Your Valuable Partner of Material Science!

Alumina from Powder to Sapphire Crystals & Ceramic Components

Quartz from Sand to Wool & Fused Quartz Components

Other Supplies for Material Processing and Characterization

Please Visit Us at Booth #218

Http://www.advaluetech.com
Tel: 1-520-514-1100, Fax: 1-520-747-4024, Email: sales@advaluetech.com
3158 S. Chrysler Ave., Tucson, AZ 85713, U.S.A
Dear Colleague,

On behalf of the MS&T Program Coordinating Committee, it is my pleasure to welcome you to MS&T16 and Salt Lake City!

We are delighted that you are able to join us for one of the most exciting weeks of the year in the materials community—Materials Science & Technology 2016! Sponsored by the five leading materials engineering societies—the American Ceramic Society (ACerS); the Association for Iron & Steel Technology (AIST); ASM International; The Minerals, Metals & Materials Society (TMS); and NACE International—MS&T16 will host more than 2,000 presentations and a selection of special events designed to engage and inspire.

Please join us on Tuesday morning for the all-conference plenary session in the Salt Palace Convention Center, Ballrooms E-J. The program will feature three esteemed professionals who are at the forefront of their respective fields:

- **Julie A. Christodoulou, FASM**, U.S. Office of Naval Research
  ASM/TMS Joint Distinguished Lecture in Materials and Society
  “Elegant Solutions: Exploration and Outcomes that Matter”

- **Bruce Dunn**, University of California, Los Angeles
  ACerS Edward Orton Jr. Memorial Lecture
  “Designing Ceramics for Next-Generation Energy Storage Systems”

- **David K. Matlock, FASM**, Colorado School of Mines
  AIST Adolf Martens Memorial Steel Lecture
  “Enhancing the Fatigue Performance of Steel: Have We Learned Anything from the Past?”

We have a full calendar of events planned for the week—including social functions, student activities, committee meetings, and special lectures. See the complete listing beginning on page 10, and be sure to make room in your schedule to visit the MS&T16 Exhibit Hall, featuring more than 80 companies.

On behalf of the MS&T Program Coordinating Committee, I hope you will have a successful and enjoyable week at MS&T16!

Emmanuel De Moor  
Chair, MS&T16 Program Coordinating Committee

MS&T16 Program Coordinating Committee members:

**ACerS Representative**  
Martha Mecartney  
University of California, Irvine  
martham@uci.edu

**TMS Representative**  
Amy Clarke  
Colorado School of Mines  
amyclarke@mines.edu

**ASM Representative**  
Judy Schneider  
University of Alabama, Huntsville  
Julieth.schneider@uah.edu

**NACE Representative**  
Raul Rebak  
GE Global Research  
rebak@ge.com

**AIST Representative and Chair**  
Emmanuel De Moor  
Colorado School of Mines  
edemoor@mines.edu

---

**Table of Contents**

- Plenary Session .............. 4
- City Map .................. 6
- Convention Center Floor Plans 7
- Conference Perks/Policies ... 8
- Calendar of Events ............ 10
- Lectures .................... 15
- Special Events ................ 16
- Student Events ............... 17
- Short Courses ................ 18
- Upcoming Conferences ....... 19
- About the Organizers ........ 20
- Technical Program ............ 23
- Exhibit Directory ............ 200
PLENARY SESSION

Tuesday, October 25 | 8:00 – 10:40 a.m. | Salt Palace Convention Center, Ballrooms E-J

ASM/TMS JOINT DISTINGUISHED LECTURE IN MATERIALS AND SOCIETY

Bruce Dunn
Nippon Sheet Glass Professor, Department of Materials Science and Engineering, University of California, Los Angeles

Designing Ceramics for Next-Generation Energy Storage Systems

Abstract The ability to design the chemistry and nanostructure of ceramics is already having a profound effect on the performance of electrode materials for electrochemical energy storage and will continue to do so in the future. One significant contribution to the lithium-ion battery field has been the development of nanoscale materials whose shorter ion and electron path lengths have led to improvements in energy and power densities. The development of core-shell architectures represents another substantial advancement in the design of electrode materials. In particular, the use of electronically conducting shells provides a unique opportunity for transforming poorly conducting oxides into electrochemically active materials. Another important development is in the field of capacitors. Pseudocapacitors based on transition metal oxides offer the promise of a new generation of energy storage materials that combine the high power of capacitors and the high energy density of battery materials. In addition to key advances in the field, a number of future directions will be presented.

Biography Bruce Dunn is the Nippon Sheet Glass Professor of Materials Science and Engineering at UCLA. Prior to joining UCLA in 1981, he was a staff scientist at the General Electric...
Research and Development Center. His research interests concern the synthesis of inorganic and organic/inorganic materials, and the characterization of their electrical, optical, biological and electrochemical properties. A continuing theme in his research is the use of sol-gel methods to synthesize materials with designed microstructures and properties. His recent work on electrochemical energy storage includes three-dimensional batteries and pseudocapacitor materials. He has received a number of honors including a Fulbright research fellowship, invited professorships at the University of Paris, the University of Bordeaux, the University of Toulouse, Shinshu University and two awards from the Department of Energy for outstanding research in Materials Science. He is a Fellow of The American Ceramic Society, the Materials Research Society and a member of the World Academy of Ceramics. In addition to serving on the Board of Reviewing Editors at Science, he is a member of the editorial boards of Advanced Energy Materials, Solid State Ionics, Advanced Electronic Materials and Journal of the American Ceramic Society.

**AIST ADOLF MARTENS MEMORIAL STEEL LECTURE**

David K. Matlock, FASM

University Emeritus professor, Advanced Steel Processing and Products Research Center, The George S. Ansell Department of Metallurgical and Materials Engineering, Colorado School of Mines

Enriching the Fatigue Performance of Steel: Have We Learned Anything from the Past?

**Abstract** Fatigue failures in operating equipment continue to occur even though there has been extensive research since the mid-1800’s when the important basic aspects of fatigue were identified after multiple railroad axle failures led to several catastrophic accidents in Europe. At that time, it was realized that application of cyclic loads could lead to metal failures at peak applied loads or stress levels less than required to cause permanent deformation. Investigations were initiated to determine the root cause of the failures and basic test methods were established. Today the importance of understanding fatigue continues to be extremely important, particularly with the current emphasis on light weight designs and optimized material usage in many systems, e.g. transportation. As a consequence of optimization, higher operating stresses are often incorporated along with decreased safety factors, both of which may lead to increased potential for fatigue failures. In this presentation, selected historical aspects of fatigue testing and failures will be presented, the fundamental basis for fatigue will be reviewed, and opportunities to increase the fatigue performance, and thus safety, of operating equipment will be discussed. Selected results from failure analyses and several recent experimental studies in the author’s laboratory will provide illustrations of some unique alloying and processing related variables that can lead to parts with improved fatigue performance. Examples in steel alloy systems relevant to automotive and power transmission systems include surface hardening to produce controlled microstructural gradients, and alloying and processing to produce steels with microstructures that are more stable in the presence of multiple load (i.e. strain) cycles. While improvements in steel processing have been successfully employed to enhance fatigue performance, the importance of simultaneously understanding design concepts, manufacturing methods, material properties, and the use of non-destructive testing to locate stable cracks prior to final fracture will also be discussed to provide an overall perspective on opportunities to increase the fatigue performance of components manufactured from steel and a variety of other alloy systems.

**Biography** David K. Matlock received his B.S. degree in engineering science from the University of Texas at Austin (1968); his M.S. (1970); and Ph.D. (1972) with degrees in materials science and engineering from Stanford University.

He is a University Emeritus Professor and the Armco Foundation Fogarty professor in the George S. Ansell department of metallurgical and materials engineering at the Colorado School of Mines (CSM), Golden, Colorado. He joined the CSM faculty in 1972 and has been involved in teaching and research, primarily related to the mechanical properties of materials. Matlock is one of the co-founders of the Advanced Steel Processing and Products Research Center, an industry-university cooperative research center established at CSM in 1984. The Center currently has 28 corporate sponsors and is recognized as one of the most successful industry/university research centers in the world. He served as center director from 1993 until his retirement in May 2013. In retirement, he continues to be an active participant in all Center operations.

Matlock is a member of the U.S. National Academy of Engineering, a Fellow of the American Society for Metals (ASM), a TMS Fellow, a Fellow of Alpha Sigma Mu, a Fellow of the American Welding Society (AWS), and a Distinguished Member and Fellow of the Association for Iron & Steel Technology (AIST). In his 44 year career at CSM, his teaching and research efforts have led to awards from CSM and multiple professional societies including the American Iron and Steel Institute, Metallurgical Society of AIME, Iron and Steel Society, Association for Iron and Steel Technology, ASM International, American Welding Society, the Society of Automotive Engineers, the International Metallographic Society, and the American Nuclear Society. In 2011 he presented the AIST Howe Memorial Lecture and in 2014 he presented the AIST J. Keith Brimacombe Memorial Lecture. He has authored or co-authored over 400 technical publications, mostly related to steels.
Navigating The City

Salt Lake Downtown Accommodations

1. Radisson Hotel Salt Lake City Downtown
2. Salt Lake Marriott Downtown at City Creek (ACerS)
3. Holiday Inn Express Salt Lake City Downtown
4. Hilton Salt Lake City Center (ASM)
5. Salt Lake Marriott City Center (AIST/TMS)
NAVIGATING THE SALT PALACE

The main entrances from the street are the East Entrance from West Temple and the South Entrance from 200 South. There are also entrances on the North and West sides of the building.

Meeting rooms are numbered by floor. The lower level rooms begin with 1; the Mezzanine level rooms begin with 2 and only in the northwest part of the Salt Palace is a meeting room located on the third floor.

Meeting rooms 155, 255 and 355 are stacked on top of each other. The easiest way to reach these rooms from the Main or South entrances is from the Mezzanine Level.
CONFERENCE PERKS/POLICIES

Your MS&T Full Conference Registration includes:

- Welcome Reception and Exhibition Grand Opening (Monday)
- Technical Sessions (Monday – Thursday)
- Proceedings CD-ROM
- Exhibition & Poster Session
- Exhibit Hall Happy Hour Reception (Tuesday PM)
- Tuesday Lunch Ticket (full conference attendees only)
- Wednesday Lunch Ticket (full conference attendees/exhibitors/students)
- Exhibition Contests and Activities
- Complimentary Memberships* in ACerS, AIST, ASM, TMS, if selected (for non-members only)

*Non-member students receive one free year Material Advantage membership

Exhibit Dates & Show Hours

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, Oct 24</td>
<td>4:30 p.m. – 6:00 p.m.</td>
</tr>
<tr>
<td>Tuesday, Oct 25</td>
<td>10:00 a.m. – 6:00 p.m.</td>
</tr>
<tr>
<td>Wednesday, Oct 26</td>
<td>9:30 a.m. – 2:00 p.m.</td>
</tr>
</tbody>
</table>

Refreshment Breaks

Refreshments are available throughout the concourse of the Salt Palace Convention Center during the morning and afternoon technical session breaks on Monday, Wednesday and Thursday. The Tuesday morning coffee break will be in the exhibit hall.

Contributed Papers CD-ROM for Conference Registrants

A CD-ROM containing papers presented at MS&T16 is provided to attendees who pay the full conference or participant registration rate. It contains the full text (in PDF format) of papers from the conference submitted for publication. The CD-ROM is searchable and can also be browsed by symposium. Students who present papers also receive the complimentary CD-ROM. The CD-ROM may also be purchased at the MS&T16 Registration Desk for $195 for attendees and $75 for students.

Society Member Lounges – Not Just for Members!

Visit ACerS, AIST, ASM and TMS member lounges in the Lower Concourse on the ground level of the Salt Palace Convention Center (near Registration) to:

- Meet members and society staff
- Learn about complimentary membership for full conference, non-member attendees
- Find books, magazines, journals and other technical resources
- Network with colleagues

Internet Access

Complimentary WiFi access is available for MS&T16 attendees in public spaces of the Salt Palace Convention Center.

Meeting App

Download the MS&T16 app to serve as your handheld guide to the meeting. Search for MS&T16 on the App Store and the Google Play™ Store. Once downloaded, login with the email address you used at registration. App features include:

- Up-to-date program information
- Special events and lectures
- Build your personal conference schedule
- Salt Lake City information
- Exhibitor and product details
- And much more!

Message Board

For your convenience, a message board is located near the Registration area of the Salt Palace Convention Center to post messages for participants and attendees.
Badge Pick-up and Onsite Conference Registration

The MS&T Conference and registration desk will be located in the South Foyer on the first level of the convention center. Advance registrants may pick up badges at the registration area during the following hours:

- **Sunday, October 23**: 12:00 p.m. – 5:00 p.m.
- **Monday, October 24**: 7:00 a.m. – 6:00 p.m.
- **Tuesday, October 25**: 7:00 a.m. – 6:00 p.m.
- **Wednesday, October 26**: 7:00 a.m. – 5:00 p.m. (note end time is different than M/T)
- **Thursday, October 27**: 7:00 a.m. – 12:00 p.m.

Guests With Special Needs and Family Needs

ACerS, AIST, ASM, and TMS, the Salt Palace Convention Center and all the conference hotels strive to accommodate all guests with special needs. A private room is available at the Salt Palace Convention Center for new and nursing mothers. Please see staff at the MS&T Registration desk for access.

Audio and Visual Recording of Technical Paper Presentations/Sessions

ACerS, AIST, ASM, and TMS reserve the right to any still photography, audio, and video reproduction of presentations at every technical session. Recording of sessions (audio, video, still photography) intended for personal use, distribution, publication, or copyright is strictly prohibited without the express written consent of MS&T and the individual authors. MS&T will take photographs and video during the MS&T Conference and Exhibition, and reproduce them in MS&T educational, news or promotional material, whether in print, electronic or other media, including the MS&T website. By participating in the MS&T Conference and Exhibition, you grant MS&T the right to use your name, photograph and biography for such purposes. All postings become the property of MS&T. Postings may be displayed, distributed or used by MS&T for any purpose.

Cellular Phone Usage

In consideration of attendees and presenters, MS&T16 organizing societies kindly request your cooperation in minimizing disturbances during technical sessions. Please place phones and other electronic devices in silent mode while you are in meeting rooms.

Be Materials-minded

MS&T16 management is committed to being environmentally responsible. Please join us in our efforts by using recycling bins located throughout the Convention Center.

Alumni Receptions

The following universities are holding receptions at MS&T:

- Purdue University MSE Alumni & Friends Reception
- Alfred University Alumni Event
- MTU Materials Science and Engineering Reception

For times and locations, see the Calendar of Events on page 10.

Authors’ Coffee

Authors’ Coffee for speakers will be available in Ballroom ABCD of the Salt Palace Convention Center Monday, October 24 through Thursday, October 27 from 7:00 a.m. to 8:00 a.m.

Presenters should only attend on the day of their scheduled presentation(s).
## CALENDAR OF EVENTS

Accurate as of 9/8/16 (times and locations are subject to change)

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FRIDAY, OCTOBER 21</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Committee Meetings</td>
<td>12:00 p.m. – 5:00 p.m.</td>
<td>MDCC Executive Boardroom</td>
</tr>
<tr>
<td>ACerS Executive Committee Meeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SATURDAY, OCTOBER 22</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Committee Meetings</td>
<td>7:00 a.m. – 5:00 p.m.</td>
<td>Hilton Granite Boardroom</td>
</tr>
<tr>
<td>ASM Committee Council Office</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACerS President's Council of Student Advisors (PCSA) Business Meeting</td>
<td>8:00 a.m. – 5:00 p.m.</td>
<td>MDCC Salons A-C</td>
</tr>
<tr>
<td>ACerS Board of Directors Meeting</td>
<td>9:00 a.m. – 5:00 p.m.</td>
<td>MDCC Grand Ballroom G&amp;H</td>
</tr>
<tr>
<td>TMS Professional Registration Committee Workshop and Meeting</td>
<td>9:00 a.m. – 5:00 p.m.</td>
<td>MCC Amethyst 2</td>
</tr>
<tr>
<td>ACerS PCA/Board of Directors Lunch</td>
<td>12:00 p.m. – 1:00 p.m.</td>
<td>MDCC Grand Ballroom I&amp;J</td>
</tr>
<tr>
<td>TMS Financial Planning Committee</td>
<td>2:00 p.m. – 5:00 p.m.</td>
<td>MCC Gallivan Boardroom</td>
</tr>
<tr>
<td>TMS Professional Registration Committee Dinner</td>
<td>6:00 p.m. – 8:00 p.m.</td>
<td>Off-site Valter's Osteria Restaurant</td>
</tr>
<tr>
<td><strong>SUNDAY, OCTOBER 23</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conference Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration</td>
<td>12:00 p.m. – 5:00 p.m.</td>
<td>SPCC South Foyer</td>
</tr>
<tr>
<td>Programming Support Desk</td>
<td>12:00 p.m. – 5:00 p.m.</td>
<td>SPCC North Foyer</td>
</tr>
<tr>
<td>Society Member Lounges</td>
<td>12:00 p.m. – 5:00 p.m.</td>
<td>SPCC Lower Concourse</td>
</tr>
<tr>
<td>Educational Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additive Manufacturing of Metals - ASM Education short course</td>
<td>8:30 a.m. – 12:00 p.m.</td>
<td>SPCC 150A</td>
</tr>
<tr>
<td>Failure Mechanisms and Analysis - ASM Education short course</td>
<td>8:30 a.m. – 12:00 p.m.</td>
<td>SPCC 150B</td>
</tr>
<tr>
<td>Computational Modeling of Thermal Processes for Metallic Parts - ASM Education short course</td>
<td>8:30 a.m. – 4:30 p.m.</td>
<td>SPCC 150C</td>
</tr>
<tr>
<td>A Design Mindset for Additive Manufacturing - ASM Education short course</td>
<td>8:30 a.m. – 4:30 p.m.</td>
<td>SPCC 150D</td>
</tr>
<tr>
<td>Essential Microstructure Interpretation - ASM Education short course</td>
<td>8:30 a.m. – 4:30 p.m.</td>
<td>SPCC 150E</td>
</tr>
<tr>
<td>Testing and Qualification in Additive Manufacturing - ASM Education short course</td>
<td>8:30 a.m. – 4:30 p.m.</td>
<td>SPCC 150F</td>
</tr>
<tr>
<td>Material Advantage Student Functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chapter Leadership Workshop (Material Advantage Chapters Only)</td>
<td>10:00 a.m. – 12:00 p.m.</td>
<td>SPCC 155A</td>
</tr>
<tr>
<td>Undergraduate Student Speaking Contest Semi-Final 1</td>
<td>1:00 p.m. – 3:00 p.m.</td>
<td>SPCC 155E</td>
</tr>
<tr>
<td>Undergraduate Student Speaking Contest Semi-Final 2</td>
<td>1:00 p.m. – 3:00 p.m.</td>
<td>SPCC 155F</td>
</tr>
<tr>
<td>Undergraduate Student Speaking Contest Finals</td>
<td>4:00 p.m. – 5:00 p.m.</td>
<td>SPCC 155E</td>
</tr>
<tr>
<td>How to Get That Job: Bridging The Communication Gap Between Generations</td>
<td>5:00 p.m. – 6:00 p.m.</td>
<td>SPCC 155F</td>
</tr>
<tr>
<td>Student Networking Mixer</td>
<td>7:00 p.m. – 9:00 p.m.</td>
<td>SPCC 155BC</td>
</tr>
<tr>
<td>Social Functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASM Annual Meeting and Awards Dinner Rehearsal</td>
<td>11:00 a.m. – 2:30 p.m.</td>
<td>Hilton Grand Ballroom C</td>
</tr>
<tr>
<td>MS&amp;T Women in Materials Science Reception</td>
<td>6:00 p.m. – 7:00 p.m.</td>
<td>SPCC Ballroom J</td>
</tr>
<tr>
<td>Committee Meetings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACerS Keramos National Board and Business Meeting</td>
<td>7:00 a.m. – 9:00 a.m.</td>
<td>MDCC Hotel Restaurant</td>
</tr>
<tr>
<td>ASM Committee Council Office</td>
<td>7:00 a.m. – 9:00 a.m.</td>
<td>Hilton Granite Boardroom</td>
</tr>
<tr>
<td>ACerS Keramos Student Chapter Business Meeting</td>
<td>8:00 a.m. – 9:00 a.m.</td>
<td>MDCC Deer Valley</td>
</tr>
<tr>
<td>Alpha Sigma Mu Board of Trustees Meeting</td>
<td>8:30 a.m. – 12:00 p.m.</td>
<td>Hilton Canyon A</td>
</tr>
<tr>
<td>ACerS Board of Directors and Division Leaders Meeting</td>
<td>8:30 a.m. – 12:00 p.m.</td>
<td>MDCC Salons H-J</td>
</tr>
<tr>
<td>TMS Board of Directors Meeting</td>
<td>8:30 a.m. – 2:00 p.m.</td>
<td>MCC Olympus B</td>
</tr>
<tr>
<td>ACerS Keramos Convocation &amp; Business Meeting</td>
<td>9:00 a.m. – 11:00 a.m.</td>
<td>MDCC Deer Valley</td>
</tr>
<tr>
<td>ACerS President's Council of Student Advisors (PCSA) Meeting</td>
<td>9:00 a.m. – 12:00 p.m.</td>
<td>MDCC Salons A-C</td>
</tr>
<tr>
<td>ASM Action in Education Committee Meeting</td>
<td>10:00 a.m. – 1:00 p.m.</td>
<td>Hilton Alpine East</td>
</tr>
<tr>
<td>ACerS Keramos Career Speaker</td>
<td>11:00 a.m. – 12:00 p.m.</td>
<td>MDCC Deer Valley</td>
</tr>
<tr>
<td>FAS Board and Committee Chairs Meeting</td>
<td>11:30 a.m. – 5:00 p.m.</td>
<td>Hilton Alpine West</td>
</tr>
<tr>
<td>ACerS Publications Committee</td>
<td>12:00 p.m. – 3:30 p.m.</td>
<td>MDCC Grand Ballroom G</td>
</tr>
<tr>
<td>ACerS Ceramic and Glass Industry Foundation (CGIF) Board of Directors Meeting</td>
<td>12:00 p.m. – 5:00 p.m.</td>
<td>MDCC Snowbird/Brighton</td>
</tr>
<tr>
<td>TMS Accreditation Committee</td>
<td>12:30 p.m. – 2:30 p.m.</td>
<td>MCC Amethyst 1</td>
</tr>
<tr>
<td>ACerS Electronics Division Executive Committee Meeting</td>
<td>1:00 p.m. – 4:00 p.m.</td>
<td>MDCC Solitude</td>
</tr>
<tr>
<td>ACerS Glass and Optical Materials Division Programming and Executive Committee Meeting</td>
<td>2:00 p.m. – 4:30 p.m.</td>
<td>MDCC Alta</td>
</tr>
<tr>
<td>ACerS Nuclear &amp; Environmental Technology Division Executive Committee Meeting</td>
<td>2:30 p.m. – 4:30 p.m.</td>
<td>MDCC Cottonwood</td>
</tr>
</tbody>
</table>
### SUNDAY, OCTOBER 23 (cont)

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Committee Meetings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACerS Engineering Ceramics Division Executive Committee Meeting</td>
<td>3:00 p.m. – 4:30 p.m.</td>
<td>MDCC Park City</td>
</tr>
<tr>
<td>TMS ABET Refresher Training</td>
<td>3:00 p.m. – 5:30 p.m.</td>
<td>MCC Amethyst 2</td>
</tr>
<tr>
<td>ASM Materials Education Foundation Board of Trustees Meeting</td>
<td>3:00 p.m. – 7:00 p.m.</td>
<td>Hilton Grand Ballroom B</td>
</tr>
<tr>
<td>ACerS Basic Science Division Executive Committee Meeting</td>
<td>3:30 p.m. – 5:30 p.m.</td>
<td>MDCC Grand Ballroom A-C</td>
</tr>
<tr>
<td>TMS Diversity Committee Meeting</td>
<td>4:00 p.m. – 5:30 p.m.</td>
<td>MCC Olympus A</td>
</tr>
<tr>
<td>TMS Program Committee</td>
<td>4:00 p.m. – 6:00 p.m.</td>
<td>MCC Capitol Ballroom B</td>
</tr>
<tr>
<td>ASM Materials Behavior and Characterization Sub-Committee</td>
<td>5:00 p.m. – 6:00 p.m.</td>
<td>Hilton Canyon B</td>
</tr>
<tr>
<td>ASM Emerging Technologies Awareness Committee (ETAC)</td>
<td>5:00 p.m. – 7:00 p.m.</td>
<td>Hilton Canyon A</td>
</tr>
<tr>
<td>TMS Materials Innovation Committee</td>
<td>5:30 p.m. – 7:00 p.m.</td>
<td>MCC Amethyst 1</td>
</tr>
<tr>
<td>TMS Nanomechanical Technologies Awareness Committee (ETAC)</td>
<td>5:45 p.m. – 6:45 p.m.</td>
<td>MCC Olympus B</td>
</tr>
<tr>
<td>TMS Ad Hoc Steels Committee</td>
<td>6:00 p.m. – 7:00 p.m.</td>
<td>MCC Olympus A</td>
</tr>
<tr>
<td>TMS Mechanical Behavior of Materials Committee Meeting</td>
<td>7:00 p.m. – 8:30 p.m.</td>
<td>MCC Capitol Ballroom C</td>
</tr>
<tr>
<td>ASM International Materials Reviews Committee</td>
<td>7:00 p.m. – 10:00 p.m.</td>
<td>Hilton Canyon C</td>
</tr>
<tr>
<td>TMS Phase Transformation Committee</td>
<td>7:30 p.m. – 9:30 p.m.</td>
<td>MCC Olympus B</td>
</tr>
<tr>
<td>ASM Materials Education Foundation Board of Trustees Dinner</td>
<td>7:30 p.m. – 10:00 p.m.</td>
<td>Hilton Grand Ballroom A</td>
</tr>
</tbody>
</table>

### MONDAY, OCTOBER 24

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conference Activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors’ Coffee</td>
<td>7:00 a.m. – 8:00 a.m.</td>
<td>SPCC Ballroom ABCD</td>
</tr>
<tr>
<td>Registration</td>
<td>7:00 a.m. – 6:00 p.m.</td>
<td>SPCC South Foyer</td>
</tr>
<tr>
<td>Programming Support Desk</td>
<td>7:00 a.m. – 6:00 p.m.</td>
<td>SPCC North Foyer</td>
</tr>
<tr>
<td>Society Member Lounges</td>
<td>7:00 a.m. – 6:00 p.m.</td>
<td>SPCC Lower Concourse</td>
</tr>
<tr>
<td>ACerS Basic Science Division Ceramographic Exhibit Set-up</td>
<td>8:30 a.m. – 9:00 a.m.</td>
<td>SPCC Lower Concourse</td>
</tr>
<tr>
<td>ACerS Basic Science Division Ceramographic Exhibit and Competition</td>
<td>9:00 a.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td><strong>Exhibition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhibitor Set-Up</td>
<td>8:00 a.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Poster Installation</td>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Exhibition Show Hours</td>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Football Feature</td>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Show Office</td>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Exhibitor Lounge</td>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>IMS International Metallographic Contest Winners</td>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Welcome Reception &amp; Exhibition Grand Opening</td>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td><strong>Lectures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACerS/NICE: Arthur L. Friedberg Ceramic Engineering Tutorial and Lecture</td>
<td>9:00 a.m. – 10:00 a.m.</td>
<td>SPCC 255B</td>
</tr>
<tr>
<td>ACerS Richard M. Fulrath Award Session</td>
<td>2:00 p.m. – 4:40 p.m.</td>
<td>SPCC 255B</td>
</tr>
<tr>
<td>ACerS Alfred R. Cooper Award Session</td>
<td>2:00 p.m. – 4:30 p.m.</td>
<td>SPCC 255A</td>
</tr>
<tr>
<td>Alpha Sigma Mu Lecture</td>
<td>2:30 p.m. – 4:00 p.m.</td>
<td>SPCC 15F</td>
</tr>
<tr>
<td><strong>Student Functions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACerS-CGIF Ceramic Careers Mentoring Luncheon</td>
<td>10:30 a.m. – 12:00 p.m.</td>
<td>MDCC Deer Valley</td>
</tr>
<tr>
<td>AIST Student Plant Tour</td>
<td>11:30 a.m. – 4:30 p.m.</td>
<td>SPCC Bus Loading/Unloading Area</td>
</tr>
<tr>
<td>ACerS Student Tour</td>
<td>12:00 p.m. – 5:00 p.m.</td>
<td>SPCC Bus Loading/Unloading Area</td>
</tr>
<tr>
<td>Undergraduate Student Poster Contest Installation</td>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Graduate Student Poster Contest Installation</td>
<td>4:30 p.m. – 6:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td><strong>Social Functions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASM Women in Materials Engineering Breakfast (Ticketed Event)</td>
<td>7:00 a.m. – 9:00 a.m.</td>
<td>SPCC Ballroom I</td>
</tr>
<tr>
<td>ASM Guest Hospitality</td>
<td>8:00 a.m. – 10:30 a.m.</td>
<td>Hilton Canyon A</td>
</tr>
<tr>
<td>Experience Salt Lake City</td>
<td>8:90 a.m. – 10:00 a.m.</td>
<td>SPCC Ballroom ABCD</td>
</tr>
<tr>
<td>ASM Leadership Awards Luncheon</td>
<td>11:30 a.m. – 1:00 p.m.</td>
<td>SPCC Ballroom EF</td>
</tr>
<tr>
<td>AIST Foundation University and Industry Relations Roundtable Luncheon</td>
<td>11:30 a.m. – 1:00 p.m.</td>
<td>MCC Olympus A</td>
</tr>
<tr>
<td>ASM Tuxedo Pick Up</td>
<td>4:00 p.m. – 6:00 p.m.</td>
<td>Hilton Canyon C</td>
</tr>
<tr>
<td>AIST Steel to Students Reception</td>
<td>6:00 p.m. – 8:00 p.m.</td>
<td>MCC Capitol Ballroom A</td>
</tr>
<tr>
<td>ACerS Annual Honor and Awards Banquet Reception</td>
<td>6:45 p.m. – 7:30 p.m.</td>
<td>MDCC Grand Ballroom Pre-function</td>
</tr>
<tr>
<td>ACerS Annual Honor and Awards Banquet</td>
<td>7:30 p.m. – 10:00 p.m.</td>
<td>MDCC Grand Ballroom D-F</td>
</tr>
<tr>
<td>ASM Canada Council Suite</td>
<td>9:00 p.m. – 12:00 a.m.</td>
<td>Hilton</td>
</tr>
</tbody>
</table>
## CALENDAR OF EVENTS

Accurate as of 9/8/16 (times and locations are subject to change)

### MONDAY, OCTOBER 24 (cont)

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alumni Events</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purdue MSE Alumni &amp; Friends Reception</td>
<td>6:30 p.m. – 8:30 p.m.</td>
<td>Squatter's Pub Brewery (Potting Shed)</td>
</tr>
<tr>
<td><strong>Annual Meetings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACoS 118th Annual Membership Meeting</td>
<td>1:00 p.m. – 2:00 p.m.</td>
<td>SPCC 355F</td>
</tr>
<tr>
<td>ASM 103rd Annual Business Meeting</td>
<td>4:00 p.m. – 5:00 p.m.</td>
<td>Ballroom EF</td>
</tr>
<tr>
<td><strong>Committee Meetings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMS Metallurgical and Materials Transactions A Board of Review</td>
<td>7:00 a.m. – 8:00 a.m.</td>
<td>Capitol Ballroom B</td>
</tr>
<tr>
<td>ASM Committee Council Office</td>
<td>7:00 a.m. – 5:00 p.m.</td>
<td>Granite Boardroom B</td>
</tr>
<tr>
<td>ACoS SPEO Meeting</td>
<td>7:30 a.m. – 9:00 a.m.</td>
<td>Solitude</td>
</tr>
<tr>
<td>ASM Investment Committee Meeting</td>
<td>8:00 a.m. – 10:00 a.m.</td>
<td>Grand Ballroom A</td>
</tr>
<tr>
<td>ASM Materials Properties Database Committee Meeting</td>
<td>8:00 a.m. – 10:00 a.m.</td>
<td>Canyon B</td>
</tr>
<tr>
<td>ASM Metallurgy, Microstructure and Analysis Editorial Board</td>
<td>8:00 a.m. – 10:30 a.m.</td>
<td>Alpine West</td>
</tr>
<tr>
<td>TMS Membership &amp; Student Development Committee Meeting</td>
<td>8:15 a.m. – 9:45 a.m.</td>
<td>Gallivan Boardroom</td>
</tr>
<tr>
<td>ACoS Past Presidents’ Meeting</td>
<td>8:30 a.m. – 10:30 a.m.</td>
<td>Alta</td>
</tr>
<tr>
<td>SMST Board Meeting</td>
<td>8:30 a.m. – 11:30 a.m.</td>
<td>Room 326</td>
</tr>
<tr>
<td>ASM Chapter Council</td>
<td>9:00 a.m. – 11:00 a.m.</td>
<td>Alpine East</td>
</tr>
<tr>
<td>ACoS/TMS Leadership Meeting</td>
<td>10:00 a.m. – 11:00 a.m.</td>
<td>Ken Knight Boardroom B</td>
</tr>
<tr>
<td>ASM Women in Materials Engineering Committee</td>
<td>10:00 a.m. – 11:30 a.m.</td>
<td>Grand Ballroom B</td>
</tr>
<tr>
<td>ACoS Meetings Committee Meeting</td>
<td>10:00 a.m. – 11:30 a.m.</td>
<td>Capitol Ballroom B</td>
</tr>
<tr>
<td>TMS Executive Committee Meeting</td>
<td>11:30 a.m. – 1:00 p.m.</td>
<td>Gallivan Boardroom</td>
</tr>
<tr>
<td>ACoS Electronics Division General Business Meeting</td>
<td>12:00 p.m. – 1:00 p.m.</td>
<td>255F</td>
</tr>
<tr>
<td>TSS Board and Committee Chairs Meeting</td>
<td>12:00 p.m. – 5:00 p.m.</td>
<td>Alpine West</td>
</tr>
<tr>
<td>TMS Integrated Computational Materials Engineering Committee Meeting</td>
<td>12:15 p.m. – 1:45 p.m.</td>
<td>Olympus B</td>
</tr>
<tr>
<td>TMS Education Committee</td>
<td>12:30 p.m. – 2:00 p.m.</td>
<td>Amethyst 2</td>
</tr>
<tr>
<td>ACoS Volunteerism Committee Meeting</td>
<td>1:30 p.m. – 3:00 p.m.</td>
<td>Alpine East</td>
</tr>
<tr>
<td>ACoS Awards Policy Committee Meeting</td>
<td>1:30 p.m. – 3:30 p.m.</td>
<td>Ken Knight Boardroom B</td>
</tr>
<tr>
<td>TMS Foundation Board of Trustees Meeting</td>
<td>1:30 p.m. – 4:00 p.m.</td>
<td>Capitol Ballroom B</td>
</tr>
<tr>
<td>TMS Bladesmithing 2017 Student Meeting</td>
<td>2:00 p.m. – 3:00 p.m.</td>
<td>Amethyst 1</td>
</tr>
<tr>
<td>ACoS Education Integration Committee Business Meeting</td>
<td>2:00 p.m. – 4:00 p.m.</td>
<td>MDCC Solitude</td>
</tr>
<tr>
<td>ACoS NICE Business Meeting</td>
<td>4:00 p.m. – 5:30 p.m.</td>
<td>MDCC Solitude</td>
</tr>
<tr>
<td>ACoS Fulkath Committee Meeting</td>
<td>4:30 p.m. – 5:30 p.m.</td>
<td>255B</td>
</tr>
<tr>
<td>ACoS Nuclear &amp; Environmental Technology Division General Membership Meeting</td>
<td>4:45 p.m. – 5:45 p.m.</td>
<td>250A</td>
</tr>
<tr>
<td>ACoS Glass and Optical Materials Division General Business Meeting</td>
<td>5:00 p.m. – 6:00 p.m.</td>
<td>255A</td>
</tr>
<tr>
<td>ACoS Annual Meeting</td>
<td>5:00 p.m. – 7:00 p.m.</td>
<td>Alpine East</td>
</tr>
<tr>
<td>ACoS Electronic Division General Business Meeting</td>
<td>5:30 p.m. – 7:00 p.m.</td>
<td>Canyon B</td>
</tr>
<tr>
<td>TMS Nuclear Materials Committee</td>
<td>5:30 p.m. – 7:00 p.m.</td>
<td>Amethyst 2</td>
</tr>
<tr>
<td>TMS Composite Materials Committee</td>
<td>5:45 p.m. – 6:45 p.m.</td>
<td>Amethyst 1</td>
</tr>
<tr>
<td>TMS Additive Manufacturing Committee</td>
<td>6:00 p.m. – 7:30 p.m.</td>
<td>355D</td>
</tr>
<tr>
<td>ACoS Finance Committee Dinner</td>
<td>6:00 p.m. – 9:00 p.m.</td>
<td>Alpine West</td>
</tr>
<tr>
<td>ACoS Alloy Phase Diagram (APD) Committee Meeting</td>
<td>7:30 p.m. – 9:30 p.m.</td>
<td>Grand Ballroom A</td>
</tr>
</tbody>
</table>

### TUESDAY, OCTOBER 25

<table>
<thead>
<tr>
<th>Conference Activities</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authors’ Coffee</td>
<td>7:00 a.m. – 8:00 a.m.</td>
<td>Ballroom ABCD</td>
</tr>
<tr>
<td>Registration</td>
<td>7:00 a.m. – 6:00 p.m.</td>
<td>South Foyer</td>
</tr>
<tr>
<td>Programming Support Desk</td>
<td>7:00 a.m. – 6:00 p.m.</td>
<td>North Foyer</td>
</tr>
<tr>
<td>Society Member Lounges</td>
<td>7:00 a.m. – 6:00 p.m.</td>
<td>Lower Concourse</td>
</tr>
<tr>
<td>ACoS Basic Science Division Ceramicographic Exhibit &amp; Competition</td>
<td>7:00 a.m. – 7:00 p.m.</td>
<td>Hall DE</td>
</tr>
<tr>
<td>General Poster Session Installation</td>
<td>10:00 a.m. – 11:00 a.m.</td>
<td>Hall DE</td>
</tr>
<tr>
<td>Poster Session/Refreshment Break</td>
<td>10:40 a.m. – 11:30 a.m.</td>
<td>Hall DE</td>
</tr>
<tr>
<td>General Poster Session with Presenters</td>
<td>11:00 a.m. – 1:00 p.m.</td>
<td>Hall DE</td>
</tr>
<tr>
<td>General Poster Viewing</td>
<td>1:00 p.m. – 6:00 p.m.</td>
<td>Hall DE</td>
</tr>
</tbody>
</table>

**Exhibition**

| Event                                                             | Time               | Location  |
|                                                                  |                    | Hall DE   |
| ASM Mini-Materials Camp                                           | 9:00 a.m. – 2:00 p.m. | Hall DE   |
| Exhibition Show Hours                                             | 10:00 a.m. – 6:00 p.m. | Hall DE   |
| Show Office                                                       | 10:00 a.m. – 6:00 p.m. | Hall DE   |
| Exhibitor Lounge                                                  | 10:00 a.m. – 6:00 p.m. | Hall DE   |
## Exhibition

- **Football Feature**
  - Time: 10:00 a.m. – 6:00 p.m.
  - Location: SPCC Hall DE
- **IMS International Metallographic Contest Winners**
  - Time: 10:00 a.m. – 6:00 p.m.
  - Location: SPCC Hall DE
- **MS&T Food Court**
  - Time: 12:00 p.m. – 2:00 p.m.
  - Location: SPCC Hall DE
- **Happy Hour Reception**
  - Time: 4:00 p.m. – 6:00 p.m.
  - Location: SPCC Hall DE

## Lectures

- **MS&T Plenary Lectures**
  - Time: 8:00 a.m. – 10:35 a.m.
  - Location: SPCC Ballroom E-J
- **TMS Young Professional Tutorial Luncheon (ticketed)**
  - Time: 12:00 p.m. – 12:45 p.m.
  - Location: SPCC Ballroom 1
- **TMS Young Professional Tutorial Lecture (open)**
  - Time: 12:45 p.m. – 2:00 p.m.
  - Location: SPCC Ballroom 1
- **ASM Edward DeMille Campbell Memorial Lecture**
  - Time: 12:45 p.m. – 1:45 p.m.
  - Location: SPCC 155F
- **ACerS Frontiers of Science and Society - Rustum Roy Lecture**
  - Time: 1:00 p.m. – 2:00 p.m.
  - Location: SPCC 25SB

## Social Functions

- **Undergraduate Student Poster Contest Judging**
  - Time: 10:00 a.m. – 12:00 p.m.
  - Location: SPCC Hall DE
- **Graduate Student Poster Contest Judging**
  - Time: 10:00 a.m. – 12:00 p.m.
  - Location: SPCC Hall DE
- **ASM DomesDay Competition**
  - Time: 12:00 p.m. – 2:00 p.m.
  - Location: SPCC Hall DE
- **ASM Guest Hospitality**
  - Time: 6:00 p.m. – 7:30 p.m.
  - Location: SPCC Ballroom J
- **ACerS Companion Breakfast**
  - Time: 8:00 a.m. – 10:00 a.m.
  - Location: SPCC Bus Loading/Unloading Area

## Committee Meetings

- **ASM Committee Council Office**
  - Time: 7:00 a.m. – 5:00 p.m.
  - Location: Hilton Granite Boardroom
- **Material Advantage Committee Meeting**
  - Time: 7:00 a.m. – 8:30 a.m.
  - Location: SPCC Ken Knight Boardroom
- **ASM Journal of Failure Analysis & Prevention Editorial Board**
  - Time: 7:00 a.m. – 9:00 a.m.
  - Location: Hilton Alpine West
- **ASM Handbook Committee Meeting**
  - Time: 8:30 a.m. – 11:00 a.m.
  - Location: Hilton Alpine East
- **TMS Young Professional Committee Meeting**
  - Time: 9:00 a.m. – 10:15 a.m.
  - Location: MCC Olympus A
- **ASM Canada Council**
  - Time: 9:00 a.m. – 11:00 a.m.
  - Location: Hilton Topaz
- **ACerS Basic Science Division General Membership Meeting**
  - Time: 10:15 a.m. – 12:00 p.m.
  - Location: SPCC Ken Knight Boardroom
- **ACerS Engineering Ceramics Division General Membership Meeting**
  - Time: 10:00 a.m. – 1:00 p.m.
  - Location: SPCC 251E
- **ASM Technical Books Committee**
  - Time: 2:00 p.m. – 3:30 p.m.
  - Location: Hilton Topaz
- **TMS Powder Materials Committee**
  - Time: 12:30 p.m. – 2:00 p.m.
  - Location: MCC Olympus A
- **ACerS Nominating Committee**
  - Time: 2:15 p.m. – 3:15 p.m.
  - Location: MDCCC Alta
- **ASM Past Presidents Meeting**
  - Time: 3:00 p.m. – 4:30 p.m.
  - Location: Hilton Canyon A
- **ACerS Panel of Fellows Meeting**
  - Time: 3:00 p.m. – 5:00 p.m.
  - Location: MDCCC Brighton
- **ACerS Art, Archaeology and Conservation Science Executive Committee Meeting**
  - Time: 4:00 p.m. – 5:30 p.m.
  - Location: Hilton Canyon B
- **TMS Titanium Committee**
  - Time: 5:00 p.m. – 6:00 p.m.
  - Location: MCC Olympus A
- **TMS Surface Engineering Committee Meeting**
  - Time: 5:00 p.m. – 6:00 p.m.
  - Location: MCC Capitol Ballroom B
- **TMS Shaping & Forming Committee**
  - Time: 5:00 p.m. – 7:00 p.m.
  - Location: MCC Olympus B
- **TMS Biomaterials Committee**
  - Time: 5:30 p.m. – 6:30 p.m.
  - Location: MCC Amethyst 1
- **TMS Corrosion & Environmental Effects Committee**
  - Time: 5:30 p.m. – 6:30 p.m.
  - Location: MCC Amethyst 2
- **TMS Refractory Metals & Materials Committee**
  - Time: 5:30 p.m. – 6:30 p.m.
  - Location: MCC Capitol Ballroom C
## CALENDAR OF EVENTS

Accurate as of 9/8/16 (times and locations are subject to change)

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WEDNESDAY, OCTOBER 26</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conference Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registration</td>
<td>7:00 a.m. – 5:00 p.m.</td>
<td>SPCC South Foyer</td>
</tr>
<tr>
<td>Programming Support Desk</td>
<td>7:00 a.m. – 6:00 p.m.</td>
<td>SPCC North Foyer</td>
</tr>
<tr>
<td>Authors’ Coffee</td>
<td>7:00 a.m. – 8:00 a.m.</td>
<td>SPCC Ballroom ABCD</td>
</tr>
<tr>
<td>Society Member Lounges</td>
<td>7:00 a.m. – 5:00 p.m.</td>
<td>SPCC Lower Concourse</td>
</tr>
<tr>
<td>ACerS Basic Science Division Ceramographic Exhibit &amp; Competition</td>
<td>7:00 a.m. – 5:00 p.m.</td>
<td>SPCC Lower Concourse</td>
</tr>
<tr>
<td>Exhibition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASM Mini-Materials Camp</td>
<td>9:00 a.m. – 11:00 a.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Exhibition Show Hours</td>
<td>9:30 a.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>General Poster Viewing</td>
<td>9:30 a.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Football Feature</td>
<td>9:30 a.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Show Office</td>
<td>9:30 a.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Exhibitor Lounge</td>
<td>9:30 a.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>MS&amp;T Food Court</td>
<td>12:00 p.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>ASM Mini-Materials Camp</td>
<td>12:00 p.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Exhibitor Tear-down</td>
<td>2:00 p.m. – 9:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>General Poster Session - Tear Down</td>
<td>2:00 p.m. – 3:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>MS&amp;T Food Court</td>
<td>12:00 p.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td><strong>Lectures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACerS Basic Science Division Robert B. Sosman Lecture</td>
<td>1:00p.m. – 2:00 p.m.</td>
<td>SPCC 255B</td>
</tr>
<tr>
<td><strong>Student Functions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate Student Poster Contest Display</td>
<td>9:30 a.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Graduate Student Poster Contest Display</td>
<td>9:30 a.m. – 2:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Undergraduate Student Poster Dismantle</td>
<td>2:00 p.m. – 3:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td>Graduate Student Poster Dismantle</td>
<td>2:00 p.m. – 3:00 p.m.</td>
<td>SPCC Hall DE</td>
</tr>
<tr>
<td><strong>Social Functions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASM Board of Trustees and 2016 Fellows Breakfast</td>
<td>7:00 a.m. – 8:00 a.m.</td>
<td>Hilton Topaz</td>
</tr>
<tr>
<td>ASM Tuxedo Drop Off</td>
<td>7:00 a.m. – 12:00 p.m.</td>
<td>Hilton Canyon C</td>
</tr>
<tr>
<td>ASM Guest Hospitality</td>
<td>8:00 a.m. – 10:30 a.m.</td>
<td>Hilton Canyon A</td>
</tr>
<tr>
<td><strong>Committee Meetings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASM Committee Council Office</td>
<td>7:00 a.m. – 5:00 p.m.</td>
<td>Hilton Granite Boardroom</td>
</tr>
<tr>
<td>JOM Focus Group</td>
<td>7:30 a.m. – 9:00 a.m.</td>
<td>MCC Gallivan Boardroom</td>
</tr>
<tr>
<td>ASM Board of Trustees Meeting</td>
<td>8:00 a.m. – 4:30 p.m.</td>
<td>Hilton Alpine East/West</td>
</tr>
<tr>
<td>ACerS Art, Archaeology and Conservation Science Division General Membership Meeting</td>
<td>12:00 p.m. – 1:00 p.m.</td>
<td>SPCC 251F</td>
</tr>
<tr>
<td>ASM MS&amp;T Programming Meeting</td>
<td>12:00 p.m. – 1:30 p.m.</td>
<td>SPCC 151D</td>
</tr>
<tr>
<td>ACerS/TMS Leadership Meeting</td>
<td>12:30 p.m. – 1:30 p.m.</td>
<td>MDCC Park City</td>
</tr>
<tr>
<td>MS&amp;T JPLT Meeting</td>
<td>4:00 p.m. – 5:00 p.m.</td>
<td>MCC Gallivan Boardroom</td>
</tr>
<tr>
<td>MS&amp;T Steering Committee</td>
<td>5:00 p.m. – 6:00 p.m.</td>
<td>MCC Gallivan Boardroom</td>
</tr>
<tr>
<td>FAS Program Committee Meeting</td>
<td>7:00 p.m. – 8:00 p.m.</td>
<td>Hilton Grand Ballroom C</td>
</tr>
<tr>
<td>FAS Launch Party</td>
<td>8:00 p.m. – 9:00 p.m.</td>
<td>Hilton Grand Ballroom B</td>
</tr>
<tr>
<td><strong>THURSDAY, OCTOBER 27</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conference Activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authors’ Coffee</td>
<td>7:00 a.m. – 8:00 a.m.</td>
<td>SPCC Ballroom ABCD</td>
</tr>
<tr>
<td>Registration</td>
<td>7:00 a.m. – 12:00 p.m.</td>
<td>SPCC South Foyer</td>
</tr>
<tr>
<td>Programming Support Desk</td>
<td>7:00 a.m. – 12:00 p.m.</td>
<td>SPCC North Foyer</td>
</tr>
<tr>
<td>Society Member Lounges</td>
<td>7:00 a.m. – 12:00 p.m.</td>
<td>SPCC Lower Concourse</td>
</tr>
<tr>
<td>ACerS Basic Science Division Ceramographic Exhibit &amp; Competition</td>
<td>7:00 a.m. – 12:00 p.m.</td>
<td>SPCC Lower Concourse</td>
</tr>
<tr>
<td>Educational Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sintering of Ceramics (Day 1 of 2) – ACerS Education Short Course</td>
<td>9:00 a.m. – 4:30 p.m.</td>
<td>SPCC 150A</td>
</tr>
<tr>
<td><strong>FRIDAY, OCTOBER 28</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sintering of Ceramics (Day 2 of 2) – ACerS Education Short Course</td>
<td>9:00 a.m. – 2:30 p.m.</td>
<td>MDCC Park City</td>
</tr>
</tbody>
</table>

Legend:
- SPCC = Salt Palace Convention Center
- MCC = Salt Lake Marriott City Center
- MDCC = Salt Lake Marriott Downtown at City Creek
- Hilton = Hilton Salt Lake City Center
LECTURES

Monday, October 24
9:00 a.m. – 10:00 a.m.
ACerS/NICE Arthur L. Friedberg Ceramic Engineering Tutorial and Lecture
– Aldo R. Boccaccini, Institute of Biomaterials, University of Erlangen-Nuremberg, Erlangen, Germany
Bioactive Glasses in Soft Tissue Repair: What Do We Know So Far?

2:00 p.m. – 4:30 p.m.
ACerS Alfred R. Cooper Award Session
Cooper Distinguished Lecture
– Neville Greaves, Cambridge University, Cambridge, UK, and Wuhan University of Technology, Wuhan, China
Where Inorganic Meets Organic in the Glassy State: Hybrid Glasses and Dental Cements

ACerS 2016 Alfred R. Cooper Scholar Lecture and Award Presentation
– Matthew A. Tuggle, Center for Optical Materials Science and Engineering Technology and Clemson University
Novel Approaches to Glass Optical Fibers

2:00 p.m. – 4:20 p.m.
ACerS Richard M. Fulrath Award Session
– Tadachika Nakayama, Nagaoka University of Technology, Japan
Ceramics/Polymer Hybrids and its Processing with Nano Pulsed Power Technology
– Yoshiki Iwazaki, Taiyo Yuden Co., Ltd., Gunma, Japan
Material Design of Dielectric and Piezoelectric Materials With First-Principles Calculation
– James G. Hemrick, Reno Refractories, Inc.
A Future for Refractory Ceramic Technology Based on a Rich Past
– Tomoyuki Nakamura, Murata Manufacturing Co., Ltd., Japan
Development of Dielectrics for Monolithic Ceramic Capacitor
– Bryan D. Huey, University of Connecticut
High Speed and Tomographic AFM of Functional Materials

2:30 p.m. – 4:00 p.m.
ASM Alpha Sigma Mu Lecture
– Alton D. Romig, Jr., FASM, Executive Officer, National Academy of Engineering
National Academy of Engineering Grand Challenges for Engineering

Tuesday, October 25
8:00 a.m. – 10:40 a.m.
MS&T Plenary Session
ASM/TMS Joint Distinguished Lecture in Materials and Society | 8:10 a.m.
– Julie A. Christodoulou, FASM, Director, Naval Materials, S&T Division
Sea Warfare and Weapons Department, Office of Naval Research
Elegant Solutions: Exploration and Outcomes that Matter

ACerS Edward Orton Jr. Memorial Lecture | 9:00 a.m.
– Bruce Dunn, University of California, Los Angeles
Designing Ceramics for Next-Generation Energy Storage Systems

AIST Adolf Martens Memorial Steel Lecture | 9:50 a.m.
– David K. Matlock, FASM, University Emeritus Professor, Advanced Steel Processing and Products Research Center, The George S. Ansell Department of Metallurgical and Materials Engineering, Colorado School of Mines
Enhancing the Fatigue Performance of Steel: Have We Learned Anything from the Past?

12:45 p.m. – 1:45 p.m.
ASM Edward DeMille Campbell Memorial Lecture
– A. Lindsay Greer, University of Cambridge
Extending the Range of the Glassy State: New insights from the Novel Properties of Metallic Glasses

1:00 p.m. – 2:00 p.m.
ACerS Frontiers of Science and Society–Rustum Roy Lecture
– Cato T. Laurencin, University of Connecticut
Regenerative Engineering: A Convergence Approach to Next Generation Grand Challenges

Wednesday, October 26
1:00 p.m. – 2:00 p.m.
ACerS Basic Science Division Robert B. Sosman Lecture
– Jennifer A. Lewis, Harvard University
Programmable Assembly of Colloidal Suspensions

Young Professionals Programming at MS&T16 – Tuesday, Oct. 25
12:00 p.m. – 12:45 p.m. | SPCC-Ballroom I | TMS Young Professionals Tutorial Luncheon (ticketed)
12:45 p.m. – 2:00 p.m. | SPCC-Ballroom E | TMS Young Professionals Tutorial Lecture (open)
4:30 p.m. – 6:00 p.m. | SPCC-Ballroom J | Young Professionals Reception
SPECIAL EVENTS

Sunday, October 23

MS&T Women in Materials Science Reception
6:00 p.m. – 7:00 p.m. | SPCC Ballroom J
Enjoy the chance to network with professionals and peers in a relaxed environment.

Monday, October 24

ASM Women in Materials Engineering Breakfast
7:00 a.m. – 9:00 a.m. | SPCC Ballroom J
Join your colleagues for the ASM Women in Materials Engineering Breakfast and listen to a lively discussion of relevant topics with featured speakers. This breakfast sold out last year and is expected to sell out again in 2016. Tickets can be purchased via the registration form. Please join us!

Experience Salt Lake City | SPCC Ballroom A B C D
Join us 9:00 a.m. – 10:00 a.m. to meet with local tour organizers who will provide information on local activities, sites, and self-guided tours in Salt Lake City. The knowledgeable local staff will assist in getting your day planned and started. You will be surprised by all of the activities and sight-seeing available to you during your stay! Advance registration is not required.

ASM Leadership Awards Luncheon
11:30 a.m. – 1:00 p.m. | SPCC Ballroom E F
ASM’s organizational unit awards as well as awards and scholarships of the ASM Materials Education Foundation will be presented. ASM’s incoming Committee/Council chairs will also be recognized for their leadership. ASM Committee/Council members meeting during MS&T, and awardees, will receive an invitation to attend. Others may purchase tickets via the meeting registration form.

ACerS 118th Annual Meeting
1:00 p.m. – 2:00 p.m. | SPCC 355 F
The president reports on Society activities and newly elected officers take their positions during the annual membership meeting. All ACerS members and guests are welcome.

ASM 103rd Annual Business Meeting
4:00 p.m. – 5:00 p.m. | SPCC Ballroom E F
Attend our annual business meeting where officers will be elected for the 2016-2017 term and other ASM business will be transacted. ASM members and guests are welcome.

Welcome Reception and Exhibit Grand Opening
4:30 p.m. – 6:00 p.m. | SPCC Hall D E
Network with your colleagues, meet new people, talk to the exhibitors, and learn about the exciting membership offerings of the organizing societies.

ACerS 118th Annual Honors and Awards Reception and Banquet
6:45 p.m. – 10:00 p.m. | MDCC Grand Ballroom D F
Enjoy dinner, conversation and the presentation of Society awards. Purchase tickets for $90 via meeting registration.

ASM Canada Council Suite
9:00 p.m. – 12:00 a.m. | Hilton
Experience Canadian hospitality!

Tuesday, October 25

Salt Lake City Tour
8:30 a.m. – 2:00 p.m. | SPCC Bus loading/unloading area
Price per person: $65 (includes lunch)
Purchase tickets at matscitech.org
A 30-mile adventure, which includes visits to Temple Square; the State Capitol Building; This Is the Place Heritage Park; historic districts, with mansions and cathedrals; University of Utah; Pony Express Station; historic Fort Douglas; Trolley Square; Union Pacific Depot; and more!

MS&T16 Exhibit Happy Hour Reception
4:00 p.m. – 6:00 p.m. | SPCC Hall D E
Network with colleagues and build relationships with qualified attendees, buyers and prospects!

MS&T Young Professionals Reception
4:30 p.m. – 6:00 p.m. | SPCC Ballroom J
Attend this reception to meet and network with fellow young professionals.

ASM Awards Dinner Reception
6:15 p.m. – 7:00 p.m. | Hilton Alpine East/West
ASM Awards Dinner
7:00 p.m. – 9:00 p.m. | Hilton Grand Ballroom
Join us in celebrating the wonderful accomplishments of this year’s award recipients and the 2016 Class of Fellows. Tickets, which include the President’s Reception following the dinner, can be purchased via the registration form.
STUDENT EVENTS

Student Activities Page (Information subject to change. See Calendar of Events on pages 10-14 for times and location. For more information on student events, please visit matscitech.org/students)

**Undergraduate Student Poster Contest**
Stop by the convention center exhibit hall to view the submissions to the 2016 undergraduate poster contest. Posters will be displayed on Tuesday, October 25 and Wednesday, October 26, during regular exhibit hall hours.

**Graduate Student Poster Contest**
The contest, open to current graduate students pursuing M.S. or Ph.D. degrees, recognizes superior research performed during graduate study. Posters must be accepted for the MS&T technical program to be entered into the contest. Entries will be displayed in the general poster session.

For more information about either poster contest, contact Tricia Freshour, tfreshour@ceramics.org.

**SUNDAY, OCTOBER 23, 2016**

**Chapter Leadership Workshop** – FOR CHAPTER OFFICERS ONLY
Meet fellow chapter officers, share best practices, and learn about Material Advantage! This workshop is for chapter officers only (Chair, Vice-Chair, Secretary, and Treasurer). Registration was required for this workshop.

**Undergraduate Student Speaking Contest**
MS&T hosts the semi-final and final rounds of the Material Advantage Undergraduate Student Speaking Contest. This contest encourages undergraduate students to present technical papers and improve their presentation skills. The presentation subject must be technical but can relate to any aspect of materials science and engineering. One contestant from a university competes in this contest. For more information, contact Tricia Freshour at tfreshour@ceramics.org.

**How To Get That Job: Bridging The Communication Gap Between Generations**
Featuring experienced professionals, this workshop will inform you of the preferred communication practices across different mediums. Your future interview and workplace will involve a diverse group of individuals that span various generations – effectively communicating is an essential skill that will prepare you for success. Open to all students. Walk-ins are welcomed.

**Student Networking Mixer**
Join in this relaxed, casual, and fun atmosphere designed for students, Material Advantage faculty advisors, and society volunteer leaders. Students are encouraged to wear their school colors. Music will be provided.

**MONDAY, OCTOBER 24, 2016**

**Welcome Reception**
Join the festivities to help kick off MS&T! See page 16 for more details.

**ACerS CGIF Ceramic Careers Mentoring Luncheon**
Enjoy lunch while learning about careers in ceramics! Professionals from the ceramics and glass industry will be on hand to present an overview of jobs in their fields and will be available for one-on-one career questions and advice.

**ACerS Student Tour**
Students have the opportunity to visit Amedica Corporation in Salt Lake City during MS&T. The tour is organized by ACerS President’s Council of Student Advisors (PCSA). For more information, contact Tricia Freshour at tfreshour@ceramics.org.

**AIST Student Plant Tour**
AIST will be offering students the opportunity to tour a steel plant while at MS&T16. Nucor Steel - Utah will be hosting the tour. Advance registration is required.

**Perspectives for Emerging Materials Professionals**
Organized by the ASM Emerging Professionals Committee, be sure to participate in this symposium specifically created for those just starting their materials science career!

**TUESDAY, OCTOBER 25, 2016**

**Ceramic Mug Drop Contest**
Mugs fabricated by students from ceramic raw materials are judged on aesthetics and breaking thresholds. Mugs are dropped from varying levels until the breaking threshold is reached. The mug with the highest successful drop distance wins! Don’t miss this smashing event in the Exhibit hall.

**Ceramic Disc Golf Contest**
This contest is sure to draw a crowd! Students create discs from ceramic or glass materials to meet certain specifications; the discs are then thrown into a regulation disc golf basket. Each disc will be judged in the categories of farthest distance achieved and artistic merit (aesthetics). The disc that is successfully thrown into the disc golf basket from the farthest distance in the fewest number of shots will be named winner of the Ceramic Disc Golf Contest; the most aesthetically pleasing/creative disc will be recorded as “Best Looking” disc.

**ASM Geodesic Dome Design Competition “DomesDay”**
Can these domes take the weight? Join us for the display, judging, and selection of winners at the third ASM Geodesic Dome Design Competition! The Domes will be scored on aesthetics, elevator pitch, and mechanical strength through compression testing. For more information, visit www.asminternational.org/domesday.

**Student Awards Ceremony**
Congratulations to the winners of this year’s contests: Material Advantage Chapters of Excellence, Student Speaking Contest, Graduate and Undergraduate Poster Contests, Ceramic Mug Drop Contest, Ceramic Disc Golf Contest, TMS Superalloys Awards, AIST/AISI Scholarships, ACerS Creativity Competition, and Keramos National Awards.
The basic building block of any powder-based Additive Manufacturing (AM) system is the input metal powder. The quality of the final part directly relates to the starting powder and how it was manipulated during the additive process. Microstructural and chemical changes to that base powder must be tightly controlled and intimately understood in order to produce predictable and acceptable components. Powders can experience a wide range of heat, pressure, humidity, vibration, and other environmental conditions during the processing path. This course will look at some of those conditions and what impact they may have on final components, as well as how to manage and control them to yield the best possible parts. Different AM processes will be compared and contrasted as to how they manipulate the starting powder and what that means to the ultimate material properties.

8:30 a.m. – 4:30 p.m.
**A Design Mindset for Additive Manufacturing**
*Instructor: Howard A. Kuhn, FASM, University of Pittsburgh, America Makes*

Additive manufacturing (AM), more commonly known as 3D printing, has captured the attention and fascination of the world of materials and manufacturing. AM provides the opportunity for revolutionary approaches to product development through part integration, tooling for conventional processes, and unique geometries for weight savings. This short course focuses on a formalized approach to design for additive manufacturing by briefly reviewing the materials and characteristics of AM processes, describing various research accomplishments and successful commercial applications, and summarizing these observations into a set of rules, procedures, and mindset for realizing genuine value propositions for AM in metallic and ceramic materials.

8:30 a.m. – 4:30 p.m.
**Computational Modeling of Thermal Processes for Metallic Parts**
*Instructor: Dr. B. Lynn Ferguson, FASM, Dante Solutions*

This course illustrates integrated computational materials engineering concepts. The focus will be on modeling of thermal processing of metallic parts, with emphasis on microstructure control, dimensional change, and stress during, and as a consequence of the process. The focus is on heat treatment processes. Most examples will be on steel components, although aluminum, nickel, and titanium alloys will be discussed. Thermal processing modeling of components involves heat and mass transport, possible surface reactions, solid state transformations, thermal stress, and transformation induced stress. Models include thermal and chemical diffusion, mechanical, and metallurgical models. Material and process data needed for these models will be discussed, including testing methods used to determine the data.

8:30 a.m. – 4:30 p.m.
**Essential Microstructure Interpretation**
*Instructors: Frauke Hogue, FASM, Hogue Metallography*

Do you interpret microstructures on a regular basis, for quality control, failure analysis, or research? Are you just curious about what the structures mean that you have been seeing all these years? Or is metallography a new field for you? In any case, this Sunday class before the MS&T conference is for you! This is a one-day version of the four-day class that has been presented to rave reviews at the ASM Headquarters at Materials Park for the last 20 years. The focus is on practical interpretation, NOT theory, phase diagrams, and thermodynamics. There are no prerequisites. We will look at slides of over 200 structures and find out and discuss what each structure tells us about the type of material, manufacturing methods used, heat treatment, mechanical properties, and sometimes even failure modes.

8:30 a.m. – 12:00 p.m.
**Additive Manufacturing of Metals**
*Instructor: Eric Bon, Engineering Solutions at Puri*

The basic building block of any powder-based Additive Manufacturing (AM) system is the input metal powder. The quality of the final part directly relates to the starting powder and how it was manipulated during the additive process. Microstructural and chemical changes to that base powder must be tightly controlled and intimately understood in order to produce predictable and acceptable components. Powders can experience a wide range of heat, pressure, humidity, vibration, and other environmental conditions during the processing path. This course will look at some of those conditions and what impact they may have on final components, as well as how to manage and control them to yield the best possible parts. Different AM processes will be compared and contrasted as to how they manipulate the starting powder and what that means to the ultimate material properties.

8:30 a.m. – 12:00 p.m.
**Failure Mechanisms and Analysis**

This half-day short course is based on the very popular ASM course: Principles of Failure Analysis. Whether made of metallic or nonmetallic materials, components fail by distortion, corrosion, wear, and/or fracture. The primary objective of failure analysis is to accurately identify the failure mechanism, so that appropriate preventive actions can be taken. The important mechanisms for each type of failure (distortion, corrosion, wear, and fracture) will be reviewed in detail, including the key macro- and microscale features used by the failure analyst to identify the various failure mechanisms. Numerous examples and case studies are illustrated with photographs, fractographs, and photomicrographs.

8:30 a.m. – 12:00 p.m.
**Testing and Qualification in Additive Manufacturing**
*Instructors: Dr. Prabir K. Chaudhury, Exova*

Additive Manufacturing (AM) of 3D printed metallic parts do not have inspection, testing, and quality assurance guidelines. There isn’t a consensus among participants on qualifying parts and inspecting when in production. This course addresses testing and qualification for industrial implementation. Processing related effects on microstructure and property provide guidance on process development and optimization through testing, inspection, and qualification. Mechanical, physical, and microstructural property measurement requirements for part design will be addressed. Material and process selection, machine qualification, product and process development, process optimization, qualification, monitoring, and finally product quality assurance are discussed. Beneficial for machine developers, part manufacturers, product designers, and original equipment manufacturers engaged in AM.

Day 1: 9:00 a.m. – 4:30 p.m.
**Sintering of Ceramics**
*Instructor: Mohamed N. Rahaman, Missouri University of Science and Technology*

This two-day course will follow the key topics in the textbook, Sintering of Ceramics, by M. N. Rahaman (book is included with course) and will be supplemented by detailed case studies of the sintering of specific ceramics and systems. Students will develop sufficient background in the principles and practice of sintering to be able to (i) do sintering to achieve specified target microstructures, (ii) understand the difficulties encountered in practical sintering, and (iii) take practical steps to rectify the problems encountered in producing required target microstructures.
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Location/Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance Solutions</td>
<td>November 7 – 9, 2016</td>
<td>Scottsdale, AZ, USA – AIST</td>
</tr>
<tr>
<td>77th Conference on Glass Problems (77th GPC)</td>
<td>November 7 – 10, 2016</td>
<td>Columbus, OH, USA – ACerS</td>
</tr>
<tr>
<td>CerSJ-GOMD Joint Symposium on Glass Science and Technologies</td>
<td>November 13 – 15, 2016</td>
<td>Kyoto, Japan – ACerS</td>
</tr>
<tr>
<td>41st International Conference and Expo on Advanced Ceramics and</td>
<td>January 22 – 27, 2017</td>
<td>Daytona Beach, FL, USA – ACerS</td>
</tr>
<tr>
<td>Composites (ICACC’17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modern Electric Furnace Steelmaking</td>
<td>February 6 – 10, 2017</td>
<td>Fort Worth, TX, USA – AIST</td>
</tr>
<tr>
<td>Scrap Supplements &amp; Alternative Ironmaking 7</td>
<td>February 19 – 21, 2017</td>
<td>Orlando, FL, USA – AIST</td>
</tr>
<tr>
<td>Rod &amp; Bar Rolling</td>
<td>February 21 – 23, 2017</td>
<td>Atlanta, GA, USA – AIST</td>
</tr>
<tr>
<td>TMS 2017 Annual Meeting &amp; Exhibition</td>
<td>February 26 – March 2, 2017</td>
<td>San Diego, CA, USA – TMS</td>
</tr>
<tr>
<td>Cold Rolling Fundamentals</td>
<td>March 5 – 9, 2017</td>
<td>Indianapolis, IN, USA – AIST</td>
</tr>
<tr>
<td>System Automation Fundamentals</td>
<td>March 6 – 9, 2017</td>
<td>Indianapolis, IN, USA – AIST</td>
</tr>
<tr>
<td>Specialty Alloy and Foundry</td>
<td>March 13 – 16, 2017</td>
<td>Mobile, AL, USA – AIST</td>
</tr>
<tr>
<td>Corrosion 2017</td>
<td>March 26 – 30, 2017</td>
<td>New Orleans, LA, USA – NACE</td>
</tr>
<tr>
<td>53rd Annual St. Louis Section/RCD Meeting</td>
<td>March 29 – 30, 2017</td>
<td>St. Louis, MO, USA – ACerS</td>
</tr>
<tr>
<td>28th AeroMat Conference and Exposition</td>
<td>April 10 – 13, 2017</td>
<td>Charleston, SC, USA – ASM</td>
</tr>
<tr>
<td>TSS Characterization Topical</td>
<td>April 11 – 12, 2017</td>
<td>Charleston, South Carolina, USA – ASM</td>
</tr>
<tr>
<td>6th Ceramic Leadership Summit</td>
<td>April 24, 2017</td>
<td>Cleveland, OH, USA – ACerS</td>
</tr>
<tr>
<td>3rd Ceramics Expo</td>
<td>April 25 – 27, 2017</td>
<td>Cleveland, OH, USA – ACerS</td>
</tr>
<tr>
<td>ISTFA Topical</td>
<td></td>
<td>Malaysia – ASM</td>
</tr>
<tr>
<td>60th SVC TECHCON Conference and Exposition</td>
<td>April 29 – May 4, 2017</td>
<td>Providence, RI, USA – ASM</td>
</tr>
<tr>
<td>AISTech 2017 - The Iron &amp; Steel Technology Conference and Exhibition</td>
<td>May 8 – 11, 2017</td>
<td>Nashville, TN, USA – AIST</td>
</tr>
<tr>
<td>Shape Memory and Superelastic Technologies Conference and Exposition</td>
<td>May 15 – 19, 2017</td>
<td>San Diego, CA, USA – ASM</td>
</tr>
<tr>
<td>4th World Congress on Integrated Computational Materials Engineering</td>
<td>May 21 – 25, 2017</td>
<td>Ypsilanti, MI, USA – TMS</td>
</tr>
<tr>
<td>(ICME 2017)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12th Pacific Rim Conference on Ceramic and Glass Technology (PACRIM 12), including Glass &amp; Optical Materials Division Meeting (GOMD 2017)</td>
<td>May 21 – 26, 2017</td>
<td>Waikoloa, HI, USA – ACerS</td>
</tr>
<tr>
<td>New Developments in Advanced High-Strength Sheet Steels</td>
<td>May 30 – June 2, 2017</td>
<td>Keystone, CO, USA – AIST</td>
</tr>
<tr>
<td>Hot Sheet Metal Forming of High-Performance Steel</td>
<td>June 4 – 7, 2017</td>
<td>Atlanta, GA, USA – AIST</td>
</tr>
<tr>
<td>International Thermal Spray Conference &amp; Exposition</td>
<td>June 7 – 9, 2017</td>
<td>Dusseldorf, Germany – ASM</td>
</tr>
<tr>
<td>24th Annual Crane Symposium</td>
<td>June 11 – 13, 2017</td>
<td>Pittsburgh, PA, USA – AIST</td>
</tr>
<tr>
<td>TSS Suspensions &amp; Solutions Thermal Spray (TS4)</td>
<td>Fall 2017 TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>UNITECR 2017</td>
<td>September 27 – 29, 2017</td>
<td>Santiago, Chile – ACerS</td>
</tr>
<tr>
<td>Material Handling and Transportation Logistics</td>
<td>October 3 – 5, 2017</td>
<td>Louisville, KY, USA – AIST</td>
</tr>
<tr>
<td>MS&amp;T17</td>
<td>October 8 – 12, 2017</td>
<td>Pittsburgh, PA, USA – MS&amp;T Team</td>
</tr>
</tbody>
</table>
The American Ceramic Society is the premier global membership organization for the technical ceramics and glass community. Celebrate with us Monday evening at the ACerS 118th Annual Honors and Awards Banquet for the induction of the 2016 Class of Fellows and awards presentations. The Society's prestigious award lectures will be presented at MS&T16: ACerS/NICE Arthur L. Friedberg Ceramic Engineering Tutorial and Lecture, Frontiers of Science and Society—Rustum Roy Lecture, Edward Orton, Jr. Memorial Lecture, and Robert B. Sosman Lecture. All attendees are welcome to attend the ACerS lectures. Be sure to stop by the member lounge to relax between sessions, network with peers, hear what's new with the Society, and more. ceramics.org

The Association for Iron & Steel Technology is a non-profit entity with over 18,000 members from more than 70 countries. AIST is recognized as a global leader in networking, education and sustainability programs for advancing iron and steel technology. Serving the entire iron and steel community, including steel manufacturers, suppliers, consumers and academics, our mission is to advance the technical development, production, processing and application of iron and steel. The Iron & Steel symposia is just one of the highlights for AIST members. The Adolf Martens Memorial Steel Lecture is part of the plenary session beginning at 8 a.m. on Tuesday, October 25. Students with an interest in steel are encouraged to attend the Steel to Students Reception on Monday while at the conference! aist.org

ASM International® is the world's largest association of metals-centric materials engineers and scientists with over 26,000 members and 80+ professional chapters worldwide. Join us Monday for the ASM Women in Materials Engineering Breakfast, the Alpha Sigma Mu Lecture, and attend the ASM Leadership Awards Luncheon, where ASM Materials Education Foundation, Committee/Council and ASM organizational unit awards will be presented. Attend ASM's 103rd Annual Meeting where officers will be elected for the 2016-2017 term and other ASM business will be transacted. Plan to experience Canadian hospitality at the ASM Canada Council Suite at the end of the day. On Tuesday, attend the ASM/TMS Distinguished Lecture in Materials and Society as included in the Plenary Session. Additionally, ASM will host the ASM Dome Design Competition sponsored by the ASM Student Board Members, and the Edward DeMille Campbell Memorial Lecture will be presented. You won't want to miss the ASM Awards Dinner on Tuesday evening! Join us in celebrating the accomplishments of this year’s award recipients and the 2016 Class of Fellows. Tickets, which include the President’s Reception, can be purchased via the registration form. asminternational.org

The Minerals, Metals & Materials Society (TMS), is a member-driven international professional society dedicated to fostering the exchange of learning and ideas across the entire range of minerals, metals, and materials science and engineering, from minerals processing and primary metals production, to basic research and the advanced applications of materials. Included among its 13,000 professional and student members are metallurgical and materials engineers, scientists, researchers, educators, and administrators from more than 90 countries on six continents. TMS invites attendees to join us on Tuesday for the TMS Young Professional Tutorial Lecture, featuring speaker Suveen Mathaudhu, and the ASM/TMS Joint Distinguished Lecture in Materials and Society, delivered by the Office of Naval Research’s Julie Christodoulou as part of the MS&T plenary session. tms.org

NACE International, The Worldwide Authority Corrosion Society, is the world’s largest and most recognized association for corrosion control. With over 36,000 members in 140 countries, NACE International is dedicated to protecting people, assets and the environment from the effects of corrosion. The association is involved in every industry and area of corrosion prevention and control, from chemical processing and water systems, to transportation and infrastructure protection. nace.org

CO-SPONSORED BY:

NACE International
The Worldwide Authority Corrosion Society
CALL FOR PAPERS

Submit your abstracts by March 15, 2017

THEMES FOR 2017 INCLUDE:

Additive Manufacturing
Biomaterials
Ceramic and Glass Materials
Electronic and Magnetic Materials
Energy
Fundamentals, Characterization, and Computational Modeling
Iron and Steel (Ferrous Alloys)
Materials-Environment Interactions
Nanomaterials
Processing and Manufacturing
Special Topics
## Program Highlights

<table>
<thead>
<tr>
<th>Event</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS&amp;T16 Plenary Lectures</td>
<td>TUE</td>
<td>AM</td>
<td>Ballroom E-J</td>
<td>77</td>
</tr>
<tr>
<td>MS&amp;T16 Poster Session</td>
<td>TUE</td>
<td>AM</td>
<td>Exhibit Halls DE</td>
<td>154</td>
</tr>
<tr>
<td>ACerS Frontiers of Science and Society - Rustum Roy Lecture</td>
<td>TUE</td>
<td>PM</td>
<td>255B</td>
<td>78</td>
</tr>
<tr>
<td>ACerS Richard M. Fulrath Award Symposium</td>
<td>MON</td>
<td>PM</td>
<td>255B</td>
<td>58</td>
</tr>
<tr>
<td>ACerS Robert B. Sosman Lecture</td>
<td>WED</td>
<td>PM</td>
<td>255B</td>
<td>36</td>
</tr>
<tr>
<td>ACerS/NICE Arthur L. Friedberg Ceramic Engineering Tutorial and Lecture</td>
<td>MON</td>
<td>AM</td>
<td>255B</td>
<td>36</td>
</tr>
<tr>
<td>ASM Alpha Sigma Mu Lecture</td>
<td>MON</td>
<td>PM</td>
<td>155F</td>
<td>62</td>
</tr>
<tr>
<td>ASM Edward DeMille Campbell Memorial Lecture</td>
<td>TUE</td>
<td>PM</td>
<td>155F</td>
<td>81</td>
</tr>
</tbody>
</table>

## Additive Manufacturing

### Additive Manufacturing for Surface Engineering of Materials

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>WED</td>
<td>AM</td>
<td>355B</td>
<td>96</td>
</tr>
<tr>
<td>II</td>
<td>WED</td>
<td>PM</td>
<td>355B</td>
<td>119</td>
</tr>
</tbody>
</table>

### Additive Manufacturing of Composites and Complex Materials

<table>
<thead>
<tr>
<th>Component</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frontiers in Additive Manufacturing</td>
<td>MON</td>
<td>AM</td>
<td>355E</td>
<td>36</td>
</tr>
<tr>
<td>Metals and Metallic Composites</td>
<td>MON</td>
<td>PM</td>
<td>355E</td>
<td>58</td>
</tr>
<tr>
<td>Processing</td>
<td>TUE</td>
<td>PM</td>
<td>355E</td>
<td>78</td>
</tr>
<tr>
<td>Techniques</td>
<td>WED</td>
<td>AM</td>
<td>355E</td>
<td>96</td>
</tr>
</tbody>
</table>

### Additive Manufacturing of Metals: Microstructure, Material Properties, and Product Performance

<table>
<thead>
<tr>
<th>Component</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless Steels Processing and Properties</td>
<td>MON</td>
<td>AM</td>
<td>355D</td>
<td>37</td>
</tr>
<tr>
<td>Understanding AM Processes</td>
<td>MON</td>
<td>AM</td>
<td>355C</td>
<td>37</td>
</tr>
<tr>
<td>Characterization Methods</td>
<td>MON</td>
<td>PM</td>
<td>355C</td>
<td>59</td>
</tr>
<tr>
<td>Titanium: Processing and Properties</td>
<td>MON</td>
<td>PM</td>
<td>355D</td>
<td>59</td>
</tr>
<tr>
<td>Effects of EBM Processing on Ti-6Al-4V</td>
<td>TUE</td>
<td>PM</td>
<td>355D</td>
<td>79</td>
</tr>
<tr>
<td>Laser Processing of Superalloys</td>
<td>TUE</td>
<td>PM</td>
<td>355C</td>
<td>79</td>
</tr>
<tr>
<td>Characteristics of AM Superalloys/Components Manufactured by AM</td>
<td>WED</td>
<td>AM</td>
<td>355D</td>
<td>97</td>
</tr>
<tr>
<td>Modeling of AM Processes</td>
<td>WED</td>
<td>AM</td>
<td>355C</td>
<td>97</td>
</tr>
<tr>
<td>AM Processes and Post-deposition Treatment</td>
<td>WED</td>
<td>PM</td>
<td>355C</td>
<td>120</td>
</tr>
<tr>
<td>Powder Characteristics and Recycling</td>
<td>WED</td>
<td>PM</td>
<td>355D</td>
<td>120</td>
</tr>
<tr>
<td>AM Processing of Light Metals</td>
<td>THU</td>
<td>AM</td>
<td>355C</td>
<td>140</td>
</tr>
<tr>
<td>Microstructure and Properties Control</td>
<td>THU</td>
<td>AM</td>
<td>355D</td>
<td>141</td>
</tr>
</tbody>
</table>

### Additive Manufacturing of Shape Memory, Superelastic Alloys and Multifunctional Materials

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>MON</td>
<td>AM</td>
<td>355A</td>
<td>38</td>
</tr>
<tr>
<td>II</td>
<td>MON</td>
<td>PM</td>
<td>355A</td>
<td>60</td>
</tr>
<tr>
<td>MATSCITECH.ORG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additive Manufacturing: In-situ Process Monitoring, Defect Detection and Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directed Energy Deposition and Related Technologies</td>
<td>WED AM</td>
<td>355A</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>Laser Beam Powder Bed Fusion and Related Technologies</td>
<td>WED PM</td>
<td>355A</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Electron Beam Powder Bed Fusion and Related Technologies</td>
<td>THUR AM</td>
<td>355A</td>
<td>141</td>
<td></td>
</tr>
<tr>
<td>Recent Development in Additive Manufacturing: Process and Equipment Development and Applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modeling, Process Design &amp; Manufacturing Process in Additive Manufacturing</td>
<td>WED AM</td>
<td>258</td>
<td>114</td>
<td></td>
</tr>
<tr>
<td>Defects, Inspection and Prediction of Quality in Additive Manufacturing</td>
<td>WED PM</td>
<td>258</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>Diverse and Disruptive Applications of Additive Manufacturing</td>
<td>THU AM</td>
<td>258</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>Biomaterials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nanomaterials Working in the Near-infrared: Biomedical Applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Novel Methods &amp; Materials’ Characterization</td>
<td>TUE PM</td>
<td>258</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Probes &amp; Nanothermometry I</td>
<td>WED AM</td>
<td>260A</td>
<td>112</td>
<td></td>
</tr>
<tr>
<td>Therapy &amp; Imaging</td>
<td>WED PM</td>
<td>260A</td>
<td>134</td>
<td></td>
</tr>
<tr>
<td>Multifunctional Architectures &amp; Nanothermometry II</td>
<td>THU AM</td>
<td>260A</td>
<td>151</td>
<td></td>
</tr>
<tr>
<td>Next Generation Biomaterials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session I</td>
<td>MON AM</td>
<td>259</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Session II</td>
<td>MON PM</td>
<td>259</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Session III</td>
<td>TUE PM</td>
<td>259</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Session IV</td>
<td>WED AM</td>
<td>259</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>Session V</td>
<td>WED PM</td>
<td>259</td>
<td>134</td>
<td></td>
</tr>
<tr>
<td>Session VI</td>
<td>THU AM</td>
<td>259</td>
<td>152</td>
<td></td>
</tr>
<tr>
<td>Surface Properties of Biomaterials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processing, Coating and Surface Modifications</td>
<td>MON AM</td>
<td>355B</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>3D Printing and Tribology</td>
<td>MON PM</td>
<td>355B</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Bioactivity and Biocompatibility</td>
<td>TUE AM</td>
<td>355A</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Ceramic and Glass Materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceramic Matrix Composites</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceramic Fiber Composite Degradation</td>
<td>MON AM</td>
<td>257B</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Environmental Effects and Fiber Degradation</td>
<td>TUE PM</td>
<td>254A</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>Processing and Properties of Ceramic Composites</td>
<td>WED AM</td>
<td>254A</td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>Additive Manufacturing and Ceramic Fiber Composites</td>
<td>WED PM</td>
<td>254A</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Ceramic Optical Materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session I</td>
<td>MON AM</td>
<td>254C</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Session II</td>
<td>MON PM</td>
<td>254C</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Session III</td>
<td>TUE PM</td>
<td>254C</td>
<td>82</td>
<td></td>
</tr>
<tr>
<td>Session IV</td>
<td>WED PM</td>
<td>254C</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>Topic</td>
<td>Day</td>
<td>Time</td>
<td>Room</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td><strong>Glass, Amorphous, and Optical Materials: Common Issues within Science &amp; Technology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical Properties of Glass</td>
<td>MON</td>
<td>AM</td>
<td>255A</td>
<td>44</td>
</tr>
<tr>
<td>ACerS Alfred R. Cooper Award Session</td>
<td>MON</td>
<td>PM</td>
<td>255A</td>
<td>65</td>
</tr>
<tr>
<td>Structures of Glass I: Correlation to Physical Properties</td>
<td>TUE</td>
<td>PM</td>
<td>255A</td>
<td>83</td>
</tr>
<tr>
<td>Structures of Glass II: Simulations and Experiments</td>
<td>WED</td>
<td>AM</td>
<td>255A</td>
<td>105</td>
</tr>
<tr>
<td>Electrical Properties of Glass</td>
<td>WED</td>
<td>PM</td>
<td>255A</td>
<td>128</td>
</tr>
<tr>
<td>Crystallization and Glass Transition of Glass Forming Melts</td>
<td>THU</td>
<td>AM</td>
<td>255A</td>
<td>145</td>
</tr>
<tr>
<td>Mechanical Properties of Glass</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Innovative Processing and Synthesis of Ceramics, Glasses, and Composites</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceramic Processing I</td>
<td></td>
<td>AM</td>
<td>255D</td>
<td>45</td>
</tr>
<tr>
<td>Ceramic Processing II</td>
<td></td>
<td>PM</td>
<td>255D</td>
<td>65</td>
</tr>
<tr>
<td>SPS/Sintering</td>
<td>TUE</td>
<td>PM</td>
<td>255D</td>
<td>84</td>
</tr>
<tr>
<td>Polymer-Derived Ceramics I</td>
<td>WED</td>
<td>AM</td>
<td>255D</td>
<td>107</td>
</tr>
<tr>
<td>Polymer-Derived Ceramics II</td>
<td>WED</td>
<td>PM</td>
<td>255D</td>
<td>129</td>
</tr>
<tr>
<td><strong>Multifunctional Oxides</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Characterization</td>
<td>WED</td>
<td>AM</td>
<td>255C</td>
<td>111</td>
</tr>
<tr>
<td>Novel Synthesis I</td>
<td>WED</td>
<td>PM</td>
<td>255C</td>
<td>133</td>
</tr>
<tr>
<td>Novel Synthesis II</td>
<td>THU</td>
<td>AM</td>
<td>255C</td>
<td>151</td>
</tr>
<tr>
<td><strong>Phase Transformations in Ceramics: Science and Applications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nanoscale Phenomena</td>
<td>MON</td>
<td>AM</td>
<td>255C</td>
<td>53</td>
</tr>
<tr>
<td>Transformation Mechanisms at the Atomic Scale</td>
<td>MON</td>
<td>PM</td>
<td>255C</td>
<td>72</td>
</tr>
<tr>
<td>Prediction and Simulation</td>
<td>TUE</td>
<td>AM</td>
<td>255C</td>
<td>91</td>
</tr>
<tr>
<td><strong>Zirconia Based Materials for Cutting Edge Technology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session I</td>
<td>TUE</td>
<td>PM</td>
<td>254B</td>
<td>95</td>
</tr>
<tr>
<td>Session II</td>
<td>WED</td>
<td>AM</td>
<td>254B</td>
<td>119</td>
</tr>
<tr>
<td>Session III</td>
<td>WED</td>
<td>PM</td>
<td>254B</td>
<td>140</td>
</tr>
<tr>
<td><strong>Electronic and Magnetic Materials</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advances in Dielectric Materials and Electronic Devices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dielectrics</td>
<td>MON</td>
<td>AM</td>
<td>255F</td>
<td>40</td>
</tr>
<tr>
<td>Piezoelectrics</td>
<td>MON</td>
<td>PM</td>
<td>255F</td>
<td>61</td>
</tr>
<tr>
<td>Ferroics and Multiferroics I</td>
<td>TUE</td>
<td>PM</td>
<td>255F</td>
<td>80</td>
</tr>
<tr>
<td>Ferroics and Multiferroics II</td>
<td>WED</td>
<td>AM</td>
<td>255F</td>
<td>100</td>
</tr>
<tr>
<td>Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session I</td>
<td>TUE</td>
<td>PM</td>
<td>257A</td>
<td>82</td>
</tr>
<tr>
<td>Session II</td>
<td>WED</td>
<td>AM</td>
<td>257A</td>
<td>103</td>
</tr>
<tr>
<td>Session III</td>
<td>WED</td>
<td>PM</td>
<td>257A</td>
<td>126</td>
</tr>
<tr>
<td>Day</td>
<td>Time</td>
<td>Room</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td><strong>Semiconductor Heterostructures: Theory, Growth, Characterization, and Device Applications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session I</td>
<td>MON</td>
<td>AM</td>
<td>257A</td>
<td>55</td>
</tr>
<tr>
<td>Session II</td>
<td>MON</td>
<td>PM</td>
<td>257A</td>
<td>74</td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3D Graphene for Energy Conversion and Storage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3D Graphene in Energy Storage I</td>
<td>MON</td>
<td>AM</td>
<td>250B</td>
<td>35</td>
</tr>
<tr>
<td>3D Graphene in Energy Storage II</td>
<td>MON</td>
<td>PM</td>
<td>250B</td>
<td>57</td>
</tr>
<tr>
<td>3D Graphene and Graphene Like Materials</td>
<td>TUE</td>
<td>PM</td>
<td>250B</td>
<td>78</td>
</tr>
<tr>
<td>Energy Storage VI: Materials, Systems and Applications Symposium</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Li-ion Batteries</td>
<td>WED</td>
<td>AM</td>
<td>250B</td>
<td>103</td>
</tr>
<tr>
<td>Sodium and Flow Batteries</td>
<td>WED</td>
<td>PM</td>
<td>250B</td>
<td>127</td>
</tr>
<tr>
<td>Other Innovative Energy Storage Systems</td>
<td>THU</td>
<td>AM</td>
<td>250B</td>
<td>144</td>
</tr>
<tr>
<td><strong>Materials Development for Nuclear Applications and Extreme Environments</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Modeling in Nuclear Materials</td>
<td>MON</td>
<td>AM</td>
<td>250A</td>
<td>48</td>
</tr>
<tr>
<td>Accident Tolerant Fuels and Cladding Materials</td>
<td>MON</td>
<td>PM</td>
<td>250A</td>
<td>68</td>
</tr>
<tr>
<td>Processing and Microstructure Analysis of Nuclear Materials</td>
<td>TUE</td>
<td>PM</td>
<td>250A</td>
<td>87</td>
</tr>
<tr>
<td>Processing and Monitoring of Nuclear Materials</td>
<td>WED</td>
<td>AM</td>
<td>250A</td>
<td>110</td>
</tr>
<tr>
<td>Zircaloy and Corrosion in Nuclear Materials</td>
<td>WED</td>
<td>PM</td>
<td>250A</td>
<td>131</td>
</tr>
<tr>
<td>Irradiation Effects in Nuclear Materials</td>
<td>THU</td>
<td>AM</td>
<td>250A</td>
<td>148</td>
</tr>
<tr>
<td><strong>Materials and Processes for CO2 Capture, Conversion and Sequestration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorbent and Metal-Organic Framework Materials</td>
<td>TUE</td>
<td>PM</td>
<td>151B</td>
<td>86</td>
</tr>
<tr>
<td>Physical and Electrochemical Carbon Dioxide Capture and Sequestration</td>
<td>WED</td>
<td>AM</td>
<td>151B</td>
<td>109</td>
</tr>
<tr>
<td>Carbon Dioxide Conversion</td>
<td>WED</td>
<td>PM</td>
<td>151B</td>
<td>131</td>
</tr>
<tr>
<td><strong>Materials Issues in Nuclear Waste Management in the 21st Century</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Waste Form Technologies and Waste Forms</td>
<td>MON</td>
<td>AM</td>
<td>251D</td>
<td>49</td>
</tr>
<tr>
<td>Waste Forms Development</td>
<td>MON</td>
<td>PM</td>
<td>251D</td>
<td>68</td>
</tr>
<tr>
<td>Stability of Waste Forms</td>
<td>TUE</td>
<td>PM</td>
<td>251D</td>
<td>87</td>
</tr>
<tr>
<td>Immobilization of Radioactive Wastes into Glass</td>
<td>WED</td>
<td>AM</td>
<td>251D</td>
<td>110</td>
</tr>
<tr>
<td>Immobilization and Capture of Radionuclides/Radiation Effects</td>
<td>WED</td>
<td>PM</td>
<td>251D</td>
<td>131</td>
</tr>
<tr>
<td>The Impact of Extended Dry Storage on Used Nuclear Fuel</td>
<td>THU</td>
<td>AM</td>
<td>251D</td>
<td>149</td>
</tr>
<tr>
<td><strong>Fundamentals and Characterization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd International Workshop of In-situ Studies with Photons, Neutrons and Electrons Scattering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synchrotron Based Techniques and Measurements I</td>
<td>MON</td>
<td>AM</td>
<td>250E</td>
<td>35</td>
</tr>
<tr>
<td>Neutrons Based and Other Techniques and Measurements</td>
<td>MON</td>
<td>PM</td>
<td>250E</td>
<td>58</td>
</tr>
<tr>
<td>Synchrotron Based Techniques and Measurements II</td>
<td>TUE</td>
<td>PM</td>
<td>250E</td>
<td>78</td>
</tr>
<tr>
<td>Event</td>
<td>Day</td>
<td>Time</td>
<td>Room</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
<td>------</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>Advancements in In-situ Electron Microscopy Characterization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combining In-situ Electron Microscopy with Advanced Mapping</td>
<td>WED</td>
<td>AM</td>
<td>253A</td>
<td>99</td>
</tr>
<tr>
<td>In-situ Electron Microscopy in Complex Environments</td>
<td>WED</td>
<td>PM</td>
<td>253A</td>
<td>123</td>
</tr>
<tr>
<td>Computational Design of Ceramics and Glasses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disordered Materials and Irradiation Effects</td>
<td>WED</td>
<td>AM</td>
<td>252A-B</td>
<td>102</td>
</tr>
<tr>
<td>Ceramics Materials – Structure and Properties</td>
<td>WED</td>
<td>PM</td>
<td>252A-B</td>
<td>125</td>
</tr>
<tr>
<td>Interfaces, Mesoscale, and Continuum</td>
<td>THU</td>
<td>AM</td>
<td>252A-B</td>
<td>143</td>
</tr>
<tr>
<td>Heterogeneity during Plastic Deformation – Synergy between Experimental Investigation and Simulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic Interactions at the Atomistic and Nanoscale</td>
<td>MON</td>
<td>AM</td>
<td>250F</td>
<td>45</td>
</tr>
<tr>
<td>Deformation of Twinned and Martensitic Microstructures</td>
<td>MON</td>
<td>PM</td>
<td>250F</td>
<td>65</td>
</tr>
<tr>
<td>Advances in Experimental and Characterization Techniques</td>
<td>TUE</td>
<td>PM</td>
<td>250F</td>
<td>84</td>
</tr>
<tr>
<td>Synergy Between Experiment and Simulation I</td>
<td>WED</td>
<td>AM</td>
<td>250F</td>
<td>105</td>
</tr>
<tr>
<td>Advances in Numerical Techniques and Constitutive Modeling</td>
<td>WED</td>
<td>PM</td>
<td>250F</td>
<td>128</td>
</tr>
<tr>
<td>Synergy Between Experiment and Simulation II</td>
<td>THU</td>
<td>AM</td>
<td>250F</td>
<td>146</td>
</tr>
<tr>
<td>ICME Accelerated Materials Discovery in Process &amp; Product Development</td>
<td>WED</td>
<td>AM</td>
<td>251A</td>
<td>106</td>
</tr>
<tr>
<td>Interfaces, Grain Boundaries, and Surfaces from Atomistic and Macroscopic Approaches -- Fundamental and Engineering Issues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structure &amp; Chemistry of Interfaces I</td>
<td>MON</td>
<td>AM</td>
<td>251B</td>
<td>45</td>
</tr>
<tr>
<td>Structure &amp; Chemistry of Interfaces II</td>
<td>MON</td>
<td>PM</td>
<td>251B</td>
<td>66</td>
</tr>
<tr>
<td>Properties A</td>
<td>TUE</td>
<td>PM</td>
<td>251A</td>
<td>85</td>
</tr>
<tr>
<td>Properties B</td>
<td>TUE</td>
<td>PM</td>
<td>251B</td>
<td>85</td>
</tr>
<tr>
<td>Wetting &amp; Adsorption I</td>
<td>WED</td>
<td>AM</td>
<td>251B</td>
<td>107</td>
</tr>
<tr>
<td>Wetting &amp; Adsorption II</td>
<td>WED</td>
<td>PM</td>
<td>251B</td>
<td>130</td>
</tr>
<tr>
<td>Kinetics</td>
<td>THU</td>
<td>AM</td>
<td>251B</td>
<td>147</td>
</tr>
<tr>
<td>International Symposium on Defects, Transport, and Related Phenomena</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session I</td>
<td>MON</td>
<td>AM</td>
<td>251E</td>
<td>46</td>
</tr>
<tr>
<td>Session II</td>
<td>MON</td>
<td>PM</td>
<td>251E</td>
<td>66</td>
</tr>
<tr>
<td>Session III</td>
<td>TUE</td>
<td>PM</td>
<td>251E</td>
<td>85</td>
</tr>
<tr>
<td>Session IV</td>
<td>WED</td>
<td>AM</td>
<td>253B</td>
<td>108</td>
</tr>
<tr>
<td>Materials Property Understanding through Characterization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Novel Techniques I</td>
<td>MON</td>
<td>AM</td>
<td>251C</td>
<td>49</td>
</tr>
<tr>
<td>Advanced Materials I</td>
<td>MON</td>
<td>PM</td>
<td>251C</td>
<td>69</td>
</tr>
<tr>
<td>Advanced Materials II</td>
<td>TUE</td>
<td>PM</td>
<td>251C</td>
<td>88</td>
</tr>
<tr>
<td>Metals I</td>
<td>TUE</td>
<td>PM</td>
<td>252A-B</td>
<td>88</td>
</tr>
<tr>
<td>Novel Techniques II</td>
<td>WED</td>
<td>AM</td>
<td>251C</td>
<td>111</td>
</tr>
<tr>
<td>Glass</td>
<td>WED</td>
<td>PM</td>
<td>251C</td>
<td>132</td>
</tr>
<tr>
<td>Metals II</td>
<td>THU</td>
<td>AM</td>
<td>251C</td>
<td>149</td>
</tr>
<tr>
<td>Day</td>
<td>Time</td>
<td>Room</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------</td>
<td>---------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Measurement and Modeling of High Strain-rate Deformation</td>
<td>MON AM</td>
<td>251A</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Medium-to-high Strain Rate Deformation I</td>
<td>MON PM</td>
<td>251A</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Medium-to-high Strain Rate Deformation II</td>
<td>MON AM</td>
<td>251A</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Modeling of Multiscale Phenomena in Materials Processing and Advanced Manufacturing</td>
<td>WED PM</td>
<td>253B</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Process Modeling and Prediction of Process-Structure-Property Relationships</td>
<td>WED PM</td>
<td>253B</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Predicting Deformation, Damage, and Failure Through Multi-scale Modeling/Modeling of Microstructural Evolution</td>
<td>WED AM</td>
<td>253B</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Multi Scale Modeling of Microstructure Deformation in Material Processing</td>
<td>MON AM</td>
<td>252A-B</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Multi Scale Modeling of Microstructure Deformation in Material Processing II</td>
<td>MON PM</td>
<td>252A-B</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Phase Stability, Diffusion Kinetics, and their Applications (PSDK-XI)</td>
<td>MON PM</td>
<td>155D</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>Gibbs Session I</td>
<td>TUE PM</td>
<td>155D</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>Gibbs Session II</td>
<td>WED AM</td>
<td>155D</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>Tracer Session I</td>
<td>WED PM</td>
<td>155C</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>General Session I</td>
<td>WED PM</td>
<td>155D</td>
<td>135</td>
<td></td>
</tr>
<tr>
<td>Tracer Session II/ General Session II</td>
<td>THU AM</td>
<td>155D</td>
<td>152</td>
<td></td>
</tr>
<tr>
<td>General Session III</td>
<td>THU AM</td>
<td>155D</td>
<td>152</td>
<td></td>
</tr>
<tr>
<td>Symposium on Large Fluctuations and Collective Phenomena in Materials III</td>
<td>TUE PM</td>
<td>250C</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Multicomponent and High Entropy Alloys</td>
<td>WED AM</td>
<td>250C</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>Metallic Glasses</td>
<td>WED PM</td>
<td>250C</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>Granular Materials and Other Topics</td>
<td>WED AM</td>
<td>250C</td>
<td>154</td>
<td></td>
</tr>
<tr>
<td>Crystals and Dislocations</td>
<td>WED PM</td>
<td>250D</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>Applications, Motivators, and Enabling Technologies</td>
<td>WED AM</td>
<td>250D</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>Symposium on Applications of Low Emittance Synchrotron X-ray Sources to Mesoscale Materials Studies</td>
<td>MON AM</td>
<td>155F</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Advanced High Strength Steel Design / Technological Exploitation</td>
<td>MON PM</td>
<td>155E</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>AHSS and Sheet Steels I</td>
<td>TUE PM</td>
<td>155F</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>AHSS and Sheet Steels II</td>
<td>WED AM</td>
<td>155F</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>AHSS and Sheet Steels III</td>
<td>WED PM</td>
<td>155E</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Plate, Bar, and Structural Steels</td>
<td>WED PM</td>
<td>155E</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Stainless and High Alloy Steels</td>
<td>MON AM</td>
<td>155D</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Advances in Zinc-coated Sheet Steel Processing and Properties</td>
<td>MON PM</td>
<td>155E</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Ferrous Metallurgy: From Past to Present</td>
<td>MON AM</td>
<td>155F</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Ferrous Metallurgy: Past to Present</td>
<td>MON PM</td>
<td>155E</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Day</td>
<td>Time</td>
<td>Room</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td><strong>Gas/Metal Reactions, Diffusion and Phase Transformation during Heat Treatment of Steel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session I</td>
<td>WED AM</td>
<td>155E</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>Session II</td>
<td>WED PM</td>
<td>155E</td>
<td>128</td>
<td></td>
</tr>
<tr>
<td>Session III</td>
<td>THU AM</td>
<td>155E</td>
<td>145</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Materials-Environment Interactions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Coatings for Wear and Corrosion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Coatings for Wear and Corrosion Protection I</td>
<td>MON AM</td>
<td>253A</td>
<td>38</td>
</tr>
<tr>
<td>Advanced Coatings for Wear and Corrosion Protection II</td>
<td>MON PM</td>
<td>253A</td>
<td>60</td>
</tr>
<tr>
<td>Advanced Coatings for Wear and Corrosion Protection III</td>
<td>TUE PM</td>
<td>253A</td>
<td>80</td>
</tr>
<tr>
<td>Advanced Materials for Harsh Environments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Materials for Harsh Environments I</td>
<td>MON AM</td>
<td>254A</td>
<td>39</td>
</tr>
<tr>
<td>Advanced Materials for Harsh Environments II</td>
<td>MON PM</td>
<td>254A</td>
<td>61</td>
</tr>
<tr>
<td>Advanced Materials for Oil and Gas Applications - Performance and Degradation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combating Corrosion in Oil &amp; Gas Applications</td>
<td>WED PM</td>
<td>250D</td>
<td>122</td>
</tr>
<tr>
<td>Manufacturing of Materials for Oil &amp; Gas Industry</td>
<td>THU AM</td>
<td>250D</td>
<td>142</td>
</tr>
<tr>
<td>Degradation of Nonmetallic Materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degradation of Nonmetallic Materials</td>
<td>MON AM</td>
<td>250C</td>
<td>43</td>
</tr>
<tr>
<td>High Temperature Corrosion of Structural Materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrosion of Fe-base Alloys/ Ni, Cr and FCC Alloys</td>
<td>WED AM</td>
<td>250E</td>
<td>106</td>
</tr>
<tr>
<td>High Temperature Oxidation of Various Systems</td>
<td>WED PM</td>
<td>250E</td>
<td>129</td>
</tr>
<tr>
<td>Coatings and High Temperature Oxidation/Molten Salt Exposures and Other Testings</td>
<td>THU AM</td>
<td>250E</td>
<td>146</td>
</tr>
<tr>
<td>Materials Degradation in Supercritical CO₂ Power Cycles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-temperature Oxidation in Supercritical CO₂</td>
<td>MON AM</td>
<td>250D</td>
<td>47</td>
</tr>
<tr>
<td>Materials and Fabrication Issues for Components of Supercritical CO₂ Power Cycles</td>
<td>MON PM</td>
<td>250D</td>
<td>67</td>
</tr>
<tr>
<td>Materials Selection and Characterization for Corrosion Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Selection: Session I</td>
<td>MON AM</td>
<td>253B</td>
<td>50</td>
</tr>
<tr>
<td>Materials Selection: Session II</td>
<td>MON PM</td>
<td>253B</td>
<td>69</td>
</tr>
<tr>
<td>Materials Selection: Session III</td>
<td>TUE PM</td>
<td>253B</td>
<td>88</td>
</tr>
<tr>
<td>Materials Tribology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials Tribology</td>
<td>MON PM</td>
<td>250C</td>
<td>70</td>
</tr>
<tr>
<td>Surface Protection for Enhanced Materials Performance: Science, Technology, and Application</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal and Environmental Barrier Coatings</td>
<td>WED AM</td>
<td>251E</td>
<td>116</td>
</tr>
<tr>
<td>Environmental Protection Coatings</td>
<td>WED PM</td>
<td>251E</td>
<td>138</td>
</tr>
<tr>
<td>Tribological Coatings</td>
<td>THU AM</td>
<td>251E</td>
<td>154</td>
</tr>
<tr>
<td>Thermal Protection Materials and Systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal Protection Materials: Ablators and Ceramic Composites</td>
<td>MON AM</td>
<td>254B</td>
<td>56</td>
</tr>
<tr>
<td>Thermal Protection Materials: Special Materials and Applications</td>
<td>MON PM</td>
<td>254B</td>
<td>76</td>
</tr>
</tbody>
</table>
### Nanomaterials

**Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials**

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session I</td>
<td>TUE</td>
<td>PM</td>
<td>257B</td>
<td>82</td>
</tr>
<tr>
<td>Session II</td>
<td>WED</td>
<td>AM</td>
<td>257B</td>
<td>102</td>
</tr>
<tr>
<td>Session III</td>
<td>WED</td>
<td>PM</td>
<td>257B</td>
<td>126</td>
</tr>
<tr>
<td>Session IV</td>
<td>THU</td>
<td>AM</td>
<td>257B</td>
<td>143</td>
</tr>
</tbody>
</table>

**Nanotechnology for Energy, Environment, Electronics, and Industry**

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session I</td>
<td>MON</td>
<td>AM</td>
<td>260A</td>
<td>52</td>
</tr>
<tr>
<td>Session II</td>
<td>MON</td>
<td>PM</td>
<td>260A</td>
<td>71</td>
</tr>
<tr>
<td>Session III</td>
<td>TUE</td>
<td>PM</td>
<td>260A</td>
<td>90</td>
</tr>
</tbody>
</table>

**Responsive Functional Nanomaterials**

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsive Functional Nanomaterials - General</td>
<td>MON</td>
<td>AM</td>
<td>260B</td>
<td>53</td>
</tr>
<tr>
<td>Responsive Nanomaterials Design</td>
<td>MON</td>
<td>PM</td>
<td>260B</td>
<td>73</td>
</tr>
<tr>
<td>Responsive Nanomaterials Synthesis and Applications</td>
<td>TUE</td>
<td>PM</td>
<td>260B</td>
<td>92</td>
</tr>
</tbody>
</table>

### Processing and Product Manufacturing

**Advanced Manufacturing Technologies**

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Manufacturing- Processes</td>
<td>WED</td>
<td>AM</td>
<td>150F</td>
<td>99</td>
</tr>
<tr>
<td>Advanced Manufacturing- Machines, Equipment and Systems</td>
<td>WED</td>
<td>PM</td>
<td>150F</td>
<td>122</td>
</tr>
<tr>
<td>Advanced Manufacturing- Materials</td>
<td>THU</td>
<td>AM</td>
<td>150F</td>
<td>142</td>
</tr>
</tbody>
</table>

**Advances in Metal Casting Technologies**

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing and Properties</td>
<td>MON</td>
<td>AM</td>
<td>150F</td>
<td>40</td>
</tr>
<tr>
<td>Steel Casting Technologies</td>
<td>MON</td>
<td>PM</td>
<td>150F</td>
<td>62</td>
</tr>
</tbody>
</table>

**Avant-garde Developments in the Processing, Properties and Performance of Multifunctional Ceramic- and Metal-Matrix Composites**

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Processing, Thermal and Mechanical Properties of MMCs and CMCs</td>
<td>WED</td>
<td>PM</td>
<td>150D</td>
<td>124</td>
</tr>
</tbody>
</table>

**Boron, Boron Coatings, Boron Compounds and Boron Nanomaterials: Structure, Properties, Processing, and Applications**

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coatings and Nanostructures</td>
<td>MON</td>
<td>PM</td>
<td>257B</td>
<td>62</td>
</tr>
<tr>
<td>Atomically Thin Boron</td>
<td>WED</td>
<td>AM</td>
<td>260B</td>
<td>101</td>
</tr>
<tr>
<td>Physical Properties</td>
<td>WED</td>
<td>PM</td>
<td>260B</td>
<td>124</td>
</tr>
<tr>
<td>Bulk Materials</td>
<td>THU</td>
<td>THU</td>
<td>260B</td>
<td>142</td>
</tr>
</tbody>
</table>

**Construction and Building Materials for a Better Environment**

<table>
<thead>
<tr>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session I</td>
<td>MON</td>
<td>AM</td>
<td>151B</td>
<td>42</td>
</tr>
<tr>
<td>Session II</td>
<td>MON</td>
<td>PM</td>
<td>151B</td>
<td>63</td>
</tr>
<tr>
<td>Time</td>
<td>Room</td>
<td>Page</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
<td>------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day Time Room Page</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Failure Analysis and Prevention</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue and Fracture</td>
<td>MON AM</td>
<td>150G</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>MON PM</td>
<td>150G</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Non-Metallic Materials</td>
<td>TUE PM</td>
<td>150G</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Complex and Historical Cases</td>
<td>WED AM</td>
<td>150G</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>High Performance Vehicles/Corrosion</td>
<td>WED PM</td>
<td>150G</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Tools and Techniques</td>
<td>THU AM</td>
<td>150G</td>
<td>144</td>
<td></td>
</tr>
<tr>
<td><strong>Joining of Advanced and Specialty Materials (JASM XVII)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friction Stir Welding</td>
<td>MON AM</td>
<td>155B</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Welding Metallurgy 1</td>
<td>MON PM</td>
<td>155B</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>Brazing and Ceramics Joining</td>
<td>TUE PM</td>
<td>155B</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Dissimilar Metal Welds and Overlays</td>
<td>WED AM</td>
<td>155B</td>
<td>109</td>
<td></td>
</tr>
<tr>
<td>Welding Metallurgy 2</td>
<td>WED PM</td>
<td>155B</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Micro and Nano Joining</td>
<td>THU AM</td>
<td>155B</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td>Welding Processes and Weld Properties</td>
<td>THU AM</td>
<td>155C</td>
<td>147</td>
<td></td>
</tr>
<tr>
<td><strong>Light Metal Technology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum Technology</td>
<td>MON AM</td>
<td>150C</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Magnesium Technology</td>
<td>MON PM</td>
<td>150C</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Titanium Technology</td>
<td>TUE PM</td>
<td>150C</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td><strong>Mechanochemical Synthesis and Reactions in Materials Science</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nanocrystalline Alloys and Composites</td>
<td>MON AM</td>
<td>155A</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Organic Compounds and 2D Nanomaterials</td>
<td>MON PM</td>
<td>155A</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Materials for Hydrogen Production and Storage</td>
<td>TUE PM</td>
<td>155A</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>Inorganic Compounds</td>
<td>WED AM</td>
<td>155A</td>
<td>111</td>
<td></td>
</tr>
<tr>
<td>Highly Energetic Materials and Reactions</td>
<td>WED PM</td>
<td>155A</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Applications</td>
<td>THU AM</td>
<td>155A</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td><strong>Panel Discussion on Advanced Manufacturing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborative Research Programs and Advances in Biomanufacturing</td>
<td>TUE PM</td>
<td>355B</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Session I</td>
<td>MON PM</td>
<td>255E</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Session II</td>
<td>TUE PM</td>
<td>255E</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Session III</td>
<td>WED AM</td>
<td>255E</td>
<td>113</td>
<td></td>
</tr>
<tr>
<td>Session IV</td>
<td>WED PM</td>
<td>255E</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>Day</td>
<td>Time</td>
<td>Room</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Opening Session</td>
<td>MON AM</td>
<td>151G</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Session I</td>
<td>MON AM</td>
<td>151A</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Session II</td>
<td>MON AM</td>
<td>151G</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Session III</td>
<td>MON PM</td>
<td>151A</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Session IV</td>
<td>MON PM</td>
<td>151G</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Session V</td>
<td>TUE PM</td>
<td>151A</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td>Session VI</td>
<td>TUE PM</td>
<td>151G</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Session VII</td>
<td>WED AM</td>
<td>151A</td>
<td>114</td>
<td></td>
</tr>
<tr>
<td>Session VIII</td>
<td>WED AM</td>
<td>151G</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Session IX</td>
<td>WED AM</td>
<td>151A</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Session X</td>
<td>WED AM</td>
<td>151G</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Session XI</td>
<td>WED PM</td>
<td>151A</td>
<td>137</td>
<td></td>
</tr>
<tr>
<td>Session XII</td>
<td>WED PM</td>
<td>151G</td>
<td>137</td>
<td></td>
</tr>
</tbody>
</table>

Scaling-up from the Laboratory: Strategies, Examples, Challenges, and/or Solutions for Advanced Metal Manufacturing

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Scale-up Session I</td>
<td>MON AM</td>
<td>155C</td>
<td>54</td>
</tr>
<tr>
<td>Technology Scale-up Session II</td>
<td>MON PM</td>
<td>155C</td>
<td>74</td>
</tr>
</tbody>
</table>

Shaping and Forming of Composite Materials

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping and Forming of Composite Materials</td>
<td>MON AM</td>
<td>151C</td>
<td>55</td>
</tr>
</tbody>
</table>

Sintering and Related Powder Processing Science and Technologies

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sintering and Grain Growth I</td>
<td>MON AM</td>
<td>150E</td>
<td>55</td>
</tr>
<tr>
<td>High Temperature Materials</td>
<td>MON PM</td>
<td>150E</td>
<td>75</td>
</tr>
<tr>
<td>Sintering &amp; Grain Growth II</td>
<td>TUE PM</td>
<td>150E</td>
<td>93</td>
</tr>
<tr>
<td>Field Assisted Sintering I</td>
<td>WED AM</td>
<td>150E</td>
<td>115</td>
</tr>
<tr>
<td>Field Assisted Sintering II</td>
<td>WED PM</td>
<td>150E</td>
<td>137</td>
</tr>
<tr>
<td>Sintering &amp; Powder Processing</td>
<td>THU AM</td>
<td>150E</td>
<td>153</td>
</tr>
</tbody>
</table>

Solid State Processing

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
</table>

The 8th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Manufacturing I</td>
<td>MON PM</td>
<td>151C</td>
<td>76</td>
</tr>
<tr>
<td>Green Manufacturing II</td>
<td>TUE PM</td>
<td>151C</td>
<td>94</td>
</tr>
<tr>
<td>Green Materials Processing I</td>
<td>WED AM</td>
<td>151C</td>
<td>118</td>
</tr>
<tr>
<td>Green Materials Processing II</td>
<td>WED PM</td>
<td>151C</td>
<td>138</td>
</tr>
</tbody>
</table>
Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MON AM</td>
<td>150A&amp;B</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>MON PM</td>
<td>150A&amp;B</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>TUE PM</td>
<td>150A&amp;B</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>WED AM</td>
<td>150A&amp;B</td>
<td>118</td>
<td></td>
</tr>
<tr>
<td>WED PM</td>
<td>150A&amp;B</td>
<td>139</td>
<td></td>
</tr>
</tbody>
</table>

Special Topics

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MON AM</td>
<td>150D</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>MON PM</td>
<td>150D</td>
<td>58</td>
<td></td>
</tr>
<tr>
<td>TUE PM</td>
<td>251F</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>WED AM</td>
<td>251F</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>WED PM</td>
<td>251F</td>
<td>123</td>
<td></td>
</tr>
</tbody>
</table>

Curricular Innovations and Continuous Improvement of Academic Programs (and Satisfying ABET along the Way): The Elizabeth Judson Memorial Symposium

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MON AM</td>
<td>258</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>MON PM</td>
<td>258</td>
<td>64</td>
<td></td>
</tr>
</tbody>
</table>

International Standards for Properties and Performance of Advanced Ceramics – 30 years of Excellence

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>WED AM</td>
<td>254C</td>
<td>108</td>
<td></td>
</tr>
</tbody>
</table>

Materials Genome Initiative/Materials Today - Data Grand Challenge

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MON AM</td>
<td>255E</td>
<td>48</td>
<td></td>
</tr>
</tbody>
</table>

The technical program was finalized on September 9. Any changes or cancellations made after that date are reflected in the session signs. Session chairs are strongly encouraged to not adjust presentation times in the event of cancellations.
3D Graphene for Energy Conversion and Storage —
3D Graphene in Energy Storage I
Program Organizer: Yun Hu, Michigan Technological University
Monday AM  Room: 250B
October 24, 2016  Location: Salt Palace Convention Center
Session Chairs: Guozhong Cao, University of Washington; Yun Hu, Michigan Technological University

8:00 AM  Keynote
High Power High Safety Battery with Li3V2(PO4)3 Cathode and Li4Ti5O12 Anode with 95% Energy Efficiency: Guozhong Cao¹; ¹University of Washington

