Technical Meeting and Exhibition



October 1–4, 2023 | Columbus, Ohio

FINAL TECHNICAL PROGRAM

The content in the Final Technical Program was generated on September 14, 2023. Please refer to the online session sheets for the most up-to-date information.



Organizing Societies:







Co-Sponsoring Society:





Topic Area/Symposium	Date	Time	Room	Page
Program Highlights				
MS&T23 Plenary Session	TUE	PM	Union Station Ballroom A	59
MS&T23 Poster Session	MON	PM	Exhibit Hall A	92
ACerS Alfred R. Cooper Award Session	TUE	AM	B132	50
ACerS Basic Science Robert B. Sosman Lecture	WED	PM	B130	78
ACerS Bioceramics Division Awards Presentations	TUE	AM	A222	57
ACerS Frontiers of Science and Society - Rustum Roy Lecture	TUE	PM	B130	59
ACerS Navrotsky Award	TUE	AM	A123	59
ACerS Richard M. Fulrath Award Session	MON	PM	B130	27
ACerS/EPDC: Arthur L. Friedberg Ceramic Engineering Tutorial and Lecture	MON	AM	B130	10
Additive Manufacturing				
Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstru	cture, Mech	anics, and	l Process	
AM Modeling, Simulation and Machine Learning - Process Modeling	MON	AM	C150	10
AM Modeling, Simulation and Machine Learning - Structure & Property I	MON	PM	C150	28
AM Modeling, Simulation and Machine Learning - Machine Learning and Artificial Intelligence	TUE	AM	C150	43
Poster Session	TUE	PM	Exhibit Hall A	95
AM Modeling, Simulation and Machine Learning - Structure & Property II	WED	AM	C150	60
Additive Manufacturing of Ceramic-based Materials: Process Development, Mat	terials. Proc	ess Optim	ization and	
Applications	· · · · · ·			
Extrusion-based AM and Binder Jet	MON	AM	C161A/161B	11
Vat Photopolymerization and Laser Powder Bed Fusion	MON	PM	C161A/161B	28
Novel and Emerging Ceramic AM Processes	TUE	AM	C161A/161B	44
Additive Manufacturing of High and Ultra-high Temperature Ceramics and Com	posites: Pro	cessing, C	haracterizatio	on and
Testing	•	0,		
Poster Session	TUE	PM	Exhibit Hall A	96
SLA/Binder Jet and Miscellaneous Techniques	WED	AM	C161A/161B	60
Extrusion/DIW/Robocasting	WED	PM	C161A/161B	78
Additive Manufacturing of Metals: Microstructure, Properties and Alloy Develop	ment			
Additive Manufacturing of Al-based Alloys	MON	AM	C151	11
Additive Manufacturing of Cu-, Ni-, and W-based Alloys	MON	PM	C151	29
Additive Manufacturing of Fe-based Alloys	TUE	AM	C151	44
Additive Manufacturing - Miscellaneous Section I	WED	AM	C151	61
Additive Manufacturing of Multi-material. Functionally-graded Materials and			0151	70
High Entropy Alloys	WED	РМ	C151	/8
Additive Manufacturing of Ni-based Alloys	WED	PM	C150	79
Additive Manufacturing of Polymeric-based Materials: Challenges and Potentia	ls			
Poster Session	TUE	PM	Exhibit Hall A	96
Revolutionizing Applications and Unleashing the Potential of Polymer-based Additive Manufacturing	WED	AM	C171	61
Exploring the Additive Manufacturing Frontier of Polymeric Composites	WED	PM	C171	79
Additive Manufacturing of Titanium-based Materials: Processing, Microstructure	e and Mater	ial Proper	ties	
Session I	MON	AM	C171	12
Session II	MON	PM	C171	29
Poster Session	TUE	PM	Exhibit Hall A	96
Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Appl	ications			
Session I	MON	PM	C160A/160B	30
Session II	TUF	AM	C160A/160B	45
Poster Session	TUF	PM	Exhibit Hall A	96
Session III	W/FD	АМ	C160A/160B	62
Section IV		DM	C1604/160P	80
36330111		1 1 1	0100A/100B	00