8:40 AM  Invited
CVD Assembly of 3D Graphene and their Contribution for Lithium-sulfur Batteries with High Energy Density and Long Lifespan: Qiang Zhang¹; ¹Tsinghua University

9:00 AM  Invited
Well-defined Graphene-based Hybrids for Energy Storage Applications: Linjie Zhi¹; Xianglong Li¹; Bin Luo¹; Bin Wang¹; ¹National Center for Nanoscience and Technology of China

9:20 AM
Beyond Graphene Foam, a New Form of Three-dimensional Graphene for Supercapacitor Electrode: Lu Zhang¹; Derek DeArmond¹; Noe Alvarez¹; Daoli Zhao¹; Tingting Wang¹; Guangfeng Hou¹; Rachit Malik¹; William Heineman¹; Vesselin Shanov¹; ¹University of Cincinnati

9:40 AM  Keynote
Peanut Shell Hybrid Sodium Ion Capacitor with Extreme Energy: Power Rivals Lithium Ion Capacitors: David Mitlin¹; ¹Clarkson University

10:20 AM  Break

10:40 AM
Three-dimensional Graphene-based Materials for Flexible Electrochemical Supercapacitors: Zheye Zhang¹; Shuai Wang¹; ¹Huazhong University of Science & Technology

11:00 AM
Nanomorphology and Optical Characteristics of Wrinkled Graphene: Suparnamaaya Prasad¹; Narsingh Singh¹; ¹University of Maryland, Baltimore County

11:20 AM
Chemical Bonding in Graphene and Newly Predicted Two-dimensional Materials: Ivan Popov¹; ¹Utah State University

3rd International Workshop of In-situ Studies with Photons, Neutrons and Electrons Scattering —
Synchrotron Based Techniques and Measurements I
Program Organizers: Antonio Ramirez, The Ohio State University; Sudarsanam Babu, The University of Tennessee, Knoxville; Thomas Kannengiesser, BAM Federal Institute for Materials Research and Testing; Yu-ichi Komizo, Osaka University; Hidenori Terasaki, Kumamoto University; Andre Tschiptschin, University of Sao Paulo; Eren Kalay, METU
Monday AM  Room: 250E
October 24, 2016  Location: Salt Palace Convention Center
Session Chairs: Antonio Ramirez, The Ohio State University; Sudarsanam Babu, The University of Tennessee, Knoxville; Arne Kromm, BAM Federal Institute for Materials Research and Testing

8:00 AM  Invited
Industrial Applications in the Fields of Materials Science at SPring-8 Today: Yu-ichi Komizo¹; ¹Osaka University

8:40 AM
Advanced Thermo-mechanical Simulation Coupled with Synchrotron X-ray Scattering: Antonio Ramirez¹; Guilherne Faria¹; Leonardo Wu¹; ¹The Ohio State University; ¹Brazilian Nanotechnology National Laboratory

9:00 AM
In-situ 3D Observation of Slip Events in a Zirconium Polycrystal: Rulin Chen¹; Jonathan Lind²; Robert Suter¹; ¹Carnegie Mellon University; ²Lawrence Livermore National Laboratory

9:20 AM
In-situ study of Austenite Formation and Decomposition in Ti-stabilized Supermartensitic Stainless Steel: Julian Escobar¹; Guilherne Faria¹; Paulo Me¹; Antonio Ramirez¹; ¹State University of Campinas, Unicamp; ²The Ohio State University

9:40 AM
Study of a Novel Combination of Hot Stamping with Quenching and Partitioning Processing on High Strength Steels: Edwan Anderson Ariza¹; Arthur Nishikawa¹; André Paulo Tschiptschin¹; ¹University of Sao Paulo

10:00 AM  Break

10:20 AM  Invited
Surface Effects on Cooling Induced Martensitic Transformation Temperatures Observed by Medium Energy (12KeV) In Situ X-ray Diffraction: Guilherme Faria¹; Julian Escobar¹; Antonio Ramirez¹; ¹Dept. of Materials Science and Eng. - The Ohio State University; ¹Brazilian Nanotecnology Laboratory

11:00 AM
In-situ X-ray Characterization of the Thermal Stability of Expanded Austenite in a 316L Austenitic Stainless Steel: Andre Tschiptschin¹; Carlos Pinedo¹; Arthur Nishikawa¹; Luis Varela¹; ¹University of Sao Paulo; ¹University of Mogi das Cruzes

11:20 AM
Study of Phase Transformations in the ICHAZ of Grade 91 Weldment Using In-situ Synchrotron X-ray Diffraction: Kyle Stritch¹; Guilherne Abreu Faria¹; Boian Alexandrov¹; Antonio Ramirez¹; ¹The Ohio State University
**Accelerated Insertion of Materials (AIM) Qualification I**

Program Organizers: Jiadong Gong, QuesTek Innovations; Greg Olson, Northwestern University; David Furrer, Pratt & Whitney

**Monday AM**  
Room: 150D  
Location: Salt Palace Convention Center  

Session Chairs: Jiadong Gong, QuesTek Innovations LLC; Greg Olson, Northwestern University; David Furrer, Pratt & Whitney

8:00 AM Introductory Comments Leo Christodoulou: Accelerated Insertion of Materials (AIM): 15 Years Later

8:05 AM Invited  
Accelerated Insertion of Materials (AIM): 15 Years Later: Leo Christodoulou; 1The Boeing Company

8:45 AM Invited  
Probabilistic Property Prediction: Strategic Data Fusion with Science Based Modeling: D Gary Harlow; 1Lehigh University

9:25 AM Invited  
Ferrium S53, an AIM Case Study: Charles Kuehmann; 1SpaceX/Tesla

10:05 AM Break

10:25 AM Invited  
Materials Innovation Case Study: QuesTek’s Ferrium® M54® Steel for Hook Shank Application: David Furrer; 1Pratt & Whitney

11:05 AM Invited  
AIM Qualification of Additively Manufactured Components: Greg Olson; 1Northwestern University

**ACerS/NICE: Arthur L. Friedberg Ceramic Engineering Tutorial and Lecture**

**Monday AM**  
Room: 255B  
Location: Salt Palace Convention Center  

Session Chair: Ricardo Castro, University of California, Davis

9:00 AM Invited  
Bioactive Glasses in Soft Tissue Repair, What Do We Know So Far?: Aldo Boccaccini; 1University of Erlangen-Nuremberg

**Additive Manufacturing of Composites and Complex Materials — Frontiers in Additive Manufacturing**

Program Organizers: Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, New York University; Dirk Lehmhus, ISIS Sensorial Materials Scientific Centre

**Monday AM**  
Room: 355E  
Location: Salt Palace Convention Center

Session Chairs: Jonathan Spowart, Air Force Research Laboratory; Mark Benedict, Air Force Research Laboratory

8:00 AM Introductory Comments

8:10 AM Keynote  
Enabling Additive Manufacturing Qualification: Mark Benedict; 1Air Force Research Laboratory

8:50 AM Question and Answer Period

9:00 AM Invited  
Metal Additive Manufacturing at the Army Research Laboratory: Brandon McWilliams; Andrew Gaynor; Larry Holmes; 1US Army Research Laboratory

9:40 AM  
Knowns and Unknowns of the Current State, Future Trends, and Associated Implications of Additive Manufacturing: Runze Huang; Diane Graziano; Matthew Riddle; Joe Cresko; Eric Masanet; 1Northwestern University; 2Argonne National Laboratory; 3U.S. Department of Energy

10:00 AM  
Securing the Cloud Based Additive Manufacturing Chain: Fei Chen; Gary Mac; Nikhil Gupta; 1New York University

10:20 AM Break

10:40 AM  
Metal Powders and Powder Mixtures for Additive Manufacturing: Assessing their Processing Characteristics: Claus Aumann-Kopp; Dirk Lehmhus; Hong Ngoc Le; Frank Petzoldt; Matthias Busse; 1Fraunhofer Institute for Manufacturing Technology and Advanced Materials; 2MAPEX Centre for Materials and Processes, University of Bremen; 3University of Applied Sciences Bremerhaven

11:00 AM  
Developing Additive Manufacturing Processes for Radome Fabrication: Gerard Simon; 1Air Force Research Laboratory

11:20 AM Invited  
Topological Design for Additive Manufacturing of Cellular Material: Application to Energy Absorption Applications: Faris Tarlochan; Tarek Shaban; Abdullah Baqir; Mohammed Hoque; Yasser Al-Hamidi; Bilal Mansoor; 1Qatar University; 2Texas A & M University

11:40 AM  
Additive Manufacturing of Composites with Anisotropic Heterogeneities: Neal Brodnik; Katherine Faber; 1California Institute of Technology
Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harryson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBBTi Consulting

Monday AM Room: 355D Location: Salt Palace Convention Center

Session Chair: Todd Palmer, The Pennsylvania State University

8:00 AM
Process-structure-property Relationships in 304L Stainless Steel Produced by Directed Energy Deposition: Experimental Characterization and Modeling: Zhuqing Wang; Todd Palmer; Allison Beece; ’Department of Materials Science and Engineering, Pennsylvania State University; ’Department of Materials Science and Engineering, Applied Research Laboratory, Pennsylvania State University

8:20 AM
Assessment of Residual Stress in Selective Laser Melted 17-4 PH Stainless Steel via Numerical Modeling and Neutron Diffraction: Mohammad Masoomi; Aref Yadollahi; Scott Thompson; Nima Shamsaei; Robert Winholtz; Justin Milner; ’Mississippi State University; ’University of Missouri; ’National Institute of Standards and Technology

8:40 AM
Characterization of Selective Laser Melted 304L: Wes Everhart; Paul Korinko; Marissa Reigel; Michael Morgan; John Bobbitt; ’NNSA National Security Campus; ’Savannah River National Laboratory

9:00 AM
Constitutive Property and Modeling of Additive Manufactured Stainless Steels: Shub Rong Chen; G. T. Gray; Carl Cady; Veronica Livescu; Cameron Knapp; John Carpenter; ’Los Alamos National Laboratory

9:20 AM
Investigation of the Solidification Effects of Microstructures of Laser Melted Stainless Steel: Enne Ozci; Hadi Mozaffari-Jovein; Class Muller; ’University of Freiburg; ’Hochschule Furtwangen Campus Tuttlingen; ’Hochschule Furtwangen Campus Tuttlingen; ‘University of Freiburg

9:40 AM
Microstructural Characterization of ExOne-printed and Liquid Phase Sintered Stainless Steel: Christopher Allen; Mitra Taheri; ’Drexel University

10:00 AM Break

10:20 AM
Microstructural Evolution and Defect Control in 316L SS Components Fabricated via Laser Additive Manufacturing: Baolong Zheng; James Haley; Nancy Yang; Joshua Yee; Yizhang Zhou; Enrique Lavernia; Julie Schoenung; ’University of California; ’Sandia National Laboratories

10:40 AM
Microstructure of Additively Manufactured 304L and 316L Stainless Steel Materials and Powder Feedstock: Benjamin Morrow; Veronica Livescu; Cameron Knapp; John Carpenter; George Gray; ’Los Alamos National Laboratory

11:00 AM
Process-structure-property Relationships for Selective Laser Melted 17-4 PH Stainless Steel: Aref Yadollahi; Mohammad Masoomi; Scott Thompson; Nima Shamsaei; ’Mississippi State University

11:20 AM
Additive Manufacturing of Stainless Steel: Processing, Microstructure, and Material Properties: Sridhar Radhakumar; Penn Rawn; Bryce Abstetar; Ronda Cogull; Bruce Madigan; ’Montana Tech

11:40 AM
On the Limitations of Volumetric Energy Density as a Key Parameter to Describe Selective Laser Melting of 316L Stainless Steel: Umberto Scipioni Bertoli; Alexander Wolfer; Manyalibo Matthews; Andrew Anderson; Rose McCallen; Kevin Wheeler; Dogan Timucin; Enrique Lavernia; Jean-Pierre Delplanque; Julie Schoenung; ’University of California, Irvine; ’UC Davis; ’Lawrence Livermore National Laboratory; ’NASA Ames Research Center

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harryson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBBTi Consulting

Monday AM Room: 355C Location: Salt Palace Convention Center

Session Chair: Andrzej Wojcieszynski, ATI Powder Metals

8:00 AM Invited
Developing Fundamental Scaling Relationships for Size and Geometry in Directed Energy Deposition Processes: Todd Palmer; ’Penn State

8:40 AM
Additive Manufacturing of Metals: Differing Microstructures with Varying Builds: Roberto Beal; Veronica Livescu; George Gray; Manny Lovato; ’Los Alamos National Laboratory

9:00 AM

9:20 AM
Partitioning of Laser Energy during Directed Energy Deposition: Frederick Lia; Joshua Park; Jay Tressler; Richard Martukanitz; ’ARL at the Pennsylvania State University

9:40 AM
Understanding the Impact of Hot Isostatic Pressing (HIP) Using Computed Tomography (CT) on Ti-6Al-4V Wall Structures Fabricated by Laser Based Directed Energy Deposition: Jay Keist; Griffin Jones; Todd Palmer; ’ARL at Penn State

10:00 AM Break

10:20 AM
Effect of Hot Isostatic Pressing on Mechanical Properties and Dimensional Accuracy of Intentionally Porous Ti6Al4V Parts Made by Selective Laser Melting: Raya Mertens; Bart Boeckmans; Lore Thijs; Jan Van Humbeeck; Jean-Pierre Kruth; ’KU Leuven; ’3D Systems LayerWise
10:40 AM
The Effect of Processing Parameters on Surface Finish and Mechanical Behavior Of Additively Manufactured Metals: Joy Gockel1; ‘Wright State University

11:00 AM
Understanding the Microstructure Evolution of Additively Manufactured Ti-base Alloys, Composition and Processing Windows: Michael Mendoza1; Matthew Rolchigo1; Thomas Ales1; Richard Lesar1; Peter Collins1; ‘Iowa State University

11:20 AM
Development of a Diffusion Mobility Description and Its Implications for Additive Manufactured Titanium Alloys: Greta Lindwall1; Kil-Won Moon1; Nikolaos Rabe1; Carelyn Campbell1; ‘National Institute of Standards and Technology

11:40 AM
The Influence of Post-build Microstructure on the Electrochemical Behavior of Additively Manufactured 17-4 Stainless Steel: Mark Stoudt1; Richard Ricker1; Eric Lass1; Carelyn Campbell1; Lyle Levine1; ‘National Institute of Standards and Technology

Additive Manufacturing of Shape Memory, Superelastic Alloys and Multifunctional Materials — Session I
Program Organizers: Mohammad Elahinia, University of Toledo; Reginald Hamilton, The Pennsylvania State University; Haluk Karaca, University of Kentucky; Reza Mirzaeifar, Virginia Tech

Monday AM
Room: 355A
Location: Salt Palace Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Additive Manufacturing of Functional Heusler Alloys: Markus Chmielus1; Erica Stevens1; Yuval Krimmer1; Amir Mostafaei1; Jakub Toman1; ‘University of Pittsburgh

8:40 AM
3D-printing of Ni-based Shape Memory Alloys: Shannon Taylor2; Peter Mullner2; Ramille Shah1; David Dunand1; ‘Northwestern University; ‘Boise State University

9:00 AM
Effects of Fabrication Parameter of Selective Laser Melting on Microstructure and Shape Memory Response of Ni-rich NiTi: Soheil Saedi1; Ali Turabi1; Mohsen Taheri Andani1; Mohammad Elahinia1; Haluk Karaca1; ‘University of Kentucky; ‘The University of Toledo

9:20 AM
Selective Laser Melting of TiNi Auxetic Structures: Moataz Attallah1; Hany Hassanin1; Kamis Essa1; Sheng Li1; Nicholas Adkins1; ‘University of Birmingham; ‘Kingston University

9:40 AM
Microstructure and Superelasticity of NiTi Alloys Fabricated Using Laser Directed Energy Deposition: Beth Bimber1; Reginald Hamilton1; Jayme Keist2; Todd Palmer2; ‘Penn State; ‘ARL at Penn State

10:00 AM Break

10:20 AM
Selective Laser Melting of Shape Memory Ternary Alloys: Microstructural Development and Thermo-mechanical Properties: Hollie Baker1; Moataz Attallah1; Nick Adkins1; Hugh Hamilton1; Andrew Fones1; Miren Aristizabal1; ‘The University of Birmingham; ‘Johnson Matthey Technology Centre

10:40 AM
Additive Manufacturing of a Magnetic Shape-memory Alloy: Directed Energy Deposition and Post-processing: Jakub Toman1; Yuval Krimmer1; Peter Mullner2; Markus Chmielus1; ‘University of Pittsburgh; ‘Boise State University

11:00 AM
The Effect of Microstructure on the Shape Memory Behavior in Selective Laser Melted Ni-rich NiTi Alloys: Brian Franco1; Gustavo Tapia1; Kubra Karayagiz1; Ji Ma1; Alaa Elwany1; Raymundo Arroyave1; Ibrahim Karaman1; ‘Texas A&M University

11:20 AM
Fe-Mn-Al-Ni Shape Memory Alloy Processed by Selective Laser Melting—microstructure and Pseudo-elastic Behavior: Florian Brenne1; Philipp Krob1; Malte Vollmer1; Johannes Günther1; Dieter Schwarze1; Horst Biermann1; Thomas Niendorf1; ‘University of Kassel; ‘SLM Solutions GmbH; ‘TU Bergakademie Freiberg

Advanced Coatings for Wear and Corrosion Protection — Advanced Coatings for Wear and Corrosion Protection I
Program Organizers: Evelina Vogl, LiquidMetal Group Holdings, Inc.; Fei Tang, DNV GL; Homero Castaneda, Texas A&M; Qixin Zhou, University of Akron

Monday AM
Room: 253A
Location: Salt Palace Convention Center

Session Chair: Homero Castaneda, Texas A&M

8:00 AM
Obtaining of Wear-resistant Chrome Carbide Coatings under Self Propagating High Temperature Synthesis Conditions: Borys Sereda1; Dmytro Sereda1; ‘DSTU; ‘ZSEA

8:20 AM
Parameters Control of 09Cr3NiMo3VNbr Carburizing Steel Diffusion Layer in the Process of Thermochemical Treatment: Valeriy Mishchenko1; Oleksandr Menialo1; Oleksandr Bagriichuk2; Oleksandr Bulakh3; ‘Zaporizhzhya National University

8:40 AM
Electrochemical Corrosion of Various HfB2-ZrB2 Solid Solutions: A Predictive Study: Steven Sitzer1; Krishnan Raja1; Indrajit Charit1; ‘University of Idaho

9:00 AM
Characterization of Si Based Diffusion Coatings on Nb: Ana Sofia D’Oliveira1; Mariane Thomé1; ‘UFPR - Federal University of Paraná

9:20 AM
Corrosion Resistance of Metal Carbide Coatings on Steel Alloys: Brandon Strahin1; Devesh Dadhich Shreeram1; Jonathon Fouts1; Arindam Paul1; Shengxi Li1; Hongbo Cong1; Gary Doll1; ‘The University of Akron
<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:40 AM</td>
<td>Tantalum and Tantalum-based Ceramic Coatings for Extremely Corrosive Environments</td>
<td>Jacob Stiglich1; Dean Gambale1; Brian Williams1; Therese Grundl1; 'Ultramet'</td>
<td></td>
</tr>
<tr>
<td>10:20 AM</td>
<td>Molten Metal Corrosion Resistant Thermal Sprayed Coatings</td>
<td>Evelina Vogli1; Gabriel Santillan1; Anupam Ghildyal1; 'MesoCoat'</td>
<td></td>
</tr>
<tr>
<td>10:40 AM</td>
<td>Nanostructured Hard Coatings for Protecting Aircraft Engines from Solid Particle Erosion</td>
<td>Qi Yang1; 'National Research Council of Canada'</td>
<td></td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Residual Stresses in a NiCry Coating on a Powder Metal Disk Superalloy</td>
<td>Tim Gabbi1; Richard Rogers1; James Nesbitt1; Robert Miller1; Susan Draper1; Jack Telesman1; Ivan Lucci1; 'NASA Glenn Research Center'; 'University of Toledo'</td>
<td></td>
</tr>
<tr>
<td>11:20 AM</td>
<td>Laser Heating of NiCry-Al₂O₃ Composite Coating Made on Low Carbon Steel</td>
<td>Manoj Rathod1; Rohit Bardapurkar1; Shubham Mohod1; 'College of Engineering Pune'</td>
<td></td>
</tr>
</tbody>
</table>

**Advanced Materials for Harsh Environments — AHSS and Sheet Steels I**

Program Organizers: Alla Sergueeva, The NanoSteel Company; Daniel Branagan, The NanoSteel Company; Kester Clarke, Colorado School of Mines

Monday AM  
Room: 155F  
Location: Salt Palace Convention Center  
Session Chairs: Kip Findley, Colorado School of Mines; Charles Enloe, General Motors

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td>Materials Design for Quench and Partition Steels</td>
<td>Amit Behera1; Gregory Olson1; 'Northwestern University'</td>
<td></td>
</tr>
<tr>
<td>8:20 AM</td>
<td>Ultra-fine-grained Quenching and Partitioning (Q&amp;P) Steel Produced by Near Ac₃ Austenitizing</td>
<td>Eun Jung Seo1; Lawrence Cho1; Bruno C. De Cooman1; 'GIFT, POSTECH'</td>
<td></td>
</tr>
<tr>
<td>8:40 AM</td>
<td>Work Hardening Behavior in Medium Mn TRIP Steels</td>
<td>Michael Callahan1; Jean-Hubert Schmitt1; 'CentraleSupelec'</td>
<td></td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Annealing Temperature Dependence of the Tensile Behavior of 6pt Mn Multi-phase TWIP-TRIP Steel</td>
<td>Seonjong Lee1; Sunmi Shin1; Minhyeok Kwon1; Bruno C De Cooman1; 'GIFT / Material Design Laboratory'; 'Pohang University of Science and Technology/GIFT'</td>
<td></td>
</tr>
<tr>
<td>9:20 AM</td>
<td>Dynamic and Static Recrystallization of V Micro-alloyed TWIP Steel</td>
<td>Hojun Gwon1; Sunmi Shin1; Bruno Charles De Cooman1; 'GIFT, POSTECH'</td>
<td></td>
</tr>
<tr>
<td>9:40 AM</td>
<td>The Influence of Phase Characteristics on the Cold Rollability of Medium-Mn Steels</td>
<td>Bishan Sun1; Fateh Fazeli1; Colin Scott1; Xiaojuan Yan1; Zhiwei Liu1; Xiaooy Qin1; Stephen Yue1; 'McGill University'; 'CanmetMATERIALS, Natural Resources Canada'; 'Beihang University'</td>
<td></td>
</tr>
</tbody>
</table>

**Advanced Materials for Harsh Environments I**

Program Organizers: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

Monday AM  
Room: 254A  
Location: Salt Palace Convention Center  
Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td>Corrosion Behavior of Glass Seals with Crofer 22 APU Interconnect for the Planar Solid Oxide Fuel Cells</td>
<td>Gurbinder Kaur1; 'Thapar University'</td>
<td></td>
</tr>
<tr>
<td>8:40 AM</td>
<td>Advanced Materials Solutions for High-temperature Power Plant Valve Components</td>
<td>John Shingledecker1; Daniel Purdy1; 'Electric Power Research Institute'</td>
<td></td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Electroceramic Composite Sensors for Monitoring Harsh-environment Energy Systems</td>
<td>Gunes Yakaboylu1; Rajalekshmi Chockalingam1; Katarzyna Sabolsky1; James Meyer1; Edward Sabolsky1; Jeffrey Bogan1; Margaret Raughley1; Joshua Sayre1; 'West Virginia University'; 'HarbisonWalker International Technology Center'</td>
<td></td>
</tr>
<tr>
<td>9:20 AM</td>
<td>Electrodeposition of Nickel-based Protective Coatings for High Temperature Electrochemical Systems</td>
<td>Mark King1; Manoj Mahapatra1; 'University of Alabama at Birmingham'</td>
<td></td>
</tr>
<tr>
<td>9:40 AM</td>
<td>Fatigue and Creep Crack Growth Mechanism Assessment in Inconel 718 at 650°C</td>
<td>Halsey Ostergaard1; Jamie Kruzic1; 'Oregon State University'</td>
<td></td>
</tr>
</tbody>
</table>
8:00 AM Introductory Comments

8:20 AM Invited
Fractal Microelectronics within Nanoelectronics and Energy Correlation: Vojislav Mitic; Ljubiša Kocic; Steven Tidrow; Hans Fecht; ‘Faculty of Electronic Engineering, University of Nis; Institute of Technical Sciences of the Serbian Academy of Sciences and Arts; ‘Faculty of Electronic Engineering, University of Nis; ‘Alfred University; ‘University of Ulm

8:40 AM Invited
Predicting A-site Cation Ordering in Na$_{1.5}$La$_{0.5}$TiO$_3$: Kevin Tolman; Rick Ubic; ‘Boise State University

9:00 AM
An Empirical Model for Perovskite Tetragonality: Kevin Tolman; Rick Ubic; ‘Boise State University

9:20 AM Invited
Reducing the Search Space, Time and Cost, for Developing Materials and Devices: Steven Tidrow; ‘Alfred University

9:40 AM
Bipolar Pt/HfOx/Ho: HfO2/TiN RRAM Device with Capacitance Switching: Yogesh Sharma; Shojan Pavunny; Do-Kyun Kwon; ‘Korea Aerospace University

10:00 AM Break

10:20 AM Invited
Nature of BaTiO3 Nanocubes for Dielectric 3D Architectures: Kazumi Kato; Ken-ichi Mimura; Qiang Ma; Zheng Liu; Kyoichi Yasui; ‘National Institute of Advanced Industrial Science and Technology

10:40 AM Invited
Novel Microwave Dielectric Ceramics with Ultra-low Sintering Temperatures: Hong Wang; Xi’an Jiaotong University

11:00 AM Invited
Influence of Processing and Microstructure on Dielectric Properties of Calcium Copper Titanate Ceramics: Disna Samarakoon; Normal Govindaraju; Raj Singh; ‘Oklahoma State University

11:20 AM Invited
Enhancement of Energy Storage Density in CaTiO$_3$-Based Dielectric Ceramics: Xiang Ming Chen; Hai Yang Zhou; Xiao Na Zhu; ‘Zhejiang University

11:40 AM
Combinatorial Studies of Scandium-aluminum Nitride Thin Films for Piezoelectric Applications: Kevin Talley; Geoff Brennecka; Andriy Zakutayev; Dong Wu; Corinne Packard; ‘Colorado School of Mines; ‘National Renewable Energy Laboratory

8:00 AM
Process-based Cost Modeling of Metal Castings: The Cost Implications of Reducing Wall Thickness through Improved Manufacturing Processes: Di Wu; Muhammad Farooq; Richard Roth; Randolph Kirchain; ‘Massachusetts Institute of Technology

8:20 AM
Materials and Energy Saving in Foundries: Hamid Ahmad Mehrabi; Mark Jolly; Konstantinos Salonitis; Emanuele Pagone; ‘Cranfield University

8:40 AM
Influence of Water Quality on Rate of Quenching of Metals during Continuous Casting by Pneumatic and Hydraulic Sprays: Umair Alam; ‘University of Maryland; ‘Bradken Tacoma; ‘Scot Forge; ‘Electric Boat

9:00 AM
Hydrogen Embrittlement Mitigation Techniques in High Strength Steel Manufacture: Matthew Draper; Elaine Thomas; Kyle Rackers; Neil Fichtelberg; Sreeramamurthy Ankem; ‘University of Maryland; ‘Bradken Tacoma; ‘University of Utah

9:20 AM
Comparison of Conventional Open-Cell Aluminum Foam and Its Additively Manufactured Twin: Kristoffer Matheson; Kory Cross; Jayden Plumb; Iman Javahery; Ashley Spear; ‘University of Utah

9:40 AM
Effect of Solution Treatment on Mechanical Behavior of Cast Superalloy: Jianjun Tian; Yang Gao; ‘Beijing Beye Functional Materials Corporation
Advances in Zinc-coated Sheet Steel Processing and Properties — Advances in Zinc-coated Sheet Steel Processing and Properties
Program Organizers: Frank Goodwin, International Zinc Association; Joseph McDermid, McMaster University

Monday AM
October 24, 2016
Room: 155D
Location: Salt Palace Convention Center

Session Chair: Erika Bellhouse, ArcelorMittal Dofasco

8:00 AM
Surface Selective Oxide Reduction during Continuous Annealing of Advanced High Strength and Ultra-high Strength Steel Grades: Lawrence Cho1; Jong Han Oh1; Eun Jung Seo1; Myung Soo Kim2; Ki Cheol Kang2; Bruno C. De Cooman1; 1GIFT, Postech; 2POSCO Technical Research Center

8:20 AM
High Temperature Oxidation of Advanced High Strength Steel: Mary Story1; Bryan Webler1; 1Carnegie Mellon University

8:40 AM
Oxidation Behavior of Steels Alloyed with Si and Mn for Galvanizing: Mayra Rodriguez Perea1; Nelson Garza Montes de Oca1; Maribel de la Garza Garza1; Omar Garcia Rincón1; 1Universidad Autonoma de Nuevo Leon; 2Ternium Mexico

9:00 AM
Evolution of Zn-Rich Phases during Austenitizing of Galvanized 22MnB5 Sheet Steel: Zahra Ghanbari1; John Speer1; 1Colorado School of Mines

9:20 AM
Effect of Coating Thickness and Mg Content on Adhesion Strength and Corrosion Behavior of EML-PVD Alloy Coating on Steel Strip: Woosung Jung1; Chang Wook Lee1; Bruno De cooman1; 1Graduate Institute of Ferrous Technology (GIFT)

9:40 AM
Corrosion Resistance and Mechanical Properties Zinc Coating Sheet Steels, Received in Conditions of Self-propagating High Temperature Synthesis: Boerys Sereda1; Dmytro Sereda1; 1DSTU; 2ZSEA

10:00 AM
Internal Stresses and Processing Modeling for Galvanized and Galvannealed DP Steels: Hongwei Ma1; 1WISCO

Ceramic Matrix Composites — Ceramic Fiber Composite Degradation
Program Organizers: J. P. Singh, U.S. Army Research Laboratory; Narottam Bansal, NASA Glenn Research Center; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

Monday AM
October 24, 2016
Room: 257B
Location: Salt Palace Convention Center

Session Chairs: Triplicane Parthasarathy, UES, Inc.; Marina Ruggles-Wrenn, Air Force Institute of Technology

8:00 AM Invited
Modeling Architecture-dependent Effects on Environmental Degradation of SiC-Fiber Reinforced CMCs: Triplicane Parthasarathy1; Qing Yang1; Brian Cox2; David Marshall2; Craig Przybyla2; Micahel Cimbulk3; 1UES, Inc.; 2University of Miami; 3Teledyne Scientific; 4Air Force Research Laboratory

8:40 AM Invited
Overview of Foreign Object Damage in Ceramic Matrix Composites: Sung Choi1; David Faucett1; Nesredin Kedir2; Joseph Hunt3; Luis Sanchez4; 1Naval Air Systems Command

9:20 AM
Foreign Object Damage Behavior of a SiC/SiC Composite at Ambient Temperature at Cantilever Support Configuration: David Faucett1; Nesredin Kedir2; Sung Choi1; 1NAVAIR

9:40 AM
Foreign Object Damage in SiC/SiC Fibrous Ceramics: Nesredin Kedir1; David Faucett1; Sung Choi1; 1NAVAIR

10:00 AM Break

10:20 AM Invited
Mechanical Behavior of an Oxide: Oxide Ceramic Matrix Composite at Elevated Temperature in Air and in Steam: Marina Ruggles-Wrenn1; 1Air Force Institute of Technology

11:00 AM
Engineered Matrix Composites: Design and Properties of the Engineered Matrix: S. Raj1; 1NASA Glenn Research Center

11:20 AM
Influence of Impurity Inclusions on the Microstructure and Mechanical Properties of Titanium based Cermets (TiCN and TiN): Munyadziwa Ramakokovhu1; Mxolisi Shongwe1; 1Tshwane University of Technology

11:40 AM
High-temperature Calcium-magnesium-aluminosilicate (CMAS) Interactions with Ytterbium Disilicate Environmental Barrier Coating Material: Valerie Wiesner1; Nathan Johnson2; David Scales2; Bryan Harder2; Narottam Bansal1; 1NASA Glenn Research Center; 2Colorado School of Mines; 3University of Washington Seattle
Ceramic Optical Materials — Session I

Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Michael Squillante, RMD, Inc; Takunori Taira, Institute for Molecular Science

Monday AM Room: 254C Location: Salt Palace Convention Center

Session Chair: Yiquan Wu, Alfred University

8:00 AM Invited
Optical Ceramics for High Energy Lasers: Woohong (Rick) Kim¹; Colin Baker⁴; Guillermo Villalobos³; Jesse Frantz⁴; Brandon Shaw¹; Michael Hunt³; Bryan Sadowski⁴; Lynda Busse¹; Shyam Bayya¹; Darryl Boyd³; Ishwar Aggarwal³; Jasbinder Sanghera¹; ¹Naval Research Laboratory; ²Sotera Defense Solutions

8:40 AM Invited
Microstructure-property Relationships for Light Transmission, Absorption and Emission in Optical Ceramics: Elias Penilla¹; Alex Dupuy¹; Yasuhiro Kodera¹; Javier Garay²; ¹University of California, Riverside; ²University of California, San Diego

9:20 AM
Er:Y₂O₃+MgO Nanocomposites for Mid-IR Solid-state Lasers: Victoria Blair¹; Zackery Fleischman¹; Nicholas Ku¹; Larry Merkle¹; ¹Army Research Laboratory

9:40 AM
Crystal Fiber Lasers: Woohong (Rick) Kim¹; Brandon Shaw¹; Shyam Bayya¹; Charles Askins¹; John Peele³; Daniel Rhonehouse³; Jason Meyers¹; Rajesh Thapa¹; Steven Bowman¹; Daniel Gibson¹; Jasbinder Sanghera¹; ¹Naval Research Laboratory; ²Sotera Defense Solutions; ³University Research Foundation

10:00 AM Break

10:20 AM Invited
Transparent, Fine-grained Polycrystalline Ceramics with Improved Properties: Marina Pascucci¹; Mark Parish¹; John Gannon¹; ¹CeraNova Corporation

11:00 AM
Processing of Electro-optic Ceramics Using Current Activated Pressure Assisted Densification (CAPAD): Alex Dupuy¹; Yasuhiro Kodera¹; Javier Garay²; ¹UC Riverside; ²University of California, San Diego

11:20 AM Invited
Polymer-derived Rare-earth-activated Silicon Based Oxynitride Phosphors: Xuan Cheng¹; Xiamen University

Construction and Building Materials for a Better Environment — Session I

Program Organizers: Henry Colorado, Universidad de Antioquia; Dileep Singh, Argonne National Laboratory; Flavio Silva, Pontificia Universidade Católica do Rio de Janeiro (PUC-Rio); Gaurav Sant, University of California, Los Angeles

Monday AM Room: 151B Location: Salt Palace Convention Center

Session Chairs: Henry Colorado, Universidad de Antioquia; Flavio Silva, Pontificia Universidade Católica do Rio de Janeiro (PUC-Rio)

8:00 AM Invited
Defect-induced Stiffening-strengthening-toughening Mechanisms in Complex, Layered Cementitious Materials: Ning Zhang¹; ¹University of North Texas

8:40 AM
Magnetically Concrete: A Composite Material Containing Ferrite Ceramics: Ralph Luecke¹; Mauricio Esguerra¹; ¹Magment UG

9:20 AM
Sub-micron Sized β-Dicalcium Silicates for Environmentally Conscious Cementitious Materials: Scarlett Widgeon¹; Elizabeth Cisneros¹; Rahul Sangodkar¹; Mariane Silva de Miranda¹; Flavio Rodrigues¹; Bradley Chmelka¹; ¹New Mexico Highlands University; ²University of California, Santa Barbara; ³Universidade de Mogi dasCruces

10:00 AM
Chemical Effect on Compressive Strength of Concrete Incorporating with Rice Husk Ash: Onkar Singh¹; Gurpreet Singh¹; ¹Punjabi University

10:20 AM Break

10:40 AM
Mechanical and Corrosion Properties of Coconut Fibre Reinforced Concrete in Marine Environment: Ameeq Farooq¹; Ahsan Saleem¹; Nauman Tahir¹; Ashar Alam¹; Rafiq Ahmad¹; ¹University of the Punjab

11:00 AM
Crystalline Phase Evolution of an Industrial Calcium Sulfoaluminate Cement as a Function of Its Oxide Ratios: Ariel Berrio¹; Jorge Tobón¹; ¹Cementos ARGOS; ²Universidad Nacional

11:20 AM Invited
Calorimetry Study of High Early Strength Portland Cement Blended with Superfine Steel Dust: Henry Colorado²; Samuel Arango²; ¹Universidad de Antioquia UdeA; ²Cementos Argos
Curricular Innovations and Continuous Improvement of Academic Programs (and Satisfying ABET along the Way): The Elizabeth Judson Memorial Symposium — Continuous Improvement of MSE Programs

Program Organizers: Devarajan Venugopalan, University of Wisconsin-Milwaukee; Thomas Bieler, Michigan State University; Jeffrey Fergus, Auburn University; Janet Callahan, Boise State University; Ronald Gibala, University of Michigan; Lan Li, Boise State University; Laura Bartolo, Kent State University; Kathy Lu, Virginia Tech

Monday AM
October 24, 2016
Room: 258
Location: Salt Palace Convention Center
Session Chair: Dev Venugopalan, University of Wisconsin-Milwaukee

8:00 AM
Recent and Upcoming Changes in ABET Criteria: Jeffrey Fergus¹; Auburn University

8:20 AM
ABET Support for Continuous Improvement: Danielle Baron¹; ABET

8:40 AM
The Organic Development of an ABET Continuous Improvement Process: Ben Church¹; Nidal Abu-Zahra¹; University of Wisconsin-Milwaukee

9:00 AM
ABET Diversity and Inclusion Listening Session: Kristen Constant¹; Iowa State University

9:30 AM
Change is Coming: Janet Callahan¹; Jeffrey Fergus; Angus Rockett; William Mullins; Dev Venugopalan¹; Boise State University; Auburn University; University of Illinois; Office of Naval Research; University of Wisconsin Milwaukee

10:00 AM Break

10:20 AM
Revisiting the Engineering Communications Program in the Materials Science and Engineering (MSE) Curriculum at Virginia Tech: Christine Burgoyne; Robert Hendricks; Virginia Tech

10:40 AM
Using Mechanical Testing of Disposable Plastic Cups to Illustrate Processing-structure-property Relationships in an Introductory Materials Laboratory Course: Kendra Erk¹; Purdue University

11:00 AM
Understanding Current State of Materials Education for a Successful Career Tomorrow: Kathy Lu¹; Virginia Tech

11:20 AM
Methods for Increasing Student Engagement and Success in Introductory Materials Science Courses: Debbie Goodwin¹; Andrew Nydam; ASM Education Foundation

Degradation of Nonmetallic Materials — Degradation of Nonmetallic Materials

Program Organizers: John Howarter, Purdue University; Jessica Torrey, Bureau of Reclamation; Logan Kearney, Purdue University

Monday AM
Room: 250C
Location: Salt Palace Convention Center
Session Chair: John Howarter, Purdue University

8:00 AM
Informed Materials Design of Degradation Resistant Polymer Thin Films: Logan Kearney¹; Michael Toomey¹; John Howarter¹; Purdue University

8:20 AM
Effect of Carbon Nano-filler Addition on the Degradation of Epoxy Adhesive Joints Subjected to Hygrothermal Aging: Jojibabu Panta¹; Janaki Ram Gabbita¹; Abhijit Deshpande¹; Sevinivas Bakshi¹; Indian Institute of Technology Madras

8:40 AM
Degradation of Mechanical Properties of Low Density Polyethylene under UV Radiation: Ana Rodriguez¹; Georges Ayoub²; Bilal Mansoor³; Amine Benzerga⁴; Texas A&M University, Texas A&M University at Qatar; American University of Beirut, Texas A&M University at Qatar; Texas A&M University at Qatar; Texas A&M University

9:00 AM
Nanostructural Characterization of Ballistic Fibers Subjected to Hydrothermal and Ultrasonic Degradation: Nelyan Lopez-Perez¹; Gamini Mendis¹; John Howarter¹; Purdue University

9:20 AM
Long Term Solid State Investigations of Cementitious Waste Forms: Matthew Amsussen¹; Jeff Serne¹; Nikolla Qafoku¹; Pacific Northwest National Laboratory

Failure Analysis and Prevention — Fatigue and Fracture

Program Organizer: Burak Akyuz, ATS, Inc.

Monday AM
Room: 150G
Location: Salt Palace Convention Center
Session Chairs: Daniel Dennies, Metallurgical Consultant; Craig Schroeder, Element; Aaron Slager, Bell Helicopter

8:00 AM
Failure of a Trunnion Axle on a Hard-suspension, Multi-axle Trailer: Joseph Lemberg¹; Eric Guyer¹; Exponent Failure Analysis Associates, Inc.

8:20 AM
Failure Analysis and Engineering Investigation of a Failed Tower Crane Turntable Weld That Led to a Crane Collapse: Richard McSwain¹; William Carden¹; Eric Van Iderstine¹; L. Scott Marshall¹; Leah Godwin¹; McSwain Engineering, Inc.

8:40 AM
Managing Cold Temperature and Brittle Fracture Hazards in Pressure Vessels: Nicholas Cherolis¹; Daniel Benac¹; Baker Engineering and Risk Consultants, Inc.
MONDAY AM

9:00 AM Analysis of In Vivo Tested Leads: Margaret Bush; 'Medtronic, Inc.

9:20 AM Intergranular Fracture in a Plain Very Low Carbon Steel: Donato Firrao; Paolo Matteis; 'Politecnico di Torino - DISAT

9:40 AM Interface Microstructure in a Failed APMT/KHR45A Tubular Weld Joint after Service Exposure: Ihho Park; Yunjo Ro; Raghavan Ayer; Junghoon Jeon; Jae-woong Kim; Youngsu Ji; 'SK innovation; 'SK Energy

10:00 AM Break

10:20 AM Extremely Low Cycle Fatigue Damage Mechanism, Fractographic Examination, and Life Prediction: Mohammed Algarni; Yuanli Bai; 'University of Central Florida

10:40 AM Examination of Three Fatigue Cracked Helicopter Main Transmission Gearbox Cases from Aggressive Operation, a Manufacturing Issue, and Fatigue Testing: Aaron Slager; 'Bell Helicopter

11:00 AM Fatigue and Fracture of Bicycle Components: Dan Grice; Brett Miller; 'Materials Evaluation and Engineering, Inc.; 'IMR Test Labs

11:20 AM Inclusion Orientation Effect on Rolling Contact Fatigue Crack Paths Observed by Laminography Using Synchrotron Radiation X-ray: Yoshikazu Nakai; Daiki Shiozawa; Shoichi Kikuchi; Tomoya Obama; Hirotoshi Saito; Taizo Makino; Yutaka Neishi; 'Kobe University; 'Nippon Steel & Sumitomo Metal Corporation

11:40 AM Backup Roll Service Life Assessment: Konstantin Redkin; Christopher Hrizo; Kevin Marsden; 'WHEMCO Inc

Ferrous Metallurgy: From Past to Present — Ferrous Metallurgy: Past to Present
Program Organizer: Kester Clarke, Colorado School of Mines

Monday AM Room: 155E Location: Salt Palace Convention Center

Session Chair: Kester Clarke, Colorado School of Mines

8:00 AM Invited The Age of Bessemer Steel: Charles Simcoe; Frances Richards; 'ASM International

8:20 AM Invited Historic Heavy Hydraulic Presses: Transitioning from Ferrous to Nonferrous Forgings: Jon Tirpak; 'FDMC

9:00 AM Invited Advances in High-Temperature Microscopy: Rian Dippenaar; 'University of Wollongong

9:40 AM Invited Quench Embrittlement: History and Importance in High Carbon Steels: George Krauss; 'Colorado School of Mines

10:20 AM Break

10:40 AM Invited The Evolution of Ferrous Grain Size Control: Standards and Practice: Robert Glodowski; 'RIG Metallurgical LLC

11:20 AM Invited Widmanstätten Ferrite: From Meteorites to Rolling Mills: John Jonas; 'McGill University

Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology — Optical Properties of Glass

Program Organizers: Steve W. Martin, Iowa State University; Gang Chen, Ohio University

Monday AM Room: 255A Location: Salt Palace Convention Center

Session Chair: Pierre Lucas, University of Arizona

8:00 AM Invited Amorphous Thin Film Integrated Photonics: A Crystal-clear Future: Juejun Hu; 'Massachusetts Institute of Technology

8:40 AM Invited Nanoparticle Formation and Optics in Glass Substrate Applications: Ashtosh Ganjoo; Adam Poleyn; James McCamy; 'PPG Industries

9:20 AM Invited Tailoring Infrared Transmission Edge and Refractive Index Dispersion of Chalcogenide Glasses for Use in Infrared-transmitting Lens Applications: Yong Gyu Choi; Jun Ho Lee; Jeong Han Yi; Woo Hyung Lee; Ju Hyeon Choi; Hye Jeong Kim; 'Korea Aerospace University; 'Korea Photonics Technology Institute

10:00 AM Break

10:20 AM Invited Surface Characteristics of Silica Glass Optical Fibers: Minoru Tomozawa; 'Rensselaer Polytechnic Institute

11:00 AM Quantifying Optical Function Loss from Mechanical Abuse: David Schoen; David Rolfe; Erwin Lau; Lucas Berla; Evan Brown; 'Exponent, Inc.

11:20 AM Invited Optical Glass Ceramics for GRIN: Engineering Microstructure for Optical Function: Kathleen Richardson; 'University of Central Florida
Heterogeneity during Plastic Deformation – Synergy between Experimental Investigation and Simulation — Plastic Interactions at the Atomicistic and Nanoscale

Program Organizers: Stephen Niezgoda, The Ohio State University; David Fullwood, Brigham Young University

Monday AM  Room: 250F
October 24, 2016
Location: Salt Palace Convention Center

Session Chair: To Be Announced

8:00 AM  A Multiscale Modeling Study of the Onset of Flow Localization in Irradiated Iron: Moon Rhee1; Nathan Barton1; Tom Arsenlis1; Jaime Marian1; 1LLNL; 1University of California Los Angeles

8:20 AM  Deformation Mechanisms during High Speed Impaction of Ag Nanoparticles: Tushar Chitrakar1; Michael Becker2; John Keto3; Desiderio Kovar4; 1The University of Texas at Austin

8:40 AM  Dislocation Nucleation at Grain Boundaries: Ricky Wyman1; David Fullwood2; Robert Wagoner3; Eric Homer4; 1Brigham Young University; 2The Ohio State University

9:00 AM  Development of Many-body Potentials for Al-TiN Nanolayered Composites: Paul Simanjuntak1; Ridwan Sakidja2; Caizhi Zhou3; 1Missouri State University; 2Missouri University of Science & Technology

9:20 AM  Invited  Linking Nanoscale Deformation Mechanisms and Interfaces with Diffraction Profiles in Nanocrystalline Materials: Daniel Foley1; Shawn Coleman2; Mark Tschopp3; Garrett Tucker4; 1Drexel University; 2U.S. Army Research Laboratories

10:00 AM  Break

10:20 AM  Exploring the Energy Landscape for Dislocation Motion in Tantalum: Amit Samanta1; Vasily Bulatov1; 1Lawrence Livermore National Laboratory

10:40 AM  Plasticity-induced Restructuring of Nanocrystalline Grain Boundary Networks: Jason Panzarino1; Timothy Rupert2; 1University of California Irvine

11:00 AM  The Influence of Elastic Anisotropy and the γ Surface in Cross Slip of Copper: Ben Scajewski1; Abigail Hunter2; Irene Beyerlein3; 1Los Alamos National Laboratory

Innovative Processing and Synthesis of Ceramics, Glasses and Composites — Ceramic Processing I

Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, U.S. Army Research Laboratory; Scarlett Widgeon, New Mexico Highlands University; Gabriela Mera, TU Darmstadt

Monday AM  Room: 255D
October 24, 2016
Location: Salt Palace Convention Center

Session Chair: Ivar Reimanis, Colorado School of Mines; Yutaka Shinoda, Tokyo Institute of Technology

8:00 AM  Invited  Fabrication of Highly Structure-controlled Ceramics by Advanced Powder Processing: Yoshiho Sakka1; 1NIMS

8:40 AM  Invited  Inorganic Clusters and Nanoparticles in the Synthesis of Ceramics: Alexandra Navrotsky1; 1University of California, Davis

9:20 AM  Invited  Direct Observation of Solute Atoms and Interfaces in Covalent Bonded Materials: Yuichi Ikuhara1; Chanlin Chen1; Ryo Ishikawa2; Naoya Shibata2; Takashi Taniguchi3; 1University of Tokyo; 2Tohoku University; 3NIMS

10:00 AM  Break

10:20 AM  Invited  Toughening of Transparent Magnesium Aluminate Spinel by Dissolution/Precipitation of Alumina: Ivar Reimanis1; Aaron Miller2; Weiguo Miao3; 1Colorado School of Mines; 2Corning Incorporated

11:00 AM  Invited  Novel Development of Ceramic Superplasticity: Yutaka Shinoda1; Fumihiro Wakai1; Takashi Akatsu2; 1Tokyo Institute of Technology; 2Saga University

11:40 AM  Nano-catalyst Impregnation Optimization of SOFC Electrodes Using Catechol Surfactants: Ozcan Ozmen1; John Zondlo1; Shiwoo Lee1; Gregory Hackett1; Harry Abernathy1; Edward Sabolsky2; 1West Virginia University; 2AECOM/GES; 1US DOE-National Energy Technology Laboratory

Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches — Fundamental and Engineering Issues — Structure & Chemistry of Interfaces I

Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Paul Wynblatt, Carnegie Mellon University

Monday AM  Room: 251B
October 24, 2016
Location: Salt Palace Convention Center

Session Chairs: John Blendell, Purdue; Wayne Kaplan, Technion - Israel Institute of Technology

8:00 AM  Keynote  Grain Boundary Energy and Curvature Determined from Three-dimensional Microstructure Data: Xiaoting Zhong1; Gregory Rohrer2; 1Carnegie Mellon University
8:40 AM Keynote
Grain Boundary Line Defects in Polycrystalline Al₂O₃ and their Dominant Role in High Temperature Phenomena: Arthur Heuer; ‘Case Western Reserve University

9:20 AM Invited
Investigating the Interplay between Grain Boundary Facet Junctions and Interfacial Dislocations: Douglas Medlin; K. Hattar; J. Zimmerman; F. Abdeljawad; S. Foiles; ‘Sandia National Labs

9:40 AM Keynote
A Phase Field Crystal Study of Defects in Multilayer Graphene: Rachel Zucker; Mark Asta; ‘University of California, Berkeley

10:20 AM Break

10:40 AM
Structural Characterization of Triangle-shaped Lattice Defects in 4H-SiC Epitaxial Layer: Eita Tochigi; Hirofumi Matsuhata; Hirotaoka Yamaguchi; Takashi Sekiguchi; Yuichi Ikuhara; ‘The University of Tokyo; ‘National Institute of Advanced Industrial Science and Technology; ‘National Institute for Materials Science

11:00 AM
An Efficient Algorithm for Determining the Minimum Energy Structures of Grain Boundaries: Arash Dehghan Banadaki; Mark Tschopp; Srikanth Patala; ‘North Carolina State University; ‘U.S. Army Research Laboratory

11:20 AM
The Generating Algorithm for Coincidence Site Lattices in General Bravais Lattice Systems: Srikanth Patala; Arash Banadaki; ‘North Carolina State University

11:40 AM
The Effect of Oxygen Partial Pressure on Oxygen Transport Kinetics in Alumina Grain Boundaries: Yan Wang; Helen Chan; Jeffrey Rickman; Martin Harmer; ‘Lehigh University

International Symposium on Defects, Transport and Related Phenomena — Session I
Program Organizers: Sangtae Kim, University of California, Davis; Doreen Edwards, Alfred University; Tatsuya Kawada, Tohoku University; Manfred Martin, RWTH Aachen University

Monday AM Room: 251E
October 24, 2016 Location: Salt Palace Convention Center

Session Chairs: Harry Tuller, MIT; Shu Yamaguchi, The University of Tokyo

8:00 AM Invited
Defects and Transport in Nanosized Particles: Novel In-situ Means for Investigation: Harry Tuller; Philippe Knaub; Sean Bishop; ‘Massachusetts Institute of Technology; ‘Aix Marseille Université

8:40 AM Invited
Surface Reactivity and Electronic/spin Structure of Nonstoichiometric Oxide Cathode: Shu Yamaguchi; ‘The University of Tokyo

9:20 AM Invited
Proton Transport Properties of Mn Doped CaZrO₃, with Redox Protonation: Yuji Okuyama; Shinya Nagamine; Muneyuki Shibuya; Akira Nakajima; Naoki Matsunaga; Go Sakai; Tomoko Oshima; Fusako Takahashi; Koji Tsucheyoshi; ‘University of Miyazaki; ‘TYK Corp.

10:00 AM Break

10:20 AM Invited
Non-stoichiometry and Isothermal Transport Properties of La₀.₁Sr₀.₉Co₀.₈Fe₀.₂O₃₋₋d: Ha-Ni Im; Sun-Ju Song; ‘Chonnam National University

11:00 AM Invited
Redox Capacity of Ultrathin CeO₂₋₋d Depends Non-monotonically on Large Biaxial Strain: William Chueh; ‘Stanford University

11:40 AM
Direct Measurement of Charge and Electrostatic Potential Distribution in Non-stoichiometric Nano Magnesium Aluminate Spinel: Mahdi Halabi; Amit Kohn; Shmuel Hayun; ‘Department of Materials Engineering, Ben-Gurion University of the Negev, Israel; ‘Department of Materials Science and Engineering, Tel Aviv University, Israel

Joining of Advanced and Specialty Materials (JASM XVIII) — Friction Stir Welding
Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Hartin Institute of Technology; Darren Barbork, AZZ|WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Monday AM Room: 155B
October 24, 2016 Location: Salt Palace Convention Center

Session Chairs: Judy Schneider, University of Alabama in Huntsville; Yuri Hovanski, Pacific Northwest National Laboratory

8:00 AM Keynote
Friction Stir Welding: Benefits and Unique Issues: Murray Mahoney; ‘Retired from Rockwell Scientific

8:40 AM
3D Visualization of Elemental Tracer Foils after Friction Stir Welding: Richard Fonda; Amanda Levinson; Keith Knipling; ‘Naval Research Laboratory

9:00 AM
Interpretation of Friction Stir Welding Flow Paths: Judith Schneider; Josef Cobb; ‘University of Alabama at Huntsville; ‘Mississippi State University

9:20 AM
Joining Dissimilar Materials with Friction Stir Scribe Technology: Piyush Upadhyay; Yuri Hovanski; Saumyadeep Jana; Leo Fifield; ‘Pacific Northwest National Laboratory

9:40 AM
Joining of Polymer Composite to Advanced High Strength Steel by Friction Bit Joining Process: Hoonmo Park; Yong Chee Lim; Jong Khak Keum; Junho Jang; Zhili Feng; ‘Hyundai Motor Company; ‘Oak Ridge National Lab

10:00 AM Break

10:20 AM Invited
Recent Developments on FSW of High Temperature Alloys: Antonio Ramirez; ‘The Ohio State University

46 OCTOBER 23 – 27, 2016 | SALT PALACE CONVENTION CENTER | SALT LAKE CITY, UTAH USA
Enabling Curvilinear, Dissimilar Alloy Tailor-welded Blanks

10:40 AM

Microstructural Evolution of Friction Stir Welded Steel Joints: Yisae Maeda1; Tomoki Matsuoka1; Tomokazu Sano1; Akio Hirose1; Atsushi Takada1; Munee Matsushita1; Naoya Hayakawa2; Kenji Oi2; Osaka University; 'Steel Research Laboratory, JFE Steel Corporation

11:00 AM

In-situ Microstructure Distribution during Friction Stir Welding of Austenite Stainless Steel: Fengchao Liu1; Tracy Nelson1; Brigham Young University

11:20 AM

Quantitative Microstructure Study of High Speed FSW Aluminum Alloy: Jingyi Zhang1; Piyush Upadhya2; Yuri Hovanski2; David Field1; Washington State University; 'Pacific Northwest National Laboratory

11:40 AM

Enabling Curvilinear, Dissimilar Alloy Tailor-welded Blanks: Yuri Hovanski1; Piyush Upadhya1; Dustin Marshall1; Thomas Luzanski1; Pacific Northwest National Laboratory; 'TWB Company

Light Metal Technology — Aluminum Technology

Program Organizer: Xiaoming Wang, Purdue University

Monday AM Room: 150C Location: Salt Palace Convention Center

Session Chairs: Qiang Zhu, General Research Institute for Non Ferrous Metals; Xiaoming Wang, Purdue University

8:00 AM Keynote

Advanced Light Metals and Manufacturing for Structural Applications: Alan Luo1; The Ohio State University

8:40 AM Invited

Mechanical Properties of AlMgSi Alloys as a Function of Microstructure and Thermomechanical Processing: Alexander Wimmer1; Neuman Aluminium

9:00 AM

Numerical Simulation and Experimental Validation of Hydroforming of Square Cups Using Cryorolled Aluminum Alloy Sheets: Fatmum Feyissa1; Ravi Digavali1; Indian Institute of Technology Delhi; 'Indian Institute of Technology Delhi

9:20 AM

Influence of Zirconium on the Growth of Al3Ti and TiB2 Particles in Aluminum Alloys: Habin Ma1; Xingtao Liu1; Xiaoming Wang1; Purdue University

9:40 AM Invited

Investigation of the Thermal Stability during Thermal Exposure of A201, 319s and 2618 Alloys: Junzhen Gao1; Qiang Zhu1; Daquan Li1; Yonglin Kang1; General Research Institute for Nonferrous Metals; 'University of Science and Technology Beijing

10:00 AM Break

10:20 AM

Constitutive Behavior of As-quenched Al-Cu-Mn Alloy Considering Influence of Casting Porosity: Gang Wang1; Wenguang Wang1; Yisen Hu1; Guannan Guo2; Yiming Rong1; Institute of Manufacturing Engineering, Tsinghua University; 'Worcester Polytechnic Institute; 'South University of Science and Technology

10:40 AM

Metallurgical Bonding between Cast-in Ferrous Inserts and Aluminum: Carl Soderberg1; Diran Apelian1; Worcester Polytechnic Institute

11:00 AM Invited

Crystallographic and Evolution of Intermetallic Phases in Al-Fe Reaction in Soldering Region of the Die Casting of Aluminum Alloys: Jie Song1; Xiaoming Wang2; Tony DenOtDen3; Qingyou Han4; Yao Fu4; Colorado School of Mines; 'Purdue University; 'Fiat Chrysler Automobiles; 'Oak Ridge National Laboratory

11:20 AM Invited

Coupling Of Distortations and Precipitates: Impact on the Mechanical Behavior of Ultralfine Grained Al–Zn–Mg Alloys: Kaka Ma1; Hao Hu1; Hanrui Yang1; Troy Topping2; Ali Yousefian3; Enrique J. Lavernia4; Julie Schoenung4; Colorado State University; 'University of California, Davis; University of California, San Diego; 'University of California, Davis; Washington State University; 'University of California, Davis; California State University; 'Boeing Research and Technology; 'University of California, Irvine; University of California, Davis

Materials Degradation in Supercritical CO2 Power Cycles — High-temperature Oxidation in Supercritical CO2

Program Organizers: Omer Dogan, DOE National Energy Technology Laboratory; Julie Tucker, Oregon State University; Briggs White, DOE National Energy Technology Laboratory

Monday AM Room: 250D Location: Salt Palace Convention Center

Session Chairs: Monica Kapoor, National Energy Technology Laboratory; Charles Lewinsohn, Ceramatec

8:00 AM

An Update on Oxidation and Carburization of Structural Alloys in Supercritical CO2 for Transformational Fossil Energy Systems: John Shingledecker1; Steve Kung1; David Thimsen1; Brett Tossey2; Ian Wright3; Adrian Sabab4; Electric Power Research Institute; 'DNV-GL; 'WrightIT; 'Oak Ridge National Laboratory

8:20 AM

High Temperature Oxidation of Ni-base Alloys and Austenitic Stainless Steels in Supercritical CO2 for Power Systems Applications: Gordon Holcomb1; Omer Dogan1; Casey Carney2; Kyle Rozman1; Jeffrey Hawk1; National Energy Technology Laboratory; 'National Energy Technology Laboratory and AECOM

8:40 AM

Effect of Pressure and Thermal Cycling on Compatibility in CO2 for Concentrated Solar Power Applications: Bruce Pint1; R Breshe1; J Keiser1; Oak Ridge National Laboratory

9:00 AM

High-temperature Early Stage Oxidation of Alloy 617 in CO2: Richard Olesuk1; John Baltrus2; Casey Carney2; Jinchao Nakano3; Gordon Holcomb1; Omer Dogan1; National Energy Technology Laboratory, Albany, OR; 'National Energy Technology Laboratory, Pittsburgh, PA

9:20 AM

Oxidation and Carburization of 9Cr Ferritic Alloys for the Structural Components of SC-CO2 Brayton Cycle: Muhammet Ark1; David Adam1; Jacob Mahaffey1; Andrew Brittian1; Mark Anderson1; Kumar1; University of Wisconsin
9:40 AM  
Effects of Various Coatings on Carburation Resistance of 316LN Stainless Steel in High Temperature S-CO₂ Environment: Sung Hwan Kim¹; Ho Jung Lee¹; Obulan Subramanian Gokul¹; Changheui Jang¹; ¹KAIST

10:00 AM  
Break

10:20 AM  
Supercritical CO₂ Round Robin Test Program Update: Julie Tucker²; ²Oregon State University

10:40 AM  
Corrosion Behavior of Iron-nickel-chrome Alloy in Supercritical CO₂: Lucas Teeters¹; Benjamin Adam¹; Jacob Mahaffey¹; Mark Anderson¹; Julie Tucker¹; ¹Oregon State University; ²University of Wisconsin-Madison

11:00 AM  
Compatibility of Structural Alloys in Supercritical CO₂ for Concentrated Solar Power Energy Generation: Robert Brese¹; ¹Oak Ridge National Laboratory; University of Tennessee

10:40 AM  
Molecular Dynamics Simulation of Defect Production in FeCr Alloys: Ram Devanathan¹; ¹Pacific Northwest National Laboratory

8:40 AM  
Invited
D. T. Rankin Award Lecture: Thermochemical Modeling of Nuclear Fuel and Its Use in Fuel Performance Codes: Theodore Besmann¹; Benjamin Gaston¹; Jacob McMurray¹; Srdjan Simunovic²; Markus Piro³; ¹University of South Carolina; ²Oak Ridge National Laboratory; ³Canadian Nuclear Laboratories

8:40 AM  
Invited
Molecular Dynamics Simulation of Defect Production in FeCr Alloys: Ram Devanathan¹; ¹Pacific Northwest National Laboratory

9:20 AM  
Precipitation Modeling in Nuclear Steels with Cluster Dynamics: Dane Morgan¹; Huibin Ke¹; Mahmood Mamivand¹; Jia-Hong Ke¹; Nicholas Cunningham¹; Peter Wells¹; G. Odete¹; ¹University of Wisconsin - Madison

10:00 AM  
Break

10:20 AM  
Development of a Multi-component (Al, Am, Fe, Ga, Ni, Pu, and U) CALPHAD Database for Complex Actinide-based Systems: Aurelien Perron¹; Patrice Turchi¹; Alexander Landa¹; Benoit Oudot¹; Brice Ravat¹; Francois Delaunay¹; ¹Lawrence Livermore National Laboratory; ²CEA-Valduc

10:40 AM  
Coupling Radiation Damage from Binary Collision Monte Carlo to Phase Field Microstructure Evolution: Daniel Schwert¹; ¹Idaho National Laboratory

11:00 AM  
Effects of the Two-temperature Model on Cascade Evolution in Ni and Ni-based Alloys: Eva Zarkadoula¹; German Samolyuk¹; William Weber¹; ¹Oak Ridge National Laboratory; ²University of Tennessee

11:20 AM  
Efficient Deterministic Simulation of Phonon Transport in Nuclear Materials: Jackson Harter¹; Laura de Sousa Oliveira¹; Aria Hosseini¹; Todd Palmer¹; P. Alex Greaney¹; ¹Oregon State University; ²University of California - Riverside

11:40 AM  
CALPHAD Assessment of the Carbon-zirconium System: Theresa Davey¹; Suzana G Fries²; Michael W Finnis¹; ¹Imperial College London; ²Ruhr-Universität Bochum

Materials Genome Initiative/Materials Today - Data Grand Challenge — Materials Science and Engineering Data Grand Challenge
Program Organizers: Charles Ward, Air Force Research Laboratory; James Warren, Nist; Alexis Lewis, National Science Foundation; Baptiste Gault, Max-Planck-Institut für Eisenforschung GmbH
Monday AM  
October 24, 2016  
Location: Salt Palace Convention Center
Room: 255E

Session Chairs: Charles Ward, Air Force Research Laboratory; James Warren, National Institute of Standards and Technology; Alexis Lewis, National Science Foundation; Joe d’Angelo, Elsevier Ltd.

8:00 AM  
Invited
Structure-based Energy Models from Simulated Al Grain Boundary Datasets: Joshua Gomberg¹; Andrew Medford¹; Surya Kalidindi¹; ¹Georgia Institute of Technology

8:20 AM  
Invited
The Thermodynamic Scale of Inorganic Crystalline Metastability: Wenhao Sun¹; Stephen Dacek¹; Shuai Ping Ong¹; Geoffrey Hautier¹; Anubhav Jain¹; William Richards¹; Anthony Gams¹; Kristin Persson¹; Gerbrand Ceder¹; ¹Massachusetts Institute of Technology; ²University of California, San Diego; ³University Catholique de Louvain; ⁴Lawrence Berkeley National Laboratory; ⁵Lawrence Berkeley National Laboratory; ⁶University of California, Berkeley

8:40 AM  
Invited
Deceptively Simple and Endlessly Complicated: Machine Learning Prediction and Experimental Confirmation of Novel Heusler Compounds: Anton Olinsky³; Erin Antonio³; Taylor Sparks³; Leila Ghadbeigi³; Michael Gautois³; Bryce Meredig³; Arthur Mar³; ¹University of Alberta; ²Citrine Informatics; ³University of Utah; ⁴University of Cambridge; ⁵Citrine Informatics

9:00 AM  
Invited
Optimal Design of Atomic Crystalline Solids using Kernel Regression Property Prediction Models: Bruno Abreu Calfa¹; John Kitchin¹; ¹University of Wisconsin-Madison; ²Carnegie Mellon University

*Program Organizers:* Josef Matyas, Pacific Northwest National Laboratory; Jake Amoroso, Savannah River National Laboratory; Isabelle Giboire, CEA Marcoule; Raghunath Kanakala, University of Idaho; Yutai Katoh, Oak Ridge National Laboratory; Stefan Neumeier, Forschungszentrum Juelich GmbH; David Shoessmith, Western University; Kumar Sridharan, University of Wisconsin; David Enos, Sandia National Laboratories; Charles Bryan, Sandia National Laboratories

*Monday AM*  
*Room:* 251D  
*Location:* Salt Palace Convention Center  
*Session Chairs:* Josef Matyas, PNLL; Kevin Fox, SRNL

8:00 AM Invited  
Advanced Waste Form Technologies with a Focus on Hot Isostatic Pressing:  
*Dan Gregg*¹; *Lou Vance*¹; *ANSTO*

8:40 AM Invited  
New Binders, New Trends, New Potentialities in Waste Cementation:  
*Fabien Frizon*¹; *Céline Cau dit Coumes*¹; *David Lambertin*¹; *Arnaud Pourlesquen*¹; *CEA*

9:20 AM  
Silver-functionalized Silica Aerogel for Highly Efficient Capture and Sequestration of Iodine from Low-activity Waste Off-gas Condensate:  
*Josef Matyas*¹; *Matthew Asmussen*¹; *Nick Qafoku*¹; *Pacific Northwest National Laboratory*

9:40 AM  
Immobilisation of I in AgI Sodalite, Ag₅Si₃O₁₂·I:  
*Lou Vance*¹; *Dan Gregg*¹; *Charmaine Grant*¹; *A Stopic*¹; *Ewan Maddrell*¹; *ANSTO; National Nuclear Laboratory*

10:00 AM Break

10:20 AM Invited  
Study of Fatigue Crack Growth Analysis in Microalloyed Steel (38MnV6) Using Digital Image Correlation:  
*Akshay Patil*¹; *Krishna Jonnalagadda*; *Suraj Toppo*¹; *Bharat Forge Ltd.; Indian Institute of Technology Bombay*

10:40 AM  
Effect of Tempering Temperature on the Microstructure, Mechanical and Magnetic Properties of 26NiCrMoV11-5 Steel:  
*Santosh Mane*¹; *Nityanand Prabhu*; *Sagar Bapat*; *Rajkumar Singh*²; *Bharat Forge Limited; Indian Institute of Technology Bombay*
Materials Selection and Characterization for Corrosion Control — Materials Selection: Session I
Program Organizers: Ajit Mishra, Haynes International; Matthew Asmussen, Pacific Northwest National Laboratory; Eric Schindelholz, Sandia National Laboratories; Florent Bocher, Southwest Research Institute; Guang-Ling Song, Xiamen University; Jeffery Thomson, Oak Ridge National Lab; Kevin Lambrych, Ashland Performance Materials; Gary Coates, Nickel Institute / Garcoa Metallurgical; Raul Rebak, GE Global Research

Monday AM
October 24, 2016
Room: 253B
Location: Salt Palace Convention Center

Session Chairs: Matthew Asmussen, Pacific Northwest National Laboratory; Ajit Mishra, Haynes International

8:00 AM Keynote
Advanced Electrochemical, Spectroscopic and Microscopic Techniques for the Study of Corrosion Processes: David Shoesmith; Western University

8:40 AM
Role of Admixtures in Concrete during Corrosion of Rebar: Effect of Glycerol and Silica Formulations: Robert Blair; Batric Pesic; Krishnan Raja; Ian Ehrsam; Jacob Kline; University of Idaho

9:00 AM
Corrosion Analysis of Wire Cleaning Processes for Biological Use Wire: Daniel Sullivan; Brad Burrows; Eric Ross; EAG

9:20 AM
Materials Selection for Use in Concentrated Acids: Ajit Mishra; Haynes International

9:40 AM
Correlation of Grain Boundary Plane, Sensitization and Corrosion Resistance: Matthew Hartshorne; Mitra Taheri; Drexel University

10:00 AM Break

Measurement and Modeling of Medium-to-high Strain Rate Deformation — Medium-to-high Strain Rate Deformation I
Program Organizers: Ivi Smid, Penn State; Tim Eden, Penn State; Susan Hill, University of Dayton Research Institute

Monday AM
Room: 251A
Location: Salt Palace Convention Center

Session Chair: Ivi Smid, Penn State

8:00 AM Introductory Comments

8:20 AM Invited Experimental Verification and Computational Modeling for High Strain Rate Additive Manufacturing: Danielle Cote; Baillie McNally; Jeremy Schreiber; Victor Champagne; Richard Sisson; Worcester Polytechnic Institute; Penn State Applied Research Lab; Army Research Laboratory

8:40 AM
Measuring Dynamic Fracture Toughness Using a Digital Image Correlation: Carl Cady; Cheng Liu; Manuel Lovato; Arthur Nobile; Los Alamos National Laboratory

9:00 AM
Wave Propagation in Ballistic Gelatin: Ghatu Subhash; University of Florida

9:20 AM
High Strain Rate Testing and Modeling of a Woven E-glass / Vinylester Composite in Dry and Saturated Conditions: David Hufner; Susan Hill; General Dynamics Electric Boat; University of Dayton Research Institute

9:40 AM
On the Rate and Temperature Dependent Evolution of Dislocation Density in BCC Crystals: Ben Szajewski; Abigail Hunter; Dean Preston; Los Alamos National Laboratory

10:00 AM Break

10:20 AM Experimental Investigation of the Internal Heating of Metals in a Wide Range of Strain Rates Using Simultaneous Digital Image Correlation and High Speed Infrared Imaging: Jeli-Tapani Kuokkala; Jarrod Smith; Jeremy Seidt; Amos Gilat; Tampere University of Technology; The Ohio State University

10:40 AM
A Molecular Dynamics Study of Dislocation Density Generation and Plastic Relaxation during Shock of Single Crystal Cu: Mehdiad Mirzaei Sichani; Douglas Spearot; University of Arkansas; University of Florida
Mechanochemical Synthesis and Reactions in Materials Science — Nanocrystalline Alloys and Composites
Program Organizers: Antonio Fuentes, Cinvestav del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, UQTR

Monday AM  Room: 155A
October 24, 2016  Location: Salt Palace Convention Center

Session Chairs: Challapalli Suryanarayana, University of Central Florida; Mamoru Senna, Keio University

8:00 AM Invited
Conferences in the History of Mechanochemical Processing: Laszlo Takacs¹; ¹University of Maryland Baltimore County

8:40 AM Keynote
Mechanical Attrition as a Non-equilibrium Processing Method: Over 33 Years of Research at North Carolina State University: Carl Koch¹; ¹North Carolina State University

9:20 AM
Influencing the Creep Behavior of Particle-reinforced Aluminium Matrix Composites (AMCs): Steve Siebeck¹; Daisy Nestler¹; Bernhard Wielage¹; Guntram Wagner¹; ¹TU Chemnitz

9:40 AM Invited
Synthesis and Characterization of Austenitic Stainless Steel Powder Alloys through Mechanical Alloying: Ahmed Al-Joubori¹; C. Suryanarayana¹; ¹University of Central Florida

10:00 AM
Mechanochemical Synthesis of Al-C Composites: Hyunjoo Choi¹; ¹Kookmin University

10:20 AM Break

10:40 AM Keynote
A Novel Mechanochemical Route for Li-ion Friendly Nanomaterials: Mamoru Senna¹; ¹Keio University

11:20 AM Invited
Application of Mechanical Alloying/Mechanochemistry for Synthesis of Functional and Structural Materials: Dariusz Oleszak¹; ¹Warsaw University of Technology

11:40 AM
Ultrafast Synthesis of Copper Sulfides by Mechanochemistry: Matej Baláž¹; Anna Zorkovská¹; Nina Daniec¹; Farit Urkachev¹; Peter Baláž¹; Zdenka Bujnáková¹; Jaroslav Briancin¹; ¹Institute of Geotechics; ¹Jožef Stefan Institute; ¹Sobolev Institute of Geology and Mineralogy, Russian Academy of Sciences

Multi Scale Modeling of Microstructure Deformation in Material Processing — Multi Scale Modeling of Microstructure Deformation in Material Processing I
Program Organizers: Łukasz Madej, AGH University of Science and Technology; Krzysztof Muszka, AGH University of Science and Technology; Danuta Szelig, AGH University of Science and Technology

Monday AM  Room: 252A-B
October 24, 2016  Location: Salt Palace Convention Center

Session Chairs: Danuta Szelig, AGH University of Science and Technology; Krzysztof Muszka, AGH University of Science and Technology

8:00 AM Invited
Microstructure as Data: Microstructure Quantification and Analysis for Materials Design: Mark Tschopp¹; ¹Army Research Laboratory

8:40 AM A Database of Elastic Properties of Biocompatible Ti-alloys Built from First-principles Calculations and CALPHAD Modeling Approach: Cassie Marker¹; Shun-Li Shang¹; Ji-Cheng Zhao¹; Zi-Kui Liu¹; ¹The Pennsylvania State University; ¹The Ohio State University

9:00 AM
Phase-field Approach for Three-dimensional Recrystallization and Grain Growth in Ti-Al Alloys Based on Crystal Plasticity Theory: Arunabha Roy¹; Sriram Ganesan¹; Susan Gentry¹; Anna Trump¹; John Allison¹; Veera Sundararaghavan¹; Katsuyo Thornton¹; ¹University of Michigan at Ann Arbor

9:20 AM
Possibilities of Assessment Of strain Inhomogeneity in Ti Alloys Using Multiscale Modeling Approach: Krzysztof Muszka¹; Łukasz Madej¹; Brad Wynn¹; ¹AGH University of Science and Technology; ¹The University of Sheffield

9:40 AM
Investigation of Neighborhood Effects on Crack Initiation Sites in Different Ti Microstructures: Vahid Tari¹; Michael Groeber¹; Adam Pilchak¹; Anthony Rollett¹; ¹Carnegie Mellon University; ¹Air Force Research Laboratory (AFRL/RXCM)

10:00 AM Break

10:20 AM Identification of the Fracture Model Based on Coupled Cellular Automata
Finite Element Approach: Konrad Perzynski¹; Yuriy Ososkov¹; David S. Wilkinson¹; Mukesh Jain¹; Łukasz Madej¹; ¹AGH University of Science and Technology; ¹US Steel Canada; ¹McMaster University

10:40 AM
Prediction of Crack Propagation in Single Crystal Material Using Fast Fourier Transform: Sen Wang¹; Vahid Tari¹; Anthony Rollett¹; ¹Carnegie Mellon University

11:00 AM
Modeling the ViscoPlastic Behavior of Commercial Aluminum Alloys as a Function of Recrystallized Grain Fractions and Texture: Khaled Adam¹; ¹WSU
11:20 AM
Cellular Automata Based Model of Microstructure Evolution during Hot Deformation of HSLA Steel: Deepak Kundalkar; Rajkumar Singh; Asim Tewari; 'Department of Mechanical Engineering, IIT Bombay; 'Kalyani Center for Technology and Innovation

Next Generation Biomaterials — Session I
Program Organizers: Roger Narayan, UNC/NC State University; Sundeep Mukherjee, University of North Texas

Monday AM Room: 259 Location: Salt Palace Convention Center

Session Chairs: Rajarshi Banerjee, University of North Texas; Leif Hermansson, Doxa AB

8:00 AM Invited
Additive Manufacturing of Functionally Graded Titanium Alloys for Biomedical Devices: Srinivas Aditya Mantri; Trina Majumdar; Calvin Mikler; Tushar Borkar; Chris Yannetta; Rubens Caram; Nick Birbilis; Rajarshi Banerjee; 'University of North Texas; 'Monash University; 'Cleveland State University; 'University of Campinas

8:40 AM
Development of Novel Implants with Embedded Therapeutics Using Additive Manufacture: Parastoo Jamshidi; Sophie Cox; Moataz Attallah; Hany Hassanin; Liam Grover; Duncan Shepherd; Owen Addison; 'University of Birmingham

9:00 AM
Electric Field-mediated Growth of Osteoblast on 3D Printed Ti-6Al-4V Alloy Porous Scaffolds under Dynamic Condition: Alok Kumar; Krishna Chaitanya Nune; Devesh Misra; 'University of Texas at El Paso

9:20 AM Invited
On Additive Manufacturing and Restoration of Tooth Cavities Using Chemically Bonded Ceramics - an Overview: Leif Hermansson; 'Doxa AB

10:00 AM Break

10:20 AM
Osteoblast Functions in Functionally Graded Ti-6Al-4V 3D Printed Mesh Structures: Krishna Chaitanya Nune; Devesh Misra; Li SJ; Hao YL; Yang R; 'University of Texas at El Paso; 'Chinese Academy of Sciences

10:40 AM Invited
Advanced Freeze Casting for Mimetic Bone and Biomaterials: Steven Naleway; Marc Meyers; Joanna McKittrick; 'University of Utah; 'University of California, San Diego

11:20 AM
Fabrication of Porous Bioabsorbable Magnesium Alloys: Jennifer Scozzari; Marcus Young; 'University of North Texas

11:40 AM Invited
Bioactive Glass Hydrogel Composites Potential for Skeletal Tissue Repair: Anthony Wren; 'Alfred University

MONDAY AM

8:00 AM Invited
Metal Oxide and Graphene Based Nanomaterials for Solar Cells Application: Yoon-Bong Hahn; 'Chonbuk National University

8:40 AM
CuO Impregnated on Shape Controlled CeO2 Support and Their Catalytic Activity: Shaikh Tofazzel Hossain; Ruigang Wang; 'Youngstown State University

9:00 AM
Disposable Optical Immunoaffintiy Biosensor with the Sensitivity of Photomultiplier Tube (PMT): Jae-Chul Pyun; Byong-Gi Ahn; Jae-Gwan Park; Hong-Rae Kim; Young-Wook Chang; 'Yonsei University; 'Samsung Electronics; 'Korea Institute of Science and Technology (KIST)

9:20 AM
Dopamine Sensor Using Cerium Oxide Immobilized on Highly Ordered Polymer Nanopillars: Swetha Barkam; Madison Peppler; Soumen Das; Shashank Saraf; Chao Li; Jason Thomas; Sudipta Seal; 'University of Central Florida

9:40 AM
Eco-friendly Dyeing of Electrospun Cellulose Nanofibers with Reactive Dye: Soudabeh Hajahmadi; 'Najafabad Branch, Islamic Azad University

10:00 AM Break

10:20 AM
High Temperature Stability of Nano-scale Grains in Oxygen Free Fe-10Cr Powders: Peiman Shahbeigi Roodposhti; Mostafa Saber; Harold Brody; Ronald Scattergood; 'University of Connecticut; 'Portland State University; 'North Carolina State University

10:40 AM
Interaction of DNA and RNA Molecules with Nanoclays that Have Potential for Use in Gene Therapy: Archana Gajjar; 'Texas State University
### Perspectives for Emerging Materials Professionals — Perspectives for Emerging Materials Professionals I

**Program Organizers:** Rachel Bethancourt, Fitbit; Laura Jean Weidman, University of Maryland

**Monday AM**

**Room:** 251F  
**Location:** Salt Palace Convention Center

**Session Chair:** Rachel Bethancourt, Emerging Professionals Committee

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td>Invited</td>
<td>Engineering Survivor: Perspectives on Mid-career Job Moves, Layoffs, and Corporate Structure Changes: Emily Kinser; IBM/Yale University</td>
</tr>
<tr>
<td>8:40 AM</td>
<td>Invited</td>
<td>How to Aim at a Career as a Leader in Industry and End up as a Happy Professor: Richard Vinci; Lehigh University</td>
</tr>
<tr>
<td>9:00 AM</td>
<td></td>
<td>Preparing for a Career in Materials Research: Ying Chen; Rensselaer Polytechnic Institute</td>
</tr>
<tr>
<td>9:20 AM</td>
<td></td>
<td>Where Are You Headed? You Never Know. Follow Your Interest: Jerome Klawitter; Integra Life Sciences</td>
</tr>
<tr>
<td>9:40 AM</td>
<td></td>
<td>Question and Answer Period</td>
</tr>
<tr>
<td>10:00 AM</td>
<td></td>
<td>Panel Discussion</td>
</tr>
</tbody>
</table>

### Phase Transformations in Ceramics: Science and Applications — Nanoscale Phenomena

**Program Organizers:** Pankaj Sarin, Oklahoma State University; Ivar Reimanis, Colorado School of Mines; Waltraud Kriven, University of Illinois at Urbana-Champaign

**Monday AM**

**Room:** 255C  
**Location:** Salt Palace Convention Center

**Session Chair:** Waltraud Kriven, University of Illinois at Urbana-Champaign

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td>Invited</td>
<td>Surface Energy is a Thermodynamic Driver for Phase Transformations in Nanoscale Materials: Alexandra Navrotsky; University of California, Davis</td>
</tr>
<tr>
<td>8:40 AM</td>
<td></td>
<td>Thermal Analysis and Calorimetry Applied to the Thermodynamic Studies of Phase Transformations in Ceramics and Glasses: Kristina Lilova; Link Brown; Setaram Inc.</td>
</tr>
<tr>
<td>9:00 AM</td>
<td></td>
<td>Enhancement of the Electrocaloric Effect near the Diffuse Critical Point in Relaxor Ferroelectric Ceramics: Zdravko Kuzjak; Nikola Novak; Brigita Rozic; Rasa Pirc; Jozef Stefan Institute</td>
</tr>
<tr>
<td>9:20 AM</td>
<td></td>
<td>Emergence and Extinction of a New Phase during On-off Experiments Related to Flash Sintering of 3YSZ: Rishi Raj; Jean-Marie Lebrun; John Francis; Kevin Seymour; Waltrud Kriven; University of Colorado</td>
</tr>
<tr>
<td>10:00 AM</td>
<td></td>
<td>Break</td>
</tr>
<tr>
<td>10:20 AM</td>
<td>Invited</td>
<td>Nanoscale Phase Diagrams for Zirconia Based Systems: Ricardo Castro; John Dzarin; Robon Grosso; Eliana Muccillo; University of California, Davis; IPEN</td>
</tr>
<tr>
<td>11:00 AM</td>
<td></td>
<td>Patterning Oxide Nanopillars at the Atomic Scale by Phase Transformation: Chunlin Chen; Frank Lichtenberg; Yuichi Ikuhara; Johannes Georg Bednorz; Tohoku University; ETH Zürich; The University of Tokyo; Zürich Research Laboratory</td>
</tr>
<tr>
<td>11:20 AM</td>
<td></td>
<td>Nanoscale Electrical Characterization of the Metal-insulator Transition in Vanadium Dioxide Thin Films: James Steffes; Aliya Carter; Raegan Johnson-Wilke; Paul Clem; Bryan Huey; University of Connecticut; Sandia National Laboratory</td>
</tr>
<tr>
<td>11:40 AM</td>
<td></td>
<td>Shape Memory in Nano-sized Oxides: Xiaoxing Ke; Beijing University of Technology</td>
</tr>
</tbody>
</table>

### Responsive Functional Nanomaterials — Responsive Functional Nanomaterials - General

**Program Organizers:** Jiahua Zhu, The University of Akron; Ziqi Sun, Queensland University of Technology; Liwen Mu, The University of Akron

**Monday AM**

**Room:** 260B  
**Location:** Salt Palace Convention Center

**Session Chairs:** Ziqi Sun, Queensland University of Technology; Jiahua Zhu, The University of Akron

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td>Break</td>
<td></td>
</tr>
<tr>
<td>8:40 AM</td>
<td>Keynote</td>
<td>Enhancing Photovoltaic Response of Solar Cell Devices Using Nanomaterials: John Bell; Hongxia Wang; Aijun Du; The University of Akron; Queensland University of Technology</td>
</tr>
<tr>
<td>9:20 AM</td>
<td></td>
<td>Assembling Freestanding Conductive Polymer Tube Arrays at Liquid/Liquid Interface: Tuo Ji; Long Chen; Jiahua Zhu; The University of Akron</td>
</tr>
<tr>
<td>9:40 AM</td>
<td></td>
<td>Some Keys to Design/Propose New Functional Materials: Taizo Sasaki; National Institute for Materials Science</td>
</tr>
<tr>
<td>9:40 AM</td>
<td></td>
<td>Preparing of Thermosensitive Magnetic Surface Protein Imprinted Microsphere and Its Application for Protein Recognition: Qiuyu Zhang; Northwestern Polytechnical University</td>
</tr>
<tr>
<td>10:00 AM</td>
<td></td>
<td>Invited</td>
</tr>
<tr>
<td>10:20 AM</td>
<td></td>
<td>Preparation of Thermosensitive Magnetic Surface Protein Imprinted Microsphere and Its Application for Protein Recognition: Qiuyu Zhang; Northwestern Polytechnical University</td>
</tr>
<tr>
<td>10:40 AM</td>
<td></td>
<td>Engineering Iron Oxide Nanoparticles for Magnetic Imaging Applications: Anna Cristina Samia; Case Western Reserve University</td>
</tr>
<tr>
<td>11:00 AM</td>
<td></td>
<td>Nanomagnetism Tunned by Crystal Facet Engineering: Wenzhang Li; Ziqi Sun; Rongkun Zheng; Xiangyuan Cui; Shanghai University; Queensland University of Technology; The University of Sydney</td>
</tr>
</tbody>
</table>

---

**MONDAY AM**
11:20 AM  Invited  
Development of Metal Nanoparticle as Direct Visible Light Photocatalyst for Numerous Organic Syntheses: Sarina Sarina1; Huai Yong Zhu1; ‘Queensland University of Technology

11:40 AM  Invited  
Wet Chemical Synthesis of High-performance Graphene-like Ultrathin 2D Metal Oxide Nanosheets: Ziqi Sun1; ‘Queensland University of Technology

---

**S2P: Semi-solid Processing of Alloys and Composites — Opening Session**  
*Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group*

Monday AM  
Room: 151G  
Location: Salt Palace Convention Center

**Session Chair:** Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group

8:00 AM  Keynote  
Some Reflections On What Semi-Solid Processing Research has Taught Us: Merton Flemings1; ‘Massachusetts Institute of Technology

8:15 AM  Keynote  
Thixomolding at 25 Years: Raymond Decker1; ‘Thixomat, Inc

8:45 AM  Keynote  
Semi-solid Metal Processing from an Industrial Perspective: The Best is Yet to Come: John Jorstad1; ‘J L J Technologies Inc

9:25 AM  Keynote  
Modelling of Semi-Solid Processes: Michael Modigell1; ‘RWTH Aachen, Germany and GUTech Muscat, Saltante of Oman

---

**S2P: Semi-solid Processing of Alloys and Composites — Session I**  
*Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group*

Monday AM  
Room: 151A  
Location: Salt Palace Convention Center

**Session Chair:** Annalisa Pola, University of Brescia

10:30 AM  
Comparison of Morphological Evolution of Al-7wt%Si-2.5wt%Cu Alloy Produced by Direct Chill Casting/Electromagnetic Stirring and ECAP: Luis Torres1; Cecilia Proni1; Eugenio Zoqui1; ‘University of Campinas

11:00 AM  
Crystallisation and Ripening Phenomena in Semi-solid Steels: Christoph Zang1; Michael Modigell1; Annalisa Pola1; Torsten Volkmann1; ‘RWTH Aachen, Germany and GUTech Muscat, Saltante of Oman

---

**Scaling-up from the Laboratory: Strategies, Examples, Challenges, and/or Solutions for Advanced Metal Manufacturing — Technology Scale-up Session I**  
*Program Organizer: Babak Raeisinia, Novelis Global R&T Center*

Monday AM  
Room: 155C  
Location: Salt Palace Convention Center

**Session Chair:** Babak Raeisinia, Novelis Global R&T Center

8:00 AM  Introductory Comments - Babak Raeisinia

8:20 AM  Invited  
Materials Insertion Challenges in The Automobile Industry: Paul Krajewski1; ‘General Motors Company

9:00 AM  Invited  
Challenges of Transfer from Basic Research into Application of New Magnesium Alloys and Processes: Karl Kainer1; ‘Helmholtz-Zentrum Geesthacht

9:20 AM  Invited  
Scale-up of Innovative Forming Solutions from Scientific Fundamentals to Industrial Applications: Marion Merklein1; Julia Degner1; Michael Lechner1; Wolfgang Böhm1; ‘Friedrich-Alexander-Universität Erlangen-Nürnberg; ‘Neue Materialien Fürth GmbH
Shaping and Forming of Composite Materials — Shaping and Forming of Composite Materials
Program Organizers: Michael Miles, Brigham Young University; David Fullwood, Brigham Young University; Andrew George, Brigham Young University
Monday AM Room: 151C
October 24, 2016 Location: Salt Palace Convention Center
Session Chair: To Be Announced

8:00 AM Manufacturing Defects in Composite Sporting & Recreational Products: Scott Beckwith1; 1BTG composites Inc. / SAMPE

8:20 AM Resin Infusion/Liquid Composite Molding: Review of Last 35 Years and Going Forward: Scott Beckwith1; 1BTG composites Inc. / SAMPE

8:40 AM Mechanical Properties of Braided Reinforcement with Snap-cure Polyurethane Resins in RTM Processes: Kyle Kinghorn1; David Fullwood1; Andy George1; 1BYU

9:00 AM Voids in Composites: Process Modeling and Mechanical Effects: Andrew George1; Sanjay Sisodia2; David Fullwood1; 1Brigham Young University; 2Uppsala University

9:20 AM Development of In-situ Monitoring Systems for the Thermoforming of Prepreg Composite Laminates: Patrick Land1; David Branson1; Richard Crossley1; Svetan Ratchev1; 1University of Nottingham

9:40 AM Production and Characterisation of a Thermoformed Complexly Curved Component from Thermoplastic FRP/Metal Laminate: Maik Trautmann1; Daisy Nestler1; Erik Schmitteck1; Guntram Wagner1; Tomasz Osiecki1; Lothar Kroll1; 1TU Chemnitz

Sintering and Related Powder Processing Science & Technologies — Sintering and Grain Growth I
Program Organizers: Ricardo Castro, University of California, Davis; Brady Butler, U.S. Army Research Laboratory; Olivia Graeve, University of California, San Diego; Eugene Olevsky, San Diego State University; Anders Eklund, Quintus Technologies, LLC.
Monday AM Room: 150E
October 24, 2016 Location: Salt Palace Convention Center
Session Chair: To Be Announced

8:00 AM Coarsening, Densification, and Grain Growth during Sintering of Nano-sized Powders: A Perspective: Zhigang Fang1; Hongtao Wang2; Vincent Kumar2; 1University of Utah; 2Kennametal Inc
8:40 AM
Stability of Intergranular Films in MgO-doped Bayer Alumina: Tobias Frech; Elizabeth Kupp; Charles Compson; Joe Atria; Gary Messing; 1The Pennsylvania State University; 2Alnatis, Inc.

9:00 AM
The Effects of Adding CuO and/or SiO2 on Low-temperature Sintering, Microstructural Development and Dielectric Properties of TiO2: Jiuyuan Nie; Mingde Qin; Naixie Zhou; Jian Luo; 1University of California San Diego

9:20 AM Invited
Control Oxide Sintering with and without Grain Growth: I-Wei Chen; 1University of Pennsylvania

10:00 AM Break

10:20 AM Invited
Sintering Force behind the Viscous Sintering of Two Particles: Fumihiro Wakai; Kota Katsura; Shun Kanchika; Yutaka Shinoda; Takashi Akatsu; Kazunari Shinagawa; 1Tokyo Institute of Technology; 2Saga University; 3Kagawa University

11:00 AM
Correlation between Particle Size and Grain Size Distributions in Single/Multiphase Ceramics: Keyur Karandikar; Austin Travis; Kenta Ohtaki; Martha Mecartney; Olivia Graeve; 1University of California, San Diego; 2University of California, Irvine

Surface Properties of Biomaterials — Processing, Coating and Surface Modifications
Program Organizers: Amit Bandyopadhyay, Washington State University; Susmita Bose, Washington State University; Mukesh Kumar, Biomet Inc; Jason Langhorn, DePuy Synthes Joint Reconstruction; Venu Varanasi, Texas A & M University

Monday AM
Room: 355B
Location: Salt Palace Convention Center

Session Chair: Jason Langhorn, DePuy Synthes Joint Reconstruction

8:00 AM Invited
Superhydrophobic Surfaces for Blood Contacting Medical Devices: Ketul Popat; 1Colorado State University

8:40 AM
Electrochemical Deposition for Tuning Hydroxyapatite Morphology: Nik Jinda; Manoj Mahapatra; 1UAB

9:00 AM
Long Term Silver Release Study Using Porous Titanium Implants with and without Surface Modification: Anish Shivaram; Susmita Bose; Amit Bandyopadhyay; 1Washington State University

9:40 AM Invited
Altering the Surface Chemistry of Silicon Nitride Bioceramics for Improved Osteointegration: Ryan Bock; Bryan McEntire; Wenliang Zhu; Elia Marin; Francesco Boschetto; Alfredo Rondinella; Yoshinori Marunaka; Tetsuya Adachi; Toshiro Yamamoto; Narisato Kanamura; Giuseppe Pezzotti; B. Sonny Bal; 1Amedica Corporation; 2Osaka University; 3National Institute of Technology, Suzuka College; 4University of Erlangen-Nuremberg

10:00 AM Break

10:20 AM
Silicon and Magnesium Doped Hydroxyapatite Coatings on Titanium Alloy Implants: Enhanced In Vivo Osseointegration in Rat Femur Defect Model: Dongxu Ke; Sam Robertson; Amit Bandyopadhyay; Susmita Bose; 1Washington State University

10:40 AM
Effects of Laser Etching on Cytotoxicity and Mechanical Properties of Polyetheretherketone: Andrew Decoster; Leijun Li; 1Weber State University; 2University of Alberta

11:00 AM Invited
Reduced Metabolic Activity of Porphyromas Gingivalis on Silicon Nitride Bioceramics: Giuseppe Pezzotti; Ryan Bock; Bryan McEntire; Erin Jones; Marco Boffelli; Wenliang Zhu; Greta Baggio; Leonardo Puppulin; Tetsuya Adachi; Toshiro Yamamoto; Narisato Kanamura; Yoshinori Marunaka; B. Sonny Bal; 1Kyoto Institute of Technology; 2Amedica Corporation; 3Osaka University; 4Kyoto Prefectural University of Medicine

11:20 AM
Biofilm Formation Behavior on Graphene in a Circulation-type Laboratory Biofilm Reactor: Hideyuki Kanematsu; Akiko Ogawa; Nobumitsu Hirai; Katsuhiko Sano; Michiko Yoshitake; 1National Institute of Technology, Suzuka College; 2D & D Corporation; 3National Institute for Materials Science

11:40 AM Invited
Electrophoretic Deposition as a Biofabrication Technique: Aldo Boccaccini; 1University of Erlangen-Nuremberg

Thermal Protection Materials and Systems — Thermal Protection Materials: Ablators and Ceramic Composites
Program Organizers: Sylvia Johnson, NASA Ames Research Center; Thomas Squire, NASA Ames Research Center; Jeff DeMange, University of Toledo

Monday AM
Room: 254B
Location: Salt Palace Convention Center

Session Chairs: Sylvia Johnson, NASA-Ames Research Center; Jeff DeMange, University of Toledo

8:20 AM
Determination of the Mechanical Properties of the ZURAM Ablative Material: Thomas Reimer; Christian Zuber; Jakob Rieser; Thomas Rothermel; 1DLR

9:00 AM
Influence of Aerogel Morphology and Reinforcement Architecture on Gas Convection in Aerogel Composites: Frances Hurwitz; Matthew Meyer; Haiquan Guo; Richard Rogers; Jeff DeMange; 1NASA Glenn Research Center; 2Universities Space Research Association (USRA); 3Ohio Aerospace Institute; 4University of Toledo

9:20 AM
In-situ Studies of the Pyrolysis of Phenolic Impregnated Carbon Ablator (PICA): Brody Bessire; Timothy Minton; 1Montana State University

9:40 AM
Thermal Testing of Ablators in the NASA Johnson Space Center Radiant Heat Test Facility: Steven Del Papa; 1NASA
10:20 AM Break

10:40 AM
Characterization and Modeling of Microstructure-sensitive Damage Formation/Propagation in Ceramic Continuous Fiber Reinforced Ceramic Matrix Composites: Craig Przybyla; Stephen Bricker; Jeff Simmons; Travis Whitlow; Michael Braginsky; Kaitlin Kollins; Air Force Research Laboratory; University of Dayton Research Institute; Southwest Ohio Council for Higher Education

11:00 AM
Silicon Carbide / Carbon Fibers for Use in Composites: John Garnier; Ken Koller; Shawn Perkins; Advanced Ceramic Fibers, LLC

11:20 AM
Unlocking the Thermal Protection Potential of Ceramic Matrix Composites: Robert Cook; Lancer Systems

Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications — High Temperature Materials I
Program Organizers: Ali Yousefiani, Boeing Research and Technology; Troy Topping, California State University, Sacramento

Monday AM
Room: 150A&B
October 24, 2016
Location: Salt Palace Convention Center
Session Chair: Ali Yousefiani, Boeing Research and Technology

8:00 AM
Niobium Based Alloys: Challenges and Breakthroughs: Panayiotis Tsakiropoulos; University of Sheffield

8:20 AM
Role of Composition and Processing in Increasing the Ductile Temperature Regime of Structural Mo-Si-B Materials: Peter Marshall; Oliver Stibr; Imaging Systems Technology; Deep Springs Technology

8:40 AM
The Development of Superalloys Reinforced by Gamma Prime and Gamma Double Prime Precipitates: Paul Mignanelli; Nicholas Jones; Mark Hardy; Howard Stone; University of Cambridge; Rolls-Royce plc

9:00 AM
Effects of Solution Heat Treatment Condition on Carbide Structure and Mechanical Properties of Cast Hastelloy X: Joon Eun Jung; In Soo Kim; Baig Gyu Choi; Chang Yong Jo; Korea Institute of Materials Science

9:20 AM
Effect of Thermal Deformation on Forging Bar Microstructure and Properties of Inconel 718 Alloy: Yuehong Zhang; Qingzeng Wang; Zixing Wang; Jing Wu; Pengchao Dai; Peiyu Tian; Baosteel

9:40 AM
Room and Elevated Temperature Fatigue Life Improvement of ATI 718Plus Using UNSM Treatment: Micheal Kattoura; Abhishek Telang; Seetha Ramaiah Mannava; Dong Qian; Vijay Vasudevan; University of Cincinnati; University of Texas at Dallas

10:00 AM Break

10:20 AM
ICME Design of High Entropy Alloys for High-temperature Applications: James Saul; Jeff Doak; Jason Sebastian; Greg Olson; QuesTek Innovations

10:40 AM
Mechanical Properties of a High Coercivity FeCrCoMnNi High Entropy Alloy: Christian Roach; Trevor Clark; Sveen Mathaudhu; University of California, Riverside

11:00 AM
High-entropy FeNiMnAlCr Alloys: I. Baker; Zhangwei Wang; Dartmouth College

3D Graphene for Energy Conversion and Storage — 3D Graphene in Energy Storage II
Program Organizer: Yun Hu, Michigan Technological University

Monday PM
Room: 250B
October 24, 2016
Location: Salt Palace Convention Center
Session Chairs: I-Wei Chen, University of Pennsylvania; Yun Hu, Michigan Technological University

2:00 PM Keynote
Mesoscopic 3D Tubular Graphenes: I-Wei Chen; Fuqiang Huang; University of Pennsylvania; Shanghai Institute of Ceramics

2:40 PM Keynote
Tailoring In-plane Pores in 3D Graphene for Highly Efficient Energy Storage: Xiangfeng Duan; UCLA

3:20 PM Keynote
Self-Assembly of Chemically Modified Graphenes for Electrochemical Capacitors: Gaoguan Shi; Miao Zhang; Tsinghua University

3:40 PM
Three-dimensional Architecture of Lithium-anodes Made from Graphite Fibers Coated with Thin-films of Silicon Oxycarbide: Design, Performance and Manufacturability: Ibrahim Saleh; Rishi Raj; University of Colorado

4:00 PM
Ionic Interactions to Tune Mechanical and Electrical Properties of Hydrated Liquid Crystal Graphene Oxide Films: Mohammad Javadi; ACES
3rd International Workshop of In-situ Studies with Photons, Neutrons and Electrons Scattering — Neutrons Based and Other Techniques and Measurements

Program Organizers: Antonio Ramirez, The Ohio State University; Sudarsanam Babu, The University of Tennessee, Knoxville; Thomas Kannengiesser, BAM Federal Institute for Materials Research and Testing; Yu-ichi Komizo, Osaka University; Hidenori Terazaki, Kumamoto University; Andre Tschiptschin, University of Sao Paulo; Eren Kalay, METU

Monday PM  Room: 250E  Location: Salt Palace Convention Center
Session Chairs: Yu-ichi Komizo, Osaka University; Eren Kalay, METU

2:00 PM Invited
Imaging of Hydrogen in Steels with Neutrons: Axel Griesche1; Eitan Dabah2; Thomas Schauppi; Beate Pretzschner3; Thomas Kannengiesser3; 1Federal Institute for Materials Research and Testing (BAM)

2:40 PM Invited
In-situ Polarisated Neutron Reflectometry during Thin Film Growth: Wolfgang Kreuzpaintner1; 1Technische Universität München

3:00 PM Invited
In-situ Raman Monitoring of Cu2ZnSnS4 (CZTS) Solar Absorber Material at Elevated Temperatures: Osama Awadallah1; Zhe Cheng2; 1Florida International University

3:20 PM Invited
Dynamic Response of Nanocrystalline and Ultrafine Grained Microstructures to Ion Irradiation: Mert Efe1; Osman El-Atwani2; Jonathan Hinks3; Jean Paul Allain4; 1Middle East Technical University; 2Drexel University; 3University of Huddersfield; 4University of Illinois at Urbana-Champaign

3:40 PM Invited
Time-resolved WAXS Studies on the Formation and Dissolution of Polynuclear Aluminium Sulfates: Anke Kabelitz1; Franziska Emmerling2; 1Federal Institute for Materials Research and Testing

Accelerated Insertion of Materials (AIM) Qualification — Accelerated Insertion of Materials (AIM) Qualification II

Program Organizers: Jiadong Gong, QuesTek Innovations; Greg Olson, Northwestern University; David Furrer, Pratt & Whitney

Monday PM  Room: 150D  Location: Salt Palace Convention Center
Session Chairs: Jiadong Gong, QuesTek Innovations LLC; Greg Olson, Northwestern University; David Furrer, Pratt & Whitney

2:00 PM Invited
Accelerated Materials and Processing in Defense in 2016: Julie Christodoulou1; 1Office of Naval Research

2:40 PM Invited
A Regulatory Perspective on ICME and Model-enabled Certification: Michael Gorelik2; 2Federal Aviation Administration

3:20 PM Invited
FDA’s perspective on 3D Printing of Medical Devices: Matthew Di Prima; 1Food and Drug Administration

ACerS Richard M. Fulrath Award Session

Monday PM  Room: 255B  Location: Salt Palace Convention Center
Session Chair: Man Yan, OFS Laboratories

2:00 PM Invited
Ceramics/Polymer Hybrids and its Processing with Nano Pulsed Power Technology: Tadakika Nakayama; 1Nagaoka University of Technology

2:40 PM Invited
Material Design of Dielectric and Piezoelectric Materials with First-Principles Calculation: Yoshiki Iwazaki; 1Taiyo Yuden Co., Ltd.

3:00 PM Invited
A Future for Refractory Ceramic Technology Based on a Rich Past: James Henrick; 1Reno Refractories, Inc.

3:20 PM Invited
Development of Dielectrics for Monolithic Ceramic Capacitor: Tomoyuki Nakamura; 1Murata Manufacturing Co., Ltd.

3:40 PM Invited
High Speed and Tomographic AFM of Functional Materials: Bryan Huey; 1University of Connecticut

Additive Manufacturing of Composites and Complex Materials — Metals and Metallic Composites

Program Organizers: Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, New York University; Dirk Lehmhus, ISIS Sensorial Materials Scientific Centre

Monday PM  Room: 355E  Location: Salt Palace Convention Center
Session Chairs: Dirk Lehmhus, ISIS Sensorial Materials Scientific Centre; Matthias Lodes, University of Erlangen - ZMP

2:00 PM Invited
Selective Electron Beam Melting as AM Method for Complex Materials: Matthias Lodes; 1University of Erlangen - ZMP

2:40 PM Invited
Laser Deposited In Situ TiC Reinforced Nickel Matrix Composites: 3D Microstructure and Tribological Properties: Tushar Borkar; 1Reno Refractories, Inc.; Prashanth Reddy Yenni; 1John Sosa; 1Thomas Scharf; Jaimie Tiley; 1Hamish Fraser; 1Rajarshi Banerjee; 1Cleveland State University; 2The Ohio State University; 3University of North Texas; 4Air Force Research Laboratory

3:00 PM Invited
Laser Deposition of Zr/Alumina Composites and Functionally Graded Zr/ Stainless Materials by Powder Injected Melting: Mehrdad Iravani; 1Arshad Harooni; 1Adrian Gerlich; Amir Khajepour; 1Ahmed Khalifa; 1J.M. (Mitch) King; 1University of Waterloo; 1Canadian Nuclear Laboratories
3:20 PM
Selective Laser Melting of FeCr24Ni7Si2 Steel: Processing; Zhao Xiao1; Yi Xin1; Liu Jie1; Song Bu2; Wei Song1; Shi Sheng1; 1HUST

3:40 PM
Microstructure and Mechanical Properties of Stainless Steel Specimen Manufactured by Selectively Laser Sintering: Fei Chen1; Nikhil Gupta1; Khaleed Shabib1; 1NYU Tandon School of Engineering; 2NYU Abu Dhabi

3:40 PM
深加工不锈钢的微观结构和机械性能研究

5:00 PM
On the Microstructure and Mechanical Properties of Al-Cu-Fe-Cr Quasicrystal and Al-Cu-Fe-Cr/Al Composite Materials Prepared by Selective Laser Melting: Nan Kang1; Yingqing Fu2; Pierre Coddet1; Hanlin Liao1; Christian Coddet1; 1University of Technology Belfort-Montbeliard (UTBM); 2Dalain Maritime University

5:20 PM
Microstructure and Residual Stress of a Selective Laser Melting Produced AI-50Si Alloy: Effect of Heat Treatments: Nan Kang1; Pierre Coddet1; Hanlin Liao1; Christian Coddet1; 1University of Technology Belfort-Montbeliard (UTBM)

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrysson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBBTi Consulting

Monday PM Room: 355D Location: Salt Palace Convention Center

Session Chair: Jack Beuth, Carnegie Mellon University

2:00 PM
An Experimental Investigation of Support Structure for Selective Laser Melting of Ti-6Al-4V: Kui Zeng1; J.J.S Dilip2; Huijun Gong3; Deepankar Pal4; Brent Stucker5; 13DSIM; 2University of Louisville; 3Georgia Southern University; 4Von Alamos National Laboratory; 5University of California, Davis

2:20 PM
Analysis of Residual Stress Formation in Additive Manufacturing of Ti-6Al-4V: Mauritz Möller1; Dirk Herzog1; Tim Wischeropp1; Claus Emmelmann1; Christina Krywka1; Peter Staron1; Maximilian Munsch1; 1Institute of Laser and System Technologies, Hamburg University of Technology; 2Helmholtz-Zentrum Geestacht, Max-Planck-Straße 1; 3Implantcast GmbH, Lüneburger Schanze 26

2:40 PM
Anisotropic Spall Strength in Additively Manufactured Ti-6Al-4V: David Jones1; Roberta Beal1; Olivia Dipippo2; Veronica Livescu2; George Gray3; 1Los Alamos National Laboratory

3:00 PM
Effect of Welding Speed and Post Weld Heat Treatments in Laser Wire Deposition of Thin Ti-6Al-4V Deposits: Microstructure Characterization: Nejib Chekir1; Raynald Gauvin1; Nicolas Brodusch1; JJ Sixsmith2; Mathieu Brochu1; 1McGill University; 2Libard
3:20 PM
Role of Composition on the Microstructure and Texture Evolution of Additively Manufactured Beta-Ti Alloys: Srinivas Aditya Mantri1; Calvin Mikler1; Vishal Soni1; Deep Choudhuri1; Chris Yannetta1; Rajarshi Banerjee1; 1University of North Texas

3:40 PM
Influence of Directed Energy Deposition Parameters on the Geometry, Distortion, Porosity, and Microstructure of Ti-6Al-4V: David Carbie1; Nathan Kistler1; Abdalla Nassar1; Edward Reutzle1; Allison Beese1; 1Penn State University

4:00 PM
Microstructure Informatics Cloud Computing for Data Analytics of Titanium Additive Manufacturing: Ayman Salem1; Daniel Satko1; Joshua Shaffer1; Richard Kubi1;; Moshen Seifi2; John Lewandowski2; 1Materials Resources LLC; 2Case Western Reserve University

4:20 PM
Thermophysical Property Measurements of Ti-based liquid Metal Alloys by Electrostatic Levitation: Jonathan Raush1; Xiaoming Zhang1; Boliang Zhang1; Bin Zhang1; Shengmin Guo1; W.J. Meng1; Michael Sansoucie1; Jan Rogers1; 1Louisiana State University; 2NASA Marshall Space Flight Center

Advanced Coatings for Wear and Corrosion Protection — Advanced Coatings for Wear and Corrosion Protection II
Program Organizers: Evelina Vogli, LiquidMetal Group Holdings, Inc.; Fei Tang, DNV GL; Homero Castaneda, Texas A&M; Qixin Zhou, University of Akron
Monday PM Room: 253A Location: Salt Palace Convention Center
Session Chairs: Evelina Vogli, MesoCoat Inc.; Fei Tang, DNV

3:20 PM
Peculiarities of Phase-structural Transformations at Nickel Titanium Intermetallic during Layerwise Selective Laser and Electron Beam Melting: Igor Shishkovsky1; Nina Kakovkina1; 1Lebedev Physical Institute of Russian Academy of Sciences

3:40 PM
Bayesian Calibration of a Physics-based Precipitation Model for the Additive Manufacturing of Shape Memory Alloys: Gustavo Tapia1; Luke Johnson1; Brian Franco1; Kubra Karayuz0; Alaa Elwany1; Raymundo Arroyave1; Ji Ma1; Ibrahim Karaman1; 1Texas A&M University

3:00 PM
A Coupled Thermal and Precipitation Modeling for Selective Laser Melting Process: Kubra Karayuz0; Luke Johnson1; Brian Franco1; Gustavo Tapia1; Alaa Elwany1; Ji Ma1; Ibrahim Karaman1; Raymundo Arroyave1; 1Texas A&M University

3:20 PM
Phase and Kirkendall Void Evolution Study in Ti-coated Ni Wires via Ex Situ Annealing and In-situ X-ray Tomographic Microscopy Experiments: Ashley Paz y Puente1; Sarah Plain1; Dine Erdeniz1; David Dunand1; 1Northwestern University

3:40 PM
Effects of Aging on the Shape Memory Response of Selective Laser Melting Fabricated Ni-rich NiTi: Soheil Saedi1; Ali Turabi1; Narges Shayesteh1; Moghaddam1; Mohsen Taheri Andani1; Mohammad Elahiinia1; Haluk Karaca1; 1University of Kentucky; 2The University of Toledo

4:00 PM
Additive Manufacturing of Ferromagnetic Functional Parts Made from Ni-Mn-Ga Powders: Matthew Caputo1; C. Virgil Solomon1; Phi-Khanh Nguyen1; Ami Berkowitz1; 1Youngstown State University; 2University of California San Diego

4:20 PM
Inconel 625 Made by Directed Energy Deposition Additive Manufacturing: Measurement of Mechanical Behavior at Elevated Temperatures with In Situ Neutron Diffraction: Allison Beese1; Zhuqing Wang1; Alexandru Stoica1; Dong Ma1; 1Pennsylvania State University; 2Pennsylvania State University; 3Oak Ridge National Laboratory

High Temperature Creep Performance of Graded Transition Joint Fabricated by High Density Infrared Plasma Arc Lamp: Xinghua Yu1; Joshua Caris1; Evelina Vogli2; Zhili Feng2; 1Oak Ridge National Laboratory; 2MesoCoat

3:20 PM
Multilayer Ceramic Coating for Corrosion (C3) Resistance of Nuclear Fuel Cladding: Ece Alat1; Arthur Motta1; Robert Comstock1; Jonna Partezana1; Douglas Wolfe1; 1Pennsylvania State University; 2Westinghouse Electric Co

3:40 PM
Application Temperature Smooths Coating to Improve Corrosion Resistance: Michael Bonner1; 1Saint Clair Systems, Inc.
4:00 PM Invited
Environmental Conditioning of the Coating — CermaClad Technology: Joshua Caris; Evelina Vogli; Anupam Ghildyal;’MesoCoat

2:00 PM
Hydrogen Embrittlement of Aluminized Ultra-high Strength Press Hardened Steel: Lawrence Cho; Dimas Hand Sulistiyono; Eun Jung Seo; Kyoung Rae Cho; Bruno C. De Cooman;’GIFT, Postech

2:30 PM
The Plastic Accommodation in Austenite Matrix during the Formation of Lath Martensite: Taku Niino; Mayumi Ojima; Shoichi Nambu; Junya Inoue; Toshihiko Kosuke;’The University of Tokyo

3:00 PM
Internal Stresses and Processing Modeling for Galvanized and Galvannealed DP Steels: Hongwei Ma;’WISCO

3:40 PM
Effect of Al Content on the Microstructure and Tensile Properties of Ferritic Lightweight Steels: Yunik Kwon; Alireza Zargaran; Hansoo Kim; Nack J. Kim;’POSTECH

4:00 PM
Plasma Polymerized Terpinen-4-ol Thin Films: An Environment Friendly Step towards Marine Anti-fouling Coating: Avishek Kumar;’James Cook University

5:00 PM
Monitoring Exhaust System Integration of a Novel Solid-state Electrochemical NOx Sensor for Dwell Times: Leta Woo; Frank Bell; Mike Boettcher; James Chee; Joe Fitzpatrick; Shaw Harding; Brett Henderson; Dave Lippoth; Orlando Otero; Matt Phee; Lee Sorensen; Victor Wang; Joseph Winn; Andrew Marshall; Bob Novak; Jaco Visser;’CoorsTek Sensors;’Georgia Tech Research Institute;’Ford Motor Company
2:20 PM
Towards Perfect Template Particle Alignment in Textured Ceramics:
Elizabeth Kupp1; Beecher Watson1; Yunfei Chang1; Mark Fanton1; Richard Meyer1; Gary Messing1; Penn State University; Applied Research Laboratory

2:40 PM
Manufacturing Grain Textured Piezoelectric Ceramics: Mark Fanton1; Elizabeth Kupp1; Richard Meyer1; Beecher Watson1; Brian Weiland1; Yunfei Chang1; Gary Messing1; Penn State University

3:00 PM
[001]c Textured PIN-PMN-PT Ternary Ceramics with Enhanced Piezoelectric Properties by Templated Grain Growth: Yunfei Chang1; Beecher Watson1; Elizabeth Kupp1; Mark Fanton1; Richard Meyer1; Gary Messing1; Penn State University

3:20 PM
Structural, Optical, Dielectric, Ferroelectric and Charge Transport Studies on [K(NbO3)1-x][Ba(Ni1/2Nb1/2O3-δ)]x Electroceramics: Blanca Rosas1; Shojan Pavunny1; Nora Ortega1; Alvaro Instan1; Ram Katiyar1; University of Puerto Rico

3:40 PM
The Origin of High Piezoelectric Properties of KNN-based Ceramics: Jianguo Zhu1; Jiagang Wu1; Jie Xing1; Zhi Tan1; Qiang Chen1; Sichuan University

2:00 PM
Flow Field Research on Bottom Argon Blowing of 40-ton Ladle: Tongjian Zhou1; Junzhan Liu1; Hui Luo1; Baosteel Special Steel Co., Ltd

2:20 PM
Study on Vertical Continuous Casting of M2 High Speed Steel: Zhigang Zhao1; Shengtao Qiu1; National Engineering and Research Center for Continuous Casting Technology, Center Iron and Steel Institute

2:40 PM
Development of Medium-high Carbon Casing/Tubing for Direct Strip Production Complex (DSPC): The Zhou1; Peng Zhang1; Kate Kuuskman1; Erminio Cerilli1; Kashif Rehman1; Sang-Hyun Cho1; Dan Burella1; Essar Steel Algoma Inc.

3:00 PM
Influence of Secondary Cooling Intensity Variation on Solidification Structure and Carbon Macro-segregation for GCr15 Continuously-cast Bloom: Kun Dou1; Zhenguo Yang1; Qing Liu1; Jun Wang 1; Hongbiao Dong1; State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; Special Steel Plants, Laiwu Iron and Steel Co., Ltd.; Graduate Institute of Ferrous Technology (GIFT), Pohang University of Science and Technology (POSTECH); Department of Engineering, University of Leicester

3:20 PM
Uneven Thermal Shrinkage of Wide-thick Continuous Casting Slab and Its Influence on Caster Taper: Chenhui Wu1; Cheng Ji1; Miao-yong Zhu1; Northeastern University of China

3:40 PM
Control of the Precipitation Behavior of Ti and Nb Micro-alloyed Steels Slab Corner during Continuous Casting: Zhao-zhen Cai1; Zhen-yu Ni1; Jia-zhi An1; Miao-yong Zhu1; Northeastern university; Northeastern University

4:00 PM
Industrial Trial Practice of Slab Corners Microstructure Control: Jingsxin Song1; Zhaozhen Cai1; Miao-yong Zhu1; Nailing Cheng1; Baosteel Meishan Company; School of Metallurgy, Northeastern University

ASM Alpha Sigma Mu Lecture
Monday PM
October 24, 2016
Room: 155F
Location: Salt Palace Convention Center

2:30 PM Invited
National Academy of Engineering Grand Challenges for Engineering: A. D. Romig Jr1; National Academy of Engineering

Boron, Boron Coatings, Boron Compounds and Boron Nanomaterials: Structure, Properties, Processing, and Applications — Coatings and Nanostructures
Program Organizers: Roumiana Petrova, New Jersey Institute of Tech; Jens Kunstmann, TU Dresden

Monday PM
October 24, 2016
Room: 257B
Location: Salt Palace Convention Center

Session Chair: Roumiana Petrova, NJIT

2:00 PM Invited
Development of Hard Ni-W-B Nanocomposite Coatings: Jiaqian Qin1; Xinyu Zhang1; Panyawat Wangyao1; Yuttanant Boonyongmaneerat1; Sarintorn Limpanant1; Lingzhen Ma1; Riping Liu1; Metallurgy and Materials Science Research Institute, Chulalongkorn University; State Key Laboratory of Metastable Materials Science and Technology, Yanshan University; Metallurgical Engineering Department, Faculty of Engineering, Chulalongkorn University; State Key Laboratory of Metastable Materials Science and Technology, Yanshan University

2:40 PM
Development of Protective Coatings Formulations Based on Boron for Units Operating at High Temperatures in Metallurgy: Boris Sereda1; Dmytro Sereda1; Irina Kryglyak1; DSTU; ZSEA

3:00 PM
Boron Nitride Coatings as Hydrogen Permeation Barriers: Motonori Tamara1; University of Electro-Communications
3:20 PM Question and Answer Period

3:40 PM
Oxidative Unzipping and Transformation of High Aspect Ratio Boron Nitride Nanotubes into White Graphene Oxide Platelets: Pranjal Nautiyal; Archana Loganathan; Richa Agrawal; Benjamin Boesl; Chunlei Wang; Arvind Agarwal; Florida International University

4:00 PM
Structural and Mechanical Properties of Spark Plasma Sintered Boron Nitride Nanoplatelets: Archana Loganathan; Chris Rudolf; Cheng Zhang; Benjamin Boesl; Arvind Agarwal; FIU

Ceramic Optical Materials — Session II
Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Michael Quarillante, RMD, Inc; Takunori Taira, Institute for Molecular Science

Monday PM Room: 254C Location: Salt Palace Convention Center
Session Chair: Woohong (Rick) Kim, Naval Research Laboratory

2:00 PM Invited
Hot pressing of ZnS-CaLa2S4 Composite Infrared Optical Ceramics: Yiyu Li; Yiquan Wu; Alfred University

2:40 PM Invited
Planar Waveguide YAG/RE:YAG/YAG Laser Ceramics Prepared by Non-aqueous Tape Casting and Vacuum Sintering: Jiang Li; Lin Ge; Yubai Pan; Juntao Wang; Qingsong Gao; Tongyu Dai; Basquan Yao; Weixue Li; Heping Zeng; Shanghai Institute of Ceramics, Chinese Academy of Sciences; Institute of Applied Electronics, China Academy of Engineering Physics; National Key Laboratory of Tunable Laser Technology, Harbin Institute of Technology; State Key Laboratory of Precision Spectroscopy, East China Normal University

3:20 PM Invited
Fabrication of Transparent MgAl2O4 Spinel : A Strategy for Enhancing the Transparency: Ha-Neul Kim; Jin-Myung Kim; Young-Jo Park; Jae-Woong Ko; Hai-Doo Kim; Korea Institute of Materials Science

4:00 PM
Influence of Residual Pore in the Powder on the Transmission of Y2O3 Ceramics: Wook Ki Jung; Ho Jin Ma; Yiquan Wu; Do Kyung Kim; KAIST; New York State College of Ceramics, Alfred University

4:20 PM
Fabrication of Re:YAG Transparent Ceramics with Different Sintering Aids: Xingtao Chen; Tiecheng Lu; Yiquan Wu; Jianqi Qi; Alfred University; Sichuan University

Construction and Building Materials for a Better Environment — Session II
Program Organizers: Henry Colorado, Universidad de Antioquia; Dileep Singh, Argonne National Laboratory; Flavio Silva, Pontificia Universidade Católica do Rio de Janeiro (PUC-Rio); Gaurav Sant, University of California, Los Angeles

Monday PM Room: 151B Location: Salt Palace Convention Center
Session Chairs: Henry Colorado, Universidad de Antioquia; Flavio Silva, Pontificia Universidade Católica do Rio de Janeiro (PUC-Rio)

2:00 PM
Utilization of Thermal Plant Fly Ash as an Additive in Red Brick Production: Serhat Acar; Burak Birol; Muhlis Saridede; Yildiz Technical University

2:20 PM
Strength Behavior Of Reinforced Plastic Soil Cement Mix: Karanbir Randhawa; Parneet Tiwana; Punjabi University Patiala; Public Works Department

2:40 PM
Effect of Electric Arc Furnace Dust in Asphalt: Yailuth Loaiza Lopera; Henry Colorado; Universidad de Antioquia

3:00 PM
Waste Form Screening Test Results of Secondary Low Activity Wastes (LAW) Using Ceramicrete Phosphate Ceramics: Jose Gaviria; Henry Colorado; Dileep Singh; UCLA; Universidad de Antioquia; Argonne National Laboratory

3:20 PM
Mechanical Properties of Juta Fiber Reinforced Geopolymers: Ana Carolina Trindade; Paulo Henrique Borges; Flávio Silva; Pontificia Universidade Católica do Rio de Janeiro (PUC-Rio); Centro Federal de Educação Tecnológica de Minas Gerais (CEFET-MG)

3:40 PM
Swelling of Superabsorbent Poly(Sodium-acrylate Acrylamide) Hydrogels and Influence of Chemical Structure on Internally Cured Mortar: Matthew Krafcik; Kendra Erk; Purdue University

4:00 PM
Portland Cement Pastes Reinforced with Magnetite and Samarium Oxide: Raul Flores; Henry Colorado; Carlos Castano-Giraldo; Ayodeji Alajo; Missouri University of Science and Technology; Universidad de Antioquia; University of Science and Technology
Curricular Innovations and Continuous Improvement of Academic Programs (and Satisfying ABET along the Way): The Elizabeth Judson Memorial Symposium — Curricular Innovations and Computational Materials Science and Engineering

Program Organizers: Devarajan Venugopalan, University of Wisconsin-Milwaukee; Thomas Bieler, Michigan State University; Jeffrey Fergus, Auburn University; Janet Callahan, Boise State University; Ronald Gibala, University of Michigan; Lan Li, Boise State University; Laura Bartolo, Kent State University; Kathy Lu, Virginia Tech

Monday PM
October 24, 2016
Room: 258
Location: Salt Palace Convention Center

Session Chairs: Janet Callahan, Boise State University; Jeffrey Fergus, Auburn University

2:00 PM
Freedom to Choose: The New Undergraduate Curriculum in Materials Science and Engineering at Penn State: Robert Kimel1; 1Penn State University

2:20 PM
Developing a Framework for a Collaborative, Multi-disciplinary Senior Capstone Experience: Chelsey Hargather1; 1New Mexico Institute of Mining and Technology

2:40 PM
Enhancing a Materials Selection Course by Integrating Elements of Materials Design: Richard Neu1; 1Georgia Institute of Technology

3:00 PM
Thermodynamics Beyond Equilibrium: Zi-Kui Liu1; 1The Pennsylvania State University

3:20 PM
The Texas A&M/IIMEC Summer School in Computational Materials Science: Materials Modeling across the Scales: Raymundo Arroyave1; Amine Benzerga1; Dimitris Lagoudas1; Ibrahim Karaman1; 1Texas A & M University

3:40 PM
ICME Education at Northwestern: Greg Olson1; 1Northwestern University & QuesTek Innovations LLC

4:00 PM
Incorporating Computational Modules in Undergraduate MSE Courses: Katsuyo Thornton1; Mark Asta2; 1University of Michigan; 2University of California, Berkeley

4:20 PM
Bringing Art into the Material Science Classroom: Cindy Waters1; 1NCA&T State University

Failure Analysis and Prevention — Energy
Program Organizer: Burak Akyuz, ATS, Inc.

Monday PM
October 24, 2016
Room: 150G
Location: Salt Palace Convention Center

Session Chairs: Brad James, Exponent; Thomas Traubert, Engineering Design & Testing; Thomas Kozina, NTN America; Brett Miller, IMR Test Labs

2:00 PM
Failure Analysis of a Lithium-Ion Battery Fire Onboard a Boeing 787 Airplane: Michael Budinski1; 1National Transportation Safety Board

2:20 PM
Case Study of a Natural Gas Pipeline Explosion Caused by a Combination of Manufacturing Defects and Environmental Factors: Ryan Birringer1; Alexander Hudgins1; Brad James1; 1Exponent

2:40 PM
Frozen? Mothballs on Ice: Porter Ritchie1; 1DNV GL

3:00 PM
Use of Hydrostatic Testing for Integrity Management of a Natural Gas Transmission Pipeline Containing Stress Corrosion Cracking: Courtney Pape1; Greg Quickel1; John Beavers1; 1DNV GL

3:20 PM
The Challenges of Coiled Tubing Failure Analysis: Michael Burns1; Kevin Elliott1; Pankaj Kumar1; Travis Graham-Wright1; Austin Sutch1; 1Stress Engineering Services, Inc.; 2NOV Quality Tubing

3:40 PM
Analysis of Glass Superstrate/Substrate Fractures in Solar Panels: John McNulty1; David Schoen1; Evan Brown1; 1Exponent, Inc.

4:00 PM
Investigation of a Faulted Turbine Generator: Albert Rose1; 1Engineering Design and Testing

4:20 PM
Failure Analysis of Bolted Joints at Elevated Operating Temperatures in Gas Turbine: A Case Study of Creep of the Washers and Cracking of the Bolts: Derek Gong1; Paul Flynn1; 1Rolls Royce Singapore Pte Ltd

4:40 PM
Actuator Spring Failures in the Oil and Gas Industry: Richard Marques1; Herman Amaya1; Christian Silva1; 1One Subsea
Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology — ACerS Alfred R. Cooper Award Session
Program Organizers: Steve W. Martin, Iowa State University; Gang Chen, Ohio University

Monday PM Room: 255A Location: Salt Palace Convention Center

Session Chair: C. Austen Angell, Arizona State University

2:00 PM Introductory Comments - Session Chair Professor C. Austen Angell

2:10 PM Invited
Where Inorganic Meets Organic in the Glassy State: Hybrid Glasses and Dental Cements: Neville Greaves1; 1University of Cambridge

2:50 PM Presentation of the Award

3:00 PM Invited
Novel Approaches to Glass Optical Fibers: Matthew Tuggle1; 1Clemson University

3:20 PM Presentation of the Award

3:30 PM Invited
Fractal Topological Character of the Structural Network and Ionic Conduction Pathways in Oxide Glasses: Sabyasachi Sen1; 1University of California Davis

4:10 PM Invited
Origin of Thermo-mechanical Anomalies in Oxide Glasses and How To Control Them: John Kieffer1; 1University Of Michigan

Heterogeneity during Plastic Deformation – Synergy between Experimental Investigation and Simulation — Deformation of Twinned and Martensitic Microstructures
Program Organizers: Stephen Niezgoda, The Ohio State University; David Fullwood, Brigham Young University

Monday PM Room: 250F Location: Salt Palace Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Effects of Martensite and Ferrite Properties on Hole Expansion Ratio of Dual Phase 980 Steel: K.S. Raghavan1; Xiaohua Hu2; Xin Sun2; 1AK Steel Corporation; 2Pacific Northwest National Laboratory

2:40 PM
Prediction of the Mechanical Response of DP980 Steel Incorporating a Realistic RVE: Hyuk Jong Bong1; Hojun Lim1; Myoung-Gyu Lee1; David Fullwood1; Eric Homer1; Robert. H. Wagoner1; 1The Ohio State University; 1Sandia national Lab; 1University Of Michigan; 1Korea University; 1Brigham Young University

3:00 PM
Strain Evolution in TBF 1180 Microstructures during In-situ Tension Testing: Jeffrey Cramer1; Tyson Mathis1; Michael Miles1; David Fullwood1; Eric Homer1; Tyson Brown1; Raja Mishra1; 1Brigham Young University

3:20 PM Invited
Studying the Micromechanics of Martensitic Phase Transformations Using High Energy Diffraction Microscopy: Aaron Stebner1; 1Colorado School of Mines

4:00 PM
Dislocation Density-based Modelling of Plastic Deformation of Lath Martensite: Taku Niino1; Shoichi Nambu1; Junya Inoue1; Toshikiko Koseki1; 1The University of Tokyo

4:20 PM
Influence of Adjoining Twin Pairs on Subsequent Twinning and Detwinning in HCP Metals: M. Arul Kumar1; Irene Beyerlein1; Rodney McCabe1; Carlos Tome1; 1Los Alamos National Laboratory

4:40 PM
Performance of Viscoelastic Self-Consistent Models in Reflecting Twin Activity in Mg Alloys: Devin Adams1; David Fullwood1; Marko Knezevic1; Stephen Niezgoda1; Irene Beyerlein1; Isaac Chelladurai1; Andrew Orme1; 1Brigham Young University; 1University of New Hampshire; 1Ohio State University; 1Los Alamos National Laboratory

Innovative Processing and Synthesis of Ceramics, Glasses and Composites — Ceramic Processing II
Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, U.S. Army Research Laboratory; Scarlett Widgeon, New Mexico Highlands University; Gabriela Mera, TU Darmstadt

Monday PM Room: 255D Location: Salt Palace Convention Center

Session Chairs: Narottam Bansal, NASA Glenn Research Center; Scarlett Widgeon, New Mexico Highlands University

2:00 PM Invited
Low Temperature Synthesis of SiC, Si3N4 and SiAlON by Carbothermal Reduction or Nitridation of Geopolymers: Cengiz Bagci1; Waltraud Kriven2; 1Hitt University and University of Illinois at Urbana-Champaign; 2University of Illinois at Urbana-Champaign

2:40 PM
Plasma Deposition and Modification of Metal Oxide Nanosurfaces and Hetero-interfaces for SolarSarattering Applications: Sanjay Mathur1; Yakup Gönül1; 1University of Cologne

3:00 PM
Polyhedral Ceria Crystals Synthesized by KCl-LiCl Molten Salt Method: Yuan-Pei Lan1; Yousef Mohassel2; Bao-Qiang Xu1; Hong Yong Sohn1; 1University of Utah; 2University of Utah

3:20 PM
Thermally Conductive Aluminum Nitride Thick Films for High Power Electronic Packages: Byung-Dong Hahn1; Jong-Jin Choi1; Cheol-Woo Ahn1; Jong-Woo Kim1; Jungho Ryu1; Woon-Ha Yoon1; Dong-Soo Park1; 1Korea Institute of Materials Science

3:40 PM
Toward Stress Engineered Ceramics via Processing-enabled Microstructural Design: David Lipke1; 1Alfred University

4:00 PM
Formation of Anodic Nanoporous/Nanotubular Beryllium Oxide: Steven Sitler1; Krishnan Raja1; 1University of Idaho
Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches — Fundamental and Engineering Issues — Structure & Chemistry of Interfaces II

Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Paul Wynblatt, Carnegie Mellon University

Monday PM Room: 251B Location: Salt Palace Convention Center

Session Chairs: Dominique Chatain, CNRS-CNRS; Paul Wynblatt, Carnegie Mellon University

2:00 PM Keynote
Thermal Stability and Phase Transformation of Nanostructured Nb3O7(OH)
Photocatalyst: Sophia Betsler; Christina Scheur; Ludwig Maximilian University; Max-Planck-Max-Planck-Institut fuer Eisenforschung GmbH

2:40 PM
Eigendecomposition and the Network Structure of Grain Boundaries in
Polycrystals: Oliver Johnson; Brigham Young University

3:00 PM Keynote
Grain Boundary Structural Length Scales and their Effects upon Mobility: Elizabeth Holm; Jonathan Humbersen; Carnegie Mellon University

3:40 PM
Materials Databases: Grain Boundary Datasets for Quantifying Structure-property Relationships: Mark Tschopp; Shawn Coleman; Srikanth Patala; Arash Banadaki; Zachary Trautt; Army Research Laboratory; North Carolina State University; NIST

4:00 PM Invited
Probing Grain Boundaries to Determine the Thermal Stability Mechanisms of Nanocrystalline Ni-W: Christopher Marvel; Kristopher Darling; B. Hombuckle; Martin Harner; Lehigh University; U.S. Army Research Laboratory

International Symposium on Defects, Transport and Related Phenomena — Session II

Program Organizers: Sangtae Kim, University of California, Davis; Doreen Edwards, Alfred University; Tatsuya Kawada, Tohoku University; Manfred Martin, RWTH Aachen University

Monday PM Room: 251E Location: Salt Palace Convention Center

Session Chairs: Juergen Janek, Justus-Liebig-University; Igor Lubomirsky, Weizmann Institute of Science

4:20 PM
Pistachio Shell Reinforced Iron Matrix Composites: Mackenzie Jones; A. Aning; Ibrahim Khatfallah; Hesham Elmkharrami; Virginia Tech

2:40 PM Invited
Garnet-type Li Ion Conductors as Solid Electrolytes of Li Ion Battery: Nakayama Masahiro; Randy Jalem; Nagoya Institute of Technology; National Institute for Materials Science

3:20 PM Invited
Non-classical Electrostriction in Fluorites with a Large Concentration of Point Defects: Igor Lubomirsky; Weizmann Institute of Science

4:00 PM Invited
A Novel, Simpler Method to Measure the Chemical Diffusivity of a Mixed-conducting Compound: Han-Ill Yoo; Taewon Lee; Seoul National University

Joining of Advanced and Specialty Materials (JASM XVIII) — Welding Metallurgy 1
Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Akio Hirose, Osaka University; Anning Hu, University of Tennessee; Peng He, Harbin Institute of Technology; Darren Barborak, AZZWSI; Bingtao Li, AZZWSI; Xijin Cao, Institute for Aerospace Research

Monday PM Room: 155B Location: Salt Palace Convention Center

Session Chair: Boian Alexandrov, The Ohio State University

2:00 PM Invited
Application of Modeling Tools for Understanding the Microstructures and Performance of Engineering Alloys: John DuPont; Lehigh University

2:40 PM
Evaluation of Solidification Crack Susceptibility in Laser Beam Welds of Reduced Activation Ferritic/Martensitic Steel F82H: Hiroki Mori; Takaya Hitomi; Hideki Mitsumori; Masakazu Shibahara; Hideo Sakasegawa; Takanori Hirose; Hiroyasu Tanigawa; Osaka University; Osaka Prefecture University; National Institutes for Quantum and Radiological Science and Technology

3:00 PM
Effect of Multiple Reweld Passes on the Solidification and Cracking Response of 304L Stainless Steel: Jeffrey Rodelas; Charles Robino; Michael Maguire; Sandia National Laboratories

3:20 PM
Applicability of Filler Metal 16-8-2 for Structural Welds in 304H and 347H Steels for High Temperature Service: Carolin Pink; Huimin Wang; Taylor Wyan; Matthew Bowen; Boian Alexandrov; Jorge Penso; The Ohio State University; Shell Global Solutions Inc.

3:40 PM
Evolution of Grain Boundary Coarsened Zones in INCONEL Alloy 740H: Daniel Bechetti; John DuPont; Lehigh University

4:00 PM
Examination of Explosively Bonded Interfaces via Three-dimensional Reconstruction: Olivia Underwood; Jonathan Madison; Lisa Deibler; Jeffrey Rodelas; Materials Mechanics, Sandia National Laboratories; Materials Mechanics, Sandia National Laboratories; Materials Characterization & Performance, Sandia National Laboratories; Metallurgy & Materials Joining, Sandia National Laboratories
4:20 PM
Microstructural Evolution of Simulated Heat Affected Zones in Cast
Precipitation Hardened Stainless Steels 17-4 and 13-8+Mo: Robert Hamlin;  
John DuPont; 1Lehigh University

Light Metal Technology — Magnesium Technology
Program Organizer: Xiaoming Wang, Purdue University

Monday PM  
Room: 150C  
Location: Salt Palace Convention Center  
Session Chair: Dietmar Letzig, Helmholtz Zentrum Geesthacht

2:00 PM Invited
Twin Roll Casting and Rolling of Magnesium Strips: Dietmar Letzig1; Gerrit  
Kurz1; Jan Bohlen1; Sangbong Yi1; 1MagIC - Magnesium Innovation Centre,  
Helmholtz-Zentrum Geesthacht

2:40 PM
Effect of Nano TiO2 on Tensile-compressive Asymmetry of Magnesium  
Nanocomposite: Nasirudeen Ogunlakin; 1King Fahd University of Petroleum  
and Minerals

3:00 PM
Evolution of Anelastic Behaviour and Twinning in Cyclic Loading for  
Extruded Magnesium Alloys: Hossein Fallahi; Mohammad Tabaroki1; K.V.  
Yang; Chris Davies1; 1Monash University; 2National Taiwan University

3:20 PM
Improvement of Ductility of Magnesium AZ31 Alloy Sheets Subjected to  
High Speed Rolling and Subsequent Annealing: Jing Su; Abu S. H. Kabir1;  
Stephen Yue1; 1McGill

3:40 PM
Orientiation and Length Scale Effect in Deformation Mechanism in Pure  
Magnesium: Ali Khorasani1; Mohammed Cherkaoui1; Surya Kalidindi1;  
1Georgia Institute of Technology; 2Mississippi State University

4:00 PM Invited
Recrystallization Behavior and Texture Evolution during Hot Deformation  
of Extruded ZK60 Magnesium Alloy: Amir Hadadzadeh1; Sugrib Kumar  
Shaha1; Mary Wells1; Hamid Jahan1; Bruce Williams1; 1University of Waterloo;  
2CanmetMATERIALS, Natural Resources Canada

Materials Degradation in Supercritical CO2 Power Cycles — Materials and Fabrication Issues for  
Components of Supercritical CO2 Power Cycles
Program Organizers: Omer Dogan, DOE National Energy Technology  
Laboratory; Julie Tucker, Oregon State University; Briggs White, DOE  
National Energy Technology Laboratory

Monday PM  
October 24, 2016  
Room: 250D  
Location: Salt Palace Convention Center  
Session Chairs: Mathew Walker, Sandia National Laboratories; Richard  
Oleksak, National Energy Technology Laboratory

2:00 PM
Progress in Overcoming Materials Challenges with S-CO2 Recompression  
Closed Brayton Cycles: Matthew Walker1; Alan Kruizenga1; Elizabeth Withey1;  
1Sandia National Laboratories (Livermore)

2:20 PM
Effect of Prior Exposure to sCO2 on Threshold Crack Growth of Ni-  
superalloys: Kyle Rozman1; Omer Dogan2; Gordon Holcomb3; Jeffery Hawk1;  
Jay Kruzic1; 1ORISE; 2NETL; 3Oregon State University

2:40 PM
Silicon Carbide Resistance to Corrosion in Supercritical CO2 Environments:  
Joseph Fellows4; Charles Lewinsohn1; Bjorn Westman2; Julie Tucker1;  
1Ceramatec, Inc.; 2Oregon State University

3:00 PM
High-temperature Mechanical and Corrosion Behavior of Transient-liquid- 
phase Bonded Haynes 230 and Haynes 282: Venkata Rajesh Saranam1; Monica  
Kapoor1; Omer Dogan2; Patrick McNeff1; Brian Paul1; 1Oregon State University;  
2National Energy Technology Laboratory

3:20 PM
Characterization of Diffusion-bonded Fe- and Ni-based Alloys Exposed to  
High Temperature S-CO2 Environment: Ho Jung Lee1; Sung Hwan Kim1; Ji  
Ho Shin1; Sunghoon Hong1; Changheui Jang1; 1KAIST

3:40 PM
High-temperature Oxidation of Diffusion Bonded Ni-based Superalloys in  
Supercritical CO2 Cycle Conditions: Omer Dogan1; Casey Carney2; Richard  
Oleksak1; Corinne Disenhof1; Gordon Holcomb1; 1DOE National Energy  
Technology Laboratory; 2AECOM

4:00 PM
Corrosion Behavior of Austenitic Stainless Steels in Supercritical CO2,  
Containing O2 and H2O: Lucas Teeter1; Nicolas Huerta1; Omer Dogan1;  
Margaret Ziomek-Moroz1; Corinne Disenhof1; Randal Thomas1; Julie Tucker1;  
1National Energy Technology Laboratory; 2Oregon State University

4:20 PM
XPS Study of Incipient Corrosion Behavior of 347H in Supercritical CO2  
Power Cycle Environments: Richard Oleksak1; John Baltrus2; Lucas Teeter1;  
Nicolas Huerta1; Margaret Ziomek-Moroz1; Omer Dogan1; 1National Energy  
Technology Laboratory, Albany, OR; 2National Energy Technology Laboratory,  
Pittsburgh, PA
Materials Development for Nuclear Applications and Extreme Environments — Accident Tolerant Fuels and Cladding Materials

Session Chairs: Raul Rebak, GE Global Research; S. Sundaram, Alfred University

2:00 PM Invited

Annual Accident Tolerant Fuel with Disc Inserts: Robert Mariani1; Pavel Medvedev1; Douglas Porter1; 1Idaho National Laboratory

2:40 PM

Reducing Risks in Nuclear Power Plants Operation by Using FeCrAl Alloys as Fuel Cladding: Raul Rebak1; Kurt Terrani1; Russ Favretto1; William Gassmann1; 1GE Global Research; 2Oak Ridge National Laboratory; 3Global Nuclear Fuels; 4Exelon

3:00 PM Invited

Fabrication Development Efforts in Support of the Accident Tolerant Fuel Program: Connor Wooman1; Brian Durschi1; Clint Baker1; Josh Daw1; Glenn Moore1; 1Idaho National Laboratory

3:20 PM

New ODS FeCrAlYZr Alloys for Accident Tolerant Fuel Cladding: Sebastien Dreypondt1; Caleb Massey1; Josh Turan1; Dave Hoelzer1; Kings Unocic1; Phil Edmondson1; 1Oak Ridge National Laboratory; 2University of TN

3:40 PM

Investigation of Pressure Resistance Welding for Thin-walled Accident Tolerant Fuel Claddings: Nathan Jerred1; Emmanuel Perez1; Jian Gan1; 1Idaho National Laboratory

4:00 PM

Development of Zirconium-silicide Coating for Enhancement of Accident Tolerance of Zirconium-alloy LWR Cladding Material: Hyewon Yoon1; Benjamin Maier1; Steven Fronck1; Elliot Strand1; Robert Mariani1; David Bai1; Peng Xu1; Kumar Sridharan1; 1University of Wisconsin-Madison; 2Idaho National Laboratory; 3Westinghouse Electric Company

4:20 PM

Fretting Studies of Accident Tolerant FeCrAl Cladding: Christian Williams1; Marut Pattanaik1; Sobhan Patnaik1; Raul Rebak1; Raghunath Kanakala1; 1University of Idaho; 2Arizona State University; 3GE Global Research

Materials Issues in Nuclear Waste Management in the 21st Century — Waste Forms Development

Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Jake Amoroso, Savannah River National Laboratory; Isabelle Gibeire, CEA Marcoule; Raghunath Kanakala, University of Idaho; Yutai Katoh, Oak Ridge National Laboratory; Stefan Neumeier, Forschungszentrum Juelich GmbH; David Shoesmith, Western University; Kumar Sridharan, University of Wisconsin; David Enos, Sandia National Laboratories; Charles Bryan, Sandia National Laboratories

Monday PM Room: 251D Location: Salt Palace Convention Center

Session Chairs: Dan Gregg, ANSTO; Jake Amoroso, SRNL

2:00 PM

Waste Forms for the Immobilization of Highly Enriched Uranium Waste Streams from Mo-99 Production: Dan Gregg1; Lou Vance1; Kyle Olson1; Jessica Veliscek-Carolan1; Ian Watson1; Neil Webb1; Terry McLeod1; Miodrag Jovanovic1; Iveta Kurlapski1; Charmaine Grant1; Tim Palmer1; Kim Lu1; Gerry Triani1; 1ANSTO

2:20 PM

Effect of Phase Assemblage and Chemical Speciation on the Durability of Multiphase Ceramics: Jake Amoroso1; Chris Dandeneau1; Kyle Brinkman1; Ming Tang1; 1Savannah River National Laboratory; 2Clemson University; 3Los Alamos National Laboratory

2:40 PM

Cesium Immobilization in Zinc Doped Hollandite: Robert Grote1; Yun Xu1; Kyle Brinkman1; 1Clemson University

3:00 PM

Nanoscale Investigation and Control of Radionuclides in Waste Management: Eleonora Cali1; Mary Ryan1; Luc Vandeperre1; Jiahui Qi1; 1Imperial College London

3:20 PM

Liquid Secondary Waste: Waste Form Development: Alex Cozzi1; Katie Hill1; 1Savannah River National Laboratory

3:40 PM

Low Temperature Waste Form Process Intensification: Devon McClane1; Kevin Fox1; Alex Cozzi1; 1Savannah River National Laboratory

4:00 PM

Volumetric Stabilization of Ceramic Waste Forms: Sean Locker1; Braeden Clark1; S.K. Sundaram1; 1Alfred University

4:20 PM

Structural Characterization and Cesium Retention of (Ba,Cr)-hollandites: Priyatham Tumuruogoti1; Scott Misture1; Jake Amoroso1; S.K. Sundaram1; Kazuo Inamori School of Engineering, Alfred University; 2Savannah River National Laboratory, Aiken, SC
Materials Property Understanding through Characterization — Advanced Materials I
Program Organizers: Indrajit Dutta, Corning Incorporated; Brian Strohmeier, US Steel; Nicholas Smith, Corning Incorporated

Monday PM Room: 251C
October 24, 2016 Location: Salt Palace Convention Center

Session Chair: Surojit Gupta, University of North Dakota

2:00 PM AFM Based Nanoscale Structure-property Characterization of Nanoporous Organo-silicates: Gheorghe Stan¹; Richard Gates¹; Qichi Hu²; Kevin Kjoller²; Craig Prater²; Sean King³; ¹National Institute of Standards and Technology; ²Anasys Instruments; ³Intel Corporation

2:20 PM p-Silicon based Microbolometer: Asahel Banobre¹; Nuggehalli Ravindra¹; ¹New Jersey Institute of Technology

2:40 PM Study of Surface Passivation Behavior of Carrier Selective Contacts in Crystalline Si Solar Cells: Haider Ali¹; Kristopher Davis¹; Winston Schoenfeld¹; ¹University of Central Florida

3:00 PM Correlating the Surface Chemistry of Iron Based Mixed Metal Oxide to Its Performance as an Oxygen Evolution Reaction Catalyst: Mackenzie Parker¹; Mary Lou Lindstrom¹; Dev Chidambaram¹; ¹University of Nevada, Reno

3:20 PM Synthesis and Evaluation of Thermodynamic Properties of Transition Metal Oxide Based Sodium Ion Cathode Materials (NaMO; M = Mn, Fe, Co and Ni): Radha Shivaramaiah¹; Sindhoora Tallapragada¹; Alexandra Navrotsky¹; ¹UC Davis

3:40 PM X-ray Powder Diffraction Characterization of the Giant Unit Cell of the M8 Murataite Polytype: 8×8×8 Fluorite-type Superstructure: Ryosuke Maki¹; Yoshikazu Suzuki¹; ¹University of Tsukuba

4:00 PM Electrochemical Synthesis and Properties of Carrageenan-doped Polypyrrole Films: Ali Aldalbahi¹; ¹King Saud University

Materials Selection and Characterization for Corrosion Control — Materials Selection: Session II
Program Organizers: Ajit Mishra, Haynes International; Matthew Asmussen, Pacific Northwest National Laboratory; Eric Schindelholz, Sandia National Laboratories; Florent Bocher, Southwest Research Institute; Guang-Ling Song, Xiamen University; Jeffery Thomson, Oak Ridge National Lab; Kevin Lambruch; Ashland Performance Materials; Gary Coates, Nickel Institute / Garcoa Metallurgical; Raul Rebak, GE Global Research

Monday PM Room: 253B
October 24, 2016 Location: Salt Palace Convention Center

Session Chairs: Eric Schindelholz, Sandia National Laboratory; Ajit Mishra, Haynes International

2:00 PM Keynote Corrosion Behavior of Nuclear Waste Glasses in Geological Repository Systems: James Neeway¹; ¹Pacific Northwest National Laboratory

2:40 PM Mitigation of Stress Corrosion Cracking of Austenitic Alloys by Laser Shock Peening: Bai Cui¹; Fei Wang¹; Qiaofeng Lu¹; Chenfei Zhang¹; Qing Su¹; Yongfeng Lu¹; Michael Nastasi¹; ¹University of Nebraska–Lincoln

3:00 PM Corrosion Behavior of Nanocrystalline Al-M (M: Cr, Mn, Ti, Ta, Si, Ce and Mo) Alloys Produced via High-energy Ball Milling: Javier Esquivel¹; Rajeev Gupta¹; ¹The University of Akron

3:20 PM Early Stage Oxidation of NiCrAl Alloys: Evan Zeitchick¹; John Perepezko¹; ¹University of Wisconsin - Madison

3:40 PM Long-term Field Corrosion Monitoring in Supporting Structures of China Xiamen Xiangan Submarine Tunnel: Xuan Cheng¹; Chaoyang Gong¹; Chaoyang Li¹; Yongwei Li¹; Sizhe He¹; Liuying Huang¹; Ying Zhang¹; Jiubin Chen²; Jianbin Zhang²; Chao Zeng²; ¹Xiamen University; ²Xiamen Road and Bridge Construction Group Co. Ltd.

4:00 PM Hardware Materials in Molten Carbonate Fuel Cell: Ling Chen¹; Adam Franco¹; Chao-yi Yuh¹; ¹Fuel Cell Energy Inc

4:20 PM Remarkable Oxidation Resistance Due to Nanocrystalline Structure of Fe-Cr Alloys: RK Singh Raman¹; ¹Monash University
Monday PM

Session Chairs: Pradeep Menzes, University of Nevada Reno; Emad Omrani, UW-Milwaukee; Afsaneh Dorri Moghadam, UW-Milwaukee

2:00 PM
Fricition Behavior of Network-structured Carbon Nanotubes Coating on Pure Ti Plate: Katsuyoshi Kondoh; Junko Umeda; Hirofumi Miyaji; Erika Nishida; Bunshi Fugetsu; Osaka University; Hokkaido University; The University of Tokyo

2:20 PM
High Temperature Solid Particle Erosion of Thermal Spray Barrier Coatings: Anderson Pukasiewicz; Wellington de Goes; André Chicoski; Technological Federal University of Paraná; Instituto LACTEC

2:40 PM
Recent Studies to understand the Tribology of MAX Phases, MAXPOLS, and MRM (MAX Reinforced Metals): Surojit Gupta; University of North Dakota

3:00 PM
Wear Resistance of Metal Carbide Coatings on Steel Alloys: Brandon Strahin; Gary Doll; The University of Akron

3:20 PM
Wear Properties of aluminium Alloy Processed by Friction Stir Process: Kazeem Sanusi; Esther Akinlabi; University of Johannesburg

Measurement and Modeling of Medium-to-high Strain Rate Deformation — Medium-to-high Strain Rate Deformation II

Program Organizers: Ivi Smid, Penn State; Tim Eden, Penn State; Susan Hill, University of Dayton Research Institute

Monday PM
Room: 251A
October 24, 2016
Location: Salt Palace Convention Center

Session Chairs: Susan Hill, University of Dayton; Tim Eden, Penn State

2:00 PM
Introductory Comments

2:20 PM
Assessing the Influence on Confinement Pressure and Strain Rate on Fracture Strength of Ceramics: Ghata Subhash; University of Florida

2:40 PM
Investigation of Adiabatic Heat Rise and Its Effect on Flow Stresses and Microstructural Changes during High Strain Rate Deformation of Ti-6Al-4V Alloy: Ashish Davari; B Kashyap; RKP Singh; Bharat Forge Ltd, Pune; IIT Bombay

3:00 PM
Effect of Secondary Precipitate Phases on Cold Spray Particle Impact: Jeremy Schreiber; Tim Eden; Ivi Smid; Danielle Belotsco-Cote; Baillie McNally; Vic Champagne; Penn State; WPI; Army Research Laboratory

3:20 PM
Strain Rate Dependence of AM30 Magnesium Alloy: Andrew Oppedal; Wilburn Whittington; David Francis; Mark Horstemeyer; Mississippi State University

3:40 PM
Unique Twinning in Orchestrated Deformation Mechanisms to Stiffen and Toughen Nacre under Impacts: Jialin Liu; Zaiwang Huang; Xiaodong Li; Yue Qi; Michigan State University; Central South University, China; University of Virginia

Mechanochemical Synthesis and Reactions in Materials Science — Organic Compounds and 2D Nanomaterials

Program Organizers: Antonio Fuentes, Cinvestav del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, UQTR

Monday PM
Room: 155A
October 24, 2016
Location: Salt Palace Convention Center

Session Chair: Richard Blair, University of Central Florida

2:00 PM Invited
Composites of Drugs with Inorganic and Organic Excipients Obtained Using Mechanochemical Methods: Tayana Shakhshotschnieder; Svetlana Kuznetsova; Rakesh Kumar; Vladimir Boldyrev; Institute of Solid State Chemistry and Mechanochemistry; Institute of Chemistry and Chemical Technology SB RAS; National Metallurgical Laboratory

2:40 PM
Flexible Modification of Edge-functionalized Graphene: Richard Blair; University of Central Florida

3:20 PM Invited
Mechanochemical Synthesis of Nanostructured Aluminum Nitride: S.A. Roumagni; S. Scudino; H. Esghil; A. Vyalikh; D. E. P. Vampoucke; W. Gruner; S. Oswald; A.R. Kiani Rashid; M. Samadi Khoshkhoor; U. Scheler; Juergen Ecker; Birjand University of Technology; IFW Dresden, Institute for Complex Materials; Ferdowsi University of Mashhad; Institut für Experimentelle Physik, TU Bergakademie Freiberg; Ghent University; Leibniz-Institut für Polymerforschung Dresden e.V.; Erich Schmid Institute of Materials Science, Austrian Academy of Sciences; Montanuniversität Leoben

3:40 PM
Phase Transformations of Molecular and Pharmaceutical Compounds Induced by Mechanical Activation: Marc Descamps; Jean François Willart; Emeline Dugognon; University Lille1

4:00 PM
Thermodynamic Driving Force for Polymorph Formation in Mechanochemical Synthesis of Zeolitic Imidazolate Frameworks: Zamirbek Akimbekov; Alexandra Navrotsky; Tomislav Frisic; Athanassios Katsenis; University of California, Davis; McGill University
### Multi Scale Modeling of Microstructure Deformation in Material Processing — Multi Scale Modeling of Microstructure Deformation in Material Processing II

**Program Organizers:** Lukasz Madej, AGH University of Science and Technology; Krzysztof Muszka, AGH University of Science and Technology; Danuta Szeliga, AGH University of Science and Technology

**Monday PM**  
**Room:** 252A-B  
**Location:** Salt Palace Convention Center  
**Session Chair:** Lukasz Madej, AGH University of Science and Technology

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 PM</td>
<td>Invited</td>
<td>Microstructural Deformation of High Carbon Steels and Irons: Konstantin Redkin; Christopher Hrizo; Isaac Garcia</td>
<td>WHEMCO Inc</td>
<td></td>
</tr>
<tr>
<td>2:40 PM</td>
<td></td>
<td>Modeling of Material Processing and Microstructure of Long Product: Michael Kruse</td>
<td>Friedrich Kocks GmbH &amp; Co. KG</td>
<td></td>
</tr>
<tr>
<td>3:00 PM</td>
<td></td>
<td>A Continuum Dislocation Dynamics (CDD) Based Model on the Deformation Behavior of High Entropy Alloys: Navid Kermanshadahmonfared; Ioannis Mastorakos; Clarkuni University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:20 PM</td>
<td></td>
<td>Multi Scale Modeling of Elastic Deformation of Single Wall Carbon Nanotube (SWCNT) Networks: Ankit Gupta; Elizabeth Holm</td>
<td>Carnegie Mellon University</td>
<td></td>
</tr>
<tr>
<td>3:40 PM</td>
<td></td>
<td>A Molecular Dynamics Study of Defects Produced by Displacement Cascades in bcc-Fe: Maosheng Li; Chan Gao; Hua Liang</td>
<td>Institute of Applied Physics and Computational Mathematics; Institute of Nuclear Physics and Chemistry; School of Graduate, China Academy of Engineering Physics</td>
<td></td>
</tr>
<tr>
<td>4:00 PM</td>
<td></td>
<td>Microstructure Modeling and Finite Element Analysis of Mechanical Properties of Spunlace Composite Laminates: Zhe Tong</td>
<td>Xi’an Jiaotong University</td>
<td></td>
</tr>
</tbody>
</table>

### Nanotechnology for Energy, Environment, Electronics, Healthcare and Industry — Session II

**Program Organizers:** Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech

**Monday PM**  
**Room:** 260A  
**Location:** Salt Palace Convention Center  
**Session Chairs:** Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 PM</td>
<td>Invited</td>
<td>Drug Loading Kinetics of Doxorubicin/Gentamicin Sulfate and the Cytocompatibility of the Mesoporous Bioactive Glasses for the Targeted Bone Tumour Therapy: Gurbinder Kaur; V. Kumar</td>
<td>Thapar University; Sri Guru Granth Sahib World University</td>
<td></td>
</tr>
<tr>
<td>2:40 PM</td>
<td></td>
<td>Microbial Formation of Nanoparticles with Tailored Stoichiometry: Akira Nordmeier; Dev Chidambaram</td>
<td>University of Nevada Reno</td>
<td></td>
</tr>
<tr>
<td>3:00 PM</td>
<td></td>
<td>Nanocarbon-infused Metals: A New Class of Covetic Materials for Energy Applications: U. (Balu) Balachandran; Beihai Ma; Stephen Dorris; Rachel Koritala; David Forrest; Argonne National Laboratory; U. S. Department of Energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:20 PM</td>
<td></td>
<td>Nanosensors for Detecting Pollutants in Water: Shoibhan Paul; Zetanostics Inc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:40 PM</td>
<td></td>
<td>Wettability Analysis of Nanofiber Mats Prepared by the Force-spinning Method: Edgar Munoz</td>
<td>University of Texas Rio Grande Valley</td>
<td></td>
</tr>
<tr>
<td>4:00 PM</td>
<td></td>
<td>Novel Tomographic AFM of Solar Cells for Nanoscale Photovoltaic Performance Mapping in 3-d: Justin Luria; Yasemin Kutes; Andrew Moore; Lihsa Zhang; Kim Kisslinger; Eric Stach; Bryan Huey; University of Connecticut; Colorado State University; Brookhaven National Laboratory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:20 PM</td>
<td></td>
<td>Optimization of Parameters for Controlled Titanium Dioxide Nanotubes for Functional Applications: Umair Shah; Zia ur Rahman; Hussain Asgar; Kashif Deen; Waseem Haider; Central Michigan University; University of British Columbia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Next Generation Biomaterials — Session II

**Program Organizers:** Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Sharmila Mukhopadhyay, Wright State University; Sundeep Mukherjee, University of North Texas

**Monday PM**  
**Room:** 259  
**Location:** Salt Palace Convention Center  
**Session Chairs:** Sundeep Mukherjee, University of North Texas; Sharmila Mukhopadhyay, Wright State University

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 PM</td>
<td>Invited</td>
<td>Tantalum Diffusion Coating for Increasing the Biocompatibility of Conventional Metal Implant Alloys: Jacob Stiglich; Brian Williams; Roger Narayan; Therese Grundl; Ultramet; UNC/NCSU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:40 PM</td>
<td>Invited</td>
<td>Hierarchical Carbon Scaffolds for Tissue Regeneration: Case Study with Muscle Cell Development: Akhil Patel; Anil Karumuri; Wenhui Wang; Shilpa Mukundan; Vinayak Sant; Shilpa Sant; Sharmila Mukhopadhyay; University of Pittsburgh; Wright State University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00 PM</td>
<td>Invited</td>
<td>Nanoscale Structure and Modification of Biomaterials: Federico Rosei</td>
<td>INRS Energy, Materials and Telecommunications</td>
<td></td>
</tr>
<tr>
<td>3:40 PM</td>
<td>Invited</td>
<td>Surface Texture and Wettability of Amorphous Metallic Biomaterials: Sanghita Mrdha; Ayyagari Aditya; Sandeep Mukherjee; University of North Texas</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4:00 PM Invited
Additive Manufacturing of Microscale and Nanoscale Structures for Medical Devices: Roger Narayan; 1UNC/NCSU Joint Department of Biomedical Engineering

4:20 PM
Nanoscale Surface Modification of Metallic Biomaterials for Orthopedic Applications: Kaushik Chatterjee; 1Indian Institute of Science

Perspectives for Emerging Materials Professionals — Perspectives for Emerging Materials Professionals II
Program Organizers: Rachel Bethancourt, Fitbit; Laura Jean Weidman, University of Maryland

Monday PM  Room: 251F
October 24, 2016  Location: Salt Palace Convention Center

Session Chair: Dharma Maddala, Emerging Professionals Committee

2:00 PM Invited
Career Strategic Planning, ASM, and Additive Manufacturing: William Frazier; 1Naval Air Systems Command

2:40 PM
Capitalizing on Success: How to Reclaim the Direction of Your Education and Career at the Undergraduate Level: Emily Petersen; 1Michigan Technological University

3:00 PM
Advice for Professional Engineering (PE) Licensure for Emerging Professionals: Dan Grice; 1Materials Evaluation and Engineering, Inc.

3:20 PM
Nanotechnology: Societal Impact and Policy Perspectives: Sharmila Mukhopadhyay; 1Wright State University

3:40 PM
Navigating the Professional World as a Materials Engineer: Elizabeth Hoffman; 1Savannah River National Laboratory

Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XI) — Gibbs Session I
Program Organizers: James Saal, QuesTek Innovations; Yu Zhong, Florida International University; Ji-Cheng Zhao, The Ohio State University; Nagarj Kulkarni, Knoxville, TN

Monday PM  Room: 155D
October 24, 2016  Location: Salt Palace Convention Center

Session Chairs: Carelyn Campbell, NIST; Afina Lupulescu, ASM International

2:00 PM Invited
CALPHAD: Not Just Another Phase: Ursula Kattner; 1National Institute of Standards and Technology

2:20 PM Invited
Alloy Phase Metastability and Microstructure Development: John Perepezko; 1University of Wisconsin-Madison

3:00 PM Invited
Harnessing the Gibbs Genome: From CALPHAD to Flight: Greg Olson; 1Northwestern University & QuesTek Innovations LLC

3:40 PM Invited
Industrial Applications of Multi-component Databases Developed by the CALPHAD Approach: Fan Zhang; Jun Zhu; Chuan Zhang; Shuanglin Chen; Weisheng Cao; 1CompuTherm, LLC

4:20 PM Invited
Multi-scale Modeling of Precipitation Reactions Using Phase-field Crystal: Nana Ofori-Opoku; 1NIST

Phase Transformations in Ceramics: Science and Applications — Transformation Mechanisms at the Atomic Scale
Program Organizers: Pankaj Sarin, Oklahoma State University; Ivar Reimanis, Colorado School of Mines; Waltraud Kriven, University of Illinois at Urbana-Champaign

Monday PM  Room: 255C
October 24, 2016  Location: Salt Palace Convention Center

Session Chair: Pankaj Sarin, Oklahoma State University

2:00 PM Invited
Transformations in Ceramics: Lynnette D. Madsen; Ivy Kupec; 1National Science Foundation; 2National Science Foundation

2:20 PM Invited
Structural Characterization of Phase Transitions in 2-dimensional Oxides: Scott Mixture; 1Alfred University

2:40 PM Invited
In-situ High Temperature Synchrotron Studies of Oxide Ceramics: Waltraud Kriven; 1University of Illinois at Urbana-Champaign

3:00 PM Invited
High Energy X-rays Tools for Probing Functional Materials: Karena Chapman; 1Argonne National Laboratory

3:20 PM
Mechanistic Understanding of Molten Carbonate Matrix Coarsening in Endurance Operation: Arun Surendranath; Abdelkader Hilmi; Chao-yi Yuh; 1Fuel Cell Energy Inc

3:40 PM
In-situ Phase Diagram Determination of the HfO2-Ta2O5 Binary up to 3000°C: Scott McCormack; Waltraud Kriven; Sergey Ushakov; Alexandra Navrotsky; Richard Webber; 1University of Illinois Urbana-Champaign; 2University of California Davis; 3Materials Development, Inc.

Program Organizers: Morsi Mahmoud, Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Monday PM Room: 255E
October 24, 2016 Location: Salt Palace Convention Center

Session Chairs: Morsi Mahmoud, Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Victoria Blair, Army Research Laboratory

2:00 PM Invited
Change of Energy Transfer Medium from High Temperature Gas to Microwave: Kazuhiro Nagata1; 1Tokyo Institute of Technology

2:40 PM Invited
Studies, Building and the First Operation of Iron Making in a Microwave Gas Zonal Hybrid Furnace for Industry Scales: Motoyasu Sato1; Kazuhiro Nagata1; Pradeep Goyal1; Shivanand Borkar1; Dinesh Agrawal1; 1Chubu University

3:20 PM
Microwave Sintering of Nuclear Ceramics: Jérémy Croquesel1; Sylvie Pillon2; François Valdivieso3; Sébastien Saunier3; 1CEA DEN/DTEC/SECA/LFC; 2CEA DEN/DTEC/SECA/LFC; 3Ecole des Mines de Saint Etienne, laboratoire Georges Friedel, CNRS UMR 5307

3:40 PM
Microwave-assisted Synthesis by Carbothermal Reduction of ZrC-SiC Nanocomposites: Juan Pablo Yasnó1; Ruth Kininami1; 1Universidade Federal de São Carlos

4:00 PM
Effect of Laser Shock Peening (LSP) on AISI L6 Hot Work Tool Steel: Sachin Patil1; Valmik Bhawar1; Prakash Kattire1; Prashant date2; Rajkumar Singh2; 1Bharat Forge; 2ITT, BOMBAY

4:20 PM
Industrial Applications of Direct Current/Spark Plasma/Field Assisted Sintering: Large Components and Simultaneous Multi-part Operation.: Luke Walker1; 1Thermal Technology

Responsive Functional Nanomaterials — Responsive Nanomaterials Design

Program Organizers: Jiahua Zhu, The University of Akron; Ziqi Sun, Queensland University of Technology; Liwen Mu, The University of Akron

Monday PM Room: 260B
October 24, 2016 Location: Salt Palace Convention Center

Session Chairs: Liangliang Huang, University of Oklahoma; Liwen Mu, The University of Akron

2:00 PM Invited
Modulation of Electronic Structure by Strain in 2D BiO(X=Cl,Br): Weichang Hao1; 1Beihang University

2:20 PM Invited
Several Fundamental Issues in the Assembly and Integration of Nanowires for Electronics and Sensor Applications: Zhiyong Gu1; 1University of Massachusetts Lowell

2:40 PM Invited
Theoretically Understanding on Carbon-based Nanomaterials for Energy Application: Ting Liao1; Debra Bernhardt1; Shixue Dou1; 1The University of Akron; 2University of Queensland; 3University of Wollongong

3:00 PM
Boosting Energy Efficiency of Hierarchical Electrodes via Nano-interfacial Engineering: Long Chen1; Liwen Mu1; Tao Ji1; Jiahua Zhu1; 1The University of Akron

3:20 PM Invited
Durable Self-healing Superhydrophobic Coatings: Huaiyuan Wang1; Zhanjian Liu1; Yanji Zhu1; Liwen Mu1; Jiahua Zhu1; 1Northeast Petroleum University; 2The University of Akron

4:00 PM Invited
Study on the Microstructure and Properties of Bonding Interface in the Explosive Welded AZ31/1060 Composite Plate: Suyuan Yang1; Qiong Wu1; 1Beijing Institute of Technology

3:40 PM Invited
Investigation of Vacancy-type Defects in Nanostructured Aluminum Alloys Processed by Severe Plastic Deformation: Lihong Su1; Cheng Lu1; Huijun Li1; Guanyu Deng1; Kiet Tieu1; 1University of Wollongong
S2P: Semi-solid Processing of Alloys and Composites — Session III
Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group

Monday PM  Room: 151A  Location: Salt Palace Convention Center
Session Chair: Helen Atkinson, University of Leicester

2:00 PM
Dynamic Recrystallization Behavior in Alpha Phase of Semi-solid Injection-molded AM60B Magnesium Alloy: Takehiko Yanagiya1; Yasuhiro Kishi1; Koji Kajikawa2; Takeshi Yamaguchi1; Ken Saito1; Shinji Tanaka1; 1The Japan Steel Works, Ltd.; 2The Japan steel works, Ltd.

2:30 PM
Effect of Chip Size on Semi-Solid Microstructure of AZ91D Magnesium Alloy: Hong-Yu Xu1; 1Harbin University of Science and Technology

3:00 PM
Effect of Globular Microstructure on Cavitation Resistance of Aluminium Alloys: Annalisa Pola1; Lorenzo Montesano1; Ciro Sinagra1; Giovina La Vecchia1; Marcello Gelfi1; University of Brescia; 2Laminazione Sottile SpA

3:30 PM
Effects of Natural Ageing on T6 Heat Treated Rheocasts of 319S Aluminum Alloy: Kang Du1; Daquan Li1; General Research Institute for Non-Ferrous Metals Beijing

4:00 PM
In-situ Observation of Semisolid Fe–2.5C–1.5Si Gray Cast Iron: Davi Benatti1; Kazuhiro Ito2; Kazuyuki Kohama1; Hajime Yamamoto1; Eugenio Zoqui1; 1University of Campinas; 2Osaka University

S2P: Semi-solid Processing of Alloys and Composites — Session IV
Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group

Monday PM  Room: 151G  Location: Salt Palace Convention Center
Session Chair: Pradip Dutta, IISC

2:00 PM
Controlling and Minimizing Blistering during T6 Heat Treating of Semi-solid Castings: Youfeng He1; Hongxin Lu1; Stephen Midson2; Daquan Li1; Qiang Zhu1; 1General Research Institute for Non-Ferrous Metals; 2The Midson Group

2:30 PM
Experimental Investigations on the Formation of Rosettes during Shear: Siri Harboe1; Michael Modigell1; Annalisa Pola1; Aachener Verfahrenstechnik, RWTH Aachen University; 2German University of Technology in Oman; 3Universitá degli Studi di Brescia

3:00 PM
Fabrication of Metal Laminate Composites with Interface Reinforcement by Semi-solid Sintering: Mina Bastwros1; Gap-Tong Kim1; 1Iowa State University

3:30 PM
Failure Behaviors of 2d-Cf/Mg Composites Fabricated by Liquid-solid Extrusion Following Vacuum Pressure Infiltration: Leihua Qi1; Shaolin Li1; Jiming Zhou1; 1Northwestern Polytechnical University

4:00 PM
Filling, Feeding and Defect Formation of Thick-walled AISi7Mg0.3 Semi-solid Castings: Jorge Santos1; Anders Jarfors1; Arne Dahle1; 1Jönköping University; 2Jönköping University

Scaling-up from the Laboratory: Strategies, Examples, Challenges, and/or Solutions for Advanced Metal Manufacturing — Technology Scale-up Session II
Program Organizer: Babak Raeisinia, Novelis Global R&T Center

Monday PM  Room: 155C  Location: Salt Palace Convention Center
Session Chair: Babak Raeisinia, Novelis Global R&T Center

2:00 PM Invited
Use of Modeling Methods for Scale-up and Qualification: David Furrer1; 1Pratt & Whitney

2:20 PM Invited
Process Modelling in Aluminium Sheet Production: Juergen Hirsch1; Kai Karhasuen1; Hydro Aluminium Rolled Products GmbH

2:40 PM
Data-analytics Approach for Studying Structure-property Relationships in Functional Gradient Products: Amit Verma1; Roger French1; Jennifer Carter1; Steven Claves2; 1Case Western Reserve University; 2Alcoa Technical Center

3:00 PM Invited
Realizing the Vision MGI: The Construction, Deployment, and Implementation of the Materials Innovation Infrastructure: James Warren1; 1NIST

3:20 PM Concluding Comments

Semiconductor Heterostructures: Theory, Growth, Characterization, and Device Applications — Session II
Program Organizer: John Ayers, University of Connecticut

Monday PM  Room: 257A  Location: Salt Palace Convention Center
Session Chair: To Be Announced

2:00 PM Introductory Comments

2:05 PM Invited
Influence of Alloy Composition and Strain on Band Alignments at Semiconductor Heterostructures: Rachel Goldman1; 1University of Michigan

2:45 PM
Film Stoichiometry, Intermixing and Surface Conditions in LAO/STO Hetero-interfaces: Richard Akrobetu1; Kevin Abbasi1; Alp Sehirlioglu1; 1Case Western Reserve University
3:05 PM
Purification of Ga by Distillation during MBE Growth: Kyungjean Min1; David Johnson2; Kevin Trumble3; 1Purdue University

3:25 PM
Complexity Involving Metallic Glass Formation during Sulfurization of Cu-Zn-Sn Oxide Precursors Using ppm Level H2S for Preparing CZTS Thin Films: Osama Awadallah1; Zhe Cheng1; 1Florida International University

3:45 PM
Triple Junction Silicon Solar Cell With Step Graded Si1-xGex Layer: Nji Raden Poespawati1; Rizqy Pratama Rahman1; 1Universitas Indonesia

4:05 PM Concluding Comments

Sintering and Related Powder Processing Science & Technologies — High Temperature Materials

Program Organizers: Ricardo Castro, University of California, Davis; Brady Butler, U.S. Army Research Laboratory; Olivia Graeve, University of California, San Diego; Eugene Olevsky, San Diego State University; Anders Eklund, Quintus Technologies, LLC.

Monday PM Room: 150E Location: Salt Palace Convention Center

Session Chair: To Be Announced

2:00 PM Invited
A Finite Element Based Model to Validate Temperature Gradient Measurements in Electrical Insulator and Electrical Conductor Ceramics during Spark Plasma Sintering: Erica Corral1; 1The University of Arizona

2:40 PM
Investigation the Effect of B4C Addition on Microstructure, Mechanical Properties and Oxidation Behavior of TZM Alloy Prepared by Spark Plasma Sintering: Baris Yavas1; Onur alp Yucel1; Filiz Sahin1; Gul tekin Goller1; 1Istanbul Technical University

3:00 PM
Zirconium Carbide by Spark Plasma Sintering: Densification Kinetics, Grain Growth and Thermal Properties: Xialu Wei1; Eugene Olevsky1; Christina Back1; Oleg Izhvanov1; Christopher Haines1; 1San Diego State University; 2General Atomics; 3US Army Armament Research Development Engineering Center

3:20 PM Invited
Observation of Enhanced Mechanical Properties in Nanostructured Boron Carbide: Chris Haines1; Matthew DeVries2; John Pittari3; Kendall Mills1; Ghatu Subhash1; 1US Army ARDEC; 2University of Florida; 3US Army Research Laboratory

4:00 PM
Reaction Spark Plasma Sintering of ZrB2-TiB2 Ultra High Temperature Ceramics and Their Solid Solutions: Karthi selva N1; B Murty1; Srinivasa Bakshi1; 1Indian Institute of Technology Madras

4:20 PM
Microstructure Evolution and Consolidation Kinetics Prediction in Powder Materials during Field Assisted Sintering Technique: Sudipta Biswas1; Jogender Singh1; Vikas Tomar1; 1Purdue University; 2Penn State University

4:40 PM
Microstructure and Mechanical Properties of ZrC Ceramics Enhanced by TiC Particles and Graphene: Burak Oacak1; Onur alp Yucel1; Filiz Sahin1; Gul tekin Goller1; 1Istanbul Technical University

5:00 PM
Influence of TiC and/or ZrC Addition on Densification, Microstructure and Mechanical Properties of TZM Alloys Produced by SPS: Cansinem Tüzemen1; Onur alp Yucel1; Filiz Sahin1; Gul tekin Goller1; 1Istanbul Technical University

5:20 PM
Solid Solutions Formation of Tantalum Carbide-hafnium Carbide by Spark Plasma Sintering: Cheng Zhang1; Ankur Gupta1; Sudipta Seal1; Benjamin Boes1; Arvind Agarwal1; 1Florida International University; 2University of Central Florida

5:40 PM
Study the Effect of Oxygen on the SPS of B4C by Applying the CALPHAD Approach: Mohammad Asadikia1; Yu Zhong1; 1Florida International University

Surface Properties of Biomaterials — 3D Printing and Tribology

Program Organizers: Amit Bandyopadhyay, Washington State University; Susmita Bose, Washington State University; Mukesh Kumar, Biomet Inc; Jason Langhorn, DePuy Synthes Joint Reconstruction; Venu Varanasi, Texas A & M University

Monday PM Room: 355B Location: Salt Palace Convention Center

Session Chair: Dinesh Katti, NDSU

2:00 PM
Additive In-situ 3D Printing of Gelatin-nanosilicate scaffolds for Rapid Bone Defect Healing: Venu Varanasi1; Taha Azimaie1; Phillip Kramer1; 1Texas A & M University

2:20 PM
Iron and Silicon Doped 3D printed Tricalcium Phosphate Scaffolds: Enhanced In Vivo Bone Formation in Rat Femur Defect Model: Sam Robertson1; Dishary Banerjee1; Sahar Vahabzadeh1; Amit Bandyopadhyay1; Susmita Bose1; 1Washington State University

2:40 PM Invited
Evolution of Mechanics of Cancer Cells on Tissue Engineered Scaffolds: Dinesh Katti1; Kalpana Katti1; MD. Shahjahan Molla1; 1North Dakota State University

3:00 PM
In Vitro Degradation and Bioactivity of SrO Doped Magnesium Phosphate for Bone Tissue Engineering: Bavya Devi Karuppusamy1; Suman Kumar Mandal1; Mangal Roy1; 1Indian Institute of Technology Kharagpur

3:20 PM
In Vitro and In Vivo Biocompatibility Evaluation of Laser Processed Co Based Alloys with and without Calcium Phosphate for Load Bearing Applications: Anish Shivaram1; Susmita Bose1; Amit Bandyopadhyay1; 1Washington State University

3:40 PM
Surface Modification of Titanium Foams Produced by Freeze-casting to Enhance Osseointegration: Silvia Murguia1; Joshua Barclay2; Danieli Rodrigues2; Samir Aouadi1; Marcus Young1; 1University of NorthTexas; 2The University of Texas at Dallas
The 8th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Green Manufacturing I

Session Chairs: Allen Apblett, Oklahoma State University; Jingyang Wang, Shenyang National Laboratory for Materials Science

Monday PM
October 24, 2016
Room: 151C
Location: Salt Palace Convention Center

02:00 PM Keynote
Sustainable Metal Production of Aluminum: Goodbye Smelting Plants; Hello Mini Mills: Diran Apelian¹; Sean Kelly¹; ‘Metal Processing Institute

02:40 PM Invited
Towards Sustainable Manufacturing by Using Novel Process-based Solutions: A.K. Balaqri¹; ‘The University of Utah

03:00 PM
Demonstration of Pilot Scale Lignin Isolation as a Part of a Cellulosic Sugar Production Facility: Peter Cohen¹; Xiulin Xie¹; Katerina Chagoya¹; Demetri Chagoya¹; Alan Felix¹; Richard Blair¹; ‘EK Laboratories

03:20 PM
A CFD Based Algorithm for Kinetics Analysis of the Reduction of Hematite Concentrate Particles by CO+H2 Gas Mixture in a Laminar Flow Reactor: Deqiu Fan²; Yousef Mohassab²; Mohamed Elzoohery²; Hong Yong Sohn²; ‘University of Utah; ‘University of Utah

03:40 PM
Effect of Halide Flux Addition in Molten Salts on the Production Efficiency of Critical Metals: Applications of Computational Thermodynamics to Molten Salt Design: Jae-Hong Shin¹; Joohyun Park¹; ‘Hanyang University

04:00 PM
Energy and Cost Savings in the Production of Titanium Metal Powder Using an Emerging Hydrometallurgical Process Route for the Purification of Titanium Slag, as Compared with the Chloride and Sulfate Processes: Hyrum Lefler³; Z. Zak Fang³; Peng Fan³; Ying Zhang³; ‘University of Utah

Thermal Protection Materials and Systems —
Thermal Protection Materials: Special Materials and Applications

Program Organizers: Sylvia Johnson, NASA Ames Research Center; Thomas Squire, NASA Ames Research Center; Jeff DeMange, University of Toledo

Monday PM
Room: 254B
Location: Salt Palace Convention Center

Session Chairs: Thomas Reimer, DLR; Wolfgang Fischer, AIRBUS Space GmbH

2:00 PM
Investigation of Effective Material Properties of Stony Meteorites: Parul Agrawal¹; Alexander Carlotzzi²; Katherine Bryson²; ‘ERC Corporation; ‘Analytical Mechanics Associates; ‘Bay Area Environmental Research Institute

2:40 PM
Tribological Studies of Dynamic Thermal Seals against Thermal Protection Materials: Jeff DeMange¹; Shawn Taylor¹; ‘University of Toledo

3:00 PM
TPS Development Areas and Methods for High-speed Propulsion: Chris Kogstrom¹; ‘Orbital ATK

3:20 PM
Reducing Gasoline Evaporation from Vehicle Fuel Tanks by Thermal Insulating the Storage Tank: David Horne¹; ‘Fatigue Engineering Technologies

3:40 PM
High Temperature Oxidation Behavior of Hafnium Carbide-tantalum Carbide Solid Solutions Prepared by Spark Plasma Sintering: Cheng Zhang²; Pranjal Naitiali²; Benjamin Boesl²; Arvind Agarwal²; ‘Florida International University

4:00 PM
Tantalum and Tantalum-based Ceramic Coatings for Extremely Corrosive Environments: Jacob Stiglich³; Brian Williams³; Dean Gambale³; Therese Grund³; ‘Ultrameat

4:20 PM Panel Discussion - General discussion on TPS applications and testing

Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications —
High Temperature Materials II

Program Organizers: Ali Yousefiani, Boeing Research and Technology; Troy Topping, California State University, Sacramento

Monday PM
Room: 150A&B
Location: Salt Palace Convention Center

Session Chair: Austin Mann, Boeing Research and Technology

2:00 PM Invited
Effect of Vanadium on Microstructural Evolution and Creep Properties of Dilute Al-Er-Sc-Zr-Si Alloys: Dinc Erdeniz¹; Wahaz Nasimi¹; Jahanzaib Malik¹; Bilal Mansoor¹; Georges Ayouby¹; Ibrahim Karaman¹; David Seidman¹; David Dunand¹; ‘Northwestern University; ‘Texas A&M University; ‘Texas A&M University at Qatar; ‘American University of Beirut
2:40 PM
An Optimized Dilute Al-Sc-Er-Zr-Si Alloy for High-temperature Applications. Anthony De Luca¹; James Boileau²; Bita Ghaffari¹; David Dunand¹; David Seidman¹; ¹Northwestern University; ²Ford Motor Company

3:00 PM
Evolution of the α+β Morphology during Thermo-mechanical Processing of Ti-6Al-4V Alloy: Atul Patil¹; Santosh Kumar²; Ashish Dawari²; Afroz Shaikh²; Shreyas Kirwai²; Santosh Hosmani²; ¹Kalyani Centre for Technology & Innovation, Bharat Forge Ltd.; ²Kalyani Centre for Technology & Innovation, Bharat Forge Ltd.

3:20 PM
Increasing the Elevated-temperature Strength of a Beta Titanium Alloys Through Thermomechanically-induced Phase Transformation: Vahid Khademi¹; Carl Boehlert¹; Masahiko Ikeda¹; ¹Michigan State University; ²Kansai University

3:40 PM
The Effects of Microstructural Features on the Fatigue Life of PM Ti-6Al-4V Produced by the HSPT Process: Matt Dunstan¹; James Paramore²; Zhigang Zak Fang¹; ¹University of Utah; ²United States Army Research Laboratory

4:00 PM Invited
Tribological Property of Nitrogen Solute α-titanium Powder Material: Katsuyoshi Kondoh¹; Yasuhiro Yamabe¹; Hisashi Imai¹; Junko Umeda¹; ¹Osaka University

MS&T16 Plenary Lecture
Tuesday AM
Room: Ballroom E-J
October 25, 2016
Location: Salt Palace Convention Center

8:00 AM Introductory Comments
8:10 AM Plenary
ASM/TMS Distinguished Lecture in Materials and Society: Elegant Solutions Exploration and Outcomes that Matter: Julie Christodoulou¹; ¹Office of Naval Research

8:50 AM Award Presentation
8:55 AM Introductory Comments
9:00 AM Plenary
ACerS Edward Orton Jr. Memorial Lecture: Designing Ceramics for Next-Generation Energy Storage Systems: Bruce Dunn¹; ¹University of California, Los Angeles

9:40 AM Award Presentation
9:45 AM Introductory Comments
9:50 AM Plenary
AIST Adolf Martens Memorial Steel Lecture: Enhancing the Fatigue Performance of Steel: Have We Learned Anything from the Past?: David Matlock¹; ¹Colorado School of Mines

10:30 AM Award Presentation
2:00 PM Invited
Perylene Diamide Modified Graphitic Carbon Nitride as Photocatalyst for Hydrogen Production from Water: Ling Zang; 1University of Utah

2:40 PM Keynote
3D Graphene for Dye-sensitized Solar Cells and Supercapacitors: Yun Hu; Wei Wei; 2University of Utah

3:20 PM Invited
Fuel Cell and Lithium Battery Membranes from the Assembly of Polymer Brush Nanoparticles: Ilya Zharov; 1University of Utah

3:40 PM Invited
Transport Properties of Metal-organic Graphene Analogues: Vikram Deshpande; 1University of Utah

4:00 PM Invited
Crystalline Three Dimensional Molybdenum Disulfides for Energy Generation and Storage Applications: Amin Salehi-Khojin; 1University of Illinois at Chicago

2:40 PM
Macroscopic Fronts of Localized Deformation in Tensioned Superelastic NiTi Wire Studied by In-situ 3D-XRD and FE Modelling: Pavel Sedmiduš; Jan Pilch; Ludek Heller; Janomir Kopecck; Jonathan Wright; Petr Sedlák; Miroslav Frost; 1Institute of Physics of the CAS; 2FNSPE, CTU Prague; 3ESRF; 1Institute of Thermomechanics of the CAS

3:00 PM
Real-time X-ray Radiography for Hot Crack Detection during Welding: Axel Griesche; Francis Twumasi Boateng; Arne Kromm; Thomas Kannengiesser; Uwe Zscherpel; Uwe Ewert; 1Federal Institute for Materials Research and Testing (BAM)

3:20 PM Invited
In-situ Characterization of Binary Marginal Glass Forming Alloys during Isochronal Crystallization: Eren Kalay; Mustafacan Kutsal; 1METU

4:00 PM
Analysis of Short-range Order in Alloys: Lewis Owen; 1Helen Playford; Matthew Tucker; Howard Stone; 1University of Cambridge; 2ISIS Neutron and Muon Source; 3Spallation Neutron Source

4:20 PM
Investigating the Effect of Stress on the $\alpha \rightarrow \sigma + g'$ Transformation in UNS32750 Super Duplex Stainless Steel: Guilherme Faria; Leonardo Wu; Antonio Ramirez; 1Welding Eng. Program, Dept. of Materials Science and Eng., OSU; 2Brazilian Nanotechnology Laboratory

ACerS Frontiers of Science and Society — Rustum Roy Lecture

1:00 PM Invited
Regenerative Engineering: A Convergence Approach to Next Generation Grand Challenges: Cato Laurencin; 1University of Connecticut

Additive Manufacturing of Composites and Complex Materials — Processing
Program Organizers: Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, New York University; Dirk Lehmhus, ISIS Sensorial Materials Scientific Centre

2:00 PM Introductory Comments
2:10 PM Keynote
Establishment, Vision, and Success Stories from America Makes - The National Additive Manufacturing Innovation Institute: Jennifer Fielding; 1AFRL/RXMS
2:50 PM  Question and Answer Period

3:00 PM  Additive Manufacturing of Polymer Composites for Multifunctional Applications: Michael Halbig1; Mritunjay Singh2; NASA Glenn Research Center; Ohio Aerospace Institute

3:20 PM  3D Printing of Hierarchical Ceramics: Joseph Math1; Patrick Dixon2; Logan Woish2; Lorna Gibson2; Jennifer Lewis3; Harvard University; Massachusetts Institute of Technology; Colorado School of Mines; Harvard University - School of Engineering and Applied Science, Wyss Institute

3:40 PM  Hierarchically Reinforced Epoxy Based Functional Nanocomposites: Ruel McKenzie1; Hilmar Koerner1; Air Force Research Laboratory

4:00 PM  Spatially Tailored Stimulus Response in Shape Memory Alloys: Ji Ma1; Brian Franco2; Kubra Karayagiz3; Gustavo Tapia1; Alaa Elwany1; Raymundo Arroyave4; Ibrahim Karaman5; Texas A&M University

4:20 PM  Potential of Geometrically Defined Internal Structuring in Multi-material Additive Manufacturing Parts: Dirk Lehmbus1; Axel von Hehl1; Matthias Busse1; Hans-Werner Zoch2; ISIS Sensorial Materials Scientific Centre; Stiftung Institut für Werkstofftechnik (IWT); Fraunhofer Institute for Manufacturing Technology and Advanced Materials

4:40 PM  Inkjet Printing of Three Dimensional Structures Using Metal Nanoparticles: Jayasheelan Vaithilingam1; Ehab Saleh1; Ricky Wildman1; Richard Hague1; Christopher Tuck1; University of Nottingham

5:00 PM  Ultrasonic Filament Modeling: Metal Additive Manufacturing of Fully-Dense Materials at Room Temperature with In-process Tailoring of Microstructure Capability: Anagha Deshpande1; Keng Hsu2; Arizona State University

Additive Manufacturing of Metals: Microstructure, Material Properties, and Product Performance — Laser Processing of Superalloys
Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrysson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBBTi Consulting

Tuesday PM  Room: 355C
October 25, 2016  Location: Salt Palace Convention Center

Session Chair: Andrzej Wojcieszynski, ATI Powder Metals

2:00 PM  Carbide Formation in Additive Manufacturing of Single-crystal Superalloy René N5 Processed through Scanning Laser Epitaxy: Amrita Basak1; Suman Das2; Georgia Institute of Technology

2:20 PM  Effect of Heat Treatment on the Microstructure of MAR-M247 Fabricated through Scanning Laser Epitaxy: Amrita Basak1; Suman Das2; Georgia Institute of Technology

2:40 PM  Effect of Process Parameters on the Melt Pool Geometry and Evolution of Porosity in Selective Laser Melting of Alloy IN625: John Samuel Dilip Jangam1; Ashabul Anam Md1; Pal Deepankar2; University of Louisville

3:00 PM  Selective Laser Melting of Alloy IN625: Effect of Build orientation on Microstructures and Mechanical Properties: Ashabul Anam Md1; John Samuel Dilip Jangam1; Pal Deepankar2; University of Louisville; 3D SIM
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Location</th>
<th>Chair(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:20 PM</td>
<td>Mechanical Properties and Microstructural Evaluation of Direct Metal Laser Sintered Inconel 625: Michael Brand; Don Bucholz; Cameron Knapp; John Carpenter; TD Burleigh; ‘LANL; ‘New Mexico Institute of Mining and Technology</td>
<td>Room: 253A</td>
<td>Fei Tang, DNV GL; Evelina Vogli, MesoCoat Inc.</td>
</tr>
<tr>
<td>3:40 PM</td>
<td>Advanced Coatings for Wear and Corrosion Protection III</td>
<td>Location: Salt Palace Convention Center</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Program Organizers: Evelina Vogli, LiquidMetal Group Holdings, Inc.; Fei Tang, DNV GL; Homero Castaneda, Texas A&amp;M; Qixin Zhou, University of Akron</td>
<td>Room: 253A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Location: Salt Palace Convention Center</td>
<td></td>
</tr>
<tr>
<td>4:00 PM</td>
<td>Microstructure, Tensile Properties, and Fatigue Crack Growth Behavior in Inconel 718 Manufactured by Laser Engineered Net Shaping: Jinwei Zhai; Diana Lados; ‘Worcester Polytechnic Institute, Integrative Materials Design Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:20 PM</td>
<td>Experiments with a Thermal Model for Selective Laser Melting of IN718: R Mark Ward; Miren Aristizabal; Moataz Atallah; ‘University of Birmingham</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:40 PM</td>
<td>Enhanced Barrier Properties of Polymer/Haydale’s Plasma Processed Graphene Nano-composite Coatings: Chaudhry Usman; Vikas Mittal; Brahjendra Mishra; ‘Colorado School of Mines; ‘The Petroleum Institute Abu Dhabi; ‘Worcester Polytechnic Institute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:00 PM</td>
<td>Development of Microparticle Based Self-healing Coating for Corrosion Protection: Sinuo Lang; Qixin Zhou; ‘The University of Akron</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:20 PM</td>
<td>Electrochemical and Performance Testing of Nano Engineered-coatings Based on ANA Presence when Exposed to Corrosive Environment: Be-Ming Chiu; Benton Allen; Emily Hunt; Homero Castaneda; ‘Texas A&amp;M University; ‘Advanced NANO Solutions; ‘West Texas A&amp;M University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:40 PM</td>
<td>Study of Epoxy Based Coatings for Anticorrosive and Photodegradable Retardation Phenomena under Different Environmental Conditions: Jahangir Khan; Amneeq Farooq; Talha Majeed; Khadem Hussain; Rafiq Ahmad; ‘University of the Punjab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:20 PM</td>
<td>Study of Epoxy Based Coatings for Anticorrosive and Photodegradable Retardation Phenomena under Different Environmental Conditions: Jahangir Khan; Amneeq Farooq; Talha Majeed; Khadem Hussain; Rafiq Ahmad; ‘University of the Punjab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:40 PM</td>
<td>Study of Epoxy Based Coatings for Anticorrosive and Photodegradable Retardation Phenomena under Different Environmental Conditions: Jahangir Khan; Amneeq Farooq; Talha Majeed; Khadem Hussain; Rafiq Ahmad; ‘University of the Punjab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00 PM</td>
<td>Study of Epoxy Based Coatings for Anticorrosive and Photodegradable Retardation Phenomena under Different Environmental Conditions: Jahangir Khan; Amneeq Farooq; Talha Majeed; Khadem Hussain; Rafiq Ahmad; ‘University of the Punjab</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2:20 PM Invited
Decrypting the Origin of Ferroic States in Single-phase Multiferroic Magnetoelectric Materials: Guilherme Santos; Igor Catellani; Gabriel Perin; Bruno Oliveira; Gustavo Dias; Ivair Santos; Ruyan Guo; Amar Bhalla; José Padilha; Luiz Cotica; 'State University of Maringa; 'Department of Electrical and Computer Engineering - University of Texas at San Antonio; 'Federal University of Paraná

2:40 PM
Microstructure Analysis and Biological Application of Core-shell Magnetoelectric Nanoparticles: Soutik Betal; Moumita Dutta; Amit Saha; Anand Ramasubramanian; Arturo Ponce; Amar Bhalla; Ruyan Guo; 'University of Texas at San Antonio

3:00 PM
Magnetoelectric and Magnetodielectric Properties of (K0.5Na0.5)NbO3-(Co,Ni)Fe2O4 Particulate Composites: Fabio Zabotto; Flavio Milton; Bruno Laisseren; Alexandre Gualdi; Paulo de Camargo; Adilson De Oliveira; José Eiras; Ducinei Garcia; 'Federal University of São Carlos

3:20 PM
Ferroelectric Phase Transition and Low Temperature Relaxations in Tetragonal Tungsten Bronze Ceramics: Xiaoli Zhu; Kun Li; Xiao Qiang Liu; Xiang Ming Chen; 'Zhejiang University

3:40 PM Invited
Photo-induced Electrical Properties of Silver Nanoparticles-embedded BiFeO3 Thin Films Prepared through a Solution-based Process: Wataru Sakamoto; Rika Matuyama; Isamu Yuitoo; Teruaki Takeuchi; Koichiro Hayashi; Toshinobu Yogo; 'Nagoya University; 'Waseda University

4:00 PM Invited
Recent Advances on the Multiferroic Properties of Pb(Zr1-xTix)O3–BaFe12O19 Composites: Jose de los Santos Guerra; Ruyan Guo; 'Universidade Federal de Uberlandia; 'The University of Texas at San Antonio

4:20 PM
Characterization of Doped Multiferroics-probed by Terahertz Transient Pulses: Moumita Dutta; Soutik Betal; Xomalin Peralta; Amar Bhalla; Ruyan Guo; 'University of Texas at San Antonio

Art and Cultural Heritage: Discoveries and Education — Art and Cultural Heritage: Education I
Program Organizers: Glenn Gates, Walters Art Museum; Darryl Butt, University of Utah

Tuesday PM
October 25, 2016
Room: 251F
Location: Salt Palace Convention Center

12:45 PM Invited
Extending the Range of the Glassy State; New insights from the Novel Properties of Metallic Glasses: A. Greer; 'University of Cambridge

Ceramic Matrix Composites — Environmental Effects and Fiber Degradation
Program Organizers: J. P. Singh, U.S. Army Research Laboratory; Narottam Bansal, NASA Glenn Research Center; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

Tuesday PM
October 25, 2016
Room: 254A
Location: Salt Palace Convention Center

2:00 PM Invited
Residual Strength of Hi Nicalon S Fibers and Tows after Slow Crack Growth at Intermediate Temperatures (600 – 800°C): Jacques Lamon; 'CNRS

2:40 PM Invited
Degradation Mechanisms and Models for SiC Fibers in Air, Steam, and Low pO2: Randall Hay; Randall Corns; Arie Ross; Bridget Larson; Paul Kazmierski; 'Air Force Research Laboratory

ASM Edward DeMille Campbell Memorial Lecture

Tuesday PM
October 25, 2016
Room: 155F
Location: Salt Palace Convention Center
3:20 PM Invited
Effects of Boron on Oxidation of Syrlamic SiC Fibers: Elizabeth Opila1; Bohuslava McFarland1; 1University of Virginia

3:40 PM
Na2SO4 Salt-assisted Hot Corrosion of SiC Fibers: Lucas Herweyer1; Elizabeth Opila1; 1University of Virginia Materials Science Engineering

Ceramic Optical Materials — Session III
Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Michael Squillante, RMD, Inc; Takunori Taira, Institute for Molecular Science

Tuesday PM Room: 254C Location: Salt Palace Convention Center
Session Chair: R.-J. Xie, National Institute for Materials Science

2:00 PM Invited
Transparent Ceramic Scintillators and Optics: Nerine Cherepy1; Zachary Seeley1; Stephen Payne1; Ivy Jones1; Patrick Beck1; Erik Swanson1; Daniel Schneberk1; Brian Wih1; Nicholas Harvey1; Steven Hunter1; Peter Thelin1; Scott Fisher1; 1Lawrence Livermore National Laboratory

2:40 PM
Hydrothermal Synthesis of MgAl2O4: Daniel Kopp1; Richard Riman1; 1Rutgers, The State University of New Jersey

3:00 PM Invited

3:40 PM
Highly Translucent, High Strength Zirconia Ceramics with Nano-sized Tetragonal Domain: Isao Yamashita1; Yuya Machida1; Shouichi Yamauchi1; Isao Yamashita, 1Tosoh Corporation

4:00 PM Invited
Hydrothermal Synthesis of MgAl2O4: Daniel Kopp1; Richard Riman1; 1Rutgers, The State University of New Jersey

4:20 PM
Crumpled Graphene Balls for Energy and Lubrication Applications: Fu Yan1; 1Northwestern University

5:40 PM Invited
Graphene Oxide Coatings: Reinhard Reinhold1; 1Institute for Molecular Science

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Session I
Program Organizers: Albert T. Wu, National Central University; Iver Anderson, Ames Laboratory

Tuesday PM Room: 257A Location: Salt Palace Convention Center
Session Chair: To Be Announced

2:00 PM Invited
Thermodynamic and Kinetic Constraints in Pb-Free Interconnect Design: Carol Handwerker1; John Holaday1; Kathlene Reeve1; Khoi-Nguyen Nguyen1; 1Purdue University

2:40 PM
Computational Study of Low Volume Solder Interconnects for 3D Integrated Circuit Packaging: Yahid Attari1; Raymundo Arroyave1; Zachary J. Morgan1; Yongmei Jin1; 1Texas A&M University; 2Michigan Tech University

3:00 PM
Cropped Charge Conduction and Mass Diffusion in Solder Interconnects: Zachary Morgan1; Yongmei Jin1; Yahid Attari1; Raymundo Arroyave1; 1Michigan Technological University; 2Texas A&M University

3:20 PM
Effects of Sn Grain Orientation on the Microstructural Evolution of Cu Reinforced Sn-3.5Ag Composite Solder Joint under Current Stressing: Fu Guo1; Yan Wang1; Jing Han1; Limin Ma1; 1Beijing University of Technology
3:40 PM
Interactions between Electromigration and Thermal Fatigue of Pb-free Interconnects: Guo Fu; Yong Zuo; Ma Limin; Thomas R Bieler; 1Beijing University of Technology; 2Michigan State University

4:00 PM
Effect of Indium Addition on Mitigating Whiskers in Electroplated Tin: Role of Oxide Layer: Sherin Bhassyvasantha; Narjes Fredj; S Das Mahapatra; Indranath Dutta; Bhaskar Majumdar; 1New Mexico Tech; 2Washington State University

4:20 PM
The Variation of Grain Structure and the Enhancement of Shear Strength in SAC305-0.1Ni/Cu Solder Joint before and after Aging: Collin Fleshman; 1National Tsing Hua University

Failure Analysis and Prevention — Non-Metallic Materials
Program Organizer: Burak Akyuz, ATS, Inc.

Tuesday PM
Room: 150G
Location: Salt Palace Convention Center


2:00 PM
Plastic Fitting Knit Line Failure and Comparison to Laboratory-produced Fractures: Ronald Parrington; 1Engineering Systems Inc. (ESI)

2:20 PM
Polymer & Polymer Layer Impact Failure: Andrew Havics; 1pH2, LLC

2:40 PM
DSC and TGA: Tools for Analyzing the Thermal Characteristics of Polymers: Amy Wells; William Carden; Richard McSwain; 1McSwain Engineering, Inc

3:00 PM
Failure of Recreational Products: Case Studies: Richard Baron; Amy Richards; Matthew Mulherin; 1ESI

3:20 PM
Manufacturing Defect in a Composite Main Landing Gear Leg: Matthew Fox; 1National Transportation Safety Board

3:40 PM
Failure Analysis of Composite Aircrafts with Post-crash Fire: Zhi-Ming Chen; 1FAA

4:00 PM
Examination of Six Cracked Tempered Glass Windshields from the Same Helicopter: Aaron Slager; 1Bell Helicopter

Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology — Structures of Glass I: Correlation to Physical Properties
Program Organizers: Steve W. Martin, Iowa State University; Gang Chen, Ohio University

Tuesday PM
Room: 255A
Location: Salt Palace Convention Center

Session Chair: Gang Chen, Ohio University

2:00 PM Invited
Structure and Properties of Na2O-TiO2-SiO2 Glasses: Role of Na and Ti on Modifying the Silica Network: Garth Scannell; Liping Huang; 1Rensselaer Polytechnic Institute

2:40 PM
Thermal Stability and Microstructural Development of Sol Gel Derived TiO2-ZrO2 Systems: Ali Goktas; 1Dokuz Eylul University

3:00 PM
Hot Compression of ZnO-P2O5 Glasses: Structure-property Relations: Saurabh Kapoor; Nadja Lonnroth; Randall Youngman; Sylwester Rzoska; Michal Bockowski; Morten Smedskjaer; 1Aalborg University; 2Corning; 3Polish Academy of Sciences

3:20 PM
Thickness and Density Effects in the Thermal Conductivity of Amorphous Alumina Thin Films Grown via Atomic Layer Deposition: Kelsey Meyer; John Gaskins; Mallory DeCosters; Brandon Piercy; Mark Losego; Patrick Hopkins; 1University of Virginia; 2Georgia Institute of Technology

3:40 PM
Densification of Glasses at the Glass Transition: Universal Behavior and Trends: Morten Smedskjaer; 1Aalborg University

4:00 PM Invited
Thirty-year Quest for Structure: Nucleation Relationships in Oxide Glasses: Edgar Zanotto; Jefferson Tchusida; José Schneider; Hellmut Eckert; 1Federal University of Sao Carlos; 2Federal University of Lavras; 3University of Sao Paulo

4:40 PM
Elastic Properties and Activation Energy for Modifier Cation Migration in Mixed-network Former Glasses: Weimin Wang; 1University of Michigan; 2Iowa State University; 3Iowa State University

5:00 PM
Understanding Structure-property Relationships in Amorphous Organo Silicates and Carbides Using Topological Constraint Theory: Bradley Nordell; Michelle Paquette; Anthony Caruso; Masanori Sato; Takemasa Fujiseki; Hiroiyuki Fujiwara; Sean King; 1University of Missouri - Kansas City; 2Gifu University; 3Intel Corporation

5:20 PM
Effect of Spark Plasma Sintering Temperature and Pressure on Microstructural Phase Evolution in Consolidated Mechanically Alloyed Al Based Bulk Amorphous Alloy: Ram Maurya; Asutosh Sahu; Tapas Laha; 1Indian Institute of Technology Kharagpur
### Heterogeneity during Plastic Deformation – Synergy between Experimental Investigation and Simulation — Advances in Experimental and Characterization Techniques

**Program Organizers:** Stephen Niezgoda, The Ohio State University; David Fullwood, Brigham Young University

**Tuesday PM**  
Room: 250F  
October 25, 2016  
Location: Salt Palace Convention Center  

**Session Chair:** To Be Announced

#### 2:00 PM Invited

**Strain Localisation and the Ductility of HCP Alloys:** João Fonseca; Alberto Orozco-Caballero; Feng Li; Daniel Esque-de los Ojos; 1The University of Manchester

#### 2:40 PM

**Collecting In-situ HR-EBSD and DIC Data Simultaneously Stamping a Pattern Semi-transparent to Electrons:** Timothy Ruggles; Jacob Hochhalter; Andrew Cannon; Geoffrey Bomarito; 1National Institute of Aerospace; 2NASA Langley Research Center; 1900 Engineering, LLC

#### 3:00 PM

**Comparison of Strain Measurement Techniques for Tension Testing of Fine Nitinol Wires:** Janet Gbur; Benjamin Palmer; John Lewandowski; 1Case Western Reserve University

#### 3:20 PM

**Deformation History of Individual Grains in Polycrystalline Mg-Y by In-situ 3D-XRD:** Leyun Wang; Zhonghe Huang; Jun-Sang Park; Sangbong Yi; Erica Lilleodden; Shanghai Jiao Tong University; Argonne National Laboratory; Helmholtz-Zentrum Geesthacht

#### 3:40 PM

**_formability of Magnesium Alloy AZ31B from Room Temperature to 150°C:** C. Isaac Chelladurai; Andrew Orme; Michael Miles; David Fullwood; John Carsley; Raja Mishra; Brigham Young University; General Motors

#### 4:00 PM

**Reference Selection for EBSD Based Grain Reference Orientation Deviation Maps:** Stuart Wright; Seiichi Suzuki; Matthew Nowell; EDAX; TSL Solutions K.K.

#### 4:20 PM

**Measurement of Strain Localization during Creep of a Polycrystalline Superalloy Using SEM-based Digital Image Correlation:** Connor Slone; The Ohio State University

#### 4:40 PM

**Investigating the Heterogeneous Deformation of Polycrystalline Materials at the Mesoscale:** Zhe Chen; Samantha Daly; University of Michigan

#### 5:00 PM

**Investigation of Local Slip Heterogeneity in Al-Li Alloy 2195:** Wesley Tayon; Roy Crooks; Jacob Hochhalter; John Newman; Ashley Spear; NASA Langley Research Center; Black Laboratories, L.L.C.; University of Utah

### Innovative Processing and Synthesis of Ceramics, Glasses and Composites — SPS/Sintering

**Program Organizers:** Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, U.S. Army Research Laboratory; Scarlett Widgeon, New Mexico Highlands University; Gabriela Mera, TU Darmstadt

**Tuesday PM**  
Room: 255D  
October 25, 2016  
Location: Salt Palace Convention Center  

**Session Chairs:** Waltraud Kriven, University of Illinois at Urbana-Champaign; Gabriela Mera, Technical University of Darmstadt

#### 2:00 PM Invited

**Consolidation of Diamond-based Composite by SPS:** Takashi Goto; Hirokazu Katsui; Tohoku University

#### 2:40 PM

**Challenges in Spark Plasma Sintering of Cerium(IV) Oxide:** Anil Prasad; Linu Malakkal; Lukas Bichler; Jerzy Szpunar; University of British Columbia Okanagan; University of Saskatoon

#### 3:00 PM

**High-strength Pseudobrookite-type MgTi₂O₅ by Spark Plasma Sintering:** Hyoung-Won Son; Ryosuke Maki; Byung-Nam Kim; Yoshikazu Suzuki; University of Tsukuba; National Institute for Materials Science

#### 3:20 PM

**Synthesis of Textured Ultrahigh Temperature Ceramic Diborides Using Spark Plasma Forging:** Karthiselva N; B Murty; Srinivasa Bakshi; Indian Institute of Technology Madras

#### 3:40 PM

**Influence of Hot-pressing Time on Phase Evolution of SHS Obtained Ti₂AlC Active Precursors Powders:** Leszek Chlubny; Jerzy Lis; Paulina Borowiak; Katarzyna Chabior; AGH-University of Science and Technology, Faculty of Materials Science and Ceramics

#### 4:00 PM

**Solid State Reactive Sintering for Proton Conducting Ceramics:** Jianhua Tong; Clemson University

#### 4:20 PM

**Near-zero Volume-shrinkage in Reactive Sintering of Porous MgTi₂O₅ with Pseudobrookite-type Structure:** Yuta Nakagoshi; Jun Sato; Masahumi Morimoto; Yoshikazu Suzuki; University of Tsukuba; Quantachrome Instruments Japan G.K.

#### 4:40 PM

**Increasing the Silicon Carbide Content in Laser Sintered Reaction Bonded Silicon Carbide:** Sebastian Meyers; Jef Vleugels; Jean-Pierre Kruth; KU Leuven
2:00 PM Keynote
Chemical Demixing and Thermal Stability of Supersaturated Nanocrystalline CuCr Alloys: Insights from Advanced TEM: Gerhard Dehm; T. Harzer; T. Dennenwaldt; C. Freysoldt; C.H. Liebscher; Max-Planck-Institut für Eisenforschung; École Polytechnique Fédérale de Lausanne

2:40 PM Invited
Grain-boundary Character Distribution and Correlations with Electrical and Optoelectronic Properties of CuInSe2 Thin Films: Anthony Rollett; Daniel Abou-Ras; Norbert Schäfer; Gregory Rohrer; Carnegie Mellon University; Helmholtz-Zentrum Berlin für Materialien und Energie

3:00 PM Invited
Origins of Residual Stress in Thin Films: Effects of the Microstructure and Growth Kinetics: Eric Chason; Alison Engwall; Brown University

3:20 PM
Grain Boundary Engineering of Shape Memory Alloys for Enhanced Transformation Ductility: Ying Chen; Rebecca Dar; Rensselaer Polytechnic Institute

3:40 PM Invited
Spin-polarized Two-dimensional Electron Gas at Ferroelectric Oxide Interfaces: Xiaqing Pan; University of California - Irvine

4:00 PM Invited
The Role of the Water/Glass Interface on Material Properties: Stephen Garofalini; Rutgers University

4:20 PM Invited
Simulated Migration of Incoherent Facets in Twin Grain Boundaries: Jonathan Priedeman; David Olmsted; Eric Homer; Brigham Young University; University of California, Berkeley

International Symposium on Defects, Transport and Related Phenomena — Session III
Program Organizers: Sangtae Kim, University of California, Davis; Doreen Edwards, Alfred University; Tatsuya Kawada, Tohoku University; Manfred Martin, RWTH Aachen University

2:00 PM Invited
Oxygen Storage and Transport Properties of CeO2-ZrO2-Based Oxides: Junki Tomita; Hitoshi Takamura; Tohoku University

2:40 PM Invited
Electrical Conduction Behavior of BaTiO3-Based Multi-layer Ceramic Capacitor under High Field Condition: Seok-Hyun Yoon; Samsung Electro-Mechanics Co., Ltd.

3:20 PM Invited
Defects, Transport and Related Phenomena in Y-doped ZrO2: I-Wei Chen; University of Pennsylvania

4:00 PM Invited
Properties of Proton-conducting Solid Oxide Electrolyte Required for Critically-high Electrical Efficiency of SOFCs: Yoshio Matsuaki; Yuuya Tachikawa; Takaaki Somekawa; Koki Sato; Hiroshige Matsumoto; Shunsuke Taniguchi; Kazunari Sasaki; Tokyo Gas; Kyushu University
Light Metal Technology — Titanium Technology
Program Organizer: Xiaoming Wang, Purdue University
Tuesday PM Room: 150C Location: Salt Palace Convention Center
Session Chair: Zak Fang, University of Utah

2:00 PM Invited
Low Temperature Molten Salt (LTMS) De-oxygenation of Titanium and Its Alloys: Yang Xia1; Zhigang Fang1; Pei Sun1; Ying Zhang1; Tuoyang Zhang1; Michael Free1; 1University of Utah

2:40 PM Invited
Influence of Mn Content on Phase Constitution and Heat-treatment Behavior of Ti-Mn-Fe-Al Alloys: Masahiko Ikeda1; Masato Ueda1; 1Kansai University

3:00 PM Invited
Ductile Boron Bearing Welding Materials for TIG-braze and Weld Repair of Turbine Engine Components: Mathieu Brochu1; Yuan Tian1; Alexandre Gontcharov2; Paul Lowden1; Joe Liburdi1; 1McGill University; 2Liburdi Turbine Service

3:20 PM Invited
Influence of Mn Content on Phase Constitution and Heat-treatment Behavior of Ti-Mn-Fe-Al Alloys: Mathieu Brochu1; Yuan Tian1; Alexandre Gontcharov2; Paul Lowden1; Joe Liburdi1; 1McGill University; 2Liburdi Turbine Service

3:40 PM Invited
Interface Characterization in Alumina Joints Brazed Using Ag-Cu-Ti Alloys: Kun-Lin Lin1; Mritunjay Singh2; Rajiv Asthana1; 1National Nano Device Laboratories Hsinchu 300, Taiwan; 2Ohio Aerospace Institute, Cleveland, OH; 1University of Wisconsin-Stout

4:00 PM Invited
Fundamental Issues of Wetting and Interfacial Reactions during Joining of Ceramics by Brazing Alloys: Fiqiri Hodaj1; 1Grenoble Institute of Technology

Materials and Processes for CO2 Capture, Conversion and Sequestration — Sorbent and Metal-Organic Framework Materials
Program Organizers: Kevin Huang, University of South Carolina; Winnie Wong-Ng, NIST; Lan Li, Boise State University
Tuesday PM Room: 151B Location: Salt Palace Convention Center
Session Chairs: Lan (Samantha) Li, Boise State University; Kevin Huang, University of South Carolina

2:00 PM Introductory Comments
2:10 PM Invited
Sorbent slurries for Precombustion CO2 Capture: Jeffrey Culp1; Fan Shi2; Nicholas Siefert1; David Hopkinson1; 1National Energy Technology Laboratory

2:30 PM Invited
Materials for High-temperature Capture of CO2: Steven Milne1; Faith Bami duro1; Sergio Ramirez Solis2; Robert Bloom1; Valerie Dupont1; Ming Zhao1; 1University of Leeds; 2Tsinghua University

2:50 PM Invited
Review of In-situ Diffraction CO2 Capture Studies Using Porous Materials: Winnie Wong-Ng1; Jeffrey Culp2; Yu Sheng Chen1; Igor Levin1; Hui Wu2; James Kaduk3; 1NIST; 2AECOM, National Energy Technology Laboratory (NETL); 3University of Chicago; 1Illinois Institute of Technology

3:10 PM Invited
Carbon Dioxide Chemical Fixation on Metal-organic Framework Platforms: Wenyang Gao1; Shengqian Ma1; 1University of South Florida

3:30 PM Invited
Microporous Metal-organic Frameworks for CO2 Separation and Capture: Mechanistic Insights from Neutron Scattering and Computational Modeling: Wei Zhou1; 1National Institute of Standards & Technology

3:50 PM Invited
Density Functional Theory Study of the Flexible Metal-organic Framework Material Ni-BPene: Eric Cockayne1; Andres Correa Hernandez2; Lan Li2; 1NIST; 2Boise State University
Materials Development for Nuclear Applications and Extreme Environments — Processing and Microstructure Analysis of Nuclear Materials

Program Organizers: Raghunath Kanakala, University of Idaho; Nan Li, Los Alamos National Laboratory; Todd Allen, Idaho National Laboratory; Jake Amoroso, Savannah River National Laboratory; Aiadar Csontos, Nuclear Regulatory Commission; Lingfeng He, Idaho National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Amit Misra, University of Michigan; Raul Rebak, GE Global Research; Kumar Sridharan, University of Wisconsin

Tuesday PM  Room: 250A  Location: Salt Palace Convention Center

Session Chairs: Yutai Katoh, Oak Ridge National Laboratory; Robert Mariani, Idaho National Laboratory

2:00 PM Invited
Development of Advanced Ferritic Steels for Fast Reactor Applications: Stuart Maloy1; Osman Anderoglu1; Tarik Saleh1; Mychailo Toloczko2; Thak-Sang Byun3; Curt Lavender2; G. Robert Odette2; Los Alamos National Laboratory; 3PNNL; UCSD; ORNL

2:40 PM
Microstructures and Strength of Early Nuclear Grade SiC/SiC Composite after Very High Fluence Neutron Irradiation: Yutai Katoh1; Takaaki Koyanagi1; Takashi Nozawa2; Hiroyasu Tanigawa2; Oak Ridge National Laboratory; 1Japan Atomic Energy Agency

3:00 PM
Identification of Ag-rich Phase in TRISO Fuels by Using Atom Probe Tomography: Yaqiao Wu1; Isabella van Rooyen2; Jatuporn Burns1; James Madden1; Haiming Wen1; Boise State University; 1Idaho National Laboratory; 2Idaho State University

3:20 PM
Characteristic of the Effects of Carbide Precipitates and Spinel Decomposition on Thermal Aging Embrittlement of Cast Duplex Stainless Steels: Samuel Schwarm1; Sarah Mburu2; R. Prakash Kolli3; Daniel Perea1; Sreeamanathur Ankem1; University of Maryland, College Park; 2Pacific Northwest National Laboratory

3:40 PM
Effect of Crystallographic Texture on Creep Rupture Behaviour of 9Cr-1Mo Steel: Arya Chatterjee1; Pranabananda Modak1; Abhijit Ghosh1; Rahul Mitra1; Debay Chakrabarti1; Indian Institute of Technology Kharagpur

4:00 PM
Ti-Al-C MAX Phase Coatings for Accident Tolerant Fuels: Ben Maier1; Hwasung Yeom1; Greg Johnson1; Jennifer Porto1; Peng Xu1; Ed Lahoda1; Brenda Garcia-Diaz1; Luke Olson1; Michael Martinez-Rodriguez2; Hector Colon-Mercado1; Kumar Sridharan1; University of Wisconsin - Madison; 2Westinghouse Electric Company; 3Savannah River National Laboratory

4:20 PM
Synthesis, Sintering, and Hydrothermal Corrosion Studies of Advanced Multiphase Actinide Fuels: Jennifer Watkins1; Brian Jaques1; Darryl Butt1; Boise State University


Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Jake Amoroso, Savannah River National Laboratory; Isabelle Gibeiro, CEA Marcoule; Raghunath Kanakala, University of Idaho; Yutai Katoh, Oak Ridge National Laboratory; Stefan Neumeier, Forschungszentrum Juelich GmbH; David Shoesmith, Western University; Kumar Sridharan, University of Wisconsin; David Enos, Sandia National Laboratories; Charles Bryan, Sandia National Laboratories

Tuesday PM  Room: 251D  Location: Salt Palace Convention Center

Session Chairs: David Shoesmith, Western University; S.K. Sundaram, Alfred University

2:00 PM Invited
Microbial Impacts on Materials Containing Radioactive Waste: Charles Turick1; 1Savannah River National Laboratory

2:40 PM
Performance of Te and I Getters in Cementitious Waste Forms: Matthew Asmussen1; James Neway1; Amanda Lawter1; Nikolla Qafoku1; Pacific Northwest National Laboratory

3:00 PM
A Model for the Corrosion of Spent Nuclear Fuel within a Failed Nuclear Waste Container: David Shoesmith1; Linda Wu2; Nazhen Liu1; Zack Qin1; 1Western University; 2Canadian Nuclear Laboratories

3:20 PM
Corrosion Behavior of 410 SS/Ceramic Composite Waste Forms: Xin Chen1; J. Ernesto Indacochea1; William Ebert2; 1University of Illinois at Chicago and Argonne National Laboratory; 2University of Illinois at Chicago; 3Argonne National Laboratory

3:40 PM
Electrochemical Corrosion Behavior of an HT9 Based Alloyed Waste Form: Vineeth Kumar Gatta1; William Ebert2; Terry Cruse1; J Ernesto Indacochea1; 1University of Illinois-Chicago; 3Argonne National Laboratory; 2University of Illinois at Chicago

4:00 PM
Electrochemical Studies of Lanthanide Chlorides in Molten Eutectic LiCl-KCl: Vickram Singh1; Dev Chidambaram1; 1University of Nevada, Reno

4:20 PM
Radiation Stability and Chemical Durability of Cerium Substituted Zirconolite (CaZrTi4O12) and Pyrochlore (Nd7Ti2O12): Braeden Clark1; S. Sundaram1; Jake Amoroso1; 1Alfred University; 2Savannah River National Laboratory
2:00 PM Invited Surface Characterization for Understanding the Tribology of Polymer Matrix Composites (PMCs) Fabricated by Additive Manufacturing: Surojit Gupta; Ross Dunnigan; ‘University of North Dakota

2:40 PM Thermodynamic Stability of MAX and MXene Phases: Geetu Sharma; Dawei Feng; Michael Naguib; Yuri Gogotsi; Alexandra Navrotsky; ‘University of California, Davis; ‘Oak Ridge National Laboratory; ‘Drexel University

3:00 PM Optical Properties of Passivation Layers on Black Silicon: Sita Rajyalaxmi Marthi; Nuggehalli Ravindra; ‘New Jersey Institute of Technology

3:20 PM Thermochemistry of Simplest Metal Organic Frameworks: Metal Formates [M(HCOO)]_2·XH_2O (M = Mg, Mn, Co, Ni and Zn): G. P. Nagabhushana; Alexandra Navrotsky; ‘University of California, Davis

3:40 PM Thermo-mechanical Properties of Organomodified Kaolin Used as Filler in Natural Rubber Nanocomposites: Chinedum Mgbemena; Arr Menon; ‘Federal University of Petroleum Resources; ‘National Institute for Interdisciplinary Science and Technology (CSIR),

4:00 PM Optical Properties and Temperature Dependence of Energy Gap of Transition-metal Dichalcogenides: Sushant Rassay Fiu; Wctao Tang; Nuggehalli Ravindra; ‘New Jersey Institute of Technology

Materials Property Understanding through Characterization — Metals I

Program Organizers: Indrajit Dutta, Corning Incorporated; Brian Strohmeier, US Steel; Nicholas Smith, Corning Incorporated

Tuesday PM Room: 252A-B Location: Salt Palace Convention Center

Session Chair: Nicholas Smith, Corning Incorporated

2:00 PM Clarification of Strengthening and Fracture Behavior of the Nb-Hf-Ti Alloy C-103: Francisco Coury; Andre Costa e Silva; Claudio Kiminami; Noah Philips; John Foltz; Michael Kaufman; ‘Colorado School of Mines; ‘Universidade Federal Fluminense; ‘Universidade Federal de Sao Carlos; ‘ATI Specialty Alloys and Components

2:20 PM Depth-sensing Cyclic Nanoindentation of Gum Metal: Meysam Haghshenas; Vineet Bhakhri; Robert Klassen; Shigeru Kuramoto; ‘University of North Dakota; ‘Western University; ‘Ibaraki University

2:40 PM Effects of Thermal Processing Variations on Microstructure and High Cycle Fatigue of Beta-STOA Ti-6Al-4V: Byron McArthur; Michael Kaufman; Robert Field; ‘Colorado School of Mines

3:00 PM Fracture of Mesocrystalline FeGa Alloys through DIC: Nicholas Jones; Yared Amanuel; Jazalyn Dukes; Kariann Vander Pol; ‘Naval Surface Warfare Center, Carderock Division

3:20 PM Impeder Selection for Optimizing Heat Input during High Frequency: Alexandra Tupalo; Lesley Frame; ‘Thermatool Corp

3:40 PM Microstructural Characterization of Sub-surface Deformation in Machined Ti-6Al-4V under Varying Cutting Fluid Application: Nithin Rangasamy; A.K. Balaji; ‘The University of Utah

4:00 PM Effect of Cryogenic Quenching on Microstructure and Microhardness of Rapidly Solidified Grey Cast Iron: Olamilekan Oloyede; Robert F. Cochrane; Andrew M. Mullis; ‘University of Leeds

Materials Selection and Characterization for Corrosion Control — Materials Selection: Session III

Program Organizers: Ajit Mishra, Haynes International; Matthew Asmussen, Pacific Northwest National Laboratory; Eric Schindelholz, Sandia National Laboratories; Florent Bocher, Southwest Research Institute; Guang-Ling Song, Xiamen University; Jeffery Thomson, Oak Ridge National Lab; Kevin Lambrych, Ashland Performance Materials; Gary Coates, Nickel Institute / Garcoa Metallurgical; Raul Rebak, GE Global Research

Tuesday PM Room: 253B Location: Salt Palace Convention Center

Session Chairs: Raul Rebak, General Electric; Gary Coates, Nickel Institute; Ajit Mishra, Haynes International

2:00 PM Keynote The Galvanic Corrosion between Steel and Carbon Fiber Reinforced Polymer: Chi Zhang; Dajiang Zheng; Guang-Ling Song; Yang Guo; Ming Liu; Hamid Kia; ‘Xiamen University; ‘GM R&D

2:40 PM Threshold Chloride Concentration for Passivity Breakdown of Mg-Zn-Gd-Nd-Zr Alloy (UNS M12310) in Basic Solution: Jakraphan Ninlachart; Krishnan Raja; ‘University of Idaho

3:00 PM Mechanism of Magnesium Corrosion Poisoning through Alloying: Krista Limmer; Joseph Labukas; Michael Garvey; Santanu Chaudhuri; Jan Andzelm; ‘U.S. Army Research Laboratory; ‘Illinois Applied Research Institute

3:20 PM Corrosion Behaviour of AZ31 in Highly Alkaline Environment: Somi Doja; Lukas Bichler; Simon Fan; ‘University of British Columbia - Okanagan; ‘ZincNyx
3:40 PM
Comparative Studies of the Corrosion Potentials of Three Proprietary Micro Alloyed Steels in Aerated Brine Solutions: Lawrence Onyeji1; Girish Kale2; Bijan Kermani1; 1University of Hawaii; 2Pacific Northwest National Laboratory

4:00 PM
Influence of Deformation Temperature on Mechanical and Corrosion Property of 6082-Al Alloy: Nikhil Kumar1; Devasri Fuloria1; Sunkulp Goel1; R. Jayaganthan; 1IIT Roorkee

Mechanochemical Synthesis and Reactions in Materials Science — Materials for Hydrogen Production and Storage
Program Organizers: Antonio Fuentes, Cinvestav del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, UQTR

Tuesday PM
Room: 155A
Location: Salt Palace Convention Center
Session Chairs: Jacques Huot, Universite du Quebec a Trois-Rivieres; Sabrina Sartori, University of Oslo and UNIK

2:00 PM Invited
Nanostructured Materials for Hydrogen Technology: Thomas Klason1; Nils Bergemann1; Ragle Raudepp2; Charline Wolpert2; Claudio Pistidda1; Mauricio Schieda1; Martin Dornheim1; Maria Villa Vidaller1; 1Helmholtz-Zentrum Geesthacht; 2Helmut Schmidt University Hamburg

2:40 PM Invited
Hydrogen Sorption Enhancement in Cold Rolled LaNi5, CaNi5, and MgNi5: Manuel Tousignant1; Jacques Huot1; 1UQTR

3:00 PM Invited
Mechanochemical Synthesis of Materials for Hydrogen Storage: Sabrina Sartori1; 1University of Oslo and UNIK

3:20 PM
Reversible Hydrogen Storage Properties of Mg-Ag-Al Ternary Alloys Prepared by Mechanical Milling: Yanshan Lu1; Hui Wang2; Jiangwen Liu2; Liuzhang Ouyang2; Hui Wang2; Jiangwen Liu2; Liuzhang Ouyang2; Min Zhu2; Chengshiang Zhou2; Zhiyang Zhi2; 1Department of Metallurgical Engineering, The University of Utah; 2School of Materials Science and Engineering and Guangdong Provincial Key Laboratory of Advanced Energy Storage Materials, South China University of Technology

3:40 PM Invited
Quaternary Mg-based Transition-metal Complex Hydrides Produced by Reactive Milling: Stefano Deledda1; Olena Zavorotynska1; Bjorn Hauback1; 1IFEM

4:00 PM Invited
Mechanochemical Metathesis: A Highly Selective and Effective Route for Alane (AlH3) Synthesis under Ambient Conditions: Shalabh Gupta1; Vitalij Pecharsky1; Ihor Hlova1; Jennifer Goldston1; Marek Pruski1; Takeshi Kobayashi1; 1Ams Laboratory

4:20 PM Invited
Reversible Hydrogenation of Ball Milled Mixtures of Magnesium Triborane and Group I Hydrides to Mix Metal Borohydrides: Craig Jensen1; Marina Chong1; Tom Autrey2; Shin-ichi Orimo1; 1University of Hawaii; 1Pacific Northwest National Laboratory; 2Tohoku University

Nanomaterials Working in the Near-infrared: Biomedical Applications — Novel Methods & Materials’ Characterization
Program Organizers: Antonio Benayas, Institut National de la Recherche Scientifique; Luis Carlos, Universidade de Aveiro; Fiorenzo Vetrone, Institut national de la recherche scientifique; Marta Quintanilla, CIC biomaGUNE; Daniel Jaque Garcia, Universidad Autonoma de Madrid; Artiom Skripka, Institut National de la Recherche Scientifique

Tuesday PM
Room: 258
Location: Salt Palace Convention Center
Funding support provided by: Millipore Sigma and Photont etc.