Program At A Glance

Topic Area/Symposium	Date	Time	Room	Page
Additive Manufacturing: Equipment, Instrumentation and In-Situ Process Monitoring				
Directed Energy Deposition	TUE	AM	C170	45
Laser Powder Bed Fusion	WED	AM	C170	62
Agile Additive Manufacturing by Employing Breakthrough Functionalities				
Towards Agile and Adaptive AM	MON	AM	C160A/160B	16
Phase Transformations and Microstructure Evolution during Post-Processing of	Additively M	lanufactu	red Metals	
Phase Transformations and Microstructure Evolution during Post Processing I	MON	AM	C170	24
Phase Transformations and Microstructure Evolution during Post Processing II	MON	PM	C170	41
Artificial Intelligence				
Leveraging Integrated Computational Materials Engineering for High-fidelity Ph	ysics-based	l and Mac	hine Learning	Models
Session I	TUE	AM	A120	54
Materials Informatics for Images and Multi-dimensional Datasets				
Session I	MON	PM	A121	39
Session II	TUE	AM	A121	55
Materials Processing and Fundamental Understanding Based on Machine Learn	ing and Dat	a Informa	tics	
Poster Session	TUE	PM	Exhibit Hall A	105
AI/ML Aided Materials Design and Study	WED	AM	A121	72
Machine Learning for High Performance Materials	WED	PM	A121	87
Biomaterials				
3D Printing of Biomaterials and Devices				
Session I	MON	AM	A221	9
Session II	MON	PM	A221	27
Poster Session	TUE	PM	Exhibit Hall A	95
Next Generation Biomaterials				
Next Generation Biomaterials I	MON	AM	A222	24
Next Generation Biomaterials II	MON	AM	A222	40
Next Generation Biomaterials III	TUE	AM	A222	56
American Ceramics Society Bioceramics Division Awards Presentations	TUE	AM	A222	57
Poster Session	TUE	PM	Exhibit Hall A	106
Next Generation Biomaterials Parallel Session I	WED	AM	A221	73
Next Generation Biomaterials Parallel Session II	WED	AM	A222	73
Next Generation Biomaterials IV	WED	PM	A222	88
Society for Biomaterials: Biological Response to Materials and Material's Respo	nse to Biolo	gical Envii	ronments	
Society for Biomaterials: Biological Response to Materials and Material's	MON		4222	26
Response to Biological Environments	MON	АМ	A223	20
Poster Session	TUE	PM	Exhibit Hall A	106
Society for Biomaterials: Biomaterial Applications				
Poster Session	TUE	PM	Exhibit Hall A	107
Nanotechnology	WED	AM	A224	75
Tissue Engineering and Wound Healing	WED	PM	A224	89
Society for Biomaterials: Biomaterial Applications in Today's Industry: Developm	nent, Transla	ation & Co	mmercializati	on
Biomaterials Development, Translation & Commercialization	MON	PM	A223	42
Poster Session	TUE	PM	Exhibit Hall A	107
Society for Biomaterials: Student Poster Contest + Rapid Fire				
Presentations	TUE	AM	A221	58
Poster Session	TUE	PM	Exhibit Hall A	107