Session Chairs: Marta Quintanilla, CIC biomaGUNE; Daniel Heller, Memorial Sloan-Kettering Cancer Center; Fiorenzo Vetrone, INRS-EMT

2:00 PM Introductory Comments

2:10 PM Keynote
Hyperspectral Optical Imaging Beyond 1000 nm: Mikhail Bereznin1; 1Washington University School of Medicine

2:50 PM Invited
Super-thin RVO4 (R = Y, Gd, Lu) Nanoparticles Doped with Rare-earths: Preparations and Optical Properties in NIR: Dragan Jovanovic1; Slobodan Dolic1; Miroslav Dramicanin1; 1University of Belgrade

3:10 PM Invited
Spectroscopic Properties of Red Persistent Nanophosphors Stimulated with Infrared Laser Irradiation: Mariusz Stefanski1; Robert Tomala1; Lukasz Marciniak1; Wieslaw Strek1; Dariusz Hreniak1; Jakub Cichos1; Marco Pedroni1; Fabio Piccinelli1; Marco Bettinelli1; Adolfo Speghini1; 1Institute of Low Temperature and Structure Research; 2Faculty of Chemistry, University of Wrocław; 3Dipartimento di Biotecnologie, Università di Verona and INSTM, UdR Verona

3:30 PM
Semiconductor and Upconversion Nanocrystals with NIR Emission: Spectroscopic Properties and Surface Group Analysis: C. Würth1; Mikhail Berezin1; R. Schneider1; M. Kraft1; S. Leubner2; N. Gaponik2; A. Eychmüller2; S. Wilhelm3; Lawrence Onyeji1; Girish Kale2; 1BAM Federal Institute for Material Research and Testing; 2Technical University of Dresden; 3University of Regensburg

3:50 PM Invited
Near Infrared (NIR) Absorbing and Emitting Colloidal Luminescent Nanocrystals: Venkataramanan Mahalingam1; 1Indian Institute of Science Education and Research Kolkata
Nanotechnology for Energy, Environment, Electronics, Healthcare and Industry — Session III

Program Organizers: Navin Manjooran, Siemens AG; Gary Pickrell, Virginia Tech

Tuesday PM
October 25, 2016
Room: 260A
Location: Salt Palace Convention Center

Session Chairs: Gary Pickrell, Virginia Tech; Navin Manjooran, Siemens AG

2:00 PM Introductory Comments

2:40 PM
Microbial Synthesis of Highly Catalytic Nanoparticles: Sarah Yang1; Dev Chidambaram1; Akira Nordmeier1; 1University of Nevada, Reno

3:00 PM
Percolative Nanoparticle-enhanced Films and Capacitor Devices: Andrew Sherman1; Haixong Tang1; 1Powdermet Inc

3:20 PM
Silver Nanoparticles Supported on Carbon Nanotube Carpets: Influence of Surface Functionalization: Sharmila Mukhopadhyay1; Anil Karumuri1; Dhawal Oswal1; 1Wright State University

3:40 PM
Synthesis and Properties of Heavy Metal Chalcogenides for Use as Advanced High Tech Optoelectronic Devices: Rahul Jain1; Vinay Verma2; 1RIET greater noida; 2Sharda University

4:00 PM
Synthesis, Characterization and Enhanced Photocatalytic Degradation Efficiency of Co Doped CuO Nanoparticles: Aarti Sharma1; RajKumar Dutta1; 1Indian Institute of Technology Roorkee

4:20 PM
Thermal Stability of Nanostructured Materials: Ibrahim Momohjimoh1; 1King Fahd University of Petroleum and Minerals

4:40 PM
Variation of Thermal Diffusivity of Copper Matrix Composites Using Graphene-dispersed Composite Powders: Hyo-Soo Lee1; Sang-Woo Kim1; 1KITECH

5:00 PM
New Routes for Old Pals: Triple RE3+-Doped NaGdF4 Fluorescent Nanoprobes for In Vitro (980nm-VIS) Imaging and Potential In Vivo (793nm-NIR) All Optical Monitoring: Antonio Benayas1; Wagner da Silva1; Blanca del Rosal1; Karla Josefa Santa Cruz1; Ratneswar Lal1; Francisco Sanz2; Fiorenzo Vetrone3; 1Institut national de la recherche scientifique; 2Universidade Federal de Alagoas; 3Universidad Autónoma de Madrid; 4Universidad de Sonora; 5University of California San Diego

Next Generation Biomaterials — Session III

Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Sharmila Mukhopadhyay, Wright State University; Sundeej Mukherjee, University of North Texas

Tuesday PM
October 25, 2016
Room: 259
Location: Salt Palace Convention Center

Session Chairs: Mohamed Rahaman, Missouri University of Science and Technology; Kalpana Katti, North Dakota State University; Enrico Bernardo, University of Padova

2:00 PM Invited Development of Osseointegrated Implants and Antimicrobial Technologies: Dustin Williams1; Roy Bloebaum2; 1University of Utah; 2University of Utah/VA Medical Center

2:40 PM Invited Evaluating Mechanisms of Metastasis of Cancer Using a 3D Bone-mimetic Model: Kalpana Katti1; MD Shahjahan Molla1; Dinesh Katti1; 1North Dakota State University

3:20 PM Invited Direct Ink Writing of Bioactive Silica-bonded Calcite Scaffolds from a Preceramic Polymer and Fillers: Enrico Bernardo1; Laura Ficoce1; Hamada Elsayed1; Devis Bellucci2; Valeria Cannillo2; Rainer Detsch3; Aldo Boccaccini3; 1University of Padova; 2University of Modena and Reggio Emilia; 3University of Erlangen-Nuremberg

4:00 PM Invited Silicon Nitride Implants with Complex Structures Created by Robocasting: Mohamed Rahaman1; Santuan Zhao1; Wei Xiao1; Sonny Bal2; Bryan McEntire3; Darin Ray4; 1Missouri University of Science and Technology; 2University of Missouri - Columbia; 3Amedica Corporation

Panel Discussion on Advanced Manufacturing — Collaborative Research Programs and Advances in Biomanufacturing

Program Organizer: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering

Tuesday PM
October 25, 2016
Room: 355B
Location: Salt Palace Convention Center

2:00 PM Introductory Comments - Collaborative Research Programs- Moderated by Frank Gayle, FASM. This section of the panel discussion will focus on collaborative programs for materials and processing research. Speakers will provide overviews about different types of programs and how they are driving innovation advanced manufacturing. Each speaker will give a brief presentation with plenty of time devoted to discussion and Q&A.
2:10 PM Invited
Successful Partnerships Between Academia and Industry: Diran Apelian¹;
¹Metal Processing Institute at Worcester Polytechnic Institute

2:25 PM Invited
Collaborative Program to Accelerate Materials Deployment for Additive Manufacturing via Multi-Scale Modeling: Pamir Alpay¹;
¹University of Connecticut

2:40 PM Invited
Collaborative Programs at the State and Regional Level

3:00 PM Panel Discussion on Collaborative Research Programs; Moderated by Frank Gayle, FASM

3:20 PM Invited
Data Infrastructure for Materials Data Discoverability and Reliability: Ken Kroenlein¹; ²NIST

3:40 PM Invited
Ab Initio-aided Thermodynamics of Rare Earth-based Alloys: Patrice Tarchi¹; Per Söderlind¹; Alexander Landa¹; Aurélien Perron¹; ²Lawrence Livermore National Laboratory

4:20 PM Invited
Thermodynamic Modeling Using Small Data: Suzana Fries¹; ²ICAMS, Ruhr University Bochum

Phase Transformations in Ceramics: Science and Applications — Prediction and Simulation
Program Organizers: Pankaj Sarin, Oklahoma State University; Ivar Reimanis, Colorado School of Mines; Waltraud Kriven, University of Illinois at Urbana-Champaign

Tuesday PM
Room: 255C
Location: Salt Palace Convention Center

Session Chair: Ivar Reimanis, Colorado School of Mines

2:00 PM Invited
Prediction of Diffusionless Phase Transformations for Complex Crystal Structures: Randall Hay¹; ²Air Force Research Laboratory

2:40 PM
Simulation of Crystallization Kinetics in Amorphous Oxide Thin Films: Mahyar M. Moghadam¹; Peter Voorhees¹; ²Northwestern University

3:20 PM
A Thermodynamic Approach on the Chemical Stability of Lanthanum Chromite-based Perovskite with Yttrium-stabilized Zirconia: Hooman Sabarou¹; Yu Zhong¹; ²Florida International University

3:40 PM Invited
Understanding Phase Transformations in Ceramics with Density Functional Theory Computations: Sanjay V. Khare¹; Z.T.Y. Liu¹; Yuejian Wang¹; X. Zhou¹; Cora Lind-Kovacs¹; ²University of Toledo; ³Oakland University; ⁴University of Maryland at College Park

4:00 PM
First Principles Investigation of the Atomic Scale Mechanism for the θ-Alumina to α-Alumina Phase Transformation: Krista Limmer¹; Jennifer Elward¹; Victoria Blair¹; Christopher Rinderspacher¹; ²U.S. Army Research Laboratory

4:20 PM
Deformation Mechanisms of Yttria-stabilized Tetragonal Zirconia Nanopillars: Ning Zhang¹; Mohsen Asle Zaeem¹; ²Missouri University of Science and Technology

Program Organizers: Morsi Mahmoud, Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Tuesday PM  Room: 255E  Location: Salt Palace Convention Center

Session Chairs: Kazuhiro Nagata, Tokyo Institute of Technology; Hideyuki Kanematsu, Suzuka National College of Technology

2:00 PM Invited Thermal and Microstructure Instabilities of Ceramics under a DC Voltage: I-Wei Chen; ’University of Pennsylvania

2:40 PM Invited Magnetic Alignment of Rare Earth Doped Alumina Grains in an Epoxy Matrix: A Proof of Concept Study: Victoria Blair; Carli Moorehead; Nicholas Ku; Krista Limmer; Raymond Brennan; ’Army Research Laboratory

3:20 PM Formation of Micro-textured Alumina Bodies under Applied Magnetic Field: Carli Moorehead; Victoria Blair; Raymond Brennan; ’Drexel University; ’US Army Research Laboratory

3:40 PM Microwave Sintering of Nanocrystalline PMN-PT/Fc2CoO4 Biphasic Composites and Their Dielectric and Magnetoelectric Properties: Claudia Fernandez; Ducinei Garcia; Ruth Kimitani; ’Universidade Federal de São Carlos

4:00 PM Microwaves Crystallization of Lithium Aluminum Germanium Phosphate Glass-ceramics Using 30 GHz Processing: Morsi Mahmoud; Cui Yuantao; Sarfaz Ahmad; Magnus Rolde; Carlos Ziebert; Guido Link; Hans Seifert; ’Karlsruhe Institute of Technology (KIT); City for Scientific Research and Technological Applications (SRTA City); ’Karlsruhe Institute of Technology

4:20 PM High Frequency MW Sintering of Calcium Phosphate Based Constructs: Mohamad Hassan; Guido Link; Morsi Mahmoud; Ahmed Abd El-Fattah; Sherif Kandil; ’Alexandria University; ’Karlsruhe Institute of Technology (KIT)

Responsive Functional Nanomaterials — Responsive Nanomaterials Synthesis and Applications

Program Organizers: Jiahua Zhu, The University of Akron; Ziqi Sun, Queensland University of Technology; Liwen Mu, The University of Akron

Tuesday PM  Room: 260B  Location: Salt Palace Convention Center

Session Chair: Weichang Hao, Beihang University

2:00 PM Keynote Actuation of Liquid Metal Marbles: Kourosh Kalantar-zadeh; Aman Michell; Khashayar Khoshmanesh; Shi-Yang Tang; ’RMIT

2:40 PM Invited Amino Acids Adsorption on Graphene Oxide, Titanium Dioxide and their Nanocomposite: Liangliang Huang; Mykola Seredych; Teresa Bandosa; ’University of Oklahoma; ’The City College of New York; ’The City College of New York

3:00 PM Invited Break and Reform Chemical Bonds in Energy Materials by Electrons: Bin Wang; ’The University of Oklahoma

3:20 PM Invited Influence of Solute (Impurity) Atoms on Microstructure and Deformation Mechanisms of Nanostructured Pure Titanium: Guanyu Deng; Yan Chong; Nahoko Saji; Ruixiao Zheng; Tilak Bhattacharjee; Yu Bai; Akinobu Shibata; Nobuhito Tsuji; ’Kyoto University

3:40 PM SiOx Nanoflowers and Nanobangles Grown under Atmospheric Pressure: Yimin Cui; ’Beihang University

4:00 PM Development of Lead Free Organometallic Solid State Perovskite Solar Cell: Pritam Dey; Tanmoy Maiti; ’IIT Kanpur

S2P: Semi-solid Processing of Alloys and Composites — Session V

Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group

Tuesday PM  Room: 151A  Location: Salt Palace Convention Center

Session Chair: Sagren Govender, CSIR

2:00 PM Macro-Observation of the Interface of the Al-22%Si-Cu/Al-7%Si-Mg Bi-Metal Parts Fabricated by Thixoforming: Zhao Yang; ’Central South University

2:30 PM Semi-solid Processing and Properties of Re-containing Mg Alloys: Shusen Wu; Xiaogang Fang; Shulin Lv; Li Zhao; Jing Wang; ’Huazhong University of Science and Technology

3:00 PM Research on Fabrication and Semisolid Processing of Semisolid Slurries of 7075 Aluminum Matrix Composites Reinforced with Nano-sized SiC Particles: Jufu Jiang; Ying Wang; Shoujing Luo; ’Harbin Institute of Technology

3:30 PM Effects of Grain Refiner on the Microstructural Evolution during Making Semi-solid Slurry of the A357 Alloy: Liang Xiaokang; Zhu Qiang; ’General Research Institute for Nonferrous Metal; ’General Research Institute for Nonferrous Metal

4:00 PM Effect of Mushy-state Rolling on Microstructure and Tensile Creep Behaviour of Al4.5Cu ALLOY and In-situ Al4.5Cu-STIB2 Composite: Rahul Mitra; Siddhalingeshwar G.; Monalisa Mandal; Madhusudan Chakraborty; ’Indian Institute of Technology; ’BVB College of Engineering and Technology
S2P: Semi-solid Processing of Alloys and Composites — Session VI
Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group
Tuesday PM Room: 151G Location: Salt Palace Convention Center
Session Chair: Qiang Zhu, General Research Institute for Nonferrous Metals

2:00 PM
A Review on Thixoforming of High Melting Point Alloys: Ahmed Rassili; 1University of Liège

2:30 PM
A Novel Method for Semi-Solid Casting of Hypereutectic Gray Cast Iron in Expendable Mold: Behzad Niroumand; 1Isfahan University of Technology

3:00 PM
The Interface Morphology of Thixo-joined Dissimilar Steels: Mohammed Alshekhly; 1Management & Science University (MSU)

3:30 PM
Time-dependent Thixoforming of H11 Steel and the Effects of Forming Conditions on Segregation of Liquid Phase: Yi Meng; Sumio Sugiyama; Jun Yanagimoto; 1Chongqing University; 2The University of Tokyo

4:00 PM
Development of Unconventional Processing of Steels in Semi-Solid State: Bohuslav Masek; 1University of West Bohemia; 2Technische Universität Chemnitz

Sintering and Related Powder Processing Science & Technologies — Sintering & Grain Growth II
Program Organizers: Ricardo Castro, University of California, Davis; Brady Butler, U.S. Army Research Laboratory; Olivia Graeve, University of California, San Diego; Eugene Olevsky, San Diego State University; Anders Eklund, Quintus Technologies, LLC.
Tuesday PM Room: 150E Location: Salt Palace Convention Center
Session Chair: To Be Announced

2:00 PM Invited
Challenges, Progress and Perspectives of Nanosintering: Boris Feigelson; 1Naval Research Laboratory; 2ASEE Postdoctoral Fellow

2:40 PM Invited
Compacting Nanocrystalline Iron-alloy Powders by High Pressure Torsion and Spark Plasma Sintering: Reiner Kirchheim; 1Cairo University, Faculty of Engineering; 2Central Metallurgical Research and Development Institute; 3Cairo University

3:20 PM
Grain Growth of Nano-grained Tungsten Powders during Sintering: Brady Butler; 1U.S. Army Research Laboratory; 2ORISE Research Participant

3:40 PM Invited
Sintering in Nanocrystalline Alloys Favoring Grain Boundary Segregation and Second Phase Precipitation: Christopher Schuh; 1MIT

4:20 PM Invited
Geometrical and Structural Activity in Sintering of Uniaxially Cold Compacted Metallic Powders: Alberto Molinari; 1Elisa Torresani; 2Silvia Baselli; 3University of Trento

5:00 PM
High-pressure High-temperature Gasket Material for Polycrystalline Diamond Synthesis: Colton Fox; 1University of Utah

5:20 PM
In-situ Neutron Scattering upon Sintering of Titanium Alloy Powder Compacts: Klaus-Dieter List; 1Gang Chen; 2Peng Cao; 3Australian Nuclear Science and Technology Organisation; 4Northwest Institute for Nonferrous Metal Research; 5The University of Auckland

Surface Properties of Biomaterials — Bioactivity and Biocompatibility
Program Organizers: Amit Bandopadhyay, Washington State University; Susmita Bose, Washington State University; Mukesh Kumar, Biomet Inc; Jason Langhorn, DePuy Synthes Joint Reconstruction; Venu Varanasi, Texas A & M University
Tuesday PM Room: 355A Location: Salt Palace Convention Center
Session Chair: Venu Varanasi, Texas A & M Health Science Center

2:00 PM
Material Replacement to Reduce Protein Loss during Hemodialysis: Patrick Nichols; 1Jeffrey Bates; 2University of Utah

2:20 PM Invited
Genetically Engineered Materials Building upon Biomimetic Interfaces: Candan Tamerler; 1University of Kansas

2:40 PM Invited
Developing New Biomaterials Surfaces that the FDA will Approve for Implantation: Thomas Webster; 1Northeastern University

3:00 PM
Effect of Topography on Corrosion Rate and Biocompatibility of a Mg Alloy as a Biomaterial: Aydin Tahmasebifar; 1Said Kayhan; 2Muammer Koç; 3Zafer Evis; 4Middle East Technical University; 5Hamad Bin Khalifa University

3:20 PM
Hydroxyapatite Precipitation on Cast and Forged Ti-6Al-4V and Ti-6Al-7Nb Alloys: Mahmoud Abdel-salam; 1Shimaa El-haadad; 2Waleed Khalifa; 3Cairo University, Faculty of Engineering; 4Central Metallurgical Research and Development Institute; 5Cairo University

3:40 PM
Study of Osteoblast Cells on Different Morphologies of Titanium Dioxide Nanotubes: Umair Shah; 1Waseem Haider; 2Zia Rahman; 3Hassnain Asgar; 4Kashif Deen; 5Central Michigan University; 6University of British Columbia

4:00 PM
An Exploration of Plastic Deformation Dependence of Cell Viability and Adhesion in Metallic implant Materials: Benay Uzer; 1Demircan Canadinc; 2Benay Uzer

93
Symposium on Applications of Low Emittance Synchrotron X-ray Sources to Mesoscale Materials Studies — Coherent Diffraction and Combined Techniques
Program Organizers: Robert Suter, Carnegie Mellon University; Dean Haefner, Argonne National Laboratory

Tuesday PM
October 25, 2016
Room: 250D
Location: Salt Palace Convention Center

Session Chair: Dean Haefner, Advanced Photon Source

2:00 PM Introductory Comments
2:20 PM Invited
A High-energy Microscope at the Upgraded Advanced Photon Source: Jonathan Almer1; Sarvjit Shastri1; 1Argonne National Laboratory

3:00 PM Invited
Revolutions in Coherent X-ray Sources Will Enable Dynamic Nanometer Scale Strain Imaging in Structural Materials: Richard Sandberg2; Saryu Fensin1; Ross Harder1; John Barber1; Richard Sheffield1; Edward Kober2; Reeju Pokharel1; Ricardo Lebensohn1; Cris Barnes1; 1Los Alamos National Laboratory; 2Argonne National Laboratory

3:40 PM Opportunities for Materials Science with New 3D Bragg Ptychography Methods: Stephan Hruszczewycz2; 1Argonne National Laboratory

4:00 PM Coherent Diffractive Imaging of Defect Dynamics in Nanoparticles: Andrew Ulvestad1; 1Argonne National Laboratory

4:20 PM Invited
Process and Performance Control at the Mesoscale and the MaRIE Project: Mark Bourke1; 1Los Alamos National Laboratory

Symposium on Large Fluctuations and Collective Phenomena in Materials III — Multicomponent and High Entropy Alloys
Program Organizers: Xie Xie, The University of Tennessee; Karin Dahmen, University of Illinois at Urbana-Champaign; Peter Liaw, University of Tennessee; Yong Zhang, University of Science and Technology Beijing

Tuesday PM
October 25, 2016
Room: 250C
Location: Salt Palace Convention Center

Session Chairs: Karin Dahmen, University of Illinois Urbana-Champaign; Peter Liaw, University of Tennessee

2:00 PM Invited
Atomic and Electronic Basis for the Serration Behavior of Ultrastrong BCC Refractory High Entropy Alloys: William Yi Wang1; Jinshan Li1; Shun-Li Shang1; Yi Wang1; Kristopher Darling1; Xie Xie2; Oleg Senkov3; Laszlo Kececs4; Xidong Hu5; Karin Dahmen4; Peter Liaw4; Zi-Kui Liu1; 1Northwest Polytechnical University; 2The Pennsylvania State University; 3US Army Research Laboratory; 4The University of Tennessee; 5Air Force Research Laboratory; ‘University of Science and Technology Beijing; ‘University of Illinois at Urbana Champaign

2:40 PM Heat-treatment Effect on the Serrated Flows in AlxCoCrFeNi (x = 0.1, 0.3, 0.5, and 0.7) High-entropy Alloys (HEAs): Haoyan Diao1; Chih-Hsiang Kuo1; James Brechtl1; Steven Zinkle1; Karin Dahmen1; Peter Liaw1; ‘The University of Tennessee; ‘The University of Tennessee; ‘University of Illinois at Urbana-Champaign

3:00 PM Invited
Atomiatic Clustering-ordering Mechanisms and Computational Design of Multicomponent Alloys: Ganesh Balasubramanian1; 1Iowa State University

3:40 PM Dislocation Activities during Deformation in High Entropy Alloy at Cryogenic Environment: J.P. Liu2; Zhang Yong1; 1University of Science and Technology Beijing

4:00 PM Invited
Serration Behavior in High-entropy Alloys: Yong Zhang1; 1University of Science and Technology Beijing

4:40 PM The Study of Serrated Plastic Flow in Refractory High Entropy Alloys: Shuying Chen1; Chien-Chang Juan2; Jien-Wei Yeh2; Karin Dahmen2; Peter Liaw2; 1University of Tennessee; 2National Tsing Hua University; ‘University of Illinois at Urbana Champaign

The 8th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Green Manufacturing II
Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mritunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Allen Apblett, Oklahoma State University; Marsha Bischel, Armstrong World Industries, Inc.; Surojit Gupta, University of North Dakota; Manish Mehta, National Center for Manufacturing Sciences (NCMS); Makio Naito, Osaka University; Richard Sisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Hisayuki Suematsu, Nagaoka University of Technology; Yiquan Wu, Alfred University

Tuesday PM
Room: 151C
Location: Salt Palace Convention Center

Session Chairs: Yiquan Wu, Alfred University; Manabu Fukushima, National Institute of Advanced Industrial Science and Technology (AIST)

2:00 PM Invited
A Zero-waste Approach for Concrete, Water, Heat and Electricity: Richard Riman1; 1Rutgers University

2:40 PM Invited
Green Synthetic Methods or Molybdates Based On Bimetallc Complexes: Allen Apblett1; Ahmed Moneeb2; Abdulaziz Bagabas2; Abdullah Alabdulrahman2; 1Oklahoma State University; ‘King Abdullah City for Science and Technology

3:00 PM Direct N2O Decomposition Catalysts Based on Lanthanum Silicate: Naoyoshi Nunotani1; Ryosuke Naga2; Nobuhito Inamaka1; 1Osaka University

3:20 PM Degradation and Corrosion Mechanism of MgO-C Refractory during a Ferro-manganese Processing: Yongsoo Chung1; 1Korea Polytechnic University
Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications — Bulk Metallic Glass / Shape Memory Alloys

Program Organizers: Ali Yousefiani, Boeing Research and Technology; Troy Topping, California State University, Sacramento

Tuesday PM Room: 150A&B
October 25, 2016 Location: Salt Palace Convention Center

Session Chair: Robert Dillon, NASA Jet Propulsion Laboratory

2:00 PM Invited
Developing Structural Applications for Bulk Metallic Glasses and Composites: Douglas Hofmann¹; Scott Roberts¹; ‘NASA JPL/Caltech

2:40 PM Invited
Enabling Ultra-low Temperature Mechanisms with Bulk Metallic Glass Alloys: Robert Dillon¹; John Paul Borgonia¹; Scott Roberts¹; Douglas Hofmann¹; Andrew Kennett¹; Bryan Mcenerney¹; Andrew Shapiro-Scharlotta¹; ‘JPL

3:20 PM
High Throughput Measurements of Mechanical Properties in a Ti-based Bulk Metallic Glass-matrix Composite at Different Length Scales: Ali Khoosravani²; Rene Diaz³; Douglas Hofmann¹; Naresh Thadhan¹; Surya Kalindini¹; ‘Georgia Institute of Technology; ‘NASA Jet Propulsion Laboratory/California Institute of Technology

3:40 PM
Spall Response of Titanium-based Bulk Metallic Glasses and Composites of Varying Crystalinity: Rene Diaz³; Manny Gonzales¹; Greg Kennedy¹; David Scripka¹; Ali Khoosravani²; Surya Kalindini¹; Douglas Hofmann¹; Naresh Thadhan¹; ‘Georgia Institute of Technology; ‘NASA Jet Propulsion Laboratory

4:00 PM
Effects of Aging and Cyclic Heat Treatment on Room Temperature Superelasticity in Oligocrystalline Fe-Mn-Al-Ni Shape Memory Wires: Hande Occan¹; Ji Ma¹; Jeffrey Brown¹; Ibrahim Karaman¹; ‘Texas A&M University; ‘Dynalloy

4:20 PM
Effects of Aging and Shape Memory Response on Ultra-high Strength/Temperature NiTiHfPd SMAs: Soheil Saedi¹; Guher Toker¹; Osman Ozbultu²; Haluk Karaca¹; ‘University of Kentucky; ‘University of Virginia

Zirconia Based Materials for Cutting Edge Technology — Session I

Program Organizers: Hasan Gocmez, Dumlupinar University; Yuji Hotta, National Institute of Advanced Industrial Science and Technology; Sudipta Seal, University of Central Florida; Hidrotaka Fujimoto, Yamaguchi University; Cihangir Duran, Yildirim Beyazit University; Kohel Soga, Tokyo University of Science; Takashi Shirai, Nagoya Institute of Technology; Hilmi Yurdakul, TeknoCeram

Tuesday PM Room: 254B
October 25, 2016 Location: Salt Palace Convention Center

Session Chairs: Hasan Gocmez, Dumlupinar University; Yuji Hotta, National Institute of Advanced Industrial Science and Technology (AIST); Hidrotaka Fujimoto, Yamaguchi University

2:00 PM Invited
Shape Memory Zirconia: Micro-scale Properties to Macro-scale Applications: Christopher Schuh¹; ‘MIT

2:40 PM Invited
Low Temperature Plastic Flow and Grain Boundary Structure in Nanocrystalline Tetragonal Zirconia Polycrystal (TZP): Hidehiro Yoshida¹; Koji Matsui¹; Yuichi Ikuhara³; ‘National Institute for Materials Science; ‘Tosoh Corporation; ‘The University of Tokyo

3:20 PM
Fabrication of Transparent ZrO2 and Its Applications: Yasuhiro Kodera¹; Guillermo Aguilar¹; Javier Garay¹; ‘University of California Riverside; ‘University of California San Diego

3:40 PM
Colloidal Processing and Sintering of ZrO2 Nano Powders: Cihangir Duran¹; Hasan Gocmez¹; Yuji Hotta¹; Kimiyasu Sato¹; Koji Watari¹; ‘Yildirim Beyazit University; ‘Dumlupinar University; ‘National Institute of Advanced Industrial Science and Technology; ‘National Institute of Advanced Industrial Science and Technology

4:00 PM
Materials Design for Photonic Applications of Zirconia Based Material: Kohel Soga¹; ‘Tokyo University of Science

4:20 PM
Anelastic and Dielectric Relaxation of 8 mol% Yttria Stabilized Zirconia: Peipei Gao¹; Amy Bolon¹; Edgar Lara-Curzio²; Andrew Payzant²; An Ke³; Zorica Brankovic³; Gabor Brankovic³; Miladin Radovic³; ‘Texas A&M University; ‘Oak Ridge National Laboratory; ‘University of Belgrade
Additive Manufacturing for Surface Engineering of Materials — Session I
Program Organizers: Sandip Harimkar, Oklahoma State University; Arvind Agarwal, Florida International University; Benjamin Boesl, Florida International University; Hitesh Vora, Oklahoma State University

Wednesday AM
Room: 355B
Location: Salt Palace Convention Center

Session Chairs: Arvind Agarwal, Florida International University; Sandip Harimkar, Oklahoma State University

8:00 AM Invited
Microstructural Observation of Inconel 718 Cladding Fabricated by Pulsed Laser Additive Manufacturing: Mathieu Brochu1; Yuan Tian1; Alberto Muniz2; 1McGill University

8:40 AM Invited
Thermal Spray for Additive Manufacturing: Dale Moody1; Peter Foy1; 1Plasma Powders and Systems Inc.

9:00 AM
Additive Manufacturing for AV-8B Engine Repair at FRC East: Stephen Brown1; 1ARL Penn State

9:20 AM
Development of 3D Printing Process for Engineering Graphene Reinforced Poly (Lactic Acid) Composite with Superior Surface Wear Resistance: Pranjal Nautiyal1; Jennifer Bustillos1; Daniela Zambrano1; Benjamin Boesl2; Arvind Agarwal3; 1Florida International University

10:00 AM Break

10:20 AM
Cold Spray Coating as a Tool for Additive Repair/Refurbishment of Al Alloy Components: Sundararajan Govindan1; Naveen Chavan1; 1Indian Institute of Technology Madras; 2International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

10:40 AM
Ni Based Alloy Additive Manufacturing with CMT Welding: Ana Sofia D’Oliveira1; Henrique Zenere1; Bernhard Guimaraes1; Luiz Felipe Beltzac1; Paulo Okimoto2; 1UFPR - Federal University of Paraná

Additive Manufacturing of Composites and Complex Materials — Techniques
Program Organizers: Jonathan Spowart, Air Force Research Laboratory; Nikhil Gupta, New York University; Dirk Lehmhus, ISIS Sensorial Materials Scientific Centre

Wednesday AM
Room: 355E
Location: Salt Palace Convention Center

Session Chairs: Bilal Mansoor, Texas A&M University at Qatar; Ruel McKenzie, Air Force Research Laboratory

8:00 AM
Thermoset Cross-linking Effects on Interlayer Bond Strength of Fused Filament Fabrication Parts: Andrew Abbott1; Robyn Bradford1; Gyaneshwar Tandon1; Hilmar Koerner1; Katie Thorp2; Patricia Hubbard3; Roger Avakian4; 1UDRI; 2USAF; 3PolyOne

8:20 AM Invited
Interlaminar Strengthening of Multidirectional Laminates Using Additive Manufacturing: Md Shariful Islam1; Pavana Prabhakar2; 1The University of Texas at El Paso; 2University of Wisconsin-Madison

9:00 AM
Passive Multi-feed Mixing of Complex Fluids for 3-D Direct Write Assembly: Ruel McKenzie1; Hilmar Koerner1; 1Air Force Research Laboratory

9:20 AM
Microstructure Design of Novel Composite Lanthanum Zirconate-yttria Stabilized Zirconia Based Thermal Barrier Coatings: Xingye Guo1; Zhe Lu1; Sung-Hoon Jung2; Yeon-Gil Jung2; Li Li1; James Knapp1; Jing Zhang2; 1Indiana University - Purdue University Indianapolis; 2Changwon National University; 3Praxair Surface Technologies Inc.

9:40 AM
Binder Jetting of Si3N4-based Composite Ceramics with Different Porosity: L.N. Babinsky1; A.V. Ripetsky1; S.A. Sitnikov1; Yuri Solyaev2; R.M. Kahramanov3; 1Moscow Aviation Institute

10:00 AM Break

10:20 AM Invited
Engineered and Low Cost Filler Based Lightweight Composites: Vasanth Chakravarthy Shunmugasamy1; Yasser Al-Hamidi1; Bilal Mansoor2; 1Texas A&M University at Qatar

10:40 AM
Alloy Design Multicomponent Hardmetal Alloy for Additive Manufacturing: Kai-Chun Chang1; An-Chou Yeh1; Jien-Wei Yeh2; Su-Jien Lin2; Che-Wei Tsai3; 1National Tsing Hua University

11:00 AM
Investigations on Additively Generated Micro-scale, Open-pore Components Based on a Multi-material: Florian Hengsbach1; Peter Koppa1; Martin Holzweißig1; Kay-Peter Hoyr1; Thomas Tröster1; Mirko Schaper1; 1Benteler Automobiltechnik GmbH

Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBBTi Consulting

Wednesday AM Room: 355D Location: Salt Palace Convention Center

Session Chairs: Sudarsanam Babu, University of Tennessee; Shawn Kelly, EWI

8:00 AM
Characterization of MAR-M247 Fabricated by Electron Beam Melting: Kinga Unocic1; Alfred Okello1; Michael Massey1; Michael Kirka1; Ryan Dehoff1; ‘ORNL’

8:20 AM
Effect of Microstructure on the Creep Behavior of Inconel 718 Manufactured via Electron Beam Melting: Alfred Okello1; Michael Kirka1; Kinga Unocic1; Ryan Dehoff1; ‘Oak Ridge National Laboratory’

8:40 AM
Microstructure Characterization and Monotonic Properties of Inconel 718 Manufactured Through Electron Beam Melting in the As-built and Post-processed States: Michael Kirka1; Kinga Unocic1; Ryan Dehoff1; Suresh Babu1; Alfred Okello1; ‘Oak Ridge National Laboratory’; ‘University of Tennessee’

9:00 AM
Comparison of the Processing Space for Laser-deposited Inconel 625 and 17-4 Stainless Steel: Colt Montgomery1; Jack Beuth1; Shawn Moylan1; ‘Carnegie Mellon University’; ‘National Institute of Standards and Technology’

9:20 AM
Impact of Fe content and Post Processing on Properties of Additively Manufactured Solid Solution Strengthened Nickel Based Alloys: Zakariya Khayat1; Todd Palmer1; ‘Applied Research Lab Penn State University’

9:40 AM
Supersolidus Liquid Phase Sintering of Inconel 718: Poojesh Nandwana1; Amy Elliott1; William Peter1; Sudarsanam Babu1; ‘Oak Ridge National Laboratory’

10:00 AM Break

10:20 AM
Fabricating and Characterizing Additively Manufactured Heat Exchanger Tubing: Paul Korins2; Haley KeKee2; John Bobbitt2; Sudarsanam Babu2; Frederick List1; ‘Savannah River National Laboratory’; ‘NNSA National Security Campus’; ‘University of TN Knoxville’; ‘Oak Ridge National Laboratory’

10:40 AM
Manufacturing of W-band Vacuum Electronic Devices with Electron Beam Melting: John Ledford1; Harvey West1; Timothy Horn1; ‘CAMAL’

11:00 AM
Damage Development in Thin Walled Selective Laser Melted Structures: Jonas Suurimaki1; Johan Moverare1; Hakan Brodin1; ‘Linkoping University’; ‘Siemens Industrial Turbomachinery AB’

11:20 AM
Effects of Nickel Superalloy Composition and Geometry in EBM on Microstructure: Curtis Frederick1; Suresh Babu1; Michael Kirka1; ‘UTK’

11:40 AM
Reliability Estimation of Additive Manufacturing Process Parameters Using Surrogate Modeling: Azadeh Keshtgar1; Kelvin Leung1; Nagaraja Iyery1; ‘TDA’


Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBBTi Consulting

Wednesday AM Room: 355C Location: Salt Palace Convention Center

Session Chair: Anthony Rollett, Carnegie Mellon University

8:00 AM
ICME Approach to the Materials Challenges in Additive Manufacturing of Metals: Jiadong Gong1; David Snyder1; Gregory Olson1; ‘QuesTek Innovations’; ‘Northwestern University’

8:40 AM
A Composable Simulation Framework for Microstructure and Mechanical Properties Prediction for Metallic Additive Manufacturing Processes: Nachiket Patil1; Deepankar Pal1; Pradeep Chalavadi1; Chong Teng1; Kai Zeng1; Brent Stucker1; ‘3DSIM,LLC’

9:00 AM
Materials Based Spatio-temporal Decoupling for the Prediction of Non-linear Thermomechanical Phenomenon in Metal Additive Manufacturing Processes: Deepankar Pal1; Sally Xu1; Samuel Dilip Jangani1; Chong Teng1; Brent Stucker1; ‘University of Louisiana’; ‘3DSIM’

9:20 AM
Predictive Modeling of Grain Growth in Laser-based Additive Manufacturing of Austenitic Stainless Steel: Wenda Tan1; ‘University of Utah’

9:40 AM
A Partial Solution to Modeling the Anisotropic Material Properties of Fused Deposition Modeling ABS - Part 1 of 2: Ross Fischer1; Keenan Jewkes1; Scott Kessler1; ‘Colorado Mesa University’

10:00 AM Break

10:20 AM
Spatial Control of AM Solidification Microstructure across Multiple Alloys and Processes: Sneha Narra1; Jack Beuth1; ‘Carnegie Mellon University’

10:40 AM
Phase Field Modeling of Solidification Microstructure during Laser Sintering of Inconel 625: Supriyo Ghosh1; Jonathan Guyer1; ‘National Institute of Standards and Technology’
WEDNESDAY AM
11:00 AM
Simulating Metal Additive Manufacturing Microstructures with Kinetic Monte Carlo: Theron Rodgers1; Jonathan Madison1; Veena Tikare1; 1Sandia National Laboratories

11:20 AM
Site Specific Texture Control In EBAM Process Using Numerical Modeling and Optimization Techniques Aided by High Performance Computing: Narendran Raghavan1; Ryan Dehoff2; John Turner2; Srdjan Simunovic2; Michael Kirk1; Neil Carlson1; Sudarsanam Babu1; 1University of Tennessee Knoxville; 2Oak Ridge National Laboratory; 3Los Alamos National Laboratory

11:40 AM
Continuum Modelling of Solidification during Additive Manufacturing: Ramanarayan Haribaraputran1; David T Wu1; 1Institute of High Performance Computing, Agency for Science, Technology and Research, Singapore

Additive Manufacturing: In-situ Process Monitoring, Defect Detection and Control — Directed Energy Deposition and Related Technologies
Program Organizers: Uli Ackeid, Arcam AB; Ian D. Harris, EWI; Andrzejit Wójcieszynski, ATI Powder Metals; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrysson, North Carolina State University; Rodney Boyer, Monash University

Wednesday AM Room: 355A
Location: Salt Palace Convention Center

Session Chair: Sudarsanam Babu, University of Tennessee

8:00 AM
Effect of Process Parameters on the Deposit Geometry of Directed Energy Deposits: Jay Christ1; Niyanth Sridharan2; Ralph Dinwiddie2; Sudararam Babu1; Ryan Dehoff2; Anil Chaudhary3; Brian Jordan2; 1Pennsylvania State University; 23D Systems

8:20 AM
Feedback Control of Blow-powder Additive Deposition: R Mark Ward1; Luke Carter1; Thomas Kosche1; Nicholas Adkins1; 1University of Birmingham; 2BCTGmbH

8:40 AM
Optical Emissions Monitoring of Directed Energy Deposition and Powder Bed Fusion: Abdalla Nassar1; Alexander Dunbar1; Edward Reutzel1; Jared Blecher2; 1Penn State University; 23D Systems

9:00 AM
In Situ Monitoring of Directed Energy Deposition: Cameron Knapp1; Thomas Lienert1; John Carpenter1; Desiderio Kovar2; 1Los Alamos National Laboratory; 2University of Texas at Austin

9:20 AM
Thermal Measurements of Process and Microstructural Validation for Ti-6Al-4V and Inconel 625 Material: Frederick Lia1; Joshua Park1; Michael Gouge1; Jayme Keist1; Panagiotis Michaleris1; Richard Martukanitz2; 1ARL at the Pennsylvania State University

9:40 AM
Towards Real-time Regulation of Build Geometry in a Directed Energy Deposition Process Using Vision-based Feedback Control: Dustin Seltzer1; Jeff Schiano1; Abdalla Nassar1; Edward Reutzel1; 1Penn State University

10:00 AM Break

10:20 AM
Distortion Analysis and Reduction for Layerwise Additive Manufacturing Processing by a Laminated Layerwise Analytical Model and Tool: Jingquan Cheng; 1Composite Solutions and Digital Manufacturing LLC

10:40 AM
Integrated Process Monitoring Physics-based Modeling Approach for Uncertainty Quantification in Metal-based Additive Manufacturing: Alaa Elwany1; Raymundo Arroyave1; Ibrahim Karaman1; Ji Ma1; Gustavo Tapia1; Brian Franco1; Kobra Karayagiz; 1Texas A&M University

11:00 AM
Thermal Control to Achieve Consistent and Uniform Mechanical Properties: James Craig1; Edward Reutzel2; Abdalla Nassar2; 1Stratronics, Inc.; 2ARL/Penn State University

11:20 AM
The Effect of Global Heat Control on Melt Pool Temperature and Size: James Craig1; Sarah Kunz2; 1Stratronics, Inc.; 2Wright State Institute

Advanced High Strength Steel Design / Technological Exploitation — Plate, Bar, and Structural Steels
Program Organizers: Alla Sergueeva, The NanoSteel Company; Daniel Branagan, The NanoSteel Company; Kester Clarke, Colorado School of Mines

Wednesday AM Room: 155F
Location: Salt Palace Convention Center

Session Chairs: Keith Taylor, SSAB; Amar De, ArcelorMittal

8:00 AM
Influence of Composition and Processing on the Strength and Torsional Ductility of High Strength Steel Wire: Cristina Ciganik; John Speer; Kip Findley; Walther Van Raemdonck2; 1Advanced Steel Processing and Products Research Center; 2N.V. Bekaert S.A.

8:20 AM
Precipitation Strengthening by Induction Treatment in High Strength Low Carbon Microalloyed Hot Rolled Plates: Gorka Larrzabal; Nerea Iasisti; Beatriz Pereda1; Jose Rodriguez-Ibane1; Pello Uranga1; 1CEIT and Tecnun (University of Navarra)

8:40 AM
Validation of an Indirect Technique to Quantify the Amount of Niobium in Solution Prior to Hot Rolling: Gorka Larrzabal; Nerea Iasisti; Beatriz Pereda1; Pello Uranga1; Marcelo Rebellato2; Beatriz Lopez2; Jose Rodriguez-Ibane1; 1CEIT and Tecnun (University of Navarra); 2RMS

9:00 AM
Effect of Heat Treatment on the Strength and Toughness Matching of High Strength and High Toughness Low Alloy Cast Steel: Yang Gao1; Yongji Niu1; Zhenrui Li1; Shifeng Shi1; 1Beijing Beiyi Functional Materials Corporation

9:20 AM
Phase Reversion-induced Nanograin/ultrafine-grained (NG/UFG) Low Carbon Microalloyed Steel: Low Temperature Superplasticity: Venkata Sai Challa1; Yashwanth Injeti1; Devesh Misra1; Jieou Hu2; Lin-Xiu Du2; 1University of Texas at El Paso; 2Northeastern University
9:40 AM
Advanced Strong and Ductile Low Alloy Multiphase Steels with Superior Work Hardening Capability: Abhinav Varshney; Sandeep Sangal; Kallol Mondal; 'IIT Kanpur

10:00 AM Break

10:20 AM
The Impact of Processing on Structure-property Relationship in Ultrahigh Strength Nb-Ti Microalloyed Steels: Venkata Sai Challa; Venkata Natarajan; Devesh Misra; Michael Mulholland; Dmitri Sidorenko; Jack Hartmann; 'University of Texas at El Paso; 'ArcelorMittal Global R&D

10:40 AM
Thermomechanical Process Development of a Ferrite-bainite 540MPa HR Steel for Automotive Use, the Impact of the Run Out Table Technology: Lucia Naves Candia; Omar Garcia; Roberto Bruna; César Villanueva; Daniel Vázquez; 'Ternium México; 'Ternium Siderar

11:00 AM
Effect of Austempering Temperature and Time on Mechanical Properties of SAE 9260 Steel: Ranjit Dalwatkar; 'Bharat Forge Ltd India

11:20 AM
Application of High Strength and Ultra-High Strength Steel Tubes in Structural Sections: Mechanical Properties and Micro-Structure: Fatemeh Javidan; Amin Heidarpour; Xiao-Ling Zhao; Christopher Hutchinson; 'Monash University

11:40 AM
Effect of Magnesium Addition on Inclusion Size Distribution in OCTG Steel: Linzhu Wang; Li Jingshe; Yang Shufeng; Zhang Shuo; Wang Yang; 'University of Science and Technology Beijing

Advanced Manufacturing Technologies — Advanced Manufacturing Processes
Program Organizer: Muammer Koc, HBKU / Qatar Foundation

Wednesday AM
Room: 150F
Location: Salt Palace Convention Center

Session Chair: Muammer Koc, HBKU / QF

8:00 AM Introductory Comments

8:10 AM
Finite Element Analysis and Simulation of the Manufacturing Process of Hot Formed Vessel Heads: Fatima Mendez; Roberto Ramirez; Ricardo Araiza; Miguel Quiñones; 'University of Monterrey; 'Melter, S.A. de C.V.

8:30 AM
Numerical Simulation and Experimental Validation of Hydroforming of Square Cups Using Cryorolled Aluminum Alloy Sheets: Fitsum Feyissa; Ravi Digavali; 'IIT Delhi

8:50 AM
Rapid Heat Treatment Process Using Microwaves-A Novel Approach: Swaminathan G; Prasanna Venkatesh P R; Rajendra Prasad A; 'Sri Sairam Engineering College

9:10 AM
Sustainable Electrochemical Machining for Metal Recovery, Elimination of Waste, and Minimization of Water Usage: Brian Skinner; Savidra Lucatero; Stephen Snyder; TJ Taylor; Timothy Hall; Heather McCrabb; Holly Garich; Maria Inman; 'Faraday Technology, Inc.

9:50 AM
The Profile Correction Module: A Whole New Approach to Coil Coating: Michael Bonner; 'Saint Clair Systems, Inc.

10:10 AM Break

10:30 AM
Research on the Cutting Thermodynamic Behavior of High-strength Large-thickness Offshore Jack-up Platform Leg Rack: Zhou Hong; 'Jiangsu University of Science and Technology

10:50 AM
Diffusion Bonding in Advanced Manufacturing Process Chains: Simon Jahn; Felix Gemse; Steffen Dahms; Udo Broich; Jan Pfeiffer; 'ifw Jena; 'PVA LWT

11:30 AM
Wear and Hardness Properties of Surface Modification of Copper Alloy Processed by Friction Stir Process: Kazeem Sanusi; Esther Akinlabi; 'University of Johannesburg

11:50 AM
Advanced Manufacturing Investments by the DOE EERE Advanced Manufacturing Office: David Hardy; 'DOE EERE AMO

Advancements in In-situ Electron Microscopy Characterization — Combining In-situ Electron Microscopy with Advanced Mapping
Program Organizers: Khalid Hattar, Sandia National Laboratories; Josh Kacher, Georgia Tech; Daniel Gianola, University of California, Santa Barbara; Judith Yang, University of Pittsburgh; Amith Darbal, AppFive LLC

Wednesday AM
Room: 253A
Location: Salt Palace Convention Center

Session Chairs: Daniel Gianola, University of California, Santa Barbara; Amith Darbal, AppFive

8:00 AM Invited
Cross-correlative Precession Electron Diffraction: Atom Probe Tomography Study of Solute Segregation in Grain Boundaries: Xuyang Zhou; Xiao-xiang Yu; Tyler Kaub; Richard Martens; Gregory Thompson; 'University of Alabama

8:40 AM
Simulated Kikuchi Diffraction from Atomistic Structures: Adam Herron; Eric Homer; Douglas Spearot; Shawn Coleman; 'Brigham Young University; 'University of Florida; 'U.S. Army Research Laboratory

9:00 AM
Examination of Grain Boundary Character Evolution in Copper through In-situ Annealing in SEM and TEM: Asher Leff; Brandon Rummels; Austin Nye; Ryan Demott; Irene Beyerlein; Mitra Taheri; 'Drexel University; 'University of Colorado Colorado Springs; 'Los Alamos National Laboratory
Advances in Dielectric Materials and Electronic Devices — Ferroics and Multiferroics II

Program Organizers: Amar Bhalla, The University of Texas at San Antonio; Ruyan Guo, The University of Texas at San Antonio; K. M. Nair, E.I.duPont de Nemours & Co; Danilo Suvorov, Jožef Stefan Institute; Rick Ubic, Boise State University

Wednesday AM Room: 255F
October 26, 2016 Location: Salt Palace Convention Center

Session Chairs: Rick Ubic, Boise State University; Luiz Cotica, State University of Maringá; Vojislav Milic, University of Nis, Faculty of Electronic Engineering; Ivair Santos, State University of Maringá

8:00 AM Invited Growth Peculiarities of PMN-PT Thin Films Prepared with Pulsed-laser Deposition
Danilo Suvorov1; Urska Gabor1; Matjaž Spreitzer1; Jožef Stefan Institute

8:20 AM Invited
Anomalous Magnetic Behavior in BiFeO3-PbTiO3 Multiferroic Nanoparticles: Ivair Santos1; Valdríle Freitas2; Taiana Bonadio2; Ricardo Miyahara1; Luiz Cotica1; JosÉ Eiras1; Fabiano Yokachiya1; Ruyan Guo1; Amar Bhalla1; State University of Maringá; State University of West-Center; Federal University of São Carlos; Helmholtz Zentrum Berlin fur Materialien und Energie; University of Texas at San Antonio

8:40 AM
Effects of Crystallographic Texture in Bi-based Piezoelectric Thin Films: Austin Fox1; Brady Gibbons1; Oregon State University

9:00 AM
Combinatorial Synthesis of Piezoelectrics Using an Inkjet Printer: Fred Marlton1; Owen Standard1; John Daniels1; University of New South Wales

9:20 AM
Synthesis and Properties of Nanostructured BiFeO3 Ceramics Obtained under Extreme Conditions: Ivair Santos1; Eduardo Volinste1n; Gustavo Dias1; Luiz Cotica1; Diego Viana1; Ducinei Garcia1; JosÉ Eiras1; Ruyan Guo1; Amar Bhalla1; University of Texas at San Antonio; State University of Maringá; Federal University of São Carlos

9:40 AM Invited
Induced High-temperature Relaxor Behavior in Intrinsically Ferroelectric Bismuth and Lead Based Complex Oxides: Akansha Dwivedi1; IIT BHU

10:00 AM Invited
Environmental Friendly Strontium Titanate Based Double Perovskites for High Temperature Thermoelectric Power Generation: Tanmoy Maiti1; IIT Kanpur

10:40 AM
Synthesis and Properties of Lead-free BNBT-based PTCR Thermistor Ceramics: Jörg Töpfer1; Daniel Mächler1; Univ. Appl. Sciences Jena

11:00 AM
Recent Development of Perovskite-based Composite Ceramics for High Temperature Thermistor Applications: Bo Zhang1; Qing Zhao1; Aimin Chang1; Xinjiang Technical Institute of Physics & Chemistry of CAS

11:20 AM
Rapidly Transient Electronic Systems Using Stress Engineered Glass: Gregory Whiting1; Palo Alto Research Center

11:40 AM
Bulk Relaxor Ferroelectric Ceramics as Refrigerant Elements in a Dielectric Cooling Device: Zdravko Kati{jk}1; Uros Plaznik1; Andrej Kitanovski1; Brigita Rozie1; Barbara Malie1; Hana Ursic1; Marko Vrabelj1; Qiming Zhang1; Jožef Stefan Institute; University of Ljubljana; University of Ljubljana; The Pennsylvania State University

Art and Cultural Heritage: Discoveries and Education — Art and Cultural Heritage: Discoveries I

Program Organizers: Glenn Gates, Walters Art Museum; Darryl Butt, University of Utah

Wednesday AM Room: 251F
October 26, 2016 Location: Salt Palace Convention Center

Session Chair: Darryl Butt, University of Utah

8:30 AM Introductory Comments

8:40 AM Invited
Fracture on Marble-adhesive Interfaces of Restored Art Structures: Ting Tan1; Nima Rahbar2; Carolyn Riccardelli2; George Wheeler2; Wole Soboyejo2; The University of Vermont; Worcester Polytechnic Institute; Metropolitan Museum of Art; Superstructures-Engineers and Architects; Princeton University

9:00 AM
Role of Patina in the Construction of the Poetic Image of Colombian Sculpture of 20th Century: Claudia Silva1; Henry Colorado1; Gabriel Vélez1; Universidad de Antioquia
9:20 AM
Using Supercritical Carbon Dioxide to Rehydrate Oven Dried Samples of Modern and Historic Wood with and without the Use of a Co-solvent: Georgina Hammond; 'University of Birmingham

9:40 AM
A Materials Scientist in a Geologist's World: Using Petrography to Study Ancient Roman Ceramics: Alison Trachet; 'University of Florida

10:00 AM
Characterization of 11th C AD Bismuth Containing Lusterwares from Uzbekistan and Kazakhstan: Sean Arnold; Pamela Vandiver; 'University of Arizona

10:20 AM Break

10:40 AM
Reverse Engineering Ancient Greek Ceramics: Patricia McGuigan; Sanchita Balachandran; Matt Hyleck; 'Johns Hopkins University; 'Baltimore Clayworks

11:00 AM
Characterization of Native Copper Refining through Optical Metallography of the Copper Oxide Phase: Megan Godby; Karl Rundman; Paul Sanders; 'Michigan Technological University; 'Retired

11:20 AM
Studying Plating Thickness and Base Material Composition of Modern Silver-plated Cultural Heritage Objects Using a Handheld X-ray Fluorescence Spectrometer: Matthew Carl; Marcus Young; 'University of North Texas

11:40 AM
Thermal Spray in Art & Architecture: Dale Moody; Peter Foy; 'Plasma Powders and Systems Inc.

Boron, Boron Coatings, Boron Compounds and Boron Nanomaterials: Structure, Properties, Processing, and Applications — Atomically Thin Boron
Program Organizers: Roumiana Petrova, New Jersey Institute of Tech; Jens Kunstmann, TU Dresden

Wednesday AM
Room: 260B
Location: Salt Palace Convention Center

Session Chair: Jens Kunstmann, TU Dresden

8:00 AM Invited
Synthesis of Atomically Thin Boron Films on Metal Substrates: Guoan Tai; 'Nanjing University of Aeronautics and Astronautics

8:20 AM Invited
Deciphering Multi-center Bonding in Boron Chemistry: Alexander Boldyreva; 'Utah State University

8:40 AM Invited
Synthesis of Borophenes: Anisotropic, Two-dimensional Boron Polymorphs: Andrew Mannix; Xiang-Feng Zhou; Brian Kiraly; Joshua Wood; Diego Alducina; Benjamin Myers; Xiaolong Liu; Brandon Fisher; Ulises Santiago; Jeffrey Guest; Miguel Yazaman; Arturo Ponce; Artem Oganov; Mark Hersam; Nathan Guisinger; 'Northwestern University/Argonne National Laboratory; 'Nankai University; 'Northwestern University; 'University of Texas San Antonio; 'Argonne National Laboratory; 'Skolkovo Institute of Science and Technology

10:00 AM Break

10:20 AM Invited
Realization of Two-dimensional Boron Sheets: Hui Lii; 'Institute of Physics, Chinese Acedamy of Sciences

11:00 AM
Energy Decomposition Analysis of 2D Boron Crystals from First Principles: Tomasz Tarkowski; Jacek Majewski; Nevill Gonzalez Szwachii; 'University of Warsaw

11:20 AM Invited
Nanosheets of MgB, as a New Class of 2D Semiconductor: Bo Xu; Scott Beckman; 'Washington State University

Ceramic Matrix Composites — Processing and Properties of Ceramic Composites
Program Organizers: J. P. Singh, U.S. Army Research Laboratory; Narottam Bansal, NASA Glenn Research Center; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

Wednesday AM
Room: 254A
Location: Salt Palace Convention Center

Session Chairs: Sung Choi, Naval Air Systems Command; Ramasis Goswami, Naval Research Laboratory

8:00 AM
Microstructures and Properties of Al/Al2O3 Multilayers: Ramasis Goswami; Chandra Pande; 'Naval Research Laboratory

8:20 AM
Processing Optimization and Improved Tribological Performance of Si3N4/Ti(C,N) Nanocomposite under Low Hertzian Stress: Jow-Lay Huang; Ching-Huan Lee; Horng-Hwa Lu; 'National Cheng Kung University; 'National Ching-Yi University of Technology

8:40 AM
Processing and Elevated Temperature Mechanical Properties of ZrB2/ZrB2-C Laminates: Connor Wittmaier; William Fahrenholtz; Greg Hilmas; 'Missouri University of Science and Technology

9:00 AM
Microstructure and Mechanical Properties of Metal-ceramic Composites Produced through In-situ Partial Reduction: Kevin Anderson; Richard Vinci; Helen Chan; 'Lehigh University

9:20 AM
Synthesis of Nanocrystalline Ultrahigh Temperature Tantalum Hafnium Carbide Solid Solution Powders and Related Nanocomposites: Paniz Foroughi; Zhe Cheng; 'Florida International University

9:40 AM
Self-healing Function of Mullite-based Composites at High Temperatures: Makoto Nanko; Hai Pham; 'Nagaoka University of Technology

10:00 AM Break

10:20 AM Carbon Nanotube and In-situ Titanium Carbide Reinforced Titanium Diboride Matrix Composites Synthesized by Reactive Spark Plasma Sintering: Karthiselva N; Srinivasa Bakshi; 'Indian Institute of Technology Madras
10:40 AM
Effect of SiC Content on Thermal and Ablation Properties of Pressureless Sintered ZrB2-based Ultrahigh Temperature Ceramic Composites: Rahul Mitra1; Manab Mallik1; Ansu Kailath1; Kalyan Ray1; 1Indian Institute of Technology; 2Rensselaer Polytechnic Institute; 3Army Research Laboratory, Jamsheedpur

11:00 AM Invited
Irradiation-induced Damage in Minerals: Influence of the Atomic-topology: N M Anoop Krishnan1; Bu Wang2; Gaurav Sant3; Mathieu Baudry4; 1Physics of Amorphous and Inorganic Solids Laboratory (PARISlab), University of California Los Angeles; 2Laboratory for the Chemistry of Construction Materials, University of California Los Angeles; 3Laboratory of the Chemistry of Construction Materials, University of California Los Angeles

11:40 AM
Coupled Effects of Nuclear and Electronic Energy Loss in Ceramics Under Irradiation: Eva Zarkadoula1; Yanwen Zhang2; William Weber2; 1Oak Ridge National Laboratory; 2University of Tennessee

Computational Design of Ceramics and Glasses — Disordered Materials and Irradiation Effects
Program Organizers: Mathieu Bauchy, University of California, Los Angeles; Liping Huang, Rensselaer Polytechnic Institute; Peter Kroll, University of Texas at Arlington

Wednesday AM  Room: 252A-B
Location: Salt Palace Convention Center

Session Chairs: Emanuela Del Gado, Georgetown University; Roland Pellenq, MIT-CNRS

8:00 AM Invited
Metastable-stable Phase Diagrams in the Zirconia-scandia System for Controlled Synthesis on a Nanoscale: Hirota Fujiwara1; Masatomo Yashima2; Masahiro Yoshimura3; 1Yamaguchi University; 2Tokyo Institute of Technology; 3National Cheng Kung University

8:40 AM
On the Possibility of Using Sintering to Synthesize Materials with Low Structural Defects for Opto-electronic Applications: Amit Samanta1; Andrew Lange2; Hadi Majidi3; Selim Elbadji4; 1Lawrence Livermore National Laboratory; 2University of California, Davis

9:20 AM
Irradiation-induced Damage in Minerals: Influence of the Atomic-topology: N M Anoop Krishnan1; Bu Wang2; Gaurav Sant3; Mathieu Baudry4; 1Physics of Amorphous and Inorganic Solids Laboratory (PARISlab), University of California Los Angeles; 2Laboratory for the Chemistry of Construction Materials, University of California Los Angeles; 3Laboratory of the Chemistry of Construction Materials, University of California Los Angeles

9:40 AM
Development of Potentials for Molecular Dynamics Simulations of Multi-component Glasses: Siddharth Sundararaman1; Simona Ispar2; Walter Kob2; Liping Huang2; 1Rensselaer Polytechnic Institute; 2Universite Montpellier 2

9:20 AM  Invited
Commercial Processing of Aluminum Composites with Nano Alumina Reinforcement: William Harrigan1; 1Gamma Technology, LLC

10:00 AM
Break

10:20 AM  Invited
Two-stage Sintering of Nano-sized Yttria Stabilized Zirconia with Polymer Sphere Generated Porosity: Edward Gorkowski1; Scooter Johnson1; James Wollmershauser1; Stephanie Wimmer1; 1Naval Research Laboratory

10:40 AM
Nanoparticle Doping for High Energy Fiber Lasers: Colin Baker1; Joseph Friebel1; Woohong (Rick) Kim2; Charles Askins3; John Peele4; Barbara Marcheschii5; Jasbinder Saghera6; Jun Zhang7; Radha Patnaik8; Larry Merkle9; Mark Dubinskii10; Youming Chen11; Iyad Dajani11; Cody Mart11; 1Naval Research Laboratory; 2Sotera Defense Solutions; 3Army Research Laboratory; 4Air Force Research Laboratory; 5University of Arizona

11:00 AM
Invited
Compaction Plasticity of Ceramic Spray Dried Granules to Form Microstructural Uniformity and Green Strength: Ian Maher1; Rutgers University

11:20 AM
Study on the Characteristic and Effect of the Nickel Ferrite Spinel Cermet as AI Electrolysis Inert Anode: Yihan Liu1; Xiaomeng Zhao1; 1Northeastern University

11:40 AM
Study on the Characteristic and Effect of the Nickel Ferrite Spinel Cermet as AI Electrolysis Inert Anode: Yihan Liu1; Xiaomeng Zhao1; 1Northeastern University

10:00 AM  Break

10:20 AM
Break

10:40 AM
Nanoparticle Doping for High Energy Fiber Lasers: Colin Baker1; Joseph Friebel1; Woohong (Rick) Kim2; Charles Askins3; John Peele4; Barbara Marcheschii5; Jasbinder Saghera6; Jun Zhang7; Radha Patnaik8; Larry Merkle9; Mark Dubinskii10; Youming Chen11; Iyad Dajani11; Cody Mart11; 1Naval Research Laboratory; 2Sotera Defense Solutions; 3Army Research Laboratory; 4Air Force Research Laboratory; 5University of Arizona

11:00 AM Invited
Irradiation-induced Damage in Minerals: Influence of the Atomic-topology: N M Anoop Krishnan1; Bu Wang2; Gaurav Sant3; Mathieu Baudry4; 1Physics of Amorphous and Inorganic Solids Laboratory (PARISlab), University of California Los Angeles; 2Laboratory for the Chemistry of Construction Materials, University of California Los Angeles

11:40 AM
Coupled Effects of Nuclear and Electronic Energy Loss in Ceramics Under Irradiation: Eva Zarkadoula1; Yanwen Zhang2; William Weber2; 1Oak Ridge National Laboratory; 2University of Tennessee

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Session II
Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Sanjay Mathur, University of Cologne; Eugene Olevsky, San Diego State University; Edward Gorzkowski, Naval Research Laboratory; Menka Jain, University of Connecticut; Hidehiro Kamiya, Tokyo University of Agriculture and Technology; Bhanu Chauhan, William Paterson University; Haitao Zhang, UNC Charlotte; Bhanu Chauhan, William Paterson University

Wednesday AM  Room: 257B
Location: Salt Palace Convention Center

Session Chair: Kathy Lu, Virginia Tech
11:00 AM
Laser Assisted Synthesis of Ligand Free Nanostructures for Sensing Applications: Komal Bagga; Ronan McCann; Robert Groarke; Brian Freeland; Mercedes Vazquez; Dermot Brabazon; 'Dublin City University

11:20 AM
Controlled Growth of Regular MoO3 Nanoribbons and MoO3-based Heterostructures: Soheil Razmyar; Haitao Zhang; 'UNC Charlotte

11:40 AM Invited
Zero Grain Boundary Energy Ceramics: Ricardo Castro; Nazia Nafzin; 'University of California, Davis

**Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Session II**
Program Organizers: Albert T. Wu, National Central University; Iver Anderson, Ames Laboratory

Wednesday AM Room: 257A Location: Salt Palace Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Heat-Free Soldering Using Undercooled Metals: Simge Cinar; Ian Tevis; Jiahao Chen; Martin Thuo; 'Iowa State University

8:40 AM
Subgrain Rotation of Single-crystal Solder Joints at Symmetrical Locations of a BGA Component under Thermal Shock: Fu Guo; Shihai Tan; Jing Han; 'Beijing University of Technology

9:20 AM
β-Sn Grain Formation in Aluminum-modified Lead-free Solder Alloys: Kathlene Reeve; Iver Anderson; Carol Handwerker; 'Purdue University; 'Ames Laboratory

9:40 AM
Development of Metal-coated Carbon Nanotubes Reinforced Tin Composite by Ultra-sonication Assisted Melting Process and Characterization: Md Muktadir Billah; Quanfang Chen; 'University of Central Florida

10:00 AM
On the Growth Kinetics of Cu6Sn5 Phase during Reaction between a Supercooled Sn-Cu Solder Alloy and Cu Substrate: Role of the Physic State of the Solder: Oleksii Liashenko; Fiqiri Hodaj; 'Grenoble Institute of Technology

10:20 AM Break

10:40 AM
A Study on Thermal Shock Property of Cu-filled through Silicon Via: Ma Limin; Zhao Xuewei; Guo Fu; 'Beijing University of Technology

11:00 AM
Study of the Solid-state Diffusion of Bismuth in Tin Using Electron Probe Microanalysis (EPMA): Andre Delhaise; Doug Perovic; 'University of Toronto

11:20 AM
Investigation on Subgrain Rotation Behavior in Lead-free Solder Joints during Thermal Fatigue Using EBSD In-situ Observation Technique: Jing Han; Fu Guo; Jianping Liu; 'Beijing University of Technology

**Energy Storage VI: Materials, Systems and Applications Symposium — Li-ion Batteries**
Program Organizers: Xingbo Liu, West Virginia University; Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST); Yang-Tse Cheng, University of Kentucky

Wednesday AM Room: 250B Location: Salt Palace Convention Center

Session Chair: Xingbo Liu, West Virginia University

8:00 AM
Biomass-based Carbon Fibers for Energy Applications: Ryan Paul; Xuliang Dai; Shadah Shaikh; 'GrafTech International Holdings Inc.

8:20 AM
Carbon Coated Prelithiated Silicon Nanoparticles as Anode for Next Generation Lithium Ion Batteries: Qianran He; Maziar Ashuri; Satyanarayana Emani; Leon Shaw; 'Illinois Institute of Technology

9:00 AM
Investigation of Li Spatial Distribution inside Bulk Li-Mg Alloy Electrode after Delithiation Using Neutron Imaging: Yuxuan Zhang; Ravi Chandraw; Hassina Bilheux; Madhu Jagannathan; 'University of Utah; 'Oak Ridge National Laboratory

9:20 AM
Understanding the Degradation of Electrodes in Lithium Based Battery Systems: Gabrielle Bachand; Dev Chidambaram; 'University of Nevada, Reno

9:40 AM Invited
Stability Investigation of Li Solid Electrolytes against Metallic Lithium: Kuan-Zong Fung; Shu-Yi Tsai; Chung-Ta Ni; 'National Cheng Kung University

10:20 AM Break

10:40 AM
Thermodynamic Investigations of Lithium Battery Materials: Hans Seifert; Maren Lepple; Damian Cupid; Carlos Ziebert; 'Karlsruhe Institute of Technology (KIT)

11:00 AM
The Potential of Si Micro-porous/Micro-columnar Structures as High Capacity Anodes for Li-ion Batteries: Madhusudan Jagannathan; Bhaskar Vadlamani; K.S.Ravi Chandran; 'Metallurgical Engineering
Failure Analysis and Prevention — Complex and Historical Cases  
Program Organizer: Burak Akyuz, ATS, Inc.

Wednesday AM  
Room: 150G  
October 26, 2016  
Location: Salt Palace Convention Center

Session Chairs: Joseph Lemberg, Exponent; Jonathan Trenkle, Exponent; Debbie Aliya, Aliya Analytical; Andrew Havics, PH2 LLC; Charles White, Kettering University; Amber Dalley, Consultant; Michael Budinski, National Transportation Safety Board; Pierre Dupont, Schaeffler Belgium

8:00 AM Invited  
Recent Findings in the DB Cooper Skyjacking: Alan Stone1; 1ASTON Metallurgical Services Co., Inc.

8:20 AM  
Failures of a Different Sort: Charles White1; 1Kettering University

8:40 AM  
Failure of Integrity Management in Recent Major US Pipeline Accidents: Michael Budinski1; 1National Transportation Safety Board

9:00 AM  
Brittle Fracture of Structural Steel in an Earthquake Damaged Building: Milo Kral1; 1University of Canterbury

9:20 AM  
Historical Failure: Aloha Airlines In-flight Structural Failure: Joe Epperson1; 1NTSB

10:00 AM Break

10:20 AM Invited  
Contributing Factors in the Flint, Michigan, Lead Contaminated Drinking Water Crisis: Debbie Aliya1; 1Aliya Analytical, Inc.

10:40 AM  
The Hojack Swing Bridge: Metallurgical and Structural Analysis: Ronald Parrington1; Daniel Stange; Kevin Messel1; 1Engineering Systems Inc. (ESI)

11:00 AM  
The Rainham Chemical Works Explosion: A 100th Anniversary Perspective: Meredith Sellers1; Amy Richards1; 1Exponent; 2Engineering Systems Incorporated

11:20 AM  
Materials Curiosities over the Ages in the Rolling Elements & Sliding Bearing Industry: Pierre Dupont1; 1Schaeffler Belgium Sprl/Bvba

11:40 AM  
How Different Laboratories Can Obtain Various Results in the Same Case of Failure?: Fabienne Delaunois1; Victor Ioan Stanciu1; Véronique Vitry1; 1UMONS Faculté Polytechnique FPMs

Gas/Metal Reactions, Diffusion and Phase Transformation during Heat Treatment of Steel — Session I  
Program Organizer: Liang He, Air Products and Chemicals Inc.

Wednesday AM  
Room: 155E  
October 26, 2016  
Location: Salt Palace Convention Center

Session Chair: Liang He, Air Products and Chemicals

8:00 AM Introductory Comments - Brief introduction of the symposium, the first presentation will start around 8:20 a.m.

8:20 AM Martensitic Martensite-to-austenite Transformation during Low-temperature Nitridation of 15-5 PH Martensitic Stainless Steel: Amirali Zangiabadi1; Frank Ernst1; Arthur Heuer1; 1Case Western Reserve University

8:40 AM Invited  
Modeling Surface Engineering Processes in Steels: Richard Sisson1; 1Worcester Polytechnic Institute, Center for Heat Treating Excellence

9:00 AM  
The Effect of Hardenability Variation on Deformation of Spiral Bevel Gear in Die Quenching Process: Yingtao Zhang1; Gang Wang1; Lin Yang1; Wankai Shi1; Zhichao (Charlie) Li1; 1Chongqing University; 2Beijing Key Lab of Precision/ Ultra-precision Manufacturing Equipments and Control; 3China FAW Group Corporation R&D Center; 4DANTE Solutions, Inc.

9:20 AM  
Modelling the Evolution of Composition and Stress-Depth Profiles in Expanded Austenite during Gaseous Nitriding of Austenitic Stainless Steel: Marcel A.J. Somers1; 1Technical University of Denmark

9:40 AM An Enhancement to the Low Pressure Carburizing Simulation: Lei Zhang1; Richard Sisson1; 1WPI

10:00 AM Break

10:20 AM Tempering of High Strength Air Cooled Steel: Ashish Supare1; Vinayak Pawar1; Shital Jadhav1; Amol Gujar1; Rajkumar Singh1; 1Bharat Forge Ltd

10:40 AM The Effects of Induction and Furnace Tempering Parameters on the Microstructure, Mechanical Properties and Fatigue Performance of Quenched and Tempered AISI 4140 Steel: Xiaoping Cai1; Lesley Frame2; Yuan Lu1; Richard Sisson1; 1Worcester Polytechnic Institute; 2Thermatool Corp.
Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology — Structures of Glass II: Simulations and Experiments

Program Organizers: Steve W. Martin, Iowa State University; Gang Chen, Ohio University

Wednesday AM Room: 255A Location: Salt Palace Convention Center

Session Chair: Liping Huang, RPI

8:00 AM Invited
Glass and Glass-ceramic Lithium Ion Solid State Electrolytes: Integrated Computational and Experimental Studies: Jincheng Du; 1University of North Texas

8:40 AM Invited
Novel Methods for Modeling Amorphous Materials: David Drabold; 1Ohio University

9:20 AM
Structures And Properties of Boroaluminosilicate Glasses from Molecular Dynamics Simulations: Lu Deng; Jincheng Du; 1University of North Texas

9:40 AM
Surface Structure Features of Sodium Borosilicate Glasses from Molecular Dynamics Simulations: Mengguo Ren; Jincheng Du; 1University of North Texas

10:00 AM Break

10:20 AM Invited
Structural Contributions to Fragility in Network Glasses: Pierre Lucas; Bruno Bureau; Ozgur Gulbiten; 1University of Arizona; 2University of Rennes; 3Corning Inc

11:00 AM Invited
NMR and Topological Constraints in Borophosphate and Borosilicate Glasses: Randall Youngman; Christian Hermansen; Morten Smedskjaer; Yuanzheng Yue; 1Coming Incorporated; 2Aalborg University

11:40 AM Invited
Glass Forming Limits: A Simple Model Based on Short and Intermediate Range Structural Groups: Steve Feller; 1Coe College

Heterogeneity during Plastic Deformation – Synergy between Experimental Investigation and Simulation — Synergy Between Experiment and Simulation I

Program Organizers: Stephen Niezgoda, The Ohio State University; David Fullwood, Brigham Young University

Wednesday AM Room: 250F Location: Salt Palace Convention Center

Session Chair: To Be Announced

8:00 AM Invited
Comparisons of 3D Orientation Mapping with Simulation Using a Spectral Method for Tensile Deformation of Zr: Anthony Rollett; Jon Lind; Reju Pokharel; Robert Suter; 1Carnegie Mellon University; 2Lawrence Livermore National Laboratory; 3Los Alamos National Laboratory

8:40 AM
Insights on Shear Band Behavior in BMGMCs from FFT-based Continuum Modeling: Stephen Niezgoda; Michael Gibbons; Emmanuelle Marquis; Katharine Flores; Wolfgang Windl; 1The Ohio State University; 2University of Michigan Ann Arbor; 3Washington University in St. Louis

9:00 AM
Correlating Dislocation Configuration to Deformation Behavior in Additive Manufactured IN718 and Ti-6Al-4V: Yung Suk Yoo; Todd Boedk; Michael Sangid; Josh Kacher; 1Georgia Institute of Technology; 2Purdue University

9:20 AM
Deformation at Grain Boundaries in Oligocrystalline Metals: Ying Chen; Mingjie Li; 1Rensselaer Polytechnic Institute

9:40 AM Invited
High Throughput Experimental Exploration of Structure-processing-property Relationships in Structural Metal Alloys: Surya Kalidindi; 1Georgia Institute of Technology

10:20 AM Break

10:40 AM
Recent Progress in the Concurrent Atomistic-continuum Method and Its Applications to Nano- and Microscale Metal Plasticity: David McDowell; Shuozhi Xu; Liming Xiong; Youping Chen; 1Georgia Institute of Technology; 2Iowa State University; 3University of Florida

11:00 AM
Study of β-tin Plasticity by Instrumented-indentation Testing: Zhaowen Zhao; Artria Chakraborty; Martin Crimp; Thomas Bieler; Philip Eisenlohr; 1Michigan State University

11:20 AM
Using a Machine Learning Approach to Predict Stress Hotspots: Ankita Mangal; Elizabeth Holm; 1Carnegie Mellon University
**ICME Accelerated Materials Discovery in Process & Product Development — ICME Accelerated Materials Discovery in Process & Product Development**

*Program Organizers: Weizhou Li, Caterpillar Inc.; Justin Mach, Caterpillar Inc.; Yu-Ping Yang, EWI; Sundeep Mukherjee, University of North Texas*

**Wednesday AM**  
Room: 251A  
Location: Salt Palace Convention Center

**Session Chairs:** Weizhou Li, Caterpillar Inc.; Justin Mach, Caterpillar Inc.

---

**8:00 AM Invited**

A Multi-scale Approach to Correlating Microstructure, Properties and Performance of Multiphase Steels:  
Daniel Gerbig; Allan Bower; Louis Hector Jr; Ankit Srivastava;  
Brown University; General Motors; Texas A&M University

**8:20 AM**

ICME Investigation of Electrical Conductivity of Al-Zn-Ni Alloys for Precipitation Hardening:  
Oladefi Fadayomi; Rachel Clarke; Violet Thole; Gregory Odegard; Paul Sanders;  
Michigan Tech University

**8:40 AM**

Computational Simulation and Physical Validation of Welded Aluminum Structures:  
Charles Fisher; Matthew Sinfield; Kim Tran; William Golumbfskie; Gary Margelowsky;  
Naval Surface Warfare Center

**9:00 AM**

Integrated Computational Materials Engineering for the Discovery of New Classes of Materials:  
Jake Graser; University of Utah

**9:20 AM Invited**

ICME Accelerated the Design of Welded Structures and the Development of Additive Manufacturing Process:  
Yu-Ping Yang; Jerry Gould; Mahdi Jamshidinia; Paul Boulware; Shawn Kelly;  
EWI

**10:00 AM Break**

**10:20 AM**

Design, Creep Performance, and Deformation Behavior of an Eta-phase Strengthened Nickel Base Alloy for Advanced Power Applications:  
Paul Sanders; Walter Milligan; Calvin White; John Shingledecker;  
Michigan Technological University; Electric Power Research Institute

**10:40 AM**

Computational Design and Processing of Titanium Metal Matrix Composites in Ti-B-X System:  
Ahmed Degnah; Vikas Jindal; Anthony Sanders; K. S. Ravi Chandran;  
University of Utah; Indian Institute of Technology (BHU)

**11:00 AM**

ICME Design of γ′ Strengthened Co-based Superalloys: Current Capabilities and Future Needs:  
Eric Lass; National Institute of Standards and Technology

**11:20 AM**

Integrated Computational Development of Induction Heat Treatment Process for Automotive Axle Shafts:  
Valentin Nemkov; B. Lynn Ferguson; Rob Goldstein; Zhichao Li;  
Fluxtrol, Inc.; DANTE Solutions, Inc.; Fluxtrol, Inc
11:40 AM Invited
Accelerated Development of Advanced Metallic Alloys by Thin-film Approach: Ayyagari Aditya1; Sanghita Mridha1; Sundeep Mukherjee1; 1University of North Texas

Innovative Processing and Synthesis of Ceramics, Glasses and Composites — Polymer-Derived Ceramics I
Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, U.S. Army Research Laboratory; Scarlett Widgeon, New Mexico Highlands University ; Gabriela Mera, TU Darmstadt

Wednesday AM
Room: 255D
October 26, 2016
Location: Salt Palace Convention Center

Session Chairs: Rajendra Bordia, Clemson University; Tobias Schaedler, HRL Laboratories

8:00 AM Invited
Molecular Design of Nitrides as Single-phase Ceramics and Nanocomposite Structures for Energy Applications: Samuel Bernard1; Abhijeet Lale1; Umit Demirel1; 1CNRS-European Membrane Institute

8:40 AM Invited
Molecular Approach towards Advanced Silicon-based Ceramics: Synthesis, Properties and Applications: Zhaoju Yu1; 1Xiamen University

9:20 AM
Advanced Polymer-derived Ceramics with a Controlled Nanocarbon-phase: Gabriela Mera1; Emanuel Ionescu1; Ralf Riedel1; 1TU Darmstadt, Institut für Materialwissenschaft

9:40 AM
Ceramics with Unique Pore Structures via Freeze Casting of Preceramic Polymers: Maninpat Navroj1; Paolo Colombo2; Katherine Faber3; 1Northwestern University; 2University of Padova; 3California Institute of Technology

10:00 AM Break

10:20 AM Invited
Additive Manufacturing of Polymer-derived Ceramics: Zak Eckel1; Scott Biesboer1; Kenneth Cante1; John Martin1; Jacob Hundley1; Tobias Schaedler1; 1HRL Laboratories, LLC

11:00 AM Invited
Polymer Derived Composite Ceramic Coatings and Joints: Processing, Properties and Performance: Rajendra Bordia1; Quan Li1; Kaishi Wang1; 1Clemson University; 1Aerospace Research Institute of Materials and Processing Technology

11:40 AM
Shrinkage Crack Evolution during 1st Pyrolysis in Polymer Impregnation and Pyrolysis Processing of Ceramic Matrix Composites: Natalie Larson1; Carlos Levi1; Frank Zok1; 1University of California, Santa Barbara

Interfacial Properties and Interfaces, Grain Boundaries and Surfaces from Atomicistic and Macroscopic Approaches — Fundamental and Engineering Issues — Wetting & Adsorption I
Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Paul Wynblatt, Carnegie Mellon University

Wednesday AM
Room: 251B
October 26, 2016
Location: Salt Palace Convention Center

Session Chairs: Gerhard Dehm, Max-Planck-Institut für Eisenforschung GmbH; Wayne Kaplan, Technion - Israel Institute of Technology

8:00 AM Keynote
Agglomeration of Kinetically Constrained Thin Metal Films: Klaus van Benthem1; 1University of California, Davis

8:40 AM Invited
Capillarity in Pressure Infiltration Part I: Experimental: Gionata Schneider1; Alain Léger1; Ludger Weber1; William Craig Carter2; Andreas Mortensen2; 1Ecole Polytechnique Fédérale de Lausanne (EPFL); 2MIT

9:00 AM Invited
Capillarity in Pressure Infiltration Part II: Modeling: George Varvanides1; Gionata Schneider2; Andreas Mortensen2; William Craig Carter1; 1MIT; 2Ecole Polytechnique Fédérale de Lausanne (EPFL)

9:20 AM
Dewetting Transitions of Au/Ni Bilayer Films: Xi Cen1; Andrew Thron1; Klaus van Benthem1; 1University of California Davis, Dept of Chemical Engineering and Materials Science; 2University of California Davis, Dept of Chemical Engineering and Materials Science

9:40 AM
Faceting Model for Σ3 Grain Boundaries: Testing the Hypothesis: Dustin Doty1; Oliver Johnson1; Eric Homer1; 1Brigham Young University

10:00 AM Break

10:20 AM Invited
Heteroepitaxial Recrystallization in γ-γ' Nickel Base Superalloys: Nathalie Bozzolo1; Marie-Agathe Charpagné2; 1Mines ParisTech; 2ArcelorMittal

10:40 AM Invited
Interface Stabilization and Epitaxy of Rutile and α-PbO2 Polymorphs of MO2 Dioxides on Columbite-structured Substrates: Julia Wittkämper1; Gregory Rohrer1; Paul Salvador1; 1Carnegie Mellon University

11:00 AM Invited
Wetting Dynamics of Liquid Lead on Silica-patterned Iron: Marie-Laurence Giorgi1; Moustapha Diallo1; Hervé Duval1; Jean-Michel Mataigne2; Alexey Kolosov1; 1CentraleSupélec; 2ArcelorMittal

11:20 AM Keynote
Synthesis of Hollow Metal Nanostructures by Surface Diffusion Induced Bulk Intermixing: Eugen Rabkin1; Nimrod Gazit1; Leonid Klinger1; Gunther Richter1; 1Technion; 2Max Planck Institute for Intelligent Systems
Program Organizers: Michael Jenkins, Bothell Engineering and Science Technologies; Jonathan Salem, NASA

Wednesday AM
Room: 254C
October 26, 2016
Location: Salt Palace Convention Center

Session Chairs: Jonathan Salem, NASA Glenn Research Center; Michael Jenkins, Bothell Engineering and Science Technologies

8:00 AM Introductory Comments

8:05 AM Invited
ASTM Committee C28: International Standards for Properties and Performance of Advanced Ceramics: 30 years of Excellence: Jonathan Salem; Michael Jenkins; NASA-Glenn Research Center; Bothell Engineering and Science Technologies

8:45 AM
ASTM Subcommittee C28.01 Mechanical Properties & Reliability: Michael Jenkins; Bothell Engineering and Science Technologies

9:05 AM
ASTM Subcommittee C28.03 Physical Properties & NDE: Matthias Thommes; Quantachrome Instruments

9:25 AM
ASTM Subcommittee C28.04 Applications: Randy Stafford; Cummins Inc.

9:45 AM
ASTM Subcommittee C28.07 Ceramic Matrix Composites: Andrew Wereszczac; Oak Ridge National Laboratory

10:05 AM Break

10:25 AM Introductory Comments

10:30 AM
Activities in ISO/TC206 Fine Ceramics: Shuji Sakaguchi; AIST

10:50 AM
Choice of Flaw Type for Slow Crack Growth Testing: Jonathan Salem; NASA

11:10 AM Question and Answer Period

11:20 AM Concluding Comments

International Symposium on Defects, Transport and Related Phenomena — Session IV
Program Organizers: Sangtae Kim, University of California, Davis; Doreen Edwards, Alfred University; Tatsuya Kawada, Tohoku University; Manfred Martin, RWTH Aachen University

Wednesday AM
Room: 253B
October 26, 2016
Location: Salt Palace Convention Center

Session Chairs: Koji Amezawa, Tohoku University; Klaus-Dieter Becker, TU Braunschweig

8:00 AM Invited
Investigation on SOFC Cathodic Reaction by Using Patterned Thin Film Model Electrode: Koji Amezawa; Yoshinobu Fujimaki; Yusuke Shindo; Takashi Nakamura; Keiji Yashiro; Fumitada Iguchi; Hiroo Yugami; Tatsuya Kawada; Tohoku University

8:40 AM
High-temperature ⁵⁷Fe Mössbauer Study of Mixed Ionic-electronic Conducting (Ba₀.₅Sr₀.₅)(Co₀.₈Fe₀.₂)O₃₋d: Piotr Gaczynski; Anja Harpf; Jürgen Boer; Robert Kircheisen; Ralf Kriegel; Klaus-Dieter Becker; TU Braunschweig; Fraunhofer Institute for Ceramic Technologies and Systems IKTS

9:00 AM
Electrochemical Capacitance at a Ni/YSZ Boundary as a Measure of Utilization Thickness of a Ni-YSZ Cermet Electrode: Tatsuya Kawada; Mirai Takeda; Keiji Yashiro; Shin-ichi Hashimoto; Tohoku University

9:20 AM Invited
Ionic Conduction Modification in Nanoscale Proton-conducting Oxide Heterostructures Prepared by Pulsed Laser Deposition: Stefan Nikodemski; Jianhua Tong; Joseph Berry; Phillip Parilla; David Ginley; Ryan O’Hayre; Colorado School of Mines; Clemson University; National Renewable Energy Laboratory

10:00 AM Break

10:20 AM
Ab initio Modelling of the Cation Diffusion in LaₓSrₓMnO₃₋d and Yttria-stabilized Zirconia for SOFC Applications: Yueh-Lin Lee; Yuhua Duan; Dane Morgan; Dan Sorescu; Harry Abernathy; U.S. Department of Energy, National Energy Technology Laboratory; University of Wisconsin-Madison

10:40 AM
Sintering Behavior of Transition Metal (Ni or Co) Doped Fully Stabilized Zirconia: Clay Hunt; David Driscoll; Stephen Sofie; Montana State University

11:00 AM
On the Conductivity Maximum in Rare Earth-doped Ceria: Manfred Martin; RWTH Aachen University
Joining of Advanced and Specialty Materials (JASM XVIII) — Dissimilar Metal Welds and Overlays

Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Institute of Technology; Darren Barborak, AZZ|WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Wednesday AM Room: 155B Location: Salt Palace Convention Center

Session Chairs: Darren Barborak, AZZ WSI; Boian Alexandrov, The Ohio State University

8:00 AM Invited
Life Extension of Pressurized Components by Structural Weld Overlays: Darren Barborak1; 1AZZ|WSI

8:40 AM
Low Alloy Steel Welds in X65 Pipes Internally Clad with Nickel-based Alloy: Process Development and Mechanical Testing: Evan O’Brien1; Boian Alexandrov2; 1The Ohio State University

9:00 AM
Minimization of Carbon Diffusion and Thermal Stresses in Dissimilar Metal Welds in Nuclear Applications by the Development of Novel Functionally Graded Transition Joints: Jonathan Galler1; John DuPont1; 1Lehigh University

9:20 AM
Metallurgical Characterization of Dissimilar Metal Welds in Grade F65 Steel to Grade F22 Steel Overlaid with Low Alloy Steel Filler Metal: Ryan Buntain1; Boian Alexandrov1; 1The Ohio State University

9:40 AM
Microstructural Evolution of Dissimilar Metal Weld at 475°C: Ivan Mendoza-Bravo1; 1Instituto Tecnologico de Veracruz

10:00 AM Break

10:20 AM
Precipitation Behavior during Welding of Ni-base Precipitation Strengthened Alloys 282 and 718: Graciela Penso1; Boian Alexandrov1; 1The Ohio State University

10:40 AM
Development of Graded Transition Joints for Avoiding Dissimilar Metal Weld Failures: Allison Fraser1; 1Lehigh University

11:00 AM
Optimization of Induction Bending Parameters for DMW Overlays: Rex Alexandre1; Boian Alexandrov1; 1The Ohio State University

11:20 AM
Metallurgical Characterization of Super Duplex Stainless Steel & Nickel Alloy Dissimilar Metal Welds: Emeric Suma1; 1The Ohio State University

11:40 AM
To Design of Welding Procedure to Avoid Delayed Cracking Phenomenon in ASTM A335 P22 Material: Fahad Riaz1; Muhammad Kamran2; Adil Ashraf1; Nauman Aslam1; Tahir Ahmad1; 1University of the Punjab Lahore

Materials and Processes for CO2 Capture, Conversion and Sequestration — Physical and Electrochemical

Program Organizers: Kevin Huang, University of South Carolina; Winnie Wong-Ng, NIST; Lan Li, Boise State University

Wednesday AM Room: 151B Location: Salt Palace Convention Center

Session Chairs: Kevin Huang, University of South Carolina; Winnie Wong-Ng, National Institute of Standards and Technology

8:00 AM Invited
Development of Mixed Matrix Membranes for CO2 Separation: Anne Martin1; Jeff Culp1; Surendar Venna1; David Hopkinson1; 1National Energy and Technology Laboratory (NETL)

8:20 AM Invited
Hybrid Polymer/Inorganic Membrane Process for CO2 Capture from Natural Gas Power Generation: Tim Merkel1; Xiaotong Wei2; 1MTR; 2Sabic

8:40 AM
Carbon Dioxide Capture of Different Oxides Measured by STA-PulseTA™-MS: Ekkehard Post1; Melinda Tucker1; 1NETZSCH Geraetebau GmbH; 2NETZSCH Instruments North America, LLC

9:00 AM Invited
Carbo Dioxide Sorption in Manganese Dioxide Octahedral Molecular Sieves: Izak Williamson1; Eric Nelson1; Lan Li1; 1Boise State University

9:20 AM Invited
Stabilizing Porous Silver Matrix with Atomic Layer Deposition ZrO2 for Carbon Dioxide Separation and Dry Reforming of Methane: Peng Zhang1; Jingjing Tong1; Kevin Huang1; 1University of South Carolina

9:40 AM Invited
Electrochemical Capture and Conversion of Carbon Dioxide in Molten Salts: Huayi Yin1; Dihua Wang2; 1MIT; 2Wuhan University

10:00 AM Break

10:20 AM Invited
Catalyst and Reactor Engineering for Carbon-neutral CO2 Conversion: Christopher Matranga1; Douglas Kauffman1; Sonia Hammache1; Congjun Wang1; 1US DOE- NETL

10:40 AM
Electrochemical Dealloying Derived Mixed Electronic and Carbonate Ion Conductor (MECC) Membrane for CO2 Separation: Jie Fang1; 1University of South Carolina

11:20 AM
Qualitative Estimation of the Leakage Rate of Sequestered Carbon-dioxide by a Continuum-scale Model of Flow through Porous Media: Shriram Srinivasan1; 1University of Alberta

11:40 AM Invited
Dynamic Characterization of Clays for CO2 Storage Using Molecular Dynamics Simulations and X-ray Scattering Methods: Greeshma Gadikota1; 1Princeton University
Materials Development for Nuclear Applications and Extreme Environments — Processing and Monitoring of Nuclear Materials
Program Organizers: Raghunath Kanakala, University of Idaho; Nan Li, Los Alamos National Laboratory; Todd Allen, Idaho National Laboratory; Jake Amoroso, Savannah River National Laboratory; Alidar Csontos, Nuclear Regulatory Commission; Lingfeng He, Idaho National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Amit Misra, University of Michigan; Raul Rebak, GE Global Research; Kumar Sridharan, University of Wisconsin

Wednesday AM
October 26, 2016
Room: 250A
Location: Salt Palace Convention Center

Session Chairs: Andrei Gribok, Idaho National Laboratory; Nan Li, Los Alamos National Laboratory

8:00 AM Invited
Online Monitoring of Passive Components and Structures in Nuclear Power Plants: From Offline Periodic Inspections to Online Real Time Surveillance: Andrei Gribok1; Vivek Agarwal1; 1Idaho National Laboratory

8:40 AM Invited
Influence of Compositional Changes on Defect Evolution in Advanced Alloys: Hongbin Bei1; Ke Jin1; Chenyang Lu1; Mohammad W. Ullah1; Laurent K Beland1; Dilpnanet Aidthy1; Lumin Wang1; William Weber1; Roger Stoller1; G. Malcolm Stocks1; Yanwen Zhang1; 1Oak Ridge National Laboratory; 2University of Michigan; 3University of Wisconsin; 4Oak Ridge National Laboratory; 5University of Tennessee

9:20 AM
Pyrolytic Carbon Coatings on Oxide and Carbide Microspheres: Igor Usov1; Miles Beaux2; Douglas Vodnik3; Graham King4; Kevin Hubbard4; Bryan Bennett5; Reuben Peterson6; Erik Luther7; Dasari Rao1; 1Los Alamos National Laboratory

9:40 AM
Oxide Dispersion Strengthened Steel and Silicon Carbide Composite Cladding Materials: Kathy Lu1; Zhihao Hu1; Kaijie Ning1; 1Virginia Tech

10:00 AM Break

10:20 AM
Long Duration CVD Fabrication of Mo Tubes for Nuclear Fuel Cladding: Miles Beaux1; Terry Holesinger2; Graham King1; Douglas Vodnik3; Bryan Bennett1; Reuben Peterson1; Stuart Maloy1; Igor Usov1; 1Los Alamos National Laboratory

10:40 AM
Role of Interfaces on Microstructural Stability of Cu-Nb Nanocomposites Subjected to High Pressure Torsion: Timothy Lach1; Pascal Bellon2; Robert Averback3; Elvan Ekiz-Stumphy4; Julia Ivanisenko5; 1Pacific Northwest National Laboratory; 2University of Illinois at Urbana-Champaign; 3Karlsruhe Institute of Technology

11:00 AM
Stabilization of Zr+1Al2+X MAX Phases; Issues and Achievements: Eugenio Zapata-Soliva1; Stavros R. G. Christopoulos2; Mike E. Fitzpatrick3; Alexander Chronos1; William E. Lee1; 1Imperial College London; 2Coventry University

Materials Issues in Nuclear Waste Management in the 21st Century — Immobilization of Radioactive Wastes into Glass
Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Jake Amoroso, Savannah River National Laboratory; Isabelle Giboire, CEA Marcoule; Raghunath Kanakala, University of Idaho; Yutai Katoh, Oak Ridge National Laboratory; Stefan Neumeier, Forschungszentrum Juelich GmbH; David Shoessmith, Western University; Kumar Sridharan, University of Wisconsin; David Enos, Sandia National Laboratories; Charles Bryan, Sandia National Laboratories

Wednesday AM
October 26, 2016
Room: 251D
Location: Salt Palace Convention Center

Session Chairs: Carol Jantzen, SRNL; Jaime George, PNRL

8:00 AM Invited
Peraluminous Glassy Matrices for Fission Products and Actinides Conditioning: Nadia Pellerito1; Victor Piovesan1; Babacaar Diallo1; Valérie Montouillout1; Mathieu Allix1; Rachelle Omnée1; Isabelle Giboire1; 1CNRS; 2CEA Marcoule

8:40 AM Invited
Role of Platinum Group Metals on Rheological and Electrical Properties of Nuclear Glass: Muriel Neyret1; Jean Puig1; Caroline Hanotin1; Agnès Grandjean1; Mohammed Malki1; Philippe Marchal1; 1CEA Marcoule; 2CNRS/CENMIHT; 3CNRS/ERGIP-GEMICO

9:20 AM
Effect of Anions on Sulfur Solubility in Low-Activity Waste Glass: Tongan Jin1; Dongsang Kim1; Brigitte Weese1; Michael Schweiger1; Albert Kruger1; 1Pacific Northwest National Laboratory; 2U.S. Department of Energy, Office of River Protection

9:40 AM
Rare-earth Solubility Limits in Simplified Borosilicate Glass: Isabelle Giboire1; Ines PONSOT1; Hélène NONNET1; Myriam CHARTIER1; 1CEA Marcoule

10:00 AM Break

10:20 AM
Nepheline Crystallization Kinetics in Simulated High Level Waste Glasses: Anthony McWilliams1; Devon McLane1; Jake Amoroso1; Kevin Fox1; Albert Kruger1; 1Savannah River National Laboratory; 2Office of River Protection

10:40 AM
The Effect of Composition on the Local Structure of Alkali Alumino Borosilicate Model Glasses for Comparison with Hanford High-level Waste Glasses: Jose Marcial1; Muad Saleh1; John McCloy1; 1Washington State University

11:00 AM
Crystal Accumulation Studies for Nuclear Waste Melters: Kevin Fox1; Mark Fowley1; Donald Miller1; Albert Kruger1; 1Savannah River National Laboratory; 2US DOE Office of River Protection

11:20 AM
Identification of Reactions during Melting of Low-activity Waste Glasses by Evolved Gas Analysis: Jaime George1; Dongsang Kim1; Carmen Rodriguez1; Michael Schweiger1; Albert Kruger1; 1Pacific Northwest National Laboratory; 2Office of River Protection
11:40 AM Invited
Materials Property Understanding through Characterization — Novel Techniques II
Program Organizers: Indrajit Dutta, Corning Incorporated; Brian Strohmeier, US Steel; Nicholas Smith, Corning Incorporated

Wednesday AM
Location: Salt Palace Convention Center

Session Chair: Helen Playford, STFC ISIS Facility

9:00 AM Invited
Mechanochemical Synthesis and Reactions in Inorganic Compounds
Program Organizers: Antonio Fuentes, Cinvestav del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, UQTR

Wednesday AM
Location: Salt Palace Convention Center

Session Chairs: Peter Balaz, Institute of Geotechnics, Slovak Academy of Sciences; Vladimir Sepelak, Karlsruhe Institute of Technology

8:00 AM Invited
Mechanochemical Reactions and Syntheses of Oxides: Vladimir Sepelak; 1Karlsruhe Institute of Technology

8:40 AM Invited
Mechanosynthesis, Microstructure and Ion Dynamics of Ceramic Fluoride Ion Conductors: Andre Dived; Dean Sayle; Paul Heitjans; 1Leibniz Universität Hannover; University of Kent

9:20 AM Invited
Original Setup for In-situ Mechanochemistry: Voraksmy Ban; Nikolay Tumanov; Yolanda Sadikin; Yaroslav Filinchuk; Radovan Cerný; Nicola Casati; Paul Scherrer Institute; Université catholique de Louvain; University of Geneva

10:00 AM Break

10:20 AM Invited
Quo Vadis Mechanochemistry: Insight into Chalcogenide Science and Technology: Peter Balaz; 1Institute of Geotechnics

11:00 AM Invited
Ball Milling as a Way to Produce Magnetic and Magnetocaloric Materials: Javier Blázquez; Luis Moreno-Ramirez; Jhon Ipus; Victorino Franco; Alejandro Conde; 1University of Sevilla

11:20 AM
XRD, and XPS Study of Mechanochemical Reactions in the Cu,S-CuS-Sb2S3 System: Francisco Lopez-Cota; Antonio F. Fuentes; José Diaz-Guilén; Patricia Quintana; Isidro González-Panzo; Cinvestav Unidad Saltillo; División de Estudios de Posgrado e Investigación, Instituto Tecnológico de Saltillo; 1Department of Applied Physics, Cinvestav Unidad Mérida

11:40 AM
Solute Surface Characterization of Activated Chalcopyrite Particles via the FLSmith ROL Process. Part 1: Electron Microscope Investigations: Adam Karcz; Anne Juul Damø; Jytte Boll Illerup; Sara Rocks; Kim Dam-Johansen; David Chaiko; 1Technical University of Denmark; 2FLSmith
8:20 AM Invited
Chemical Imaging and Quantification of Self-assembled Vertically Aligned Nanocomposite Thin Films by Advanced Scanning Transmission Electron Microscopy: Ping Lu1; Jon Ihlefeld1; Wei Pan1; 1Sandia National Laboratories

8:40 AM Invited
Picometer-scale Measurements of Ferroelectric Surface Reconstruction by Annular Bright Field Imaging: Peng Gao1; 1Peking University

9:00 AM
Ordered-oxygen-vacancy-driven Room-temperature Ferroelectricity and Magnetoelectricity in Single Phase Ferromagnetic LaBaCo$_2$O$_5+d$ Films: Chunrui Ma1; Ming Liu1; Yurong Yang1; Erik Enriquez2; Shangyong Bao1; Yuan Lin1; Zheng Li1; Cewen Nan1; Amar Bhalla1; Ruyan Guo1; Song Xia1; Lu Lu1; Jiangbo Lu1; Hongjian Zhao2; Xiangming Chen2; Laurent Bellaiche2; Chonglin Chen2; 1Xi’an Jiaotong University; 2University of Arkansas; 1University of Texas at San Antonio; 1University of Electronic Science & Technology of China; 1Tsinghua University; 1Zhejiang University

9:20 AM Invited
Electrical Control of Magnetism Induced by Interfacial Orbital Reconstruction: Cheng Song1; Bin Cui1; Feng Pan1; 1Tsinghua University

9:40 AM
Facile Preparation of Mixed Nickel Oxide Catalysts for the Oxygen Evolution Reaction: Mary Lou Lindstrom1; Mackenzie Parker1; Dev Chidambaram1; 1University of Nevada Reno

10:00 AM Break

10:20 AM Invited
Precision Magnetic Characterization and Imaging of Multi-functional Oxide Heterostructures with Sagnac Interferometer-based MOKE Microscope: Jing Xia1; 1University of California, Irvine

10:40 AM
Physical Property Relationships with Electromagnetism in Spinel Ferrites Developed Using the Spin-spray Deposition Method: Nicole Ray1; William Petuskey1; 1Arizona State University

11:00 AM
Growth Mechanisms in the Synthesis of Hierarchical Nanostructures of Magnetite Using Spin Spray Deposition: Kaushik Sridhar Vadari Venkata1; Nicole Ray1; William Petuskey1; 1School for Engineering of Matter, Transport & Energy, Arizona State University; 2School of Molecular Sciences, College of Liberal Arts and Sciences, Arizona State University

---

**Nanomaterials Working in the Near-infrared: Biomedical Applications — Probes & Nanothermometry I**

**Program Organizers:** Antonio Benayas, Institut National de la Recherche Scientifique; Luis Carlos, Universidade de Aveiro; Fiorenzo Vetrone, Institut national de la recherche scientifique; Marta Quintanilla, CICbiomagune; Daniel Jaque Garcia, Universidad Autónoma de Madrid; Artiom Skripka, Institut National de la Recherche Scientifique

**Wednesday AM**

**Room:** 260A

**Location:** Salt Palace Convention Center

**Funding support provided by:** Millipore Sigma and Photon etc.

**Session Chairs:** Antonio Benayas, INRS; James Adair, PennState University

8:00 AM Keynote
Molecular Imaging with near Infrared Nanoparticles: Jianghong Rao1; 1Stanford University

8:40 AM Invited
Optical Nanothermometers Based on Core@Shell Alkaline-earth Nanoparticles Activated with Lanthanide Ions: Adolfo Speghini1; 1University of Verona

9:00 AM
Lanthanide-doped Nanoparticles as Candidates for Thermal Imaging in the Biological Windows: Marta Quintanilla1; Juan Jose Giner-Casares1; Fiorenzo Vetrone1; Luis Liz-Marzan1; 1CIC BiomaGUNE; 2Institut National de la Recherche Scientifique

9:20 AM Invited
Towards Development of High-quality Near-infrared Emitting Quantum Dots: Fuqiang Ren1; Dongling Ma1; 1EMT-INRS

9:40 AM Keynote
Carbon Nanotube Photoluminescence for Bioanalytical Measurements: Daniel Heller1; 1Memorial Sloan-Kettering Cancer Center

10:20 AM Invited
Increasing Sensitivity of NIR Operating Luminescence Thermometers to the Maximum: Lukasz Marciniak1; Artur Bednarkiewicz1; Wieslaw Strek1; 1Institute of Low Temperature and Structure Research PAS

11:00 AM Invited
Nanoperovskites Doped with Nd$^3+$ or Ho$^3+$ Ions as Optical Thermal Sensor in the near Infrared: M.A. Hernández-Rodríguez1; A.D. Lozano-Gorrín1; V. Lavín1; Inocencio Martín1; U.R. Rodríguez-Mendoza1; 1Universidad de La Laguna

11:20 AM
Applications of Gold Nanoparticles in Infrared Nerve Stimulation: Paul Stoddart1; 1Swinburne University of Technology

11:40 AM
Materials Playing a Role on Fighting Cancer (and Other Outstanding Scientific & Societal Progresses from CIHR, CCS and BCSC): Antonio Benayas1; 1Institut National de la Recherche Scientifique
Next Generation Biomaterials — Session IV
Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Sharmila Mukhopadhyay, Wright State University; Sundeep Mukherjee, University of North Texas

Wednesday AM
Room: 259
Location: Salt Palace Convention Center

Session Chairs: Jamie Kruzic, Oregon State University; Donglu Shi, University of Cincinnati

8:00 AM Invited
Bioactive Materials Releasing Biologically Active Ions: Li and Nb Doped 45S5 Bioactive Glasses: Aldo Boccaccini1; Valentina Miguez-Pacheco1; Rainer Detsch1; 1University of Erlangen-Nuremberg

8:40 AM Invited
Biomimetic Coatings Using Simulated Body Fluids: A Status Review: Sarit B. Bhaduri1; Yufu Ren1; 1University of Toledo

9:20 AM Invited
In Vivo Evaluation of Novel Amorphous Silicon Oxynitrophosphide Implant Coatings for Rapid Bone Healing: Venu Varanasi1; Azhar Ilyas1; Pranesh Aswath1; Harry Kim1; Phillip Kramer1; 1Texas A & M University; 2University of Texas at Arlington; 3Texas Scottish Rite Hospital

9:40 AM Invited
In Vitro Depth-dependent Hyperthermia of Human Mammary Gland Adenocarcinoma: Donglu Shi1; Yu Zhang1; Andrew Dunn1; 1University of Toledo

10:20 AM Break

10:40 AM Invited
Novel Bioactive Glass Containing Dental Composites for Slowing Secondary Caries: Jamie Kruzic1; Dmytro Khvostenko1; Jack Ferracane2; Thomas Hilton2; John Mitchell3; 1Oregon State University; 2Oregon Health & Science University; 3Midwestern University

11:20 AM
Fabrication of Zinc Doped Magnesium Silicate Ceramics for Orthopaedic Applications: Bavaya Devi Karuppasamy1; Mangal Roy1; 1Indian Institute of Technology Kharagpur

11:40 AM
Effect of Pretreatment on Microarc Oxidation of Magnesium: Characteristics, Corrosion Resistance and Bioactivity: Sankara Narayanan TSN1; Min Ho Lee1; 1Chonbuk National University

12:00 PM
Physically Crosslinked Injectable Composites for Bone Tissue Engineering: Mohamad Hassan1; Shaimaa Mohamad1; Ahmed El-Tawila1; Ahmed Ahd El-Fattah1; Sherif Kandil1; 1Alexandria University

Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XI) — Tracer Session I
Program Organizers: James Saal, QuesTek Innovations; Yu Zhong, Florida International University; Ji-Cheng Zhao, The Ohio State University; Nagraj Kulkarni, Knoxville, TN

Wednesday AM
Room: 155D
Location: Salt Palace Convention Center

Session Chairs: Nagraj Kulkarni, Knoxville, TN; Ji-Cheng Zhao, Ohio State

8:00 AM Introductory Comments

8:10 AM Invited
Diffusion in Metals and Intermetallics: Helmut Mehrer1; 1University of Muenster

8:50 AM Invited
Assessment of Tracer and Collective Diffusion in Multicomponent Alloys with Application to High Entropy Alloys: Graeme Murch1; Irina Belova1; 1The University of Newcastle

9:30 AM Invited
Progress on Prediction of Tracer Diffusion Coefficients: Zi-Kui Liu1; 1The Pennsylvania State University

10:10 AM Break

10:30 AM Invited
Diffusion of Mass in Multicomponent Liquid Alloys: Andreas Meyer1; 1DLR German Aerospace Center

11:10 AM Invited
Grain Boundary Diffusion Studied by Radiotracer Diffusion: Sergii Divinsky1; 1University of Münster

Program Organizers: Morsy Mahmoud, Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Wednesday AM
Room: 255E
Location: Salt Palace Convention Center

Session Chairs: Motoyasu Sato, Chubu University; I-Wei Chen, University of Pennsylvania

8:00 AM Invited
Comprehending Microwave-enhanced Isothermal Process Kinetics in Ceramic Processing: Boon Wong1; 1Retired

8:40 AM Invited
In-situ Emission Spectrophotometric Analysis of Oxides Irradiated with Microwave: Jun Fukushima1; Hirotugu Takizawa1; 1Tohoku University

WEDNESDAY AM
9:00 AM
Depleted Uranium Wire Manufacturing Process Development for EBAM
Feedstock: Daniel Coughlin1; Kester Clarke1; Rodney McCabe1; Jeffrey Scott1; David Alexander1; Los Alamos National Laboratory

9:20 AM
The Metalysis Process: Alloy Design Opportunities for Additive Manufacturing: Jan Mellor1; Greg Doughty1; Matthew Piper1; Terri Ellis1; Kartik Rao1; James Deane1; Metalysis Ltd.

9:40 AM
Additive Manufacturing of Large Scale Metal Parts by Combination of Lamination Technology and Diffusion Bonding: Jan Pfeiffer1; Simon Jahn; Udo Broich2; Felix Gemse2; PVA LWT; ifw Jena

10:00 AM Break

10:20 AM Keynote
Additive Manufacturing in the Metals, Minerals, and Materials Community: Past, Present, and Exciting Future: Edward Herderick1; GE

11:00 AM
Selective Laser Melting of an Aluminium Alloy Blended with Pure Silicon to Control the Coefficient of Thermal Expansion: Luke Carter1; Theresa Hanemann1; Nicholas Adkins1; University of Birmingham; Karlsruhe Institute of Technology

11:20 AM
Selective Laser Melting of Components with Thick Section through In-situ Shelling: Nicholas Adkins1; Luke Carter1; Chunlei Qiu1; Khamis Essa1; Moataz Attallah1; University of Birmingham

11:40 AM
Fundamental Research on 2D Electron Beam Powder Melting and Beam/Powder Interactions: Paul Carriere1; Stephen Yue1; McGill University

S2P: Semi-solid Processing of Alloys and Composites — Session VII
Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group

Wednesday AM Room: 151A Location: Salt Palace Convention Center
Wednesday AM Room: 258 Location: Salt Palace Convention Center

Session Chair: Veronique Favier, Ensam PrisTech

8:00 AM
Rheo-diecasting AZ91D Magnesium Alloy Using Enthalpy Equilibrium Electromagnetic-stirring Process: Xiaoli Zhang1; Jiangsu University of Science and Technology

8:30 AM
Development of Semi-Solid Die Casting Product Design and Die Design Technology for Aluminium Alloy Clamp: Chen Song1; Zhang Fan1; He Youfeng1; Li Daquan1; Zhu Qiang1; General Research Institute for Non-ferrous Metals (GRINM)

9:00 AM
Thixo-casting of Al-7% Si Alloy Billets Prepared by Ultrasonic Treatment: Waleed Khalifa1; Yoshihiko Tsunekawa1; Cairo University; Toyota Technological Institute

8:20 AM
Macro Scale Thermal Modeling in Additive Manufacturing: Tom Stockman1; Judith Schneider1; University of Alabama Huntsville

8:40 AM
Modeling of Powder Bed Manufacturing Defects: Mustafa Megahed1; Hans-Wilfried Mindt1; Olivier Desmaison1; Alonso Peralta1; James Neumann1; ESI Group; Honeywell Aerospace

8:00 AM
Microstructural Characterization of In-situ Microwave Cast of Al-7039 Alloy: Radha Raman Mishra1; Apurba Kumar Sharma1; Indian Institute of Technology Roorkee

9:20 AM
Advanced Laser Surface Processing of Lightweight Alloys: Kendrick Mensink1; Guillermo Aguilar1; Suveen Mathaudhu1; University of California Riverside

10:00 AM Break

10:20 AM
The Critical Role of Ceramics in the Microwave Heating of Copper Metal Powder: Morsi Mahmoud1; Julia Wagner1; Guido Link1; Manfred Thumm1; Karlsruhe Institute of Technology (KIT), City for Scientific Research and Technological Applications (SRTA City); Karlsruhe Institute of Technology

10:40 AM
Microstructural Characterization of In-situ Microwave Cast of Al-7039 Alloy: Radha Raman Mishra1; Apurba Kumar Sharma1; Indian Institute of Technology Roorkee

9:20 AM
Program Organizers: Jing Zhang, Indiana University - Purdue University Indianapolis; Balraj Mani, New Jersey Institute of Technology; Johannes Homa, Lithoz GmbH; Kim Brand, 3D Parts Manufacturing, LLC; Xinghua Yu, Oak Ridge National Laboratory; Yeongil Jung, Changwon National University; Nuggehalli Ravindra, New Jersey Institute of Technology

Wednesday AM Room: 258 Location: Salt Palace Convention Center

Session Chair: Balraj Mani, New Jersey Institute of Technology; Nuggehalli Ravindra, New Jersey Institute of Technology

8:00 AM
Microstructural Analysis of 15-5PH Stainless Steel Powders and Direct Metal Laser Sintered Components: Jing Zhang1; Yi Zhang1; Bin Hu1; Yeon-Gil Jung1; Zhe Lu1; Je-Hyun Lee1; Jun Du1; University of Nevada, Reno

8:20 AM
Macro Scale Thermal Modeling in Additive Manufacturing: Tom Stockman1; Judith Schneider1; University of Alabama Huntsville

8:40 AM
Modeling of Powder Bed Manufacturing Defects: Mustafa Megahed1; Hans-Wilfried Mindt1; Olivier Desmaison1; Alonso Peralta1; James Neumann1; ESI Group; Honeywell Aerospace

8:00 AM
Microstructural Characterization of In-situ Microwave Cast of Al-7039 Alloy: Radha Raman Mishra1; Apurba Kumar Sharma1; Indian Institute of Technology Roorkee

9:20 AM
Advanced Laser Surface Processing of Lightweight Alloys: Kendrick Mensink1; Guillermo Aguilar1; Suveen Mathaudhu1; University of California Riverside

10:00 AM Break

10:20 AM
The Critical Role of Ceramics in the Microwave Heating of Copper Metal Powder: Morsi Mahmoud1; Julia Wagner1; Guido Link1; Manfred Thumm1; Karlsruhe Institute of Technology (KIT), City for Scientific Research and Technological Applications (SRTA City); Karlsruhe Institute of Technology

10:40 AM
Microstructural Characterization of In-situ Microwave Cast of Al-7039 Alloy: Radha Raman Mishra1; Apurba Kumar Sharma1; Indian Institute of Technology Roorkee

9:20 AM
Program Organizers: Jing Zhang, Indiana University - Purdue University Indianapolis; Balraj Mani, New Jersey Institute of Technology; Johannes Homa, Lithoz GmbH; Kim Brand, 3D Parts Manufacturing, LLC; Xinghua Yu, Oak Ridge National Laboratory; Yeongil Jung, Changwon National University; Nuggehalli Ravindra, New Jersey Institute of Technology

Wednesday AM Room: 258 Location: Salt Palace Convention Center

Session Chair: Balraj Mani, New Jersey Institute of Technology; Nuggehalli Ravindra, New Jersey Institute of Technology

8:00 AM
Microstructural Analysis of 15-5PH Stainless Steel Powders and Direct Metal Laser Sintered Components: Jing Zhang1; Yi Zhang1; Bin Hu1; Yeon-Gil Jung1; Zhe Lu1; Je-Hyun Lee1; Jun Du1; University of Nevada, Reno

8:20 AM
Macro Scale Thermal Modeling in Additive Manufacturing: Tom Stockman1; Judith Schneider1; University of Alabama Huntsville

8:40 AM
Modeling of Powder Bed Manufacturing Defects: Mustafa Megahed1; Hans-Wilfried Mindt1; Olivier Desmaison1; Alonso Peralta1; James Neumann1; ESI Group; Honeywell Aerospace
Reducing Porosity Defects and Production Costs in Die Casting Using GISS Technology: J. Wannasin1; K.M. Yoon2; B.J. Jung3; C.U. Lee3; M.S. Kim4; J.S. Park5; M.C. Flemings6; 1GISSCO Co., Ltd.; 2Hyundai Motor Company; 3LG Electronics Inc.; 4Massachusetts Institute of Technology

S2P: Semi-solid Processing of Alloys and Composites — Session VIII
Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group

Wednesday AM  Room: 151G
October 26, 2016  Location: Salt Palace Convention Center

Session Chair: Michael Modigell, GUTech

8:00 AM  Effect of Slurry Temperature Distribution on Semi-solid Die Casting: Wenying Qu1; Fan Zhang1; Jiaojiao Wang1; Xiaogang Hu1; Qiang Zhu1; 1General Research Institute for Non-ferrous Metals

8:30 AM  Numerical Simulation of Thixo-co-extrusion of 7075/AZ91D Double-Layer Tubes: Xiaowei Li1; Kaikun Wang1; Fei Yin1; Jinlong Fu1; 1University of Science and Technology Beijing; 2Yangzhou HongFu Aluminum Co., Ltd.

9:00 AM  Rheological Behavior and Fluidity of Semi-Solid SiCp/A357 Composites with Different SiC Addition Levels: Zhifeng Zhang1; 1General Research Institute for Nonferrous Metals

9:30 AM  Rheological Properties of Liquid Metals and Semisolid Materials at Low Solid Fraction: Marialaura Tocci1; Christoph Zang2; Ines Cadorniga Zueco3; Annalisa Pola4; Michael Modigell5; 1University of Brescia - Italy; 2RWTH Aachen University; 3Technical University of Madrid; 4GUTech - German University of Technology

10:30 AM  Application of Multiphase Modelling in Semi-solid Die Casting: Xiaogang Hu1; Qiang Zhu1; Fan Zhang1; 1General Research Institute for Nonferrous Metals

11:00 AM  Behaviour of Semisolid Slurry Flow through a Channel: Sudip Simlandi1; Nilkanta Barman1; Himadri Chattopadhyay1; Raunak Joshi1; Saikat Roy Chowdhury1; 1Jadavpur University

11:30 AM  Determining True Material Constants of Semisolid Slurries from Rotational Rheometer Data: Eva-Athena Economides1; Andreas Alexandrou1; Georgios Georgiou1; Michael Modigell1; 1University of Cyprus; 2University of Cyprus; 3German University of Technology in Oman

Sintering and Related Powder Processing Science & Technologies — Field Assisted Sintering I
Program Organizers: Ricardo Castro, University of California, Davis; Brady Butler, U.S. Army Research Laboratory; Olivia Graeve, University of California, San Diego; Eugene Olevsky, San Diego State University; Anders Eklund, Quintus Technologies, LLC.

Wednesday AM  Room: 150E
October 26, 2016  Location: Salt Palace Convention Center

Session Chair: To Be Announced

8:00 AM  Study on A Low Temperature Sintering Process for Manufacturing Bulk Ultrafine Grained Tungsten: Chai Ren1; Z. Zak Fang1; Huan Zhang1; Dean Buchenauer1; Robert Kolasinski1; Mark Koopman1; 1University of Utah; 2Sandia National Laboratories

8:20 AM  Invited  High Strength Mg-alloys via Powder Metallurgy: Current Results and Future Opportunities: Saveen Mathaudhu1; 1University of California Riverside

9:00 AM  Spark Plasma Sintering of Tungsten Powder: Densification Mechanism and Mechanical Properties: Geuntak Lee1; Eugene Olevsky2; Joanna McKittrick2; Eugene Ivanov3; 1San Diego State University; 2University of California, San Diego; 3Tosoh SMD Inc.
9:20 AM
On the Effect of Electric Field during Spark Plasma Sintering: A “Faraday Cage” Approach: Anil Prasad1; Somi Doja1; Lukas Bichler1; University of British Columbia Okanagan

9:40 AM
Creating High-property Fine/Ultrafine-grained Metallic Materials via Friction Stir Processing: Z.Y. Ma1; Peng Xue1; Bolu Xiao1; Institute of Metal Research, Chinese Academy of Sciences

10:20 AM
Equal Channel Angular Extrusion (ECAE) of FeCo-2V Soft Magnetic Alloy: Donald Susan1; Jeff Rodelas1; Blythe Clark1; Ibrahim Karaman1; Taymaz Jozaghi1; Sandia National Laboratories; Texas A&M University

10:40 AM
Experimental Study of the Effect of Flyer Thickness and Impact Angle on Interface Structure of Impact Welds: Taeseon Lee1; Anupam Vivek1; Glenn Duenh1; The Ohio State University

11:00 AM
Hybrid Extrusion-machining Method for Single-stage Processing of Fine-grained Magnesium Alloy Sheet: Dinakar Sagaparam1; Kevin Trumble1; Srinivasan Chandrasekar1; Texas A&M University; Purdue University

11:20 AM
Microstructural Evolution and Mechanical Properties of Mechanically Alloyed and Sintered Fe-1.4 wt.%C Alloy: Ibrahim Khalfallah1; Alex Aning1; Virginia Tech

11:40 AM
Some Study on the Milling Parameters Optimization in the Direct Carburization of WO3 by Mechanical Alloying: Véronique Vitry1; Victor Ioan Stanciu1; Fabienne Delaunois1; UMONS Faculté Polytechnique FPMs

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application — Thermal and Environmental Barrier Coatings

Program Organizers: Kang Lee, NASA Glenn Research Center; Yutaka Kagawa, The University of Tokyo; Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Daniel Mumm, University of California-Irvine; Mitchell Dorfman, Oerlikon Metco (US) Inc.; Christian Moreau, Concordia University

Wednesday AM
Room: 251E
Location: Salt Palace Convention Center

Session Chairs: Kang Lee, Rolls-Royce; Rodney Trice, Purdue University

8:00 AM Invited
Advancement of Enhanced Thermal Barrier Coatings by Innovative SPS Processing: Xingqin Ma1; Peter Ruggiero1; Surface Technologies Division, Curtiss-Wright

8:40 AM
Characteristics of Thermal Barrier Coatings in ZrO2-La2O3-Gd2O3 Systems Fabricated by Suspension Plasma Spray: SuJin Lee1; Seongwon Kim1; Yoon-Suk OH1; Sung-Min Lee1; Hyung-Tae KIM1; Byung-Koo Kang3; Korea Institute of Ceramic Engineering and Technology; National Institute of Materials Science

9:00 AM
Accelerated Aging Of Yttria-stabilized Zirconia Thermal Barrier Coatings In High Water Vapor Content, Elevated Temperature Environments: Timothy Montalbano1; Robert Vallen1; Daniel Mumm2; University of California-Irvine; Forschungszentrum Jülich GmbH

---


Program Organizers: Richard Fonda, Naval Research Laboratory; Yuri Hovanski, Pacific Northwest National Laboratory

Wednesday AM
Room: 155C
Location: Salt Palace Convention Center

Session Chair: Richard Fonda, Naval Research Laboratory
9:20 AM
Comparative Study of the Resistance of Yttrium Aluminum Garnet (YAG) and Yttria Stabilized Zirconia (YSZ) Coatings to Calcium-magnesium Alumino-silicate (CMAS): Rishi Kumar; Eric Jordan; Maurice Gell; 1University of Connecticut

9:40 AM
Cyclic Durability Testing of Thermal Barrier Coatings with CMAS Application: Effect of CMAS Deposition Mechanism: Alan Harris; Eric Jordan; Maurice Gell; 1University of Connecticut

10:00 AM Break

10:20 AM
Microstructure Evolution and Durability of Advanced Environmental Barrier Coating Systems for SiC/SiC Ceramic Matrix Composites: Dongming Zhu; Terry McCue; Laura Evans; 1NASA Glenn Research Center

10:40 AM
Surface Strain Distribution of EBC Layer on SiC/SiC Substrate under Mechanical Loading Conditions: Yutaka Kagawa; 1The University of Tokyo

11:00 AM
Degradation of High Temperature Abradable Coating Systems in High Water Vapor Turbine Environments: Kara Phillips; Daniel Mumm; 1University of California, Irvine

11:20 AM
Production and Characterization of CYSZ/Al2O3 Thermal Barrier Coatings with Functionally Graded Design: Fatih Kirbiyik; Gültekin Göller; 1Istanbul Technical University

11:40 AM
Effect of Processing Parameters on APS and HVOF Flashcoat Deposition of TBC Coatings: Anderson Pakasiewicz; Irene de Araújo; Gustavo Sucharski; Rodolpho Vaz; 1Federal University of Technology - Paraná; 2Institutos LACTEC; 3Federal University of Paraná

Symposium on Applications of Low Emittance Synchrotron X-ray Sources to Mesoscale Materials Studies — Applications, Motivators, and Enabling Technologies
Program Organizers: Robert Suter, Carnegie Mellon University; Dean Haeffner, Argonne National Laboratory

Wednesday AM
Room: 250D
Location: Salt Palace Convention Center

Session Chair: Robert Suter, Carnegie Mellon University

8:00 AM Invited
“Routine” Hard X-ray Imaging at the Deep Nanoscale: Yong Chul; Hanfei Yan; Evgeny Nazaretski; Xiaojing Huang; Sebastian Kalbfleisch; Kenneth Lauer; Wen Hu; Li Li; Mingyu Ge; Nathalie Bouet; Juan Zhou; Weihe Xu; Petri Ilinski; Brookhaven National Laboratory

8:40 AM Invited
Multiscale Movies of Microstructure Evolution: Henning Poulsen; Hugh Simons; Anders Jakobsen; Sonja Ahl; Jin Zhang; Wolfgang Pantleon; Søren Schmidt; P. Cook; C. Dettels; 1Risoe DTU; 2ESFR; 3ESRF

9:20 AM Invited
Understanding the Performance of Structural Materials using High Energy X-rays: Matthew Miller; 1Cornell University

10:00 AM Break

10:20 AM
Combining Experiment and Simulation for the Characterization of Semiconducting Heterostructures Using Coherent X-ray Nanodiffraction: Anastasios Pateras; Joonkyu Park; Jack Tilka; Youngjun Ahn; Martin Holt; Paul Evans; 1University of Wisconsin-Madison; 2Argonne National Laboratory

10:40 AM
Scalable Manufacturing Processes for X-Ray Optics: Timothy Hall; Brian Skinn; 1Faraday Technology Inc.

11:00 AM
In-situ X-ray Scattering Studies of Mesoporous Materials under Extreme Conditions: Robert Mayanovic; Sonal Dey; Ridwan Sakidja; Zhongwu Wang; Manik Mandal; Kai Landskron; 1Missouri State University; 2Cornell High Energy Synchrotron Source; 3Lehigh University

11:20 AM Invited
Physical Thermo-mechanical Simulation in a Synchrotron Beam: The Materials Oscilloscope: Klaus-Dieter Liss; 1Australian Nuclear Science and Technology Organisation

11:40 AM
A Deep, Coherent View of Integrated Circuits: Fast X-ray Ptychography to See Nanoscale Detail without Wafer Thinning: Junjing Deng; Si Chen; Young Hong; Youssef Nashed; Tom Peterka; Anthony Levi; John Damoulakis; Chris Jacobsen; 1Northwestern University; 2Cornell University; 3University of Southern California

Symposium on Large Fluctuations and Collective Phenomena in Materials III — Metallic Glasses
Program Organizers: Xie Xie, The University of Tennessee; Karin Dahmen, University of Illinois at Urbana Champaign; Peter Liaw, University of Tennessee; Yong Zhang, University of Science and Technology Beijing

Wednesday AM
Room: 250C
Location: Salt Palace Convention Center

Session Chairs: Yong Zhang, University of Science and Technology Beijing; Keith Chan, Hong Kong Polytechnic University

8:00 AM Invited
Plastic Deformation Behavior of Double-side-notched Bulk Metallic Glasses: S.H. Cheng; 1KC Chan; 1The Hong Kong Polytechnic University

8:40 AM Invited
Dynamic Mechanical Relaxations in Metallic Glasses: Jichao Qiao; Jean-Marc Pelletier; Yao Yao; 1Northwestern Polytechnical University

9:20 AM Invited
Mechanical Behavior of Nanoglasses: Tao Feng; 1Nanjing University of Science and Technology
10:00 AM Break

10:20 AM Invited
Modeling Intermittent Plastic Strain Accumulation in Metallic Glasses as a Jump Markov Process: Sohan Kale; Dansong Zhang; Martin Ostoja-Starzewski; 'University of Illinois at Urbana-Champaign

11:00 AM Invited
Correlation between Serrated-flow Behavior and the Amorphous Structure of Metallic Glasses: Jingli Ren; Zhengzhou University

11:40 AM Invited
Loading Force Dependent Plastic Dynamics Transition of Chaotic and Self-organized Critical States in Ni62Nb38 Metallic Glass: D.X. Han; Gang Wang; J.L. Ren; I. Hussain; S.X. Song; H. Xu; K.C. Chan; Q.J. Zhai; Shanghai University; Zhengzhou University; Shanghai Jiao Tong University; The Hongkong Polytechnic University

9:20 AM Invited
Efects of Molten Salts on Mg Reduction in Titanium Powder Production: Tuoyang Zhang; Zak Fang; Ying Zhang; Yang Xia; Zhe Huang; Pei Sun; 'The University of Utah

9:40 AM
Silicon Nitride with High Thermal Conductivity for Power-module Substrate Applications: Jin-Myung Kim; Ha-Neul Kim; Young-Jo Park; Jae-Woong Ko; 'Korea Institute of Materials Science

10:00 AM Break

10:20 AM
Low Temperature Sintering of Silicon Carbide Ceramics with Ternary or Quaternary Additives: Young-Wook Kim; Jung-Hye Eom; Yu-Kwang Seo; 'University of Seoul

10:40 AM
Porous Nano-SiC as High Temperature Thermal Insulator: Role of Nanoscale Phonon Engineering: Jingyang Wang; 'Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, China

11:00 AM
Relationship between Properties and Morphologies of Gelation Freeze Casted Ceramics: Manabu Fukushima; Hideki Hyuga; Tatsuki Ohji; Yu-ichi Yoshizawa; 'National Institute of Advanced Industrial Science and Technology (AIST)

11:20 AM
New Techniques for Old Materials: Mechnoechemical Synthesis and Advanced Processing of Lanthanide and Chalcogenide Compounds: Gordon Alanko; Brian Jaques; Darryl Butt; 'Boise State University

11:40 AM Invited
Development Of Stoneware Body Formulation Suitable For Fast Firing: Lalit Sharma; ChandrShekar Prasad; 'CSIR-Central Glass & Ceramic Research Institute

Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications — Ultrafine Grained / Nanostructured Materials

Program Organizers: Ali Yousefiani, Boeing Research and Technology; Troy Topping, California State University, Sacramento

Wednesday AM Room: 150A&B October 26, 2016 Location: Salt Palace Convention Center

Session Chairs: Ali Yousefiani, Boeing Research and Technology; Troy Topping, California State University, Sacramento

8:20 AM
On the Development of Novel Multifunctional MAXPOL Composites: Sujan Ghosh; Surojit Gupta; 'University of North Dakota

8:40 AM
High Temperature Stability of Carbonate Cement: Daniel Kopp; Richard Riman; 'Rutgers, The State University of New Jersey

9:00 AM
Effects of Molten Salts on Mg Reduction in Titanium Powder Production: Tuoyang Zhang; Zak Fang; Ying Zhang; Yang Xia; Zhe Huang; Pei Sun; 'The University of Utah

9:20 AM
Effect of Raw Powder Characteristics on Thermal Conductivity and Mechanical Properties of Sintered Reaction Bonded Silicon Nitride: Jae-Woong Ko; Mi-Nu Kim; Jin-Myung Kim; Ha-Neul Kim; Young-Jo Park; 'Korea Institute of Materials Science

8:40 AM Invited
Investigation of Cryomilled Ultrafine Grain Al Alloy Response to Corrosive Environments: Troy Topping; 'California State University, Sacramento

8:40 AM Invited
Ultrafine Grained Precipitation Hardened Aluminum Alloys and Influence of Addition of Ceramic Reinforcement: Kaka Ma; 'Colorado State University

9:20 AM
Microstructural Evolution and Mechanical Behavior of an Al-Si Hypoeutectic Alloy Subjected to Various Severe Plastic Deformation Methods: Jose Inmanuel Rajan; Sushanta Panigrahi; 'Indian Institute of Technology Madras
Studies on Dispersion of Nano-dispersoids and Mechanical Properties of Al \(2.99\text{Cu-1wt\%.Al}_2\text{O}_3\) Bulk Nanocomposites Produced by a Novel Two Step Ultrasonic Cavitation Based Technique: Vishwanatha Hire Math1; Jayakumar Eravelli2; Cheruvu Kumar1; Sudipto Ghosh1; 1Indian Institute of Technology

Microstructural Stability: The Next Frontier for Nanocrystalline Materials: Suveen Mathaudhu1; 1University of California Riverside

Mechanical Performance and Thermal Stability of Gradient Structured Aluminum Alloys: Sina Shahrzadei1; Suveen Mathaudhu1; 1University of California, Riverside

Zirconia Based Materials for Cutting Edge Technology — Session II
Program Organizers: Hasan Gocmez, Dumlupinar University; Yujin Hotta, National Institute of Advanced Industrial Science and Technology; Sudipta Seal, University of Central Florida; Hirotaka Fujimori, Yamaguchi University; Changir Duran, Yildirim Beyazit University; Kohei Soga, Tokyo University of Science; Takashi Shirai, Nagoya Institute of Technology; Hilmi Yurdakul, TeknoCeram

Zirconia Nanocrystals: Effect of Metal Precursor on the Crystalline Phase and Surface Chemistry: Katrien De Keukeleere1; Jonathan De Rool1; Pascal Van Der Voort1; José Martins1; Isabel Van Driessche1; 1Ghent University

Characterization of Hydrothermal Ageing of Zirconia Using a “Locati-like” Method: Laurent Grenillard1; Jerome Chevalier1; 1INSA-Lyon

Synthesis and Characterization of ZrO\(_2\) Thin Films and Nano Powders for Corrosion Inhibition and Optical Applications: M S Dharmaprakash1; 1BMS College of Engineering

Microstructure and Tribological Behaviour of ZrO\(_2\) Reinforced AISI 304 Austenitic Stainless Steel: Babatunde Obadele1; Mxolisi Shongwe2; Peter Olubambi3; Matsobane Ramashala4; 1University of Johannesburg; 2Tshwane University of Technology

ACerS Robert B. Sosman Lecture
Wednesday PM Room: 255B Location: Salt Palace Convention Center
Session Chair: Xingbo Liu, West Virginia University

Additive Manufacturing for Surface Engineering of Materials — Session II
Program Organizers: Sandip Harimkar, Oklahoma State University; Arvind Agarwal, Florida International University; Benjamin Boesi, Florida International University; Hitesh Vora, Oklahoma State University

Automatic Finishing of Metal AM Components: Ola Harrysson1; Richard Wysk1; Matt Frank2; Harshad Srinivasan3; Carter Keough1; 1North Carolina State University; 2Iowa State University; 3University Of Alabama

Build Surface Analysis and Process Effects in Powder-bed Electron Beam Additive Manufacturing: Kevin Chou1; Bo Chen1; 1University of Alabama

Robust, HF Free, and Water Based Polishing and Finishing Process for Complex Shapes: Timothy Hall1; Stephen Snyder1; Heather McCrabb1; E. Jennings Taylor1; 1Faraday Technology Inc.
3:40 PM Break

4:00 PM
New Technology Increased Metal Fatigue Life 20-Times in Lab Tests: David Horne1; ‘Fatigue Engineering & Technologies

4:20 PM
Laser-aided Additively Manufactured Transition Metal Intermetallic Coating on Aluminum to Enhance Functional Properties: Hitesh Vora1; Ravi Shanker Rajamure1; Anurag Roy1; Srinivasan Srivilliputhur1; G. Sundararajan1; Raja Shanti Banerjee1; Narendra Dahotre1; 1Oklahoma State University; 2University of North Texas; ‘Indian Institute of Technology, Banaras Hindu University; ‘Indian Institute of Technology, Chennai

4:40 PM
Microstructural Effect on Corrosion and Tribological Properties of Fe Based Metallic Glass Coating Synthesized by Air Plasma Spraying: Swadip Roy1; Atanu Banerjee1; Pavan Bijalwan1; Monojit Dutta1; Tapas Lah1; ‘Indian Institute of Technology Kharagpur; Tata Steel, India

5:00 PM
Obtaining Ultimate Functionalities in 3D-printed Cellular Ti-6Al-4V Mesh Structures: Krishna Chaitanya Nune1; Devesh Misra1; Li S1; Hao YL1; ‘University of Texas at El Paso; ‘Chinese Academy of Sciences

5:20 PM
Surface Texture and Microstructure of Overhanging Structures in Laser Powder Bed Fusion Additive Manufacturing: Jason Fox1; Shawn Moylan1; Brandon Lane1; Mark Stoudt1; Thien Phan1; Lyle Levine1; ‘National Institute of Standards and Technology

5:40 PM
Microstructure and Mechanical Properties of WC/Co Hardmetal Fabricated by SLM 3D Printing with Spray Granulated Powders: Chao-Jung Chen1; Chei-Wei Tsai1; An-Chou Yeh1; Su-Jien Lin1; Jien-Wei Yeh1; ‘National Tsing Hua University

6:00 PM
Additive Manufacturing of Metals: Microstructure, Material Properties, and Product Performance — AM Processes and Post-deposition Treatment
Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrysson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBBTi Consulting

Wednesday PM Room: 355C
October 26, 2016 Location: Salt Palace Convention Center
Session Chair: Timothy Horn, North Carolina State University

2:00 PM
High Density Monolithic Alloy Parts via Additive Manufacturing Using the Binder Jetting Process: Howard Kuhn1; ‘University of Pittsburgh

2:40 PM
The Effect of Aging Treatment on Mechanical Properties of Powder-bed Binder-jet Printed Alloy 625 Nickel Superalloy Parts: Erica Stevens1; Amir Mostafaei1; Markus Chmielus1; ‘University of Pittsburgh

3:00 PM
Establishing Post-build Heat Treatment for Age-hardened Additive-manufactured Alloys: Benjamin Seitz1; Michael Kirk1; Richard Neu1; ‘Georgia Institute of Technology; ‘Oak Ridge National Laboratory

3:20 PM
Laser Additive Manufacturing Processing of a Mixture of Iron and Nickel Powders: Joseph Strauss1; ‘HJE Company, Inc.

3:40 PM Break

4:00 PM
Structure / Property (Constitutive and Dynamic Strength / Damage) Characterization of Additively Manufactured (AM) 304L SS Produced Using Four Different AM Build Methods: George Gray1; John Carpenter1; Cameron Knap1; Veronica Livescu1; Carl Trujillo1; David Jones1; ‘Los Alamos National Laboratory

4:20 PM
Fe – Al Intermetallic Cellular Structures Produced by Laser Engineered Net Shaping (LENS): Krzysztof Karczewski1; Marek Polanski1; Zbigniew Bojar1; ‘Military University of Technology

4:40 PM
Microstructure and Mechanical Properties of WC/Co Hardmetal Fabricated by SLM 3D Printing with Spray Granulated Powders: Chao-Jung Chen1; Chei-Wei Tsai1; An-Chou Yeh1; Su-Jien Lin1; Jien-Wei Yeh1; ‘National Tsing Hua University

5:00 PM
Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrysson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBBTi Consulting

Wednesday PM Room: 355D
October 26, 2016 Location: Salt Palace Convention Center
Session Chair: Andrzej Wojcieszynski, ATI Powder Metals

2:00 PM
NiCr-Alloy Powder Reuse and Testing Results in Additive Manufacturing: Larry Somrack1; Melissa Gorris1; William Jarosinski1; ‘NSL Analytical Services, Inc.; ‘Praxair Surface Technology, Inc.

2:20 PM
On the Effect of Metal Powder Recyclability for Build Quality and Process Optimization in SLM 3D Printing: Vicki Barbur1; Juan Valencia1; Kenneth Sabo1; ‘Concurrent Technologies Corporation

2:40 PM
The Influence of Powder Reuse on the Properties of Nickel Super-alloy 718 in Laser Powder Bed Additive Manufacturing: Hongfeng Gu1; Harvey West1; Zaynab Mahbooba1; Chris Ledford1; Ola Harrysson1; Tim Horn1; ‘CAMAL
3:00 PM  
**Ti6Al4V Selective Laser Melted : Impact of Powder Bed Characteristics on Geometrical Stability**: Matthew Régnieré; Sébastien Saunier; Philippe Bertrand; Christophe Desrayaud; 'Ecole des Mines de Saint Etienne; 'Ecole Nationale Ingénieurs Saint Etienne

3:20 PM  
**Effect of Hall Flow Characterization on Built Properties of SLM Part**: Satyajeet Sharma; 'Oerlikon Metco

3:40 PM Break

4:00 PM  
**Effects of Powder Feedstock Quality on γ-TiAl Parts Fabricated via Electron Beam Melting**: Peeyush Nandwana; Ryan Dehoff; William Peter; 'Oak Ridge National Laboratory

4:20 PM  
**Influence of Powder Characteristics on the Structural Integrity of High Purity Tungsten Produced via Selective Laser Melting**: Amanda Field; Luke Carter; Nicholas Adkins; M Gorley; Moataz Attallah; 'University of Birmingham; 'Culham Science Centre

4:40 PM  
**Low-cost Spherical Ti Alloy Powders for Additive Manufacturing**: Pei Sun; Z. Zak Fang; Yang Xia; Ying Zhang; Chengshang Zhou; 'University of Utah, Dept of Metallurgical Engineering

5:00 PM  
**DEM Modeling of Powder Spreading in the Powder Bed Fusion Process and Empirical Correlations**: Justin Whiting; Michelle Bernhardt; Stephen Geer; 'NIST; 'University of Arkansas

---


*Program Organizers:* Ulf Ackelid, Arcam AB; Ian D. Harris, EWI; Andrzei Wojcieszynski, ATI Powder Metals; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrysson, North Carolina State University; Rodney Boyer, Monash University

**Wednesday PM**  
**Room:** 355A  
**Location:** Salt Palace Convention Center

**Session Chair:** Ola Harrysson, North Carolina State University

---

2:00 PM  
**3D Analysis in Laser Beam Melting Based on Real-time Process Monitoring**: Thomas Toeppe; Philipp Schumann; Marie-Christin Ebert; Tobias Bokkes; Kerstin Funke; Michael Werner; Fabian Zeulner; Florian Bechmann; Frank Herzog; 'Fraunhofer Institute for Machine Tools and Forming Technology IWU; 'Concept Laser GmbH

2:20 PM  
**Correlating In-process Statistical Data Collected during SLM to As-built Material Properties, Microstructure, and Residual Stress**: Nathan Levkulich; Gregory Loughnane; John Middendorf; Nathan Klingbeil; 'Wright State University

---

2:40 PM  
**Correlation of Defect Structures and a Voxelized Representation of Powder Bed Fusion Process Conditions**: Sean Donegan; Michael Groeber; Edwin Schwabach; Mark Benedick; 'BlueQuartz; 'Air Force Research Laboratory

---

3:00 PM  
**Defect Formation Mapping and Targeted Process Optimisation in Selective Laser Melted IN738LC Ni-base Superalloy**: Rachel Jennings; Mark Ward; Moataz Attallah; 'University of Birmingham

3:20 PM  
**Linking Post-process NDT to In-process Monitoring Data for SLM Quality Control and Defect Detection in Ti-6Al-4V**: Gregory Loughnane; John Middendorf; Nathan Levkulich; Nathan Klingbeil; 'Wright State University; 'Advratech, LLC

3:40 PM Break

---

4:00 PM  
**On the Requirements for Model-based Thermal Control of Melt Pool Geometry in Laser Powder Bed Fusion Additive Manufacturing**: Jason Fox; Felipe Lopez; Brandon Lane; Ho Yeung; Steven Grantham; 'National Institute of Standards and Technology

4:20 PM  
**Surface Temperature Distribution and Melt Pool Behavior during Selective Laser Melting Process for Inconel 718**: Toshi-Taka Ikeshoji; Hideki Kyogoku; Masahiro Araki; Makiko Yonehara; Kazuya Nakamura; 'Kindai University; 'Technology Research Association for Future Additive Manufacturing; TRAFAM; 'Technology Research Association for Future Additive Manufacturing; TRAFAM

4:40 PM  
**Identification of Sub-surface Defects in Parts Produced by Additive Manufacturing, Using Laser Generated Ultrasound**: Sarah Everton; Phill Dickens; Chris Tuck; Ben Dutton; 'University of Nottingham and Manufacturing Technology Centre; 'University of Nottingham; 'Manufacturing Technology Centre

5:00 PM  
**Monitoring of Humidity in Laser Based Powder Bed Fusion Systems**: Simon Jahn; Stefan Szmekus; Robert Kahlenberg; 'ifw Jena

---

**Advanced High Strength Steel Design / Technological Exploitation — Stainless and High Alloy Steels**

*Program Organizers:* Alla Sergueeva, The NanoSteel Company; Daniel Branagan, The NanoSteel Company; Kester Clarke, Colorado School of Mines

**Wednesday PM**  
**Room:** 155F  
**Location:** Salt Palace Convention Center

**Session Chairs:** Yousef Mohassab, University of Utah; Qiulin Yu, Nucor Steel

---

2:00 PM  
**Statistical Analysis of Heritage Data of 9Cr-steels, Using a Robust, Open-source, Data Analytics Design Approach**: Amit Verma; Mohamed Elsaieiti; Laura Bruckman; Roger French; Jennifer Carter; Vyacheslav Romanov; Jeffrey Hawk; 'Case Western Reserve University; 'National Energy Technology Laboratory, Pittsburgh PA; 'National Energy Technology Laboratory, Albany OR
2:20 PM  
**In-situ Assessment of Strain-induced Martensitic Transformation in 10% Nickel Multi-phase Steels during Dynamic Compression: Paul Lambert; Caleb Hustedt; Andrew Leong; Daniel Casem; Nicholas Sinclair; Xian Zhang; Todd Hufnagel; Johns Hopkins University; US Army Research Laboratory, Aberdeen Proving Ground; Argonne National Laboratory; Carderock Division, Naval Surface Warfare Center**

2:40 PM  
**Effect of Solute Partitioning on the Sensitization Resistance of AISI 321 and 347 Stainless Steels: Ihho Park; Yunjo Ro; Jaehydeok Shim; Raghavan Ayer; Jaewoong Kim; Jingak Nam; SK Innovation**

3:00 PM  
**Spherical Nanoindentation Investigation on Martensitic Fe-Ni Steel, Effects of Carbon Content and Length Scale: Ali Khosravani; Lutz Morsdorf; C. Cem Tasan; Surya Kalidindi; Georgia Institute of Technology; Max-Planck-Institut für Eisenforschung; Massachusetts Institute of Technology**

3:20 PM  Break

3:40 PM  
**Effect of Heat Treatment Paths on the Microstructure and Tensile Properties of High Cr Containing Ultra-high Strength Steels: Gyeongbae Park; Yunik Kwon; K. H. Kwon; Nack J. Kim; POSTECH; RIST**

4:00 PM  
**Synergistic Alloying Effect on Comprehensive Performances of the High Strength Stainless Steel: Jialong Tian; Institute of Metal Research**

4:20 PM  
**Influence of Heat Treatment on Microstructure and Mechanical Performance of 9Cr-1Mo-VN Steel: Chao Wang; Haibo Ma; Guangwu Tang; Tyamo Okosun; Armin Silaen; Chenn Zhou; Center for Innovation through Visualization and Simulation**

**Advanced Manufacturing Technologies — Advanced Manufacturing- Machines, Equipment and Systems**

*Program Organizer: Muammer Koc, HBKU / Qatar Foundation*

**Wednesday PM**

Room: 150F  
Location: Salt Palace Convention Center

**Session Chair: Muammer Koc, HBKU / Qatar Foundation**

2:00 PM  Introductory Comments

2:10 PM  
**Magnetic Field Assisted Assembly Machine: Design and Implementation: Yan Liu; Nuggehalli Ravindra; New Jersey Institute of Technology**

2:50 PM  
**The Novel Use of Acoustic Emission Monitoring during Proof-testing of Ceramic Spinal Implants: Bryan McIntire; Darin Ray; Ramaswamy Lakshminarayanan; Odibia Ley; Amedica Corporation; Corning, Inc.; Mistras Group, Inc.**

3:30 PM  Break

3:50 PM  
**Numerical Analysis of Raceway Combustion under Different Operating Conditions in a Blast Furnace: Bin Wu; Haibo Ma; Guangwu Tang; Armin Silaen; Chen Zhou; Center for Innovation through Visualization and Simulation**

4:10 PM  
**Repair Processes for Forging Dies and Their Testing and Impact: Pavel Podany; Michal Duchek; Martina Koukolikova; COMTES FHT a.s.**

4:30 PM  Question and Answer Period

**Advanced Materials for Oil and Gas Applications**

- **Performance and Degradation — Combating Corrosion in Oil & Gas Applications**

*Program Organizers: Andrzej Wojciechynski, ATI Powder Metals; Xi Shan, GE Oil & Gas; Maria Sawford, ATI Powder Metals; Paul Bratland, OneSubsea Company; Mariano Iannuzzi, GE Oil & Gas; Yellapu Murty, MC Technologies LLC*

**Wednesday PM**

Room: 250D  
Location: Salt Palace Convention Center

**Session Chairs: Yellapu Murty, MC Technologies; Xi Shan, GE Oil & Gas**

2:00 PM  Invited  
**Hydrogen Induced Stress Cracking of Duplex Stainless Steel under Cathodic Protection in Seawater: Historical Overview and Lessons Learned: Roy Johnson; Norwegian University of Science and Technology**

2:40 PM  Invited  
**Hydrogen Induced Cracking in X70 Pipeline Steels: Mary O’Brien; Kip Findley; John Speer; Colorado School of Mines**

3:20 PM  Break

3:40 PM  Invited  
**Advancements in High Strength Copper-nickel-tin Spinodal Alloy Mill Products: Christopher Damschroder; Fritz Grensing; William Nielsen; Diane Nielsen; Materion Performance Alloys**

4:20 PM  
**Development of C125 Steel Casing for Mildly Sour Crude Oil and Gas Environments: Riad Asfahani; U. S. Steel Research & Technology**

4:40 PM  
**AF955 (UNS N09955): A New Ni-base Alloy for Oil and Gas Applications: Luca Foroni; Stanley Gregory; Tom Grabach; Carlo Malara; Foroni SpA; Foroni Metals of Texas**

5:00 PM  
**Microstructure, Mechanical Properties and Hydrogen-induced Cracking Susceptibility of Novel Cu-modified Pipeline Steels: Xianbo Shi; Wei Yan; Wei Wang; Zhenguo Yang; Yi Yin Shan; Ke Yang; Institute of Metal Research, Chinese Academy of Sciences**
Advancements in In-situ Electron Microscopy Characterization — In-situ Electron Microscopy in Complex Environments

Program Organizers: Khalid Hattar, Sandia National Laboratories; Josh Kacher, Georgia Tech; Daniel Gianola, University of California, Santa Barbara; Judith Yang, University of Pittsburgh; Amith Darbal, AppFive LLC

Wednesday PM
October 26, 2016
Location: Salt Palace Convention Center

Session Chairs: Judith Yang, University of Pittsburgh; Josh Kacher, Georgia Tech

2:00 PM
Crystallization Kinetics of Phase Change Materials Measured with Dynamic Transmission Electron Microscopy: Mark Winseck1; Huai-Yu Cheng1; Geoffrey Campbell3; Melissa Santala1; 1Oregon State University; 2Macronix International Co., Ltd.; 3Lawrence Livermore National Laboratory

2:20 PM
Nano-scale Spatio-temporal Resolution In-situ TEM and Numerical Modeling of Rapid Solidification in Al Alloys after Laser Melting: Jorg Wiezorek1; Joseph McKeown1; Kai Zweiacker1; Can Liu1; Thomas LaGrange2; Bryan Reed3; Geoffrey Campbell1; 1University of Pittsburgh; 2Lawrence Livermore National Laboratory; 3EPFL; 4Intergated Dynamic Electron Solutions, Inc

2:40 PM
Time-resolved Atomic-scale Chemical Imaging for Study of Dynamic Phase Transformation in Li-rich Layered Cathode Materials: Ping Lu1; Pengfei Yan1; Chong-Min Wang1; 1Sandia National Labs; 2Pacific Northwest National Laboratory

3:00 PM Invited
3D Characterization of Al5083 Spall by Micro-CT and In-situ Femtosecond Laser - FIB: Tomoko Sano1; John McCloy1; Jonathan Ligda1; Timothy Walter1; Jennifer Sietins1; Cyril Williams1; 1US Army Research Laboratory

3:20 PM Break

3:40 PM Invited
In-situ Liquid Imaging of Nanoparticles in the Scanning Transmission Electron Microscope: Katherine Jungjohann1; Lucas Parent1; Patricia Abellan1; Taylor Woehl1; Ilke Arslan1; 1University of California-Davis; 2Pacific Northwest National Laboratory

4:20 PM
TEM In-situ Cantilever Testing to Assess Grain Cohesion in Irradiated ODS: Kayla Yano1; Janelle Wharry1; 1Boise State University

Art and Cultural Heritage: Discoveries and Education — Art and Cultural Heritage: Discoveries II

Program Organizers: Glenn Gates, Walters Art Museum; Darryl Butt, University of Utah

Wednesday PM
Room: 251F
October 26, 2016
Location: Salt Palace Convention Center

Session Chair: Henry Colorado, Universidad de Antioquia

2:00 PM
Contextualising Çadir Höyük: A Cross-disciplinary Investigation into Use Patterns and Long Term Glass Alteration: Hallie Meredith1; Erik Fengerstrom1; John McCloy1; 1Washington State University

2:20 PM
Eighth Century CE Window Glass from Sardis in Western Turkey: Kayli McArthur1; Pamela Vandiver2; 1University of Arizona

2:40 PM
Reverse Engineering the Physical Chemistry of Making Egyptian Faience with the Cementation Process: Magnum Pina1; Pamela Vandiver1; 1University of Arizona

3:00 PM
Swedish Vitrified Forts: Ironmaking, Building Technology, & Long-term Glass Degradation: John McCloy1; Jamie Weaver1; Rolf Sjöblom2; Peter Kresten3; Eva Hjärthner-Holdar4; Erik Ogenhall4; David Peeler5; Albert Kruger6; 1Washington State University; 2Luleå University of Technology; 3Retired; 4Arkeologerna och Geoarkeologiskt Laboratorium; 5Pacific Northwest National Laboratory; 6Department of Energy - Office of River Protection

3:20 PM Break

3:40 PM
Study Ancient Pigment Structure by Using Advanced Characterization Techniques: Yaqiao Wu1; Jatuporn Burns1; Darryl Butt1; Glenn Gates2; 1Boise State University; 2The Walters Art Museum

4:00 PM
The Analysis and Characterization of Iron Based Pigments on Corinthian Polychrome Ceramics: Catherine Klesner1; Jay Stephens1; Pamela Vandiver1; 1University of Arizona

4:20 PM
Non-destructive Methods Using in Paintings on Traditional Temple Heritage in Taiwan: Chen-Fu Wang1; Lin-ya Kang1; Chih-Ming Chou2; Chih-Yu Chen3; 1National Yunlin University of Science and Technology, Yunlin, Taiwan; 2Institute of Cultural Heritage, Bureau of Cultural Heritage, Ministry of Culture, Taiwan

4:40 PM
Fique and Luffa Fibers in Arts: Henry Colorado1; Gabriel Velez2; Claudia Silva3; 1Universidad de Antioquia
Avant-garde Developments in the Processing, Properties and Performance of Multifunctional Ceramic- and Metal-matrix Composites — General Processing, Thermal and Mechanical Properties of MMCs and CMCs

Program Organizers: Martin Pech-Canul, Cinvestav IPN- Unidad Saltillo; Golam Newaz, Wayne State University; Zariff Chaudhury, Eaton's Crouse Hinds Division

Wednesday PM  Room:  150D
October 26, 2016  Location:  Salt Palace Convention Center

Session Chair:  Martin Pech-Canul, Cinvestav IPN Saltillo

2:00 PM
A Review of Iron Based Syntactic Foams Synthesized by Metal Powder Injection Molding (MIM): Dung Luong1; Dirk Lehmhus2; Nikhil Gupta1; Joerg Weise1; 1New York University; 2ISIS Sensorial Materials Scientific Centre; 1Fraunhofer Institute for Manufacturing Technology and Advanced Materials

2:20 PM
The Effect of Functionalization on Microstructure and Mechanical Properties of Multilayered Carbon Nanotubes Reinforced Aluminium Nanocomposite Synthesized by Spark Plasma Sintering: Lavish Singh1; Akash Oraon1; Tapas Laha1; 1Indian Institute of Technology Kharagpur

2:40 PM
Tailored Copper-alumina Composites Using an In-situ Partial Reduction Process: Michael Kracum1; Zhiyang Yu1; Richard Vinci1; Martin Harmer1; Helen Chan1; 1Lehigh University

3:00 PM
Development of Wear Resistant WC Metal Matrix Composites Consolidated via Laser-assisted Cold Spray: Aaron Birt1; Diran Apelian1; 1Worcester Polytechnic Institute

3:20 PM  Break

3:40 PM
Mechanical Properties of Aluminum 7075/Ni43Co7Mn39Sn11 Composite Consolidated via Spark Plasma Sintering of Powder Precursors: Nick Barta1; Ibrahim Karaman1; 1Texas A&M University

4:00 PM
Microstructure and Mechanical Properties of Carbonized Rice Husk Nanoparticles Reinforced Al-Cu-Mg Alloy Composite: Saleiman Hassan1; Johnson Agunsoye1; Victor Aigbodion1; 1University of Lagos; 1University of Nigeria

4:20 PM
Properties of Microwave Sintered Al-Cu Metal Matrix Composites: Abdul Shakoor1; PENCHAL REDDY MATLI1; Fareeha U1; Mohamed Anna1; 1Qatar University, Doha, Qatar; 1Department of Metallurgical and Materials Engineering, Faculty of Petroleum and Mining Engineering, Suez University

4:40 PM
Synthesis and Thermo-mechanical Properties of Nickel Composite Reinforcement with TiC Particles: Mariano Braudio-Sánchez1; Carlos A. Leon-Patiño1; Ena A. Aguilar-Reyes1; Egberto Bedolla-Becerril1; 1Universidad Michoacana de San Nicolás de Hidalgo

5:00 PM
Potentialities and Limitations of Functional Ceramic-matrix Composites: Martin Pech-Canul1; Socorro Valdez2; José Flores-García3; Ana Leal-Cruz3; 1Cinvestav IPN- Unaidad Saltillo; 2UNAM; 3Universidad de Sonora

5:20 PM
The Modified Central Paradigm of Materials Science and Engineering in the Recycling of Metal-matrix Composites: Martin Pech-Canul1; Socorro Valdez2; 1Cinvestav IPN- Unaidad Saltillo; 2UNAM

Boron, Boron Coatings, Boron Compounds and Boron Nanomaterials: Structure, Properties, Processing, and Applications — Physical Properties

Program Organizers: Roumiana Petrova, New Jersey Institute of Tech; Jens Kunstmann, TU Dresden

Wednesday PM  Room:  260B
October 26, 2016  Location:  Salt Palace Convention Center

Session Chair:  Roumiana Petrova, New Jersey Institute of Technology

2:00 PM  Invited
Thermal Transport through Individual Boron-based Nanostructures and their Contacts: Deyu Li1; 1Vanderbilt University

2:40 PM  Invited
Recent Progresses in Understanding Boron Phase Diagram and Peculiar Properties of Boron Allotropes: Tadashi Ogitsu1; 1Lawrence Livermore National Laboratory

3:20 PM  Break

3:40 PM  Invited
Practical Insights Obtained from the Theoretical Analysis of Boron Nanotubes, Boron Sheets and Alpha-tetragonal Boron: Jens Kunstmann1; 1TU Dresden

4:20 PM  Invited
Thermoelectric Properties and Carrier Control of Metal Borides: Masatoshi Takeda1; 1Nagaoka University of Technology

5:00 PM
Synthesis and Thermal Stability of Boron Based High-temperature Thermoelectric Materials: Muhammad Imani1; Ramana Reddy1; 1The University of Alabama
Ceramic Matrix Composites — Additive Manufacturing and Ceramic Fiber Composites

Program Organizers: J. P. Singh, U.S. Army Research Laboratory; Narottam Bansal, NASA Glenn Research Center; Jacques Lamon, CNRS; Sung Choi, Naval Air Systems Command

Wednesday PM Room: 254A Location: Salt Palace Convention Center

Session Chairs: Rishi Raj, University of Colorado; Michael Cinibulk, Air Force Research Laboratory

2:00 PM Invited
Additive Manufacturing of Ceramics Enabled by Flash Pyrolysis of Polymer Precursors with Nanoscale Layers: Rishi Raj1; Luca Zoli2; Setareh Azarnoush3; 1University of Colorado

2:40 PM Invited
Constituent Development for Higher-temperature Capable Ceramic Matrix Composites: Michael Cinibulk1; 1AFRL

3:20 PM
Interplay of Temperature, Composition, and Geometry on the Crystallization of Polymer Derived Ceramics for CMC Manufacturing: David Poerschke1; Frederick Lauten2; Carlos Levi1; 1University of California Santa Barbara; 2Physical Sciences Incorporated

3:40 PM Break

4:00 PM
Mechanisms of Reactive Alloy Melt Infiltration for Ceramic Composite Matrices: Rebecca Reitz1; Frank Zok1; Carlos Levi1; 1University of California Santa Barbara

4:20 PM
Processing and Testing of Ultrahigh Temperature Fiber-reinforced Ceramic and Metal Matrix Composites: Jacob Stiglich1; Brian Williams1; Jerry Brockmeyer1; Victor Arrieta1; Therese Grundl1; 1Ultramet

4:40 PM
A Model for the Numerical Simulation of Liquid Silicon Infiltration into Porous Carbon/Carbon Preforms: Khurram Iqbal1; 1Dalian University of Technology

Ceramic Optical Materials — Session IV

Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Michael Squillante, RMD, Inc; Takunori Taira, Institute for Molecular Science

Wednesday PM Room: 254C Location: Salt Palace Convention Center

Session Chair: Javier Garay, University of California San Diego

2:00 PM Invited
Novel Material Ceramics for Femtosecond Lasers: Akira Shirakawa1; Shotaro Kitajima1; Ken-ichi Ueda1; 1University of Electro-Communications

2:40 PM
High Strength Transparent Spinel by Microwave Sintering: Shyam Bayya1; Guillermo Villalobos1; Michael Hunt1; Woohong (Rick) Kim1; Benjamin Rock1; Bryan Sadowski1; Jasbinder Sanghera1; 1Naval Research Laboratory

3:00 PM
Fracture Toughness of Rare Earth Doped Magnesium Aluminate Spinel: Fiona Yuwei Cui1; Animesh Kundu1; Richard Vinci1; 1Lehigh University

3:20 PM
Fabrication of Polycrystalline BaCl2 Scintillators by the Hot-forging Technique: Taylor Shoulders1; Gregory Bizarri1; Edith Bourret2; Romain Gaume3; 1University of Central Florida; 2Lawrence Berkeley National Laboratory

3:40 PM Break

4:00 PM
Multi-layer Transparent Ceramic/Polymer Armor: Guillermo Villalobos1; Michael Hunt1; Bryan Sadowski2; Robert Miklos1; Shyam Bayya1; Woohong Kim1; Jasbinder Sanghera1; 1US Naval Research Lab; 2Sotera Defense Solutions

4:20 PM Invited
Optical and Mechanical Properties of Y2O3-MgO Nanocomposite Synthesized by Sol-gel Combustion and Hot-press Sintering: Ho Jin Ma1; Wook Ki Jung1; Do Kyung Kim1; 1KAIST

4:40 PM
Scale Up of Spinel Windows for High Energy Laser Systems: Shyam Bayya1; Colin Baker1; Guillermo Villalobos1; Woohong (Rick) Kim1; Michael Hunt1; Bryan Sadowski1; Ishwar Aggarwal1; Raouf Loufty1; Juan Sepulveda1; Tim Lowe1; Jasbinder Sanghera1; 1Naval Research Laboratory; 2Sotera Defense Solutions; 3MER Corp.

Computational Design of Ceramics and Glasses — Ceramics Materials – Structure and Properties

Program Organizers: Mathieu Bauchy, University of California, Los Angeles; Leping Huang, Rensselaer Polytechnic Institute; Peter Kroll, University of Texas at Arlington

Wednesday PM Room: 252A-B Location: Salt Palace Convention Center

Session Chairs: Leping Huang, Rensselaer Polytechnic Institute; Peter Kroll, University of Texas at Arlington

2:00 PM Invited
A Metamodeling Approach for Parameter Sensitivity Analysis and Uncertainty Quantification in a Boron-carbide Interatomic Potential: Mark Tschopp1; Efrain Hernandez1; Shawn Coleman1; Souma Chowdhury1; 1Army Research Laboratory; 2University of Buffalo

2:40 PM
Effect of M Site Alloying on the Solid Solution Behaviour of (Ti,V,Zr,Hf)2AlC MAX Phases Using High Throughput Ab-initio Methods: Anjana Talapatra1; Thien Duong1; Woongrak Son1; Miladin Radovic1; Raymundo Arroyave2; 1Texas A&M University

3:00 PM
On the Calculation of (Ti,Cr)2AlC Phase Diagram: A First-principles Approach: Thien Duong1; Anjana Talapatra1; Woongrak Son1; Raymundo Arroyave2; Miladin Radovic1; 1Texas A&M University
3:20 PM Break

3:40 PM Magnetic Properties of Rare-earth Doped Alumina from First Principles: Krista Linner1; Jennifer Elward1; Christopher Rinderspacher1; 1U.S. Army Research Laboratory

4:00 PM Ripplocations: A Novel Defect in Layered Materials: Jacob Gruber1; Andrew Lang1; Justin Griggs1; Mitra Taheri1; Michel Barsoum1; Garrett Tucker1; 1Drexel University

4:20 PM Effects of Dislocation and Phase Transformation on Evolution of Nanocracks and Voids in Yttria-stabilized Zirconia Nanopillars: Ning Zhang1; Mohsen Asle Zaeem1; 1Missouri University of Science and Technology

4:40 PM Effect of A Element on Mechanical Properties of Ti3(SixAl1-x)C2: Woongtrak Son1; Anjana Talapatra1; Thien Duong1; Miladin Radovic1; Raymundo Arroyave1; 1Texas A&M University

5:00 PM First Principles (DFT) Calculation of Elastic Constants of Ti3B4 SOMNAANG Rou1; Ravi Chandran1; 1University of Utah

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Session III

Program Organizers: Gurpreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Sanjay Mathur, University of Cologne; Eugene Olevsky, San Diego State University; Edward Gorzkowski, Naval Research Laboratory; Menka Jain, University of Connecticut; Hidehiro Kamiya, Tokyo University of Agriculture and Technology; Bhanu Chauhan, William Paterson University; Haitao Zhang, UNC Charlotte; Bhanu Chauhan, William Paterson University

Wednesday PM Room: 257B
October 26, 2016 Location: Salt Palace Convention Center

Session Chairs: Haitao Zhang, UNC-C; Edward Gorzkowski, Naval Research Laboratory

2:00 PM Imprint Lithography of ZnO-PMMA Hybrids: Kathy Lu1; Michelle Gervasio1; 1Virginia Tech

2:20 PM Invited
1D Optoelectronics of Organic Nanofibers Self-assembled from Pi-conjugated Molecules: Ling Zang1; 1University of Utah

3:00 PM Controlled Synthesis and Assembly of Hollow CeO2 Nanotubes: Elizabeth Zell1; Ruizgang Wang1; 1Youngstown State University

3:20 PM Break

3:40 PM Invited
Polyethyleneimine-fatty Acid Complexes as Polymeric Dispersants for Tuning the Stability of Multicomponent Dense Non-aqueous Suspensions: Motoyuki Iijima1; Yasuhiro Kawaharada1; Naoki Okamura1; Junichi Tatami1; 1Yokohama National University

4:20 PM SiC0 Aerogels and their Performance in Environmental and Energy Applications: Susana Aguirre-Medel1; Peter Kroll1; 1University of Texas at Arlington

4:40 PM Invited
Size Effects from Nanoindentation to Microindentation in Microcrystalline and Nanocrystalline Ceramics: James Wollmershauser1; Boris Feigelson1; Edward Gorzkowski1; Kathryn Wahl1; 1Naval Research Laboratory

5:20 PM Pyrolysis of Agricultural Waste to Form Nano-structures of SiC and Si,N4: Edward Gorzkowski1; Syed Qadri1; Ramasis Goswami1; Jerry Feng1; Bhakta Rath1; 1Naval Research Laboratory

5:40 PM Fabrication of Transparent and Fluorescent Sialon Bulk Ceramics Composed of Nano-sized Grains: Junichi Tatami1; Takuma Takahashi1; Motoyuki Iijima1; 1Yokohama National University; 2Kanagawa Academy of Science and Technology

Emerging Interconnect and Pb-free Materials for Advanced Packaging Technology — Session III

Program Organizers: Albert T. Wu, National Central University; Iver Anderson, Ames Laboratory

Wednesday PM Room: 257A
October 26, 2016 Location: Salt Palace Convention Center

Session Chair: To Be Announced

2:00 PM Binder Chemistry Control of Electrically Conductive Adhesives for Inducing Low Temperature Sintering Ag Micro-fillers: Masahiro Inoue1; Yoshiaki Sakaniwa1; Yasunori Tada1; 1Gunma University

2:20 PM Direct Bonding of AlN-to-metal Utilizing Sintering of Ag Nanoparticles Derived from Ag,O Microparticles: Keita Motoyama1; Tomokazu Sano1; Akio Hirose1; 1Osaka University

2:40 PM Liquid Solid Diffusion (LSD) Bonding: Joint Structure and Bonding Method: Andreas Larsson1; Torleif Tollefsen1; Ole Martin Løvvik1; Knut Aasmundtveit1; 1Techni AS; 2TEGma AS; 3SINTEF Materials and Chemistry; 4University College of Southeast Norway

3:00 PM Retardation of Intermetallic Compounds Growth Rate via Zn Doping in Under-bump Metallization in Low Rfellow Temperature Bi-33In/Cu-xZn Micro-bump: Rui-Wen Song1; 1National Tsing Hua University

3:20 PM Break

3:40 PM Joint Properties of Diffusion Barrier for Medium-temperature Thermoelectric Materials: Hsien Chien Hsieh1; Albert T. Wu1; 1National Central University

4:00 PM Role of Ultrathin-Ni(P) Layer in ENEPIG Metallization in Ultrathin-ENEPIC/SAC305/Cu Solder Joints under Thermocycling Stress: Tsu-Ting Chou1; Cheng-Ying Ho1; Wei-Yu Chen1; Cristine Jill Lee1; Jenq-Gong Duh1; 1National Tsing Hua University
Program Organizers: Xingbo Liu, West Virginia University; Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST); Yang-Tse Cheng, University of Kentucky
Wednesday PM Room: 250B Location: Salt Palace Convention Center
Session Chair: To Be Announced

2:00 PM
High-voltage Cathode Materials for Sodium Batteries: Prabeer Barpanda1; 'The University of Tokyo

2:20 PM
Molecular Dynamics Simulations of Na2S + SiS2 Glassy Solid Electrolytes: Steve Martin1; Clarence King2; Soumik Banerjee2; Scott Beckman2; Aniruddha Dive2; 'Iowa State University; 'Washington State University

2:40 PM
Na3Zr2(SiO4)2(PO4)2 Prepared by a Solution-assisted Solid State Reaction: Sahir Naqash1; Ma Qianli2; Frank Tietz3; Olivier Guillon3; 'A. Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research, Materials Synthesis and Processing; 'Jülich Aachen Research Alliance, JARA-Energy. C. Helmholtz-Institute Münster, c/o Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research, Materials Synthesis and Processing; 'Jülich Aachen Research Alliance, JARA-Energy; Helmholtz-Institute Münster, c/o Forschungszentrum Jülich GmbH; 'Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research, Materials Synthesis and Processing; 'Jülich Aachen Research Alliance, JARA-Energy; Helmholtz-Institute Münster, c/o Forschungszentrum Jülich GmbH

3:00 PM
Stretching Carbon Too Thin: A DFT Investigation on the Structure and Theoretical Limits of Carbon as a Next Generation NIB Anode: Michelle Dolgosi; Xiulei Ji1; Alex Greaney1; Clement Bommier1; Wesley Surta1; 'Oregon State University; 'UC Riverside

3:20 PM Break

3:40 PM
The Influence of Aliovalent Ion Doping on NASICON for High Conductive Solid Electrolyte: Se Woon Jung1; Joo-Hyung Kim1; Seung Hwan Jo2; Do Kyung Kim1; 'KAIST, 'Ulsan Technopark New Energy Technical Institute
5:00 PM
Study of the Stainless Steel Corrosion in Pharmaceutical Facilities: Development and Incidence: Fabienne Delaunois1; François Tosar2; Frédéric Groulard3; 1UMONS Faculté Polytechnique FPMs; 2TECHNOCHIM-UMONS; 3TECHNOCHIM

Gas/Metal Reactions, Diffusion and Phase Transformation during Heat Treatment of Steel — Session II
Program Organizer: Liang He, Air Products and Chemicals Inc.

Wednesday PM Room: 155E Location: Salt Palace Convention Center

Session Chair: Lei Zhang, Worcester Polytechnic Insitute

2:00 PM
The Effect of Chemical Composition in Austenite and Austenite Grain Size on Hardenability of Steels: Yuan Lu1; Haixuan Yu1; Xiaqing Cai1; Richard D. Sisson, Jr.; 1Worcester Polytechnic Institute

2:20 PM
Nanoscale Analyses of Thermally Stable Austenite Intercritically Precipitated in a Transformation: Toughened Low-carbon Martensite Steel via 3D Atom-probe Tomography: Divya Jain1; Dieter Isheim1; Xian Zhang2; David Seidman2; 1Northwestern University; 2Naval Surface Warfare Center, Carderock Division

2:40 PM
Increased Strength Multi-phase Steels as a Result of Heat Treatment of Automobile Wheels: Borys Sereda1; Dmytro Sereda2; Oleg Chernet2; 1DSTU; 2ZSEA

3:00 PM
A Microstructural Study of RA330 and Aluminized RA330 in a Gas Carburizing Furnace: Anbo Wang1; Richard Sisson1; 1WPI

3:20 PM Break

3:40 PM
A Study of Fishscale Resistance in Boron Microalloyed Low Carbon Al-killed Enameling Steel for Compact Strip Production (CSP) Steel Mill: Nikhil Yellakara1; 1Steel Dynamics Inc.

4:00 PM
Hot Shortness Failures in 18x2h4ma Steel Grade in Sulphur Atmosphere during Hot Working: Vinayak Pawar1; 1Bharat Forge Ltd

4:20 PM
Oxidation Behaviour of Fe-C-Mn-Si Alloy in Reheating Furnace: Yonghoon Cho1; Dong-Woo Suh1; 1GIFT, POSTECH

Program Organizers: Steve W. Martin, Iowa State University; Gang Chen, Ohio University

Wednesday PM Room: 255A Location: Salt Palace Convention Center

Session Chair: David Drabold, Ohio University

2:00 PM Invited
Analysis of the Electronic Conductivity of Vanadate Glasses for Use in Resistive Plate Calorimeter Particle Detectors: Mario Affatigato1; 1Coe College

2:40 PM Invited
Chalcogenide Glass Structured Films for Nanoscale Memories and Devices: Tomas Wagner1; Bo Zhang1; Max Fraenkl2; Gang Chen2; 1University of Pardubice; 2University of Ohio

3:20 PM Optimization of Glass Properties for Neutrino Detection: Experimental Validation of MD Simulation Results: Rahul Dongol1; S.K. Sundaram2; 1Alfred University

3:40 PM Break

4:00 PM Invited
Basic Science of Memristors Based on Amorphous Chalcogenides: Gang Chen1; 1Ohio University

4:40 PM Invited
Interaction of Ge-Se Films with Ions: Structural Studies and Application for Memory Arrays Formation: Maria Mitkova1; Tyler Nichol1; Muhammad Rizwan Latif2; Mahesh Ailavajhala2; 1Boise State University

5:00 PM Invited
Density Fluctuations in Single-Component Glasses: Adrian Wright1; 1University of Reading

Heterogeneity during Plastic Deformation – Synergy between Experimental Investigation and Simulation — Advances in Numerical Techniques and Constitutive Modeling
Program Organizers: Stephen Niezgoda, The Ohio State University; David Fullwood, Brigham Young University

Wednesday PM Room: 250F Location: Salt Palace Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Practical Methodology for Inverse Design Exploration of Fatigue Resistant Ti Alloys: David McDowell1; Matthew Priddy1; Jordan Weaver2; Noah Paulson2; Soumya Mohan1; Donald Shih3; Surya Kalidindi1; 1Georgia Institute of Technology; 2Los Alamos National Laboratory; 3Boeing Research and Technology
2:40 PM
Developing a Crystal Plasticity Model Based on the Discrete Element Method: Agnieszka Truszkowska1; Qin Yu1; P. Alex Greaney2; T. Matthew Evans3; Jamie Kruzic1; Oregon State University; University of California — Riverside

3:00 PM
An Approach to Develop Hansel-spittel Constitutive Equation during Ingot Breakdown Operation of Low Alloy Steels: Kanwal Chadha1; davood shahriari2; Mohammad Jahazi3; ETS

3:20 PM
Stress Concentration and Redistribution at/near Grain Boundaries during Dynamic Recrystallization: An Integrated Modeling Study: Pengyang Zhao1; Thaddeus Song En Low1; Yunzhi Wang1; Stephen Niezgoda1; ETS; The Ohio State University; Oregon State University; University of California — Riverside

3:40 PM Break

4:00 PM
Predicting the Bauschinger Effect in Aged Aluminum Alloys: Wei Gan1; Hyuk Jong Bong2; Hojun Lim3; Richard Boger2; Frederic Barlat5; Robert Wagoner1; Medtronic; The Ohio State University; Sandia National Laboratories; Simulia Central Region, Cincinnati Office; Pohang University of Science and Technology

4:40 PM
Exploring the Effects of Grain Size on Dislocation Interactions and Hardening Using Phase Field Dislocation Dynamics: William Joost1; Abigail Hunter2; Irene Beyerlein3; U.S. Department of Energy; Los Alamos National Laboratory

5:00 PM
Meso-scale Interactions between Bulk Dislocations and Grain Boundaries in FCC and BCC Metals: David Fullwood1; Landon Hansen1; HyukJong Bong2; Ricky Wyman1; Austin Foster1; Eric Homer1; Robert Wagoner1; Brigham Young University

5:20 PM
Designing Heterogeneous Nano-microstructures to Improve Mechanical Properties: Mehdi Hamid Vishkasougheh1; Hao Lyu1; Hussein Zbib1; Washington State University

High Temperature Corrosion of Structural Materials — High Temperature Oxidation of Various Systems
Program Organizers: Kinga Unocic, ORNL; Raul Rebak, GE Global Research

Wednesday PM Room: 250E Location: Salt Palace Convention Center

Session Chairs: Carlos Levi, University of California, Santa Barbara; Aleksandra Jaworwicz, Forschungszentrum Juelich GmbH; Raul Rebak, GE Global Research

2:40 PM
On the Oxidation Mechanisms of High-temperature Intermetallic MAX Phases: Rishwan Sukdija1; Zachary Leuty2; Missouri State University

3:00 PM
High Temperature Investigation of Zirconium Alloys in Air: Sirak Mekonen1; Patrick Price2; Brian Jaques3; Isabella van Rooyen3; Darryl Butt4; Boise State University; Idaho National Laboratory

3:20 PM
Early Stage of Oxidation of Mo3Si by In-situ Environmental TEM: Ahmet Gulec1; Matthew Taylor2; Aram Yoon3; Jian-Min Zuo4; John Perepezko5; Laurence Marks1; Northwestern University; University of Wisconsin-Madison; University of Illinois

3:40 PM Break

4:00 PM
Effect of Zr Addition on Oxidation Behavior of Mo-Si-B Alloys in Dry and Moist Environments: Rahul Mitra1; Sandikshor Kumar1; Jayanta Das1; Indian Institute of Technology

4:20 PM
High Temperature Oxidation Studies of FeSiGe: Jonathan Valenzuela1; Wade Jensen1; Jerrold Floro1; Elizabeth Opila1; University of Virginia

4:40 PM Invited
Developing Gas Atomization with In-situ Controlled Oxidation to Simplify ODS Alloy Preparation: Iver Anderson1; Tyler Slinger2; Emma White3; Ames Laboratory; Iowa State University

Innovative Processing and Synthesis of Ceramics, Glasses and Composites — Polymer-Derived Ceramics II
Program Organizers: Narottam Bansal, NASA Glenn Research Center; Jitendra Singh, U.S. Army Research Laboratory; Scarlett Widgeon, New Mexico Highlands University; Gabriela Mera, TU Darmstadt

Wednesday PM Room: 255D Location: Salt Palace Convention Center

Session Chairs: Ralf Riedel, Technical University of Darmstadt; Erica Bernardo, University of Padova
Interfaces, Grain Boundaries from Atomistic and Macroscopic Approaches — Wetting & Adsorption II

Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Paul Wylblatt, Carnegie Mellon University

Wednesday PM Room: 251B Location: Salt Palace Convention Center

Session Chairs: Dan Lewis, Rensselaer Polytechnic Institute; Dominique Chatain, CINaM-CNRS

2:00 PM Keynote
Grain Boundary Segregation in Nanocrystalline Alloys: Case Study of Platinum-gold: Stephen Foiles1; Ping Lu1; Christopher O'Brien1; Nicolas Argibay1; Michael Chandross1; Fadi Abdeljawad; Blythe Clark1; Brad Boyce1; Sandia National Laboratories

2:40 PM Invited
Exploring the Thermal Stability of Nanocrystalline Fe-Mg Alloys: Dor Amram1; Christopher Schuh1; Massachusetts Institute of Technology

3:00 PM Invited
Surface and Grain Boundary Segregation of Hydrogen and Its Effect on the Ideal Work of Fracture of Iron and Nickel: Reiner Kirchheim1; University of Goettingen

3:20 PM Break

3:40 PM
Complexion Diagrams and Phonon Engineering: Jeffrey Rickman1; Helen Chan1; Martin Hamner1; Jian Luo1; Lehigh University; University of California, San Diego

4:00 PM
Atomistic Simulation of Grain Boundary Structures and Complexion Transitions: Shengfeng Yang1; Naixie Zhou1; Tao Hu1; Jian Luo1; University of California, San Diego

4:20 PM
Carbon Adsorption, Segregation and Diffusion on Grain Boundaries Emerging on the Surface of BCC Iron: El Tayeb Bentria1; Normand Mousseau1; Charlotte Becquet1; Othmane Bouhali1; Fadwa El Mellouhi1; Hamad Bin Khalifa University; Département de physique Université de Montréal; Hamad Bin Khalifa University

4:40 PM
The Mechanics and Thermodynamics of Interfacial Complexions in Transition Metal Alloys: Timothy Rupert1; University of California, Irvine

5:00 PM
An Atomistic and Continuum Approach to Dopant Segregation and Embrittlement at Molybdenum Grain Boundaries: Zihan Xu1; Richard Tran1; Naixie Zhou1; Balachandran Radhakrishnan1; Jian Luo1; Shyue Ping Ong1; University of California - San Diego

Joining of Advanced and Specialty Materials (JASM XVIII) — Welding Metallurgy 2

Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Institute of Technology; Darren Barborak, AZZ WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Wednesday PM Room: 155B Location: Salt Palace Convention Center

Session Chairs: Hiroaki Mori, Osaka University; Leijun Li, University of Alberta

2:00 PM
Role of Inter–critical Heat-affected Zone in Type IV Cracking of Grade 91 Pipe Weldments: Yiya Wang1; Leijun Li1; University of Alberta

2:20 PM
Explanation of the Presence of Ferrite in the Simulated ICHAZ Microstructure of Grade 91 Steel: Kyle Stritch1; Boian Alexandrov1; The Ohio State University

2:40 PM
Investigation of the Effect of Composition on the Cracking Susceptibility of P91 Steels HAZ: Guilherme Faría1; John Sieffert2; Boian Alexandrov1; Antonio Ramirez1; Dept. of Materials Science and Eng. - The Ohio State University; Electric Power Research Institute

3:00 PM
Diffusion and Phase Transformations during Dissimilar Metal Welding of Grade 91 Steel: Michael Kaper1; Boian Alexandrov1; D Burgess1; Michael Mills1; The Ohio State University; GE Power

3:20 PM Break

3:40 PM
Ferrite Control in Type 410 Stainless Steel: David Stone1; Boian Alexandrov2; Jorge Penso1; The Ohio State University; The Ohio State University; Shell Global Solutions

4:00 PM
Stress Relief Cracking in Precipitation Strengthened Alloys: Rishi Kant1; John DuPont1; Lehigh University

4:20 PM
Effect of Secondary Phases on the Corrosion Behaviour of Duplex Alloys Subjected to Natural Seawater: Doris Vette Villalobos Vera1; Instituto Tecnológico de Veracruz

4:40 PM
Phase Transformations and Mechanical Properties of the Heat-affected Zone in 10 wt% Nickel Steel: Erin Barrick1; John DuPont1; Lehigh University
5:00 PM
Laser Beam Weld for Thin-walled FeCrAl Cladding for Accident Tolerant Fuel: Jian Gun; Nathan Jerred; Emmanuel Perez; DC Haggard; Corrie Nichol; Haiming Wen; 1Idaho National Laboratory

Materials and Processes for CO2 Capture, Conversion and Sequestration — Carbon Dioxide Conversion
Program Organizers: Kevin Huang, University of South Carolina; Winnie Wong-Ng, NIST; Lan Li, Boise State University

Wednesday PM Room: 151B
October 26, 2016 Location: Salt Palace Convention Center

Session Chairs: Winnie Wong-Ng, National Institute of Standards and Technology; Lan (Samantha) Li, Boise State University

2:00 PM Invited
Mixed In and Electron Conducting Membranes for Electrochemical Carbon Capture and Conversion: Kevin Huang; 1University of South Carolina

2:20 PM
Box-Behnken Design Based Optimization of Production of Magnesium Hydroxide from Serpentinite for CO2 Mineralization: Qing Zhao; Chengjun Liu; Maofa Jiang; Baokuan Li; Henrik Saxén; Ron Zevenhoven; 1Northeastern University

2:40 PM
Pulsed FARADAYIC® ElectroDeposition of Carbon Dioxide Reduction Electrocatalysts: Brian Skinn; Steven Brown; Sujat Sen; Tim Hall; Stephen Snyder; Fikile Brushett; E Taylor; Holly Garich; Maria Inman; 1Faraday Technology, Inc.; 2Massachusetts Institute of Technology

3:00 PM
The Study of Catalysts Based on Intermetallic NiAl Alloys: Karina Belokon; Yurii Belokon; 1Zaporozhye State Engineering Academy

3:20 PM Concluding Comments

Materials Development for Nuclear Applications and Extreme Environments — Zircaloy and Corrosion in Nuclear Materials
Program Organizers: Raghunath Kanakala, University of Idaho; Nan Li, Los Alamos National Laboratory; Todd Allen, Idaho National Laboratory; Jake Amoroso, Savannah River National Laboratory; Aladar Csontos, Nuclear Regulatory Commission; Lingfeng He, Idaho National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Amit Misra, University of Michigan; Raul Rebak, GE Global Research; Kumar Sridharan, University of Wisconsin

Wednesday PM Room: 250A
October 26, 2016 Location: Salt Palace Convention Center

Session Chairs: Lingfeng He, Idaho National Laboratory; Jake Amoroso, Savannah River National Laboratory

2:00 PM Invited
Understanding Hydride Formation in Alpha-Zr at the Atomic Scale: Yongfeng Zhang; Chao Jiang; Xianming Bai; Jianguo Yu; Simon Phillpot; Michele Fullarton; Mark Noordhoek; 1Idaho National Lab; 2University of Florida; 1University of South Carolina

2:40 PM Invited
Surface Modification of Zircaloy-4 for Isotope Producing Target Designs: Walter Lascher; David Senor; Kenneth Geelhood; Stan Pitman; Kevin Clayton; 1Pacific Northwest National Laboratory; 2Idaho National Laboratory

3:20 PM Break

3:40 PM
Corrosion Behavior of U3Si2 in Pressurized Water at 300°C: Lingfeng He; Jason Harp; Rita Hoggan; Adrian Wagner; 1Idaho National Laboratory

4:00 PM
Effect of Crack-tip Stress Field on Delayed Hydride Cracking: Pritam Chakraborty; S. Bulent Biner; Daniel Schwen; Sebastien Teyssere; 1Idaho National Laboratory

4:20 PM
Controlling the Permeability of Corrosion Inducing Ions in the Concrete by Nano-viscosity Modifiers: An EIS Study: Krishnan Rajal; Battrie Pesic; Jacob Kline; Robert Blair; Ian Ehrams; 1University of Idaho

4:40 PM
Atomic Simulations of Dislocations in Zirconium Alloys: Cong Dai; Levente Balogh; Zhongwen Yao; Mark Daymond; 1Queen’s University

5:00 PM
Experimental Solubility of Lanthanides in Liquid Sodium: Jeremy Isler; Jinsuo Zhang; Robert Mariani; 1The Ohio State University; 2Idaho National Laboratory

Materials Issues in Nuclear Waste Management in the 21st Century — Immobilization and Capture of Radionuclides/Radiation Effects
Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Jake Amoroso, Savannah River National Laboratory; Isabelle Giboire, CEA Marcoule; Raghunath Kanakala, University of Idaho; Yutai Katoh, Oak Ridge National Laboratory; Stefan Neumeier, Forschungszentrum Juelich GmbH; David Shoesmith, Western University; Kumar Sridharan, University of Wisconsin; David Enos, Sandia National Laboratories; Charles Bryan, Sandia National Laboratories

Wednesday PM Room: 251D
October 26, 2016 Location: Salt Palace Convention Center

Session Chairs: Alex Cozzi, SRNL; Cory Trivelpiece, Savannah River National Laboratory

2:00 PM
Rhenium Partitioning in Simplified Low-activity Waste Glass Feed: Brigitte Weese; Tongan Jin; Dongsang Kim; Mike Schweiger; Albert Kruger; 1Pacific Northwest National Laboratory; 2U.S. Department of Energy, Office of River Protection

2:20 PM
Volatilization of Alkali Perrhenates from Sulfate and Nitrate Salt Mixtures: Jaime George; Dongsang Kim; Michael Schweiger; Albert Kruger; 1Pacific Northwest National Lab; 2Office of River Protection
2:40 PM
Use of X-Ray Tomography to Elucidate Cold Cap Structure in Waste Glass
Melter: Donna Guillen; Lisa Mitchell; Tetsuji Yano; Albert Kruger; Idaho National Laboratory; Tokyo Institute of Technology; U.S. Department of Energy

3:00 PM
XTractite: An Inorganic Ion-exchange Material for Sorption of Radionuclides
Allen Apblett; Cory Perkins; Nick Materer; Evgeni Kadassov; Oklahoma State University; XploSafe

3:30 PM Break

3:40 PM Invited
Effects of α-Radiation on a Disposal of Spent Nuclear Fuel: Akira Kitamura; Japan Atomic Energy Agency

4:00 PM Invited
Characterization of Radiation Effects in Complex-oxide Nuclear Waste Forms: New Application of Neutron Total Scattering Techniques: Mailk Lang; Jacob Shamblin; Cameron Tracy; Sarah Finkeldorf; Dirk Bosbach; Rodney Ewing; University of Tennessee; Stanford University; Forschungszentrum Jülich

Materials Property Understanding through Characterization — Glass
Program Organizers: Indrajit Dutta, Corning Incorporated; Brian Strohmeier, US Steel; Nicholas Smith, Corning Incorporated

Wednesday PM Room: 251C
Location: Salt Palace Convention Center
Session Chair: Nicholas Smith, Corning Incorporated

2:00 PM Invited
New Solid State Glassy Electrolytes Enabled through New Mixed Glass Former Ceramichemistries: Steve W. Martin; Iowa State University

2:40 PM Invited
Analysis of Advanced Display Glass Materials by XPS, ToF-SIMS, and LEIS, Including a Statistical Analysis of These Data: Matthew Linford; Cody Cushman; Brandon Sturgell; Barry Lunt; Nicholas Smith; Brigham Young University; Corning Incorporated

3:40 PM Invited
An Evaluation of Fracture Toughness and Fatigue Crack Growth Behaviour of Die Steels: Santosh Kumar; Atul Patil; Sachin Patil; Pravin JadHAV; Shreyas Kirwai; Rajkumar P Singh; Bharat Forge Limited

4:00 PM
Multi-instrument Depth Profiling of Advanced Glass Materials: Cody Cushman; Brandon Sturgell; Barry Lunt; Nicholas Smith; Matthew Linford; Brigham Young University

4:20 PM
Properties and Microstructure of Sc2O3 Doped a/β-SiAlON Ceramics: Yasemin Cetin; Sinem Baskut; Servet Turan; Anadolu University

4:40 PM
Electrocatalytic Activity of A2B2O7 (A = Y3+, Ln3+; B = Ti4+, Zr4+) Oxides in Alkaline Media for the Oxygen Reduction Reaction: Maria Valdes Ibarra; K.P. Padmasree; A.F. Fuentes; J. Alonso-Lemus; F.J. Rodriguez-Varela; CINVESTAV

Mechanochemical Synthesis and Reactions in Materials Science — Highly Energetic Materials and Reactions
Program Organizers: Antonio Fuentes, CINVESTAV del IPN; Laszlo Takacs, University of Maryland Baltimore County; Challapalli Suryanarayana, University of Central Florida; Jacques Huot, UQTR

Wednesday PM Room: 155A
Location: Salt Palace Convention Center
Session Chairs: Alexander Mukasyan, University of Notre Dame; Andrey Streletskiy, N.N.Semenov Institute of Chemical Physics RAS

2:00 PM Invited
Mechanochemical Preparation of Reactive and Energetic Materials: Edward Dreizin; NJIT

2:40 PM Invited
Combustion Synthesis: Mechanically Induced Nanostructured Materials: Alexander Mukasyan; University of Notre Dame

3:20 PM Break

3:40 PM Invited
The Nature of High Reactivity of Metal/Oxides Based Nanocomposites, Prepared by Mechanical Activation: Andrey Streletskiy; N.N.Semenov Institute of Chemical Physics RAS

4:20 PM
In-situ Monitoring of Mechanochemically-stimulated Self-propagating Reactions in the Lanthanides: Gordon Alanko; Brian Jaques; Darryl Butt; Boise State University

4:40 PM
Mechanically Activated Combustion Synthesis of Silicides and Borides: Sergio Cordova; Armando Delgado; Alan Esparza; Evgeny Shafirovich; The University of Texas at El Paso

5:00 PM
Metathetical Reactions in the Ti-B-N System: Joshua Pauls; Alexander Mukasyan; University of Notre Dame

Program Organizers: Adrián Sabau, Oak Ridge National Laboratory; Anthony Rollett, Carnegie Mellon University; Laurentiu Nastac, The University of Alabama; Mei Li, Ford Motor Company; Ashley Spear, University of Utah

Wednesday PM Room: 253B Location: Salt Palace Convention Center

Session Chairs: Anthony Rollett, Carnegie Mellon University; Mei Li, Ford Motor Company; Ashley Spear, University of Utah

2:00 PM Invited
Bayesian Calibration of Surrogate Models for Uncertainty Quantification in Additive Manufacturing: Alexander Wolfer1; Umberto Scipioni Bertoli2; Kevin Wheeler3; Dogan Timucin4; Manyalibo Matthews5; Andrew Anderson6; Rose McCallen7; Enrique Lavernia8; Julie Schoenung9; Jean-Pierre Delplanque10; 1University of California, Davis; 2University of California, Irvine; 3NASA Ames Research Center; 4Lawrence Livermore National Laboratory

2:20 PM Quantifying the Material-model Form Error for Welded and Additively-manufactured Structures Using Multiscale a Posteriori Error-estimation Techniques: Joseph Bishop1; Judith Brown2; 1Sandia National Laboratories

2:40 PM The Effects of Material Property Assumptions in Selective Laser Melting Simulations: Chong Teng1; Chris Robinson1; Vijay Jagdale2; Scott Crynock1; Deepankar Pal1; Brent Stucker1; 13DSIM, LLC; 2United Technologies Research Center; 1National Center for Defense Manufacturing & Machining America Makes

3:00 PM Image Driven Machine Learning Methods for Microstructure Recognition: Elizabeth Kautz1; Aritra Chowdhury2; Daniel Lewis3; Bulent Yener1; 1Rensselaer Polytechnic Institute

3:20 PM Break

3:40 PM Invited
Microstructure Predictions from a Macro-scale Casting Model: John Gibbs1; Seth Imhoff2; Damien Tourtell3; Neil Carlson4; Amy Clarke5; 1Los Alamos National Laboratory

4:00 PM Biased Flows in Slab Molds Induced by Slide Gates and Their Correction through SEN Design: Valentin Cedillo1; Rodolfo Morales1; Ismael Calderon Ramos2; Javier Guarneros Guarneros2; 1Instituto Politécnico Nacional; 2Universidad Autónoma de Coahuila; 3Tecnologico de Estudios Superiores de Ecatepec

4:20 PM Fast Determination of Critical Buckling Condition under Welding with Computational Analysis: Jiangchao Wang1; 1Huazhong University of Science and Technology

4:40 PM Thermal and Flow Behavior of Melt Pool during Selective Laser Melting of AlSi10Mg Powder in Point Exposure Laser Scan Pattern: Pingmei Tang1; Dengfu Chen1; Xueping Ding2; Sheng Yu3; Xuaming Du4; Majun Long5; 1Chongqing University; 2Chongqing Institute of Green and Intelligent Technology

Multifunctional Oxides — Novel Synthesis I

Program Organizers: Quanxi Jia, Los Alamos National Laboratory; Chonglin Chen, University of Texas at San Antonio; Judith MacManus-Driscoll, University of Cambridge; Xiaqoing Pan, University of California - Irvine

Wednesday PM Room: 255C Location: Salt Palace Convention Center

Session Chairs: Xiaoli Tan, Iowa State University; Erik Enriquez, Los Alamos National Laboratory

2:00 PM Invited
Enhancements in Piezoelectric and Ferroelectric Properties via Nanostructuring: Linghan Ye1; Ryan Cordier2; Zachary Thatcher3; James Steffes1; Ryan Keech4; Smitha Shetty5; Susan Trolier-McKinstrey1; John Heron6; Bryan Huey7; 1University of Connecticut; 2Pennsylvania State University; 3University of Michigan

2:20 PM Invited
Manipulating Growth and Functional Properties in Oxide Nanocomposites: Aiping Chen1; Erik Enriquez2; Wenzui Zhang3; Leigang Li4; Huiyan Wang5; Judith MacManus-Driscoll1; Quanxi Jia1; 1Los Alamos National Laboratory; 2Texas A&M University; 3University of Cambridge

2:40 PM Invited
Multifunctional Properties of Bismuth-alkali-based Perovskite Oxides: Xiaoming Liu1; Zhongming Fan1; Xiaoli Tan1; 1Iowa State University

3:00 PM Invited
Novel Perpendicular Exchange Bias in Epitaxial Nanocomposite Films through Vertical Interfacial Coupling: Wenzui Zhang1; Meng Fan2; Jie Jian3; Aiping Chen1; Yuanuan Zhu1; Ping Lu1; Quanxi Jia1; Li Chen1; Jiije Huang1; Xinghang Zhang1; Judith L. MacManus-Driscoll5; Haiyan Wang4; 1Texas A&M University; 2Los Alamos National Laboratory; 3Sandia National Laboratories; 4Purdue University; 5University of Cambridge

3:20 PM Break

3:40 PM Invited
The Role of Defects on the Electronic and Magnetic Properties of High-Te Superconducting Films: Jaume Gazquez1; Roger Guzman2; Rohan Mishra3; Cesar Magen4; Juan Salafranca5; Stephen Pennycook6; Sokrates Pantelides7; Maria Varela8; 1Institut de Ciencia de Materials de Barcelona - CSIC; 2Washington University in St. Louis; 3Universidad de Zaragoza; 4Oak Ridge National Laboratory & Universidad Complutense de Madrid, Spain; 5National University of Singapore; 6Vanderbilt University; 7University Complutense de Madrid & Oak Ridge National Laboratory

4:00 PM Room Temperature Evolution of SrFeO3-d Structural and Transport Properties: Erik Enriquez1; Aiping Chen1; Zachary Harrell2; Xujie Lu1; Paul Dowden1; Chonglin Chen1; Quanxi Jia1; 1Los Alamos National Laboratory; 2University of Texas at San Antonio
4:20 PM Invited
Multifunctional Fluorescent Nanoparticles: *Ratnesh Lal*1; 1Universidad de Sonora; 2University of Arizona; 3University of Texas M.D. Anderson Cancer Center; 1Penn State University; 2University of Virginia

Next Generation Biomaterials — Session V

Program Organizers: Roger Narayan, UNC/NC State University; Sharmila Mukhopadhyay, Wright State University; Sundee Mukherjee, University of North Texas

Wednesday PM  Room: 259
October 26, 2016  Location: Salt Palace Convention Center

Session Chairs: Perena Gouma, SUNY Stony Brook; Antonio Benayas, Institut National de la Recherche Scientifique

2:00 PM Invited
Electrospun Biomedical Nanotechnologies: *Perena Gouma*1; 1SUNY Stony Brook

2:40 PM
The Synergy of Conventional Ceramic Forming and Electronic Device Manufacturing Process to Develop Hermetic High Density Feedthroughs for Miniature Implantable Medical Devices: *Abhishek Pathak*1; John Antalek; 1Morgan Advanced Materials

3:00 PM
High Temperature Anodization of Magnesium Based Alloys for Controlling Degradation in Physiological Environment: *Zia Rahman*1; Waseem Haider; 1Central Michigan University

3:20 PM Break

3:40 PM
Improving the Flexural Mechanical Properties of Bioactive Glass (13-93) Scaffolds for Structural Bone Repair: *Mohamed Rahaman*1; Wei Xiao1; Mohsen Asle Zaeemi; Sonny Ba1; 1Missouri University of Science and Technology; 1University of Missouri-Columbia

4:00 PM
Processing and Characterization of Silicon Nitride Bioceramics: *Bryan McEntire*1; Alan Lakshminarayanan; Prabhakar Thirunghanasambandam; Jacob Seitz-Sampson; Ryan Bock; David O’Brien; 1Amedica Corporation; 1Corning, Inc.; 1Prismatik Dentalcraft, Inc

4:20 PM II Biological Window All-optical Imaging Players: A General Prospective and a Multifunctional Newcomer: *Antonio Benayas*1; Elisa Carrasco1; Blanca del Rosal1; Fuqiang Ren1; Eva Hemmer1; Dongling Ma1; Fiorenzo Vetrone1; 1Penn State University; 2Stanford University; 3Prismatik Dentalcraft, Inc

4:40 PM Electrochemical Laboratory Biofilm Reactor and Its Validity: *Hideyuki Kanematsu*1; Chisei Kato1; Nobumitsu Hirai2; Akiko Ogawa1; Takeshi Kogo; 1National Institute of Technology, Suzuka College

2:00 PM Keynote
PhotolImmuNanoTherapy (PINT): A New Therapy for Cancer through Enhanced Stem Cell Differentiation Based on Infra-red Photon Therapy with Inorganic Nanoparticles: *James Adair*1; Gail Matters1; Mark Kester2; Gary Claswson1; Xiaomeng Tang1; Welley Loc1; Sam Linton1; Christopher McGovern1; 1Penn State University; 2University of Sao Paulo; Ciceron Ayala-Orozco1; Luke Henderson1; Valtencir Zucolotto2; Jim Bankson1; Peter Nordlander1; Naomi Halas1; 1Rice University; 2University of Sao Paulo; 3University of Arizona; 4University of Texas M.D. Anderson Cancer Center

2:40 PM Invited
MRI-Active Gd(III)-doped Gold Nanomaterials: *Oura Neumann*1; Valeria Marangoni1; Caterina Kaffes2; Hui Zhang1; Sandra Bishnoi1; Ciceron Ayala-Orozco1; Luke Henderson1; Valtencir Zucolotto2; Jim Bankson1; Peter Nordlander1; Naomi Halas1; 1Rice University; 2University of Sao Paulo; 3University of Arizona; 4University of Texas M.D. Anderson Cancer Center

3:00 PM Invited
Cytoskeletal Response of Cervical Cancer Cells to In Vitro Plasmonic Photothermal Therapy: *Karla Santacruz-Gomez*1; Fernando Terán Arce1; Ratnesh Lal1; 1Universidad de Sonora; 2University of Arizona; 3University of California in San Diego

3:20 PM Break

3:40 PM Keynote
Non-invasive Brain Functional Imaging in the Second Near-infrared Window: *Guosong Hong*1; Hongjie Dai1; 1Harvard University; 2Stanford University

4:20 PM Invited
Multi-functional Nanoparticles for Image-guided Photothermal Therapy: *Chun Li*1; 1The University of Texas M.D. Anderson Cancer Center

4:40 PM Invited
Intratumoral Thermal Reading during Photo-thermal Therapy by Multifunctional Fluorescent Nanoparticles: *Elisa Carrasco*1; Blanca del Rosal1; Francisco Sanz-Rodriguez2; Ángeles Huarranz de la Fuente6; Patricia Haro Gonzalez2; Ueslen Rocha1; Kagola Upendra Kumar2; Carlos Jacinto1; José García Sole2; Daniel Jaque2; 1Durham University; 2University Autónoma Madrid; 3University of Arizona; 4University of Sao Paulo; 5University of Texas M.D. Anderson Cancer Center; 6University of California in San Diego

2:00 PM Keynote
PhotoImmunoNanoTherapy (PINT): A New Therapy for Cancer through Enhanced Stem Cell Differentiation Based on Infra-red Photon Therapy with Inorganic Nanoparticles: *James Adair*1; Gail Matters1; Mark Kester2; Gary Claswson1; Xiaomeng Tang1; Welley Loc1; Sam Linton1; Christopher McGovern1; 1Penn State University; 2University of Sao Paulo; Ciceron Ayala-Orozco1; Luke Henderson1; Valtencir Zucolotto2; Jim Bankson1; Peter Nordlander1; Naomi Halas1; 1Rice University; 2University of Sao Paulo; 3University of Arizona; 4University of Texas M.D. Anderson Cancer Center

2:40 PM Invited
MRI-Active Gd(III)-doped Gold Nanomaterials: *Oura Neumann*1; Valeria Marangoni1; Caterina Kaffes2; Hui Zhang1; Sandra Bishnoi1; Ciceron Ayala-Orozco1; Luke Henderson1; Valtencir Zucolotto2; Jim Bankson1; Peter Nordlander1; Naomi Halas1; 1Rice University; 2University of Sao Paulo; 3University of Arizona; 4University of Texas M.D. Anderson Cancer Center

3:00 PM Invited
Cytoskeletal Response of Cervical Cancer Cells to In Vitro Plasmonic Photothermal Therapy: *Karla Santacruz-Gomez*1; Fernando Terán Arce1; Ratnesh Lal1; 1Universidad de Sonora; 2University of Arizona; 3University of California in San Diego

3:20 PM Break

3:40 PM Keynote
Non-invasive Brain Functional Imaging in the Second Near-infrared Window: *Guosong Hong*1; Hongjie Dai1; 1Harvard University; 2Stanford University

4:20 PM Invited
Multi-functional Nanoparticles for Image-guided Photothermal Therapy: *Chun Li*1; 1The University of Texas M.D. Anderson Cancer Center

4:40 PM Invited
Intratumoral Thermal Reading during Photo-thermal Therapy by Multifunctional Fluorescent Nanoparticles: *Elisa Carrasco*1; Blanca del Rosal1; Francisco Sanz-Rodriguez2; Ángeles Huarranz de la Fuente6; Patricia Haro Gonzalez2; Ueslen Rocha1; Kagola Upendra Kumar2; Carlos Jacinto1; José García Sole2; Daniel Jaque2; 1Durham University; 2University Autónoma Madrid; 3University of Arizona; 4University of Sao Paulo; 5University of Texas M.D. Anderson Cancer Center; 6University of California in San Diego

2:00 PM Keynote
PhotoImmunoNanoTherapy (PINT): A New Therapy for Cancer through Enhanced Stem Cell Differentiation Based on Infra-red Photon Therapy with Inorganic Nanoparticles: *James Adair*1; Gail Matters1; Mark Kester2; Gary Claswson1; Xiaomeng Tang1; Welley Loc1; Sam Linton1; Christopher McGovern1; 1Penn State University; 2University of Sao Paulo; Ciceron Ayala-Orozco1; Luke Henderson1; Valtencir Zucolotto2; Jim Bankson1; Peter Nordlander1; Naomi Halas1; 1Rice University; 2University of Sao Paulo; 3University of Arizona; 4University of Texas M.D. Anderson Cancer Center
Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XI) — General Session I

Program Organizers: James Saal, QuesTek Innovations; Yu Zhong, Florida International University; Ji-Cheng Zhao, The Ohio State University; Nagraj Kulkarni, Knoxville, TN

Wednesday PM  Room: 155C
October 26, 2016  Location: Salt Palace Convention Center

Session Chairs: James Saal, QuesTek Innovations; Yu Zhong, Florida International University

2:00 PM Invited
Refractory Cathode Materials for Solid Oxide Fuel Cells: Deniz Cetin; Srikanth Gopalan; 1Boston University

2:40 PM Invited
Modeling Diffusion Induced Kinetic Demixing in LaCoO$_3$Oxygen Permeation Membrane: Na Ta; Ming Chen; Lijun Zhang; Weimin Chen; Christodoulos Chatzichristodoulou; Peter Vang Hendriksen; Yong Du; 1Central South University; 2Technical University of Denmark

3:20 PM
The Thermodynamic Investigation of the Effect of CO$_2$ to the Stability of LSCF-6428: Shadi Darvish; Yu Zhong; 1Florida International University

3:40 PM Break

4:00 PM
Phase Equilibria of Rare-earth-zirconium-silicon Oxide Systems: Najeb Abdal-Jabbar; David Poerschke; Cian Gabbett; Carlos Levi; 1University of California, Santa Barbara; 2Trinity College, Dublin

4:20 PM
Thermal Stability Analysis of Nanostructured Mg-Al Thin Films: Rama Sesha Vemuri; Libor Kvarik; Arun Devaraj; Giridhar Nandipati; Suveen Mathaudhu; Aashish Rohatgi; 1Pacific Northwest National Laboratory

4:40 PM
Quantitative Analysis of (La$_{0.8}$Sr$_{0.2}$)$_{0.98}$MnO$_3$±d Electronic Conductivity Using CALPHAD Approach: Shadi Darvish; Yu Zhong; 1Florida International University

5:00 PM
Diffusion and Ion Conduction in Oxide Glasses: Helmut Mehrer; 1University of Muenster

5:20 PM
Numerical Approach to Obtaining Thermal Degradation Kinetics for 3D Compact Binder Removal: Joseph Prati; M. Matthewson; Rich Haber; 1Rutgers University

5:40 PM
Self Learning Kinetic Monte Carlo Simulations of Si diffusion in High-Si-steels: Giridhar Nandipati; Rama Sesha Vemuri; Suveen Mathaudhu; Aashish Rohatgi; 1Pacific Northwest National Laboratory; 2Pacific Northwest National Laboratory; University of California, Riverside

Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XI) — Tracer Session II/ General Session II

Program Organizers: James Saal, QuesTek Innovations; Yu Zhong, Florida International University; Ji-Cheng Zhao, The Ohio State University; Nagraj Kulkarni, Knoxville, TN

Wednesday PM  Room: 155D
October 26, 2016  Location: Salt Palace Convention Center

Session Chairs: Nagraj Kulkarni, Knoxville, TN; Ji-Cheng Zhao, Ohio State

2:00 PM Invited
Tracer Diffusion in Homogeneous and Inhomogeneous Materials: Manfred Martin; 1RWTH Aachen University

2:40 PM Invited
A New Combined Tracer and Interdiffusion Experimental Approach: Irina Belova; Esin Schulz; Graeme Murch; Yongho Sohn; 1University of Newcastle; 2University of Central Florida

3:20 PM
Tracer Diffusion in Equiatomic FCC High Entropy Alloys: Mayur Vaidya; Simon Trubel; Josua Kottke; B.S. Murty; Gerhard Wilde; Sergii Divinsky; 1Department of Metallurgical & Materials Engineering, Indian Institute of Technology Madras; 2University of Münster

3:40 PM Break

4:00 PM Invited
Developing and Sharing a Reference Tracer Diffusivity Database: Carelyn Campbell; 1National Institute of Standards and Technology

4:40 PM
Multicomponent Diffusion Kerf Couples for Tracer Diffusion and Genomic Data: Nagraj Kulkarni; 1Knoxville, TN

5:00 PM
Reliable Evaluation of Both Impurity Coefficients and Interdiffusion Coefficients Using a Forward-simulation Method: Ji-Cheng Zhao; Qiaofu Zhang; Zhangqi Chen; Wei Zhong; 1The Ohio State University

Program Organizers: Morsi Mahmoud, Karlsruhe Institute of Technology (KIT) & City for Scientific Research and Technological Applications (SRTA City); Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado

Wednesday PM — Room: 255E
October 26, 2016 — Location: Salt Palace Convention Center

Session Chairs: Jun Fukushima, Tohoku University; Ruth Kiminami, Universidade Federal de São Carlos

2:00 PM Invited
Effects of Alternating Electromagnetic Field and Ultrasonic Sound Wave on Biofilm Formation in Some Aqueous Environments: Hideyuki Kanematsu; Senshin Umeki; Nobumitsu Hirai; Akiko Ogawa; Kazuyuki Tohji; National Institute of Technology, Suzuka College; Graduate Schools of Environmental Studies, Tohoku University

2:40 PM Invited
Crystallization of Rare-earth Aluminosilicate Glasses Using Microwave and Conventional Processing: Hans Seifert; Sarfraz Ahmad; Morsi Mahmoud; 1Karlsruhe Institute of Technology (KIT)

3:20 PM Break

3:40 PM
Magnetocaloric Performance Improvement of Non-stoichiometric Ni2MnGa Heusler Alloys through Mechanical Work: Michael McLeod; Zafer Turgut; Bhaskar Majumdar; New Mexico Tech; Wright Patterson AFB

4:00 PM
Sublimation of Porous Materials with Distributed Sources of Energy and Self-Sublimation and Freezing: Rahul Basu; VTU

4:20 PM
Thermal and Ionic Conductivity Characterizations of Lithium Aluminum Germanium Phosphate Glass-ceramics: Morsi Mahmoud; Cui Yuantao; Magnus Rohde; Carlos Ziebert; Hans Seifert; Karlsruhe Institute of Technology (KIT), City for Scientific Research and Technological Applications (SRTA City); Karlsruhe Institute of Technology; Karlsruhe Institute of Technology


Program Organizers: Jing Zhang, Indiana University - Purdue University Indianapolis; Balraj Mani, New Jersey Institute of Technology; Johannes Homa, Lithoz GmbH; Kim Brand, 3D Parts Manufacturing, LLC; Xinghua Yu, Oak Ridge National Laboratory; Yeongil Jung, Changwon National University; Nuggehalli Ravindra, New Jersey Institute of Technology

Wednesday PM — Room: 258
October 26, 2016 — Location: Salt Palace Convention Center

Session Chairs: Nuggehalli Ravindra, New Jersey Institute of Technology; Jing Zhang, Indiana University - Purdue University Indianapolis

2:00 PM Keynote
Hot Cracking in SLM-produced Inconel 738LC: Origins and Remedy: Eric Jägle; Lin Lu; Dierk Raabe; Max-Planck-Institut für Eisenforschung

2:40 PM
Effects of Beta Grain Orientation and Defects on Fracture and Fatigue of As-deposited and HIP EBM Powder Bed Fusion Ti-6Al-4V: Mohsen Seifi; Behrang Poorganji; Ayman Salem; John Lewandowski; Case Western Reserve University; Eaton Research and Innovation Center; Materials Resources LLC

3:00 PM
Flexible Heat Treatment of AM Material in a HIP: Anders Eklund; Magnus Ahlfors; Quintus Technologies, LLC; Quintus Technologies AB

3:20 PM Break

3:40 PM
Interfacial Bonding Quality Prediction and Improvement for Fusion Deposition Modeling by Layerwise Additive Manufacturing Analytical Block Technique: Jinquan Cheng; Composite Solutions and Digital Manufacturing LLC

4:00 PM
Quantifying Accuracy in Additive Manufacturing Processes through Standardized Test Structures: Jason Weaver; Justin Zsiros; Michael Miles; Tracy Nelson; Brigham Young University

4:20 PM
Tri-Comparative Analysis of Physical Properties of Porous Titanium with a Computed Topography Technique: Cindy Waters; Stephen Ajinola; NCA&T State University

4:40 PM
Effect of Build Parameters on the Variation in Mechanical Properties of Fused Deposition Modeled ABS: Alex Cress; Ozgur Keles; San Jose State University
S2P: Semi-solid Processing of Alloys and Composites — Session XI

Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group

Wednesday PM Room: 151A Location: Salt Palace Convention Center

Session Chair: Pascal Cote, STAS Inc.

2:00 PM
Ultrasonic Rheo-Diecasting of A383 Aluminum Alloy: Waleed Khalifa1; Yoshiki Tsunekawa2; Shimaa El-hadad3; 1Cairo University; 2Toyota Technological Institute; 3Central Metallurgical Research and Development Institute

2:30 PM
Microstructure and Rheological Properties of Semi-solid 7075 Slurries Using SEED Rheocasting Process: X. Grant Chen1; Qinfu Zhao1; Amir Bolouri1; Pascal Côté2; 1University of Quebec at Chicoutimi; 2Société des Technologies de l’Aluminium du Saguenay Inc.

3:00 PM
Microstructure Evolution and Coarsening Mechanism of 7075 Semi-solid Aluminum Alloy Predeformed by ECAP Method: Jinlong Fu1; Kaikun Wang1; Xiaowei Li1; 1Univiersity of Science and Technology Beijing

3:30 PM
Thixoforming of Mixed Electron 21 and WE43B Magnesium Granules: Lukasz Rogal1; 1Institute of Metallurgy and Materials Science

4:00 PM
Semi-solid Manufacturing of Bulk Metallic Glass Matrix Composites: Douglas Hofmann1; Scott Roberts1; 1NASA JPL/Caltech

S2P: Semi-solid Processing of Alloys and Composites — Session XII

Program Organizers: Ahmed Rassili, CRM Group; Stephen Midson, The Midson Group

Wednesday PM Room: 151G Location: Salt Palace Convention Center

Session Chair: John Jorstad, J. L. J. Technologies Inc.

2:00 PM
A New Rheo-HPDC Process with Air-cooled Stirring Rod Device for Wireless Base Station Shells of Al-8Si Alloy: Mingfan Qi1; Yonglin Kang1; Guoming Zhu1; 1University of Science and Technology Beijing; 2Dongguan EONTEC Corporation, Ltd.

2:30 PM
Thixo-Forging of an Appropriative Alloy for Scroll Production: Zhifeng Zhang1; 1General Research Institute for Nonferrous Metals

3:00 PM
Study of Forming Mechanism of Non-filling Holes in Blades of Semi-solid Cast Impellers: Hongxing Lu1; Qiang Zhu1; Youfeng He1; Fan Zhang1; Daquan Li1; 1General Research Institute for Non-Ferrous Metals

3:30 PM
Development and Achievements OF SSM Processes for High Performance Components: Mario Rossi1; Ildiko Peter2; Ivan Gattelli2; 1POLITECNICO di Torino; 2ATS

4:00 PM
Manufacturing and Fatigue Verification of Several Different Components Made by Semi-solid Processing of Aluminium TX630 Alloy: Madeleine Bladh1; Bengt Johannesson1; Patrik Nordberg2; Johannes Winklhofer3; 1Volvo Group Trucks Technology; 2Duranand AB; 3SAG MOTION GmbH

Sintering and Related Powder Processing Science & Technologies — Field Assisted Sintering II

Program Organizers: Ricardo Castro, University of California, Davis; Brady Butler, U.S. Army Research Laboratory; Olivia Graeve, University of California, San Diego; Eugene Olevsky, San Diego State University; Anders Eklund, Quintus Technologies, LLC.

Wednesday PM Room: 150E Location: Salt Palace Convention Center

Session Chair: To Be Announced

2:00 PM Invited
Flash Sintering: How Does the Flash Start and What Are the Densification Mechanisms and Field Effects?: Yuanyao Zhang1; Jiuyuan Nie1; Jian Luo1; 1UCSD

2:40 PM
Flash Sintering: Rishi Raj1; 1University of Colorado

3:00 PM
Flash Sintering of α-Al2O3, MgAl2O4 and 8 mol% Y2O3 Stabilized ZrO2 Composites: David Kok1; Shikhar Jha2; Rishi Raj2; Martha Mecartney1; 1University of California, Irvine; 2University of Colorado, Boulder

3:20 PM Break

3:40 PM
Phase Evolution, Microstructure and Properties of Porcelains Using Field Enhanced Sintering: Wirat Lerdprom1; Eugenio Zapata-Solvas1; Doni Jayaseelan1; William Lee1; 1Imperial College London

4:00 PM Invited
Energy Coupled to Matter for Field-assisted Sintering of Materials: Raymond Brennan1; Brandon McWilliams1; Victoria Blair1; Jian Yu1; Nicholas Ku1; Michael Kornecki1; 1U.S. Army Research Laboratory

4:40 PM
Microwave Assisted Consolidation of Titanium and Titanium Alloy Powder Compacts: Ben Rock1; M. Ashraf Imam2; Tony Zahrn1; 1George Washington University

5:00 PM Invited
Porous Materials by Spark Plasma Sintering Using Different Approaches: Dina Dudina1; Vyacheslav Mali1; Alexander Anisimov1; Arina Ukhina1; Andrei Brester2; Boris Bokhonov2; 1Lavrentyev Institute of Hydrodynamics SB RAS; 2Institute of Solid State Chemistry and Mechanochemistry SB RAS
MS&T16
MATERIALS SCIENCE & TECHNOLOGY

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application — Environmental Protection Coatings
Program Organizers: Kang Lee, NASA Glenn Research Center; Yutaka Kagawa, The University of Tokyo; Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Daniel Mumm, University of California-Irvine; Mitchell Dorfman, Oerlikon Metco (US) Inc.; Christian Moreau, Concordia University

Wednesday PM
October 26, 2016
Room: 251E
Location: Salt Palace Convention Center

Session Chairs: Dongming Zhu, NASA; Yutaka Kagawa, The University of Tokyo

2:00 PM Invited
Alumizing of Austenitic Stainless Steels: Vipulan Rav1; Michell Aranda1; Daniel Navarro1; 1California State Polytechnic University, Pomona

2:40 PM Invited
A Master Equation for Force Distributions in Dense Granular Materials: Kuniyasu Saitoh1; 1Tohoku University

3:20 PM Break

3:40 PM Invited
Avalanches in Jammed Granular Materials: Hisao Hayakawa1; Michio Otuki1; 1Kyoto University; 2Shimane University

4:20 PM Invited
Thermodynamics of Critical Phenomena: Fluctuation and Anomaly: Zi-Kui Liu1; 1The Pennsylvania State University

5:00 PM Invited
Stick-slip Friction of Polymer Gels Having Controlled Surface Asperities: Tetsuo Yamaguchi1; Yoshinori Sawae1; 1Kyushu University

The 8th International Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Green Materials Processing II
Program Organizers: Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology (AIST); Mritunjay Singh, Ohio Aerospace Institute, NASA Glenn Research Center; Allen Apblett; Oklahoma State University; Marsha Bischel, Armstrong World Industries, Inc.; Suojiit Gupta, University of North Dakota; Manish Mehta, National Center for Manufacturing Sciences (NCMS); Makio Naito, Osaka University; Richard Siisson, Worcester Polytechnic Institute, Center for Heat Treating Excellence; Hisayuki Suematsu, Nagaoka University of Technology; Yiquan Wu, Alfred University

Wednesday PM
October 26, 2016
Room: 151C
Location: Salt Palace Convention Center

Session Chairs: Suojiit Gupta, University of North Dakota; Tadachika Nakayama, Nagaoka Univ of Technology

2:00 PM Invited
Processing Composite Stable Porous Silicon (SPS) as an Anode for Lithium Ion Battery: Indrajit Dutta1; Brian Kent1; David Baker1; Brett Abell1; 1Corning Incorporated

2:20 PM
Two Step Pressurization in Pulsed Electric Current Sintering of MoO3 for Production of Radioactive Isotopes: H. Sueatsu1; M. Seki1; S. Sato1; M. Nanko1; K. Tsuchiya1; K. Nishikata1; T. Suzuki1; T. Nakayama1; K. Niihara1; 1Nagaoka University of Technology; 2Japan Atomic Energy Agency

2:40 PM
New Thoughts on Electric Field-related Sintering Behavior in Dielectric Sr5(PO4)3F Crystals: Yin Liu1; Yiquan Wu1; 1Alfred University

3:00 PM
Innovative Low Magnetic Field Orientation Process for Fabrication of C-axis Oriented Si3N4 Ceramics by Using Multilayered-graphene Coated â-Si3N4 Particle: Takuma Takahashi1; Mariko Sado1; Nanako Sugimoto2; Junichi Tatami1; Motoyuki Iijima1; 1Kenagawa Academy of Science and Technology; 2Yokohama National University

3:20 PM Break

3:40 PM Invited
Stereolithographic Additive Manufacturing of Ceramic Components with Micro Geometric Patterns: Soshu Kirihara1; 1Osaka University
2:00 PM Introductory Comments — A special session has been scheduled at MS&T’16 to discuss the current national and international landscape of the materials data sharing infrastructure. Discussion topics will include the latest tools and processes for data capture, curation, dissemination, and discovery as well as efforts to integrate materials and manufacturing data into broader engineering systems. The Town Hall Meeting is part of the “ICME Accelerated Materials Discovery in Process & Product Development” symposium.

2:10 PM Invited
Materials Data Infrastructure: Current Status and Update on NIST Data Programs: James Warren1; ‘National Institute of Standards and Technology

2:15 PM Invited
The Materials Commons and the PRISMS Center at the University of Michigan: James Warren1; ‘National Institute of Standards and Technology

2:20 PM Invited
Center for Hierarchical Materials Design (CHiMaD) and the Materials Data Facility: James Warren1; ‘National Institute of Standards and Technology

2:25 PM Invited
The National Data Service (NDS) and the Timely and Trustworthy Curating and Coordinating Data Framework (T2C2) Project: Steve Konstanty1; ‘University of Illinois at Urbana-Champaign

2:30 PM Invited
Integrated Collaborative Environment (ICE) for Materials Research: Matthew Jacobsen1; ‘Air Force Research Laboratory

2:35 PM Invited
The Materials Project: Patrick Huck2; ‘Lawrence Berkeley National Laboratory

2:40 PM Invited
Citrination Platform: Bryce Meredith2; ‘Citrine Informatics

2:45 PM Invited
The Institute for Data Intensive Engineering and Science (IDIES): K Ramesh3; ‘Johns Hopkins University

2:50 PM Question and Answer Period

Ultra High Performance Metals, Metal Alloys, Intermetallics, and Metal Matrix Composites for Aerospace, Defense, and Automotive Applications — Composites / Hybrid / Graded Materials

Program Organizers: Ali Yousefiani, Boeing Research and Technology; Troy Topping, California State University, Sacramento

Wednesday PM Room: 150A&B
October 26, 2016 Location: Salt Palace Convention Center

Session Chair: Troy Topping, California State University, Sacramento

2:00 PM On the Development of MRMs (MAX Reinforced Metals) for Multifunctional Applications: Faisal AlAnazi1; Sujan Ghosh1; Surojit Gupta1; ‘University of North Dakota

2:20 PM Hierarchically Structured Nanocomposites: Scalable Ceramic Bearing Technology: Andrew Sherman1; Joe Hensel1; ‘Powdermet Inc

2:40 PM Fabrication of Metal Matrix Syntactic Foams with a Laser Additive Manufacturing Process: Myranda Spratt1; J Newkirk1; K Chandrashekhara1; ‘Missouri University of Science and Technology

3:00 PM Temperature Dependent Damping Properties of Ferroelectric Ceramic-reinforced Metal-Matrix Composites: Liwei Geng1; Zachary Morgan1; Yongmei Jin1; Stephen Kampe1; ‘Michigan Technological University

3:20 PM Break

3:40 PM Microstructure and Mechanical Properties of Heat Treated TiC-steel Matrix Composite: Seong Hoon Kim1; Dong-Woo Suh1; ‘GIFT, POSTECH

4:00 PM Optimization of Powder Metallurgy (P/M) Route for Fabrication of Metal Matrix Composites Reinforced by Ultra High Temperature Ceramics: Babak Jahani1; Mehdi Salimi Jazi1; Fardad Azarmi1; ‘North Dakota State University

4:20 PM Processing of Ball-milled Ni – 50%Fe Base Alloy System Using Spark Plasma Sintering: Mxolisi Shongwe1; ‘Tshwane University of Technology

2:40 PM Invited
Extrusion and Tape Casting Based Production Processes for New Lightweight Kiln Furniture: Uwe Scheithauer1; Eric Schwarzer1; Tassilo Moritz1; Alexander Michaelis1; ‘Fraunhofer Institute for Ceramic Technologies and Systems IKTS

3:00 PM A Parametric Study on the Hydrolysis of Titanium Acid in HCl Solution for Synthesis of TiO2 with Controlled Particle Sizes and Morphology: Zhe Huang1; Ying Zhang1; Zhihong Fang1; Hyrum Leffler1; Tuoyang Zhang1; Lu Yang1; ‘University of Utah

4:00 PM Room-temperature and Low-pressure Injection Molding of Silicon Nitride Aqueous Suspensions: Lisa Rueschhoff1; Jeffrey Youngblood1; Rodney Trice1; ‘Purdue University

5:00 PM Titania Nanosheet Production by An Inexpensive Green Process: Allen Apblett1; Cody Cannon1; ‘Oklahoma State University

5:20 PM Invited
Fabrication of Metal Matrix Syntactic Foams with a Laser Additive Manufacturing Process: Myranda Spratt1; J Newkirk1; K Chandrashekhara1; ‘Missouri University of Science and Technology

6:00 PM Temperature Dependent Damping Properties of Ferroelectric Ceramic-reinforced Metal-Matrix Composites: Liwei Geng1; Zachary Morgan1; Yongmei Jin1; Stephen Kampe1; ‘Michigan Technological University

6:20 PM Break
Zirconia Based Materials for Cutting Edge Technology — Session III

Program Organizers: Hasan Gocmez, Dumlupinar University; Yuji Hotta, National Institute of Advanced Industrial Science and Technology; Sudipta Seal, University of Central Florida; Hirotsuka Fujimori, Yamaguchi University; Chiangir Duran, Yildirim Beyazit University; Kohel Soga, Tokyo University of Science; Takashi Shirai, Nagoya Institute of Technology; Hilmi Yurdakul, TeknoCeram

Wednesday PM  Room: 254B
October 26, 2016  Location: Salt Palace Convention Center

Session Chairs: Miladin Radovic, Texas A&M University; Takashi Shirai, Nagoya Institute of Technology; Taylor Sparks, University of Utah

2:00 PM Invited
Electrically Driven Microstructure Evolutions in Cubic and Tetragonal YSZ: I-Wei Chen; 'University of Pennsylvania

2:40 PM
Zirconia Green Body Sintering Investigated by Dilatometry and Laser Flash Analysis: Ekkehard Post; Melinda Tucker; 'NETZSCH Geraetebau GmbH; 'NETZSCH Instruments North America

3:00 PM
Thermal Properties and Fabrication of Low Thermal Conductivity ZrO₂ Composites: Byung-Koog Jang; SeongWon Kim; Yoon-Suk Oh; Hyung-Tae Kim; 'National Institute for Materials Science; 'Korea Institute of Ceramic Engineering and Technology

3:20 PM Break

3:40 PM
In-situ Synthesis of ZrB₂-SiC Based Ceramics from ZrO₂-B₄C-SiC System by Spark Plasma Sintering Technique: Burcu Yilmaz; Kübra Gürcan; Erhan Ayas; 'Anadolu University

4:00 PM
Measurement of Electronic Conductivity in 8YSZ Using an Embedded Electrode: Lei Zhang; Liangzhu Zhu; Anil Virkar; 'University of Utah

4:20 PM
Use of Yttria-stabilized Zirconia for Potentiometric Measurements at Low Temperatures: Alexander Szendrei; Taylor Sparks; Anil Virkar; 'University of Utah


Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Gla Harryson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBRTi Consulting

Thursday AM  Room: 355C
October 27, 2016  Location: Salt Palace Convention Center

Session Chair: Frank Medina, EWI

8:00 AM
Defect Characterization in Powder Bed AM Aluminum: Lisa Deibler; Jeff Rodelas; Jay Carroll; 'Sandia National Laboratories

8:20 AM
Design of an ODS-TiAl Alloy for Additive Manufacturing Technologies: Christoph Kenel; Karl Dawson; Georgia Dasargyri; Thomas Bauer; Alberto Coletta; Adriaan Spierings; Gordon Tatlock; 'Christian Leinenbach; 'Empa-Swiss Federal Laboratories for Materials Science and Technology; 'University of Liverpool; 'Inspire AG - Innovation Center for Additive Manufacturing Switzerland; 'MBN Nanomaterialia S.p.A.