Topic Area/Symposium	Date	Time	Room	Page
Ceramic and Glass Materials				
Advances in Dielectric Materials and Electronic Devices				
Novel Processing of Functional Ceramics; Ferroelectrics and Piezoelectrics	MON	AM	B231	14
Dielectrics & Metrology; Memristors & Transisitors	MON	PM	B231	31
Thermoelectrics & Magnetoelectrics; Ionic Conduction, EM Sheiding, & Quantum 2.0	TUE	AM	B231	47
Poster Session	TUE	PM	Exhibit Hall A	98
Ceramics and Glasses Modeling by Simulations and Machine Learning		1	1	
Poster Session	TUE	PM	Exhibit Hall A	99
Simulations and Machine Learning I	WED	AM	B231	65
Simulations and Machine Learning II	WED	PM	B231	82
Engineering Ceramics: Microstructure-Property-Performance Relations and Ap	plications		1	
Engineering Ceramics: Microstructure Characterization and Related			2000	
Properties	TUE	AM	B232	50
Poster Session	TUE	PM	Exhibit Hall A	101
Engineering Ceramics: Advanced Processing and Properties	WED	AM	B232	67
Engineering Ceramics: Ceramic Matrix Composites and Applications	WED	PM	B232	84
Glasses and Optical Materials: Current Issues and Functional Applications				
Glass Chemistry, Design, and Characterization	MON	AM	B132	19
Interactions of Glass with Water and Radiation	MON	PM	B132	35
Cooper Distinguished Lecture	TUE	AM	B132	50
Poster Session	TUE	PM	Exhibit Hall A	101
Glass Research for Optical and Energy-Related Challenges	WED	AM	B132	67
Manufacturing and Processing of Advanced Ceramic Materials				
New Advances in Ceramic Processing I: Sintering	MON	AM	B233	22
Processing of Carbides, Borides, and Nitrides	MON	PM	B233	39
New Advances in Ceramic Processing II: Conventional vs. Additive	TUE	AM	B233	55
Novel Processing of Ovide Coramics	W/ED	ΔΜ	B233	72
Moved Processing of Oxide Ceranics Mesoscale Phenomena in Functional Polycrystals and Their Nanostructures	WLD		BESS	12
Forreelectric Dielectric and Thermal Phonomena	MON	۸M	B230	22
Thermal Transport Optical and Mechanical Phonomona	MON		B230	40
Doctor Soccion	THE		Evhibit Hall A	105
Public Jession Phase Transformations in Coramics: Science and Applications	TOL	F I I		105
Socion I		۸M	B230	74
Session II			B230	88
Solid-state Ontical Materials and Luminosconce Properties			B230	00
Dostor Sossion	THE	DM	Exhibit Hall A	108
Socion I	W/ED		B235	76
Session II		DM	B235	80
The American Ceramic Society Journal Awards Symposium		F I I	D233	03
American Ceramic Society Journal Awards Symposium	THE	۸M	B230	58
American Ceramic Society Journal Awards Session	TUE	AIM	B230	50
Carpor Transition: How to Navigate the Job Market2 Incights from Academia and	Inductor			
Navigate your Caroor in an Evolving Drefossional Sphere	MON	ΔΜ	۸121	16
Dester Session				00
Curricular Innovations and Continuous Improvement of Academic Programme for	d Satisfying			99 Tho
Elizabeth Judson Memorial Symposium	iu satistying	ADEI alo	ing the way): I	ille.
Curriculum, Instruction, and Accreditation	MON	AM	A120	18
Student Support and Inclusion	MON	PM	A120	34