8:40 AM
Characterisation of Additive Manufactured Aluminum-based alloy Periodic Cellular Structures (PCS): Florian Gallien; Adriana Spierings; Andrew Norman; Andreas Mortensen; Volker Gass; 'EPFL-Swiss Space Center; 'Inspire AG; 'ESA; 'EPFL-LMM

9:00 AM
Mechanical Properties of Selective Laser Melted Al-12Si Alloy: Jyoti Suryawanshi; K. G. Prashanth; J. Eckert; U. Ramamurty; 'Indian Institute of Science, Bangalore; 'Institute for Complex Materials

9:20 AM
Microstructure Control in Additive Manufacturing of Aluminum Alloys: Hunter Martin; Brennan Yahata; Eric Clough; Jacob Hundle; Tobias Schaedler; Tresa Pollock; 'HRL Laboratories; 'University of California, Santa Barbara

9:40 AM
Relationship between Porosity Size and Fatigue Life Distributions of AlSi10Mg Parts Produced by Selective Laser Melting: Ming Tang; Petrus Pistorius; 'Carnegie Mellon University

10:00 AM Break

10:20 AM
Solidification Microstructure and Mechanical Properties Development due to Selective Laser Melting of AlSi10Mg Alloy: Moataz Attallah; Michael Loretto; Noriko Read; Uriel Tradowsky; Wei Wang; Jan White; 'University of Birmingham; 'Institut für Werkstoffwissenschaften,

10:40 AM
The Role of Melting Pool Boundary in the Determination of Mechanical Property of Al Alloys Made by Selective Laser Melting: Yajeng Yang; Ma Qian; Milan Brandt; 'Institute of Processing Engineering, Chinese Academy of Science; 'RMIT University
Program Organizers: Andrzej Wojcieszynski, ATI Powder Metals; Ulf Ackelid, Arcam AB; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrysson, North Carolina State University; Ian D. Harris, EWI; Rodney Boyer, RBBTi Consulting

Thursday AM
Room: 355D
Location: Salt Palace Convention Center

Session Chair: Richard Martukanitz, Pennsylvania State University

8:00 AM Invited
On the Role of Microstructure on the Fatigue Performance of Additively Manufactured Components: Thomas Niendorf1; Stefan Leuders2; Andre Riemer2; Johannes Guenther3; Florian Brenne1; 1University of Kassel; 2University of Paderborn; 3TU Bergakademie Freiberg

8:40 AM
Impact of Atomization and Processing Conditions on the Heat Treatment Response of Additively Manufactured 17-4 Stainless Steel: Scott Meredith1; Jared Blecher2; Todd Palmer1; Rich Martukanitz1; 1Applied Research Lab, Penn State; 23D Systems

9:00 AM
Influence of Grain Structure on the Mechanical Properties of Electron Beam Melted Inconel 718: Michael Kirka1; Kinga Unocic1; Alfred Okello1; Ryan Dehoff1; Ralph Dinwiddie1; Yousub Lee1; Naren Raghavan2; 1Oak Ridge National Laboratory; 2University of Tennessee

9:20 AM
Microstructural and Surface Defects Found in Additive Manufactured Titanium Components: Julius Bonini1; Joan Morra1; Kaitlyn Mazza1; 1Lucideon M + P

9:40 AM
Drop-weight Impact Properties of an Additively Manufactured Re-entrant Auxetic Cellular Structure: Geometrical and Material Effects: Amer Beharic1; Rafael Rodriguez Egul1; Li Yang1; 1University of Louisville

10:00 AM Break

10:20 AM
Evaluation of Structure and Properties of 4340 Steel Produced by the DMLS Process: Elias Jelis1; Rajendra Sadangi2; Michael Hespson1; Jamal White2; Matthew Clemente1; Nuggehalli Ravindra3; 1U.S. Army, ARDEC, Picatinny Arsenal; 2U.S. Army, ARDEC; 3Picatinny Arsenal, 3New Jersey Institute of Technology

10:40 AM
Mechanical Properties of Hastelloy X Fabricated by Electron Beam Melting: Sebastien Dryepondt1; Mike Kirka1; Ryan Dehoff1; 1Oak Ridge National Laboratory

11:00 AM
Microstructural Characterization of As-Manufactured and Heat Treated Electron Beam Melted Inconel 718: Danyong Deng1; Jonas Saarimäki1; Hans Söderberg1; Ru Lin Peng1; Håkan Brodin1; Johan Moverare1; 1Linköping University; 2Sandvik AB; 3Siemens Industrial Turbomachinery AB

11:20 AM
Properties of 316L Austenitic Stainless Steel Additively Manufactured Using Laser Metal Deposition Method: Kosuke Sasaki1; Tomokazu Sanot1; Akio Hirose1; Go Obara1; Takashi Obara1; Nao Tada Okada1; Miki Mori1; 1Graduate School of Engineering, Osaka University; 2Corporate Manufacturing Engineering Center, Toshiba Corporation

Program Organizers: Ulf Ackelid, Arcam AB; Ian D. Harris, EWI; Andrzej Wojcieszynski, ATI Powder Metals; Sudarsanam Babu, The University of Tennessee, Knoxville; Ola Harrysson, North Carolina State University; Rodney Boyer, Monash University

Thursday AM
Room: 355A
Location: Salt Palace Convention Center

Session Chair: Ulf Ackelid, Arcam AB

8:00 AM Invited
Layer-Wise Thermal Feedback Control of Ti64 Electron Beam Melting: Brian Fisher1; Shakerer Ridwan1; Jorge Mireles1; Jack Beuth1; Ryan Wicker1; 1Carnegie Mellon University; 2University of Texas at El Paso

8:40 AM
Development and Validation of a Numerical Model of Electron Beam Additive Manufacturing Using In-situ Thermographic Measurements: Yousub Lee1; Ralph Dinwiddie1; Michael Kirka1; Narendran Raghavan2; John Turner1; Ryan Dehoff1; 1Oak Ridge National Laboratory; 2University of Tennessee

9:00 AM
In Situ Temperature Measurement during the Electron Beam Melting Process of Inconel 718: Ralph Dinwiddie1; Michael Kirka1; Ryan Dehoff1; Larry Lowe1; Garry Marlow1; 1Oak Ridge National Laboratory

9:20 AM
In-Situ Observations of Chimney Pore Formation during Electron-Beam Additive Manufacturing: Zachary Cordero1; Ralph Dinwiddie1; Ryan Dehoff1; 1Oak Ridge National Laboratory

9:40 AM
Automated Computer Vision System for Characterizing AM Powder Feedstock and Build Quality: Harshvardhan Jain1; Brian DeCost2; Ross Cunningham1; Anthony Rollett1; Elizabeth Holm1; 1Carnegie Mellon University

10:00 AM
Using Machine Vision and Machine Learning to Explore and Evaluate a Large Dataset of AM Powder Feedstock Images: Brian DeCost1; Elizabeth Holm1; 1Carnegie Mellon University
Advanced Manufacturing Technologies — Advanced Manufacturing - Materials  
Program Organizer: Muammer Koc, HBKU / Qatar Foundation

Thursday AM  Room: 150F  Location: Salt Palace Convention Center

Session Chair: Muammer Koc, HBKU / Qatar Foundation

8:00 AM Introductory Comments

8:20 AM Pronounced Effects of Minor Addition of Zr in the Properties of a Spray Formed Cu-Al-Ni-Mn Shape Memory Alloy: Régis Cava; Piter Gargarella; Eric Mazzer; Vinicius Pedroso; Claudemiro Bolfarini; Walter Botta; Claudio Kiminami; 1Federal University of S. Carlos

9:00 AM A Study on Peripheral Recrystallization of Hot Extruded AA6XXX and AA7XXX Aluminium Alloys: Yiwei Sun; Kevin Trumble; David Johnson; 1Purdue University

9:20 AM Use of MgO-C Wasted Bricks as Steelmaking Fluxing Additions: Mohammed Tayeb; Othman AlZeghaibi; 1SABIC Metals SBU

10:00 AM Break

10:20 AM Optimization of Filler Materials for Large Forging Dies: Michal Duchek; Martina Koukolikova; Jana Niznanska; Miroslav Major; 1COMTES FHT; 2Czech Precision Forge

10:40 AM Effect of Starting Microstructure on the Graphite Dispersion Size, Formed after Graphitising Anneal of High Si and Al Medium Carbon Steel: Aqil Inam; David Edmonds; Rik Brydson; 1University of the Punjab; 2University of Leeds

11:00 AM Question and Answer Period

Advanced Materials for Oil and Gas Applications - Performance and Degradation — Manufacturing of Materials for Oil & Gas Industry  
Program Organizers: Andrzej Wojcieszyński, ATI Powder Metals; Xi Shan, GE Oil & Gas; Maria Sawford, ATI Powder Metals; Paal Bratland, OneSubsea Company; Mariano Iannuzzi, GE Oil & Gas; Yellapu Murty, MC Technologies LLC

Thursday AM  Room: 250D  Location: Salt Palace Convention Center

Session Chairs: Paal Bratland, OneSubsea Company; Maria Sawford, ATI Powder Metals

9:00 AM Spray Formed Boron-containing Super Duplex Stainless Steel: Juliano Soyama; Thiago Pama Lopes; Claudio Kiminami; Walter Botta; Claudemiro Bolfarini; 1Federal University of S. Carlos

9:20 AM Design and Thermo-mechanical Processing of Steel Grade APIX70 PSL2 for Use in Line-pipe at Oil&Gas Industry: Adriana Berlanga; 1Ternium

Boron, Boron Coatings, Boron Compounds and Boron Nanomaterials: Structure, Properties, Processing, and Applications — Bulk Materials  
Program Organizers: Roumiana Petrova, New Jersey Institute of Tech; Jens Kunstmann, TU Dresden

Thursday AM  Room: 260B  Location: Salt Palace Convention Center

Session Chair: Jens Kunstmann, TU Dresden

8:00 AM Invited Experimental and Theoretical Studies of the Hard Materials A2MB2 (A, M: Transition Metals): Boniface Fokwa; 1University of California, Riverside

8:40 AM Invited New Intermetallic Phases in the Ternary Al/Ga-Ni-B and Al-Pd-B Systems: Andreas Leithe-Jasper; Qiang Zheng; Yuri Prot; Walter Schnelle; Roman Gumieniuk; Yuri Grin; 1MPI-CPfS; 2TU Bergakademie Freiberg

9:20 AM Compressing Amorphous Boron Nitride at High-pressure: Ab-initio Molecular Dynamic Simulations: Peter Kroll; 1University of Texas at Arlington

9:40 AM Understanding Size and Morphology Control of Boron Carbide Ceramic Powders Synthesized via Carbothermal Reduction Reaction: Paniz Foroughi; Zhe Cheng; 1Florida International University

10:00 AM Break

10:20 AM Boron Carbide Synthesize via ICP method: Celaletdin Ergun; Selim Parlakyigit; 1Istanbul Technical University

10:40 AM Sintering of B4C at Relatively Low Temperatures: Ramasis Goswami; Syed Qadri; James Wollmerhauser; Noam Bernstein; 1Naval Research Laboratory

11:00 AM Rising R-curve Behavior in Nanostructured Titanium Boride: Anthony Sanders; Ahmed Degnah; Ravi Chandran; 1University Of Utah

Advanced Materials for Oil and Gas Applications - Performance and Degradation — Manufacturing of Materials for Oil & Gas Industry  
Program Organizers: Andrzej Wojcieszyński, ATI Powder Metals; Xi Shan, GE Oil & Gas; Maria Sawford, ATI Powder Metals; Paal Bratland, OneSubsea Company; Mariano Iannuzzi, GE Oil & Gas; Yellapu Murty, MC Technologies LLC

Thursday AM  Room: 250D  Location: Salt Palace Convention Center

Session Chairs: Paal Bratland, OneSubsea Company; Maria Sawford, ATI Powder Metals

8:00 AM Invited Material Challenges in Oil and Gas Exploration and Production: Rashmi Bhavsar; Paal Bratland; 1Schlumberger; 2OneSubsea

8:40 AM Additive Manufacturing in Oil & Gas Drilling: Alloy Systems, Properties & Application Prospects: Krutibas Panda; 1Halliburton
Computational Design of Ceramics and Glasses — Interfaces, Mesoscale, and Continuum

Program Organizers: Mathieu Bauchy, University of California, Los Angeles; Liping Huang, Rensselaer Polytechnic Institute; Peter Kroll, University of Texas at Arlington

Thursday AM  Room: 252A-B  Location: Salt Palace Convention Center

October 27, 2016  Location: Salt Palace Convention Center

Session Chairs: Mathieu Bauchy, University of California, Los Angeles; Jaime Marian, University of California, Los Angeles

8:00 AM  Invited
C-S-H Across Length Scales: From Nano to Micron: Roland Pellenq

1; Katerina Ioannidou1; Franz-Josef Ulm1; Emanuela Del Gado2; 1MIT-CNRS; 2Georgetown University

8:40 AM  Invited
The Crucial Effect of Early-stage Gelation on the Mechanical Properties of Cement Hydrates: Emanuela Del Gado1; Katerina Ioannidou2; Jure Dobnikar2; Daan Frenkel3; Lunna Li4; Matej Kanduc5; 1MIT; 2University of Chemical Technology; 3University of Cambridge; 4Helmholtz-Zentrum Berlin

9:20 AM  Invited
Micro-structural Stress Modeling of Brittle Materials for Enhanced Performance and Reliability: Melissa Teague1; Thomas Buchheit1; Raegan Johnson1; Kevin Ewsuk1; 1Sandia National Laboratories

10:00 AM  Break

10:20 AM  Invited
Computational Investigation of Interfaces in SiCO Ceramics: Peter Kroll1; 1University of Texas at Arlington

11:00 AM  First Principle Study on Effect of Surface Adsorption and Non-stoichiometry on the Workfunction of ZnO Surfaces: Wei Sun1; Yun Li1; Jitendra Jha1; Nigel Shepherd1; Jincheng Du1; 1University of North Texas

11:20 AM  Computational Design of Zirconium (Zr) Based Multiphase Ceramic Materials for Improved Strength and Toughness Properties: Md. Kayser1; Sheikh Ferdous1; Ashfaq Adnan1; 1University of Texas at Arlington

11:40 AM  The Thermodynamic Investigation of the Effect of CO₂ to the Stability of (La0.8Sr0.2)0.98MnO3±δ: Shadi Darvish1; Yu Zhong1; 1Florida International University

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Session IV

Program Organizers: Gupreet Singh, Kansas State University; Kathy Lu, Virginia Tech; Sanjay Mathur, University of Cologne; Eugene Olevsky, San Diego State University; Edward Gorzkowski, Naval Research Laboratory; Menka Jain, University of Connecticut; Hidehiro Kamiya, Tokyo University of Agriculture and Technology; Bhanu Chauhan, William Paterson University; Hailao Zhang, UNC Charlotte; Bhanu Chauhan, William Paterson University

Thursday AM  Room: 257B  Location: Salt Palace Convention Center

October 27, 2016  Location: Salt Palace Convention Center

Session Chairs: Edward Gorzkowski, Naval Research Laboratory; Sanjay Mathur, University of Cologne

8:00 AM  Hydrothermal Synthesis of Copper Sulfides for Controlled Morphology and Composition: Jing Liu1; Zhe Ren1; Jingyang Wang1; Edouard Asselin1; 1The University of British Columbia; 2Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences

8:20 AM  Synthesis, Processing and Characterization of Oxide-Metal Exchange-Coupled Powder and Bulk 3D Nanocomposites for Permanent Magnetic Applications: Aleksey Volodchenkov1; Yasuhiro Kodera1; Javier Garay2; 1University of California, Riverside; 2University of California, San Diego

8:40 AM  Microstructure and Mechanical Properties of Electrodeposited Ni-W Alloys: Denise Yin1; Christopher Marvel1; Richard Vinci1; Martin Harmer1; 1Lehigh University

9:00 AM  Molecular Dynamics Simulations of Glancing Angle Deposition of Polymer Nanoparticles: David Kessler1; Marriner Merrill1; 1Naval Research Laboratory

9:20 AM  Preparation and Characterization of Poly (meta-phenylene isophthalamide) Microporous Membranes by Coaxial Electrospinning: Weiwang Chen1; Wenguo Weng1; 1Tsinghua University

9:40 AM  Stress-induced Synthesis and Processing of Functionally Designed Nanomaterials: Hongyou Fan1; 1Sandia National Laboratories

10:20 AM  Break

10:40 AM  Synthesis of Magnéli Phases Nano-titanium Suboxides by Thermal Plasma: Baqiang Xu1; Yousef Mohassab2; Yuanpei Lan1; Hong Yong Sohn1; 1University of Utah; 2University of Utah

11:00 AM  Tailored Carbide Powder Morphologies: Synthesis and Mechanisms of Formation: Tianqi Ren1; Olivia Graeve1; 1University of California, San Diego

11:20 AM  Large-scale Production of Three-dimensionally Tailored Nanofibrous Carbon Components Using Vapor-phase Deposition: Roger Welsh1; David Edwards1; Mark Atwater1; 1Millersville University
11:40 AM
New Approach to Multifunctional Supramolecular Gels: Bhanu Chauhan1; Daniela Artiga1; Aarti Patel1; Erika Castelar1; 1William Paterson University

Program Organizers: Xingbo Liu, West Virginia University; Keeyoung Jung, Research Institute of Industrial Science and Technology (RIST); Yang-Tse Cheng, University of Kentucky
Thursday AM  Room:  250B
October 27, 2016  Location:  Salt Palace Convention Center
Session Chair:  To Be Announced

8:00 AM
Calorimetry Studies of High Temperature Thermal Storage Materials Used in Concentrated Solar Power (CSP) Systems: Kristina Lilova1; Link Brown1; 1Setaram Inc.

8:20 AM
Encapsulation Strategy for Metallic Phase Change Materials Used for High-temperature Heat Storage: Selmar Binder1; Sophia Haussener1; 1EPFL

9:00 AM
The Design and Performance of Metal Hydride Based Thermal Batteries: Yanshan Lu1; Chenguang Zhou1; Zhigang Zak Fang1; Min Zhu1; 1Department of Metallurgical Engineering, The University of Utah; 2School of Materials Science and Engineering and Guangdong Provincial Key Laboratory of Advanced Energy Storage Materials, South China University of Technology

9:20 AM
Reaction between LiBH4 and MgH2 Induced by High-energy Ball Milling: Zhao Ding1; Leon L. Shaw1; 1Illinois Institute of Technology

9:40 AM
Development of Highly Conductive Metal-containing Monolithic Hybrid Ceramics for Energy Applications: Praba Moh1; Mauricio Goraiebe Pollachini1; Michaela Wilhelm1; Kurosch Rezwan1; 1University of Bremen

10:00 AM Break

11:00 AM
Use of Nonlinear Optics for Determination of Imminent Failure: James Patterson1; Shawn Averett1; Alex Farnsworth1; Steven Stanley1; 1Brigham Young University

11:20 AM
On the Use of “Smart” Tools for Failure Detection & Prevention in Machineries: Pierre Dupont1; 1Schaefller Belgium Sprl/Bvba

11:40 AM
Remaining Life Assessment of Turbomachinery: Donald Norsworthy1; 1VeriTech Labs, LLC

Failure Analysis and Prevention — Tools and Techniques
Program Organizer: Burak Akyuz, ATS, Inc.
Thursday AM  Room:  150G
October 27, 2016  Location:  Salt Palace Convention Center
Session Chairs: James Lane, Professional Analysis and Consulting; Mark Hood, Hood Engineering, LLC; Nicholas Cherolis, Baker Engineering and Risk Consultants; Jake Aullif, Danfoss Power Solutions (US) Company

8:00 AM Invited
Scanning Electron Microscopy/Energy Dispersive X-Ray Spectrometry (SEM/EDS) Elemental Microanalysis: Accuracy and Precision Beyond My Wildest Dreams!: Dale Newbury1; Nicholas Ritchie1; 1National Institute of Standards and Technology

8:20 AM Invited
SEM Sample Chamber Secrets Revealed by On-X Backscatter: Alan Stone1; 1ASTON Metallurgical Services Co., Inc.

8:40 AM Invited
SEM/EDS Elemental Microanalysis, Remarkably Quantitative, but Easy to Break: Cautions in Using Analytical Software: Dale Newbury1; Nicholas Ritchie1; 1National Institute of Standards and Technology

9:00 AM
Analyzing Food Packaging with SEM/EDS and Raman Spectroscopy: John Konopka1; 1Thermo Fisher Scientific

9:20 AM
Confocal Laser Scanning Microscopy of Fracture Surfaces and Fine Features of Aerospace Components: Matthew Johnson1; 1Rolls-Royce Corporation

9:40 AM
Nanoscratch Characterization of Opaque Thin Films: Lucas Berla1; Evan Brown1; 1Exponent

10:00 AM Break

10:20 AM
Use of Metallographic Replicas for Non-destructive Evaluation of Microstructure in Historical Ferrous Metal Building Structures: Debbie Aliya1; 1Aliya Analytical, Inc.

10:40 AM
The Remaining Life Assessment of High Temperature Service Exposed Component by Metallographic Technique: Dwarka Sahu1; 1JSW Steel Limited
Gas/Metal Reactions, Diffusion and Phase Transformation during Heat Treatment of Steel — Session III
Program Organizer: Liang He, Air Products and Chemicals Inc.

Thursday AM
October 27, 2016
Location: Salt Palace Convention Center

Session Chair: Christopher Mulligan, US Army ARDEC, Benét Laboratories

8:00 AM
Corrosion and Fatigue Behavior of ASTM A723 High-strength Steel Treated with a Zn-alloy Thermo-diffusion Coating: Christopher Mulligan1; Gregory Vigilante1; 1U.S. Army ARDEC, Benét Laboratories

8:20 AM
Microstructural Characterisation and Transformation Mechanism of Inverse Bainite in Fe-0.8C-1Cr-1Mn Steel: Rangasayee Kannan1; Yiyu (Jason) Wang1; Leijun Li1; 1Department of Chemical and Materials Engineering, University of Alberta

8:40 AM
Effects of Controlled Cooling during a Hot Rolling Process on the Mechanical Properties of Medium Carbon Steel: Haley Doude1; Dmitry Tsvetkov2; Hongjoo Rhee1; Andrew Oppedal1; 1Mississippi State University; 2Steel Dynamics, Inc.

9:00 AM
Study of Texture and Phase Transformation in an Experimental Duplex Stainless Steel during Rolling at Different Temperature: Mohammad Masoumi1; Francisco Reis1; Hamilton de Abreu1; 1Universidade Federal do Ceara

9:20 AM
Understanding the Microstructure and Yield Strength Evolution during Coiling of a Direct Strip Casted Low Carbon Low Niobium Steel: Thomas Dorin1; Nicole Stanford1; Peter Hodgson1; 1Deakin University; 2Monash University

Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology — Mechanical Properties of Glass
Program Organizer: Steve W. Martin, Iowa State University; Gang Chen, Ohio University

Thursday AM
Room: 255A
October 27, 2016
Location: Salt Palace Convention Center

Session Chair: John Kieffer, University of Michigan

8:00 AM Invited
Two-point Bend Studies of Silicate Glass Strength and Fatigue: Richard Brow1; Erica Ronchetto1; Zhongzhi Tang1; 1Missouri S&T

8:40 AM
Local Mechanical Properties of Compressive Stress Layer in Ion-exchanged Glass Measured Using Microcantilever Beam Specimens: Junichi Tatami1; Saho Fujita1; Motoyuki Iijima1; Tsukaho Yahagi2; Takuma Takahashi2; 1Yokohama National University; 2Kanagawa Academy of Science and Technology

9:00 AM
Predicting Fragmentation of Ion-exchanged Glass: Kevin Strong1; Thomas Buchheit1; Rajan Tandon1; S. Jill Glass1; Gregory Whiting1; 1Sandia National Laboratories; 2Palo Alto Research Center

9:20 AM Invited
Correlating Structure and Mechanical Properties for Submicron Amorphous Silica Spheres: Stefan Romeis1; Patrick Herre1; Mirza Mackovic1; Jochen Schmidt1; Jonas Paul1; Dominique de Ligny1; Erdmann Speicker1; Wolfgang Peukert1; 1Institute of Particle Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg; 2Institute of Micro- and Nanostructure Research, Friedrich-Alexander-Universität Erlangen-Nürnberg; 3Institute of Glass and Ceramics, Friedrich-Alexander-Universität Erlangen-Nürnberg

Glass, Amorphous, and Optical Materials: Common Issues within Science & Technology — Crystalization and Glass Transition of Glass Forming Melts
Program Organizer: Steve W. Martin, Iowa State University; Gang Chen, Ohio University

Thursday AM
Room: 255D
October 27, 2016
Location: Salt Palace Convention Center

Session Chair: Steve Martin, Iowa State University

8:00 AM Invited
Structure and Crystalization in Silicate Melts and Minerals: John McCoy1; 1Washington State University

8:40 AM Invited
Single Crystal Growth from Glass via Solid-solid Transformation: Dmytro Savystsik1; Volkmar Dierolf1; Himanshu Jain1; 1Lehigh University

9:20 AM Invited
Some New Twists on the Road to Understanding the Glass Transition in Condensed Matter, with Some Emphasis on ΔCp: C. Austen Angell1; 1Arizona State University

10:00 AM Break

10:20 AM Invited
Compositional Dependence of Crystallization in Sodium Aluminosilicate Glasses: Ambar Deshkar1; Yaqoot Shaharyar1; Jose Marcial1; John McCoy2; Ashutosh Goel1; 1Rutgers-The State University of New Jersey; 2Washington State University

11:00 AM Invited
Grand Challenges in Glass Science: John Mauro1; 1Corning Incorporated
8:00 AM Invited
Simulating Heterogeneous Deformation in Experimentally Characterized Microstructures in Commercial Purity Ti and a Ti Alloy: Thomas Bieler1; Harsha Phukan1; Chen Zhang1; Martin Crimp1; Philip Eisenlohr1; Carl Boehlert1; Leyun Wang2; Jonathan Lind1; Robert Suter3; Peter Kenesei4; Jun-Sang Park5; MohammadSadeghi1; Farhad Rahimi1; Meysam Haghshenas2; 1Iran University of Science & Technology; 2National Energy Technology Laboratory / AECOM; 3National Energy Technology Laboratory; 4Carnegie Mellon University; 5Argonne National Laboratory

8:40 AM
Influence of Grain Size and Crystallographic Orientation on Localized Plastic Strain Distribution in Polycrystalline Beta Titanium Alloys: Vahid Khadem1; Thomas Bieler1; Masahiko IKEDA2; Carl Boehlert1; 1Tennessee Technological University; 2University of North Dakota

9:00 AM
Recrystallized Grain Size Distribution and Mechanical Response of Formed Components in Incoloy 800H: Catherine Bishop1; Shaun Mucalo1; Milo Kral1; 1University of Canterbury

9:20 AM Invited
Microstructure and Mechanical Behavior of HCP/BCC Bulk Nanolaminate Composites Produced by Accumulative Roll Bonding: Nathan Mara1; Daniel Savage2; John Carpenter1; Rodney McCabe3; Thomas Nizelek4; Nan Li5; Sven Vogel6; Marko Knezevic6; Irene Beyerlein2; 1University of California-Irvine; 2University of New Hampshire

9:40 AM
Solubilities of Oxides in Molten Na2SO4: An Insight into Hot Corrosion: Kliah Soto Leytan1; Daniel Mumma2; 1University of California-Irvine; 2University of Arizona

10:00 AM Break

10:20 AM
Experimental, Analytical & Numerical Studies on the Relation between R-value & Earing Profile in Deep Drawing: Soheil Bakhshi1; Bagher MohammadSadeghi1; Farhad Rahimi1; Maysam Haghshenas1; 1Iran University of Science & Technology; 2National Energy Technology Laboratory / AECOM; 3National Energy Technology Laboratory

10:40 AM
Study of Residual Stress in a Ti-7Al Alloy: Kamalika Chatterjee1; Armand Beaudoin1; 1University of Illinois at Urbana-Champaign
Interfaces, Grain Boundaries and Surfaces from Atomistic and Macroscopic Approaches -- Fundamental and Engineering Issues – Kinetics

Program Organizers: Wayne Kaplan, Technion - Israel Institute of Technology; Dominique Chatain, CNRS, Aix-Marseille University; John Blendell, Purdue University; Paul Wymbat, Carnegie Mellon University

Thursday AM
October 27, 2016
Location: Salt Palace Convention Center

Session Chairs: Dor Amram, MIT; Klaus van Benthem, University of California, Davis

9:00 AMInvited
Joints Fabricated by Brazing Technique with Bismuthate Glass Solder

A Preliminary Research of Microstructure and Properties of Li-Ti Ferrite

9:00 AM
He

8:00 AM Keynote
Stress Relaxation in Tin Thin Films: From Whiskers to Grain Growth: Carol Handwerker; John Blendell; Ying Wang; Wei-Hsun Chen; B.G. Yoo; Oliver Kraft; Stefano Curioito; Dominique Chatain; Maureen Williams; Purdue University; Karlsruhe Institute of Technology; Aix Marseille Université; National Institute of Standards and Technology

8:40 AM Invited
Modeling the Effect of Adsorption on the Kinetics of Grain Growth: Dan Lewis; Rensselaer Polytechnic Institute

9:00 AM Invited
Grain Growth Transitions in Perovskite Ceramics: Wolfgang Rheinheimer; Michael Hoffmann; Karlsruhe Institute of Technology

Joining of Advanced and Specialty Materials (JASM XVIII) — Micro and Nano Joining

Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Institute of Technology; Darren Barborak, AZZ|WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Thursday AM
October 27, 2016
Room: 155B
Location: Salt Palace Convention Center

Session Chairs: Peng He, Harbin Institute of Technology; Tomokazu Sano, Osaka University

8:00 AM Invited
Soldering and Brazing Microelectronic Components without Thermal Damage: Timothy Wehrs; Johns Hopkins University

8:40 AM Invited
Stereolithographic Additive Manufacturing of Metal Photonic Crystals for Terahertz Wave Modulation: Soshu Kirihara; Osaka University

9:00 AM
A Preliminary Research of Microstructure and Properties of Li-Ti Ferrite Joints Fabricated by Brazing Technique with Bismuthate Glass Solder: Peng He; Harbin Institute of Technology

9:20 AM
Deposition of Reactive Multilayer Films for Nanojoining: Ying Ma; Hong Li; Anming Hu; Beijing University of Technology

9:40 AM
Optimization of Formate Coating Conditions on Cu Powder and Its Application for Solid-state Bonding of Cu/Cu Interface and Persistence of Reformed Layer: Shunya Saito; Shinji Koyama; Gunma University

10:00 AM Break

10:20 AM Invited
Atomistic Simulations on the Sintering of Cu-Ag Core-shell Structures: Part 1 Theory and Approach: Seungha Shin; Jiaqi Wang; University of Tennessee

10:40 AM
Reduction Behavior of CuO Paste during Cu-to-Cu Bonding: Takafumi Yao; Tomokazu Sano; Tomoki Matsuda; Akio Hirose; Katsunori Ishii; Chiaki Morikawa; Atsushi Ohbuchi; Hisashi Yashiro; Osaka University; Rigaku Corporation

11:00 AM
Room Temperature Molecular Dynamics Simulations on the Sintering of Cu-Ag Core-shell Structures: Nanoparticles and Nanowires: Jiaqi Wang; Seungha Shin; University of Tennessee

11:20 AM
High Performance Micro-supercapacitors on Flexible Polyimide Sheets Using Femtosecond Laser Writing and Au Coating: Anming Hu; Shatong Wang; Yongchao Yu; Denzel Bridges; Delong Ma; Guoying Feng; University of Tennessee; Sichuan University

Joining of Advanced and Specialty Materials (JASM XVIII) — Welding Processes and Weld Properties

Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Institute of Technology; Darren Barborak, AZZ|WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Thursday AM
October 27, 2016
Room: 155C
Location: Salt Palace Convention Center

Session Chairs: Judy Schneider, University of Alabama in Huntsville; Zhenzhen Yu, Metallurgical and Materials Engineering

8:00 AM Invited
Dissimilar Friction Welding of Stainless Steel to 1018 Steel: Zhenzhen Yu; Nathan Switzner; Michael Eff; Thomas Lienert; Stephen Liu; Colorado School of Mines; EWI; Los Alamos National Laboratory

8:20 AM
Dissimilar Friction Welding of Titanium Alloy to Nickel Alloy Using Insert Metal: Tomo Ogura; Takahiro Matsumura; Tomoya Imai; Kazuyoshi Saída; Osaka University

8:40 AM
Reduction Behavior of CuO Paste during Cu-to-Cu Bonding: Takafumi Yao; Tomokazu Sano; Tomoki Matsuda; Akio Hirose; Katsunori Ishii; Chiaki Morikawa; Atsushi Ohbuchi; Hisashi Yashiro; Osaka University; Rigaku Corporation

9:00 AM
Room Temperature Molecular Dynamics Simulations on the Sintering of Cu-Ag Core-shell Structures: Nanoparticles and Nanowires: Jiaqi Wang; Seungha Shin; University of Tennessee

9:20 AM
Deposition of Reactive Multilayer Films for Nanojoining: Ying Ma; Hong Li; Anming Hu; Beijing University of Technology

9:40 AM
Optimization of Formate Coating Conditions on Cu Powder and Its Application for Solid-state Bonding of Cu/Cu Interface and Persistence of Reformed Layer: Shunya Saito; Shinji Koyama; Gunma University

10:00 AM Break

10:20 AM Invited
Atomistic Simulations on the Sintering of Cu-Ag Core-shell Structures: Part 1 Theory and Approach: Seungha Shin; Jiaqi Wang; University of Tennessee

10:40 AM
Reduction Behavior of CuO Paste during Cu-to-Cu Bonding: Takafumi Yao; Tomokazu Sano; Tomoki Matsuda; Akio Hirose; Katsunori Ishii; Chiaki Morikawa; Atsushi Ohbuchi; Hisashi Yashiro; Osaka University; Rigaku Corporation

11:00 AM
Room Temperature Molecular Dynamics Simulations on the Sintering of Cu-Ag Core-shell Structures: Nanoparticles and Nanowires: Jiaqi Wang; Seungha Shin; University of Tennessee

11:20 AM
High Performance Micro-supercapacitors on Flexible Polyimide Sheets Using Femtosecond Laser Writing and Au Coating: Anming Hu; Shatong Wang; Yongchao Yu; Denzel Bridges; Delong Ma; Guoying Feng; University of Tennessee; Sichuan University

Joining of Advanced and Specialty Materials (JASM XVIII) — Micro and Nano Joining

Program Organizers: Boian Alexandrov, The Ohio State University; Mathieu Brochu, McGill University; Akio Hirose, Osaka University; Anming Hu, University of Tennessee; Peng He, Harbin Institute of Technology; Darren Barborak, AZZ|WSI; Bingtao Li, AZZ WSI; Xinjin Cao, Institute for Aerospace Research

Thursday AM
October 27, 2016
Room: 155B
Location: Salt Palace Convention Center

Session Chairs: Peng He, Harbin Institute of Technology; Tomokazu Sano, Osaka University

8:00 AM Invited
Soldering and Brazing Microelectronic Components without Thermal Damage: Timothy Wehrs; Johns Hopkins University

8:40 AM Invited
Stereolithographic Additive Manufacturing of Metal Photonic Crystals for Terahertz Wave Modulation: Soshu Kirihara; Osaka University

9:00 AM
A Preliminary Research of Microstructure and Properties of Li-Ti Ferrite Joints Fabricated by Brazing Technique with Bismuthate Glass Solder: Peng He; Harbin Institute of Technology
8:40 AM
Fatigue Behaviour of AL-6XN Super Austenitic Stainless Steel Welds: Iván Cortés-Cervantes1; Victor López-Morelos2; Yukio Miyashita3; Carlos León4; Alberto Ruiz5; 1Instituto de Investigación en Metalurgia y Materiales; 2Nagaoka University of Technology

9:00 AM
Characterization of Fatigue Damage in Dissimilar Friction Stir Welded Aluminum-to-Magnesium alloys: H. Rao1; JB Jordan1; W Yuan2; 1The University of Alabama; 2Hitachi America Ltd.

9:20 AM
Improvement of Fatigue Properties of Laser-welded 2024-T3 Aluminum Alloy Using Femtosecond Laser Peening: Takayuki Iimura1; Tomokazu Sano2; Akio Hirose3; Seichirou Tsutsumi4; Masami Mizutani5; Yousseke Kawahito6; Seiji Katayama6; Kazuto Arakawa7; Ayumi Shiro8; Takahisa Shobu9; Kiyotaka Masaki10; Yuji Sano11; 1Osaka University; 2Hitachi University of Technology; 3Instituto de Investigación en Metalurgia y Materiales; 4Okinawa National College of Technology; 5Toshiba Corporation

9:40 AM
Factors Affecting Grain Size in High Frequency Welding: Lesley Frame1; Olexandra Tupalo2; 1Thermatool Corp.

10:00 AM Break

10:20 AM
Microstructure-property Relations in Arc Welded High Strength Low Alloy Steel Plates for Haul Truck Applications: Emanuel Santos1; Adrian Gerlich2; Sashank Nayak3; 1University of Waterloo; 2Hitachi Construction Truck Manufacturing Ltd.

10:40 AM
Finite Element Analysis of Groove Shrinkage in Muti-pass Circumferential Welding with Narrow Gap: Hisashi Serizawa1; Ryousseke Doi2; Hidekazu Murakawa3; 1Osaka University

11:00 AM
Three-dimensional Numerical Simulations of Keyhole Behavior and Molten Pool Dynamics in Laser Welds Based on Thermal-hydraulic: Qiaofeng Zhou1; Katsuma Horio2; Fumikazu Miyasaka3; Hiroaki Mori4; Masami Mizutani5; Yousseke Kawahito6; Seiji Katayama7; 1Osaka University

11:20 AM
Effect of Hydrogen Dissolution on Advanced Welding Flux Design for High Strength Steels: Sanghoon Chung1; Il Sohn2; 1Yonsei University, Seoul

11:40 AM
Optimization of Electron Beam Welding Parameters for Ti-6Al-4V Alloy by Using Taguchi Method: Sandeep Thakare1; N Prabhu2; Rajkumar Singh3; 1Bharat Forge Limited; 2Indian Institute of Technology Bombay

Materials Development for Nuclear Applications and Extreme Environments — Irradiation Effects in Nuclear Materials
Program Organizers: Raghunath Kanakala, University of Idaho; Nan Li, Los Alamos National Laboratory; Todd Allen, Idaho National Laboratory; Jake Amoroso, Savannah River National Laboratory; Aladar Csontos, Nuclear Regulatory Commission; Lingfeng He, Idaho National Laboratory; Yutai Katoh, Oak Ridge National Laboratory; Josef Matyas, Pacific Northwest National Laboratory; Amit Misra, University of Michigan; Raul Rebak, GE Global Research; Kumar Sridharan, University of Wisconsin

Thursday AM
Room: 250A
Location: Salt Palace Convention Center

Session Chairs: Raghunath Kanakala, University of Idaho; Cory Trivelpiece, Savannah River National Laboratory

8:00 AM Invited
Polyionization in Nuclear Materials: Thierry Wiss1; Oliver Dieste2; Rudy Konings3; Vincenzo Rondinella1; Ondrej Benes1; Jean-Yves Colle1; Dragos Staica2; Paul Van Uffelen2; Mara Marchetti3; Fabiola Cappia4; Joe Somers5; 1European Commission - JRC-ITU

8:40 AM
Helium Retention in Various Grades of Tungsten: Chase Taylor1; Osman El-Atwani2; James Frishkoff3; Wayne Harlow4; Mitra Taheri5; 1Idaho National Laboratory; 2Drexel University

9:00 AM
Damage Accumulation in Ni-based Concentrated Solid-solution Alloys under Prolonged Irradiation: Mohammad W. Ullah1; Yanwen Zhang2; William J. Weber3; 1Oak Ridge National Laboratory

9:20 AM
Neutron Irradiation of Ti3AlC2 -Ti5Al2C3 and Ti3SiC2 Materials: Caen Ang1; Chad Parish2; Chinthaka Silva3; Chung Hao Shi4; Steven Zinkle5; Yutai Katoh6; 1ORNL; 2General Atomics; 3University of Tennessee

9:40 AM
Characterizing Ion Irradiation Damage in Structural Metals using Spherical Nanoindentation Stress-Strain Curves: Jordan Weaver1; Cheng Sun2; Siddhartha Pathak2; Yongjia Lang3; Ashley Reichardt4; Peter Hosemann5; Nathan Mara6; 1Los Alamos National Laboratory; 2University of Nevada Reno; 3University of California Berkeley

10:00 AM Break

10:20 AM
Cluster Evolution in F/M Alloys upon Neutron, Proton, and Self-ion Irradiation: Matthew Svenson1; Janelle Wharry2; 1Boise State University

10:40 AM
Thermal Conductivity of Multiphase Ceramics for an Inert Matrix Fuel: Austin Travis1; Keyur Karandikar1; Andrew Nelson2; Olivia Graeve2; Martha Mecartney3; 1University of California, Irvine; 2University of California, San Diego; 3Los Alamos National Laboratory
11:00 AM
Effects of Ion-irradiation Damage on Mechanical Behavior in Silicon Carbide: Helen Prat1; David Armstrong2; Steve Roberts3; 1Department of Materials, University of Oxford; 2Department of Materials, University of Oxford; 3Department of Materials, University of Oxford; Culham Centre for Fusion Energy

11:20 AM
Radiation Damage Behavior in Multiphase Ceramics: Kenta Ohtaki1; Maulik Patel1; Christina Trautmann2; Martha Mecartney3; 1University of California, Irvine; 2University of Tennessee, Knoxville; 3Technische Universität, Darmstadt

11:40 AM
Irradiation Induced Defects in Titanium Dioxide for Energy Storage Applications: Kassiopeia Smith1; Claire Xiong2; Darryl Butt3; Janelle Wharry3; 1Boise State University

12:00 PM
Grain Boundary Dependence of Radiation Induced Damage in Nanocrystalline Nickel and Nickel-chromium Thin Films: James Nathaniel1; Mitra Taheri1; Khalid Hattar1; Asher Leff1; Osman El-Atwani1; 1Drexel University; 2Sandia National Laboratory

Materials Issues in Nuclear Waste Management in the 21st Century — The Impact of Extended Dry Storage on Used Nuclear Fuel
Program Organizers: Josef Matyas, Pacific Northwest National Laboratory; Jake Amoroso, Savannah River National Laboratory; Isabelle Giboire, CEA Marcoule; Raghu Nathak, Idaho National Laboratory; Stefan Neumeier, Forschungszentrum Juelich GmbH; David Shoesmith, Western University; Kumar Sridharan, University of Wisconsin; David Enos, Sandia National Laboratories; Charles Bryan, Sandia National Laboratories

Thursday AM
Room: 251D
Location: Salt Palace Convention Center

Session Chairs: David Enos, Sandia National Laboratories; Charles Bryan, Sandia National Laboratories

8:00 AM
Chemical and Physical Environment on the Surface of SNF Interim Storage Canisters: Charles Bryan1; David Enos1; 1Sandia National Laboratories

8:20 AM
Understanding the Risk of Chloride Induced Stress Corrosion Cracking of Interim Storage Containers for the Dry Storage of Spent Nuclear Fuel: Residual Stresses in Typical Welded Containers: David Enos1; Charles Bryan1; 1Sandia National Laboratories

8:40 AM
Chloride-induced Stress Corrosion Cracking (CISCC) Aging Management Guidelines and Inspection Capabilities: Shannon Chu1; Jeremy Renshaw1; 1Electric Power Research Institute

9:00 AM
An Integrated Computational Materials Engineering (ICME) Model of Chloride Induced Stress Corrosion Cracking in Dry Canister Storage Systems of Spent Nuclear Fuel: Jifeng Zhao1; Jiadong Gong1; Ricardo Komai1; 1QuesTek

9:20 AM
Modeling the Long Term Degradation of Used Nuclear Fuel Canisters: Ram Devanathan1; Philip Jensen1; 1Pacific Northwest National Laboratory

9:40 AM
Key Data Gaps in Assessing the Chloride Induced Stress Corrosion Cracking of Interim Storage Containers for Spent Nuclear Fuel: David Enos1; Charles Bryan1; 1Sandia National Laboratories

10:00 AM Break

10:20 AM
SCC Detection and Life Prediction for Nuclear Waste Management Using PGAA and NAA: Zeev Shayer1; Jason Brookman1; 1Colorado School of Mines

10:40 AM
Innovative Approaches to Marine Atmospheric Stress Corrosion Cracking Inspection, Evaluation and Modeling in Used-fuel Dry Storage Canisters: David Olson1; Zeev Shayer1; Stephen Liu1; Zhenzhen Yu1; Konkonda Murty1; Niles Kumar1; Djamel Kaoumi1; Sylvain Depinoy1; Brian Anderson1; Timothy Ulrich1; Charles Bryan1; David Enos1; Jonathan Almer2; Jeffery Johns1; Donald Lewis1; 1Colorado School of Mines; 2North Carolina State University; 3University of South Carolina; 4Brigham Young University; 5Los Alamos National Laboratory; 6Sandia National Laboratory; 7Argonne National Laboratory; 8CB&I

11:00 AM
Estimating Bounding Corrosion Pit Sizes on Stainless Steel SNF Interim Storage Canisters: Charles Bryan1; David Enos1; Remi Dingreville1; 1Sandia National Laboratories

Materials Property Understanding through Characterization — Metals II
Program Organizers: Indrajit Dutta, Corning Incorporated; Brian Strohmeier, US Steel; Nicholas Smith, Corning Incorporated

Thursday AM
Room: 251C
Location: Salt Palace Convention Center

Session Chair: Indrajit Dutta, Corning Incorporated

8:00 AM
Determination of Critical Resolved Shear Stress Ratios for Hexagonal Deformation Systems from Surface Slip Trace Analysis: Hongmei Li1; Indraroop Dasdital2; Vahid Khadem3; Philip Eisenlohr1; Darren Mason1; Thomas Bieler1; Martin Crimp1; Carl Boehlert1; 1Michigan State University; 2Albion College

8:20 AM
Deformation Induced Austenite Formation in As-cast 2101 Duplex Stainless Steel and Its Effect on Hot-ductility: Sudipta Patra1; Debay Chakrabarti2; Lokes Singh1; 1Indian Institute of Technology, Kharagpur; 2Jindal Stainless Limited

8:40 AM
Effect of Microstructural Boundaries of Low-carbon Lath Martensitic Steel in Cleavage Fracture Resistance: Abhijit Ghosh1; Rahul Mitra1; Debay Chakrabarti2; 1Indian Institute of Technology Kharagpur

9:00 AM
Surface Chemistry Changes that Occur during a Reforming Process in Borosilicate Glass: Christy Chapman1; 1Corning Incorporated
9:20 AM
Effect of Microstructure-texture-residual Stress on Mechanical Properties of Thermo-mechanically Treated (TMT) Reinforcement Steel Bars: Md. Basiruddin1; Debaloy Chakrabarti2; Saurabh Kundu1; IIT Kharagpur; Tata Steel

9:40 AM
Effect of Secondary Phase Precipitation on Impact Toughness of Duplex Stainless Steel: Amit Pawar1; Amol Gujar2; Niketan Manthani1; Vinayak Pawar1; RKP Singh1; Bharat Forge Ltd.

11:20 AM
Mechanochemical Prospects in Wet Stirred Media Milling: Stefan Romeis1; Jochen Schmidt1; Larissa Wegener1; Alexander Strobel1; Wolfgang Peukert2; Institute of Particle Technology, Friedrich-Alexander-Universität Erlangen-Nürnberg

11:40 AM
Building Synergies between Molten Salt Synthesis, and Mechanical Milling: Preparation of Nanometric LaAlO3 Powders at Very Low Temperatures: Esmeralda Mendoza-Mendoza1; Sagrario Montemayor2; Antonio Fuentes1; CIQA; Cinvestav del IPN

150
OCTOBER 23 – 27, 2016 | SALT PALACE CONVENTION CENTER | SALT LAKE CITY, UTAH USA
10:40 AM Multiscale Modeling of Additive Manufacturing: Matthew Rolchigo; Michael Mendoza; Peter Collins; Richard LeSar; Iowa State University

11:00 AM Secondary Steelmaking CAS-OB Process Kinetic Model: Fuzhong Ji; Andrew Smith; Alun Thomas; Zushu Li; Wouter Tiekink; Materials Processing Institute; Tata Steel UK; Formerly Tata Steel UK; Tata Steel EU

11:20 AM Implementation of a Coupled Read-Shockley Q-state Monte Carlo into the SPPARKS Framework to Simulate Magnetic Field Influence on Textures: Efrain Hernandez-Rivera; Mark Tschopp; Jeffrey Allen; U.S. Army Research Lab; U.S. Army Engineer Research and Development Center

Multifunctional Oxides — Novel Synthesis II
Program Organizers: Quanxi Jia, Los Alamos National Laboratory; Chonglin Chen, University of Texas at San Antonio; Judith MacManus-Driscol, University of Cambridge; Xiaoqing Pan, University of California - Irvine

Thursday AM Room: 255C Location: Salt Palace Convention Center

Session Chairs: Shinbuhm Lee, Daegu Gyungbook Institute of Science and Technology; Yuan Lin, University of Electronic Science and Technology of China

8:00 AM Invited Black TiO2 Synthesized by Laser Melting with Novel Structure and Photoelectrical Properties: Jing Ma; Lu Song; Zhijian Shen; Ce-wen Nan; Tsinghua University

8:20 AM Invited Epitaxial Growth of V0, Polymorphs: Shinbuhm Lee; Ho Nyung Lee; Daegu Gynbook Institute of Science and Technology; Oak Ridge National Laboratory

8:40 AM Invited Growth of Wafer-scaled VO, Thin Films Using a Chemical Solution Approach: Yuan Lin; Weizheng Liang; Chang Lu; Min Gao; Chonglin Chen; University of Electronic Science and Technology of China; Department of Physics and Astronomy, University of Texas at San Antonio

9:00 AM Invited Evolution of Filaments and Electromagnetic Coupling in the Resistive Switching of NiO: Yonggang Zhao; Tsinghua University

Nanomaterials Working in the Near-infrared: Biomedical Applications — Multifunctional Architectures & Nanothermometry II
Program Organizers: Antonio Benayas, Institut National de la Recherche Scientifique; Luis Carlos, Universidade de Aveiro; Fiorenzo Vetrone, Intitut national de la recherche scientifique; Marta Quintanilla, CICbiomagune; Daniel Jaque García, Universidad Autónoma de Madrid; Artiom Skripka, Institut National de la Recherche Scientifique

Thursday AM Room: 260A Location: Salt Palace Convention Center

Session Chairs: Mikhail Berezin, Washington University in St. Louis; Guosong Hong, Harvard University; Karla Santacruz Gómez, Universidad de Sonora

8:00 AM Keynote Intracellular Thermometry with Fluorescent Polymeric Thermometers: Seiichi Uchiyama; University of Tokyo

8:40 AM Invited Near-infrared Emitting Rare-earth Doped Garnets for Nanothermometry and Nanoheating Applications in Biomedicine: Victor Lavin; Ulises Rodriguez-Mendoza; Inocencio Martin; Universidad de La Laguna

9:00 AM Invited Luminescent Nanoplatforms as Magnetic Theranostic Agents: Carlos Brites; Rafael Piñol; Angel Millan; Luis Carlos; CICECO-Aveiro Institute of Materials, University of Aveiro; ICMA, University of Zaragoza

9:20 AM Invited A Hybrid Nanomaterial with Magnetic and Luminescent Properties: Proof of Concept Study for Biomedical Applications: Dirk Ortgies; Leonor de la Cueva; David Cabrera; Francisco Terán; Emma Martin Rodriguez; Gorka Salas; Universidad Auto’ noma de Madrid; IMDEA Nanociencia

9:40 AM Synthesis and Characterization of Multifunctional (Superparamagnetic and Upconversion) Core/Shell/Shell Nanoparticles for Biomedical Applications: Fan Yang; Fuqiang Ren; Xinyu Liu; Fiorenzo Vetrone; Dongling Ma; EMT-INRS; McGill University

10:00 AM Break

10:20 AM Keynote Luminescent Materials for Biophotonics in OTN-NIR Biological Window: Kohei Soga; Masao Kamimura; Tokyo University of Science
Next Generation Biomaterials — Session VI
Program Organizers: Roger Narayan, UNC/NCSU Joint Department of Biomedical Engineering; Sharmila Mukhopadhyay, Wright State University; Sundeep Mukherjee, University of North Texas

Thursday AM Room: 259
October 27, 2016 Location: Salt Palace Convention Center

Session Chairs: Nida Iqbal, Universiti Teknologi Malaysia; Jae-Chul Pyun, Yonsei University

8:00 AM Invited
Preparation and Characterizations of Nano Composites Based on Biphasic Mixture of Bioactive Ceramics for Biomedical Applications: Nida Iqbal1, Mohammed Rafiq Abdul Kadir1; 1Universiti Teknologi Malaysia

8:40 AM
CVD Grown Anti-inflammatory Cerium Oxide Coatings for Orthopedic Implants: Ankur Gupta1; Soumen Das1; Sudipta Seal1; 1University of Central Florida

9:00 AM
Nanostructured Amorphous Magnesium Phosphate/Poly (Lactic Acid) Composite Coating for Enhanced Corrosion Resistance and Bioactivity of Biodegradable AZ31 Magnesium Alloy: Yufu Ren1; Elham Babaie1; Sarit B. Bhaduri1; 1University of Toledo

9:20 AM
Effects of Forming Voltage on Surface Characteristics and Shear Strength of Anodized Titanium: Sakshi Jain1; Scott Williamson1; Michael Roach1; 1University of Mississippi Medical Center

9:40 AM
Laser Desorption/Ionization (LDI) Mass Spectrometry Based on Nanomaterials for Biomedical Applications: Jae-Chul Pyun1; 1Yonsei University

10:00 AM Break

10:20 AM
Electrophoretic Deposition of Functionalized Graphene on Ti6Al4V Alloy for Biomedical Applications: Hassnain Asgar1; Zia Ur Rahman1; Umair Shah1; Mohsin Raza1; Kashif Deen1; Waseem Haider1; 1Central Michigan University

10:40 AM
Comparison of Annealing and Hot Isotactic Pressing for Post Processing Heat Treatment of Direct Metal Laser Sintered Ti6Al4V: Yangzi Xu1; Yuan Lu1; Jianyu Liang1; Richard Sisson1; 1Worcester Polytechnic Institute

11:00 AM
A New Method to Produce Macroporous Bone Cement: Elham Babaie1; Sarit Bhaduri1; 1University of Toledo

11:20 AM Invited
Investigation of Corrosion-assisted Cracking of Magnesium Alloys under Appropriate Mechano-Chemical Conditions for Bio-implant Applications: RK Singh Raman1; 1Monash University

Phase Stability, Diffusion Kinetics, and Their Applications (PSDK-XI) — General Session III
Program Organizers: James Saal, Questek Innovations; Yu Zhong, Florida International University; Ji-Cheng Zhao, The Ohio State University; Nagraj Kulkarni, Knoxville, TN

Thursday AM Room: 155D
October 27, 2016 Location: Salt Palace Convention Center

Session Chairs: James Saal, Questek Innovations; Yu Zhong, Florida International University

8:00 AM Invited
Development of a Mobility Database for the γ Phase in the Co-rich Co-Al-W-Ni System: Kil-Won Moon1; Carelyn Campbell1; Maureen Williams1; 1National Institute of Standards and Technology

8:40 AM
Precipitate Coarsening in Gamma-gamma Prime Nickel-base Superalloys with Low Interphase Interfacial Energies: Subhashish Meher1; Laura Carroll1; Tresa Pollock1; Mark Carroll1; 1Idaho National Laboratory; 1University of California Santa Barbara

9:00 AM
Using DFT Calculations of the Vacancy Formation Energy to Inform the Assessment of the C-Zr Phase Diagram: Theresa Davey1; Andrew Duff1; Suzana Fries1; Michael Finnis1; 1Imperial College London; 1Ruhr-Universität Bochum

9:20 AM
Atomistic Simulation of Pipe Diffusion in Aluminum and Copper: Siavash Solami1; Niaz Abdolrahimi1; Panthea Sepehrband1; 1University of Central Florida; 1TKC Global; 1US Army Research Laboratory

9:40 AM
Interdiffusion, Crystallography and Mechanical Properties of Ni-Mn-Ga Alloys: Le Zhou1; Anit Giri1; Kyu Choi1; Yongho Sohn1; 1University of Central Florida; 1US Army Research Laboratory

10:00 AM Break

10:20 AM
Phase Stabilities of Ti Bio-implant Materials with a Focus on Thermodynamic Modeling of bcc, α and α phases: Cassie Marker1; Shun-Li Shang1; Ji-Cheng Zhao1; Zi-Kui Liu1; 1The Pennsylvania State University; 1The Ohio State University

10:40 AM
Investigation of Mn-YSZ Conductivity by Applying the CALPHAD Approach: Mohammad Asadiyya1; Prabhakar Singh1; Yu Zhong1; 1Florida International University; 1University of Connecticut
Recent Development in Additive Manufacturing: Process and Equipment Development and Applications — Diverse and Disruptive Applications of Additive Manufacturing

Program Organizers: Jing Zhang, Indiana University - Purdue University Indianapolis; Balraj Mani, New Jersey Institute of Technology; Johannes Homa, Lithoz GmbH; Kim Brand, 3D Parts Manufacturing, LLC; Xinghua Yu, Oak Ridge National Laboratory; Yeongil Jung, Changwon National University; Nuggehalli Ravindra, New Jersey Institute of Technology

Thursday AM
Room: 258
Location: Salt Palace Convention Center

Session Chairs: Jing Zhang, Indiana University - Purdue University Indianapolis; Balraj Mani, New Jersey Institute of Technology

8:00 AM Keynote
Suspension-based Additive Manufacturing of Ceramic and Metal-ceramic Components: Uwe Scheithauer1; Eric Schwarzer1; Steven Weingarten1; Hans-Jürgen Richter1; Tassilo Moritz1; Alexander Michaelis1; 1Fraunhofer Institute for Ceramic Technologies and Systems IKTS

8:40 AM
Toward Predicting Rapidly Solidified Microstructures of Metallic Alloys: John Roehling1; Aurelien Perron1; Jean-Luc Fattebert1; Patrice Turchi1; Joseph McKeown1; 1Lawrence Livermore National Laboratory

9:00 AM
Additive Manufacturing of Catalyst Substrates for Steam-methane Reforming: Matthew Watson1; Michelle Kramer1; Emily McKelvie1; 1University of Canterbury

9:20 AM
Challenges Adopting Additive Manufacturing Processes into Mining and Energy Applications: Tonya Wolfe1; Gary Fisher1; Hani Henein1; 1Alberta Innovates - Technology Futures; 1University of Alberta

9:40 AM
Comparative Study of Mechanical Properties of 3D Printed Plastic components: Jing Zhang1; Yi Zhang1; Michael Golub1; Linlin Cai1; Linmin Wu1; 1Indiana University - Purdue University Indianapolis

10:00 AM
Cost Analytics in a Cyber-manufacturing Environment: Jerry Evans1; Edmund Moore1; Joseph Shelton1; 1Future Way Designs LLC; 1AFRL/RQTE

Sintering and Related Powder Processing Science & Technologies — Sintering & Powder Processing

Program Organizers: Ricardo Castro, University of California, Davis; Brady Butler, U.S. Army Research Laboratory; Olivia Graeve, University of California, San Diego; Eugene Olevsky, San Diego State University; Anders Eklund, Quintus Technologies, LLC.

Thursday AM
Room: 150E
Location: Salt Palace Convention Center

Session Chair: To Be Announced

8:00 AM
Accelerated Sintering of Powder Metallurgy Ti-6Al-4V Alloy by Repeated Phase Transformation Induced by Thermal Cycling: Pankaj Kumar1; K.S. Ravi Chandran1; Fei Cao1; 1University of Utah

8:20 AM
Achieving Very High Strength in Powder Metallurgy Ti-6Al-4V Alloy through Accelerated Sintering at β-Transus and Hydrogenation-dehydrogenation Treatment: Fei Cao1; K.S. Ravi Chandran1; Pankaj Kumar1; 1University of Utah

8:40 AM
Densification Behavior of MIM491 Superalloy Prepared by Master Alloy Route: Lin Zhang1; Xiaowei Chen1; Xuanhui Qu1; 1University of Science and Technology Beijing

9:00 AM
Effect of Additives on the Kinetics of Formation of Cordierite via Solid State Reaction: Demet Aydogmus1; Erdem Demirkesen1; 1Istanbul Technical University

9:20 AM
Enhancement of Diffusion Bonding of Silver Graphite to Copper by Severe Plastic Deformation: Daudi Waryoba1; 1Penn State University, DuBois

9:40 AM
Low-cost Titanium Alloys with Wrought-like Microstructures and Exceptional Mechanical Properties Produced by Hydrogen Sintering and Phase Transformation (HSPT): James Paramore1; Brady Butler1; Matt Dunstan1; Z. Zak Fang1; Pei Sun1; 1United States Army Research Laboratory; 1University of Utah

10:00 AM Break

10:20 AM
Nanograined Bulk Silicon Steel as a Material for Electric Motor Stators: Trevor Clark1; Hellen Jiang1; Nicole Overman1; Suveen Mathaudhu1; 1University of California, Riverside; 1Pacific Northwest National Laboratory; 1University of California, Riverside; Pacific Northwest National Laboratory

10:40 AM
Sintering Properties of TiB, Powders from Carbon Coated Precursors Method with TiCrFeCoNiAl High Entropy Alloy as Sintering Aid: Zhezhen Fu1; Rasit Koc1; 1Southern Illinois University Carbondale

11:00 AM
The Relationship between the Grain Size and Ductility of Ultra-fine Grain Powder Metallurgy Tungsten Alloys: Huan Zhang1; Zak Fang1; Mark Koopman1; Chai Ren1; James Paramore1; Scott Middlesmas1; 1The University of Utah; 1United States Army Research Laboratory
11:20 AM
FEA of Hot Isostatic Pressing of Steel 316: A Comparative Study of Different Powder Compaction Constitutive Models: Khamis Essa1; Ali Abdelhafeez2; Moaatz Attallah1; 1University of Birmingham

Surface Protection for Enhanced Materials Performance: Science, Technology, and Application — Tribological Coatings
Program Organizers: Kang Lee, NASA Glenn Research Center; Yutaka Kagawa. The University of Tokyo; Dongming Zhu, NASA Glenn Research Center; Rodney Trice, Purdue University; Daniel Mumm, University of California-Irvine; Mitchell Dorfman, Oerlikon Metco (US) Inc.; Christian Moreau, Concordia University

Thursday AM Room: 251E Location: Salt Palace Convention Center

Session Chairs: Daniel Mumm, University of California, Irvine; Mitch Dorfman, Oerlikon Metco

8:00 AM Invited
Efficient FARADAYIC® ElectroStripping of WC-Co Wear Coatings from Inconel® 718 Substrates: Brian Skinn1; Heather McCrabb1; Stephen Snyder1; Maria Inman1; 1Faraday Technology, Inc.

8:40 AM
Environmentally Friendly Chromium Stripping: Heather McCrabb1; Timothy Hall1; Maria Inman1; E.J. Taylor1; 1Faraday Technology

9:00 AM
Development of Hard Ni-W-WC Nanocomposite Coatings: Jiaqian Qin1; 1Metallurgy and Materials Science Research Institute, Chulalongkorn University

9:20 AM
Effect of Annealing and Bias Voltage on Microstructure and Mechanical Properties of Ni-Zr tThin Film: Bibhu Sabu1; 1IIT Kharagpur

9:40 AM
Pulsed Current Electrodeposition and Dry Sliding Wear Behavior of Ni-W-SiC Nanocomposite Coating as an Alternative for Hard Chrome Replacement: Sunendarajan Govindasamy1; Nitin Wasekar1; 1Indian Institute of Technology Madras; 1International Advanced Research Centre for Powder Metallurgy & New Materials (ARC"

Symposium on Large Fluctuations and Collective Phenomena in Materials III — Crystals and Dislocations
Program Organizers: Xie Xie, The University of Tennessee; Karin Dahmen, University of Illinois at Urbana Champaign; Peter Liaw, University of Tennessee; Yong Zhang, University of Science and Technology Beijing

Thursday AM Room: 250C Location: Salt Palace Convention Center

Session Chairs: Robert Maass, University of Illinois at Urbana-Champaign; Lin Li, University of Alabama

8:00 AM Invited
Spatiotemporal Slip Dynamics during Deformation of Microcrystals: Robert Maass1; 1University of Illinois at Urbana-Champaign

8:40 AM Invited
Connecting Discrete Dislocation Slip and Deformation Behaviors in Nanocrystalline Ni: A Quantized Crystal Plasticity Study: Paul Christodoulou1; Peter Anderson2; Lin Li3; 1The Ohio State University; 1University of Alabama

9:20 AM Invited
Fluctuations in Martensitic Transformations in Shape Memory Alloys Studied by a Mesoscale Model: Ying Chen1; 1Rensselaer Polytechnic Institute

10:00 AM Break

10:20 AM Invited
Multiscale Entropy Analysis on the Serrated Flow of Unirradiated and Irradiated Alloy Systems Undergoing Mechanical Testing at Different Strain Rates and Temperatures: Janieson Brechtl1; Xie Xie1; Shuying Chen1; Haoyan Diao1; Yunzhu Shi1; Peter Liaw1; Steven Zinkle1; 1University of Tennessee

11:00 AM Invited
Collective Motion of Dislocation Associated with Local Plasticity Initiation and Macroscopic Properties in bcc Fe Alloys: Takahito Ohmura1; Takuya Suzuki1; 1National Institute for Materials Science

MS&T16 Poster Session — Additive Manufacturing
Tuesday AM Room: Exhibit Halls DE Location: Salt Palace Convention Center

A-1: Direct Laser Deposition of Nickel-Base Superalloy for Surface Coating: Hyeoyol Kim1; Hong-Chao Zhang2; 1Texas Tech University

A-2: Fabrication and Thermal Properties of Aluminum Matrix Composites Reinforced with Molybdenum Carbide-coated Graphite Fibers: Tingting Liu1; 1University of Science and Technology Beijing

A-3: Functional Graded Titanium Matrix Composites Reinforced by Submicron TiC or TiB2 Inclusions under SLM: Igor Shishkovsky1; Vladimir Scherbakov1; Nina Kakovkina1; 1Lebedev Physical Institute of Russian Academy of Sciences

A-4: A Combinatorial Assessment of Complex Concentrated Alloys / High Entropy Alloys: Tushar Borkar1; Bharat Gwalani1; Deep Choudhury1; Talukder Alam1; Calvin Mikler1; Chris Vannetta1; Xi Chen1; Raju Ramanujan1; Mark Styles1; Mark Gibson1; Rajarshi Banerjee1; 1Cleveland State University; 1University of North Texas; 1Nanyang Technological University; 1CSIRO Manufacturing Flagship

A-5: An Alternative Processing Route for Historically Process Incompatible Metal Alloys: Christopher Roberts1; David Bourell1; 1University of Texas at Austin

A-6: Laser Additive Processing of Magnetic Alloys from Elemental Blends: Calvin Mikler1; Tushar Borkar1; Srinivas Mantri1; Varun Chaudhury1; Rodrigo Contieri1; Chen Xi1; Raju Ramanujan1; Rajarshi Banerjee1; 1University of North Texas; 1Cleveland State University; 1Nanyang Technological University; 1FCA/UNICAMP
A-7: Strengthening Weld-based Additive Manufacturing Through Age-hardened Supersaturated Alloys: Rachel Clark; 1Michigan Technological University

A-8: Tensile Property of the AISI H13 Tool Steel Deposited by the Direct Energy Deposition Process: Jun Seok Park; 1Yoon-Sun Lee; Ji Hyun Sung; Sang-Kon Lee; 1Yong-Jae Cho; Da Hye Kim; 1KITECH

A-9: Thermodynamic & Kinetic Model Application to Strengthening Mechanisms of Aluminum Alloys for Additive Manufacturing: Derek Tsaknopoulos; 1Danielle Cote; Richard Sisson; Victor Champagne; 1Worcester Polytechnic Institute

A-10: Microstructures of Low-C and Medium-C Steel Powders Additively Deposited on Cast Iron Using Directed Energy Deposition (DED) Technique: Seulbi Lee; 1Yoon Suk Choi; 1Jae Hyun Yu; Sang Hu Park; Do-Sik Shim; Dae-Geum Nam; 1Pusan National University; 2Korea Institute of Industrial Technology

A-11: Open Material Database for Additive Manufacturing (AM): Van Lu; Paul Withrelle; 1Alkan Donmez; 1WPI; 2US Army Research Laboratory

A-12: Residual Stress in Direct Metal Laser Sintered Steel powders: Elias Jells; Rajendra Sadangi; 2Michael Hespos; Nuggehalli Ravindra; 1U.S Army, ARDEC, Picatinny Arsenal; 2U.S Army, ARDEC, Picatinny Arsenal; 1New Jersey Institute of Technology

A-13: The Microstructural Evolution of Powder Aluminum Alloys after Thermal Processing: Caitlin Walde; 1Danielle Cote; Richard Sisson; Victor Champagne; 1WPI; 2US Army Research Laboratory

A-14: The Effect of Post Processing Heat Treatment on Improving Mechanical Properties of 17-4 PH Stainless Steel Additively Manufactured via Laser Powder Bed Fusion: Somayeh Paseban; 1Sunil Badwea; Harish Irinkki; 1North American Hoganas; 2University of Louisville

A-15: Investigation for Bionic-Structural Design of Titanium Alloy Produced Using Additive Manufactured Forming, and Resulting Microstructure and Bioreactor Characteristic: Chun-Ming Lin; Huang Shih-Hua; Weng Li-Wen; 1National Taipei University of Technology; 2Metal Industries Research & Development Centre

B-1: Bio-mediated Materials Fabrication: Exopolysaccharides as Structural Templates: Sabine Kugler; 1Steffi Deuringer; Cordt Zollfrank; 1Daniel Van Opendenbosch; 1Technische Universität München

B-2: Developing Functionally Graded Ti Orthopedic Implants: Compositional Gradient via LENs Process: Dalton Lima; Rodrigo Contieri; 1Kaio Campos; Eder Lopes; 1Rajashri Banerjee; Rubens Caram; 1UNICAMP; 1University of North Texas

B-3: Guided Biotemplating: Photostatic Structuring of Polysaccharides by Microalgae: Steffi Deuringer; Sabine Kugler; 1Daniel Van Opendenbosch; Cordt Zollfrank; 1Technische Universität München, Fachgebiet Biogene Polymerse

B-4: Load-to-failure of Composite Bone Following Removal of Proximal Femoral Fixation Hardware: Janet Obar; Hazel Marie; James Shaer; 1Youngstown State University; 2St. Elizabeth Youngstown Hospital

B-5: Model Biomimetic Dental Composites: Processing and Mechanical Properties of Glass Fiber Model Systems: Karan Mohan; 1Christopher Wong; 1Isabel Lloyd; 1University of Maryland

B-6: Grain Refinement and Biodegradation of Mg-RE Alloy for Orthopedic Implant Applications: Process-Structure-Functional Property Relationship: Pramanshu Trivedi; Krishna Chaitanya Nune; 1R.D.K. Misra; 1R. Jayganthan; 1University of Texas at El Paso; 2Indian Institute of Technology

B-7: Tribological Performance and In Vivo Response of Laser Processed CoCrMo-CaP Composites for Load Bearing Implants: Anish Shivaram; Himanshu Sahasrabudhe; Susmita Bose; Amit Bandyopadhyay; 1Washington State University

B-8: Effects of Strontium and Magnesium on Osteoblast-Osteoclast Co-culture Using Doped Hydroxyapatite Plasma Coatings: Dishaly Banerjee; Sahar Vahabzadeh; Susmita Bose; 1Washington State University

B-9: Enhanced Osteoblastic Differentiation of Human Bone Marrow-derived Mesenchymal Stem Cells from Strontium Doped Hydroxyapatite Sol-gel Coatings on Titanium Alloys: Sam Robertson; Susmita Bose; 1Washington State University

MS&T16 Poster Session — Ceramic and Glass Materials

Tuesday AM Room: Exhibit Halls DE Location: Salt Palace Convention Center

C-1: Investigations on BTNN-PVDF Composites of 0-3 Connectivity: Jaciele Rosso; 1Taiana Bonadio; Daniel Silva; José Burato; Valdirle Freitas; 1Luis Cótica; 2Ivair dos Santos; 1State University of Maringá; 2Midwestern State University

C-2: Processing of Cu-10 wt% Graphite Composite by High-energy Ball Milling: Yaxuan Zhang; A. Aning; 1Hesham Elmkharram; 1Ibrahim Khalfallah; 1Virginia Tech

C-3: Synthesis of Nanopowders of Zirconia through Salt Incorporated Precursors: Divya Padmanabhan; Parag Bhargava; 1IIT Bombay

C-4: Influence of Dopants on the Thermal Behavior of Y3Al5O12 Nanoparticles: Geetu Sharma; Ricardo Castro; 1University of California davis

C-5: Compositional Dependence of Cd-S-Se Quantum Dot Embedded Silicate Glass for LED Color Converters: Karan Han; 1Jae Won Jang; Yong Gyu Choi; 1Woon Jin Chung; 1Kongju National University; 2Korea Aerospace University

C-6: The Evolution of the Structure and Physicochemical Properties of Crystals ZrO2-Y2O3, ZrO2-Sc2O3, and ZrO2-Y2O3-Sc2O3 Obtained by Skull Melting Technique: Philipp Milovich; Mihail Borik; Sergey Bredikhin; 1Aleksi Kulebyakin; Irina Khalfallah; 1Kongju National University; 2Korea Aerospace University

C-7: Low Temperature Glass Powders for Hermetic Sealing Process in Large Sized Dye Sensitized Solar Cells: Hansol Lee; 1Kongju National University

MS&T16 Poster Session — Biomaterials

Tuesday AM Room: Exhibit Halls DE Location: Salt Palace Convention Center

B-1: Bio-mediated Materials Fabrication: Exopolysaccharides as Structural Templates: Sabine Kugler; 1Steffi Deuringer; Cordt Zollfrank; 1Daniel Van Opendenbosch; 1Technische Universität München

B-2: Developing Functionally Graded Ti Orthopedic Implants: Compositional Gradient via LENs Process: Dalton Lima; Rodrigo Contieri; 1Kaio Campos; Eder Lopes; 1Rajashri Banerjee; Rubens Caram; 1UNICAMP; 1University of North Texas

B-3: Guided Biotemplating: Photostatic Structuring of Polysaccharides by Microalgae: Steffi Deuringer; Sabine Kugler; 1Daniel Van Opendenbosch; Cordt Zollfrank; 1Technische Universität München, Fachgebiet Biogene Polymerse

B-4: Load-to-failure of Composite Bone Following Removal of Proximal Femoral Fixation Hardware: Janet Obar; Hazel Marie; James Shaer; 1Youngstown State University; 2St. Elizabeth Youngstown Hospital
C-8: Application of Porous MgTiO₃ Ceramics with Pseudobrookite-type Structure for Diesel Particle Filter Application: Xinze Miao; Yoshikazu Suzuki; 1University of Tsukuba

C-9: Mechanical Properties of Dense ZrO₂-Al₂O₃ Composites Fabricated Using Various Sintering Methods: Ken Hirota; Xiaoteng Ge; Masaki Kato; Hideki Taguchi; Hideo Kimura; 1Doshisha University; 2Daiichi Kigenso Kagaku Kogyo Co., Ltd.

C-10: Simultaneous Synthesis and Densification of New-type Carbon Nanofibers (CNF) Dispersed B4C/CNF Composites by Pulsed Electric Current Pressure Sintering (PECPS) and their Mechanical Properties: Ken Hirota; Hironobu Hirahara; Masaki Kato; Hideki Taguchi; Toshiyuki Nishimura; 1Doshisha University; 2National Institute for Materials Science

C-11: Stable Nano Nonstoichiometric Cerium Oxide by DC Thermal Plasma: Yuan-Pei Lan; Yousef Mohassab; Bao-Qiang Xu; Hong Yong Sohn; 1University of Utah

C-12: Synthesis and Characterization of alkaline Earth and Transition Metal Complex Oxides: A Study on the Effect of Chelating Agent EDTA and Time-dependent Sintering: Weyshla Rodriguez Rodriguez; Boxun Hu; Ashish Aphiyle; Chiyi Liang; Prabhakar Singh; 1University of Connecticut

C-13: Synthesis and Electrochemical Properties of Ni-Co.8-xSm0.2-xBi0.4O6 Double Perovskites Based Thermoelectric Material: Takashi Shirai; Masayoshi Fuji; 1Nagoya Institute of Technology

C-14: Synthesis of Ceramic Composites and Systems in Composition (Ca,Sr,Ba)O-Al₂O₃-ZrO₂: Ilyouha Nickolai; Timoeevica Valentina; 1Academic Ceramic Center

C-15: Resistive Switching Memory Based on BiFeO₃ Nano-island Showing High Resistance Ratio and Nonlinearity Factor: Taekjib Choi; Ji hoon Jeon; Baeho Park; 1Sejong University; 2Konkak University

C-16: Synthesis, Characterization, Surface Energetics and Sintering Behavior of Spinel MgGa₂O₄ Nanoparticles: Geetha Sharma; Ricardo Castro; 1University of California Davis

C-17: A New Approach to Calorimetry: “Drop-n-catch” Technique Applied to Laser Heated Levitated Alumina and Yttria above 2000 °C: Denys Kapush; 1University of Nebraska; 2Northeastern University of China

C-18: Comparative Study of the Effect of Zr⁴⁺ Dopant on Phase Transformations in Rare-earth Ortho-niobates and -tantalates: Pankaj Sarin; Daniel Lowry; 1Ohio State University

C-19: Crystalline Phase Studies of KNa₂[Al₃Si₂O₆] Cl: Andrew Steveson; Waltraud Kruvin; 1University of Illinois at Urbana-Champaign

C-20: Experimental Study of the Effect of La₂O₃ on the Liquidus and the Equilibrium Phases of the CaO-SiO₂-Nb₂O₅-Phase Diagram: Lifeng Sun; Jiyu Qiu; Zhouyan Wang; Junjie Shi; Maofa Jiang; 1Key Laboratory for Ecological Metallurgy of Multimetals (Ministry of Education), School of Metallurgy, Northwu University, 2School of Materials Science and Engineering, University of Michigan

C-21: Microstructural Damage of a-Al₂O₃ Induced by High Energy Density Plasma: Qun Yang; 1Kishor Kalathiparambil; Daniel Elg; 2David Ruzic; Waltraud Kruvin; 1University of Illinois at Urbana-Champaign

C-22: Structural Stability Comparing for Lanthanum Chromite-based Perovskites: Hooman Sabarou; Yu Zhong; 1Florida International University

C-23: Synthesis of Iron-doped Na-ß’-Alumina + Yttria-Stabilized Zirconia Composite Electrolytes by a Vapor Phase Process: Leila Ghabbeigi; Alexander Szendrea; Taylor Sparks; Anil Virkar; 1University of Utah

C-24: Effect of Morphology of Nanostructured ZrO₂-WO₃ Mixed Anodic Oxide on Electrochemical Energy Storage: Stuart Whitham; Krishna Raja; 1University of Idaho

C-25: Effect of Water Vapor on Oxidation of Nickel in BYSZ at High Temperature: Michael Lu; Martha Mecartney; 1University of California Irvine; 2University of California Irvine

C-26: Electroreduction of Yttria Stabilized Zirconia with In-situ Potential Measurement Using Embedded Electrodes: Liangzhu Zhu; Lei Zhang; Anil Virkar; 1University of Utah

C-27: Enhancement of Photocatalytic Activity of WO₃ by ZrO₂ for the Treatment of Phenolic Wastewater: Mohamed Gar Alami; 1Faculty of Engineering Mansoura University

C-28: Fabrication of Ceramics/Nano-carbon Composites by Combination of Gelcasting and Argon Sintering: Takashi Shirai; Masayoshi Fuji; 1Nagoya Institute of Technology

C-29: Microstructural Evolution and Tribocorrosion Performance of Novel Laser Clad Ti-Ni-ZrO₂ Composite Coatings in 3.5% NaCl Solution: Babatunde Ozubara; Peter Olubambi; 1University of Johannesburg

C-30: Synthesis and Phase Stability of the ZrO₂-Y₂O₃-Ta₂O₅ Compositions for High Tetragonality Zirconia-based Thermal Barrier Coatings: Ivan Mazzini; Lev Baldaev; Nikolay Zaitsev; Evgeny Sazonov; 1TSPC Ltd

C-31: Enhancement of Photocatalytic Activity of WO₃ by ZrO₂ for the Treatment of Phenolic Wastewater: Mohamed Gar Alami; 1Faculty of Engineering Mansoura University

C-32: Fabrication of Ceramics/Nano-carbon Composites by Combination of Gelcasting and Argon Sintering: Takashi Shirai; Masayoshi Fuji; 1Nagoya Institute of Technology

D-1: Clausius-Mossotti Equation in Correlation with Curie-weiss Law, Fractal Frontiers: Vojislav Mitic; Steven Tidrow; Ljubica Kocic; Hans Fecht; Vesna Paunovic; 1Faculty of Electronic Engineering, University of Niš; 2Faculty of Electronic Engineering, University of Niš; 3Fermi Fractals

D-2: Complex Site Occupancy and Mesoscale Chemical Heterogeneity of (1-x)BaTiO₃ – xBiMO₃ Dielectrics: Michaela Beuerlein; Geoff Brennecka; 1Colorado School of Mines

D-3: Conversion from p-type to n-type Semiconductor Behavior in BaxSr₂–xTiO₃:FexO.8NOb.406 Double Perovskites Based Thermoelectric Material: Pankaj Sarin; 1University of Illinois at Urbana-Champaign

D-4: Crystal Structure, Microstructure and Piezoelectric Properties of Ca/Zr Co-substituted BaTiO₃ Lead Free Piezoelectric Materials: Vojislav Mitic; 1Faculty of Electronic Engineering, University of Niš; 2University of California Irvine

D-5: Development of Sr₂TiMoO₆ Based Novel Double Perovskites for High Temperature Thermoelectric Power Generation: Mandvi Saxena; 1Tamil Nadu Technical University

D-6: Dielectric, Magnetic and Magnetoelectric Characterization of (1-x)[0.90Pb(Zn₁/₃ – Nb₂/₃)O₃-0.10PbTiO₃]xCoFe₂O₄ Particulate Composites: Flávio Milion; Claudia Perdomo; Diego Viana; Fabio Zabotto; Alexandre Gualdi; Paulo Camargo; Adlisson Oliveira; Ruth Kaminami; Jose Eiras; Dacine Garcia; 1Group of Ceramics and High Temperature Materials; 2DeMa; 3Grupo de Superconductividade e Magnetismo
D-7: Effect of A-site Doping by La, Ba, and Ca on Thermoelectric Properties of Sr2FeTiO6 Double Perovskites: Pinka Roy; Imon Bose; Vikram Waghmare; Mandvi Saxena; Tanmoy Maiti; 1IIT Kanpur

D-8: Effect of Spark Plasma Sintering on Thermoelectric Figure-of-merit of Nb Doped SrTiO3: Vijayeta Pal; Tanmoy Maiti; 1IIT Kanpur

D-9: Improvement of Microwave Dielectric Properties of Bi2(Zn1/3Nb2/3)2O7 Ceramics by Annealing Treatment: Siyuan Dong; Xiaoli Wang; Xi’an Jiaotong University

D-10: Innovatively Designed Piezoelectric Laminate Composites for DC Magnetic Field Sensing: Ivair Santos; Jose Pereira; Fernando Gaiotto; Diogo Montanher; Soutik Betal; Ruyan Guo; Amar Bhalla; State University of Maringá; State University of Maringá; 2A State University of Sao Paulo; 3University of Texas at San Antonio

D-11: Investigation of the Physical Properties in BiFeO3–based Multiferroic Ceramics: Marcos Mariano; Yosdan Martinez-Camejo; Ruyan Guo; Amar Bhalla; Jose de los Santos Guerra; Universidade Federal de Uberlândia; The University of Texas at San Antonio

D-12: Multifilamentary Conduction Modeling in Heterogeneous Binary Transition Metal Oxides Based RRAM: Shiva Asapu; Tanmoy Maiti; 1IIT Kanpur

D-13: Polymers’ Electrical Conductivity and Fractional Order Models: Shiva Asapu; Eric Ngo; S. Gary Hirsch; Thomas Parker; Daniel Shreiber; Erik Enriquez; Clifford Hubbard; Melanie W. Cole; Marc Ulrich; U.S. Army Research Laboratory; Center for Integrated Nanotechnologies; University of Michigan; 1University of Connecticut

D-14: Room Temperature Negative Capacitance in RF Sputtered BTO/STO Bilayers: Mathew Ivill; Eric Ngo; S. Gary Hirsch; Thomas Parker; Daniel Shreiber; Erik Enriquez; Clifford Hubbard; Melanie W. Cole; Marc Ulrich; U.S. Army Research Laboratory; Center for Integrated Nanotechnologies; U.S. Army Research Office

D-15: Spectroscopic, Structural and Electrical Properties of BaMn1/3Nb1/3TiO3 (M = Ho, Er, Lu, Tm): Vajislav Mitic; Zoran Vosika; M. P. Lazarevic; Ljubisa Kocic; V. Pavlovic; Faculty of Electronic Engineering, University of Niš; Institute of Technical Sciences of the Serbian Academy of Sciences and Arts; Faculty of Electronic Engineering, University of Niš; University of Belgrade

D-16: Structural Analysis of the Lead-free AlFeO3-Based Magnetoelectric Compositions: Guilherme Santos; Jose Sousa; Ivair Santos; Luiz Cotica; Universidade Estadual de Maringá; Universidade Federal do Paraná

D-17: Study of Crystal and Electronic Structures of (Bi0.9Nd0.1)(Fe0.9Co0.1)O3 Multiferroic Compositions Calculated from X-ray Diffraction Data: Odair Oliveira; Anuar Mincache; Guilherme Santos; Brejo Oliveira; Gustavo Dias; Ivair Santos; Luiz Cotica; State University of Maringá

D-18: Study of the Dielectric Response of Rare-earth Modified PZT Ferroelectric Ceramics: An Approach to the Diffuse Phase Transition: Sazana Hessed; Atair Carvalho da Silva; Ruyan Guo; Amar Bhalla; Jose de los Santos Guerra; Universidade Federal de Uberlândia; Universidade Estadual Paulista; The University of Texas at San Antonio

D-19: Study of the Magnetoelectric Effect in Bi1-xNdxFeyCo3O12 Compositions: Anuar Mincache; Odair Oliveira; Andre Sanahara; Brejo Oliveira; Gustavo Dias; Ivair Santos; Ruyan Guo; Amar Bhalla; Luiz Cotica; State University of Maringá; University of Texas at San Antonio

D-20: Thermoelectric Properties of BaSr2-xTiCoO6 Double Perovskites with 0.0<x=0.3: Pinka Roy; Imon Bose; Megha Acharyya; Mandvi Saxena; Tanmoy Maiti; 1IIT Kanpur

D-21: Ab Initio Study of Electronic Structure of Bi1-xNdxFeyO3 Magnetoelectric Compositions: Gabriel Perin; Ivair Santos; Brejo Oliveira; Jose Padilha; Luis Cotica; State University of Maringá; Federal University of Paraná

D-22: Compound Growth during Reaction Diffusion between Liquid Sb-base Alloys and Solid Fe: Ryo Fukushima; Minho O; Kajihara Masanori; Tokyo Institute of Technology; Tokyo Institute of Technology

D-23: Kinetics of Reactive Diffusion between Sn-Ag Alloys and Ni at Solid-state Temperatures: Misako Nakayama; O Minho; Kajihara Masanori; Tokyo Institute of Technology

D-24: Circuit Model for Equilibrium Strains in Semiconductor Multilayers and Superlattices: Tedi Kujofsa; John Ayers; University of Connecticut

D-25: Threading Dislocations in InGaAs/GaAs (001) Buffer Layers for Metamorphic High Electron Mobility Transistors: Yifei Song; John Ayers; University of Connecticut


D-27: Microstructure Characterization of Reactive Sputtered Cu(In,Ga)Se2 Absorber Material: Anh Duong; MiaSole

D-28: Design of Graded Buffer Layers for Tandem Solar Cells on GaAs (001) Substrates: Yifei Song; John Ayers; University of Connecticut

MS&T16 Poster Session — Energy

Tuesday AM Room: Exhibit Halls DE Location: Salt Palace Convention Center

E-1: Conductive Nanostructured Scaffolds Render Low Local Current Density to Inhibit Lithium Dendrite Growth: Qiang Zhang; Tsinghua University

E-2: Free Standing, Flexible, High Ionic Conductivity Cubic-Li7La3Zr2O12 Ceramic Thin Film Membranes for Lithium Batteries: Eongyu Yi; Weimin Wang; John Kieffer; Richard Laine; University of Michigan

E-3: Honeycomb TiO2: Self-ordering Titania with Increased Stability, Capacitance and Surface Area: Steven Stiler; Krishnan Raja; University of Idaho

E-4: Improved Mechanical Properties of Silver-Zinc Batteries Utilizing Current Collector Geometry: Alla Zamaryeva; Cheryl Chang; Michael Wang; Igal Deckman; Greg Davies; Daniel Steingart; Ana Arias; University of California, Berkeley; Princeton University

E-5: Investigation of Capacity Fading of Li-rich Layered Composite Cathodes based on Structure Considerations: Kuan-Zong Fung; Shu-Yi Tsai; Chung-Ta Ni; Bo-Yuan Huang; National Cheng Kung University
E-6: LiCoNiFeO Nanocrystalline Cathode Particles for Lithium Ion Batteries: Prepared by Ultrasonic Spray Pyrolysis (USP) Method: Cigdem Toparl; Burak Ebin; Sebahattin Gurmen; Max Planck Institute for Iron Research GmbH; Chalmers University of Technology; Istanbul Technical University

E-7: Towards a Compliant Energy Storage System for Wearable Technology: High Performance Ag-Zn Chemistry Batteries: Alla Zamaraeva; Michael Liu; Abhinav Gaikwad; Igal Deckman; Michael Wang; Brian Khau; Daniel Steinart; Ana Arias; University of California, Berkeley; Princeton University

E-8: Structural Stability of La0.8Ca0.2Fe1-xCox(x=0-0.4) Perovskite Oxygen Transport Membrane for Cabon Capture Application: Kuan-Zong Fung; Shu-Yi Ni; Chung-Ta Ni; Shiang-Yi Lo; National Cheng Kung University

E-9: Perovskite Manganese Oxides for Thermocyclic Conversion of CO2 to CO: Siu-wai Chan; Columbia University

E-10: In-Situ Low Temperature Neutron Powder Diffraction Study of Mixed CH4,CO2 Gas Hydrates: Bernadette Cladek; S. Michelle Everett; Bryan Chakoumakos; Luke Heroux; Melanie Kirkham; Ashfa Huq; Claudia Rawm; University of Tennessee, Knoxville; Oak Ridge National Laboratory

E-11: Creep-fatigue Crack Growth Mechanisms for Alloy 617 at 800°C: Dylan Addison; Jamie Kruzic; Oregon State University

E-12: Effect of Carbonate Concentration on Dissolution Rate of UO2 and Spent Fuel: A Review: Akira Kitamura; Kuniaki Akahori; Japanese Atomic Energy Agency; Mitsubishi Materials Corporation

E-13: Effect of Laves Phase Precipitating Behavior on the Impact Properties of P92 Heat-resistant Steel: Wei Yan; Xu Yang; Wei Wang; Yiyin Shan; Ke Yang; Wei Sha; Institute of Metal Research, Chinese Academy of Sciences; State Key Laboratory of Metastable Materials Science and Technology, Yanshan University; School of Planning, Architecture and Civil Engineering, Queen's University Belfast

E-14: Ex-situ and In-situ Investigation of Heavy Ion Irradiation Damage in Ti-6Al-4V: Aida Amroussia; Carl Boehlert; Frederique Pellemeine; Isabelle Monnet; Wolfgang Mittig; Clara Grygel; Florent Durantel; Mikhail Avilov; Michigan State University; Facility for rare Isotope Beams -Michigan State University; CIMP, Normandie universite-UNICAEN-ENSICAEN-CEA-CNRS; Facility for Rare Isotope Beams FRIB -National Superconducting Cyclotron Lab, Michigan State University

E-15: Fuel-cladding Interaction in the Monolithic U-Mo Nuclear Fuels: Jan-Fong Jue; Jamie Keiser; Idaho National Laboratory

E-16: High Temperature Behavior of Zirconium Alloys: Jordan Vandegrift; Kelci Lester; Boise State University

E-17: Laser Welding of Zr-2.5Nb Alloy to 410 Stainless Steel with Ni Interlayer: Jianyin Chen; Ahmed Khalifa; Lijue Xue; Mitch King; National Research Council Canada; Canadian Nuclear Laboratories.

E-18: Microstructural Properties of Alloy 718 Processed at Different Experimental Conditions: Chinthaka Silva; Keith Leonard; Jeremy Busby; Gary Was; Lawrence Nelson; Gabriel Ilevbare; Oak Ridge National Laboratory; University of Michigan; JLN Consulting; Electric Power Research Institute

E-19: Microstructure Stability of Mo/W/Ti/Zr/Nb-Ta-alloyed 3105 Austenite Stainless Steels Designed by a Cluster Model: Qing Wang; Donghui Wen; Wen Lu; Guoqing Chen; Chuang Dong; Peter K. Liaw; Dalian University of Technology; The University of Tennessee

E-20: Phase Field Modeling of Irradiation-induced Recrystallization: Karim Ahned; Xianming Bai; Yongfeng Zhang; Daniel Schwien; Janguo Yu; Idaho National Laboratory

E-21: Radiation response of a Novel Intermetallic-strengthened Alloy: Tianyi Chen; Mo-Rigen He; Lizhen Tan; Ying Yang; Beata Tyburska-Puschel; Kumar Sridharan; Oak Ridge National Laboratory; University of Wisconsin-Madison

E-22: Studies of Grain Boundary Regions in Nb Superconductive Accelerating Cavities: Ali Khosravani; Thomas Bieler; Surya Kalindindi; Georgia Institute of Technology; Michigan State University

E-23: Tailoring WO3 Nanostructures Using Low Energy High Flux He Ion Irradiation: Jitendra Tripathi; Theodore Novakowski; Joseph Fiala; Arvind Sundaearam; Ahmed Hassanein; Purdue University

E-24: Experimental and Calculation Investigation on Severe Accidents in PWR Reactors: Andrea Quain; C. Gueneau; S. Goss; D. Manara; CEA Saclay; European Commission, Institute for Transuranium Elements

E-25: Cascade Simulations in Ceramic/Metallic Nano-composites: Ioannis Mastorakos; Iman Salehinia; Clarkson University; Northern Illinois University

E-26: Characterization of Radiation Induced Microstructural and Thermoelectrical Properties Changes in Bismuth Telluride and Half Heusler Materials: Medha Veligatla; Joseph Croteau; Nicholas Kempf; Luke Schoensee; Brian Jaques; Chao Han; Jonathan Gigax; Ran He; Lin Shao; Zhifeng Ren; Yanliang Zhang; Darryl But; Boise State University; Texas A&M University; University of Houston

E-27: Corrosion Behavior of Advanced Duplex Stainless Steels in High Temperature Steam Environment: Hyunmyung Kim; Jin Woo Heo; Sung Hwan Kim; Ho-Sub Kim; Hun Jang; Changheui Jang; KAIST; KEPCO Nuclear Fuel

E-28: The Effect of Cold Work on the Recrystallization of a Nanostructured Ferritic Alloy: Clarissa Yablinsky; Eda Aydogan; Sven Vogel; G. Robert Odette; David Hoelzer; Kester Clarke; Stuart Maloy; Los Alamos National Laboratory; Los Alamos National Laboratory/Texas A&M University; University of California, Santa Barbara; Oak Ridge National Laboratory; Los Alamos National Laboratory/Colorado School of Mines

E-29: The Effect of Stoichiometry on the Mechanical Properties of CeO2-x: Ursula Carvajal; Nathan Mara; Andrew Nelson; LANL

E-30: The Study of Ni3Sn05 Tube Stress Corrosion Behavior in Aqueous Alkali: Mingjuan Ma; Chengtao Li; Baosteel Special Metals Co., Ltd.; Suzhou Nuclear Power Research Institute

E-31: The Challenges and Goals of Integrated Waste Treatment Unit: Derek Fowers; Raghunath Kanakala; University of Idaho

E-32: Examining Durability and Alternative Phase Formation in Ceramic Waste Forms Using Vapor Hydration Testing: Devin Harkins; Clemson University

E-33: Phosphate Cement Blended with Samarium Oxide as Irradiation Shielding Materials: YaliLu Loaiza Lopera; Henry Colorado Lopera; Carlos Castano; Universidad de Antioquia; Missouri University of Science and Technology

E-34: X-ray Scattering and Spectroscopy Studies of Nanasheet MnO2 Supercapacitor Electrodes: Peter Metz; Peng Gao; Scott Miture; Alfred University
MS&T16 Poster Session — Fundamentals, Characterization, and Computational Modeling

Tuesday AM
October 25, 2016
Room: Exhibits Halls DE
Location: Salt Palace Convention Center

F-1: Roles of Ag Addition in FePt L10 Ordering Transition Investigated by In-situ Heating HRTEM Observations: Youxing Yu; 1Beihang University

F-2: Automatic Deconvolution of Dilatometry Curve in Continuous Cooling Transformations: Hoheok Kim; 1 Junya Inoue; 2 Masato Okada; 2 Kenji Nagata; 2 Satoru Tokuda; 1 Graduate School of Materials Engineering, University of Tokyo

F-3: Multi-phase-field Study of Cube Recrystallization Texture of Aluminium Alloy: Akinobu Hori; 1 Junya Inoue; 1 University of Tokyo

F-4: Non-isothermal Nanocrystallization Kinetics of FINEMET Type Alloys Using a Direct Extension of JMAK Theory: Alejandro Manchon-Gordon; 1 Javier Blázquez; 2 Clara Conde; 3 Alejandro Conde; 1 University of Seville

F-5: A 3D Polyhedral Description of Grain Boundary Structural Features Based on the Structure of Defects in Bulk FCC Metals: Arash Dehghan Banadaki; 1 Srikanth Patala; 1 North Carolina State University

F-6: Modeling Material Interfaces with Hybrid Adhesion Theory: Nicholas Brown; 1 Jianmin Qu; 2 Enrique Martinez; 2 Northwestern University; 2 Tufts University; ‘Los Alamos National Laboratory

F-7: Cohereancy Strain Reduction in Particles on a Substrate as a Driving Force for Solute Segregation: Der Amrani; 1 David Barlam; 2 Eugen Rabkin; 2 Roni Shneck; 2 Technion - Israel Institute of Technology; ‘Ben Gurion University of the Negev

F-8: Grain Boundary Structure-property Relationships: Single Disorientation Axis Trends: Hunter Erickson; 1 Eric Homer; 1 Brigham Young University

F-9: Partially Agglomerated Metallic Thin Films Formed by Annealing of Solid Solution Nanoparticles at Low Homologous Temperatures: Nimrod Gazi; 1 Leonid Klinger; 1 Eugen Rabkin; 1 Technion - Israel institute of Technology

F-10: The Development of Physically Based Atomistic Microstructure: The Effect on the Mechanical Response of Polycrystals: Jacob Gruber; 1 Fadi Abdeljawad; 2 Hojiun Lim; 1 Stephen Foiles; 1 Garritt Tucker; 1 Drexel University; ‘Sandia National Laboratories

F-11: The Effect of the Grain Size on the Growth Kinetics in the IMC Layer in Fe-Al Binary System: Lei Xu; 1 Joseph Rosbon; 1 Zhigang Fang; 1 Philip Prangnell; 1 University of Utah; ‘University of Manchester

F-12: Anorthite (CaAl2Si2O8)-Aluminium Interface: Kinetics of High-Temperature Interactions: Esmaeil Adabifrozoojaei; 1 Hongyang Ma; 1 Pramod Koshly; 1 Charles Sorrell; 1 University of New South Wales

F-13: Ionic Conductivity in Alkali Nitrates and Composite Solid Electrolytes Based on LiNO3: Julia Matyeshina; 1 Nikolai Uvarov; 1 Artem Ulilin; 1 Institute of Solid State Chemistry and Mechanochemistry SB RAS

F-14: Study of Isothermal Mass and Charge Transport Properties of La2Ni0.95Al0.05O4.025+d: Sang-Yun Jeon; 1 Sun-Ju Song; 1 KEPCO Research Institute; ‘Chonnam National University

F-15: Anisotropic Tailored Thermal Expansion In Martensitic Alloys: Dominic Gehring; 1 Ibrahim Karaman; 2 Texas A&M University

F-16: Flow Characteristics of Ultrafine Grained Zircaloy-4 pProcessed by Mutiaxial Forging: Devasri Fuloria; 1 Nikhil Kumar; 2 R. Jayaganthan; 3 S. Jha; 3 D. Srivastava; 1 IIT Roorkee

F-17: Grain Growth during Cyclic Straining of Copper Films Revealed with In-situ Resistance Measurements: Megan Cordill; 1 Oleksandr Glushko; 2 Erich Schmid Institute of Materials Science

F-18: Low Energy Ion Scattering (LEIS) of Commercial Display Glasses: George Major; 1 Cody Cushman; 1 Barry Lunt; 2 Nicholas Smith; 2 Matthew Linford; 2 Brigham Young University; ‘Comring Incorporated

F-19: Nucleation of Dynamic Recrystallization and Grain Growth in Hot Extruded Mg-Fe Alloys: Aidin Imandoust; 1 Haitham El Kadiri; 1 Mississippi State University, Department of Mechanical Engineering; ‘Mississippi State University, Department of Mechanical Engineering

F-20: Relating Anisotropy and Strain-induced Crystallinity to Processing and Glass Transition Temperature of Polypropylene and Poly(Ethylene-terephthalate) Plastic Cups: Hannah Woods; 1 Kendra Erik; 1 Purdue University

F-21: Effect of Sulfur Content on Fatigue Strength of AISI 4140 Steel: Sachin Patil; 1 Mohan Mehta; 1 Sandip Sutar; 1 Akshay Patil; 1 Shreyas Kirwai; 1 Suresh Arangi; 1 Bharat Forge Ltd.

F-22: Behaviour of Asphalt Concrete Beyond Its Limit of Elasticity: Lee Leon; 1 Raymond Charles; 1 Nicola Simpson; 1 University of the West Indies

F-23: Influence of Quenching Processes on Microstructure and Mechanical Properties of 800MPa High Strength Steels: Zhengtao Duan; 1 Xinhua Pei; 1 Shanghai Meishan Iron and Steel Co. Ltd.

F-24: Structure Property Relationship of Cationic Doping in Ca2Al2O5 Nanocages: John Robert Salasini; 1 Christina Cox; 2 Sabina Ude; 3 Ashfa Huq; 2 Claudia Ravina; 1 University of Tennessee; ‘Oak Ridge National Laboratory

F-25: Compact Forced Simple-shear and Compact Forced Double-shear Applications for Shear Localization in Materials: Thomas Lebrun; 1 Los Alamos National Laboratory

F-26: Modeling the Hydroforming of a Large Grain Niobium Tube: Ahoosar Mapar; 1 Thomas Bieler; 2 Farhang Pourboghrat; 1 Michigan State University; ‘The Ohio State University

F-27: Numerical Simulation of Inclusion Aggregation and Removal in a Bottom Gas-injected Ladle during Molten Steel Deoxidation: Yanbin Yuan; 1 Jiongming Zhang; 1 Shaowu Lei; 1 Shuxi Wang; 1 Qipeng Dong; 1 State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing; ‘Hutian Engineering & Technology Corporation, MCC


F-29: Thermal Non-Equilibrium Effects on Nickel Solid-Liquid Interface: Nicholas Brown; 1 Enrique Martinez; 1 Jianmin Qu; 2 Northwestern University; ‘Los Alamos National Lab; ‘Tufts University
F-10: Stochastic Modeling for Prediction of the Columnar to Equiaxed Transition during Solidification of Magnesium-based Alloys: Ahmad Salman1; Lauretina Nastase1; 1The University of Alabama

F-31: Multiscale Numerical Model of Nanoindentation Test of PLD sample: Konrad Perzynski1; Grzegorz Cios1; Lukasz Madej1; 1AGH University of Science and technology

F-32: Simulation of Tube Drawing Textures in NiTi Using Elasto-plastic Self Consistent Algorithm : Shivram Kashyap Sridhar1; Scott Robertson2; Anthony Rollett1; Richard Francis1; 1Carnegie Mellon University; 2Medtronic Inc.

F-33: Maximum Likelihood Parameter Estimation in Crystal Plasticity Finite Element Method Using Particle Filter: Yushi Sato1; Junya Inoue1; 1The University of Tokyo

MS&T16 Poster Session — Iron and Steel (Ferrous Alloys)

Tuesday AM  Room: Exhibit Halls DE  Location: Salt Palace Convention Center

October 25, 2016

G-1: Effect of Iron on Combustion Characteristics of Coal Char Pyrolyzed by Lump Coal: Haiyang Wang1; Jianliang Zhang1; Guangwei Wang1; Zhengjian Liu1; Runsheng Xu1; Siyuan Liu1; Tengfei Song1; Ke Guo1; 1University of Science and Technology Beijing

G-2: Application of the EAF Steelmaking Combined Blowing Technology in 100T EAF: Ma Guohong1; 1University of Science and Technology Beijing

G-3: Deformation Analysis and the Relation to Martensite Morphology and Distribution in Dual Phase Steels: Fan Zhang1; Annie Ruimi1; Amrita Kundu1; David Field1; 1Washington State University

G-4: Effect of Cementite on Ductile Fracture in High Tensile Strength Steel Sheets: Mari Maeda1; Junji Shimamura1; Shinuske Suzuki1; 1Waseda University; 2JFE Steel Corporation; 3Waseda University

G-5: Hot Deformation and Processing Maps of a Low Carbon Nb/Ti Microalloy Steel: Mei Zhang1; 1Shanghai University

G-6: Investigation of Combustion Reaction Kinetic of Anthracite by Sectioning Method: Buling Du1; 1University of Science and Technology Beijing

G-7: Investigation on the Structure Evolution of Ferrous Burden under the Simulation Oxygen Blast Furnace: Yan Huaitian1; Guang Wang1; Depeng Sun1; Yingli Liu1; 1USTB

G-8: Microstructure and Mechanical Properties of Fe-Ni-Cr-Mo Alloys Fabricated by Centrifugal Casting: Kyeongsoon Park1; J. Pi1; A. Iqbal1; K. Oh1; N. Yi1; S. Kim1; 1Sejong University

G-9: Modeling Deformation in Steels with Retained Austenite: Daniel Free1; Stephen Chiff1; Devin Adams1; David Fullwood1; Michael Miles1; Eric Homer1; 1Brigham Young University

G-10: Research on the Flow Behavior of Molten Slag through Pore: Yingli Liu1; Guang Wang1; Long Chen1; Haojian Yan1; 1USTB

G-11: Research on the Generation Characteristics and Particle Size Distribution of Steelmaking Dust: Zhizheng Li1; 1University of Science and Technology Beijing

G-12: Study on Chlorine Distribution Rate between Bosh Gas and Slag in Blast Furnace: Cui Wang1; Jian-liang Zhang1; Ke-shun Zhang1; Zheng-jian Liu1; Ke-xin Jiao1; 1University of Science and Technology Beijing

G-13: The Effect of Sodium and Zinc on Metallurgy Character of Sinter Ore in BF: Zhiwu Yan1; Jianliang Zhang1; Zhengjian Liu1; Xiang Yuan1; Heshun Zhang1; Yang Wang1; 1University of Science and Technology Beijing; 2Shougang Jingtang United Iron & Steel Co. Ltd.

G-14: Research on Galvanisability of High Manganese Alloyed Steel Containing Vanadium: Tingdong Ren1; Hu Jiang1; Nan Zou1; Wen Sh11; 1Shanghai University

G-15: The Influence of Zinc Vapor on Composition and Properties of Coke: Jianbo Zhong1; Jianliang Zhang1; Kejiang Li1; Di Zhao1; Hao Lin1; Heshun Zhang1; 1University of Science and Technology Beijing; 2Shougang Jingtang United Iron & Steel Co. Ltd.

G-16: Effect of Addition of the Grain Refinement in Cold-rolled Low-carbon Steel during Annealing at Two Different Heating Rates: Anish Karmakar1; Debalay Chakrabarti1; 1Indian Institute of Technology, Kharagpur

G-17: Multi-phase Numerical Research on Oxygen Lance Blowing High Temperature Oxygen: Shaoyan Hu1; 1University of Science and Technology Beijing China

G-18: Optimizing the Cooling Rate for Maximum Precipitation Strengthening of Naturally Cooled V Micro-alloyed Steels: Anish Karmakar1; Pooja Sahu1; Subrata Mukherjee1; Saurabh Kundu1; Debalay Chakrabarti1; 1Indian Institute of Technology, Kharagpur; 2R & D, Tata Steel

G-19: Thermodynamic Calculation and Experimental Investigation of Second Phase Particles in HRB400III Steels Enhanced Nitrogen: Wei Song1; Hong-ming Zhang1; Shun-xi Wang1; 1State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing

G-20: High-speed Quenching of Springs to Generate Compressive Residual Stresses: Gabriela Martinez Cazares1; 1Universidad de Monterrey

G-21: Effect of Coarse Grain Band on the Ridging Severity of 409L Ferritic Stainless Steel: Sambita Patra1; Debalay Chakrabarti1; Arijit Podder1; 1Indian Institute of Technology, Kharagpur; 2Jindal Stainless Limited

G-22: Study of La Element Content Control in Alloy Smelting: Yongji Niu1; Zhiwei Zhang1; Yang Gao1; 1Beijing Beiye Functional Materials Corporation

G-23: A First-principles Study on the Effect of Coverage in the Dilute Limit for the Adsorption and Dissociation of CO on Fe-110 Surface: Aurab ENSCL, University of Lille 1; 3University of Montreal; 4Qatar Environment and Energy Research Institute; 1Hamad bin Khalifa University

G-24: A Study on the Viscous Behaviour with K2O Additions on the Slags: Yang Junqiang1; Yang Wang1; 1University of Science and Technology Beijing
H-4: Getting of Wear-resistant Coatings on Steels in SHS Conditions: Borys Sereda; Dmytro Sereha; DSTU; ZSEA

H-5: Microstructure and Properties of TiN Coating Layer on Tool Materials: Young Suk Kim1; Charles Han1; Young Hoon Lee1; Ho Yo Soo Lee1; Ki Buem Kim1; Sejong University; KITECH, Incheon

H-6: Phlogopite Glass-ceramic Coatings on Stainless Steel Substrate: Aida Faeghghina; 1MERC

H-7: Fabrication of Superhydrophobic Coatings on AA 6061: Muhammad Nauman Siddiqui1; Agha Zeeshan Ali1; Hamza Haseeb1; Muhammad Sharyar1; 1University of the Punjab

H-8: Effect of Surface Profile of Mild Steel Substrate upon the Adhesion Strength of WC-11%Co Flame Spray Coating: Muhammad Irfan1; Aqil Inam1; Rafiq Ahmad1; Anaum Nawaz1; Muhammad Irfan1; Muhammad Saleem1; Muhammad Saleem2; Waqs Ali1; University of the Punjab

H-9: Performance of Methanogen Encapsulated Proppant in Release of Ni-Co-Al-Ti-15Cr Alloys: Katerina Christofidou1; Mathew Mathew1; Aqil Inam1; Rafiq Ahmad1; Muhammad Ishtiaq1; Riaz Sarwar1; Khubai Zohaib1; Muhammad Shaheen1; University of the Punjab

H-10: Degradation of Indium Tin Oxide Film under Electrochemical Corrosion Environment: Jiawen Byeon1; Hina Farooq1; 1Seoul National University of Technology

H-11: Structure-property Relationships Governing Degradation Induced Release of Nanoparticles from Polymer Materials: Jacob Cohen1; Eric Rohrbach1; Kai Gao1; Michael Toomey1; John Howarter1; Logan Kearnley1; 1Purdue University

H-12: Bacterial Corrosion of Oxides Formed in Supercritical Water: Zachary Karmiol1; 1University of Nevada Reno

H-13: Oxidation Behavior of Deformable Austempered Ductile Iron and the Ways for Improvement of Its High Temperatures Properties: Olga Tsoutrasma1; Nuzgur Khidasheli1; Elguta Kutelia1; Tengiz Kukava1; Bronislava Gor1; Benjamin Gregoire1; Fernando Pedraza1; 1Georgian Technical University; 1University of Siegen; 1University of La Rochelle

H-14: The Effect of NiCo and Al:Ti Ratios on the Oxidation Behaviour of NiCo-Al-Ti-15Cr Alloys: Katerina Christofidou1; Nicholas Jones1; Mark Hardy1; Howard Stone1; 1University of Cambridge; 1Rolls Royce plc

H-15: Characterization of Surface Films on Magnesium Alloy AZ31D in NaCl Solutions with Electrochemical Techniques: Shuoshuo Xi1; 1University of Illinois at Chicago

H-16: Corrosion Response of ASTM A-299 Steel Weldment in As-weld and Post Weld Heat Treatment Condition: Muhammad Kamran1; Tahir Ahmad1; 1University of the Punjab

H-17: Effect of Carbon Content on Corrosion Properties of Plain Carbon Steels: Amer Malik1; Aqil Inam1; Rafiq Ahmad1; Muhammad Ishtiaq1; Riaz Sarwar1; Khubai Zohaib1; Muhammad Shaheen1; University of the Punjab

H-18: Evaluation of Corrosion of Shielded Metal Arc Weldment in Boiler Tube Steel in 3.5% NaCl solution: Ravindra Kumar1; 1NIET

H-19: Modification of AC/DC/AC Technique for Organic Coatings: Qi Gui1; Dajiang Zheng1; Guang-Ling Song1; 1Xiamen University

H-20: Study on Corrosion Resistance of the Effect of the Temperature on Thread Steel: Zhitong Wang1; Jiongming Zhang1; Bo Wang1; Yanbin Yin1; Qipeng Dong1; Shunxi Wang1; Wei Song1; Lilei Han1; 1University of Science and Technology Beijing

H-21: Advanced Thermal Barrier Coating Architectures for Improved Erosion Durability: Brena Gorin1; Michael Schmitt1; Amarendra Rai1; Douglas Wolfe1; Dongming Zhu1; 1The Pennsylvania State University; 1UES Inc; 1NASA Glenn Research Center

H-22: Assessment of Mechanical Behaviors of Co-evaporated EBVPD TBCs with Varying Rare Earth Content: James Stokes1; Michael Schmitt1; Douglas Wolfe1; 1The Pennsylvania State University

H-23: Performance and Durability of Environmental Barrier Coatings on SiC/SiC Ceramic Matrix Composites: Dongming Zhu1; Bryan Harder1; Ram Bhatt1; 1NASA John H. Glenn Research Center

H-24: Material Behavior of Window 7 Carrier Panel Tiles and Thermal Pane Glass Fragments Recovered from the Space Shuttle Columbia: Brenda Arellano1; 1The University of Texas at El Paso

H-25: Fabrication of Silica Aerogel as Thermal Insulation Coating: Noppakun Sanpo1; Jaturong Jitputti1; Koichi Fukuda1; 1SG Chemical Co., Ltd.
I-5: Reductions in the Size and Spacing of Ni Nanoparticles Dewet Via Laser Pulse through the Addition of Alumina Capping Layers: Benjamin White; McKay Stoker; Nicholas Roberts; 'Utah State University

I-6: Second Derivative Fourier Transform Infrared Spectroscopy Analysis of Aligned Graphene and Graphene Oxide in Carboxymethyl Cellulose Films: Julie Muretta; Una Trivanovic; 'Montana State University

I-7: Structural and Magnetic Properties of Melt-spun Fe₄₋₀Si₃ (x = 3-9 wt.%) Materials: Xiujian Jiang; Karen Kruska; Arun Deveraj; Jens Darsell; Vincet Josh; Nicole Overman; 'Pacific Northwest National Lab

I-8: Fabrication of 3D Phononic Crystals with Long-Range SiO Phononic Band Structure: Shan-Ju Chiang; Leon Shaw; 'Illinois Institute of Technology

J-1: Bilayer Graded Al/SiC/Rice Husk Ash Composite: Thermal and Electrical Properties: Amin Bahrami; Martin Pech-Canal; Shagayegh Soltani; Niloofar Soltani; Carlos Gutierrez; Luis Gonzalez; 'CINVESTAV-IPN; 'K. N. Toosi University of Technology

J-2: Porous Silicon Oxycarbide Composites with Aligned Macro Porosity from Water-based Slurry by Freeze Casting Process: Niloofar Soltani; Ulla McKay Stoker; Scott Beckman; Aleksander Gurlo; 'CINVESTAV-IPN; 'Technische Universiteit Berlin

J-3: Thermal and Electrical Properties of Infiltrated High Volume Fraction Si₃N₄ and Si₃N₄-coated SiO₂ Preforms by Al-Mg-Si Alloys as Heat Sink Materials in Electronic Packaging: Niloofar Soltani; Shagayegh Soltani; Martin Pech-Canal; Amin Bahrami; Luis Gonzalez; 'Centro de Investigació y de Estudios Avanzados del IPN; 'K. N. Toosi University of Technology

J-4: Improvement of Mechanical Properties of Pure Titanium by Boronization and Nitridation by Al Added Fused Salt Bath: Ryoya Ishino; Shohei Arai; Shaghayegh Shital Jadhav; 'Montana State University

J-5: Obtaining of Boride Coatings under SHS Conditions for Car Parts: Boris Sereda; Dmytro Sereda; 'DSTU; 'ZSEA

J-6: High Temperature Oxidation Study of Hafnium & Zirconium Diborides: MHD Electrode Coatings: Steven Stiler; Krishnan Raja; Indrajit Charit; 'University of Idaho

J-7: Relating Hardness, Bonding, and Composition in Al₂B₆: Liwen Wan; Scott Beckman; 'Lawrence Berkeley National Laboratory; 'Washington State University

J-8: The Nature of Thermoelectricity in AlYB₁₄ Compounds: Bo Xu; Irmak Sargin; Scott Beckman; 'Washington State University

J-9: Admixture Optimization in Concrete by Using Superplasticizers: Andrea Munoz; Sergio CIFuentes; Henry Colorado; 'Universidad de Antioquia; 'Conasaltos

J-10: Aggregate Optimization in Concrete by the Viterbo O’Reilly Diaz Method: Edison Murillo Mosquera; Henry A Colorado; 'Universidad de Antioquia

J-11: Process Optimization of a VSI Crusher and Screening System Used with Feldspar Minerals: Hugo Gomez; Juan Esteban Ospina; 'S uninol S.A.S.; 'Organizacion Corona

J-12: Characterization of Composition and Ionic Effects on Superabsorbent Hydrogel Polymers for Internal Curing of Cement: Matthew Parsons; Kendra Erk; 'Purdue University

J-13: Superabsorbent Hydrogels as Internal Curing Agents: Investigating the Effects of Hydrogel Particle Size on Properties and Microstructure of Concrete: Austin Beggs; Matthew Krafick; Kendra Erk; 'Purdue University

J-14: Suspension Polymerization of Superabsorbent Polymer Hydrogels and Impact of Particle Size and Shape on Internal Curing: Stacey Kelly; Kendra A. Erk; 'Purdue University

J-15: Creep of Calcium Aluminate Cements: John Zapata; Maryory Gomez; Henry Colorado; 'Universidad de Antioquia

J-16: Waste Form Screening Test Results of Submerged-bed Scrubber Effluent (SBSE) Using Ceramicrete Phosphate Ceramics: Jose Caviria; Henry Colorado; Dileep Singh; 'University of California - Los Angeles; 'Universidad de Antioquia; 'Argonne National Laboratory

J-17: Electron Microscopy Analysis of Secondary Phases in KHR45A Tubulars after 10 Years Service in an Ethylene Furnace: Ihho Park; Yunjo Ro; Raghavan Ayer; Junghoon Jeon; Jee-Woong Kim; 'SK innovation; 'SK Energy

J-18: Failure Analysis of Uneven Fracture of Connecting Rod during Splitting Operation: Shital JadHAV; Vinayak Pawar; Ashish Supare; Amol Gujar; Rajkumar Singh; 'Bhartiforge, Ltd

J-19: Effect of Geometrical Parameters on Deflection of Different Chassis Components Sections: Sumedh Kousadikar; Mangesh Yadav; Dattaprasad Lomate; Manoj Ukhande; 'Bharti Forge Ltd.

J-20: Ceramic-metal Joining on the Nanoscale: Engineered Interfaces for Robust Thermal Performance: David Driscoll; Stephen Sofie; 'Montana State University

J-21: Fracture Toughness Comparison between Fricton Stir Welds in Two API-5L-X80 Steels with Different Microstructure and Composition: Julian Avila; Eduardo Fonseca; Johnatan Rodriguez; Antonio Ramirez; 'University of Sao Paulo at Sao Carlos School of Engineering; Brazilian Nanotechnology National Laboratory; 'Brazilian Nanotechnology National Laboratory; 'The Ohio State University

J-22: Application of Computational Thermodynamics & Kinetics to Rare Earth Reduction in Magnesium Alloys: Kyle Fitzpatrick-Schmidt; Danielle Cote; 'Worcester Polytechnic Institute

J-23: Light Element Measurements on Electron Probe Microscopy by Wavelength-dispersive X-ray Spectrometry: Michel Outrequin; Mona Moret; Anne-Sophe Robbes; Michel Fialin; David Larson; Thomas Kelly; 'CAMECA SA; 'Université Pierre et Marie Curie - Paris 6; 'CAMECA Instruments Inc.

J-24: Localized Corrosion Behavior of Mg-Y-R.E-Zr Alloy in Basic Solution: Jakraphan Ninlachart; 'K. N. Toosi University of Technology


J-27: Characterization of Mechanical Milling Induced Effects in Titania Pyrocloys with Neutron Total Scattering; Eric O’Quinn; Jacob Shamblin; Maik Lang; Antonio Fuentes; University of Tennessee; CINVESTAV Unidad Salltito

J-28: The Effect of Sintering Temperature on the Microstructure of Fe-1.4 wt.% C Alloy Prepared by Mechanical Alloying; Ibrahim Khalifallah; Alex Aning; J. Chen; David Gray; David Berry; Virginia Tech; National Taiwan University of Technology; Prime Photonics, LC

J-29: Effect of Milling Conditions on the Mechanochemical Reactions in the System Al – B2O3 – C; José Alonso Díaz-Guillén; José Nayeli Cepeda; Antonio F. Fuentes; Instituto Tecnológico de Saltillo; 1CINVESTA V

J-30: Effects of Few-layered Graphene (FLG) on the Mechanical and Thermal Properties of Copper Matrix Composites; Seonghyeon Yoo; Haneul Jang; Hyoungjoo Choi; Kookmin University

J-31: Electrical Properties of Ln4Zr3O12 (Ln = Y, Ho, Er and Yb) Zirconates Synthesized by Mechanical Milling; José Orlando Acosta-García; Antonio Fernández-Fuentes; Madelyne Salazar-Zertuche; María Elena Bazaldúa-Medellín; José Alonso Díaz-Guillén; Instituto Tecnológico de Saltillo; CINVESTAV Unidad Salltito

J-32: Facile Oxyhalides Production from Halogenated Pollutants Destruction by Ball Milling; Giovanni Cagnetta; Mengnan Lu; Jun Huang; Gang Yu; Tsinghua University

J-33: High-energy Milling Activation, a Key Step on a Molten Salts Route, to Synthesize Multiferroic Compounds at Low-temperature; Anayantzin Hernandez-Ramirez; A. Martinez-Luevanos; Antonio F. Fuentes; Sogarismo M. Montemayor; Universidad Autónoma de Coahuila; CINVESTAV Unidad Salltito; Centro de Investigación en Química Aplicada

J-34: Mechanical Activation Effect on the Chemistry of a Typical Flat Glass Batch; Antonio Fuentes; CINVESTAV del IPN

J-35: Mechanisms of Refractory Metal Borides and Carbides Formation during Mechanical Alloying; Maria Savay; Franzveych Institute for Problems of Materials Science National Academy of Sciences of Ukraine

J-36: Mechanochemical Acetylation of Peat; Maksim Efano; High Technology Park

J-37: Mechanochemical Destruction of Fluorosurfactants as the Alternatives to PFOS: A Feasibility Study; Mengnan Lu; Kanlin Zhang; Jun Huang; Gang Yu; Tsinghua University

J-38: Mechanochemical Synthesis of Thermoelectric Materials for Space Applications; Sabah Bux; Jean-Pierre Fleuriel; Richard Blair; Thierry Caillat; Jet Propulsion Laboratory/California Institute of Technology; University of Central Florida

J-39: Mechanochemical Synthesis, Structural Characteristics, and Electrical Properties of the Gd2(H2O-xTi)xO7 Solid Solution; Nayeli Cepeda; José Díaz-Guillén; Ulises Amador; Antonio Fuentes; CINVESTAV; Instituto Tecnológico de Saltillo; Universidad CEU San Pablo, Facultad de Farmacia

J-40: Mechanochemical Synthesis, Structure, and Properties of Solid Solutions of Alkaline Earth Metal Fluorides: M1, M2F3 (M: Ca, Sr, Ba); Marcel Heise; Gudrun Scholz; André Dävel; Paul Heitjans; Erhard Kennmix; Humboldt-Universität zu Berlin; Leibniz Universität Hannover

J-41: Mechanochemistry for CO-PROX Catalysts Preparation; Olga Marozova; Galina Vorobjeva; Alla Firsova; Andrey Sreletsikii; Alexander Leonov; Ernst Kurmaev; Christine Borchers; May Martin; Semenov Institute of Chemical Physics RAS; Lomonosov Moscow State University, Chemical Department; M.N. Mikhailov Institute of Metal Physics, RAS-Ural Division; Institute for Materials Physics, University of Göttingen

J-42: Microstructure-mechanical Property Relationship for Nanocomposite High Energy Density Materials; Christopher Shuck; Timothy Ovaert; Alexander Mukasyan; University of Notre Dame

J-43:Reaction Kinetics and Thermodynamic Study of Metal-doped Magnesium Silicides: Mallikharjuna Bogala; Ramana Reddy; 1University of Alabama

J-44: Synthesis of Al/Graphene Composites via Solution Process Combined with Mechanical Milling; Daeyoung Kim; Seonghyeon Yoo; Hyejin Lim; Hyoungjoo Choi; School of Advanced Materials Engineering, Kookmin University

J-45: Thermoelectric Properties of Amorphous Ti50Cu28Ni15Sn7-dispersed Bi0.4Sb1.6Te3 Nanocomposite Fabricated by Mechanical Alloying and Vacuum Hot Pressing: Pee-Yew Lee; National Taiwan Ocean University

J-46: Microstructure and Mechanical Properties of the As-cast and Extruded Al-Si-Fe-Cu-Mn Based Alloys Fabricated by Adding Grain Refiner: Hyeon-Tae Suh; Yong-Ho Kim; Hyo-Sang Yoo; Jung-Han Kim; Korea Institute of Industrial Technology

J-47: Effect of the Microstructure Characteristics of Semi-solid Slurries on the Gradient Structure of Tubes Produced by Rho-squeeze Casting High Si Al Alloys: Lu Li; Rongfeng Zhou; Jia Wang; Yehua Jiang; Rong Zhou; Kunning University of Science and Technology

J-48: Microstructure and Deformation Behaviour of Ti-Cu Alloys in the Semisolid State: Kaio Campo; Caio de Freitas; Rubens Caram; UNICAMP-University of Campinas

J-49: Modelling of Metal Drawing Process for Aluminium Alloys in Semisolid State: Himadri Chattopadhyay; Sudip Simlandi; Nikkanta Barman; Jadavpur University

J-50: New Semi-solid Forging Process for Fabrication Aluminunm Bioplate Plates in Fuel Cell: Chul Kyu Jin; Chung Gil Kang; Kyungnam University; Pusan National University

J-51: Semi-solid Forming of Cavity Filter Using in the Telecommunication Industry: Zhiyu Yang; Xiaokang Liang; Youfeng He; Hui Yao; Chunlong Zhang; Qiang Zhu; General Research Institute for Non Ferrous Metals; Shenzhen Silver Basis Diecasting Technology Co., Ltd

J-52: Investigation on Liquid Segregation during Rheo-casting Process based on Eulerian-granular Multiphase Model; Jiaoqiao Wang; Qiang Zhu; Fan Zhang; Daquan Li; Youfeng He; General Research Institute for Non-ferrous Metals

J-53: Microstructure and Mechanical Properties of TiAZ31 Multi-layered Materials Processed by Accumulative Roll Bonding; C.S. Hsu; N. Zou; Qizhen Li; Washington State University

J-54: Effect of Powder Size and Sintering Parameters on Spark Plasma Sintering Behavior of TiAl-Nb Alloys: Yan Wang; Yong Liu; Jiawen Wang; Chi Zhang; Central South University

J-55: Processing and Characterization of Gradient Micro-porous Metals through Blended Elemental Powder Metallurgy; Cindy Waters; Gerald Visbarg; NCA&T State University
J-56: Sintering and Characterization of Ge₃Sb₂Te₅ Target by Spark Plasma Sintering: Hong Min¹; Jin Kya Lee²; ¹Kongju National University

J-57: Microstructural Heterogeneity and Texture of As-received, Vacuum Arc-cast, Extruded, and Re-extruded NiTi Shape Memory Alloy: Jiao Luo¹; J. Bobanga²; John J. Lewandowski³; ¹Northwestern Polytechnical University; ²Case Western Reserve University

J-58: Microstructure Evolution and Deformation Mechanisms Responsible for Flow Softening of Ti17 Alloy during Isothermal Compression: Jiao Luo¹; Lian Li¹; M.Q. Li¹; ¹Northwestern Polytechnical University

J-59: The Influence of Deformation Twinning on Copper 220 Caused by Cryogenic Processing: Janette Fernelius¹; Eric Homer¹; Tracy Nelson¹; ¹Brigham Young University

J-60: Carbon Structure in Blast Furnace Dusts Characterized by Raman Spectroscopy and Its Links with Combustion Reactivity: Di Zhao¹; Guangwei Wang¹; Jianliang Zhang¹; Runsheng Xu¹; Haiyang Wang¹; Yang Wang¹; ¹University of Science and Technology Beijing

J-61: Comparative Study on the Microstructure Evolution of Semicoke and Lump Coal under High Temperature: Runsheng Xu¹; Jianliang Zhang¹; Wei Wang¹; Zhenglian Xue¹; Changgui Cheng¹; ¹The State Key Laboratory of Refractories and Metallurgical; ¹University of Science and Technology Beijing

J-62: Mechanical Analysis of Artificial Stone Produced with Waste from Glass Sheetings Processes in Polymeric Matrix: Lucas Martins¹; Carlos Mauricio Vieira¹; Sergio Monteiro¹; ¹UENF; ¹IME

J-63: Research on the Recycling Technology of Ladle Furnace Hot Steel Slag: Feng Wang¹; Yang Wang¹; Shufeng Yang¹; Jinghe Li¹; ¹University of Science and Technology Beijing

J-64: Research on the Separation Behavior of Zinc-bearing Dust Briquettes: Ziluo Chen¹; Jianliang Zhang¹; Zhengjian Liu¹; Xiang Yuan¹; Bin Gao¹; ¹University of Science and Technology Beijing

J-65: The Effect of Particle Size of Semi-coke on the Permeability of Stock Column: Hao Lin¹; Jianliang Zhang¹; Runsheng Xu¹; Yun Zhou¹; Tao Xu¹; Zhanguo Li¹; ¹University of Science and Technology Beijing

J-66: Effect Of SiC Nanoparticles on Microstructure and Mechanical Properties of CoCrFeMnNi HIGH Entropy Alloy with FCC Solid Solution: Lukasz Rogal¹; Damian Kalita¹; ¹Institute of Metallurgy and Materials Science


J-68: Martensitic Phase Transformation in a f.c.c./B2 FeNiMnAl Alloy: Margaret Wu¹; Ian Baker¹; Paul Munroe²; ¹Dartmouth College; ²University of New South Wales

J-69: Microstructures and High Temperature Mechanical Properties of 304 Stainless Steel Nanocomposites: Chansun Shin¹; Hyohang Cho¹; Junhyun Kwon¹; Hyung-Ha Jin¹; ¹Myongji University; ²KAERI

J-70: Additive Manufacturing by Extrusion Freeforming of Kaolinite Clay Based Ceramics: Carlos F. Revelo H.; Henry Colorado¹; ¹Universidad de Antioquia

---

**MS&T16 Poster Session — Special Topics**

**Tuesday AM**

**K-1:** Analysis of Corn and Tobacco Residue on Archaeological Objects: Wendy Lindsey¹; Nancy Odegaard¹; ¹University of Arizona

**K-2:** High Resolution Digital Elevation Modeling of Artworks by Structured Light Methods: Maria del Carmen Casas Perez¹; Lorenzo Borselli²; Bernardino Barrientos Garcia³; Darryl Butt⁴; Damiano Sarocchi²; Gamaliel Moreno Chavez²; ¹Boise State University / Universidad Autónoma de San Luis Potosí; ²Universidad Autónoma de San Luis Potosí; ³Centro de Investigaciones en Óptica; ⁴Boise State University

**K-3:** Importance of Stabilizing Agents in Conserving the Historical/Cultural Heritage in Tainan City: Kuan-Zong Fang¹; Shu-Yi Tsai¹; Chung-Ta Ni¹; ¹National Cheng Kung University

**K-4:** Initial Micro-structural Evaluation of Tamahagane Steel: Prabal Tiwari¹; Atanu Choudhary²; Srinivasa Ranganathan¹; Satyam Suwas³; ¹University of Florida; ²Indian Institute of Science

**K-5:** Peculiar Protrusions: Examining the Chemistry of Medieval Oil-on-copper Paintings Using Microscopy and Spectroscopy: Robin McCown¹; Bogdan Makar¹; Sierra Ludwig¹; Maria del Carmen Casas Perez²; Glenn Gates³; Darryl Butt⁴; ¹Boise State University; ² Universidad Autónoma de San Luis Potosí; ³Boise State University

**K-6:** State of Conservation Survey of Artworks by Image Analysis Techniques: The Case Study of the Analco Virgin (Puebla, Mexico): Maria del Carmen Casas Perez¹; Damiano Sarocchi²; Lorenzo Borselli²; Darryl P. Butt³; ¹Universidad Autónoma de San Luis Potosí; ²Universidad Autónoma de San Luis Potosí; ³Boise State University

**K-7:** Uncovering the Secrets of “32.6 the Bearded Man”: Brittany Cannon¹; Hanna Meinikheim¹; Brittany Archuleta¹; Maria del Carmen Casas²; Jennie Coon¹; Ron Garnys¹; Cassie Green¹; Benjamin Herren¹; Garnet Kwader¹; Alaggio Laurino¹; Robin McCown¹; Cameron Quade¹; John-Paul Stroud¹; Jared Talley¹; Glenn Gates¹; Janice Neri¹; Darryl Butt¹; ¹Boise State University; ²Walters Art Museum
<table>
<thead>
<tr>
<th>A</th>
<th>124</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agunsoye, J</td>
<td>124</td>
</tr>
<tr>
<td>Ahlfors, M</td>
<td>136</td>
</tr>
<tr>
<td>Ahl, S</td>
<td>117</td>
</tr>
<tr>
<td>Ahmad Mehrabi, H</td>
<td>40</td>
</tr>
<tr>
<td>Ahmad, R</td>
<td>161</td>
</tr>
<tr>
<td>Ahmad, S</td>
<td>136</td>
</tr>
<tr>
<td>Ahmad, T</td>
<td>161</td>
</tr>
<tr>
<td>Ahmed, K</td>
<td>158</td>
</tr>
<tr>
<td>Ahn, B</td>
<td>52</td>
</tr>
<tr>
<td>Ahn, C</td>
<td>65</td>
</tr>
<tr>
<td>Ahn, Y</td>
<td>117</td>
</tr>
<tr>
<td>Aiddy, D</td>
<td>110</td>
</tr>
<tr>
<td>Aigbodion, V</td>
<td>124</td>
</tr>
<tr>
<td>Ailavajhala, M</td>
<td>128</td>
</tr>
<tr>
<td>Aisman, D</td>
<td>93</td>
</tr>
<tr>
<td>Ajinola, S</td>
<td>136</td>
</tr>
<tr>
<td>Akahori, K</td>
<td>158</td>
</tr>
<tr>
<td>Akatsu, T</td>
<td>56</td>
</tr>
<tr>
<td>Akbar, S</td>
<td>55</td>
</tr>
<tr>
<td>Akimbekov, Z</td>
<td>70</td>
</tr>
<tr>
<td>Akinlabi, E</td>
<td>70</td>
</tr>
<tr>
<td>Akrobetu, R</td>
<td>74</td>
</tr>
<tr>
<td>Akyuz, B</td>
<td>144</td>
</tr>
<tr>
<td>Alabdulrahman, A</td>
<td>94</td>
</tr>
<tr>
<td>Alajo, A</td>
<td>63</td>
</tr>
<tr>
<td>Alam, A</td>
<td>42</td>
</tr>
<tr>
<td>Alam, T</td>
<td>154</td>
</tr>
<tr>
<td>Alam, U</td>
<td>40</td>
</tr>
<tr>
<td>AlAnazi, F</td>
<td>139</td>
</tr>
<tr>
<td>Alanko, G</td>
<td>132</td>
</tr>
<tr>
<td>Alat, E</td>
<td>60</td>
</tr>
<tr>
<td>Al-Azzawi, M</td>
<td>102</td>
</tr>
<tr>
<td>Aldalbahi, A</td>
<td>69</td>
</tr>
<tr>
<td>Alducin, D</td>
<td>101</td>
</tr>
<tr>
<td>Ales, T</td>
<td>38</td>
</tr>
<tr>
<td>Alexander, D</td>
<td>114</td>
</tr>
<tr>
<td>Alexandre, R</td>
<td>109</td>
</tr>
<tr>
<td>Alexandrou, A</td>
<td>115</td>
</tr>
<tr>
<td>Alexanderov, B</td>
<td>109</td>
</tr>
<tr>
<td>Algarini, M</td>
<td>44</td>
</tr>
<tr>
<td>Al-Hamidi, Y</td>
<td>96</td>
</tr>
<tr>
<td>Ali, A</td>
<td>161</td>
</tr>
<tr>
<td>Ali, H</td>
<td>69</td>
</tr>
<tr>
<td>Ali, W</td>
<td>161</td>
</tr>
<tr>
<td>Aliya, D</td>
<td>144</td>
</tr>
<tr>
<td>Al-Joubori, A</td>
<td>51</td>
</tr>
<tr>
<td>Allain, J</td>
<td>58</td>
</tr>
<tr>
<td>Allen, B</td>
<td>80</td>
</tr>
<tr>
<td>Allen, C</td>
<td>37</td>
</tr>
<tr>
<td>Allen, J</td>
<td>151</td>
</tr>
<tr>
<td>Allen, T</td>
<td>111</td>
</tr>
<tr>
<td>Allison, J</td>
<td>51</td>
</tr>
<tr>
<td>Allison, P</td>
<td>116</td>
</tr>
<tr>
<td>Allix, M</td>
<td>110</td>
</tr>
<tr>
<td>AlMangour, B</td>
<td>59</td>
</tr>
<tr>
<td>Almer, J</td>
<td>149</td>
</tr>
<tr>
<td>Aloufi, Lemos, I</td>
<td>132</td>
</tr>
<tr>
<td>Alshehhi, M</td>
<td>93</td>
</tr>
<tr>
<td>Althowibi, F</td>
<td>157</td>
</tr>
<tr>
<td>Alvarez, N</td>
<td>35</td>
</tr>
<tr>
<td>Aizeghaibi, O</td>
<td>142</td>
</tr>
<tr>
<td>Amador, U</td>
<td>163</td>
</tr>
<tr>
<td>Ama, M</td>
<td>124</td>
</tr>
<tr>
<td>Aman, Y</td>
<td>88</td>
</tr>
<tr>
<td>Amaya, H</td>
<td>64</td>
</tr>
<tr>
<td>Amexaza, K</td>
<td>108</td>
</tr>
<tr>
<td>Amoroso, J</td>
<td>110</td>
</tr>
<tr>
<td>Amr, S</td>
<td>159</td>
</tr>
<tr>
<td>Amroussia, A</td>
<td>158</td>
</tr>
<tr>
<td>Anber, E</td>
<td>100</td>
</tr>
<tr>
<td>Andani, M</td>
<td>38</td>
</tr>
<tr>
<td>Andergouli, O</td>
<td>87</td>
</tr>
<tr>
<td>Anderson, A</td>
<td>133</td>
</tr>
<tr>
<td>Anderson, B</td>
<td>149</td>
</tr>
<tr>
<td>Anderson, I</td>
<td>129</td>
</tr>
<tr>
<td>Anderson, K</td>
<td>101</td>
</tr>
<tr>
<td>Anderson, M</td>
<td>47</td>
</tr>
<tr>
<td>Anderson, P</td>
<td>154</td>
</tr>
<tr>
<td>Andzelm, J</td>
<td>88</td>
</tr>
<tr>
<td>Ang, C</td>
<td>148</td>
</tr>
<tr>
<td>Angell, C</td>
<td>65</td>
</tr>
<tr>
<td>Aning, A</td>
<td>163</td>
</tr>
<tr>
<td>Anisimov, A</td>
<td>137</td>
</tr>
<tr>
<td>An, J</td>
<td>62</td>
</tr>
<tr>
<td>Anjem, S</td>
<td>40</td>
</tr>
<tr>
<td>Antalek, J</td>
<td>134</td>
</tr>
<tr>
<td>Antono, E</td>
<td>48</td>
</tr>
<tr>
<td>Aouadi, S</td>
<td>75</td>
</tr>
<tr>
<td>Applett, A</td>
<td>139</td>
</tr>
<tr>
<td>Apelian, D</td>
<td>162</td>
</tr>
<tr>
<td>Aphale, A</td>
<td>156</td>
</tr>
<tr>
<td>Ar, S</td>
<td>162</td>
</tr>
<tr>
<td>Araiza, R</td>
<td>99</td>
</tr>
<tr>
<td>Arakawa, K</td>
<td>148</td>
</tr>
<tr>
<td>Araki, M</td>
<td>121</td>
</tr>
<tr>
<td>Aranda, M</td>
<td>138</td>
</tr>
<tr>
<td>Arangi, S</td>
<td>159</td>
</tr>
<tr>
<td>Arango, S</td>
<td>42</td>
</tr>
</tbody>
</table>
Beaudoin, A..................................146
Beaux II, M.................................110
Beaux, M....................................110
Beavers, J..................................64
Bechetti, D..................................66
Bechgaard, T..............................146
Bechmann, F..............................121
Becker, K..................................108
Becker, M.................................108
Beckman, S...............................101, 127, 162
Beck, P.....................................82
Beckwith, S...............................130, 160
Becquart, C..............................130, 160
Bednarkiewicz, A.......................112
Bednorz, J.................................53
Bedolla-Becerril, E.................124
Beese, A.................................37, 59, 60
Beggs, A..................................162
Beharic, A.................................141
Behera, A..................................39
Bei, H......................................110
Beland, L.................................110
Bellaiche, L..............................112
Bell, F.....................................61
Bellhouse, E.............................41
Bell, J.....................................53
Bellon, P.................................110
Bellucci, D...............................90
Belokon, K...............................116, 131
Belokon, Y...............................116, 131
Belova, I.................................113, 135
Belsito-Cote, D.........................70
Belzacz, L.................................96
Benac, D..................................43
Benar, A..................................86
Benati, D..................................74
Benavides, A.........................119, 131
Benayás, A............................89, 90, 112, 134, 151
Benedict, M..............................36, 121
Benes, O.................................148
Benhaddad, S............................138
Bennett, B.................................110
Bentria, E.................................130, 160
Benzeraga, A.........................43, 64
Berezin, M............................89, 151
Bergemann, N.........................89
Berkowitz, A............................60
Bera, L..................................44, 144
Berlanga, A.............................142
Bernardo, E.............................90, 129
Bernard, S..............................107
Bernhardt, D............................73
Bernhardt, M...........................121
Bernstein, N............................142
Berrio, A.................................42
Berry, D..................................163
Berry, J..................................108
Bertrand, P............................121
Bessmann, T..............................48
Bessire, B...............................156
Betal, S...............................81, 157
Bethancourt, R.........................53, 72
Bettinelli, M............................89
Betzer, S.................................66
Beuerlein, M............................156
Beuth, J...............................37, 59, 97, 141
Beyelelein, I.............................65
Beylerlein, I..............................45, 65, 99, 129, 146
Bhaduri, S...............................113, 152
Bhakiri, V...............................107
Bhalla, A.............................40, 61, 80, 81, 100, 112, 157
Bhargava, P.............................155
Bhassvyasantha, S.......................83
Bhattacharjee, T.........................92
Bhatt, R.................................161
Bhavasar, R..............................142
Bhawar, V................................
Bichler, L.................................84, 88, 116
Bieler, T............................43, 64, 105, 146, 149, 158, 159
Biermann, H.............................38
Biesboer, S..............................107
Bihuniak, P.............................145
Bijalwan, P..............................120
Bilheux, H..............................103
Billah, M.................................103
Bimber, B...............................138
Binder, S...............................144
Biner, S.................................131
Birbilis, N...............................52
Birnie, D.................................55
Birol, B.................................63, 95
Birringer, R.............................64
Birt, A..................................124
Bischel, M............................76, 94, 118, 138
Bishnoi, S...............................134
Bishop, C.................................146
Bishop, J...............................59, 133
Bishop, S.................................46
Biswa, S.................................75
Bizarri, G..............................125
Bladh, M...............................137
Bladwin, K.............................50, 70, 76, 131, 163
Blair, R...............................50, 70, 76, 131, 163
Blair, V...............................42, 73, 91, 92, 137
Blanco, E...............................95
Blázquez, J.............................111, 159
Blecher, J............................... 98, 141
Blendell, J............................45, 66, 85, 107, 130, 147
Bloebaum, R.............................90
Bloom, R.................................86
Bobanga, J..............................164
Bobbio, L............................... 59, 133
Bobbitt, J...............................37, 97
Boccaccini, A.........................36, 56, 90, 91, 113
Bocher, F............................... 50, 69, 88
Bockowski, M...........................83, 146
Bock, R.................................56, 134
Boeckmans, B...........................37
Boehlert, C..............................77, 146, 149, 158
Boer, J.................................108
Boesl, B.................................63, 75, 76, 82, 96, 119
Boettcher, M...........................61
Boffelli, M...............................56
Bogala, M...............................163
Bogan, J................................. 39, 146
Boger, R.................................129
Bohlen, J................................. 67, 146
Böhm, W................................. 54, 146
Boileau, J............................... 77, 146
Bojar, Z.................................120
Bokhonov, B............................137
Bokkes, T...............................121
Boldyrev, A..............................101
Boldyrev, V............................. 70, 146
Bolfarini, C.............................142
Bolon, A................................. 95, 146
Bolouri, A..............................137
Bomarito, G............................ 84, 146
Bommier, C............................. 127, 146
Bonacci, T...............................100, 155
Bong, H................................. 65, 129
Bonini, J............................... 141, 146
Bonner, M..............................60, 99
Book, T.................................105
Boomyongmaneerat, Y...........62, 146
Borchers, C...........................93, 163
Bordia, R..............................107, 129
Borges, P............................... 63, 146
Borgonia, J.........................59, 95, 155
Borik, M...............................155
<table>
<thead>
<tr>
<th>Author</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borkar, S.</td>
<td>52, 58, 154</td>
</tr>
<tr>
<td>Borkar, T.</td>
<td>52, 58, 154</td>
</tr>
<tr>
<td>Borowiak, P.</td>
<td>84</td>
</tr>
<tr>
<td>Borselli, L.</td>
<td>164</td>
</tr>
<tr>
<td>Bo, S.</td>
<td>59</td>
</tr>
<tr>
<td>Bosbach, D.</td>
<td>132</td>
</tr>
<tr>
<td>Boschetto, F.</td>
<td>56</td>
</tr>
<tr>
<td>Bose, I.</td>
<td>157</td>
</tr>
<tr>
<td>Bose, S.</td>
<td>56, 75, 93, 155</td>
</tr>
<tr>
<td>Botta, W.</td>
<td>142</td>
</tr>
<tr>
<td>Bouet, N.</td>
<td>117</td>
</tr>
<tr>
<td>Bouhali, O.</td>
<td>130, 160</td>
</tr>
<tr>
<td>Boulware, P.</td>
<td>106</td>
</tr>
<tr>
<td>Bourell, D.</td>
<td>154</td>
</tr>
<tr>
<td>Bourke, M.</td>
<td>94</td>
</tr>
<tr>
<td>Bourret, E.</td>
<td>125</td>
</tr>
<tr>
<td>Bowen, M.</td>
<td>66</td>
</tr>
<tr>
<td>Bower, A.</td>
<td>106</td>
</tr>
<tr>
<td>Bowman, S.</td>
<td>42</td>
</tr>
<tr>
<td>Boyce, B.</td>
<td>59, 130</td>
</tr>
<tr>
<td>Boyd, D.</td>
<td>42</td>
</tr>
<tr>
<td>Boyer, R.</td>
<td>37, 59, 79, 97, 98, 120, 121, 140, 141</td>
</tr>
<tr>
<td>Bozzolo, N.</td>
<td>107</td>
</tr>
<tr>
<td>Brabazon, D.</td>
<td>103</td>
</tr>
<tr>
<td>Bradford, R.</td>
<td>96</td>
</tr>
<tr>
<td>Braginsky, M.</td>
<td>57</td>
</tr>
<tr>
<td>Branagan, D.</td>
<td>39, 61, 80, 98, 121</td>
</tr>
<tr>
<td>Brand, K.</td>
<td>114, 136, 153</td>
</tr>
<tr>
<td>Brand, M.</td>
<td>80</td>
</tr>
<tr>
<td>Brandt, M.</td>
<td>140</td>
</tr>
<tr>
<td>Brankovic, G.</td>
<td>95</td>
</tr>
<tr>
<td>Brankovic, Z.</td>
<td>95</td>
</tr>
<tr>
<td>Branson, D.</td>
<td>55</td>
</tr>
<tr>
<td>Bratland, P.</td>
<td>122, 142</td>
</tr>
<tr>
<td>Braulio-Sánchez, M.</td>
<td>124</td>
</tr>
<tr>
<td>Brechtl, J.</td>
<td>94, 154</td>
</tr>
<tr>
<td>Bredikhin, S.</td>
<td>155</td>
</tr>
<tr>
<td>Brennan, P.</td>
<td>106</td>
</tr>
<tr>
<td>Brennan, R.</td>
<td>92, 137</td>
</tr>
<tr>
<td>Brennecka, G.</td>
<td>40, 156</td>
</tr>
<tr>
<td>Brenne, F.</td>
<td>38, 141</td>
</tr>
<tr>
<td>Brent, S.</td>
<td>79</td>
</tr>
<tr>
<td>Brese, R.</td>
<td>47, 48</td>
</tr>
<tr>
<td>Brester, A.</td>
<td>137</td>
</tr>
<tr>
<td>Brezovec, P.</td>
<td>127</td>
</tr>
<tr>
<td>Briancin, J.</td>
<td>51</td>
</tr>
<tr>
<td>Bricker, S.</td>
<td>57</td>
</tr>
<tr>
<td>Bridges, D.</td>
<td>147</td>
</tr>
<tr>
<td>Brinkman, K.</td>
<td>68</td>
</tr>
<tr>
<td>Brites, C.</td>
<td>151</td>
</tr>
<tr>
<td>Brittan, A.</td>
<td>47</td>
</tr>
<tr>
<td>Brochu, M.</td>
<td>46, 59, 66, 86, 96, 109, 130, 147</td>
</tr>
<tr>
<td>Brockmeyer, J.</td>
<td>125</td>
</tr>
<tr>
<td>Brodin, H.</td>
<td>97, 141</td>
</tr>
<tr>
<td>Brodnik, N.</td>
<td>36</td>
</tr>
<tr>
<td>Brodusch, N.</td>
<td>59</td>
</tr>
<tr>
<td>Brody, H.</td>
<td>52</td>
</tr>
<tr>
<td>Broich, U.</td>
<td>99, 114</td>
</tr>
<tr>
<td>Brookman, J.</td>
<td>149</td>
</tr>
<tr>
<td>Brown, E.</td>
<td>44, 64, 144</td>
</tr>
<tr>
<td>Brown, J.</td>
<td>95, 133</td>
</tr>
<tr>
<td>Brown, L.</td>
<td>53, 144, 147</td>
</tr>
<tr>
<td>Brown, N.</td>
<td>159</td>
</tr>
<tr>
<td>Brown, S.</td>
<td>96, 131</td>
</tr>
<tr>
<td>Brown, T.</td>
<td>65</td>
</tr>
<tr>
<td>Bow, R.</td>
<td>145</td>
</tr>
<tr>
<td>Bruckman, L.</td>
<td>121</td>
</tr>
<tr>
<td>Bruna, R.</td>
<td>99</td>
</tr>
<tr>
<td>Brushett, F.</td>
<td>131</td>
</tr>
<tr>
<td>Bryan, C.</td>
<td>49, 68, 87, 110, 131, 149</td>
</tr>
<tr>
<td>Brydson, R.</td>
<td>142</td>
</tr>
<tr>
<td>Bryson, K.</td>
<td>76</td>
</tr>
<tr>
<td>Buchenauer, D.</td>
<td>115</td>
</tr>
<tr>
<td>Buchheit, T.</td>
<td>49, 143, 145</td>
</tr>
<tr>
<td>Bucholz, D.</td>
<td>80</td>
</tr>
<tr>
<td>Budinski, M.</td>
<td>64, 104</td>
</tr>
<tr>
<td>Bujñáková, Z.</td>
<td>51</td>
</tr>
<tr>
<td>Bulakh, O.</td>
<td>38</td>
</tr>
<tr>
<td>Bulatov, V.</td>
<td>45</td>
</tr>
<tr>
<td>Bulgak, V.</td>
<td>150</td>
</tr>
<tr>
<td>Buntain, R.</td>
<td>109</td>
</tr>
<tr>
<td>Burtal, J.</td>
<td>155</td>
</tr>
<tr>
<td>Bureau, B.</td>
<td>105</td>
</tr>
<tr>
<td>Bureau, D.</td>
<td>62</td>
</tr>
<tr>
<td>Burgess, D.</td>
<td>130</td>
</tr>
<tr>
<td>Burgoyne, C.</td>
<td>43</td>
</tr>
<tr>
<td>Burleigh, T.</td>
<td>80</td>
</tr>
<tr>
<td>Burns, J.</td>
<td>87, 123</td>
</tr>
<tr>
<td>Burns, M.</td>
<td>64</td>
</tr>
<tr>
<td>Burrows, B.</td>
<td>50</td>
</tr>
<tr>
<td>Busby, J.</td>
<td>158</td>
</tr>
<tr>
<td>Bush, M.</td>
<td>44</td>
</tr>
<tr>
<td>Busse, L.</td>
<td>42</td>
</tr>
<tr>
<td>Busse, M.</td>
<td>36, 79</td>
</tr>
<tr>
<td>Bustillos, J.</td>
<td>96</td>
</tr>
<tr>
<td>Butler, B.</td>
<td>55, 75, 93, 115, 137, 153</td>
</tr>
<tr>
<td>Butt, D.</td>
<td>48, 81, 87, 100, 118, 123, 129, 132, 149, 158, 164</td>
</tr>
<tr>
<td>Bux, S.</td>
<td>163</td>
</tr>
<tr>
<td>Byeon, J.</td>
<td>161</td>
</tr>
<tr>
<td>Byun, J.</td>
<td>161</td>
</tr>
<tr>
<td>Byun, T.</td>
<td>87</td>
</tr>
</tbody>
</table>

C

<table>
<thead>
<tr>
<th>Author</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabrera, D.</td>
<td>151</td>
</tr>
<tr>
<td>Cadorniga Zueco, I.</td>
<td>115</td>
</tr>
<tr>
<td>Cady, C.</td>
<td>37, 50</td>
</tr>
<tr>
<td>Cagnetta, G.</td>
<td>163</td>
</tr>
<tr>
<td>Cai, L.</td>
<td>153</td>
</tr>
<tr>
<td>Caillat, T.</td>
<td>163</td>
</tr>
<tr>
<td>Cai, X.</td>
<td>104, 128</td>
</tr>
<tr>
<td>Cai, Z.</td>
<td>62</td>
</tr>
<tr>
<td>Calderon Ramos, I.</td>
<td>133</td>
</tr>
<tr>
<td>Calfa, B.</td>
<td>48</td>
</tr>
<tr>
<td>Cali, E.</td>
<td>68</td>
</tr>
<tr>
<td>Callahan, J.</td>
<td>43, 64</td>
</tr>
<tr>
<td>Callahan, M.</td>
<td>39</td>
</tr>
<tr>
<td>Camargo, P.</td>
<td>80, 156</td>
</tr>
<tr>
<td>Campbell, C.</td>
<td>38, 72, 91, 135, 152</td>
</tr>
<tr>
<td>Campbell, G.</td>
<td>123</td>
</tr>
<tr>
<td>Campo, K.</td>
<td>155, 163</td>
</tr>
<tr>
<td>Canadinc, D.</td>
<td>93</td>
</tr>
<tr>
<td>Cannillo, V.</td>
<td>90</td>
</tr>
<tr>
<td>Cannon, A.</td>
<td>84</td>
</tr>
<tr>
<td>Cannon, B.</td>
<td>164</td>
</tr>
<tr>
<td>Cannon, C.</td>
<td>139</td>
</tr>
<tr>
<td>Cante, K.</td>
<td>107</td>
</tr>
<tr>
<td>Cao, F.</td>
<td>153</td>
</tr>
<tr>
<td>Cao, G.</td>
<td>35, 82</td>
</tr>
<tr>
<td>Cao, P.</td>
<td>93</td>
</tr>
<tr>
<td>Cao, W.</td>
<td>72</td>
</tr>
<tr>
<td>Cao, X.</td>
<td>46, 66, 86, 109, 130, 147</td>
</tr>
<tr>
<td>Cao, Y.</td>
<td>122</td>
</tr>
<tr>
<td>Cappia, F.</td>
<td>148</td>
</tr>
<tr>
<td>Caputo, M.</td>
<td>60</td>
</tr>
<tr>
<td>Caram, R.</td>
<td>52, 155, 163</td>
</tr>
<tr>
<td>Carden, B.</td>
<td>127</td>
</tr>
<tr>
<td>Carden, W.</td>
<td>43, 83, 127</td>
</tr>
<tr>
<td>Caris, J.</td>
<td>60, 61</td>
</tr>
<tr>
<td>Carl, M.</td>
<td>101</td>
</tr>
<tr>
<td>Carlos, L.</td>
<td>89, 112, 134, 151</td>
</tr>
<tr>
<td>Carluzzi, A.</td>
<td>76</td>
</tr>
<tr>
<td>Carlson, N.</td>
<td>98, 133</td>
</tr>
<tr>
<td>Carney, C.</td>
<td>47, 67</td>
</tr>
<tr>
<td>Carpenter, J.</td>
<td>37, 80, 98, 120, 146</td>
</tr>
<tr>
<td>Carrasco, E.</td>
<td>134</td>
</tr>
<tr>
<td>Carriere, P.</td>
<td>114</td>
</tr>
<tr>
<td>Carroll, J.</td>
<td>59, 140</td>
</tr>
<tr>
<td>Name</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------</td>
<td>------</td>
</tr>
<tr>
<td>Christensen, R</td>
<td>83</td>
</tr>
<tr>
<td>Christ, J</td>
<td>98</td>
</tr>
<tr>
<td>Christodoulou, J</td>
<td>58, 77</td>
</tr>
<tr>
<td>Christodoulou, L</td>
<td>36</td>
</tr>
<tr>
<td>Christodoulou, P</td>
<td>154</td>
</tr>
<tr>
<td>Christofidou, K</td>
<td>161</td>
</tr>
<tr>
<td>Christopoulos, S</td>
<td>110</td>
</tr>
<tr>
<td>Chronos, A</td>
<td>110</td>
</tr>
<tr>
<td>Chueh, W</td>
<td>46</td>
</tr>
<tr>
<td>Chung, S</td>
<td>148</td>
</tr>
<tr>
<td>Chung, W</td>
<td>155</td>
</tr>
<tr>
<td>Chung, Y</td>
<td>94</td>
</tr>
<tr>
<td>Church, B</td>
<td>43, 106</td>
</tr>
<tr>
<td>Chu, S</td>
<td>149</td>
</tr>
<tr>
<td>Chu, Y</td>
<td>117</td>
</tr>
<tr>
<td>Chyrkin, A</td>
<td>106</td>
</tr>
<tr>
<td>Cichos, J</td>
<td>89</td>
</tr>
<tr>
<td>CIFuentes, S</td>
<td>162</td>
</tr>
<tr>
<td>cigar, C</td>
<td>98</td>
</tr>
<tr>
<td>Cinar, S</td>
<td>103</td>
</tr>
<tr>
<td>Cinibulk, M</td>
<td>41, 125</td>
</tr>
<tr>
<td>Cios, G</td>
<td>160</td>
</tr>
<tr>
<td>Cisneros, E</td>
<td>42</td>
</tr>
<tr>
<td>Ciston, J</td>
<td>100</td>
</tr>
<tr>
<td>Cladek, B</td>
<td>158</td>
</tr>
<tr>
<td>Clark, B</td>
<td>68, 87, 116</td>
</tr>
<tr>
<td>CLARK, B</td>
<td>130</td>
</tr>
<tr>
<td>Clarke, A</td>
<td>78, 133</td>
</tr>
<tr>
<td>Clarke, K</td>
<td>39, 44, 61, 80, 98, 114, 121, 158</td>
</tr>
<tr>
<td>Clarke, R</td>
<td>106</td>
</tr>
<tr>
<td>Clark, R</td>
<td>155</td>
</tr>
<tr>
<td>Clark, T</td>
<td>57, 153</td>
</tr>
<tr>
<td>Claves, S</td>
<td>74</td>
</tr>
<tr>
<td>Clawson, G</td>
<td>134</td>
</tr>
<tr>
<td>Claypool, J</td>
<td>40</td>
</tr>
<tr>
<td>Clayton, K</td>
<td>131</td>
</tr>
<tr>
<td>Clemente, M</td>
<td>141</td>
</tr>
<tr>
<td>Clem, P</td>
<td>53</td>
</tr>
<tr>
<td>Clough, E</td>
<td>140</td>
</tr>
<tr>
<td>Cluff, S</td>
<td>160</td>
</tr>
<tr>
<td>Coates, G</td>
<td>50, 69, 88</td>
</tr>
<tr>
<td>Cobb, J</td>
<td>46</td>
</tr>
<tr>
<td>Cochrane, R</td>
<td>88</td>
</tr>
<tr>
<td>Cockayne, E</td>
<td>86</td>
</tr>
<tr>
<td>Cockett, C</td>
<td>59</td>
</tr>
<tr>
<td>Coddet, C</td>
<td>59</td>
</tr>
<tr>
<td>Coddet, P</td>
<td>59</td>
</tr>
<tr>
<td>Coguill, R</td>
<td>37</td>
</tr>
<tr>
<td>Cohen, J</td>
<td>161</td>
</tr>
<tr>
<td>Cohen, P</td>
<td>76</td>
</tr>
<tr>
<td>Colella, A</td>
<td>140</td>
</tr>
<tr>
<td>Cole, M</td>
<td>157</td>
</tr>
<tr>
<td>Coleman, S</td>
<td>45, 66, 99, 125</td>
</tr>
<tr>
<td>Colle, J</td>
<td>148</td>
</tr>
<tr>
<td>Collins, P</td>
<td>38, 151</td>
</tr>
<tr>
<td>Colombo, P</td>
<td>107, 129</td>
</tr>
<tr>
<td>Colon-Mercado, H</td>
<td>87</td>
</tr>
<tr>
<td>Colorado, H</td>
<td>42, 63, 81, 100, 123, 162, 164</td>
</tr>
<tr>
<td>Colorado Lopera, H</td>
<td>158</td>
</tr>
<tr>
<td>Commander, J</td>
<td>81</td>
</tr>
<tr>
<td>Compton, C</td>
<td>56</td>
</tr>
<tr>
<td>Comstock, R</td>
<td>60</td>
</tr>
<tr>
<td>Conde, A</td>
<td>111, 159</td>
</tr>
<tr>
<td>Conde, C</td>
<td>159</td>
</tr>
<tr>
<td>Cong, H</td>
<td>38, 80</td>
</tr>
<tr>
<td>Constant, K</td>
<td>43</td>
</tr>
<tr>
<td>Contieri, R</td>
<td>154, 155</td>
</tr>
<tr>
<td>Cook, G</td>
<td>81</td>
</tr>
<tr>
<td>Cook, P</td>
<td>117</td>
</tr>
<tr>
<td>Cook, R</td>
<td>57</td>
</tr>
<tr>
<td>Coon, J</td>
<td>164</td>
</tr>
<tr>
<td>Copperstthaite, D</td>
<td>49</td>
</tr>
<tr>
<td>Corbin, D</td>
<td>60</td>
</tr>
<tr>
<td>Corredo, Z</td>
<td>141</td>
</tr>
<tr>
<td>Cordier, R</td>
<td>133</td>
</tr>
<tr>
<td>Cordill, M</td>
<td>159</td>
</tr>
<tr>
<td>Cordova, S</td>
<td>132</td>
</tr>
<tr>
<td>Corons, R</td>
<td>81</td>
</tr>
<tr>
<td>Corral, E</td>
<td>75</td>
</tr>
<tr>
<td>Corea Hernandez, A</td>
<td>86</td>
</tr>
<tr>
<td>Cortes-Cervantes, I</td>
<td>148</td>
</tr>
<tr>
<td>Costa e Silva, A</td>
<td>88</td>
</tr>
<tr>
<td>Costa e Silva, A</td>
<td>91</td>
</tr>
<tr>
<td>Cote, D</td>
<td>50, 155, 162</td>
</tr>
<tr>
<td>Cote, P</td>
<td>137</td>
</tr>
<tr>
<td>Cote, P</td>
<td>137</td>
</tr>
<tr>
<td>Coticia, L</td>
<td>81, 100, 157</td>
</tr>
<tr>
<td>Coticia, L</td>
<td>155</td>
</tr>
<tr>
<td>Coughlin, D</td>
<td>114</td>
</tr>
<tr>
<td>Courage, F</td>
<td>88</td>
</tr>
<tr>
<td>Cox, B</td>
<td>41</td>
</tr>
<tr>
<td>Cox, C</td>
<td>159</td>
</tr>
<tr>
<td>Cox, S</td>
<td>52</td>
</tr>
<tr>
<td>Cozzi, A</td>
<td>68, 131</td>
</tr>
<tr>
<td>Craig, J</td>
<td>98</td>
</tr>
<tr>
<td>Cramer, J</td>
<td>65</td>
</tr>
<tr>
<td>Crane, C</td>
<td>50</td>
</tr>
<tr>
<td>Crenshaw, T</td>
<td>59</td>
</tr>
<tr>
<td>Cresko, J</td>
<td>36</td>
</tr>
<tr>
<td>Cress, A</td>
<td>136</td>
</tr>
<tr>
<td>Crimp, M</td>
<td>105, 146, 149</td>
</tr>
<tr>
<td>Critchfield, T</td>
<td>85</td>
</tr>
<tr>
<td>Crooks, R</td>
<td>84</td>
</tr>
<tr>
<td>Croquesel, J</td>
<td>73</td>
</tr>
<tr>
<td>Cross, K</td>
<td>40</td>
</tr>
<tr>
<td>Crossley, R</td>
<td>55</td>
</tr>
<tr>
<td>Croteau, J</td>
<td>158</td>
</tr>
<tr>
<td>Crown, F</td>
<td>157</td>
</tr>
<tr>
<td>Cruse, T</td>
<td>87</td>
</tr>
<tr>
<td>Crynock, S</td>
<td>133</td>
</tr>
<tr>
<td>Csontos, A</td>
<td>48, 68, 87, 110, 131, 148</td>
</tr>
<tr>
<td>Cui, B</td>
<td>69, 112, 129, 146</td>
</tr>
<tr>
<td>Cui, F</td>
<td>85, 125</td>
</tr>
<tr>
<td>Cui, X</td>
<td>53</td>
</tr>
<tr>
<td>Cui, Y</td>
<td>92</td>
</tr>
<tr>
<td>Culp, J</td>
<td>86, 109</td>
</tr>
<tr>
<td>Cunningham, N</td>
<td>48</td>
</tr>
<tr>
<td>Cunningham, R</td>
<td>59, 141</td>
</tr>
<tr>
<td>Cupid, D</td>
<td>103</td>
</tr>
<tr>
<td>Curiotto, S</td>
<td>147</td>
</tr>
<tr>
<td>Curtis, B</td>
<td>83</td>
</tr>
<tr>
<td>Cushman, C</td>
<td>132, 159</td>
</tr>
<tr>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Dabah, E</td>
<td>58</td>
</tr>
<tr>
<td>Dacek, S</td>
<td>48</td>
</tr>
<tr>
<td>Daehn, G</td>
<td>116</td>
</tr>
<tr>
<td>Dahle, A</td>
<td>74</td>
</tr>
<tr>
<td>Dahmen, K</td>
<td>94, 117, 138, 154</td>
</tr>
<tr>
<td>Dahms, S</td>
<td>99</td>
</tr>
<tr>
<td>Dahotre, N</td>
<td>120</td>
</tr>
<tr>
<td>Dai, C</td>
<td>131</td>
</tr>
<tr>
<td>Dai, H</td>
<td>134</td>
</tr>
<tr>
<td>Dai, P</td>
<td>57</td>
</tr>
<tr>
<td>Dai, T</td>
<td>63</td>
</tr>
<tr>
<td>Dai, X</td>
<td>103</td>
</tr>
<tr>
<td>Dajani, I</td>
<td>102</td>
</tr>
<tr>
<td>Dalley, A</td>
<td>104</td>
</tr>
<tr>
<td>Dalwatkar, R</td>
<td>99</td>
</tr>
<tr>
<td>Daly, S</td>
<td>84</td>
</tr>
<tr>
<td>Dam-Johansen, K</td>
<td>111</td>
</tr>
<tr>
<td>Dano, A</td>
<td>111</td>
</tr>
<tr>
<td>Damoulakis, J</td>
<td>117</td>
</tr>
<tr>
<td>Damschoeder, C</td>
<td>122</td>
</tr>
<tr>
<td>Dandeneau, C</td>
<td>68</td>
</tr>
<tr>
<td>Daneu, N</td>
<td>51</td>
</tr>
<tr>
<td>d'Angelo, J</td>
<td>48</td>
</tr>
<tr>
<td>Daniels, J</td>
<td>100</td>
</tr>
<tr>
<td>Daquan, L</td>
<td>114</td>
</tr>
</tbody>
</table>
Darbal, A .................................. 99, 123
Darling, K ................................. 66, 94
Dar, R ...................................... 85
Darsell, J .................................. 162
Darvish, S ................................. 135, 143
Dasargyro, G .............................. 140
da Silva, W ................................ 90
Das, J ....................................... 129
Dasmahapatra, A ......................... 102
Das Mahapatra, S ......................... 83
Das, S ....................................... 52, 79, 152
Dastidar, I .................................. 149
date, P ...................................... 73
Date, P ..................................... 61
Davey, T .................................... 48, 152
Davies, C ................................... 67
Davies, G ................................... 157
Davis, K .................................... 69, 79
Dawari, A ................................... 70, 77
Daw, J ....................................... 68
Dawson, K .................................. 140
Daymond, M ................................. 131
De, A ........................................ 98
de Abreu, H ................................. 145
Deane, J .................................... 114
de Araújo, I .................................. 117
DeArmond, D ............................... 35
debray, k .................................... 115
de Camargo, P .............................. 81
Deceuster, A ................................ 56
Decker, R ................................... 54
Deckman, I .................................. 157, 158
De cooman, B ................................ 41
De Cooman, B ............................... 39, 41, 61
DeCoost, B .................................. 141
DeCoster, M ................................ 83
Decterov, S ................................ 91
Deen, K .................................... 71, 93, 152
Deepankar, P ................................ 79
de Freitas, C ................................ 163
Degnah, A .................................. 106, 142
Degner, J ................................... 54
de Goes, W .................................. 70
De Graef, M ................................ 100
Dehghan Banadaki, A ................. 46, 159
Dehm, G .................................... 107
Dehoff, R .................................... 79, 97, 98, 121, 141
Deibler, L ................................... 59, 66, 140
De Keukeleere, K ......................... 119
de la Cueva, L ............................... 151
de la Garza Garza, M ..................... 41
De Ganay, F ................................ 48
Delanois, F .................................. 104, 116, 128
del Carmen Casas, M ................. 164
Deledda, S .................................. 89
Delgado, A .................................. 132
Del Gado, E .................................. 102, 143
Delhaise, A .................................. 103
de Ligny, D .................................. 145
Delogu, F .................................... 150
de los Santos Guerra, J ............... 40, 81, 157
Del Papa, S .................................. 56
Delplanque, J ............................... 37, 133
del Rosal, B ................................. 90, 134
De Luca, A .................................. 77
DeMange, J .................................. 56, 76
Demchenko, N ............................. 159
Demirci, U .................................. 107
Demirkesen, E ............................. 153
De Moor, E .................................. 61
Demott, R ................................... 99
Deng, D ..................................... 141
Deng, G ..................................... 73, 92
Deng, J ..................................... 117
Deng, L ..................................... 105
Dennenwaldt, T ............................ 85
Dennies, D .................................. 43
DenOUDen, T ............................... 47
de Oliveira, A ............................... 80
De Oliveira, A .............................. 81
Depinyo, S .................................. 149
De Roo, J .................................... 119
Descamps, M ............................... 70
Deshkar, A .................................. 145
Deshpande, A ............................... 43, 79
Deshpande, V ................................ 78
Desmasoan, O ............................... 114
de Sousa Oliveira, L ..................... 48
Desrayaud, C ............................... 121
Detlefs, C .................................... 117
Detsch, R ................................. 90, 113
Deuering, S .................................. 155
Devananthan, R ......................... 48, 102, 149
Devaraj, A .................................. 135
Deveraj, A .................................. 162
DeVries, M .................................. 75
Dey, P ....................................... 92
Dey, S ....................................... 117
Dharmaprakash, M ..................... 119
Diallo, B ................................. 110
Diallo, M .................................... 107
Diao, H ..................................... 94, 100, 154
Dias, G ..................................... 81, 100, 157
Diaz, A ....................................... 79
Diaz-Guillén, J ......................... 111, 163
Diaz, R ....................................... 95
Dickens, P .................................. 121
Dierolf, V .................................. 145
Dieste, O .................................... 148
Digavali, R ................................. 47, 99
Dilip, J ....................................... 59
Dilip Jangam, S ......................... 97
Dillon, R .................................... 59, 95
Dingreville, R ............................. 149
Ding, X ..................................... 133
Ding, Z ..................................... 144
Dinwiddie, R ............................... 98, 141
Dippenaar, R ............................... 44
Dippo, O .................................... 59
Di Prima, M ................................. 58
Disenhof, C ................................ 67
Dive, A ..................................... 127
Divinsky, S ................................. 113, 135
Dixon, P .................................... 79
Doak, J ....................................... 57
Dobnikar, J ................................. 143
Dogan, O ..................................... 47, 50, 67
Dogan, Ō .................................... 47, 67
Doi, R ....................................... 148
Do, J ......................................... 57
Doja, S ....................................... 88, 116
Dolgos, M ................................. 127
Dolic, S ..................................... 89
D’Oliveira, A ............................... 38, 96
Doll, G ....................................... 38, 70, 80
Donegan, S ................................. 121
Dong, C ..................................... 158
Dong, H ..................................... 62, 115
Dongol, R ................................. 128
Dong, q ..................................... 161
Dong, Q .................................... 159
Dong, S ..................................... 157
Dommaz, A ................................. 155
Dorfman, M ............................... 116, 138, 154
Dorin, T .................................... 145
Dornheim, M ............................. 89
Dorri Moghadam, A ........................ 70
Dorris, S .................................... 71
dos Santos, I ............................... 155
Goldston, J. .......................... 89
Goller, G. .......................... 75
Göller, G. .......................... 117
Golub, M. .......................... 153
Golumbískie, W .......................... 36, 58, 97, 149
Gomberg, J .......................... 48
Gomez, H .......................... 162
Gomez, M .......................... 162
Gong, C .......................... 69
Gong, D .......................... 64
Gong, H .......................... 59
Gong, J .......................... 101
Gong, X .......................... 49
Gontcharov, A. .......................... 86
Gönnüllü, Y .......................... 65
Gonzales, M .......................... 95
Gonzalez, L .......................... 162
González-Panzo, I .......................... 111
Gonzalez, R .......................... 80
Gonzalez Szwacki, N .......................... 101
Goodwin, D .......................... 43
Goodwin, F .......................... 41
Gopalan, S .......................... 135
Gorelik, M .......................... 58
Gorin, B .......................... 161
Görke, O .......................... 162
Görley, M .......................... 121
Gorr, B .......................... 161
Gorris, M .......................... 120
Gorzkowski, E .......................... 82, 102, 126, 143, 161
Gossé, S .......................... 158
Goswami, R .......................... 101, 126, 142
Goto, T .......................... 84
Gouge, M .......................... 98
Gould, J .......................... 106
Gouma, P .......................... 134
Govender, G .......................... 115
Govender, S .......................... 92
Govindan, S .......................... 96, 154
Govindaraju, N .......................... 40
Goyal, P .......................... 73
G, R .......................... 96
Graczyk-Zajac, M .......................... 130
Graeve, O .......................... 55, 56, 75, 93, 115, 137, 143, 148, 153
Graham-Wright, T .......................... 64
Grandjean, A .......................... 110
Grant, C .......................... 49, 68
Grantham, S .......................... 121
Graser, J .......................... 106

Gray, D .......................... .163
Gray, G .......................... 37, 59, 120
Graziano, D .......................... 36
Green, A .......................... .127
Gray, P .......................... 48, 129
Greaves, N .......................... .65
Green, C .......................... .164
Greer, A .......................... .81
Greff, D .......................... .49, 68
Grieger, B .......................... .161
Gregory, S .......................... .122
Gremliard, L .......................... .119
Greene, J .......................... .150
Grensing, F .......................... .122
Grbok, A .......................... .110
Grice, D .......................... 44, 72, 127
Griesche, A .......................... .58, 78
Griffith, G .......................... .49
Gripps, J .......................... .126
Grin, Y .......................... .142
Groarke, R .......................... .103
Grober, M .......................... 51, 121
Gross, D .......................... .40
Grosso, R .......................... .53
Gross, T .......................... .146
Grote, R .......................... .68
Grouard, F .......................... .128
Grover, L .......................... .52
Grubach, T .......................... .122
Gruber, J .......................... .126, 159
Grundl, T .......................... 39, 71, 76, 125
Grüner, D .......................... .106
Gruner, W .......................... .70
Grygier, C .......................... .158
Grzesiak, D .......................... .59
G, S .......................... .99
G, S .......................... .92
Gualdi, A .......................... 80, 81, 156
Guarnieros Guarnieros, J .......................... .133
Guéneau, C .......................... .158
Guenther, J .......................... .141
Guest, J .......................... .101
Gu, H .......................... .120
Guillen, D .......................... .132
Guillon, O .......................... .127
Guimarães, B .......................... .96
Gui, Q .......................... .161
Guisinger, N .......................... .101
Gujar, A .......................... 104, 150, 162
Gujiari, A .......................... .52

Gulbiren, O .......................... 105
Gulec, A .......................... 129
Gumeniuk, R .......................... 142
Gunter, C .......................... 116
 Günther, J .......................... .38
Guo, D .......................... .138
Guo, F .......................... .82, 103
Guo, G .......................... .47
Guo, H .......................... .56, 86
Guohong, M .......................... 160
Guo, K .......................... 160
Guo, R .......................... 40, 61, 80, 81, 100, 112, 157
Guo, S .......................... .60
Guo, X .......................... .96
Guo, Y .......................... .88
Gupta, A .......................... 71, 75, 152
Gupta, N .......................... 36, 58, 59, 78, 96, 124
Gupta, R .......................... 69, 138
Gupta, S .......................... 69, 70, 76, 88, 94, 118, 138, 139
Gürcan, K .......................... 140
Gurlo, A .......................... 162
Gurmen, S .......................... 158, 161
Gutierrez, C .......................... 162
Guyer, E .......................... .43, 50
Guyer, J .......................... 97, 150
Gu, Z .......................... .73
Guzman, R .......................... 133
Gwalani, B .......................... 154
Gwon, H .......................... .39

H

Haber, R .......................... 135
Hackett, G .......................... .45
Hadadzaheh, A .......................... .67
Haeffer, D .......................... 94, 117
Haggard, D .......................... 131
Haghshenas, M .......................... 88, 146
Hague, R .......................... .79
Hahn, B .......................... .65
Hahn, Y .......................... .52
Haider, W .......................... 71, 93, 134, 152
Haines, C .......................... .75
Hains, C .......................... .55
Hajahmadi, S .......................... .52
Halabi, M .......................... .46
Halan, N .......................... 134
Halbig, M .......................... .79, 86
Haley, J .......................... .37
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson, R.</td>
<td>.146</td>
</tr>
<tr>
<td>Jacobsen, C.</td>
<td>.117</td>
</tr>
<tr>
<td>Jacobsen, M.</td>
<td>.139</td>
</tr>
<tr>
<td>Jadav, S.</td>
<td>104,162</td>
</tr>
<tr>
<td>Jagannathan, M.</td>
<td>.103</td>
</tr>
<tr>
<td>Jagdale, V.</td>
<td>.133</td>
</tr>
<tr>
<td>Jägle, E.</td>
<td>.136</td>
</tr>
<tr>
<td>Jahan, B.</td>
<td>119,129</td>
</tr>
<tr>
<td>Jahazi, M.</td>
<td>.129</td>
</tr>
<tr>
<td>Jahed, H.</td>
<td>.67</td>
</tr>
<tr>
<td>Jahn, S.</td>
<td>99,114,121</td>
</tr>
<tr>
<td>Jain, A.</td>
<td>.48</td>
</tr>
<tr>
<td>Jain, D.</td>
<td>.128</td>
</tr>
<tr>
<td>Jain, H.</td>
<td>111,141,145</td>
</tr>
<tr>
<td>Jain, M.</td>
<td>51,82,102,126,143</td>
</tr>
<tr>
<td>Jain, R.</td>
<td>.90</td>
</tr>
<tr>
<td>Jain, S.</td>
<td>.152</td>
</tr>
<tr>
<td>Jak, E.</td>
<td>.91</td>
</tr>
<tr>
<td>Jakobsen, A.</td>
<td>.117</td>
</tr>
<tr>
<td>Jalem, R.</td>
<td>.66</td>
</tr>
<tr>
<td>Jalowicka, A.</td>
<td>106,129</td>
</tr>
<tr>
<td>James, B.</td>
<td>.64</td>
</tr>
<tr>
<td>Jamshidinia, M.</td>
<td>.106</td>
</tr>
<tr>
<td>Jamshidi, P.</td>
<td>.52</td>
</tr>
<tr>
<td>Jana, S.</td>
<td>.46</td>
</tr>
<tr>
<td>Jane, K.</td>
<td>.66</td>
</tr>
<tr>
<td>Jangam, P.</td>
<td>.79</td>
</tr>
<tr>
<td>Jang, B.</td>
<td>116,140</td>
</tr>
<tr>
<td>Jang, C.</td>
<td>48,67,158</td>
</tr>
<tr>
<td>Jang, H.</td>
<td>158,163</td>
</tr>
<tr>
<td>Jang, J.</td>
<td>46,155</td>
</tr>
<tr>
<td>Jantzen, C.</td>
<td>110,111</td>
</tr>
<tr>
<td>Jaque, D.</td>
<td>.134</td>
</tr>
<tr>
<td>Jaqueline García, D.</td>
<td>89,112,134,151</td>
</tr>
<tr>
<td>Jaques, B.</td>
<td>87,118,129,132,158</td>
</tr>
<tr>
<td>Jared, B.</td>
<td>.59</td>
</tr>
<tr>
<td>Jarfors, A.</td>
<td>.74</td>
</tr>
<tr>
<td>Jarosinski, W.</td>
<td>120</td>
</tr>
<tr>
<td>Javadi, M.</td>
<td>.57</td>
</tr>
<tr>
<td>Javahery, I.</td>
<td>.40</td>
</tr>
<tr>
<td>Javidan, F.</td>
<td>.99</td>
</tr>
<tr>
<td>Jayagandhi, R.</td>
<td>89,159</td>
</tr>
<tr>
<td>Jayaseelan, D.</td>
<td>.137</td>
</tr>
<tr>
<td>Jayaganth, R.</td>
<td>.155</td>
</tr>
<tr>
<td>Jelis, E.</td>
<td>141,155</td>
</tr>
<tr>
<td>Jenkins, M.</td>
<td>.108</td>
</tr>
<tr>
<td>Jennings, R.</td>
<td>.121</td>
</tr>
<tr>
<td>Jensen, C.</td>
<td>.89</td>
</tr>
<tr>
<td>Jensen, L.</td>
<td>.146</td>
</tr>
<tr>
<td>Jensen, P.</td>
<td>.149</td>
</tr>
<tr>
<td>Jensen, W.</td>
<td>.129</td>
</tr>
<tr>
<td>Jeon, J.</td>
<td>44,156,162</td>
</tr>
<tr>
<td>Jeon, S.</td>
<td>.159</td>
</tr>
<tr>
<td>Jerred, N.</td>
<td>68,131</td>
</tr>
<tr>
<td>Jewkes, K.</td>
<td>.97</td>
</tr>
<tr>
<td>Jha, J.</td>
<td>1143</td>
</tr>
<tr>
<td>Jha, K.</td>
<td>.116</td>
</tr>
<tr>
<td>Jha, S.</td>
<td>137,159</td>
</tr>
<tr>
<td>Jiang, C.</td>
<td>.131</td>
</tr>
<tr>
<td>Jiang, H.</td>
<td>39,153,160</td>
</tr>
<tr>
<td>Jiang, J.</td>
<td>.92</td>
</tr>
<tr>
<td>Jiang, M.</td>
<td>131,156</td>
</tr>
<tr>
<td>Jiang, W.</td>
<td>102</td>
</tr>
<tr>
<td>Jiang, X.</td>
<td>162</td>
</tr>
<tr>
<td>Jiang, Y.</td>
<td>163</td>
</tr>
<tr>
<td>Jian, J.</td>
<td>.133</td>
</tr>
<tr>
<td>Jiao, K.</td>
<td>.160</td>
</tr>
<tr>
<td>Jia, Q.</td>
<td>111,133,151</td>
</tr>
<tr>
<td>Ji, C.</td>
<td>.62</td>
</tr>
<tr>
<td>Jia, L.</td>
<td>.59</td>
</tr>
<tr>
<td>Ji, F.</td>
<td>.151</td>
</tr>
<tr>
<td>Jin, C.</td>
<td>.163</td>
</tr>
<tr>
<td>Jindal, N.</td>
<td>.56</td>
</tr>
<tr>
<td>Jindal, V.</td>
<td>.106</td>
</tr>
<tr>
<td>Jingshe, L.</td>
<td>.99</td>
</tr>
<tr>
<td>Jin, H.</td>
<td>.164</td>
</tr>
<tr>
<td>Jin, K.</td>
<td>.110</td>
</tr>
<tr>
<td>Jin, T.</td>
<td>110,131</td>
</tr>
<tr>
<td>Jin, Y.</td>
<td>82,139</td>
</tr>
<tr>
<td>Jirkova, H.</td>
<td>.93</td>
</tr>
<tr>
<td>Ji, T.</td>
<td>53,73</td>
</tr>
<tr>
<td>Jitputti, J.</td>
<td>.161</td>
</tr>
<tr>
<td>Ji, X.</td>
<td>.127</td>
</tr>
<tr>
<td>Ji, Y.</td>
<td>.44</td>
</tr>
<tr>
<td>J. Morgan, Z.</td>
<td>.82</td>
</tr>
<tr>
<td>Jo, C.</td>
<td>.57</td>
</tr>
<tr>
<td>Jodoin, B.</td>
<td>138</td>
</tr>
<tr>
<td>Johannesson, B.</td>
<td>137</td>
</tr>
<tr>
<td>Johnsen, R.</td>
<td>122</td>
</tr>
<tr>
<td>Johns, J.</td>
<td>.149</td>
</tr>
<tr>
<td>Johnson, D.</td>
<td>75,80,142</td>
</tr>
<tr>
<td>Johnson, G.</td>
<td>.87</td>
</tr>
<tr>
<td>Johnson, L.</td>
<td>.60</td>
</tr>
<tr>
<td>Johnson, M.</td>
<td>.144</td>
</tr>
<tr>
<td>Johnson, N.</td>
<td>.41</td>
</tr>
<tr>
<td>Johnson, O.</td>
<td>66,85,107</td>
</tr>
<tr>
<td>Johnson, R.</td>
<td>49,143</td>
</tr>
<tr>
<td>Johnson, S.</td>
<td>56,76,102</td>
</tr>
<tr>
<td>Johnson-Wilke, R.</td>
<td>.53</td>
</tr>
<tr>
<td>Jolly, M.</td>
<td>.40</td>
</tr>
<tr>
<td>Jonas, J.</td>
<td>.44</td>
</tr>
<tr>
<td>Jones, D.</td>
<td>59,120</td>
</tr>
<tr>
<td>Jones, E.</td>
<td>.56</td>
</tr>
<tr>
<td>Jones, G.</td>
<td>37,59</td>
</tr>
<tr>
<td>Jones, I.</td>
<td>.82</td>
</tr>
<tr>
<td>Jones, J.</td>
<td>.146</td>
</tr>
<tr>
<td>Jones, K.</td>
<td>.66</td>
</tr>
<tr>
<td>Jones, M.</td>
<td>.66</td>
</tr>
<tr>
<td>Jones, N.</td>
<td>50,57,88,161</td>
</tr>
<tr>
<td>Jonnalagadda, K.</td>
<td>.49</td>
</tr>
<tr>
<td>Joost, W.</td>
<td>.129</td>
</tr>
<tr>
<td>Jordan, B.</td>
<td>.98</td>
</tr>
<tr>
<td>Jordan, E.</td>
<td>.117</td>
</tr>
<tr>
<td>Jordon, B.</td>
<td>.116</td>
</tr>
<tr>
<td>Jordon, J.</td>
<td>.148</td>
</tr>
<tr>
<td>Jorstad, J.</td>
<td>54,137</td>
</tr>
<tr>
<td>Jo, S.</td>
<td>.127</td>
</tr>
<tr>
<td>Joshi, R.</td>
<td>.115</td>
</tr>
<tr>
<td>Joshi, V.</td>
<td>.162</td>
</tr>
<tr>
<td>Jovanovic, D.</td>
<td>.89</td>
</tr>
<tr>
<td>Jovanovic, M.</td>
<td>.68</td>
</tr>
<tr>
<td>Jozaghi, T.</td>
<td>.116</td>
</tr>
<tr>
<td>Juan, C.</td>
<td>.94</td>
</tr>
<tr>
<td>Juanarraez de la Fuente, Á.</td>
<td>134</td>
</tr>
<tr>
<td>Jue, J.</td>
<td>.158</td>
</tr>
<tr>
<td>Jung, B.</td>
<td>115</td>
</tr>
<tr>
<td>Jung, K.</td>
<td>115</td>
</tr>
<tr>
<td>Jungiohann, K.</td>
<td>.123</td>
</tr>
<tr>
<td>Jung, K.</td>
<td>103,127,144</td>
</tr>
<tr>
<td>Jung, S.</td>
<td>.96</td>
</tr>
<tr>
<td>Jung, W.</td>
<td>41,63,125</td>
</tr>
<tr>
<td>Jung, Y.</td>
<td>96,114,136,153</td>
</tr>
<tr>
<td>Junqi, Y.</td>
<td>.160</td>
</tr>
<tr>
<td>Jur, T.</td>
<td>.127</td>
</tr>
<tr>
<td>Justice, G.</td>
<td>.61</td>
</tr>
<tr>
<td>Kaiser, M.</td>
<td>.89</td>
</tr>
<tr>
<td>Kailath, A.</td>
<td>.74</td>
</tr>
<tr>
<td>Kailath, A.</td>
<td>57,150</td>
</tr>
<tr>
<td>Kabelitz, A.</td>
<td>58,150</td>
</tr>
<tr>
<td>Kabir, A.</td>
<td>.67</td>
</tr>
<tr>
<td>Kacher, J.</td>
<td>40,99,105,123</td>
</tr>
<tr>
<td>Kachur, S.</td>
<td>106</td>
</tr>
<tr>
<td>Kadassov, E.</td>
<td>132</td>
</tr>
<tr>
<td>Kaduk, J.</td>
<td>.86</td>
</tr>
<tr>
<td>Kahramanov, R.</td>
<td>.96</td>
</tr>
<tr>
<td>Kaffes, C.</td>
<td>134</td>
</tr>
<tr>
<td>Kagawa, Y.</td>
<td>116,117,138,154</td>
</tr>
<tr>
<td>Kahlenberg, R.</td>
<td>121</td>
</tr>
<tr>
<td>Kahramanov, R.</td>
<td>.96</td>
</tr>
<tr>
<td>Kailath, A.</td>
<td>.102</td>
</tr>
<tr>
<td>Kailath, A.</td>
<td>102</td>
</tr>
<tr>
<td>Kainer, K.</td>
<td>.54</td>
</tr>
<tr>
<td>Kaiser, M.</td>
<td>.89</td>
</tr>
<tr>
<td>Kajikawa, K.</td>
<td>.74</td>
</tr>
<tr>
<td>Name</td>
<td>Page Numbers</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Kakovkina, N</td>
<td>60, 154</td>
</tr>
<tr>
<td>Kalant ar-zadeh, K</td>
<td>.92</td>
</tr>
<tr>
<td>Kalathiparambil, K</td>
<td>.156</td>
</tr>
<tr>
<td>Kalay, E</td>
<td>35, 58, 78</td>
</tr>
<tr>
<td>Kalbfleisch, S</td>
<td>.117</td>
</tr>
<tr>
<td>Kale, G</td>
<td>.89</td>
</tr>
<tr>
<td>Kale, S</td>
<td>.118</td>
</tr>
<tr>
<td>Kalidindi, S</td>
<td>48, 49, 67, 95, 105, 122, 128, 158</td>
</tr>
<tr>
<td>Kalita, D</td>
<td>.164</td>
</tr>
<tr>
<td>Kaliyaperumal Veerapandiyan, V</td>
<td>.157</td>
</tr>
<tr>
<td>Kamimura, M</td>
<td>.151</td>
</tr>
<tr>
<td>Kamiya, H</td>
<td>82, 102, 126, 143</td>
</tr>
<tr>
<td>Kampe, S</td>
<td>.139</td>
</tr>
<tr>
<td>Kamran, M</td>
<td>109, 161</td>
</tr>
<tr>
<td>Kanakala, R</td>
<td>48, 49, 68, 87, 110, 131, 148, 149, 158</td>
</tr>
<tr>
<td>Kanamura, N</td>
<td>.56</td>
</tr>
<tr>
<td>Kanchika, S</td>
<td>.56</td>
</tr>
<tr>
<td>Kandil, S</td>
<td>92, 113</td>
</tr>
<tr>
<td>Kanduc, M</td>
<td>.143</td>
</tr>
<tr>
<td>Kanematsu, H</td>
<td>56, 92, 134, 136</td>
</tr>
<tr>
<td>Kang, C</td>
<td>.163</td>
</tr>
<tr>
<td>Kang, K</td>
<td>.41</td>
</tr>
<tr>
<td>Kang, N</td>
<td>.59</td>
</tr>
<tr>
<td>Kang, Y</td>
<td>47, 137</td>
</tr>
<tr>
<td>Kannan, R</td>
<td>.145</td>
</tr>
<tr>
<td>Kannengiesser, T</td>
<td>35, 36, 58, 78</td>
</tr>
<tr>
<td>Kant, R</td>
<td>.130</td>
</tr>
<tr>
<td>Kaoumi, D</td>
<td>.149</td>
</tr>
<tr>
<td>Kaplan, W</td>
<td>45, 66, 85, 107, 130, 147</td>
</tr>
<tr>
<td>Kapoor, M</td>
<td>47, 50, 67</td>
</tr>
<tr>
<td>Kapoor, S</td>
<td>.83</td>
</tr>
<tr>
<td>Kapush, D</td>
<td>.156</td>
</tr>
<tr>
<td>Karaca, H</td>
<td>38, 60, 95</td>
</tr>
<tr>
<td>Karaman, I</td>
<td>38, 60, 64, 76, 77, 79, 95, 98, 116, 124, 159</td>
</tr>
<tr>
<td>Kardanikar, K</td>
<td>56, 148</td>
</tr>
<tr>
<td>Karayagiz, K</td>
<td>38, 60, 79, 98</td>
</tr>
<tr>
<td>Karcz, A</td>
<td>.111</td>
</tr>
<tr>
<td>Karczewski, K</td>
<td>.120</td>
</tr>
<tr>
<td>Karhasuen, K</td>
<td>.74</td>
</tr>
<tr>
<td>Karma, A</td>
<td>.78</td>
</tr>
<tr>
<td>Karmakar, A</td>
<td>.160</td>
</tr>
<tr>
<td>Karmiol, Z</td>
<td>.161</td>
</tr>
<tr>
<td>Karthik, G</td>
<td>.97</td>
</tr>
<tr>
<td>Karumuri, A</td>
<td>.71, 90</td>
</tr>
<tr>
<td>Karuppasamy, B</td>
<td>75, 113</td>
</tr>
<tr>
<td>Kashyap, B</td>
<td>70, 116</td>
</tr>
<tr>
<td>Katayama, S</td>
<td>.148</td>
</tr>
<tr>
<td>Katayama, S</td>
<td>.148</td>
</tr>
<tr>
<td>Katiyar, R</td>
<td>.40, 62</td>
</tr>
<tr>
<td>Kato, C</td>
<td>.134</td>
</tr>
<tr>
<td>Katoh, Y</td>
<td>48, 49, 68, 87, 110, 131, 148, 149</td>
</tr>
<tr>
<td>Kato, K</td>
<td>.40</td>
</tr>
<tr>
<td>Kato, M</td>
<td>.156</td>
</tr>
<tr>
<td>Katsenis, A</td>
<td>.70</td>
</tr>
<tr>
<td>Katsui, H</td>
<td>.84</td>
</tr>
<tr>
<td>Katti, D</td>
<td>.75, 90</td>
</tr>
<tr>
<td>Katti, K</td>
<td>75, 90, 91</td>
</tr>
<tr>
<td>Kattire, P</td>
<td>.73</td>
</tr>
<tr>
<td>Kattner, U</td>
<td>.72</td>
</tr>
<tr>
<td>Kattoura, M</td>
<td>.57</td>
</tr>
<tr>
<td>Kaub, T</td>
<td>.99</td>
</tr>
<tr>
<td>Kauffman, D</td>
<td>.109</td>
</tr>
<tr>
<td>Kauffman, M</td>
<td>.88</td>
</tr>
<tr>
<td>Kaupp, G</td>
<td>49, 111</td>
</tr>
<tr>
<td>Kaur, G</td>
<td>.39, 71</td>
</tr>
<tr>
<td>Kaur, S</td>
<td>.129</td>
</tr>
<tr>
<td>Kautz, E</td>
<td>.133</td>
</tr>
<tr>
<td>Kawada, T</td>
<td>46, 66, 85, 108</td>
</tr>
<tr>
<td>Kawaharada, Y</td>
<td>.126</td>
</tr>
<tr>
<td>Kawahito, Y</td>
<td>.148</td>
</tr>
<tr>
<td>KAWAHITO, Y</td>
<td>.149</td>
</tr>
<tr>
<td>Kayhan, S</td>
<td>.93</td>
</tr>
<tr>
<td>Kayser, M</td>
<td>.143</td>
</tr>
<tr>
<td>Kazerooni, D</td>
<td>.161</td>
</tr>
<tr>
<td>Kazmierski, P</td>
<td>.81</td>
</tr>
<tr>
<td>KcKee, H</td>
<td>.97</td>
</tr>
<tr>
<td>Ke, A</td>
<td>.95</td>
</tr>
<tr>
<td>Kearney, L</td>
<td>43, 161</td>
</tr>
<tr>
<td>Kecskes, I</td>
<td>.94</td>
</tr>
<tr>
<td>Ke, D</td>
<td>.96</td>
</tr>
<tr>
<td>Kedir, N</td>
<td>.41</td>
</tr>
<tr>
<td>Keech, R</td>
<td>.133</td>
</tr>
<tr>
<td>Ke, H</td>
<td>.48</td>
</tr>
<tr>
<td>Keiser, D</td>
<td>.158</td>
</tr>
<tr>
<td>Keiser, J</td>
<td>.47</td>
</tr>
<tr>
<td>Keist, J</td>
<td>37, 38, 59, 98</td>
</tr>
<tr>
<td>Ke, J</td>
<td>.48</td>
</tr>
<tr>
<td>Keles, O</td>
<td>.136</td>
</tr>
<tr>
<td>Keller, B</td>
<td>.49</td>
</tr>
<tr>
<td>Keller, T</td>
<td>.150</td>
</tr>
<tr>
<td>Kelly, S</td>
<td>76, 97, 106, 162</td>
</tr>
<tr>
<td>Kelly, T</td>
<td>.162</td>
</tr>
<tr>
<td>Kemnitz, E</td>
<td>.163</td>
</tr>
<tr>
<td>Kempf, N</td>
<td>.158</td>
</tr>
<tr>
<td>Kenel, C</td>
<td>.140</td>
</tr>
<tr>
<td>Kenesei, P</td>
<td>.146</td>
</tr>
<tr>
<td>Kennedy, G</td>
<td>.95</td>
</tr>
<tr>
<td>Kenedd, A</td>
<td>.95</td>
</tr>
<tr>
<td>Kent, B</td>
<td>.138</td>
</tr>
<tr>
<td>Keough, C</td>
<td>.119</td>
</tr>
<tr>
<td>Kermani, B</td>
<td>.89</td>
</tr>
<tr>
<td>Kermanshahimonfared, N</td>
<td>.71</td>
</tr>
<tr>
<td>Keshtgar, A</td>
<td>.97</td>
</tr>
<tr>
<td>Kessler, D</td>
<td>.143</td>
</tr>
<tr>
<td>Kessler, S</td>
<td>.97</td>
</tr>
<tr>
<td>Kester, M</td>
<td>.134</td>
</tr>
<tr>
<td>Ketto, J</td>
<td>.45</td>
</tr>
<tr>
<td>Keum, J</td>
<td>.46</td>
</tr>
<tr>
<td>Ke, X</td>
<td>.53</td>
</tr>
<tr>
<td>Khademi, V</td>
<td>.77, 146, 149</td>
</tr>
<tr>
<td>Khajepour, A</td>
<td>.58</td>
</tr>
<tr>
<td>Khalfahlah, I</td>
<td>66, 116, 155, 163</td>
</tr>
<tr>
<td>Khalifa, A</td>
<td>58, 158</td>
</tr>
<tr>
<td>Khalifa, W</td>
<td>76, 93, 114, 137</td>
</tr>
<tr>
<td>Khan, J</td>
<td>.80</td>
</tr>
<tr>
<td>Khan, M</td>
<td>.138</td>
</tr>
<tr>
<td>Khare, S</td>
<td>.91</td>
</tr>
<tr>
<td>Khau, B</td>
<td>.158</td>
</tr>
<tr>
<td>Khayat, Z</td>
<td>.97</td>
</tr>
<tr>
<td>Khidasheli, N</td>
<td>.161</td>
</tr>
<tr>
<td>Khoshkhooh, M</td>
<td>.70</td>
</tr>
<tr>
<td>Khoshmanes, K</td>
<td>.92</td>
</tr>
<tr>
<td>Khosrovarani, A</td>
<td>67, 95, 122, 158</td>
</tr>
<tr>
<td>Khvostenko, D</td>
<td>.113</td>
</tr>
<tr>
<td>Kia, H</td>
<td>.88</td>
</tr>
<tr>
<td>Kieffer, J</td>
<td>65, 83, 145, 157</td>
</tr>
<tr>
<td>Kikuchi, S</td>
<td>.44</td>
</tr>
<tr>
<td>Kim, B</td>
<td>40, 84, 156</td>
</tr>
<tr>
<td>Kim, D</td>
<td>63, 82, 106, 110, 125, 127, 131, 155, 163</td>
</tr>
<tr>
<td>Kimel, R</td>
<td>.64</td>
</tr>
<tr>
<td>Kim, G</td>
<td>.74</td>
</tr>
<tr>
<td>Kim, H</td>
<td>.44, 52, 61, 63, 113, 118, 140, 154, 158, 159, 161</td>
</tr>
<tr>
<td>KIM, H</td>
<td>.116</td>
</tr>
<tr>
<td>Kim, I</td>
<td>.57</td>
</tr>
<tr>
<td>Kiminami, C</td>
<td>.88, 142</td>
</tr>
<tr>
<td>Kiminami, R</td>
<td>73, 80, 92, 136, 156</td>
</tr>
<tr>
<td>Kim, J</td>
<td>44, 63, 65, 118, 122, 127, 162, 163</td>
</tr>
<tr>
<td>Kim, K</td>
<td>.161</td>
</tr>
<tr>
<td>Kim, M</td>
<td>41, 115, 118</td>
</tr>
<tr>
<td>Kim, N</td>
<td>.61, 122</td>
</tr>
<tr>
<td>Kim, T</td>
<td>.161</td>
</tr>
</tbody>
</table>
Kimura, H .................................. 156
Kim, W ......................... 42, 63, 102, 125
Kim, Y ....................... 118, 161, 163
King, C ................................. 127
King, G ................................ 110
Kinghorn, K ..................... 58
King, J ......................... 39, 158
King, S ......................... 69, 83
Kinser, E ............................ 53
Kiraly, B ......................... 101
Kirbiyik, F .......................... 117
Kirchain, R ...................... 40
Kirchheiser, R .................. 108
Kirchheim, R .................... 93, 130
Kirihara, S ....................... 138, 147
Kirk, M ...................... 79, 97, 98, 120, 141
Kirkham, M ..................... 158
Kirsch, H ......................... 55
Kirwai, S ......................... 159
Kishi, Y ......................... 74
Kisslinger, K ................. 71
Kistler, N ......................... 60
Kitajima, S ....................... 125
Kitamura, A ..................... 132, 158
Kitanovski, A ................... 100
Kitchin, J .......................... 48
Kjoller, K ......................... 69
Klassen, R ....................... 88
Klassen, T ....................... 89
Klawitter, J ..................... 53
Klesner, C ....................... 123
Kline, J ......................... 50, 131
Klingbeil, N .................... 121
Klinger, L ....................... 107, 159
Knapp, C ....................... 37, 80, 98, 120
Knapp, J ....................... 96
Knauth, P ....................... 46
Knezevic, M ................... 65, 146
Knipling, K ................. 39, 46
Kobayashi, T ..................... 89
Kober, E .......................... 94
Kob, W ......................... 102
Koch, C .......................... 51
Kocic, L ......................... 40, 156, 157
Koc, M ......................... 99, 122, 142
Koč, M .......................... 93
Koc, R .......................... 153
Kodera, y ...................... 42
Kodera, Y ....................... 42, 95, 143
Koenigstein, M ............... 50, 60
Koerner, H ..................... 79, 96
Kogo, T ......................... 134
Kogstrom, C ................... 76
Kohama, K ..................... 74
Kohn, A ......................... 46
Ko, J ......................... 63, 118
Kok, D .......................... 137
Kolasinski, R .................. 115
Koller, K ......................... 57
Kollins, K ...................... 57
Kollin, R ....................... 87
Koltsov, A ...................... 107
Komai, R ....................... 149
Komizo, Y ...................... 35, 58, 78
Kondoh, K ..................... 70, 77
Konings, R ..................... 148
Konopka, J ................... 144
Konstanty, S .................. 139
Koopman, M ................... 115, 153
Kopecek, J ..................... 78
Koppa, P ........................ 96
Kopp, D ....................... 82, 118
Korinko, P ..................... 37, 97
Koritala, R ..................... 71
Kornecki, M .................. 137
Körner, C ...................... 58
Kosasang, O ................... 85
Kosche, T ....................... 98
Koseki, T ....................... 61, 65
Koshy, P ....................... 159
Kottada, R ..................... 97
Kottke, J ....................... 135
Koukolikova, M .......... 122, 142
Kousadikar, S .................. 162
Kovar, D ....................... 45, 98
Kovarik, L ..................... 135
Koyama, S ..................... 147, 162
Koyanagi, T .................. 87
Kozina, T ....................... 64
Kracum, M ..................... 124
Kraficik, M .................... 63, 162
Kraft, M ....................... 89
Kraft, O ....................... 147
Krajewski, P ................... 54
Kral, M ......................... 104, 146
Kramer, M ..................... 153
Kramer, P ..................... 75, 113
Krauss, G ....................... 44
Kresten, P ..................... 123
Kreuzpaintner, W ............. 58
Kriegel, R ...................... 108
Krimer, Y ....................... 38
Krishnan, N .................... 102
Kriven, W ................... 53, 65, 72, 84, 91, 156
Kroenlein, K .................. 91
Kroll, L ........................ 55
Kroll, P ......................... 102, 125, 126, 130, 142, 143
Kromm, A .................... 35, 36, 78
Krooß, P ....................... 38
Kruger, A ....................... 110, 123, 131, 132
Kruizenga, A ................ 67
Krusse, M ....................... 71
Kruska, K ....................... 162
Krut, J ......................... 37, 84
Kruzic, J ....................... 39, 67, 113, 129, 158
Kryglaky, I ...................... 62
Krywka, C ....................... 59
Kublik, R ....................... 49, 60
Kucukelyas, B .................. 161
Kuehmann, C .................. 36
Kugler, S ........................ 155
Kuhn, H ......................... 120
Kujofsa, T ..................... 55, 157
Kukava, T ....................... 161
Kulebyakin, A .......... 155
Kulkarni, N ................... 72, 91, 113, 135, 152
Kumar, A ...................... 52, 61, 156
Kumar, C ....................... 119
Kumar, J ....................... 116
Kumar, K ....................... 134
Kumar, M ...................... 56, 75, 93, 150
Kumar, N ..................... 89, 129, 149, 159
Kumar, P ....................... 64, 153
Kumar, R ..................... 70, 117, 161
Kumar, S ....................... 132
Kumar, V ....................... 55, 71
Ku, N ......................... 42, 92, 137
Kundalkar, D .................. 52
Kundu, A ....................... 85, 125, 160
Kundu, S ....................... 150, 160
Kung, L ......................... 123
Kung, S ......................... 47
Kunstmann, J .......... 62, 101, 124, 142
Kuntz, S ....................... 98
Kuo, C ......................... 94
Kuokkala, V ................... 50
Kupec, I ....................... 72
Kuper, M ....................... 130
Kupp, E ...................... 56, 62
<table>
<thead>
<tr>
<th>Index</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madden, J</td>
<td>.87</td>
</tr>
<tr>
<td>Maddrill, E</td>
<td>.49</td>
</tr>
<tr>
<td>Madej, L</td>
<td>.51, 71, 160</td>
</tr>
<tr>
<td>Madigan, B</td>
<td>.37</td>
</tr>
<tr>
<td>Madison, J</td>
<td>.49, 66, 78, 98</td>
</tr>
<tr>
<td>Madsen, L</td>
<td>.72</td>
</tr>
<tr>
<td>Maeda, M</td>
<td>.160</td>
</tr>
<tr>
<td>Maeda, Y</td>
<td>.47</td>
</tr>
<tr>
<td>Magen, C</td>
<td>.133</td>
</tr>
<tr>
<td>Maguire, M</td>
<td>.59, 66</td>
</tr>
<tr>
<td>Ma, H</td>
<td>.41, 47, 61, 63, 122, 125, 159</td>
</tr>
<tr>
<td>Mahaffey, J</td>
<td>.47, 48</td>
</tr>
<tr>
<td>Mahalingam, V</td>
<td>.39, 56</td>
</tr>
<tr>
<td>Mahapatra, M</td>
<td>.79, 120</td>
</tr>
<tr>
<td>Mahbooba, Z</td>
<td>.102</td>
</tr>
<tr>
<td>Mahfooz, M</td>
<td>.73, 92, 113, 114, 136</td>
</tr>
<tr>
<td>Mahoney, M</td>
<td>.46</td>
</tr>
<tr>
<td>Maier, B</td>
<td>.68, 87</td>
</tr>
<tr>
<td>Maiti, T</td>
<td>.92, 100, 156, 157</td>
</tr>
<tr>
<td>Ma, J</td>
<td>.38, 60, 79, 95, 98, 151</td>
</tr>
<tr>
<td>Majeed, T</td>
<td>.80</td>
</tr>
<tr>
<td>Majer, M</td>
<td>.142</td>
</tr>
<tr>
<td>Majewski, J</td>
<td>.101</td>
</tr>
<tr>
<td>Majidi, H</td>
<td>.102</td>
</tr>
<tr>
<td>Major, G</td>
<td>.159</td>
</tr>
<tr>
<td>Majumdar, B</td>
<td>.83, 136</td>
</tr>
<tr>
<td>Majumdar, T</td>
<td>.52</td>
</tr>
<tr>
<td>Ma, K</td>
<td>.47, 118</td>
</tr>
<tr>
<td>Makar, B</td>
<td>.164</td>
</tr>
<tr>
<td>Makino, T</td>
<td>.44</td>
</tr>
<tr>
<td>Maki, R</td>
<td>.69, 84</td>
</tr>
<tr>
<td>Ma, L</td>
<td>.82</td>
</tr>
<tr>
<td>Malakkal, L</td>
<td>.84</td>
</tr>
<tr>
<td>Malara, C</td>
<td>.122</td>
</tr>
<tr>
<td>Malic, B</td>
<td>.100</td>
</tr>
<tr>
<td>Malik, A</td>
<td>.161</td>
</tr>
<tr>
<td>Malik, J</td>
<td>.76, 77</td>
</tr>
<tr>
<td>Malik, R</td>
<td>.35</td>
</tr>
<tr>
<td>Mali, V</td>
<td>.137</td>
</tr>
<tr>
<td>Malik, M</td>
<td>.110</td>
</tr>
<tr>
<td>Mallik, M</td>
<td>.102</td>
</tr>
<tr>
<td>Maloy, S</td>
<td>.87, 110, 158</td>
</tr>
<tr>
<td>Ma, M</td>
<td>.62, 158</td>
</tr>
<tr>
<td>Mamivand, M</td>
<td>.48</td>
</tr>
<tr>
<td>Manandhar, K</td>
<td>.93</td>
</tr>
<tr>
<td>Manara, D</td>
<td>.158</td>
</tr>
<tr>
<td>Manchon-Gordon, A</td>
<td>.159</td>
</tr>
<tr>
<td>Mandal, M</td>
<td>.92, 117</td>
</tr>
<tr>
<td>Mandal, S</td>
<td>.75</td>
</tr>
<tr>
<td>Mane, S</td>
<td>.49</td>
</tr>
<tr>
<td>Mangal, A</td>
<td>.105</td>
</tr>
<tr>
<td>Manga, V</td>
<td>.146</td>
</tr>
<tr>
<td>Mangin, P</td>
<td>.115</td>
</tr>
<tr>
<td>Mani, B</td>
<td>.114, 136, 153</td>
</tr>
<tr>
<td>Manjooran, N</td>
<td>.39, 52, 61, 71, 90</td>
</tr>
<tr>
<td>Mann, A</td>
<td>.76, 77</td>
</tr>
<tr>
<td>Manna, A</td>
<td>.57</td>
</tr>
<tr>
<td>Mannix, A</td>
<td>.101</td>
</tr>
<tr>
<td>Mansoor, B</td>
<td>.36, 43, 76, 77, 96</td>
</tr>
<tr>
<td>Mansoori, A</td>
<td>.55</td>
</tr>
<tr>
<td>Manthani, N</td>
<td>.150</td>
</tr>
<tr>
<td>Mantri, S</td>
<td>.52, 60, 154</td>
</tr>
<tr>
<td>Mao, T</td>
<td>.86</td>
</tr>
<tr>
<td>Mapar, A</td>
<td>.159</td>
</tr>
<tr>
<td>Ma, Q</td>
<td>.40</td>
</tr>
<tr>
<td>Mar, A</td>
<td>.48</td>
</tr>
<tr>
<td>Mara, N</td>
<td>.146, 148, 158</td>
</tr>
<tr>
<td>Marangoni, V</td>
<td>.134</td>
</tr>
<tr>
<td>Marchal, P</td>
<td>.110</td>
</tr>
<tr>
<td>Marcheschi, B</td>
<td>.102</td>
</tr>
<tr>
<td>Marchetti, M</td>
<td>.148</td>
</tr>
<tr>
<td>Marcial, J</td>
<td>.110, 145</td>
</tr>
<tr>
<td>Marciniak, L</td>
<td>.89, 112</td>
</tr>
<tr>
<td>Marelin, B</td>
<td>.82</td>
</tr>
<tr>
<td>Margelowsky, G</td>
<td>.106</td>
</tr>
<tr>
<td>Maria, J</td>
<td>.111</td>
</tr>
<tr>
<td>Mariani, R</td>
<td>.68, 87, 131</td>
</tr>
<tr>
<td>Marian, J</td>
<td>.45, 102, 143, 150</td>
</tr>
<tr>
<td>Mariano, M</td>
<td>.157</td>
</tr>
<tr>
<td>Marie, H</td>
<td>.155</td>
</tr>
<tr>
<td>Marin, E</td>
<td>.56</td>
</tr>
<tr>
<td>Marker, C</td>
<td>.51, 152</td>
</tr>
<tr>
<td>Markiewicz, D</td>
<td>.127</td>
</tr>
<tr>
<td>Marks, L</td>
<td>.129</td>
</tr>
<tr>
<td>Marlow, G</td>
<td>.141</td>
</tr>
<tr>
<td>Marlon, J</td>
<td>.100</td>
</tr>
<tr>
<td>Marques, R</td>
<td>.64</td>
</tr>
<tr>
<td>Marquis, E</td>
<td>.105</td>
</tr>
<tr>
<td>Marsden, K</td>
<td>.44</td>
</tr>
<tr>
<td>Marshall, A</td>
<td>.61</td>
</tr>
<tr>
<td>Marshall, D</td>
<td>.41, 47</td>
</tr>
<tr>
<td>Marshall, L</td>
<td>.43, 127</td>
</tr>
<tr>
<td>Marshall, P</td>
<td>.57</td>
</tr>
<tr>
<td>Mart, C</td>
<td>.102</td>
</tr>
<tr>
<td>Martens, R</td>
<td>.99</td>
</tr>
<tr>
<td>Marti, S</td>
<td>.88</td>
</tr>
<tr>
<td>Marti, A</td>
<td>.109</td>
</tr>
<tr>
<td>Martinez-Camejo, Y</td>
<td>.157</td>
</tr>
<tr>
<td>Martinez Cázares, G</td>
<td>.160</td>
</tr>
<tr>
<td>Martinez, E</td>
<td>.159</td>
</tr>
<tr>
<td>Martinez-Luévanos, A</td>
<td>.163</td>
</tr>
<tr>
<td>Martinez-Rodriguez, M</td>
<td>.87</td>
</tr>
<tr>
<td>Martin, H</td>
<td>.140</td>
</tr>
<tr>
<td>Martin, I</td>
<td>.151</td>
</tr>
<tr>
<td>Martin, J</td>
<td>.112</td>
</tr>
<tr>
<td>Martin, M</td>
<td>.46, 66, 83, 108, 135, 163</td>
</tr>
<tr>
<td>Martin Rodriguez, E</td>
<td>.151</td>
</tr>
<tr>
<td>Martin, S</td>
<td>.44, 65, 83, 105, 127, 128, 132, 145</td>
</tr>
<tr>
<td>Martins, J</td>
<td>.119</td>
</tr>
<tr>
<td>Martins, L</td>
<td>.164</td>
</tr>
<tr>
<td>Martukanitz, R</td>
<td>.37, 98, 141</td>
</tr>
<tr>
<td>Marunaka, Y</td>
<td>.56</td>
</tr>
<tr>
<td>Maruyama, R</td>
<td>.81</td>
</tr>
<tr>
<td>Marvel, C</td>
<td>.66, 143</td>
</tr>
<tr>
<td>Ma, S</td>
<td>.86</td>
</tr>
<tr>
<td>Masaki, K</td>
<td>.148</td>
</tr>
<tr>
<td>Masanobu, N</td>
<td>.66</td>
</tr>
<tr>
<td>Masanori, K</td>
<td>.157</td>
</tr>
<tr>
<td>Masek, B</td>
<td>.93</td>
</tr>
<tr>
<td>Maskay, A</td>
<td>.61</td>
</tr>
<tr>
<td>Mason, D</td>
<td>.149</td>
</tr>
<tr>
<td>Masoomi, M</td>
<td>.37</td>
</tr>
<tr>
<td>Masoumi, M</td>
<td>.145</td>
</tr>
<tr>
<td>Massardier, V</td>
<td>.55</td>
</tr>
<tr>
<td>Massey, C</td>
<td>.68</td>
</tr>
<tr>
<td>Massey, M</td>
<td>.97</td>
</tr>
<tr>
<td>Mastorakos, I</td>
<td>.71, 158</td>
</tr>
<tr>
<td>Mataigne, J</td>
<td>.107</td>
</tr>
<tr>
<td>Materer, N</td>
<td>.132</td>
</tr>
<tr>
<td>Matayshina, Y</td>
<td>.159</td>
</tr>
<tr>
<td>Mathauddhu, S</td>
<td>.57, 114, 115, 119, 135, 153</td>
</tr>
<tr>
<td>Matheson, K</td>
<td>.40</td>
</tr>
<tr>
<td>Mathew, M</td>
<td>.161</td>
</tr>
<tr>
<td>Mathis, T</td>
<td>.65</td>
</tr>
<tr>
<td>Mathur, S</td>
<td>.65, 82, 102, 126, 143</td>
</tr>
<tr>
<td>Matli, P</td>
<td>.124</td>
</tr>
<tr>
<td>Matlock, D</td>
<td>.77</td>
</tr>
<tr>
<td>Matranga, C</td>
<td>.109</td>
</tr>
<tr>
<td>Matsuda, T</td>
<td>.47, 147</td>
</tr>
<tr>
<td>Matsuhata, H</td>
<td>.46</td>
</tr>
<tr>
<td>Matsui, K</td>
<td>.95</td>
</tr>
<tr>
<td>Matsumoto, H</td>
<td>.85</td>
</tr>
<tr>
<td>Matsumura, T</td>
<td>.147</td>
</tr>
<tr>
<td>Matsunaga, N</td>
<td>.46</td>
</tr>
<tr>
<td>Matsushita, M</td>
<td>.47</td>
</tr>
<tr>
<td>Ong, S</td>
<td>48, 130</td>
</tr>
<tr>
<td>Oneyje, L</td>
<td>89</td>
</tr>
<tr>
<td>Opata, K</td>
<td>93</td>
</tr>
<tr>
<td>Opila, E</td>
<td>82, 129</td>
</tr>
<tr>
<td>Oppedal, A</td>
<td>70, 145</td>
</tr>
<tr>
<td>O’Quinn, E</td>
<td>111, 163</td>
</tr>
<tr>
<td>Oraon, A</td>
<td>124</td>
</tr>
<tr>
<td>Orimo, S</td>
<td>89</td>
</tr>
<tr>
<td>Orme, A</td>
<td>65, 84</td>
</tr>
<tr>
<td>Orozco-Caballero, A</td>
<td>84</td>
</tr>
<tr>
<td>Ortalan, V</td>
<td>80</td>
</tr>
<tr>
<td>Ortega, N</td>
<td>62</td>
</tr>
<tr>
<td>Ortgies, D</td>
<td>151</td>
</tr>
<tr>
<td>Ortiz, L</td>
<td>106</td>
</tr>
<tr>
<td>O’Shea, R</td>
<td>127</td>
</tr>
<tr>
<td>Oshima, T</td>
<td>46</td>
</tr>
<tr>
<td>Osiecki, T</td>
<td>55</td>
</tr>
<tr>
<td>Osokov, Y</td>
<td>51</td>
</tr>
<tr>
<td>V</td>
<td>162</td>
</tr>
<tr>
<td>Ostergaard, H</td>
<td>39</td>
</tr>
<tr>
<td>Ostoja-Starzewski, M</td>
<td>118</td>
</tr>
<tr>
<td>Oswal, D</td>
<td>90</td>
</tr>
<tr>
<td>Oswald, S</td>
<td>70</td>
</tr>
<tr>
<td>Otero, O</td>
<td>61</td>
</tr>
<tr>
<td>Otis, R</td>
<td>59</td>
</tr>
<tr>
<td>Otuku, M</td>
<td>138</td>
</tr>
<tr>
<td>Oudot, B</td>
<td>48</td>
</tr>
<tr>
<td>Outrequin, M</td>
<td>162</td>
</tr>
<tr>
<td>Ouyang, L</td>
<td>89</td>
</tr>
<tr>
<td>Ovaert, T</td>
<td>163</td>
</tr>
<tr>
<td>Overman, N</td>
<td>153, 162</td>
</tr>
<tr>
<td>Owen, L</td>
<td>78</td>
</tr>
<tr>
<td>Ozbulut, O</td>
<td>95</td>
</tr>
<tr>
<td>Ozcan, H</td>
<td>95</td>
</tr>
<tr>
<td>Özel, E</td>
<td>37</td>
</tr>
<tr>
<td>Ozmen, O</td>
<td>45</td>
</tr>
<tr>
<td>Ozturk, T</td>
<td>59</td>
</tr>
<tr>
<td>Pama Lopes, T</td>
<td>142</td>
</tr>
<tr>
<td>Panas, I</td>
<td>106</td>
</tr>
<tr>
<td>Panda, K</td>
<td>142</td>
</tr>
<tr>
<td>Pande, C</td>
<td>101</td>
</tr>
<tr>
<td>Pandey, S</td>
<td>150</td>
</tr>
<tr>
<td>Pan, F</td>
<td>112</td>
</tr>
<tr>
<td>Panigrahi, S</td>
<td>118</td>
</tr>
<tr>
<td>Panta, J</td>
<td>43</td>
</tr>
<tr>
<td>Pantelides, S</td>
<td>133</td>
</tr>
<tr>
<td>Panteleon, W</td>
<td>117</td>
</tr>
<tr>
<td>Pan, W</td>
<td>112</td>
</tr>
<tr>
<td>Pan, X</td>
<td>85, 111, 133, 151</td>
</tr>
<tr>
<td>Pan, Y</td>
<td>63</td>
</tr>
<tr>
<td>Panzarino, J</td>
<td>45</td>
</tr>
<tr>
<td>Pape, C</td>
<td>64</td>
</tr>
<tr>
<td>Paquette, M</td>
<td>83</td>
</tr>
<tr>
<td>Paramore, J</td>
<td>77, 93, 153</td>
</tr>
<tr>
<td>Parent, L</td>
<td>123</td>
</tr>
<tr>
<td>Parilla, P</td>
<td>108</td>
</tr>
<tr>
<td>Parish, C</td>
<td>148</td>
</tr>
<tr>
<td>Parish, M</td>
<td>42</td>
</tr>
<tr>
<td>Park, B</td>
<td>156</td>
</tr>
<tr>
<td>Park, D</td>
<td>65</td>
</tr>
<tr>
<td>Park, M</td>
<td>69, 112</td>
</tr>
<tr>
<td>Park, T</td>
<td>157</td>
</tr>
<tr>
<td>Park, G</td>
<td>122</td>
</tr>
<tr>
<td>Park, H</td>
<td>46</td>
</tr>
<tr>
<td>Park, I</td>
<td>44, 122, 162</td>
</tr>
<tr>
<td>Park, J</td>
<td>37, 52, 76, 84, 98, 115, 117, 146, 155</td>
</tr>
<tr>
<td>Park, K</td>
<td>160</td>
</tr>
<tr>
<td>Park, S</td>
<td>155</td>
</tr>
<tr>
<td>Park, Y</td>
<td>63, 118</td>
</tr>
<tr>
<td>Parlakgigit, S</td>
<td>142</td>
</tr>
<tr>
<td>Parrington, R</td>
<td>83, 104</td>
</tr>
<tr>
<td>Parsons, M</td>
<td>162</td>
</tr>
<tr>
<td>Partezana, J</td>
<td>60</td>
</tr>
<tr>
<td>Parthasarathy, T</td>
<td>41</td>
</tr>
<tr>
<td>Pascucci, M</td>
<td>42</td>
</tr>
<tr>
<td>Pasebani, S</td>
<td>155</td>
</tr>
<tr>
<td>Patala, S</td>
<td>46, 66, 159</td>
</tr>
<tr>
<td>Patel, A</td>
<td>71, 144</td>
</tr>
<tr>
<td>Patel, M</td>
<td>149</td>
</tr>
<tr>
<td>Pateras, A</td>
<td>117</td>
</tr>
<tr>
<td>Pathak, S</td>
<td>148</td>
</tr>
<tr>
<td>Patil, A</td>
<td>49, 77, 159</td>
</tr>
<tr>
<td>Patil, N</td>
<td>97</td>
</tr>
<tr>
<td>Patil, S</td>
<td>73, 159</td>
</tr>
<tr>
<td>Patnaik, A</td>
<td>134</td>
</tr>
<tr>
<td>Patnaik, S</td>
<td>68</td>
</tr>
<tr>
<td>Patnaik, S</td>
<td>149, 160</td>
</tr>
<tr>
<td>Patanaik, M</td>
<td>68</td>
</tr>
<tr>
<td>Patterson, J</td>
<td>144</td>
</tr>
<tr>
<td>Patnaik, R</td>
<td>102</td>
</tr>
<tr>
<td>Paul, A</td>
<td>38</td>
</tr>
<tr>
<td>Paul, B</td>
<td>50, 67</td>
</tr>
<tr>
<td>Paul, J</td>
<td>145</td>
</tr>
<tr>
<td>Paul, R</td>
<td>103</td>
</tr>
<tr>
<td>Paul, S</td>
<td>71</td>
</tr>
<tr>
<td>Pauls, J</td>
<td>132</td>
</tr>
<tr>
<td>Paulson, N</td>
<td>128</td>
</tr>
<tr>
<td>Paunovic, V</td>
<td>156</td>
</tr>
<tr>
<td>Pavlovic, V</td>
<td>157</td>
</tr>
<tr>
<td>Pavuny, S</td>
<td>40, 62</td>
</tr>
<tr>
<td>Pawar, V</td>
<td>104, 128, 150, 162</td>
</tr>
<tr>
<td>Payne, S</td>
<td>82</td>
</tr>
<tr>
<td>Payzant, A</td>
<td>95</td>
</tr>
<tr>
<td>Paz y Puente, A</td>
<td>60</td>
</tr>
<tr>
<td>Pecharsky, V</td>
<td>89</td>
</tr>
<tr>
<td>Pecharsky, V</td>
<td>124, 162</td>
</tr>
<tr>
<td>Pedrazza, F</td>
<td>161</td>
</tr>
<tr>
<td>Pedroni, M</td>
<td>89</td>
</tr>
<tr>
<td>Pedrosa, V</td>
<td>142</td>
</tr>
<tr>
<td>Peele, J</td>
<td>42, 102</td>
</tr>
<tr>
<td>Peeler, D</td>
<td>123</td>
</tr>
<tr>
<td>Pei, X</td>
<td>159</td>
</tr>
<tr>
<td>Pellegrino, F</td>
<td>158</td>
</tr>
<tr>
<td>Pelliq, R</td>
<td>102, 143</td>
</tr>
<tr>
<td>Pellerin, N</td>
<td>110</td>
</tr>
<tr>
<td>Pelletier, J</td>
<td>117</td>
</tr>
<tr>
<td>Peng Chiang, C</td>
<td>120</td>
</tr>
<tr>
<td>Peng, Y</td>
<td>129</td>
</tr>
<tr>
<td>Penilla, E</td>
<td>42</td>
</tr>
<tr>
<td>Penciak, S</td>
<td>133</td>
</tr>
<tr>
<td>Penso, G</td>
<td>109</td>
</tr>
<tr>
<td>Penso, J</td>
<td>66, 130</td>
</tr>
<tr>
<td>Pepler, M</td>
<td>52</td>
</tr>
<tr>
<td>Peralta, A</td>
<td>114</td>
</tr>
<tr>
<td>Peralta, X</td>
<td>81</td>
</tr>
<tr>
<td>Perdomo, C</td>
<td>156</td>
</tr>
<tr>
<td>Perea, D</td>
<td>87</td>
</tr>
<tr>
<td>Pereda, B</td>
<td>98</td>
</tr>
<tr>
<td>Pereira da Cunha, M</td>
<td>61</td>
</tr>
<tr>
<td>Pereira, J</td>
<td>157</td>
</tr>
<tr>
<td>Perpepko, J</td>
<td>69, 72, 129</td>
</tr>
<tr>
<td>Perez, E</td>
<td>68, 131</td>
</tr>
<tr>
<td>Perin, G</td>
<td>81, 157</td>
</tr>
<tr>
<td>Perkins, C</td>
<td>132</td>
</tr>
<tr>
<td>Perkins, S</td>
<td>57</td>
</tr>
<tr>
<td>Perovic, D</td>
<td>103</td>
</tr>
<tr>
<td>Name</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Rodriguez Rodriguez, W.</td>
<td>156</td>
</tr>
<tr>
<td>Rodriguez-Varela, F.</td>
<td>132</td>
</tr>
<tr>
<td>Roehling, J.</td>
<td>78, 153</td>
</tr>
<tr>
<td>Roerig, F.</td>
<td>80</td>
</tr>
<tr>
<td>Rogal, L.</td>
<td>137, 164</td>
</tr>
<tr>
<td>Rogers, J.</td>
<td>140</td>
</tr>
<tr>
<td>Rogers, R.</td>
<td>39, 56</td>
</tr>
<tr>
<td>Rohatgi, A.</td>
<td>135</td>
</tr>
<tr>
<td>Rohatgi, P.</td>
<td>70</td>
</tr>
<tr>
<td>Rohde, M.</td>
<td>92, 136</td>
</tr>
<tr>
<td>Rohrbach, E.</td>
<td>161</td>
</tr>
<tr>
<td>Rohrer, G.</td>
<td>45, 85, 102, 107</td>
</tr>
<tr>
<td>Rojas-Chávez, H.</td>
<td>163</td>
</tr>
<tr>
<td>Rolchigo, M.</td>
<td>38, 151</td>
</tr>
<tr>
<td>Rolfe, D.</td>
<td>44</td>
</tr>
<tr>
<td>Rollett, A.</td>
<td>51, 59, 85, 97, 105, 133, 141, 150, 160</td>
</tr>
<tr>
<td>Romanov, V.</td>
<td>121</td>
</tr>
<tr>
<td>Romeis, S.</td>
<td>145, 150</td>
</tr>
<tr>
<td>Romig Jr., A.</td>
<td>62</td>
</tr>
<tr>
<td>Ronchetto, E.</td>
<td>145</td>
</tr>
<tr>
<td>Rondinella, A.</td>
<td>56</td>
</tr>
<tr>
<td>Rondinella, V.</td>
<td>148</td>
</tr>
<tr>
<td>Rong, Y.</td>
<td>47, 59</td>
</tr>
<tr>
<td>Rosas, B.</td>
<td>62</td>
</tr>
<tr>
<td>Rose, A.</td>
<td>64</td>
</tr>
<tr>
<td>Rosei, F.</td>
<td>71, 91</td>
</tr>
<tr>
<td>Rosenzweig, Z.</td>
<td>81</td>
</tr>
<tr>
<td>Ross, A.</td>
<td>81</td>
</tr>
<tr>
<td>Ross, E.</td>
<td>50</td>
</tr>
<tr>
<td>Rosso, J.</td>
<td>155</td>
</tr>
<tr>
<td>Rosso, M.</td>
<td>54, 137</td>
</tr>
<tr>
<td>Rothermel, T.</td>
<td>56</td>
</tr>
<tr>
<td>Roth, R.</td>
<td>40</td>
</tr>
<tr>
<td>Rounaghi, S.</td>
<td>70</td>
</tr>
<tr>
<td>Rou, S.</td>
<td>126</td>
</tr>
<tr>
<td>Rowenhorst, D.</td>
<td>39</td>
</tr>
<tr>
<td>Ro, Y.</td>
<td>44, 122, 162</td>
</tr>
<tr>
<td>Roy, A.</td>
<td>51, 120</td>
</tr>
<tr>
<td>Roy Chowdhury, S.</td>
<td>115</td>
</tr>
<tr>
<td>Roy, M.</td>
<td>75, 113</td>
</tr>
<tr>
<td>Roy, P.</td>
<td>156, 157</td>
</tr>
<tr>
<td>Roy, S.</td>
<td>120</td>
</tr>
<tr>
<td>Rozic, B.</td>
<td>53, 100</td>
</tr>
<tr>
<td>Rozman, K.</td>
<td>47, 50, 67</td>
</tr>
<tr>
<td>Rubesova, K.</td>
<td>93</td>
</tr>
<tr>
<td>Rucker, W.</td>
<td>55</td>
</tr>
<tr>
<td>Rudolf, C.</td>
<td>63</td>
</tr>
<tr>
<td>Rueschhoff, L.</td>
<td>118, 139</td>
</tr>
<tr>
<td>Ruggiero, P.</td>
<td>116</td>
</tr>
<tr>
<td>Ruggles, T.</td>
<td>84</td>
</tr>
<tr>
<td>Ruggles-Wrenn, M.</td>
<td>41</td>
</tr>
<tr>
<td>Ruimi, A.</td>
<td>148</td>
</tr>
<tr>
<td>Ruiz, A.</td>
<td>148</td>
</tr>
<tr>
<td>Runckel, K.</td>
<td>101</td>
</tr>
<tr>
<td>Runnels, B.</td>
<td>99</td>
</tr>
<tr>
<td>Rupert, T.</td>
<td>150</td>
</tr>
<tr>
<td>Ruzic, D.</td>
<td>156</td>
</tr>
<tr>
<td>R, V.</td>
<td>96</td>
</tr>
<tr>
<td>R, Y.</td>
<td>52, 120</td>
</tr>
<tr>
<td>Ryan, M.</td>
<td>68</td>
</tr>
<tr>
<td>Ryu, J.</td>
<td>65</td>
</tr>
<tr>
<td>Rzoska, S.</td>
<td>83, 146</td>
</tr>
<tr>
<td>Saal, J.</td>
<td>57, 72, 91, 113, 135, 152</td>
</tr>
<tr>
<td>Saarimmäki, J.</td>
<td>97, 141</td>
</tr>
<tr>
<td>Sabarou, H.</td>
<td>91, 156</td>
</tr>
<tr>
<td>Sabau, A.</td>
<td>47, 133, 150</td>
</tr>
<tr>
<td>Saber, M.</td>
<td>52</td>
</tr>
<tr>
<td>Sabo, K.</td>
<td>120</td>
</tr>
<tr>
<td>Sabolsky, E.</td>
<td>39, 45</td>
</tr>
<tr>
<td>Sabolsky, K.</td>
<td>39</td>
</tr>
<tr>
<td>Saby, M.</td>
<td>115</td>
</tr>
<tr>
<td>Sadang, R.</td>
<td>141, 155</td>
</tr>
<tr>
<td>Sadikin, Y.</td>
<td>111</td>
</tr>
<tr>
<td>Sado, M.</td>
<td>138</td>
</tr>
<tr>
<td>Sadowski, B.</td>
<td>42, 125</td>
</tr>
<tr>
<td>Saedi, S.</td>
<td>38, 60, 95</td>
</tr>
<tr>
<td>Safaltin, S.</td>
<td>161</td>
</tr>
<tr>
<td>Sagapuranam, D.</td>
<td>116</td>
</tr>
<tr>
<td>Saha, A.</td>
<td>81</td>
</tr>
<tr>
<td>Sahasrabudhe, H.</td>
<td>155</td>
</tr>
<tr>
<td>Sahin, F.</td>
<td>75</td>
</tr>
<tr>
<td>Sahu, A.</td>
<td>83</td>
</tr>
<tr>
<td>Sahu, B.</td>
<td>154</td>
</tr>
<tr>
<td>Sahu, D.</td>
<td>144</td>
</tr>
<tr>
<td>Sahu, M.</td>
<td>82</td>
</tr>
<tr>
<td>Sahu, P.</td>
<td>160</td>
</tr>
<tr>
<td>Said, K.</td>
<td>147</td>
</tr>
<tr>
<td>Sailo, S.</td>
<td>147</td>
</tr>
<tr>
<td>Saito, H.</td>
<td>44</td>
</tr>
<tr>
<td>Saitoh, K.</td>
<td>138</td>
</tr>
<tr>
<td>Saito, K.</td>
<td>74</td>
</tr>
<tr>
<td>Saji, N.</td>
<td>92</td>
</tr>
<tr>
<td>Sakaguchi, S.</td>
<td>108</td>
</tr>
<tr>
<td>Sakai, G.</td>
<td>46</td>
</tr>
<tr>
<td>Sakamoto, W.</td>
<td>81</td>
</tr>
<tr>
<td>Sakaniwa, Y.</td>
<td>126</td>
</tr>
<tr>
<td>Sakasegawa, H.</td>
<td>66</td>
</tr>
<tr>
<td>Sakid, R.</td>
<td>145, 117, 129</td>
</tr>
<tr>
<td>Sakka, Y.</td>
<td>45</td>
</tr>
<tr>
<td>Salafranca, J.</td>
<td>133</td>
</tr>
<tr>
<td>Salas, G.</td>
<td>151</td>
</tr>
<tr>
<td>Salasin, J.</td>
<td>159</td>
</tr>
<tr>
<td>Salazar-Zertuche, M.</td>
<td>163</td>
</tr>
<tr>
<td>Saleem, A.</td>
<td>42</td>
</tr>
<tr>
<td>Saleem, M.</td>
<td>161</td>
</tr>
<tr>
<td>Saleh, E.</td>
<td>79</td>
</tr>
<tr>
<td>Saleh, I.</td>
<td>57</td>
</tr>
<tr>
<td>Saleh-Khojina, A.</td>
<td>78</td>
</tr>
<tr>
<td>Salehinia, I.</td>
<td>158</td>
</tr>
<tr>
<td>Saleh, M.</td>
<td>110</td>
</tr>
<tr>
<td>Saleh, T.</td>
<td>87</td>
</tr>
<tr>
<td>Salem, A.</td>
<td>49, 60, 136</td>
</tr>
<tr>
<td>Salem, J.</td>
<td>108</td>
</tr>
<tr>
<td>Salimi Jazi, M.</td>
<td>139</td>
</tr>
<tr>
<td>Salim, A.</td>
<td>160</td>
</tr>
<tr>
<td>Salomons, K.</td>
<td>40</td>
</tr>
<tr>
<td>Salvador, P.</td>
<td>102, 107</td>
</tr>
<tr>
<td>Salzburger, A.</td>
<td>59</td>
</tr>
<tr>
<td>Samanta, A.</td>
<td>45, 102</td>
</tr>
<tr>
<td>Samarakoon, D.</td>
<td>40</td>
</tr>
<tr>
<td>Samia, A.</td>
<td>53</td>
</tr>
<tr>
<td>Samolyuk, G.</td>
<td>48</td>
</tr>
<tr>
<td>Sam Parmak, E.</td>
<td>161</td>
</tr>
<tr>
<td>Sanchez, L.</td>
<td>41</td>
</tr>
<tr>
<td>Sandberg, R.</td>
<td>94</td>
</tr>
<tr>
<td>Sanders, A.</td>
<td>106, 114, 142</td>
</tr>
<tr>
<td>Sanders, P.</td>
<td>40, 62, 101, 106</td>
</tr>
<tr>
<td>Sandhu, K.</td>
<td>116</td>
</tr>
<tr>
<td>Sandol, L.</td>
<td>102</td>
</tr>
<tr>
<td>Sangal, S.</td>
<td>99</td>
</tr>
<tr>
<td>Sanghera, J.</td>
<td>42, 63, 82, 102, 125</td>
</tr>
<tr>
<td>Sangid, M.</td>
<td>105</td>
</tr>
<tr>
<td>Sangodkar, R.</td>
<td>42</td>
</tr>
<tr>
<td>Sano, K.</td>
<td>56</td>
</tr>
<tr>
<td>Sano, T.</td>
<td>47, 123, 126, 141, 147, 148</td>
</tr>
<tr>
<td>Sano, Y.</td>
<td>148</td>
</tr>
<tr>
<td>Sanpo, N.</td>
<td>161</td>
</tr>
<tr>
<td>Sansoucie, M.</td>
<td>60</td>
</tr>
<tr>
<td>Santacruz-Gomez, K.</td>
<td>134</td>
</tr>
<tr>
<td>Santacruz-Gómez, K.</td>
<td>151</td>
</tr>
<tr>
<td>Santacruz, K.</td>
<td>90</td>
</tr>
<tr>
<td>Santala, M.</td>
<td>123</td>
</tr>
<tr>
<td>Sant, G.</td>
<td>42, 63, 102</td>
</tr>
<tr>
<td>Santiago, U.</td>
<td>101</td>
</tr>
<tr>
<td>Santiil, G.</td>
<td>39</td>
</tr>
<tr>
<td>Santos, E.</td>
<td>148</td>
</tr>
<tr>
<td>Santos, G.</td>
<td>81, 157</td>
</tr>
<tr>
<td>Name</td>
<td>Page(s)</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>Szajewski, B</td>
<td>45, 50</td>
</tr>
<tr>
<td>Szeliga, D</td>
<td>51, 71</td>
</tr>
<tr>
<td>Szemkus, S</td>
<td>121</td>
</tr>
<tr>
<td>Szendrei, A</td>
<td>140, 144</td>
</tr>
<tr>
<td>Szendreia, A</td>
<td>156</td>
</tr>
<tr>
<td>Szpunar, J</td>
<td>84</td>
</tr>
<tr>
<td>Tang, Z</td>
<td>103</td>
</tr>
<tr>
<td>Takamura, H</td>
<td>37, 50, 99, 100, 126, 148, 149</td>
</tr>
<tr>
<td>Tada, Y</td>
<td>126</td>
</tr>
<tr>
<td>Taguchi, H</td>
<td>156</td>
</tr>
<tr>
<td>Taheri, M</td>
<td>37, 50, 99, 100, 126, 148, 149</td>
</tr>
<tr>
<td>Tahir, N</td>
<td>103</td>
</tr>
<tr>
<td>Tahmasebifar, A</td>
<td>93</td>
</tr>
<tr>
<td>Tai, G</td>
<td>101</td>
</tr>
<tr>
<td>Taira, T</td>
<td>42, 63, 82, 125</td>
</tr>
<tr>
<td>Takacs, L</td>
<td>51, 70, 89, 111, 132, 150</td>
</tr>
<tr>
<td>Takada, A</td>
<td>47</td>
</tr>
<tr>
<td>Takahashi, F</td>
<td>46</td>
</tr>
<tr>
<td>Takahashi, T</td>
<td>126, 138, 145</td>
</tr>
<tr>
<td>Takamura, H</td>
<td>85</td>
</tr>
<tr>
<td>Takeda, M</td>
<td>108, 124</td>
</tr>
<tr>
<td>Takeshi, E</td>
<td>138</td>
</tr>
<tr>
<td>Takeuchi, T</td>
<td>81</td>
</tr>
<tr>
<td>Takizawa, H</td>
<td>113</td>
</tr>
<tr>
<td>Talapatra, A</td>
<td>125, 126</td>
</tr>
<tr>
<td>Tallant, D</td>
<td>49</td>
</tr>
<tr>
<td>Tallapragada, S</td>
<td>69</td>
</tr>
<tr>
<td>Talley, J</td>
<td>164</td>
</tr>
<tr>
<td>Talley, K</td>
<td>40</td>
</tr>
<tr>
<td>Tamara, M</td>
<td>62</td>
</tr>
<tr>
<td>Tamerler, C</td>
<td>91, 93</td>
</tr>
<tr>
<td>Ta, N</td>
<td>135</td>
</tr>
<tr>
<td>Tanaka, S</td>
<td>74</td>
</tr>
<tr>
<td>Tandon, G</td>
<td>96</td>
</tr>
<tr>
<td>Tandon, R</td>
<td>145</td>
</tr>
<tr>
<td>Tang, F</td>
<td>38, 50, 60, 80</td>
</tr>
<tr>
<td>Tang, G</td>
<td>122</td>
</tr>
<tr>
<td>Tang, H</td>
<td>90</td>
</tr>
<tr>
<td>Tang, M</td>
<td>68, 140</td>
</tr>
<tr>
<td>Tang, P</td>
<td>133</td>
</tr>
<tr>
<td>Tang, S</td>
<td>92</td>
</tr>
<tr>
<td>Tang, W</td>
<td>88</td>
</tr>
<tr>
<td>Tang, X</td>
<td>129, 134</td>
</tr>
<tr>
<td>Tang, Z</td>
<td>145</td>
</tr>
<tr>
<td>Tanigawa, H</td>
<td>66, 87</td>
</tr>
<tr>
<td>Taniguchi, S</td>
<td>85</td>
</tr>
<tr>
<td>Taniguchi, T</td>
<td>45</td>
</tr>
<tr>
<td>Tan, L</td>
<td>158</td>
</tr>
<tr>
<td>Tan, S</td>
<td>103</td>
</tr>
<tr>
<td>Tan, T</td>
<td>100</td>
</tr>
<tr>
<td>Tan, W</td>
<td>97</td>
</tr>
<tr>
<td>Tan, X</td>
<td>133</td>
</tr>
<tr>
<td>Tapia, G</td>
<td>38, 60, 79, 98</td>
</tr>
<tr>
<td>Tari, V</td>
<td>51</td>
</tr>
<tr>
<td>Tarkowski, T</td>
<td>101</td>
</tr>
<tr>
<td>Tarlochan, F</td>
<td>36</td>
</tr>
<tr>
<td>Tasan, C</td>
<td>122</td>
</tr>
<tr>
<td>Tatami, J</td>
<td>119, 126, 138, 145</td>
</tr>
<tr>
<td>Tatlock, G</td>
<td>140</td>
</tr>
<tr>
<td>Tauber, A</td>
<td>157</td>
</tr>
<tr>
<td>Tayeb, M</td>
<td>142</td>
</tr>
<tr>
<td>Taylor, C</td>
<td>148</td>
</tr>
<tr>
<td>Taylor, E</td>
<td>61, 99, 119, 131, 146, 154</td>
</tr>
<tr>
<td>Taylor, K</td>
<td>98</td>
</tr>
<tr>
<td>Taylor, M</td>
<td>129</td>
</tr>
<tr>
<td>Taylor, S</td>
<td>38, 76</td>
</tr>
<tr>
<td>Tayon, W</td>
<td>84</td>
</tr>
<tr>
<td>Tchusida, J</td>
<td>83</td>
</tr>
<tr>
<td>Teague, M</td>
<td>49, 143</td>
</tr>
<tr>
<td>Team, P</td>
<td>78</td>
</tr>
<tr>
<td>Teeter, L</td>
<td>48, 67</td>
</tr>
<tr>
<td>Telang, A</td>
<td>57</td>
</tr>
<tr>
<td>Telesman, J</td>
<td>39</td>
</tr>
<tr>
<td>Teng, C</td>
<td>97, 133</td>
</tr>
<tr>
<td>Terán Arce, F</td>
<td>134</td>
</tr>
<tr>
<td>Terán, F</td>
<td>151</td>
</tr>
<tr>
<td>Terasaki, H</td>
<td>35, 58, 78</td>
</tr>
<tr>
<td>Terrani, K</td>
<td>68</td>
</tr>
<tr>
<td>Terrazas, C</td>
<td>79</td>
</tr>
<tr>
<td>Tevis, I</td>
<td>103</td>
</tr>
<tr>
<td>Tewari, A</td>
<td>52, 61</td>
</tr>
<tr>
<td>Teysseyre, S</td>
<td>131</td>
</tr>
<tr>
<td>Thadhani, N</td>
<td>95</td>
</tr>
<tr>
<td>Thakare, S</td>
<td>148</td>
</tr>
<tr>
<td>Thapa, R</td>
<td>42</td>
</tr>
<tr>
<td>Thatcher, Z</td>
<td>133</td>
</tr>
<tr>
<td>Thelin, P</td>
<td>82</td>
</tr>
<tr>
<td>Thilis, L</td>
<td>37</td>
</tr>
<tr>
<td>Thimsen, D</td>
<td>47</td>
</tr>
<tr>
<td>Thirugnanasambandam, P</td>
<td>134</td>
</tr>
<tr>
<td>Thole, V</td>
<td>106</td>
</tr>
<tr>
<td>Thomas, A</td>
<td>151</td>
</tr>
<tr>
<td>Thomas, E</td>
<td>40</td>
</tr>
<tr>
<td>Thomas, J</td>
<td>52</td>
</tr>
<tr>
<td>Thomas, R</td>
<td>67</td>
</tr>
<tr>
<td>Thomé, M</td>
<td>38</td>
</tr>
<tr>
<td>Thommes, M</td>
<td>108</td>
</tr>
<tr>
<td>Thompson, G</td>
<td>99</td>
</tr>
<tr>
<td>Thompson, S</td>
<td>37</td>
</tr>
<tr>
<td>Thomson, J</td>
<td>50, 69, 88</td>
</tr>
<tr>
<td>Thornton, K</td>
<td>51, 64</td>
</tr>
<tr>
<td>Thorp, K</td>
<td>96</td>
</tr>
<tr>
<td>Thron, A</td>
<td>107</td>
</tr>
<tr>
<td>Thumm, M</td>
<td>114</td>
</tr>
<tr>
<td>Thuo, M</td>
<td>103</td>
</tr>
<tr>
<td>Tian, J</td>
<td>40, 122</td>
</tr>
<tr>
<td>Tian, P</td>
<td>57</td>
</tr>
<tr>
<td>Tian, Y</td>
<td>86, 96</td>
</tr>
<tr>
<td>Tidrow, S</td>
<td>40, 61, 156, 157</td>
</tr>
<tr>
<td>Tiegel, M</td>
<td>93</td>
</tr>
<tr>
<td>Tiekink, W</td>
<td>151</td>
</tr>
<tr>
<td>Tietz, F</td>
<td>127</td>
</tr>
<tr>
<td>Tieu, K</td>
<td>73</td>
</tr>
<tr>
<td>Tikare, V</td>
<td>98</td>
</tr>
<tr>
<td>Tiley, J</td>
<td>58</td>
</tr>
<tr>
<td>Tilka, J</td>
<td>117</td>
</tr>
<tr>
<td>Timucin, D</td>
<td>37, 133</td>
</tr>
<tr>
<td>Tirpak, J</td>
<td>44</td>
</tr>
<tr>
<td>Tiwana, P</td>
<td>63</td>
</tr>
<tr>
<td>Tiwari, P</td>
<td>164</td>
</tr>
<tr>
<td>Tobón, J</td>
<td>42</td>
</tr>
<tr>
<td>Tocci, M</td>
<td>115</td>
</tr>
<tr>
<td>Tochigi, E</td>
<td>46</td>
</tr>
<tr>
<td>Toeppe, T</td>
<td>121</td>
</tr>
<tr>
<td>Tohji, K</td>
<td>136</td>
</tr>
<tr>
<td>Toker, G</td>
<td>95</td>
</tr>
<tr>
<td>Tokuda, S</td>
<td>159</td>
</tr>
<tr>
<td>Tollesen, T</td>
<td>126</td>
</tr>
<tr>
<td>Tolman, K</td>
<td>40</td>
</tr>
<tr>
<td>Tolozcko, M</td>
<td>87</td>
</tr>
<tr>
<td>Tomala, R</td>
<td>89</td>
</tr>
<tr>
<td>Toman, J</td>
<td>38</td>
</tr>
<tr>
<td>Tomar, V</td>
<td>75</td>
</tr>
<tr>
<td>Tome, C</td>
<td>65</td>
</tr>
<tr>
<td>Tomina, Y</td>
<td>119</td>
</tr>
<tr>
<td>Tomita, J</td>
<td>85</td>
</tr>
<tr>
<td>Tomozawa, M</td>
<td>44</td>
</tr>
<tr>
<td>Tong, J</td>
<td>84, 108, 109</td>
</tr>
<tr>
<td>Tong, Z</td>
<td>71</td>
</tr>
<tr>
<td>Toomey, M</td>
<td>43, 161</td>
</tr>
<tr>
<td>Toparl, C</td>
<td>158</td>
</tr>
<tr>
<td>Töpper, J</td>
<td>100</td>
</tr>
<tr>
<td>Topping, T</td>
<td>47, 57, 76, 77, 95, 118, 139</td>
</tr>
<tr>
<td>Toppo, S</td>
<td>49</td>
</tr>
<tr>
<td>Torosyan, A</td>
<td>150</td>
</tr>
<tr>
<td>Torresani, E</td>
<td>93</td>
</tr>
<tr>
<td>Name</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Torres, L.</td>
<td>116</td>
</tr>
<tr>
<td>Torrey, J.</td>
<td>117</td>
</tr>
<tr>
<td>Tosar, F.</td>
<td>118</td>
</tr>
<tr>
<td>Tosse, B.</td>
<td>119</td>
</tr>
<tr>
<td>Tourret, D.</td>
<td>120</td>
</tr>
<tr>
<td>Tousignant, M.</td>
<td>121</td>
</tr>
<tr>
<td>Toyoda, S.</td>
<td>122</td>
</tr>
<tr>
<td>Trachet, A.</td>
<td>123</td>
</tr>
<tr>
<td>Tracy, C.</td>
<td>124</td>
</tr>
<tr>
<td>Tradowsky, U.</td>
<td>125</td>
</tr>
<tr>
<td>Traidi, K.</td>
<td>126</td>
</tr>
<tr>
<td>Tran, K.</td>
<td>127</td>
</tr>
<tr>
<td>Tran, R.</td>
<td>128</td>
</tr>
<tr>
<td>Traubert, T.</td>
<td>129</td>
</tr>
<tr>
<td>Trautmann, C.</td>
<td>130</td>
</tr>
<tr>
<td>Trautmann, M.</td>
<td>131</td>
</tr>
<tr>
<td>Traut, Z.</td>
<td>132</td>
</tr>
<tr>
<td>Travis, A.</td>
<td>133</td>
</tr>
<tr>
<td>Trelewaicz, J.</td>
<td>134</td>
</tr>
<tr>
<td>Trenkle, J.</td>
<td>135</td>
</tr>
<tr>
<td>Tressler, J.</td>
<td>136</td>
</tr>
<tr>
<td>Triani, G.</td>
<td>137</td>
</tr>
<tr>
<td>Trice, R.</td>
<td>138</td>
</tr>
<tr>
<td>Trindade, A.</td>
<td>139</td>
</tr>
<tr>
<td>Tripathi, J.</td>
<td>140</td>
</tr>
<tr>
<td>Trivanovic, U.</td>
<td>141</td>
</tr>
<tr>
<td>Trivedi, P.</td>
<td>142</td>
</tr>
<tr>
<td>Troadpiece, C.</td>
<td>143</td>
</tr>
<tr>
<td>Trolier-McKinstry, S.</td>
<td>144</td>
</tr>
<tr>
<td>Tröster, T.</td>
<td>145</td>
</tr>
<tr>
<td>Trubel, S.</td>
<td>146</td>
</tr>
<tr>
<td>Trujillo, C.</td>
<td>147</td>
</tr>
<tr>
<td>Trumble, K.</td>
<td>148</td>
</tr>
<tr>
<td>Trump, A.</td>
<td>149</td>
</tr>
<tr>
<td>Truszkowska, A.</td>
<td>150</td>
</tr>
<tr>
<td>Tsai, C.</td>
<td>151</td>
</tr>
<tr>
<td>Tsai, S.</td>
<td>152</td>
</tr>
<tr>
<td>Tsakiroplou, P.</td>
<td>153</td>
</tr>
<tr>
<td>Tsaknopoulos, D.</td>
<td>154</td>
</tr>
<tr>
<td>Tschiptschin, A.</td>
<td>155</td>
</tr>
<tr>
<td>Tschopp, M.</td>
<td>156</td>
</tr>
<tr>
<td>TSN, S.</td>
<td>157</td>
</tr>
<tr>
<td>Tsuhiya, K.</td>
<td>158</td>
</tr>
<tr>
<td>Tsuji, L.</td>
<td>159</td>
</tr>
<tr>
<td>Tsuji, N.</td>
<td>160</td>
</tr>
<tr>
<td>Tsunekawa, Y.</td>
<td>161</td>
</tr>
<tr>
<td>Tsuneyoshi, K.</td>
<td>162</td>
</tr>
<tr>
<td>Tsutsumia, O.</td>
<td>163</td>
</tr>
<tr>
<td>Tsuruta, T.</td>
<td>164</td>
</tr>
<tr>
<td>Tsutsumi, S.</td>
<td>165</td>
</tr>
<tr>
<td>Tsvetkov, D.</td>
<td>166</td>
</tr>
<tr>
<td>Tucker, C.</td>
<td>167</td>
</tr>
<tr>
<td>Tucker, G.</td>
<td>168</td>
</tr>
<tr>
<td>Tucker, J.</td>
<td>169</td>
</tr>
<tr>
<td>Tucker, M.</td>
<td>170</td>
</tr>
<tr>
<td>Tuggle, M.</td>
<td>171</td>
</tr>
<tr>
<td>Tuller, H.</td>
<td>172</td>
</tr>
<tr>
<td>Tumanov, N.</td>
<td>173</td>
</tr>
<tr>
<td>Tumurugoti, P.</td>
<td>174</td>
</tr>
<tr>
<td>Tungala, V.</td>
<td>175</td>
</tr>
<tr>
<td>Tupalo, O.</td>
<td>176</td>
</tr>
<tr>
<td>Turabi, A.</td>
<td>177</td>
</tr>
<tr>
<td>Turan, J.</td>
<td>178</td>
</tr>
<tr>
<td>Turan, S.</td>
<td>179</td>
</tr>
<tr>
<td>Turchi, N.</td>
<td>180</td>
</tr>
<tr>
<td>Turgut, Z.</td>
<td>181</td>
</tr>
<tr>
<td>Turick, C.</td>
<td>182</td>
</tr>
<tr>
<td>Turner, J.</td>
<td>183</td>
</tr>
<tr>
<td>Tüzemen, C.</td>
<td>184</td>
</tr>
<tr>
<td>Twumasi Boateng, F.</td>
<td>185</td>
</tr>
<tr>
<td>Tyburska-Püschel, B.</td>
<td>186</td>
</tr>
<tr>
<td>Ubic, R.</td>
<td>187</td>
</tr>
<tr>
<td>Uchiyama, S.</td>
<td>188</td>
</tr>
<tr>
<td>Ude, S.</td>
<td>189</td>
</tr>
<tr>
<td>Ueda, K.</td>
<td>190</td>
</tr>
<tr>
<td>Ueda, M.</td>
<td>191</td>
</tr>
<tr>
<td>U, F124</td>
<td>192</td>
</tr>
<tr>
<td>Uffelen, P.</td>
<td>193</td>
</tr>
<tr>
<td>Ukhande, M.</td>
<td>194</td>
</tr>
<tr>
<td>Ukhina, A.</td>
<td>195</td>
</tr>
<tr>
<td>Ullin, A.</td>
<td>196</td>
</tr>
<tr>
<td>Ullah, M.</td>
<td>197</td>
</tr>
<tr>
<td>Ulm, F.</td>
<td>198</td>
</tr>
<tr>
<td>Ulrich, M.</td>
<td>199</td>
</tr>
<tr>
<td>Ulrich, T.</td>
<td>200</td>
</tr>
<tr>
<td>Ulyan, E.</td>
<td>201</td>
</tr>
<tr>
<td>Ulvestad, A.</td>
<td>202</td>
</tr>
<tr>
<td>Umeda, J.</td>
<td>203</td>
</tr>
<tr>
<td>Umeiki, S.</td>
<td>204</td>
</tr>
<tr>
<td>Underwood, O.</td>
<td>205</td>
</tr>
<tr>
<td>Unoci, K.</td>
<td>206</td>
</tr>
<tr>
<td>Upadhyay, P.</td>
<td>207</td>
</tr>
<tr>
<td>Urakaev, F.</td>
<td>208</td>
</tr>
<tr>
<td>Uranga, P.</td>
<td>209</td>
</tr>
<tr>
<td>Ursic, H.</td>
<td>210</td>
</tr>
<tr>
<td>Usahow, S.</td>
<td>211</td>
</tr>
<tr>
<td>Usman, C.</td>
<td>212</td>
</tr>
<tr>
<td>Usov, I.</td>
<td>213</td>
</tr>
<tr>
<td>Uvarov, N.</td>
<td>214</td>
</tr>
<tr>
<td>Uzer, B.</td>
<td>215</td>
</tr>
</tbody>
</table>