Program At A Glance

Topic Area/Symposium	Date	Time	Room	Page
Fundamentals and Characterization			•	
Emergent Materials under Extremes and Decisive In Situ Characterizations				
Next Generation X-ray and Neutron Technologies for Advanced				10
Characterization	MON	AM	A220	18
In situ Characterization of Fuels and Ceramics Under Extreme Conditions	MON	PM	A220	34
Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-F	erformance	Relations	nips	
Microstructure	MON	AM	A215	20
Atomistics	MON	PM	A215	35
Grain Boundary Properties	TUE	AM	A215	51
Poster Session	TUE	PM	Exhibit Hall A	101
Mechanics	WED	AM	A215	68
High Entropy Materials: Concentrated Solid Solutions, Intermetallics, Ceramics	, Functional	Materials a	and Beyond IV	/
Processing and Properties	MON	PM	A216	36
Materials Design and Discovery	TUE	AM	A216	51
Poster Session	TUE	PM	Exhibit Hall A	101
Theory and Modeling	WED	AM	A216	68
Materials Structure and Characterization	WED	PM	A216	84
Interface-mediated Phenomena in Structural Materials				
Interface Structure and Kinetics	MON	PM	A214	38
Interface-related Mechanics	TUE	AM	A214	53
Poster Session	TUE	PM	Exhibit Hall A	102
Interfaces in Advanced Materials	WED	AM	A214	71
Interface-promoted Deformation	WED	PM	A214	86
Metal Powder Synthesis and Processing: Fundamental Aspects and Modeling				
Session I	MON	AM	A214	23
Synthesis, Characterization, Modeling and Applications of Functional Porous M	aterials			
Porous Materials I	TUE	AM	A220	58
Porous Materials II	WED	AM	A220	77
Porous Materials III	WED	PM	A220	90
Iron and Steel (Ferrous Alloys)				
Advancements in Steel Structural Refinement			· · · · · · · · · · · · · · · · · · ·	
Advancements in Steel Structural Refinement	MON	AM	A212	13
Poster Session	TUE	PM	Exhibit Hall A	98
Advances in Ferrous Metallurgy				
Session I	MON	AM	A210	14
Session II	MON	PM	A210	32
Poster Session	TUE	PM	Exhibit Hall A	98
Student Poster Session	TUE	PM	Exhibit Hall A	98
Advances in Understanding of Martensite in Steels II		·		
Crystallography and Modelling	WED	AM	A211	64
Microstructure Evolution and Properties	WED	PM	A211	81
Steels for Sustainable Development II	1	1	, ,	
Poster Session	TUE	PM	Exhibit Hall A	108
Steels for Sustainable Development I	WED	AM	A210	76
Steels for Sustainable Development II	WED	PM	A210	90
Lightweight Alloys				
Light Metal Technology				
Aluminum-rare Earth Alloys and Composites	MON	PM	A212	38
Aluminum Casting and Diecasting	TUE	AM	A212	54
Poster Session	TUE	PM	Exhibit Hall A	105
Hexagonal Structured Lightweight Alloys	WED	AM	A212	71
Smart Manufacturing Light Weight Metals and Alloys	WED	PM	A212	87