**V**

Vadari Venkata, K. 116
Vadiraja, S. 37
Vadlamani, B. 103
Vahabzadeh, S. 75, 155
Vaidya, M. 135
Vaithilingam, J. .79
Valdes Ibarra, M. 132
Valdez, S. 124
Valdivieso, F. 73
Valencia, J. 120
Valentina, T. 156
Valenzuela, J. 129
van Bentem, K. 107, 147
Vance, L. 49, 68
Vancura, F. 93
Vandegriff, J. 158
Vandepere, L. 68
Vander Pol, K. 88
Van Der Voort, P. 119
Vandiver, P. 101, 123
Van Driessche, I. 119
Van Humbeeck, J. 37
Van Iderstine, E. 43, 127
Van Onderbosch, D. 155
Vanpoucke, D. 70
Van Raemonck, W. 98
van Rooyen, I. 87, 129
Varanasi, V. 56, 75, 93, 113
Vara, L. .35
Varela, M. 133
Varshney, A. 99
Varshneya, A. 145
Varvadies, G. 107
Vašen, R. 116
Vasudevan, V. 57
Vázquez, D. 99
Vazquez, M. 103
Vaz, R. 117
Veliz, G. 81, 100, 123
Veliotat, M. 158
Velsicke-Carolan, J. 68
Vemuri, R. 135
Venna, S. 109
Venugopalan, D. 43, 64
Verdeja, L. .80
Verma, A. 74, 121
Wu, D. ................................. 40, 98
Wu, H. ................................ 86
Wu, J. .................................. 57, 62
Wu, L. ................................. 35, 78, 87, 114, 153
Wu, M. ................................ 164
Wu, Q. .................................. 73
Würth, C. ............................... 89
Wu, S. .................................. 54, 92
Wu, Y. ................................. 42, 63, 76, 82, 87, 94, 118, 123,
Wynblatt, P. ....................... 45, 66, 85, 107, 130, 147
Wynne, B. ............................... 51
Wysk, R. ................................. 119

X
Xia, J. ................................. 112
Xiao, B. ................................. 116
Xiao, H. ................................. 54
Xiaokang, L. ......................... 92
Xiao, W. ................. 90, 134
Xiao, Z. ................................. 59
Xia, S. .................................. 112
Xia, Y. ................................. 86, 118, 121
Xi, C. .................................. 154
Xie, R. ................................. 82
Xie, X. ................................. 76, 94, 117, 138, 154
Xing, J. ................................. 62
Xin, Y. ................................. 59
Xiong, C. ............................... 149
Xiong, L. ............................... 105
Xi, S. .................................. 161
Xu, B. ................................. 65, 101, 143, 156, 162
Xue, L. ................................. 158
Xue, P. ................................. 116
Xuewei, Z. ......................... 103
Xue, Z. ................................. 164
Xu, H. ................................. 74, 118
Xu, L. .................................. 159
Xu, P. ................................. 68, 87
Xu, R. ................................. 86, 146, 160, 164
Xu, S. ................................. 97, 105
Xu, T. ................................. 164
Xu, W. ................................. 117
Xu, Y. ................................. 68, 152
Xu, Z. ................................. 130

Y
Yablinsky, C. ......................... 158
Yacaman, M. .......................... 101
Yadav, M. ............................. 162
Yadollahi, A. ......................... 37, 79
Yahagi, T. ............................. 145
Yahata, B ................................ 140
Yakaboylu, G. ......................... 39
Yamabe, Y. ............................ 77
Yamaguchi, H. ....................... 46
Yamaguchi, S. ......................... 46
Yamaguchi, T. ......................... 74, 138
Yamamoto, H. ......................... 74
Yamamoto, T. ......................... 56
Yamanaka, A. .......................... 61
Yamashita, I. .......................... 82
Yamazuchi, S. ......................... 82
Yanagimoto, J. ......................... 93
Yanagiya, T. .......................... 74
Yang, F. ................................. 151
Yang, H. ................................. 47
Yang, J. ................................. 59, 99, 123
Yang, K. ................................. 67, 122, 158
Yang, L. ................................. 104, 139, 141
Yang, N. ................................. 37
Yang, Q. ................................ 39, 41, 156
Yang, S. ................................. 73, 90, 130, 164
Yang, W. ................................. 99
Yang, X. ................................. 54, 158
Yang, Y. ................................. 106, 112, 140, 158, 164
Yang, Z. ................................ 62, 92, 122, 163
Yan, H. ................................. 117, 160
Yan, M. ................................. 58
Yannetta, C. ......................... 52, 60, 154
Yano, K. ................................. 123
Yano, T. ................................ 132
Yan, P. ................................. 123
Yan, W. ................................. 122, 158
Yan, X. ................................. 39
Yan, Z. ................................. 160
Yao, B. ................................. 63
Yao, H. ................................. 163
Yao, T. ................................ 49, 147
Yao, Y. ................................. 117
Yao, Z. ................................. 131
Yashima, M. ......................... 102, 119
Yoshihiro, H. ......................... 147
Yoshihiro, K. ......................... 108
Yasuo, J. ................................. 73
<table>
<thead>
<tr>
<th>Name</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yuan, W</td>
<td>148</td>
</tr>
<tr>
<td>Yoon, A</td>
<td>94, 96, 120</td>
</tr>
<tr>
<td>Yeom, H</td>
<td>68, 87</td>
</tr>
<tr>
<td>Ye, L</td>
<td>133</td>
</tr>
<tr>
<td>Yeh, A</td>
<td>96, 120</td>
</tr>
<tr>
<td>Yeh, J</td>
<td>94, 96, 120</td>
</tr>
<tr>
<td>Ye, L</td>
<td>133</td>
</tr>
<tr>
<td>Yekutayev, A</td>
<td>104, 110, 113, 114, 117, 118, 121, 131, 133, 135, 137, 139, 146, 148, 153, 154, 155, 158</td>
</tr>
<tr>
<td>Yoon, K</td>
<td>115</td>
</tr>
<tr>
<td>Yoo, S</td>
<td>65</td>
</tr>
<tr>
<td>Yoo, Y</td>
<td>105</td>
</tr>
<tr>
<td>Yoshida, H</td>
<td>95</td>
</tr>
<tr>
<td>Yoshikawa, Y</td>
<td>.118</td>
</tr>
<tr>
<td>Yoshizawa, Y</td>
<td></td>
</tr>
<tr>
<td>Yousufi, A</td>
<td>.47, 57, 76, 77, 95, 118, 139</td>
</tr>
<tr>
<td>Yuan, J</td>
<td>.61</td>
</tr>
<tr>
<td>Yuan, C</td>
<td>92, 136</td>
</tr>
<tr>
<td>Yuan, X</td>
<td>160, 164</td>
</tr>
<tr>
<td>Yu, G</td>
<td>163</td>
</tr>
<tr>
<td>Yusufi, A</td>
<td>.121</td>
</tr>
<tr>
<td>Yusefiani, A</td>
<td></td>
</tr>
<tr>
<td>Yuzi, H</td>
<td>80, 121, 129</td>
</tr>
<tr>
<td>Yuzuro, T</td>
<td>108</td>
</tr>
<tr>
<td>Yu, J</td>
<td>131, 137, 155</td>
</tr>
<tr>
<td>Yu, L</td>
<td>133</td>
</tr>
<tr>
<td>Yurko, A</td>
<td>127</td>
</tr>
<tr>
<td>Yu, S</td>
<td>133</td>
</tr>
<tr>
<td>Yuzuro, T</td>
<td>108</td>
</tr>
<tr>
<td>Zabotto, F</td>
<td>80, 81, 156</td>
</tr>
<tr>
<td>Zahra, T</td>
<td>137</td>
</tr>
<tr>
<td>Zaitsev, N</td>
<td>156</td>
</tr>
<tr>
<td>Zakaryan, Y</td>
<td>40</td>
</tr>
<tr>
<td>Zamarayeva, A</td>
<td>157, 158</td>
</tr>
<tr>
<td>Zambrano, D</td>
<td>.96</td>
</tr>
<tr>
<td>Zang, C</td>
<td>54, 115</td>
</tr>
<tr>
<td>Zangbadi, A</td>
<td>.104</td>
</tr>
<tr>
<td>Zang, L</td>
<td>78, 126</td>
</tr>
<tr>
<td>Zanotto, E</td>
<td>.83</td>
</tr>
<tr>
<td>Zapata, J</td>
<td>.162</td>
</tr>
<tr>
<td>Zapata-Solvas, E</td>
<td>110, 137</td>
</tr>
<tr>
<td>Zargaran, A</td>
<td>.61</td>
</tr>
<tr>
<td>Zarkadoula, E</td>
<td>48, 102</td>
</tr>
<tr>
<td>Zavare, S</td>
<td>.162</td>
</tr>
<tr>
<td>Zavorotynska, O</td>
<td>.89</td>
</tr>
<tr>
<td>Zbib, H</td>
<td>.129</td>
</tr>
<tr>
<td>Zeier, W</td>
<td>.66</td>
</tr>
<tr>
<td>Zeitchick, E</td>
<td>.69</td>
</tr>
<tr>
<td>Zell, E</td>
<td>.126</td>
</tr>
<tr>
<td>Zenere, H</td>
<td>.96</td>
</tr>
<tr>
<td>Zeng, C</td>
<td>.69</td>
</tr>
<tr>
<td>Zeng, H</td>
<td>.63</td>
</tr>
<tr>
<td>Zeng, K</td>
<td>.59, 97</td>
</tr>
<tr>
<td>Zeuner, F</td>
<td>.121</td>
</tr>
<tr>
<td>Zevenhoven, R</td>
<td>.131</td>
</tr>
<tr>
<td>Zhai, Q</td>
<td>.118</td>
</tr>
<tr>
<td>Zhai, Y</td>
<td>.79, 80</td>
</tr>
<tr>
<td>Zhang, B</td>
<td>60, 100, 128</td>
</tr>
<tr>
<td>Zhang, C</td>
<td>.63, 69, 72, 75, 76, 88, 146, 163</td>
</tr>
<tr>
<td>Zhang, D</td>
<td>.115, 118</td>
</tr>
<tr>
<td>Zhang, F</td>
<td>.72, 115, 137, 160, 163</td>
</tr>
<tr>
<td>Zhang, H</td>
<td>.82, 102, 103, 115, 126, 134, 143, 153, 154, 160, 162</td>
</tr>
<tr>
<td>Zhang, J</td>
<td>.161</td>
</tr>
<tr>
<td>Zhang, K</td>
<td>.163</td>
</tr>
<tr>
<td>Zhang, L</td>
<td>35, 71, 104, 128, 135, 140, 153, 156</td>
</tr>
<tr>
<td>Zhang, M</td>
<td>39, 57, 160</td>
</tr>
<tr>
<td>Zhang, N</td>
<td>42, 91, 126</td>
</tr>
<tr>
<td>Zhang, P</td>
<td>62, 86, 109</td>
</tr>
<tr>
<td>Zhang, Q</td>
<td>.35, 53, 100, 122, 133, 150, 157</td>
</tr>
<tr>
<td>Zhang, T</td>
<td>86, 118, 139</td>
</tr>
<tr>
<td>Zhang, W</td>
<td>.133</td>
</tr>
<tr>
<td>Zhang, X</td>
<td>39, 60, 62, 114, 122, 128, 133</td>
</tr>
<tr>
<td>Zhang, Y</td>
<td>.57, 69, 76, 86, 94, 102, 103, 104, 110, 113, 114, 117, 118, 121, 131, 137, 138, 139, 146, 148, 153, 154, 155, 158</td>
</tr>
<tr>
<td>Zhang, Z</td>
<td>.35, 115, 137, 160</td>
</tr>
<tr>
<td>Zhao, D</td>
<td>35, 160, 164</td>
</tr>
<tr>
<td>Zhao, H</td>
<td>.112</td>
</tr>
<tr>
<td>Zhao, J</td>
<td>.51, 55, 72, 91, 113, 135, 149</td>
</tr>
<tr>
<td>Zhao, K</td>
<td>.82, 156</td>
</tr>
<tr>
<td>Zhao, L</td>
<td>.92</td>
</tr>
<tr>
<td>Zhao, M</td>
<td>.86</td>
</tr>
<tr>
<td>Zhao, P</td>
<td>.129</td>
</tr>
<tr>
<td>Zhao, Q</td>
<td>.100, 131, 137</td>
</tr>
<tr>
<td>Zhao, S</td>
<td>.90</td>
</tr>
<tr>
<td>Zhao, X</td>
<td>.99, 102</td>
</tr>
<tr>
<td>Zhao, Y</td>
<td>.151</td>
</tr>
<tr>
<td>Zhao, Z</td>
<td>.62, 86, 105</td>
</tr>
<tr>
<td>Zharov, I</td>
<td>.78</td>
</tr>
<tr>
<td>Zheng, B</td>
<td>.37, 150</td>
</tr>
<tr>
<td>Zheng, D</td>
<td>.88, 161</td>
</tr>
<tr>
<td>Zheng, Q</td>
<td>.142</td>
</tr>
<tr>
<td>Zheng, R</td>
<td>.53, 92</td>
</tr>
<tr>
<td>Zheng, X</td>
<td>.161</td>
</tr>
<tr>
<td>Zhi, L</td>
<td>.35</td>
</tr>
<tr>
<td>Zhong, J</td>
<td>.160</td>
</tr>
<tr>
<td>Zhong, W</td>
<td>.135</td>
</tr>
<tr>
<td>Zhong, X</td>
<td>.45</td>
</tr>
<tr>
<td>Zhong, Y</td>
<td>.72, 75, 91, 113, 135, 143, 152, 156</td>
</tr>
<tr>
<td>Name</td>
<td>Pages</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>Zhou, C</td>
<td>45, 89, 121, 122, 144</td>
</tr>
<tr>
<td>Zhou, H</td>
<td>40, 111</td>
</tr>
<tr>
<td>Zhou, J</td>
<td>49, 54, 74, 117</td>
</tr>
<tr>
<td>Zhou, L</td>
<td>152</td>
</tr>
<tr>
<td>Zhou, N</td>
<td>56, 130</td>
</tr>
<tr>
<td>Zhou, Q</td>
<td>38, 60, 80, 148</td>
</tr>
<tr>
<td>Zhou, R</td>
<td>54, 163</td>
</tr>
<tr>
<td>Zhou, T</td>
<td>62</td>
</tr>
<tr>
<td>Zhou, W</td>
<td>86</td>
</tr>
<tr>
<td>Zhou, X</td>
<td>91, 99, 101</td>
</tr>
<tr>
<td>Zhou, Y</td>
<td>37, 150, 164</td>
</tr>
<tr>
<td>Zhu, D</td>
<td>116, 117, 138, 154, 161</td>
</tr>
<tr>
<td>Zhu, G</td>
<td>137</td>
</tr>
<tr>
<td>Zhu, H</td>
<td>54</td>
</tr>
<tr>
<td>Zhu, J</td>
<td>53, 61, 62, 72, 73, 92, 138</td>
</tr>
<tr>
<td>Zhu, L</td>
<td>140, 156</td>
</tr>
<tr>
<td>Zhu, M</td>
<td>62, 89, 144</td>
</tr>
<tr>
<td>Zhu, Q</td>
<td>47, 74, 93, 115, 137, 163</td>
</tr>
<tr>
<td>Zhu, W</td>
<td>56</td>
</tr>
<tr>
<td>Zhu, X</td>
<td>40, 81</td>
</tr>
<tr>
<td>Zhu, Y</td>
<td>73, 102, 133</td>
</tr>
<tr>
<td>Ziebert, C</td>
<td>92, 103, 136</td>
</tr>
<tr>
<td>Zimmerman, J</td>
<td>46</td>
</tr>
<tr>
<td>Zinkle, S</td>
<td>94, 148, 154</td>
</tr>
<tr>
<td>Ziomek-Moroz, M</td>
<td>67</td>
</tr>
<tr>
<td>Zoch, H</td>
<td>79</td>
</tr>
<tr>
<td>Zohaib, K</td>
<td>161</td>
</tr>
<tr>
<td>Zok, F</td>
<td>107, 125</td>
</tr>
<tr>
<td>Zoli, L</td>
<td>125</td>
</tr>
<tr>
<td>Zollfrank, C</td>
<td>155</td>
</tr>
<tr>
<td>Zondlo, J</td>
<td>45</td>
</tr>
<tr>
<td>Zoqu, E</td>
<td>54, 74</td>
</tr>
<tr>
<td>Zorkovská, A</td>
<td>51</td>
</tr>
<tr>
<td>Zou, N</td>
<td>160, 163</td>
</tr>
<tr>
<td>Zscherpel, U</td>
<td>78</td>
</tr>
<tr>
<td>Zsiros, J</td>
<td>136</td>
</tr>
<tr>
<td>Zuber, C</td>
<td>56</td>
</tr>
<tr>
<td>Zucker, R</td>
<td>46, 85</td>
</tr>
<tr>
<td>Zucolotto, V</td>
<td>134</td>
</tr>
<tr>
<td>Zuo, J</td>
<td>129</td>
</tr>
<tr>
<td>Zuo, Y</td>
<td>83</td>
</tr>
<tr>
<td>Zweiacker, K</td>
<td>123</td>
</tr>
</tbody>
</table>
EXHIBIT DIRECTORY
HOW TO GET THE MOST FROM YOUR VISIT

You probably have your own special system for seeing a show. Whether you look for specific exhibitors first or start by looking for particular products or services, this directory will guide you. You will be able to find exactly what you need quickly and easily.

Alphabetical Listing of Exhibitors .................................................. pg 203
Exhibit Floor Plan ............................................................................. pg 204
Alphabetical Listing of Exhibitors with Company Descriptions ...... pg 207
Products/Services Index ................................................................. pg 217

SHOW HOURS

Monday, October 24, 2016  |  4:30 p.m. – 6:00 p.m.
Welcome Reception & Exhibition Grand Opening – 4:30 p.m. to 6:00 p.m.

Tuesday, October 25, 2016  |  10:00 a.m. – 6:00 p.m.

  Refreshment Break  10:30 a.m.
  General Poster Session  11:00 a.m. – 6:00 p.m.
  Lunch on Show Floor  12:00 p.m. – 1:00 p.m.
  Happy Hour Reception  4:00 p.m. – 6:00 p.m.

Wednesday, October 26, 2016  |  9:30 a.m. – 2:00 p.m.
Lunch on Show Floor  12 p.m. – 1:00 p.m.

CONVENIENT INQUIRY SYSTEM

Your admission badge allows you to enter the exposition during show hours. When visiting exhibits, please present your personal ID badge to the exhibitor’s representative to request additional information about products and services.

MESSAGE BOARD

A bulletin board for messages will be located in the Registration area.

PHOTOGRAPHY/VIDEO EQUIPMENT

Please keep in mind that the exhibits are the property of the exhibiting companies. Photography and/or the recording of the exhibit hall or contents of any exhibitor booth are strictly prohibited at all times. Photography inside any exhibit space is limited to only the company that has contracted for the exhibit space or to an MS&T representative (or their contracted agent) with the consent of the exhibitor.

Because there may have been some late changes in booth assignments, some exhibitors may have a different booth number than was shown on their invitations and advertising. Please check the MS&T16 App for the most-up-to-date listings, as well as onsite signage.

Reasonable precautions have been taken to avoid errors in and omissions from this Directory, but MS&T does not guarantee listings herein and shall not be responsible for errors in or omission in this Directory.
<table>
<thead>
<tr>
<th>COMPANY</th>
<th>BOOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACerS</td>
<td>132</td>
</tr>
<tr>
<td>AdValue Technology</td>
<td>218</td>
</tr>
<tr>
<td>Advanced Abrasives Corporation</td>
<td>327</td>
</tr>
<tr>
<td>Agilent Technologies, Inc.</td>
<td>506</td>
</tr>
<tr>
<td>Akrometrix LLC</td>
<td>228</td>
</tr>
<tr>
<td>Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Alfred University (CACT)</td>
<td>405</td>
</tr>
<tr>
<td>Allied High Tech</td>
<td>400</td>
</tr>
<tr>
<td>American Stress Technologies</td>
<td>408</td>
</tr>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>Applied Test Systems</td>
<td>306</td>
</tr>
<tr>
<td>Boise State University - Micron School of Materials Science and Engineering</td>
<td>524</td>
</tr>
<tr>
<td>Buehler</td>
<td>225</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Cameca Instruments, Inc.</td>
<td>522</td>
</tr>
<tr>
<td>Carl Zeiss Microscopy, LLC</td>
<td>401</td>
</tr>
<tr>
<td>Centorr Vacuum Industries</td>
<td>322</td>
</tr>
<tr>
<td>CM Furnaces</td>
<td>421</td>
</tr>
<tr>
<td>CompuTherm LLC</td>
<td>321</td>
</tr>
<tr>
<td>Deltech Furnaces</td>
<td>224</td>
</tr>
<tr>
<td>EBSD Analytical Inc.</td>
<td>424</td>
</tr>
<tr>
<td>EDAX Inc.</td>
<td>422</td>
</tr>
<tr>
<td>Electron Microscopy Sciences</td>
<td>211</td>
</tr>
<tr>
<td>FEI</td>
<td>318</td>
</tr>
<tr>
<td>FlackTek, Inc.</td>
<td>423</td>
</tr>
<tr>
<td>Gasbarre Products Inc. (PTX)</td>
<td>418</td>
</tr>
<tr>
<td>Gerdau</td>
<td>510</td>
</tr>
<tr>
<td>Gleebie</td>
<td>504</td>
</tr>
<tr>
<td>GOCERAM AB</td>
<td>325</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Granta Design</td>
<td>512</td>
</tr>
<tr>
<td>Harper International</td>
<td>526</td>
</tr>
<tr>
<td>Headwaters BM</td>
<td>231</td>
</tr>
<tr>
<td>Heraeus Platinum Labware</td>
<td>121</td>
</tr>
<tr>
<td>Hitachi High Technologies America</td>
<td>410</td>
</tr>
<tr>
<td>HORIBA Scientific</td>
<td>333</td>
</tr>
<tr>
<td>Hysitron</td>
<td>219</td>
</tr>
<tr>
<td>International Centre for Diffraction Data (ICDD)</td>
<td>101</td>
</tr>
<tr>
<td>JEOL USA</td>
<td>301</td>
</tr>
<tr>
<td>Keyence Corporation</td>
<td>208</td>
</tr>
<tr>
<td>Lapmaster International</td>
<td>123</td>
</tr>
<tr>
<td>Leco Corp.</td>
<td>300</td>
</tr>
<tr>
<td>Metal Samples</td>
<td>319</td>
</tr>
<tr>
<td>Metcut Research Inc.</td>
<td>213</td>
</tr>
<tr>
<td>Micromeritics Instrument Corporation</td>
<td>119</td>
</tr>
<tr>
<td>MSE Supplies LLC</td>
<td>328</td>
</tr>
<tr>
<td>MTI Corporation</td>
<td>500</td>
</tr>
<tr>
<td>MTS Systems Corporation</td>
<td>431</td>
</tr>
<tr>
<td>Nabertherm Inc.</td>
<td>207</td>
</tr>
<tr>
<td>NACE International</td>
<td>229</td>
</tr>
<tr>
<td>Nanovea</td>
<td>113</td>
</tr>
<tr>
<td>Netzsch Instruments N.A. LLC</td>
<td>413</td>
</tr>
<tr>
<td>NIST</td>
<td>419</td>
</tr>
<tr>
<td>NSL Analytical Services, Inc.</td>
<td>430</td>
</tr>
<tr>
<td>Office of Naval Research</td>
<td>202</td>
</tr>
<tr>
<td>Oxford Instruments</td>
<td>212</td>
</tr>
<tr>
<td>PANalytical</td>
<td>205</td>
</tr>
<tr>
<td>Photron USA, Inc.</td>
<td>427</td>
</tr>
<tr>
<td>PREMIER Lab Supply, Inc.</td>
<td>330</td>
</tr>
<tr>
<td>PROTO Manufacturing, INC</td>
<td>502</td>
</tr>
<tr>
<td>Pulstec</td>
<td>420</td>
</tr>
<tr>
<td>Renishaw</td>
<td>221</td>
</tr>
<tr>
<td>Rigaku</td>
<td>332</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Setaram</td>
<td>118</td>
</tr>
<tr>
<td>Springer</td>
<td>407</td>
</tr>
<tr>
<td>Struers Inc.</td>
<td>310</td>
</tr>
<tr>
<td>TA Instruments</td>
<td>323</td>
</tr>
<tr>
<td>Taylor &amp; Francis</td>
<td>133</td>
</tr>
<tr>
<td>TEC Materials Testing</td>
<td>309</td>
</tr>
<tr>
<td>TESCAN USA</td>
<td>201</td>
</tr>
<tr>
<td>TevTech, LLC</td>
<td>425</td>
</tr>
<tr>
<td>Thermal Technology LLC</td>
<td>200</td>
</tr>
<tr>
<td>Thermcraft Inc.</td>
<td>305</td>
</tr>
<tr>
<td>Thermo-Calc Software Inc.</td>
<td>432</td>
</tr>
<tr>
<td>Thinky USA</td>
<td>331</td>
</tr>
<tr>
<td>Titanium Metals Corp.</td>
<td>508</td>
</tr>
<tr>
<td>UES, Inc.</td>
<td>223</td>
</tr>
<tr>
<td>Union Process</td>
<td>232</td>
</tr>
<tr>
<td>Unitron Ltd</td>
<td>112</td>
</tr>
<tr>
<td>Verder Scientific, Carbolite</td>
<td>311</td>
</tr>
<tr>
<td>Vision Research</td>
<td>520</td>
</tr>
<tr>
<td>Wiley</td>
<td>307</td>
</tr>
</tbody>
</table>
SPONSORS

MS&T thanks the following companies for their outstanding support!

Wiley and the American Ceramic Society

Celebrating 100 years of Excellence

Visit the Wiley Booth #307 to learn more about the journal, its history and special offerings throughout 2017. Come pick up your Special Issue of the Journal of the American Ceramic Society to kick off the journal's 100th Anniversary celebration in 2017!

2017 is the centennial year for the Journal of the American Ceramic Society. Please join us in celebrating. All attendees at MS&T will receive a complimentary Special Issue of the journal.
COMPANY DESCRIPTIONS (As of 9/14/16)

ACerS
Booth 132 ACerS is the premier organization for ceramics and glass engineers, scientists, manufacturers, educators, and students. Members stay on the cutting edge of science and technology advancements with journals, conferences, magazines, phase diagrams, books, workforce development, and training. Connect with ACerS global networks of 11,000 members. www.ceramics.org

AdValue Technology
Booth 218 A leading supplier of high temperature ceramic products made of alumina, fused quartz, sapphire, and zirconia. Products include crucibles, tubes & rods, plates & discs, sample pans for thermal analysis, cuvettes, and various custom components. We also carry cerium oxide polishing powder and other lab supplies such as agate mortar. www.advaluetech.com

Advanced Abrasives Corporation
Booth 327 Advanced Abrasives consults directly with you to design and manufacture custom tailored superabrasive solutions, meeting your application requirements! As an independently owned and operated micronizer of superabrasive products, our unique advantage is that we control the crystal type, shape, and cleanliness from start to finish. www.advancedabrasives.com

Agilent Technologies, Inc.
Booth 506 Agilent Technologies is a worldwide provider of GC, LC, MS and Spectroscopy instruments, technologies, related consumables, support, services, and workflow solutions that enable labs to analyze, confirm and quantify substances of interest with confidence while maintaining the most stringent laboratory practices, from sample preparation to final report. Learn more www.agilent.com. www.agilent.com

Akrometrix LLC
Booth 105 www.akrometrix.com

Alfred University (CACT)

Allied High Tech
Booth 400 For over 33 years, Allied High Tech Products has provided quality products for metallographic sample preparation and analysis. Items on display include state-of-the-art grinding/polishing systems, sectioning saws and mounting systems, as well as a full range of consumable products. Carl Zeiss microscopes & Mitutoyo hardness testers will also be featured. www.alliedhightech.com

American Stress Technologies
Booth 408 American Stress Technologies provides products and services for process control and quality inspection using X-ray diffraction, Barkhausen noise and hole-drilling. Our turn-key solutions are used for studying residual stresses, retained austenite contents, grinding burns, heat treat defects, hardness changes and welding stresses on camshafts, crankshafts, bearings, gears, valves, and more. www.astresstech.com

Anton Paar
Booth 204 Former CSM Instruments, now part of Anton Paar, has been a leader in the development of instruments for surface mechanical properties characterization for over 30 years in both research and industrial fields. Our product line includes: • Nano and micro indentation • Revetest, nano and micro scratch • Tribometers • Calotest www.anton-paar.com

Applied Test Systems
Booth 306 Since 1965, Applied Test Systems (ATS) has been a leading manufacturer of process heating and material testing equipment. Their diverse product line includes furnaces, ovens, universal testing machines, creep/stress rupture test frames, and additional testing accessories. ATS is known worldwide for their ability to design and build unique, customized products. http://www.atspa.com

Boise State University - Micron School of Materials Science and Engineering
Booth 524 Now accepting Ph.D. program admissions applications. Boise State is home to one of the most productive Materials Science and Engineering (MSE) programs in the Pacific Northwest. We offer innovative undergraduate and graduate programs that facilitate interdisciplinary research with physics, chemistry, biology, electrical and computer engineering, and mechanical and biomedical engineering. coen.boisestate.edu/mse

Buehler
Booth 225 Buehler is a premier manufacturer of scientific equipment (sectioning, mounting, grinding, polishing, hardness testing, image analysis) and supplies / consumables for use in materials analysis. Buehler products are used for the analysis of all types of materials, including ceramics, composites, semiconductors, metals, rocks and minerals, and plastics. www.buehler.com

California Nanotechnologies
Booth 324 California Nanotechnologies is an industry leader in spark plasma sintering (SPS), an advanced consolidation technique for every type of material. As the exclusive technical and training partner of FUJI-SPS, inventor of SPS technology, we offer R&D toll services, training, and maintenance of SPS machines. www.calnanocorp.com
COMPANY DESCRIPTIONS (As of 9/14/16)

Camtela Instruments, Inc.
Booth 522 CAMECA® is a world leader of high performance SIMS, EPMA & atom probe instrumentation for product development, quality monitoring, and materials research. CAMECA instruments provide elemental and isotopic composition data from micron down to 3-D sub-nanometer scale and are used in the most prestigious laboratories around the world. www.cameca.com

Carl Zeiss Microscopy, LLC
Booth 401 As the world’s only manufacturer of light, X-ray, and electron/ion microscopes, ZEISS offers tailor-made microscope systems for industry, materials research and academia. A well-trained sales force, an extensive support infrastructure and a responsive service team enable customers to use their ZEISS microscope systems to their full potential. www.zeiss.com/us/microscopy

Centorr Vacuum Industries
Booth 322 Centorr Vacuum Industries manufactures high-temperature vacuum, hydrogen, and controlled atmosphere batch and continuous furnaces for sintering, hot-pressing, heat treatment, and pressure densification of ceramic and metal materials, with optional debinding systems for synthetic or natural lubricant removal. Aftermarket services available.

CM Furnaces
Booth 421 CM will showcase their high temperature, 1000-2200C, line of laboratory and production furnaces. Both batch and continuous furnaces in air, inert, and reducing atmospheres. Furnaces are both standard and custom. CM is celebrating its 70th year. www.cmfurncnuses.com

CompuTherm LLC
Booth 321 CompuTherm has been developing CALPHAD-based modeling tools since 1996. These state-of-the-art products have found many applications in accelerated materials design and are currently used by many ICME practitioners. CompuTherm products include Pandat software for thermodynamic calculation and precipitation simulation and databases for variety of multicomponent alloy systems. www.computerm.com

Deltech Furnaces
Booth 224 “We Build the Furnace to Fit your Need”™. Since 1968, family owned and operated Deltech has designed and built standard and custom electric benchtop and production furnaces for materials science researchers and glass and ceramics manufacturers worldwide. Up to 2000°C in air, inert atmospheres, and under positive pressures. www.deltechfurnaces.com

EDAX Inc.
Booth 422 EDAX is a leading provider of innovative materials characterization systems encompassing Energy Dispersive Spectroscopy (EDS), Wavelength Dispersive Spectrometry (WDS), Electron Backscatter Diffraction (EBSD) and X-ray Fluorescence (XRF). The company designs, manufactures, distributes and services hardware and software solutions for a broad range of industries, educational institutions and research organizations. www.edax.com

Electron Microscopy Sciences
Booth 211 Electron microscopy sciences will have on display their complete line of accessories, chemicals, supplies, and equipment for all fields of microscopy, biological research, and general laboratory requirements. As well as our full line of tools, tweezers, and dissecting equipment. www.emdisasum.com

FEI
Booth 318 Push the limits of material characterization in 2-D and 3-D with FEI. Our commitment to innovation and discovery, combined with a comprehensive range of high-performance microscopy workflows, empowers researchers to gain a deeper understanding of metals. The extreme high-resolution and high-throughput of FEI instruments enable performance predictions in real-world conditions. www.fei.com

FlackTek, Inc.
Booth 423 FlackTek, Inc. will demonstrate an advanced tool for mixing, grinding/milling and dispersing. This non-invasive mixing technology can be used to process any combination of powders, pastes, putties, and liquids from 1g to 10kg. The Speed-Mixer removes air bubbles while homogenizing the sample, in seconds, and there is ABSOLUTELY NO CLEANUP! www.speedmixer.com

Gasbarre Products Inc. (PTX)
Booth 418 Gasbarre Products, Inc. is an international designer, manufacturer, and marketer of capital equipment and related services. We focus on primary process equipment for powder metallurgy, particulate materials, and thermal processing industries worldwide. No matter what your challenging opportunity may be, we can supply the best technically engineered solution for your specific needs. www.gasbarre.com

Gerdau
Booth 510 www.gerdau.com/northamerica/en

GOCERAM AB
Booth 325 In business since 1987, developed the concept of Medium Pressure Powder Injection Moulding (MEDPIMOULD®); supply of complete machinery lines and production technology knowhow licenses; incl. mixers, injection molding machines, rate-controlled debinding furnaces and SCE binder extractors. New binder system (TeWex™) for water-based or low-temperature thermal removal. www.goceram.com | www.goceram.com
Innovations in Hardness Testing Equipment
Material Preparation & Material Solutions

Introducing
IsoMet™ High Speed

Automatic Dressing System
Maintain consistent cut quality between and during cutting with the automatic dressing system.
*Only on IsoMet High Speed Pro

Intuitive Controls
Create repeatable and consistent cuts with programmed methods.
*Saved methods are only on IsoMet High Speed Pro

Rapid Alignment
Minimize setup time by rapid visual alignment with the IsoMet HS Laser.
*Only on the IsoMet High Speed Pro

Quick Sample Adjustments
In seconds adjust your sample placement with the rapid rail and tool-less vising system.

Efficient. Consistent. Precise.

Wilson® VH3300
The VH3300 offers precision, repetition accuracy and user friendliness in production and quality control environments.

DiaMet™ Software
Optimized for Macro and Micro Vickers and Knoop evaluations.

SimpliMet™ 4000
The Fastest Mounting Press Designed for 24/7 Use. Eliminate bottlenecks at the mounting stage, rapidly transforming your samples to specimens ready for grinding and polishing.
COMPANY DESCRIPTIONS (As of 9/14/16)

**Goodfellow Corporation**
*Booth 426* Goodfellow supplies small to medium quantities of metals and materials for research, development, and prototyping. Our catalog lists a comprehensive range of materials in many forms including rods, wires, tubes, and foils. There is no minimum order quantity and items are in stock for immediate shipment worldwide. Custom-made items are available to special order. [www.goodfellowusa.com](http://www.goodfellowusa.com)

**Granta Design**
*Booth 512* Granta helps hundreds of engineering enterprises to manage information on materials that are essential to their businesses. We help them to develop and apply material intelligence, making better materials decisions, saving time and money, and reducing risk. We also provide supporting educational resources to thousands of university educators worldwide. [www.grantadesign.com](http://www.grantadesign.com)

**Harper International**
*Booth 526* Harper International is a leader in complete thermal processing solutions and services for the production of advanced materials. Harper is on the cutting edge of the most innovative furnace and oven designs in the world, delivering customized settings for processing at high temperatures up to 3000°C and in non-ambient atmospheres. [www.harperintl.com](http://www.harperintl.com)

**Heraeus Platinum Labware**
*Booth 121* Improve the quality of your sample preparation by improving the quality of your platinum labware. Since 1851, Heraeus has produced the highest quality platinum crucibles, dishes, and precious metal products, and offered precious metal recycling services. Heraeus, The Perfect Solution for your Platinum Labware needs. [www.ptlabware.com](http://www.ptlabware.com)

**Hitachi High Technologies America**
*Booth 410* Hitachi HTA provides technologically advanced imaging solutions to meet the needs of today’s busy research and industrial labs. Our expanding product portfolio includes SEM, TEM, STEM, FIB, Ion Milling instrumentation, AFM and SPM, tabletop SEM, and sample prep systems. [www.hitachi-hta.com](http://www.hitachi-hta.com)

**HORIBA Scientific**
*Booth 333* HORIBA Scientific, world leader in spectroscopic instrumentation, offers products for solids samples analysis from C/S/O/N/H elemental analyzers to GD-OES Spectrometers for bulk and surface analysis and ICP-OES spectrometers. Check out our new EMIA-Expert and EMIA-Pro carbon/sulfur analyzers. Applications include corrosion testing, failure analysis, particle size analysis and moisture analysis [www.horiba.com/scientific](http://www.horiba.com/scientific)

**Hysitron**
*Booth 219* As the world leader in small scale mechanical testing, Hysitron® is dedicated to the development of next-generation testing solutions for nano- and micro-scale materials characterization. Hysitron’s comprehensive instrumentation suite accommodates a broad range of in-situ testing techniques that will keep you at the forefront of technology. [www.hysitron.com](http://www.hysitron.com)

**International Centre for Diffraction Data (ICDD)**
*Booth 101* Over the past 74 years, our mission has focused on meeting the needs of the scientific community through the publication of the Powder Diffraction File™ and by providing forums for the exchange of ideas and information. Released in 2015, the Powder Diffraction File™ databases boasts over 817,000 unique entries. [www.icdd.com](http://www.icdd.com)

**JEOL USA**
*Booth 301* Electron microscopes & tools for materials, failure analysis, forensics, product inspection, nanotech & semiconductor R&D: correlative microscopy solutions; LV & FE-SEMs - for observation/analysis; TEMs - for atomic-level imaging & high-speed mapping; Surface Analyzers/Microprobes (EPMA) ample prep; applications/service expertise; in-booth instrument demonstrations are available. [www.jeolusa.com](http://www.jeolusa.com)

**Keyence Corporation**
*Booth 208* KEYENCE Corporation is a world leader in advanced microscopes for imaging and measurement applications. Effortlessly capture fully-focused images and perform 3-D profile and roughness measurements with nanometer-level resolution. From basic inspection to advanced surface characterization, KEYENCE Corporation has the microscope products to meet nearly any requirement. [www.keyence.com](http://www.keyence.com)

**Lapmaster International**
*Booth 123* Lapmaster is proud to offer a complete line of sample preparation equipment, hardness testers, microscopes, imaging solutions, and supplies to meet all metallographic and materials testing needs. You can trust Lapmaster to provide the best solution for your application delivering unmatched performance and reliability. [www.lapmaster-wolters.com](http://www.lapmaster-wolters.com/)

**Leco Corp.**
*Booth 300* LECO provides a complete line of instrumentation for materials characterization, including elemental analysis, metallographic sample preparation, optics, image analysis and management, hardness testing, and related accessories, plus extensive field and in-house support services. For information, visit [www.leco.com](http://www.leco.com) | [www.leco.com](http://www.leco.com)

**Metal Samples**
*Booth 319* Mechanical test specimens to evaluate various properties of materials. Tensile, fracture mechanics, and other type specimens machined to ASTM, NACE, or customer-defined specifications. Large inventory of certified material or use customer-supplied material. Precision machining and laser services. [www.metalsamples.com](http://www.metalsamples.com)
Gerdau’s high-performing, environmentally conscious team contributes to the strength and sustainability of our communities, creating long and special steel products used in famous landmarks and everyday items like elevator guide rails and automobiles. We work collaboratively to find innovations that build a stronger future.

Join Gerdau and join a STEEL PROUD team.

gerdaucareers.com
COMPANY DESCRIPTIONS (As of 9/14/16)

Metcut Research Inc.
Booth 213 Mechanical property testing and test specimen manufacturing services for metallic, nonmetallic, and composite materials (aerospace, power generation, ground transportation, biomedical). Structural testing expertise. Microstructural analysis, including SEM/EDS, of materials and coatings. Thermophysical property determination. Locations in Cincinnati, Ohio (Metcut Research and Cincinnati Testing Laboratories) and Nantes, France (Metcut Recherches S.A.S.). www.metcut.com

Micromeritics Instrument Corporation
Booth 119 Micromeritics® is a leading supplier of materials characterization instruments and services that measure the physical characteristics of powders and solids for fundamental research, product development, quality assurance, and process control applications. The company also operates micromeritics analytical services and micromeritics pharmaceutical services, both providing contract sample analyses and consulting services. www.Micromeritics.com

MSE Supplies LLC
Booth 328 www.msesupplies.com

MTI Corporation
Booth 500 MTI Corporation has been providing a total solution for materials research labs since 1995. MTI supplies ceramic, crystal, metallic substrates from A-Z and nano-powder. We also provide laboratory R&D equipment and equipment for battery and energy materials research. www.mtixtl.com

MTS Systems Corporation
Booth 431 MTS provides high-performance testing solutions to address a broad spectrum of materials testing requirements - from simple tension compression to fracture mechanics to complex multi-axial fatigue. The versatile product portfolio is engineered to help customers pursue research and development of a range of advanced materials including metals, composites, ceramics, and polymers. www.mts.com

Nabertherm Inc.
Booth 207 Nabertherm with 450 employees worldwide have been developing and producing industrial furnaces for many different applications for over 60 years. As a manufacturer, Nabertherm offers the widest and deepest range of furnaces worldwide. 150,000 satisfied customers in more than 100 countries offer proof of our commitment to excellent design, quality, and cost efficiency. www.nabertherm.com

NACE International
Booth 229 NACE International, The Worldwide Corrosion Authority, is recognized as the premier authority for corrosion control solutions. Located in Houston, Texas, with offices in the U.S., China, Malaysia, Saudi Arabia, and Brazil, the organization serves all industries impacted by corrosion. www.nace.org

Nanoeva
Booth 113 Ease of use, advanced automation, and the dedication to superior accuracy are the driving forces behind Nanoeva's full range of profilometers, mechanical testers, and tribometers. Unlike other manufacturers, Nanoeva also provides laboratory and consulting services. Clients are given access to years of experience to improve quality control and materials development. www.nanoeva.com

Netzsch Instruments N.A. LLC
Booth 413 Thermal analysis, thermal properties, calorimetry, and contract testing services; DSC, DTA, TGA, STA (Simultaneous DSC/DTA-TGA) from cryogenic to +2400°C, evolved gas analysis by coupled FTIR&MS&GC-MS, specific heat measurement, dilatometers, DMA, DEA, TMA, thermal expansion, thermal conductivity, thermal diffusivity, and more. www.netzsch.com

NIST
Booth 419 The National Institute of Standards and Technology (NIST) promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology to enhance economic security and improve our quality of life. NIST Standard Reference Materials (SRMs) support accurate and compatible measurements by certifying and providing more than 1200 standard reference materials www.nist.gov/srm

NSL Analytical Services, Inc.
Booth 430 Since 1945, NSL has provided the highest standards of product quality from design to launch by providing trusted materials testing results. Our clients appreciate the fast turnaround time and the technology we continually invest in to produce accurate, reliable results. Learn how NSL can work with you to solve your product performance challenges. www.NSLanalytical.com

Office of Naval Research
Booth 202 www.onr.navy.mil

Oxford Instruments
Booth 212 Oxford Instruments NanoAnalysis provides leading-edge tools that enable materials characterization and sample manipulation at the nanometer scale. Used on electron microscopes (SEM and TEM) and ion-beam systems (FIB), our tools are used for R&D across a wide range of academic and industrial applications including semiconductors, renewable energy, mining, metallurgy, and forensics. www.oxford-instruments.com

PANalytical
Booth 205 Elemental excellence - our new Zetium XRF is an integration of WDXRF, EDXRF and XRD, delivering analytical power, speed and task flexibility. Our Empyrean XRD gets the GaliPIX3D detector, with unsurpassed efficiency, dynamic range and resolution, for hard radiation applications like CT/PDF. See how PANalytical can help you get insight. www.panalytical.com
ICDD databases are the only crystallographic databases in the world with quality marks and quality review processes that are ISO certified.

<table>
<thead>
<tr>
<th>S</th>
<th>Standardized data</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>More coverage</td>
</tr>
<tr>
<td>A</td>
<td>All data sets are evaluated for quality</td>
</tr>
<tr>
<td>R</td>
<td>Reviewed, edited and corrected prior to publication</td>
</tr>
<tr>
<td>T</td>
<td>Targeted for material identification and characterization</td>
</tr>
</tbody>
</table>

Featuring 384,613 entries including 271,449 entries with atomic coordinates.

Visit us at MS&T Booth #101

Celebrating 75 Years of Serving the Scientific Community
COMPANY DESCRIPTIONS (As of 9/14/16)

Photron USA, Inc.
Booth 427 Photron is the global leader in high-speed imaging technology, ultra-high-speed camera systems and slow motion analysis. The company has revolutionized the industry, providing extraordinary light sensitivity in the highest-speed imaging systems available. Markets include military, automotive, broadcast, particle image velocimetry (PIV), digital image correlation (DIC), ballistics testing, and more. www.Photron.com

PREMIER Lab Supply, Inc.
Booth 330 Premier Lab Supply manufactures and distributes XRF sample preparation consumables, equipment and platinum ware items. Our platinum labware re-fabrication service will turn your old metal back into new. Come to see the new 2 position xRefuse2 Electric Fusion Machine that delivers best in class contamination free performance. www.premierlabsupply.com

PROTO Manufacturing, INC
Booth 502 PROTO is a leading manufacturer of portable and laboratory based x-ray diffraction systems. Our product line includes residual stress and retained austenite measurement systems, powder diffraction, Laue single crystal orientation, X-ray tubes and custom XRD systems. Measurement services are available through ISO 17025 laboratories in the United States and Canada. www.protoxrd.com

Pulstec
Booth 420 Pulstec provides non-destructive X-ray diffraction(XRD) based stress analyzer. This small, light-weight, low-cost, low-radiation-dose, fast-cycletime analyzer can measure residual-stress, FWHM and retained-Austenite by detecting the full Debye ring’s profile from single incident X-ray angle. Ideal to use in a lab and field. www.pulstec.net

Renishaw
Booth 221 Renishaw is the world leader in high-sensitivity confocal Raman instrumentation. Offering systems based on confocal microscopes and advanced fiber optic probes, we can provide a wide variety of configurations and diverse applications from semiconductors to materials and contaminants. Renishaw instruments are employed in many cutting-edge research laboratories and production environments. www.renishaw.com

Rigaku
Booth 332 Rigaku provides the world’s most complete line of X-ray diffraction and X-ray fluorescence instruments and components. Systems include the miniFlex benchtop XRD, supermini benchtop WDXRF systems, SmartLab® multi-purpose diffractometers with SAXS and in-plane capabilities, DMAX Rapid II micro-diffraction systems, SMAX3000 small angle scattering systems, ZSX Primus series of high-powered WDXRF spectrometers. www.rigaku.com

Sente Software Ltd. (JMatPro)
Booth 411 Developers of JMatPro®, a powerful simulation software package for calculating a wide range of materials properties and behavior for multi-component alloys used in industrial practice (with data exports to casting, forming, forging and heat treatment packages). We have a proven track record for innovation and excellence with customers worldwide. www.jmatpro.com

Setaram
Booth 118 SETARAM Instrumentation is a leading manufacturer and supplier of high-performance thermal analyzers, calorimeters, gas sorption, and high pressure mass spectroscopy instruments, and offers complete and dedicated solutions for different applications such as pharmaceuticals and life science, advanced materials, energy, process safety, and much more. www.setaram.com

Sigma-Aldrich Materials Science
Booth 233 Aldrich Materials Science offers performance materials for the Energy, Electronics and Biomedical markets. We seek to enable innovation through collaborations, technology licensing, custom synthesis, process development, and scale-up. www.sigma-aldrich.com

Springer
Booth 407 Looking to publish your research? Discover Springer’s print and electronic publication services, including open access! Get high-quality review, maximum readership and rapid distribution. Visit our booth or springer.com/authors. You can also browse key titles in your field and buy (e)books at discount prices. With Springer you are in good company. www.springer.com

Struers Inc.
Booth 310 Struers Inc., the world leader in materialographic solutions, provides an entire range of equipment and consumables for materialographic specimen preparation – from manual machines to sophisticated preparation equipment. Complementing its materialographic products, Struers also sells an extensive line of hardness testers and Zeiss microscopes providing a comprehensive range of lab solutions. www.struers.com

TA Instruments
Booth 323 TA Instruments provides innovative materials characterization by thermal analysis, rheology, and calorimetry. See our complete line of instruments for thermal conductivity and diffusivity by laser or xenon flash, heat flow meter, or guarded hot plate. Learn about the latest in horizontal, vertical, true-differential, and non-contact optical dilatometry and heating microscopes. www.tainstruments.com

Taylor & Francis
Booth 133 tandfonline.com
Tec Materials Testing
Booth 309 At Tec Materials Testing, we’ve dedicated ourselves to improving the quality of manufactured products through application of advanced scientific methods in our products and services. We design and manufacture x-ray diffraction (XRD) systems to provide superior residual stress and retained austenite testing of metal and ceramic commercial engineering components. www.tec-materialstesting.com

TESCAN USA
Booth 201 TESCAN USA is a leading supplier in North America of scanning electron microscopes and focused ion beam workstations. The quality, performance and reliability of our products are the foundation of our business, serving customers in academia, industry, and the government sector. www.tescan-usa.com

TevTech, LLC
Booth 425 TevTech designs and manufactures custom vacuum furnaces. With applications including CVD SiC edge rings and shower heads, CMC components sintering, CVI, purification with installations around the world. Services and products offered also include engineering services, hot zone redesigns, gas delivery systems, and control systems www.tevtechllc.com

Thermal Technology LLC
Booth 200 Thermal Technology LLC is a U.S. based high temperature equipment manufacturer with more than 60 years’ experience. We manufacture leading edge direct current and conventional hot press systems, high temperature vacuum/controlled atmosphere furnaces, and arc furnaces. Our services include a world class materials development lab, industry leading technical support, and aftermarket OEM parts/consumables. www.thermaltechnology.com

The Department of Energy National Nuclear Security Administration

STEWARDSHIP SCIENCE GRADUATE FELLOWSHIP

The Department of Energy National Nuclear Security Administration Stewardship Science Graduate Fellowship (DOE NNSA SSGF) program provides outstanding benefits and opportunities to students pursuing a Ph.D. in areas of interest to stewardship science, such as properties of materials under extreme conditions and hydrodynamics, nuclear science, or high energy density physics. The fellowship includes a 12-week research experience at Lawrence Livermore National Laboratory, Los Alamos National Laboratory or Sandia National Laboratories.

BENEFITS +

- $36,000 yearly stipend
- Payment of full tuition and required fees
- $1,000 yearly academic allowance
- Yearly program review
- 12-week research practicum
- Renewable up to four years

www.krellinst.org/ssgf

This equal opportunity program is open to all qualified persons without regard to race, gender, religion, age, physical disability or national origin.

APPLICATIONS DUE

JAN. 11, 2017

Apply Online

The DOE NNSA SSGF program is open to senior undergraduates or students in their first or second year of graduate study. Access application materials and additional information at:

www.krellinst.org/ssgf
Thermcraft Inc.
Booth 305 Thermcraft is an international leading manufacturer of laboratory furnaces, industrial furnaces and ovens, high temperature heating elements, and insulation products. With over 44 years of thermal processing knowledge, we can work with you to find the solution that best fits your needs. At Thermcraft, customer service is our #1 priority! www.thermcraftinc.com

Thermo-Calc Software Inc.

Thinky USA
Booth 331 PLANETARY CENTRIFUGAL BUBBLE-FREE MIXER: Mixes, disperses, and degasses materials (0.5g to 20kg) in minutes. With or without the use of built-in vacuum pump. NANO PULVERIZER: Pulverizes your materials to nano-size “In Minutes” with very sharp particle size dispersion. Built-in chiller (-20°C) contributes to sustain crystallinity. www.thinky-usa.com

Titanium Metals Corp.
Booth 508 www.timet.com

UES, Inc.
Booth 223 Robo-Met.3D is an automated serial sectioning system generating 2-D microstructural data for 3-D characterization. High resolution three dimensional investigation of: grain size, grain shape, porosity, pore interconnectivity, cracks and failure points. Robo-Met.3D applications include: petrology porosity analysis, aerospace materials characterization, automotive cast components and coatings analysis. www.ues.com

Union Process
Booth 232 Original inventors of attritor technology, Union Process Inc. manufactures a broad line of size reduction equipment, including wet/dry/inert/cryo grinding attritors as well as the DMOX-series ultra-fine grinding horizontal bead mill. Our lab services include lab and pilot plant R&D, tolling, process optimization, and particle characterization. www.unionprocess.com

Unitron Ltd
Booth 112 Unitron develops, manufactures, distributes, and service of certified UNITRON optical microscopes, digital imaging equipment, micrometrics, lumenera and Excelis HD cameras and related accessories for industrial, material science, educational, clinical, research, geology, and forensic applications. www.unitronusa.com

Verder Scientific, Carbolite

Vision Research
Booth 520 www.phantomhighspeed.com

Wiley
Booth 307 Wiley is a content-driven, customer-focused provider of industry knowledge services for research professionals, professors and students alike. As a publishing partner of both TMS and The American Ceramic Society, Wiley provides the best and most up-to-date content in all aspects of this field. Visit www.wiley.com today! www.wiley.com
# Products and Services Index

## Ceramic Processing Equipment

### Ceramic Matrix Composites (CMCs)
- Anton Paar .................................................. 204  
- California Nanotechnologies ............................. 324  
- Sigma-Aldrich Materials Science ..................... 233  
- TevTech, LLC .............................................. 425  

### Clay & Natural Minerals
- Anton Paar .................................................. 204  
- Sigma-Aldrich Materials Science ..................... 233  
- Union Process Inc. ....................................... 232  

### Coating/Glazing
- MTI Corporation ......................................... 500  
- NACE International ...................................... 229  
- Union Process Inc. ....................................... 232  

### Coatings
- Anton Paar .................................................. 204  
- California Nanotechnologies ............................. 324  
- Krell Institute ............................................. 333  
- MSE SUPPLIES LLC ...................................... 328  
- MTI Corporation ......................................... 500  
- NACE International ...................................... 229  
- Sigma-Aldrich Materials Science ..................... 233  
- Union Process Inc. ....................................... 232  

### Components
- AdValue Technology, LLC .............................. 218  
- GOCERAM AB ............................................. 325  
- HORIBA Scientific ....................................... 333  

### Cutting Tools
- Anton Paar .................................................. 204  
- GOCERAM AB ............................................. 325  
- MTI Corporation ......................................... 500  
- Struers Inc. ............................................... 310  

### Dryers
- GOCERAM AB ............................................. 325  
- MTI Corporation ......................................... 500  
- Nabertherm, Inc. ......................................... 207  

### Electronic Ceramics
- AdValue Technology, LLC .............................. 218  
- MSE SUPPLIES LLC ...................................... 328  
- Sigma-Aldrich Materials Science ..................... 233  
- Union Process Inc. ....................................... 232  

### Fiber Insulation
- AdValue Technology, LLC .............................. 218  

### Furnaces
- Applied Test Systems .................................... 306  
- Centorr Vacuum Industries LLC ...................... 322  
- CM Furnaces .............................................. 421  
- Deltech, Inc. .............................................. 224  
- GOCERAM AB ............................................. 325  
- Harper International .................................... 526  
- MSE SUPPLIES LLC ...................................... 328  
- MTI Corporation ......................................... 500  
- Nabertherm, Inc. ......................................... 207  
- Thermal Technology LLC ............................... 200  
- Verder Scientific, Inc .................................. 311  

### Glass
- Anton Paar .................................................. 204  
- California Nanotechnologies ............................. 324  
- Goodfellow Corporation ................................ 426  
- MSE SUPPLIES LLC ...................................... 328  
- MTI Corporation ......................................... 500  
- Sigma-Aldrich Materials Science ..................... 233  
- Union Process Inc. ....................................... 232  

### Hydraulic Pressing
- MTI Corporation ......................................... 500  
- Thermal Technology LLC ............................... 200  

### Inspection/QC
- Keyence Corporation of America ..................... 208  
- Lapmaster International LLC ............................ 123  
- Photron USA, Inc. ........................................ 427  
- Unitron Ltd ............................................... 112  

### Kilns
- Harper International ...................................... 526  
- Thermcraft, Inc. ......................................... 305  

### Mixers/Mills/Grinders
- FlackTek, Inc. .............................................. 423  
- GOCERAM AB ............................................. 325  
- MSE SUPPLIES LLC ...................................... 328  
- MTI Corporation ......................................... 500  
- Union Process Inc. ....................................... 232  
- Verder Scientific, Inc .................................. 311  

### Optical Fibers
- MTI Corporation ......................................... 500  
- Union Process Inc. ....................................... 232  

### Refractory Ceramics
- AdValue Technology, LLC .............................. 218  
- MSE SUPPLIES LLC ...................................... 328  
- Thermal Technology LLC ............................... 200  
- Thermcraft, Inc. ......................................... 305  
- Union Process Inc. ....................................... 232  

### Single Crystals
- AdValue Technology, LLC .............................. 218  
- Anton Paar .................................................. 204  
- MSE SUPPLIES LLC ...................................... 328  
- MTI Corporation ......................................... 500  
- Sigma-Aldrich Materials Science ..................... 233
# PRODUCTS AND SERVICES INDEX

<table>
<thead>
<tr>
<th>PRODUCTS AND SERVICES INDEX</th>
</tr>
</thead>
</table>

## COMMERCIAL MATERIALS TESTING/CHARACTERIZATION SERVICES

**Commercial Materials Testing**

- Anton Paar ........................................... 204
- Boise State University Micron School of Materials Science and Engineering ........................................... 524
- Buehler ................................................ 225
- California Nanotechnologies ......................... 324
- Cameca Instruments, Inc. .............................. 522
- Harper International .................................. 526
- Hysitron, Inc. .......................................... 219
- Metcut Research Inc. .................................. 213
- MTS Systems Corporation ............................. 431
- NSL Analytical Services, Inc. ......................... 430
- Photon USA, Inc. ....................................... 427
- Union Process Inc. ..................................... 232

## ELECTRONICS

**Electronic Materials**

- Anton Paar ........................................... 204
- California Nanotechnologies .......................... 324
- Krell Institute ...................................... 305
- MSE SUPPLIES LLC .................................. 328
- NIST ................................................... 419
- Sente Software Ltd. (JMatPro) ........................ 411
- Sigma-Aldrich Materials Science ..................... 233
- Union Process Inc. ..................................... 232
- Unisurf Ltd. ........................................... 112

## ENGINEERING APPLICATIONS AND RELATED INTERESTS

**Atmosphere Equipment/Control**

- California Nanotechnologies .......................... 324
- CM Furnaces .......................................... 421
- Harper International .................................. 526
- Krell Institute ...................................... 305
- MSE SUPPLIES LLC .................................. 328

**Electrical Engineering**

- Krell Institute ...................................... 305
- MTS Systems Corporation ............................. 431
- Thermal Technology LLC .............................. 200

**Energy/Combustion**

- Krell Institute ...................................... 305
- MTI Corporation ..................................... 500
- Photon USA, Inc. ....................................... 427

**Equipment Design**

- Keyence Corporation of America ..................... 208
- Krell Institute ...................................... 305
- MTI Corporation ..................................... 500
- Thermal Technology LLC .............................. 200
- Thermcraft, Inc. ...................................... 305

**Equipment Manufacturing (OEM)**

- Anton Paar ........................................... 204
- CM Furnaces .......................................... 421
- GOCEAM AB ........................................... 325
- Harper International .................................. 526
- HORIBA Scientific .................................... 333
- Keyence Corporation of America ..................... 208
- Krell Institute ...................................... 305
- MSE SUPPLIES LLC .................................. 328
- Thermal Technology LLC .............................. 200
- Thermcraft, Inc. ...................................... 305
- Thiny USA ............................................ 331
- Vision Research, Inc. ................................ 520

**Finance**

- Thermal Technology LLC .............................. 200

**Industrial Gases**

- Krell Institute ...................................... 305
- NIST ................................................... 419

**Lubrication and Hydraulics**

- Anton Paar ........................................... 204
- Krell Institute ...................................... 305

**Maintenance and Reliability**

- California Nanotechnologies .......................... 324
- Krell Institute ...................................... 305

**Modeling Processes**

- Krell Institute ...................................... 305
- Sente Software Ltd. (JMatPro) ........................ 411

**Plant Engineering**

- Krell Institute ...................................... 305

**Safety and Health**

- NACE International .................................. 229
- NIST ................................................... 419

**Sales and Marketing**

- MSE SUPPLIES LLC .................................. 328
- Thermal Technology LLC .............................. 200

## HEAT TREATING EQUIPMENT & SERVICES

**Commercial Heat Treating Services**

- MSE SUPPLIES LLC .................................. 328

**Consumables**

- AdValue Technology, LLC ............................ 218
- Agilent Technologies, Inc. ............................ 506
- Allied High Tech Products ............................ 400
- Buehler ............................................... 225
- California Nanotechnologies .......................... 324
- Electron Microscopy Sciences ......................... 211
- Heraeus Platinum Labware ............................ 121
- Krell Institute ...................................... 305
- Lapmaster International LLC .......................... 123
- MSE SUPPLIES LLC .................................. 328
- NIST ................................................... 419
- Struers Inc. ............................................ 310
- Thermcraft, Inc. ...................................... 305
Heat Treating Equipment
Applied Test Systems .......................... 306
MSE SUPPLIES LLC ..................................... 328
MTI Corporation .................................. 500
Nabertherm, Inc .................................... 207
Thermal Technology LLC ......................... 200
Thermcraft, Inc .................................... 305
Verder Scientific, Inc .............................. 311

MACHINING & METAL CUTTING EQUIPMENT

Cutting Tools
Anton Paar ............................................ 204
GOCERAM AB ........................................ 325
MTI Corporation .................................... 500
Struers Inc ........................................ 310

Machine Tools
Anton Paar ............................................ 204
MTI Corporation .................................... 500

MATERIALS TESTING/CHARACTERIZATION EQUIPMENT & SUPPLIES

Color Analysis
Agilent Technologies, Inc .......................... 506

Consumables
AdValue Technology, LLC ......................... 218
Agilent Technologies, Inc ......................... 506
Allied High Tech Products ......................... 400
Buehler .............................................. 225
California Nanotechnologies ....................... 324
Electron Microscopy Sciences ..................... 211
Heraeus Platinum Labware ......................... 121
Krell Institute ....................................... 305
Lapmaster International LLC ....................... 123
MSE SUPPLIES LLC ................................. 328
NIST .................................................. 419
Struers Inc ........................................ 310
Thermcraft, Inc .................................... 305

Corrosion Testing
HORIBA Scientific .................................. 333
Keyence Corporation of America .................. 208
Krell Institute ....................................... 319
Metal Samples ..................................... 319
MTS Systems Corporation .......................... 431
NSL Analytical Services, Inc ........................ 430
TEC Materials Testing ............................. 309

Creep Testers
Anton Paar ............................................ 204
Applied Test Systems ................................ 306
Hysitron, Inc ........................................ 219
MTI Corporation .................................... 500
MTS Systems Corporation .......................... 431

Extensometers
Applied Test Systems ................................ 306
MTS Systems Corporation .......................... 431

Failure Analysis
Agilent Technologies, Inc .......................... 506
Anton Paar ............................................ 204
Camica Instruments, Inc ............................ 522
FEI Company ......................................... 318
Hitachi High Technologies America, Inc ........... 410
HORIBA Scientific .................................. 333
Hysitron, Inc ........................................ 219
JEOL USA ............................................ 301
Keyence Corporation of America .................. 208
Krell Institute ....................................... 305
Lapmaster International LLC ....................... 123
MTS Systems Corporation .......................... 431
NIST .................................................. 419
NSL Analytical Services, Inc ......................... 430
Photron USA, Inc ................................... 427
Struers Inc ........................................ 310
TEC Materials Testing ............................. 309
UES, Inc ............................................. 223

Fatigue Testers
Krell Institute ....................................... 305
Metal Samples ..................................... 319
MTS Systems Corporation .......................... 431
NIST .................................................. 419
Pulstec USA, Inc .................................... 420
TEC Materials Testing ............................. 309
UES, Inc ............................................. 223

Fractures Toughness Testing Equipment
Hysitron, Inc ........................................ 219
Krell Institute ....................................... 319
Metal Samples ..................................... 319
MTS Systems Corporation .......................... 431
TEC Materials Testing ............................. 309
UES, Inc ............................................. 223

Glass Testing
Anton Paar ............................................ 204
Heraeus Platinum Labware ......................... 121
Hysitron, Inc ........................................ 219
MTS Systems Corporation .......................... 431
NIST .................................................. 419

Hardness Testing Equipment
Allied High Tech Products ......................... 400
Anton Paar ............................................ 204
Buehler .............................................. 225
HORIBA Scientific .................................. 333
Hysitron, Inc ........................................ 219
Krell Institute ....................................... 305
Lapmaster International LLC ....................... 123
MTS Systems Corporation .......................... 431
NSL Analytical Services, Inc ......................... 430
Pulstec USA, Inc .................................... 420
Struers Inc ........................................ 310

Image Analysers
Buehler .............................................. 225
Lapmaster International LLC ....................... 123
MSE SUPPLIES LLC ................................. 328
Photron USA, Inc ................................... 427
Vision Research, Inc ................................ 520
## PRODUCTS AND SERVICES INDEX

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>306</td>
<td>FEI Company</td>
</tr>
<tr>
<td>333</td>
<td>Hitachi High Technologies America, Inc.</td>
</tr>
<tr>
<td>318</td>
<td>HORIBA Scientific</td>
</tr>
<tr>
<td>410</td>
<td>JEOL USA</td>
</tr>
<tr>
<td>301</td>
<td>Keyence Corporation of America</td>
</tr>
<tr>
<td>208</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>123</td>
<td>Lapmaster International LLC.</td>
</tr>
<tr>
<td>500</td>
<td>MTS Corporation</td>
</tr>
<tr>
<td>430</td>
<td>NSL Analytical Services, Inc.</td>
</tr>
<tr>
<td>310</td>
<td>Struers Inc.</td>
</tr>
<tr>
<td>201</td>
<td>TESCAN USA</td>
</tr>
<tr>
<td>112</td>
<td>Unifornt Ltd</td>
</tr>
<tr>
<td>522</td>
<td>Cameca Instruments, Inc.</td>
</tr>
<tr>
<td>318</td>
<td>FEI Company</td>
</tr>
<tr>
<td>121</td>
<td>Heraeus Platinum Labware</td>
</tr>
<tr>
<td>410</td>
<td>Hitachi High Technologies America, Inc.</td>
</tr>
<tr>
<td>333</td>
<td>HORIBA Scientific</td>
</tr>
<tr>
<td>301</td>
<td>JEOL USA</td>
</tr>
<tr>
<td>208</td>
<td>Keyence Corporation of America</td>
</tr>
<tr>
<td>123</td>
<td>Lapmaster International LLC.</td>
</tr>
<tr>
<td>500</td>
<td>MTS Corporation</td>
</tr>
<tr>
<td>430</td>
<td>NSL Analytical Services, Inc.</td>
</tr>
<tr>
<td>310</td>
<td>Struers Inc.</td>
</tr>
<tr>
<td>201</td>
<td>TESCAN USA</td>
</tr>
<tr>
<td>112</td>
<td>Unifornt Ltd</td>
</tr>
<tr>
<td>225</td>
<td>Buehler</td>
</tr>
<tr>
<td>318</td>
<td>HERAUS Platinum Labware</td>
</tr>
<tr>
<td>410</td>
<td>Hitachi High Technologies America, Inc.</td>
</tr>
<tr>
<td>333</td>
<td>HORIBA Scientific</td>
</tr>
<tr>
<td>301</td>
<td>JEOL USA</td>
</tr>
<tr>
<td>208</td>
<td>Keyence Corporation of America</td>
</tr>
<tr>
<td>123</td>
<td>Lapmaster International LLC.</td>
</tr>
<tr>
<td>500</td>
<td>MTS Corporation</td>
</tr>
<tr>
<td>430</td>
<td>NSL Analytical Services, Inc.</td>
</tr>
<tr>
<td>310</td>
<td>Struers Inc.</td>
</tr>
<tr>
<td>201</td>
<td>TESCAN USA</td>
</tr>
<tr>
<td>112</td>
<td>Unifornt Ltd</td>
</tr>
<tr>
<td>225</td>
<td>Buehler</td>
</tr>
<tr>
<td>506</td>
<td>Agilent Technologies, Inc.</td>
</tr>
<tr>
<td>522</td>
<td>Cameca Instruments, Inc.</td>
</tr>
<tr>
<td>318</td>
<td>FEI Company</td>
</tr>
<tr>
<td>121</td>
<td>Heraeus Platinum Labware</td>
</tr>
<tr>
<td>219</td>
<td>Hysitron, Inc.</td>
</tr>
<tr>
<td>208</td>
<td>Keyence Corporation of America</td>
</tr>
<tr>
<td>431</td>
<td>MTS Systems Corporation</td>
</tr>
<tr>
<td>310</td>
<td>Struers Inc.</td>
</tr>
<tr>
<td>309</td>
<td>TEC Materials Testing</td>
</tr>
<tr>
<td>112</td>
<td>Unifornt Ltd</td>
</tr>
<tr>
<td>506</td>
<td>Agilent Technologies, Inc.</td>
</tr>
<tr>
<td>225</td>
<td>Buehler</td>
</tr>
<tr>
<td>522</td>
<td>Cameca Instruments, Inc.</td>
</tr>
<tr>
<td>318</td>
<td>FEI Company</td>
</tr>
<tr>
<td>121</td>
<td>Heraeus Platinum Labware</td>
</tr>
<tr>
<td>219</td>
<td>Hysitron, Inc.</td>
</tr>
<tr>
<td>208</td>
<td>Keyence Corporation of America</td>
</tr>
<tr>
<td>310</td>
<td>Struers Inc.</td>
</tr>
<tr>
<td>309</td>
<td>TEC Materials Testing</td>
</tr>
<tr>
<td>112</td>
<td>Unifornt Ltd</td>
</tr>
<tr>
<td>506</td>
<td>Agilent Technologies, Inc.</td>
</tr>
<tr>
<td>225</td>
<td>Buehler</td>
</tr>
<tr>
<td>522</td>
<td>Cameca Instruments, Inc.</td>
</tr>
<tr>
<td>318</td>
<td>FEI Company</td>
</tr>
<tr>
<td>121</td>
<td>Heraeus Platinum Labware</td>
</tr>
<tr>
<td>219</td>
<td>Hysitron, Inc.</td>
</tr>
<tr>
<td>208</td>
<td>Keyence Corporation of America</td>
</tr>
<tr>
<td>310</td>
<td>Struers Inc.</td>
</tr>
<tr>
<td>309</td>
<td>TEC Materials Testing</td>
</tr>
<tr>
<td>112</td>
<td>Unifornt Ltd</td>
</tr>
</tbody>
</table>

## Impact Testers

- Applied Test Systems ........................................ 306
- Krell Institute ............................................... 419
- MTS Systems Corporation ..................................... 431
- NSL Analytical Services, Inc. ............................... 430

## Materials Selection

- Granta Design .................................................... 512
- Krell Institute .................................................. 419
- NIST ............................................................... 419

## Mechanical Testing (including hardness)

- Allied High Tech Products .................................... 400
- Anton Paar ......................................................... 204
- Applied Test Systems ........................................... 306
- Hysitron, Inc. .................................................... 219
- Krell Institute .................................................. 419
- Lapmaster International LLC. ................................. 123
- MTS Systems Corporation ..................................... 431
- NSL Analytical Services, Inc. ............................... 430
- Pulstec USA, Inc. ................................................ 420
- TEC Materials Testing ......................................... 309

## Metallographic Specimen Preparation Equipment / Supplies

- Allied High Tech Products .................................... 400
- Buehler ............................................................ 225
- Heraeus Platinum Labware ...................................... 121
- Hitachi High Technologies America, Inc. ................... 410
- Krell Institute .................................................. 419
- Lapmaster International LLC. ................................. 123
- NIST ............................................................... 419
- Struers Inc. ....................................................... 410
- UES, Inc. .......................................................... 223
- Unifornt Ltd ...................................................... 112

## Metallographs

- Allied High Tech Products .................................... 400
- Carl Zeiss Microscopy, LLC .................................... 401
- Krell Institute .................................................. 419
- Lapmaster International LLC. ................................. 123
- MTE SUPPLIES LLC ............................................. 328
- TEC Materials Testing ......................................... 309
- UES, Inc. .......................................................... 223

## Microelectronic Failure Analysis

- Allied High Tech Products .................................... 400
- Cameca Instruments, Inc. ....................................... 522
- FEI Company ....................................................... 318
- Hysitron, Inc. .................................................... 219
- Krell Institute .................................................. 419
- Lapmaster International LLC. ................................. 123
- Struers Inc. ....................................................... 310

## Microscopes

- AdValue Technology, LLC ....................................... 218
- Agilent Technologies, Inc. .................................... 506
- Allied High Tech Products .................................... 400
- Buehler ............................................................ 225
- Cameca Instruments, Inc. ....................................... 522
- Carl Zeiss Microscopy, LLC .................................... 401
- Electron Microscopy Sciences ................................ 211

## Moisture Analysis

- HORIBA Scientific .............................................. 333
- Krell Institute .................................................. 333
- MTE SUPPLIES LLC ............................................. 328

## Optical and/or Electron Microscopy (SEM, TEM, etc.)

- Cameca Instruments, Inc. ....................................... 522
- FEI Company ....................................................... 318
- Heraeus Platinum Labware ...................................... 121
- Hitachi High Technologies America, Inc. ................... 410
- HORIBA Scientific ............................................... 333
- JEOL USA .......................................................... 301
- Keyence Corporation of America .............................. 208
- Krell Institute .................................................. 419
- NIST ............................................................... 419
- NSL Analytical Services, Inc. ............................... 430

## Particle Size Analysis

- Anton Paar ......................................................... 204
- FEI Company ....................................................... 318
- Hitachi High Technologies America, Inc. ................... 410
- HORIBA Scientific ............................................... 333
- Krell Institute .................................................. 419
- NIST ............................................................... 419
- NSL Analytical Services, Inc. ............................... 430
- Union Process Inc. ............................................... 232
- Verder Scientific, Inc. ......................................... 311

## Quality Control

- Agilent Technologies, Inc. .................................... 506
- Buehler ............................................................ 225
- Cameca Instruments, Inc. ....................................... 522
- FEI Company ....................................................... 318
- Heraeus Platinum Labware ...................................... 121
- Hysitron, Inc. .................................................... 219
- Keyence Corporation of America .............................. 208
- MTS Systems Corporation ....................................... 431
- Struers Inc. ....................................................... 310
- TEC Materials Testing ......................................... 309
- Unifornt Ltd ...................................................... 112
- Vision Research, Inc. .......................................... 520

## Residual Stress Analyzers / Testers

- Krell Institute .................................................. 431
- MTS Systems Corporation ....................................... 431
- Pulstec USA, Inc. ............................................... 420
- TEC Materials Testing ......................................... 309
## PRODUCTS AND SERVICES INDEX

### Booth# and Company Listings

#### Tensile Testers

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>306</td>
<td>Applied Test Systems</td>
</tr>
<tr>
<td>306</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>123</td>
<td>Lapmaster International LLC</td>
</tr>
<tr>
<td>319</td>
<td>Metal Samples</td>
</tr>
<tr>
<td>431</td>
<td>MTS Systems Corporation</td>
</tr>
<tr>
<td>430</td>
<td>NSL Analytical Services, Inc.</td>
</tr>
</tbody>
</table>

#### Test / Lab Furnaces / Environmental Chambers

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>306</td>
<td>Applied Test Systems</td>
</tr>
<tr>
<td>306</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>526</td>
<td>Harper International</td>
</tr>
<tr>
<td>328</td>
<td>MSE SUPPLIES LLC</td>
</tr>
<tr>
<td>500</td>
<td>MTI Corporation</td>
</tr>
<tr>
<td>431</td>
<td>MTS Systems Corporation</td>
</tr>
<tr>
<td>207</td>
<td>Nabertherm, Inc.</td>
</tr>
<tr>
<td>305</td>
<td>Thermcraft, Inc.</td>
</tr>
<tr>
<td>311</td>
<td>Verder Scientific, Inc.</td>
</tr>
</tbody>
</table>

#### Thermal Analysis

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>218</td>
<td>AdVantage Technology, LLC</td>
</tr>
<tr>
<td>121</td>
<td>Heraeus Platinum Labware</td>
</tr>
<tr>
<td>410</td>
<td>Hitachi High Technologies America, Inc.</td>
</tr>
<tr>
<td>500</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>431</td>
<td>MTI Corporation</td>
</tr>
</tbody>
</table>

#### Thickness Gages

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>306</td>
<td>Applied Test Systems</td>
</tr>
<tr>
<td>208</td>
<td>Keyence Corporation of America</td>
</tr>
</tbody>
</table>

#### Torsion Testers

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>306</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>431</td>
<td>MTS Systems Corporation</td>
</tr>
</tbody>
</table>

#### Ultrasonic Testing Equipment

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>306</td>
<td>Applied Test Systems</td>
</tr>
<tr>
<td>306</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>431</td>
<td>MTS Systems Corporation</td>
</tr>
</tbody>
</table>

#### Universal (Tension / Compression) Load Cell

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>431</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>431</td>
<td>MTS Systems Corporation</td>
</tr>
</tbody>
</table>

#### Universal (Tension / Compression) Testing Machines

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>431</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>431</td>
<td>MTS Systems Corporation</td>
</tr>
</tbody>
</table>

## METAL FORMING EQUIPMENT

### Booth# and Company Listings

#### Lubricants

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>204</td>
<td>Anton Paar</td>
</tr>
<tr>
<td>419</td>
<td>NIST</td>
</tr>
</tbody>
</table>

#### Metals & Alloys - Ferrous Metals

**Cast Irons**

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>419</td>
<td>NIST</td>
</tr>
<tr>
<td>411</td>
<td>Sente Software Ltd. (JMatPro)</td>
</tr>
<tr>
<td>233</td>
<td>Sigma-Aldrich Materials Science</td>
</tr>
<tr>
<td>232</td>
<td>Union Process Inc.</td>
</tr>
</tbody>
</table>

**Iron**

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>411</td>
<td>Sente Software Ltd. (JMatPro)</td>
</tr>
<tr>
<td>233</td>
<td>Sigma-Aldrich Materials Science</td>
</tr>
<tr>
<td>232</td>
<td>Union Process Inc.</td>
</tr>
</tbody>
</table>

**Dual Phase Steels**

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>411</td>
<td>Sente Software Ltd. (JMatPro)</td>
</tr>
<tr>
<td>233</td>
<td>Sigma-Aldrich Materials Science</td>
</tr>
</tbody>
</table>

**Stainless Steels**

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>204</td>
<td>Anton Paar</td>
</tr>
<tr>
<td>419</td>
<td>NIST</td>
</tr>
<tr>
<td>411</td>
<td>Sente Software Ltd. (JMatPro)</td>
</tr>
<tr>
<td>233</td>
<td>Sigma-Aldrich Materials Science</td>
</tr>
<tr>
<td>232</td>
<td>Union Process Inc.</td>
</tr>
</tbody>
</table>

**Coke / Coke Byproducts**

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>232</td>
<td>Union Process Inc.</td>
</tr>
</tbody>
</table>

**Other Specialty Ferrous Materials**

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>411</td>
<td>Sente Software Ltd. (JMatPro)</td>
</tr>
<tr>
<td>233</td>
<td>Sigma-Aldrich Materials Science</td>
</tr>
</tbody>
</table>

**Tool Steels**

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>411</td>
<td>Sente Software Ltd. (JMatPro)</td>
</tr>
<tr>
<td>232</td>
<td>Union Process Inc.</td>
</tr>
</tbody>
</table>

**Iron**

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>233</td>
<td>Union Process Inc.</td>
</tr>
</tbody>
</table>

**Steel, Carbon &/or Alloy**

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>204</td>
<td>Anton Paar</td>
</tr>
<tr>
<td>419</td>
<td>NIST/ORM</td>
</tr>
<tr>
<td>411</td>
<td>Sente Software Ltd. (JMatPro)</td>
</tr>
<tr>
<td>233</td>
<td>Sigma-Aldrich Materials Science</td>
</tr>
<tr>
<td>309</td>
<td>TEC Materials Testing</td>
</tr>
<tr>
<td>232</td>
<td>Union Process Inc.</td>
</tr>
</tbody>
</table>

## NONFERROUS METALS

### Booth# and Company Listings

#### Aluminum and Aluminum Alloys

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>324</td>
<td>Goodfellow Corporation</td>
</tr>
<tr>
<td>426</td>
<td>JMatPro (Sente Software)</td>
</tr>
<tr>
<td>411</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>419</td>
<td>NIST</td>
</tr>
<tr>
<td>411</td>
<td>Sigma-Aldrich Materials Science</td>
</tr>
<tr>
<td>232</td>
<td>Union Process Inc.</td>
</tr>
</tbody>
</table>

#### Armor

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>324</td>
<td>California Nanotechnologies</td>
</tr>
</tbody>
</table>

#### Biomaterials

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>204</td>
<td>Goodfellow Corporation</td>
</tr>
<tr>
<td>426</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>419</td>
<td>NIST</td>
</tr>
<tr>
<td>233</td>
<td>Sigma-Aldrich Materials Science</td>
</tr>
<tr>
<td>232</td>
<td>Union Process Inc.</td>
</tr>
</tbody>
</table>

#### Copper Alloys

<table>
<thead>
<tr>
<th>Booth#</th>
<th>Company Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>204</td>
<td>Goodfellow Corporation</td>
</tr>
<tr>
<td>324</td>
<td>California Nanotechnologies</td>
</tr>
<tr>
<td>426</td>
<td>Krell Institute</td>
</tr>
<tr>
<td>419</td>
<td>NIST</td>
</tr>
<tr>
<td>411</td>
<td>Sente Software Ltd. (JMatPro)</td>
</tr>
<tr>
<td>233</td>
<td>Sigma-Aldrich Materials Science</td>
</tr>
</tbody>
</table>
### Products and Services Index

#### Engineered Materials
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

#### Heat Resistant Metals
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
</tbody>
</table>

#### Intermetallics
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
</tbody>
</table>

#### Magnesium Alloys
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>MTI Corporation</td>
<td>500</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

#### Metal-Matrix Composites (MMCs)
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

#### Nickel-, Nickel-Iron-, and Cobalt-Based High-Performance Alloys
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

#### Other Nonferrous Metals
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Heraeus Platinum Labware</td>
<td>121</td>
</tr>
<tr>
<td>MSE SUPPLIES LLC</td>
<td>328</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

#### Refractory Metals
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

#### Superalloys
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>MTI Corporation</td>
<td>500</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

#### Titanium Alloys
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>MTI Corporation</td>
<td>500</td>
</tr>
<tr>
<td>NIST</td>
<td>419</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

#### Vanadium
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

#### OTHER MATERIALS

### Consulting Services
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>CompuTherm LLC</td>
<td>321</td>
</tr>
<tr>
<td>GOCERAM AB</td>
<td>325</td>
</tr>
<tr>
<td>MTS Systems Corporation</td>
<td>431</td>
</tr>
<tr>
<td>NSL Analytical Services, Inc.</td>
<td>430</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Thermal Technology LLC</td>
<td>200</td>
</tr>
</tbody>
</table>

### Contract R & D Services
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>CompuTherm LLC</td>
<td>321</td>
</tr>
<tr>
<td>GOCERAM AB</td>
<td>325</td>
</tr>
<tr>
<td>MTS Systems Corporation</td>
<td>431</td>
</tr>
<tr>
<td>Thermal Technology LLC</td>
<td>200</td>
</tr>
</tbody>
</table>

### Electronic Materials
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Krell Institute</td>
<td></td>
</tr>
<tr>
<td>MSE SUPPLIES LLC</td>
<td>328</td>
</tr>
<tr>
<td>NIST</td>
<td>419</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
<tr>
<td>Unitron Ltd</td>
<td>112</td>
</tr>
</tbody>
</table>

### Fuel Cells
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
</tbody>
</table>

### Glass
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>MSE SUPPLIES LLC</td>
<td>328</td>
</tr>
<tr>
<td>MTI Corporation</td>
<td>500</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

### Nanomaterials
<table>
<thead>
<tr>
<th>Company</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Krell Institute</td>
<td></td>
</tr>
<tr>
<td>MSE SUPPLIES LLC</td>
<td>328</td>
</tr>
<tr>
<td>NIST</td>
<td>419</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
</tbody>
</table>
## PRODUCTS AND SERVICES INDEX

<table>
<thead>
<tr>
<th>Nanotechnologies</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Hysitron, Inc.</td>
<td>219</td>
</tr>
<tr>
<td>MSE SUPPLIES LLC</td>
<td>328</td>
</tr>
<tr>
<td>Oxford Instruments</td>
<td>212</td>
</tr>
<tr>
<td>TESCAN USA</td>
<td>201</td>
</tr>
<tr>
<td>Thermal Technology LLC</td>
<td>200</td>
</tr>
<tr>
<td>Thinky USA</td>
<td>331</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Polymer Matrix Composites</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>NIST</td>
<td>419</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software Providers</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>CompuTherm LLC</td>
<td>321</td>
</tr>
<tr>
<td>International Centre for Diffraction Data</td>
<td>101</td>
</tr>
<tr>
<td>NIST</td>
<td>419</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTHER SERVICES</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consulting Services</td>
<td>321</td>
</tr>
<tr>
<td>CompuTherm LLC</td>
<td>321</td>
</tr>
<tr>
<td>GOCERAM AB</td>
<td>325</td>
</tr>
<tr>
<td>MTS Systems Corporation</td>
<td>431</td>
</tr>
<tr>
<td>NSL Analytical Services, Inc.</td>
<td>430</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
<tr>
<td>Thermal Technology LLC</td>
<td>200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contract R &amp; D Services</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>CompuTherm LLC</td>
<td>321</td>
</tr>
<tr>
<td>GOCERAM AB</td>
<td>325</td>
</tr>
<tr>
<td>MTS Systems Corporation</td>
<td>431</td>
</tr>
<tr>
<td>Thermal Technology LLC</td>
<td>200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fuel Cells</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nanotechnologies</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Hysitron, Inc.</td>
<td>219</td>
</tr>
<tr>
<td>MSE SUPPLIES LLC</td>
<td>328</td>
</tr>
<tr>
<td>Oxford Instruments</td>
<td>212</td>
</tr>
<tr>
<td>TESCAN USA</td>
<td>201</td>
</tr>
<tr>
<td>Thermal Technology LLC</td>
<td>200</td>
</tr>
<tr>
<td>Thinky USA</td>
<td>331</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software Providers</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>CompuTherm LLC</td>
<td>321</td>
</tr>
<tr>
<td>International Centre for Diffraction Data</td>
<td>101</td>
</tr>
<tr>
<td>NIST</td>
<td>419</td>
</tr>
<tr>
<td>Sente Software Ltd. (JMatPro)</td>
<td>411</td>
</tr>
</tbody>
</table>

### PLASTICS

<table>
<thead>
<tr>
<th>Advanced Composites</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Krell Institute</td>
<td>430</td>
</tr>
<tr>
<td>NSL Analytical Services, Inc.</td>
<td>233</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>331</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Engineering Plastics</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Thinky USA</td>
<td>331</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fibers &amp; Filters</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anton Paar</td>
<td>204</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Polymers</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIST</td>
<td>419</td>
</tr>
<tr>
<td>NSL Analytical Services, Inc.</td>
<td>430</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Thinky USA</td>
<td>331</td>
</tr>
</tbody>
</table>

### POWDER METALLURGY (P/M) MATERIALS

<table>
<thead>
<tr>
<th>Ceramic &amp; Metallic Powder</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>MSE SUPPLIES LLC</td>
<td>328</td>
</tr>
<tr>
<td>MTS Corporation</td>
<td>500</td>
</tr>
<tr>
<td>NSL Analytical Services, Inc.</td>
<td>430</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Thinky USA</td>
<td>331</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Ferrous Metal Powders</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Goodfellow Corporation</td>
<td>426</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Thinky USA</td>
<td>331</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Nonferrous Metal Powders</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>Heraeus Platinum Labware</td>
<td>121</td>
</tr>
<tr>
<td>MSE SUPPLIES LLC</td>
<td>328</td>
</tr>
<tr>
<td>NACE International</td>
<td>229</td>
</tr>
<tr>
<td>Sigma-Aldrich Materials Science</td>
<td>233</td>
</tr>
<tr>
<td>Thinky USA</td>
<td>331</td>
</tr>
<tr>
<td>Union Process Inc.</td>
<td>232</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Porous &amp; Foamed Metals</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Refractory Metal Powders</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
<tr>
<td>MTS Corporation</td>
<td>500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Silicon/Ferrosilicon</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Nanotechnologies</td>
<td>324</td>
</tr>
</tbody>
</table>
# Products and Services Index

## Processes

### Stainless Steel Powders
- California Nanotechnologies ........................................... 324
- Goodfellow Corporation ............................................... 426
- NACE International .................................................... 229
- Union Process Inc. ...................................................... 232

### Steel Powders
- California Nanotechnologies ........................................... 324
- Goodfellow Corporation ............................................... 426
- Union Process Inc. ...................................................... 232

### Alloy Production
- California Nanotechnologies ........................................... 324
- Heraeus Platinum Labware ............................................ 121
- Sente Software Ltd. (JMatPro) ........................................ 411

### Brazing
- Heraeus Platinum Labware ............................................ 121
- MTI Corporation ....................................................... 500
- Thermal Technology LLC ............................................. 200
- Verder Scientific, Inc .................................................. 311

### Casting
- Heraeus Platinum Labware ............................................ 121
- Krell Institute .......................................................... 204
- Sente Software Ltd. (JMatPro) ........................................ 411

### Coatings
- Anton Paar ............................................................... 204
- California Nanotechnologies ........................................... 324
- Krell Institute .......................................................... 204
- MSE SUPPLIES LLC ................................................... 328
- MTI Corporation ....................................................... 500
- NACE International ..................................................... 229
- Sigma-Aldrich Materials Science ..................................... 233
- Union Process Inc. ...................................................... 232

### Cold Rolling
- MTI Corporation ....................................................... 500

### Extrusion/Drawing
- California Nanotechnologies ........................................... 324
- Heraeus Platinum Labware ............................................ 121

### Firing/Drying/Melting
- CM Furnaces ............................................................ 421
- Heraeus Platinum Labware ............................................ 121
- MSE SUPPLIES LLC ................................................... 328
- MTI Corporation ....................................................... 500
- Thermal Technology LLC ............................................. 200

### Heat Treating
- Anton Paar ............................................................... 204
- California Nanotechnologies ........................................... 324
- Heraeus Platinum Labware ............................................ 121
- Metal Samples ......................................................... 319
- MSE SUPPLIES LLC ................................................... 328
- Sente Software Ltd. (JMatPro) ........................................ 411
- TevTech, LLC ............................................................ 425
- Thermal Technology LLC ............................................. 200
- Verder Scientific, Inc .................................................. 311

### Hot Rolling
- Heraeus Platinum Labware ............................................ 121
- MTI Corporation ....................................................... 500

### Machining/Grinding
- California Nanotechnologies ........................................... 324
- Heraeus Platinum Labware ............................................ 121
- MTI Corporation ....................................................... 500
- Thinky USA ............................................................. 331

### Mixing/Milling/Grinding
- California Nanotechnologies ........................................... 324
- FlackTek, Inc. ............................................................. 423
- GOCERAM AB .......................................................... 325
- Heraeus Platinum Labware ............................................ 121
- MSE SUPPLIES LLC ................................................... 328
- MTI Corporation ....................................................... 500
- Thinky USA ............................................................. 331
- Union Process Inc. ...................................................... 232

### Powder Metallurgy
- California Nanotechnologies ........................................... 324
- CM Furnaces ............................................................ 421
- GOCERAM AB .......................................................... 325
- Heraeus Platinum Labware ............................................ 121
- Thermal Technology LLC ............................................. 200
- Verder Scientific, Inc .................................................. 311

### Pressing (Mechanical, Hydraulic, Compacting)
- MTI Corporation ....................................................... 500
- Thermal Technology LLC ............................................. 200

### Surface Engineering/Modification
- Keyence Corporation of America .................................... 208
- Metal Samples .......................................................... 319
- Thermal Technology LLC ............................................. 200

### Vacuum Degassing
- California Nanotechnologies ........................................... 324
- Thermal Technology LLC ............................................. 200

### Welding/Joining
- Heraeus Platinum Labware ............................................ 121
- Metal Samples .......................................................... 319
- MTI Corporation ....................................................... 500
- Sente Software Ltd. (JMatPro) ........................................ 411
- Thermal Technology LLC ............................................. 200

## Publications (Journals, Business Magazines)

<table>
<thead>
<tr>
<th>Publications</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACerS</td>
<td>132</td>
</tr>
<tr>
<td>International Centre for Diffraction Data</td>
<td>101</td>
</tr>
<tr>
<td>NACE International</td>
<td>229</td>
</tr>
<tr>
<td>NIST</td>
<td>419</td>
</tr>
<tr>
<td>Springer</td>
<td>407</td>
</tr>
<tr>
<td>Thermal Technology LLC</td>
<td>200</td>
</tr>
<tr>
<td>Wiley</td>
<td>307</td>
</tr>
</tbody>
</table>
# PRODUCTS AND SERVICES INDEX

## Refractories/Furnace Insulation

<table>
<thead>
<tr>
<th>Service</th>
<th>Vendor</th>
<th>Booth#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refractories - Furnace Insulation</td>
<td>AdValue Technology, LLC</td>
<td>218</td>
</tr>
<tr>
<td></td>
<td>MSE SUPPLIES LLC</td>
<td>328</td>
</tr>
<tr>
<td></td>
<td>Thermal Technology LLC</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>Thermcraft, Inc</td>
<td>305</td>
</tr>
</tbody>
</table>

## Services - Materials Information Resources

### Academia
- Boise State University Micron School of Materials Science and Engineering: 524
- Krell Institute: 512
- Micron School of Materials Science and Engineering - Boise State University: 524
- NIST: 419
- Wiley: 307

### Engineering Software
- Granta Design: 512
- Krell Institute: 307
- MTS Systems Corporation: 431
- NIST: 419
- Sente Software Ltd. (JMatPro): 411

### Engineering/Scientific Journals
- Krell Institute: 419
- Thermal Technology LLC: 200
- Wiley: 307

### On-Line/Off-Line Databases
- NIST: 419

### Quality Management
- Heraeus Platinum Labware: 121
- MTS Systems Corporation: 431
- NIST: 419
- Thermal Technology LLC: 200

### Research & Development
- Agilent Technologies, Inc.: 506
- FlackTek, Inc.: 423
- Granta Design: 512
- Harper International: 526
- Heraeus Platinum Labware: 121
- JMatPro (Sente Software): 411
- Krell Institute: 307
- MTI Corporation: 500
- MTS Systems Corporation: 431
- NIST: 419
- Taylor & Francis: 133
- Thermal Technology LLC: 200
- Unitron Ltd: 112

### Technology Transfer
- NIST: 419

### Trade Association/Professional Society
- ACerS: 132
- NIST: 419

## Services - Partsmaking/Materials Processing

### Casting
- Heraeus Platinum Labware: 121
- Krell Institute: 411
- Sente Software Ltd. (JMatPro): 411

### Cladding
- Heraeus Platinum Labware: 121
- Metal Samples: 319

### Contract Welding
- Metal Samples: 319

### Contract/Toll Ceramic Processing
- California Nanotechnologies: 324
- TevTech, LLC: 425
- Thermal Technology LLC: 200

### CVD, PVD Coating
- Anton Paar: 204
- TevTech, LLC: 425

### Heat Treating
- Anton Paar: 204
- California Nanotechnologies: 324
- Heraeus Platinum Labware: 121
- Metal Samples: 319
- MSE SUPPLIES LLC: 328
- Sente Software Ltd. (JMatPro): 411
- TevTech, LLC: 425
- Thermal Technology LLC: 200
- Verder Scientific, Inc: 311

### Machining, Grinding, Cutting, Drilling
- Anton Paar: 204
- Heraeus Platinum Labware: 121
- Metal Samples: 319
- Metcut Research Inc: 213

### Metal Casting
- Heraeus Platinum Labware: 121

### P/M Sintering
- California Nanotechnologies: 324
- Thermal Technology LLC: 200

### Pressing (Wet or Dry)
- Heraeus Platinum Labware: 121
- Thermal Technology LLC: 200

## Surface Engineering

### Commercial Surface Engrg. Services & Coating Services
- Metcut Research Inc: 213
### Products and Services Index

#### Consumables
- AdValue Technology, LLC ................................................................. 218
- Agilent Technologies, Inc. ............................................................... 506
- Allied High Tech Products .............................................................. 400
- Buehler .......................................................................................... 225
- California Nanotechnologies .......................................................... 324
- Electron Microscopy Sciences ......................................................... 211
- Heraeus Platinum Labware .............................................................. 121
- Krell Institute
- Lapmaster International LLC. .......................................................... 123
- MSE SUPPLIES LLC ............................................................... 328
- NIST ......................................................................................... 419
- Struers Inc. ............................................................................... 310
- Thermcraft, Inc. ........................................................................... 305

#### Vacuum Equipment

**Pumps**
- Agilent Technologies, Inc. ............................................................... 506

#### Welding and Joining Equipment

**Brazing Filter Metals**
- NIST ......................................................................................... 419
**Solders**
- NIST ......................................................................................... 419
**Welding Filler Metals (Electrodes, Welding Rod, Wire)**
- NIST ......................................................................................... 419
Software:

- **Thermo-Calc** for thermodynamics and phase equilibria in multicomponent systems
- **Diffusion module (DICTRA)** for modelling diffusion controlled transformations
- **Precipitation module (TC-PRISMA)** for modelling precipitation kinetics
- **Software development kits** for linking Thermo-Calc to your own software codes
- **Over 30 Databases** for thermodynamic and mobility applications

Benefits:

- **Predict** what phases form as a function of composition, temperature
- **Reduce** costly, time-consuming experiments
- **Base decisions** on scientifically supported predictions and data
- **Shorten** development time and accelerate materials development while reducing risk
- **Improve** the quality and consistency of your products through deeper understanding of your materials and processes

Visit us at booth #432

Thermo-Calc Software AB
Email: info@thermocalc.com
Phone: +46-8-545 959 30

Visit us at booth #432

www.thermocalc.com
The Materials Science Manufacturer®

Experience the Next Generation of Material Science Catalogs

As one of the world’s first and largest manufacturers and distributors of nanoparticles & nanotubes, American Elements’ re-launch of its 20 year old Catalog is worth noting. In it you will find essentially every nanoscale metal & chemical that nature and current technology allow. In fact quite a few materials have no known application and have yet to be fully explored.

But that's the whole idea!

American Elements opens up a world of possibilities so you can Now Invent!

www.americanelements.com