Topic Area/Symposium	Date	Time	Room	Page
Recent Developments in Light-Weight Composites and Materials			•	
Microstructures and Properties I	MON	AM	A211	25
Machine Learning, Performance and Simulation	MON	PM	A211	42
Microsrtuctures and Properties II	TUF	AM	A211	57
Materials-Environment Interactions		7.4.1	/	0.
Advanced Coatings for Wear and Corrosion Protection				
Advanced Coatings for Wear and Corrosion Protection I	MON	AM	A123	13
Advanced Coatings for Wear and Corrosion Protection II	MON	PM	A123	31
Poster Session	TUE	PM	Exhibit Hall A	97
Advanced Materials for Harsh Environments				••
Poster Session	TUE	PM	Exhibit Hall A	97
Session I	WED	AM	A120	64
Session II	WED	PM	A120	81
High Temperature Corrosion and Degradation of Structural Materials				
L Carbon Dioxide, Steam, and Interfacial Stability	MON	AM	A122	21
II. Refractory and High Entropy Alloys	MON	PM	A122	37
III Molten Salts & Harsh Environments	TUE	AM	A122	52
IV Ceramics Composites	WFD	AM	A122	69
V Thermal/Environmental Barrier Coatings	WED	PM	A122	85
Thermodynamics of Materials in Extreme Environments				
Frontiers of Thermodynamics	TUE	AM	A123	59
Poster Session	TUF	PM	Exhibit Hall A	109
Thermodynamics of Ceramic and Intermetallic Systems	WED	AM	A123	77
Thermodynamics of Molten Salt Systems	WED	PM	A123	91
Thomas of though and by storns				<u> </u>
Modelina				
Modeling Computation Assisted Materials Development for Improved Corrosion Resistant	e			
Modeling Computation Assisted Materials Development for Improved Corrosion Resistant Session I	e MON	PM	A224	33
Modeling Computation Assisted Materials Development for Improved Corrosion Resistant Session I Sessio II	mon TUE	PM AM	A224 A224	33 48
Modeling Computation Assisted Materials Development for Improved Corrosion Resistant Session I Sessio II Computational Discovery, Understanding, and Design of Multi-principal Elemen	e MON TUE t Materials	PM AM	A224 A224	33 48
Modeling Computation Assisted Materials Development for Improved Corrosion Resistant Session I Sessio II Computational Discovery, Understanding, and Design of Multi-principal Elemen Session I	MON TUE t Materials TUE	PM AM AM	A224 A224 A223	33 48 48
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Sessio II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session	MON TUE t Materials TUE TUE	PM AM AM PM	A224 A224 A223 Exhibit Hall A	33 48 48 100
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session II	MON TUE t Materials TUE TUE WED	PM AM AM PM AM	A224 A224 A223 Exhibit Hall A A223	33 48 48 100 66
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Sessio II Computational Discovery, Understanding, and Design of Multi-principal Elemen Session I Poster Session Session II Session II Session III	MON TUE t Materials TUE TUE WED WED	PM AM PM AM PM	A224 A224 A223 Exhibit Hall A A223 A223	33 48 48 100 66 83
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session II Session II Session III Integration between Modeling and Experiments for Crystalline Metals: From Ator	MON TUE t Materials TUE TUE WED WED omistic to Ma	PM AM PM AM PM acroscopi	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V	33 48 48 100 66 83
Modeling Computation Assisted Materials Development for Improved Corrosion Resistant Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session III	MON TUE t Materials TUE TUE WED WED WED omistic to Ma TUE	PM AM PM AM PM acroscopi AM	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V A225	33 48 48 100 66 83 53
Modeling Computation Assisted Materials Development for Improved Corrosion Resistant Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session II Session II Session III Session III Session III Session III Session III Session II Session I Session I Session I	MON TUE t Materials TUE TUE WED WED omistic to M TUE WED	PM AM PM AM PM acroscopi AM AM	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V A225 A225	33 48 48 100 66 83 53 70
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session II Session II Session III Session II Session II Session III	MON TUE t Materials TUE TUE WED WED WED WED WED WED	PM AM PM AM PM AM AM AM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 C Scales V A225 A225 A225 A225	33 48 48 100 66 83 53 70 86
Modelling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session II Session II Session III Session III Session III Session III Session III Session III Session II Session III	MON TUE t Materials TUE TUE WED WED WED WED WED WED	PM AM PM AM PM acroscopi AM AM PM	A224 A224 Exhibit Hall A A223 A223 c Scales V A225 A225 A225 A225	33 48 100 66 83 53 70 86
Modelling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session II Session III Multi Scale Modeling of Microstructure Deformation in Material Processing	MON TUE t Materials TUE TUE WED WED WED WED WED WED WED	PM AM PM AM PM acroscopi AM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V A225 A225 A225 A225	33 48 100 66 83 53 70 86 23
Modelling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session III Se	e MON TUE t Materials TUE TUE WED WED Omistic to M TUE WED WED WED	PM AM PM AM PM acroscopi AM AM PM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V A225 A225 A225 A225 A225 Exhibit Hall A	33 48 48 100 66 83 53 70 86 23 105
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session III Session II Session II Session II Session III Multi Scale Modeling of Microstructure Deformation in Material Processing Poster Session Nanomaterials	MON TUE t Materials TUE TUE WED WED OMISTIC tO MA TUE WED WED WED WED	PM AM PM AM PM acroscopi AM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 C Scales V A225 A225 A225 A225 A225 Exhibit Hall A	33 48 48 100 66 83 53 70 86 23 105
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session II Session III Integration between Modeling and Experiments for Crystalline Metals: From Ator Session II Session II Session III	MON TUE TUE TUE TUE WED WED OMISTIC TO M TUE WED WED WED WED WED	PM AM PM AM PM acroscopi AM AM PM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V A225 A225 A225 A225 Exhibit Hall A	33 48 48 100 66 83 53 70 86 23 105
Modelling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session I Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session III Multi Scale Modeling of Microstructure Deformation in Material Processing Poster Session Nanomaterials Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials Synthesis & Patterning	MON TUE t Materials TUE TUE WED WED Omistic to M TUE WED WED WED WED WED	PM AM PM AM PM AM AM AM PM AM PM AM	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V A225 A225 A225 A225 A225 Exhibit Hall A	33 48 48 100 66 83 53 70 86 23 105 23 105
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session I Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session II Session III Sessi	e MON TUE t Materials TUE TUE WED WED WED WED WED WED WED WED WED WE	PM AM PM AM PM AM AM AM PM AM PM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V A225 A225 A225 A225 A225 Exhibit Hall A B234	33 48 100 66 83 53 70 86 23 105 23 105 17 33
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session I Session I Session I Poster Session Session II Session III Integration between Modeling and Experiments for Crystalline Metals: From Atc Session II Session II Session II Session III Multi Scale Modeling of Microstructure Deformation in Material Processing Poster Session Nanomaterials Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials Synthesis & Patterning Functional Ceramics 2D Materials <td>e MON TUE t Materials TUE TUE WED WED WED WED WED WED WED WED WED WE</td> <td>PM AM PM AM PM AM PM AM PM AM PM ials AM PM AM</td> <td>A224 A224 A223 Exhibit Hall A A223 A223 C Scales V A225 A225 A225 A225 A225 Exhibit Hall A B234 B234</td> <td>33 48 100 66 83 53 70 86 23 105 23 105 17 33 49</td>	e MON TUE t Materials TUE TUE WED WED WED WED WED WED WED WED WED WE	PM AM PM AM PM AM PM AM PM AM PM ials AM PM AM	A224 A224 A223 Exhibit Hall A A223 A223 C Scales V A225 A225 A225 A225 A225 Exhibit Hall A B234 B234	33 48 100 66 83 53 70 86 23 105 23 105 17 33 49
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Sessio II Computational Discovery, Understanding, and Design of Multi-principal Elemen Session I Poster Session Session II Session II Session III Session II Session III Multi Scale Modeling of Microstructure Deformation in Material Processing Poster Session Nanomaterials Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials Suphaterials Poster Session	MON TUE t Materials TUE TUE WED WED WED WED WED WED MON TUE MON TUE MON TUE MON TUE MON TUE	PM AM PM AM PM AM PM AM PM AM PM ials AM PM AM PM AM PM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 C Scales V A225 A225 A225 A225 A225 Exhibit Hall A B234 B234 B234 Exhibit Hall A	33 48 100 66 83 53 70 86 23 105 23 105 17 33 49 100
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session III Session II Session II Session III Multi Scale Modeling of Microstructure Deformation in Material Processing Poster Session Nanomaterials Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials Poster Session Materials Poste	MON TUE TUE TUE TUE WED TUE MON TUE MON TUE MON TUE WEN	PM AM PM AM PM AM PM AM PM AM PM ials AM PM AM PM AM PM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V A225 A225 A225 A225 A225 Exhibit Hall A B234 B234 Exhibit Hall A B234	33 48 100 66 83 53 70 86 23 105 23 105 17 33 49 100 66
Modeling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session III Session III Session III Session III Session III Session III Session II Session III Multi Scale Modeling of Microstructure Deformation in Material Processing Poster Session Nanomaterials Controlled Synthesis & Patterning Functional Ceramics 2D Materials Poster Session Mechanical Properties & Microscopy Applications<	MON TUE t Materials TUE TUE WED WED WED WED WED WED MON TUE MON TUE MON TUE MON TUE MON WED WED	PM AM PM AM PM AM AM AM PM AM PM ials AM PM AM PM AM PM AM PM AM PM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 C Scales V A225 A225 A225 A225 A225 Exhibit Hall A B234 B234 B234 Exhibit Hall A	33 48 100 66 83 53 70 86 23 105 23 105 17 33 49 100 66 83
Modelling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session III Integration between Modeling and Experiments for Crystalline Metals: From Atc Session III Multi Scale Modeling of Microstructure Deformation in Material Processing Poster Session NanomaterialS Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials Poster Session Mechanical Properties & Microscopy Applications Functional Ceramics & Polymer-derive	MON TUE TUE TUE WED WED Omistic to M TUE WED MON TUE MON TUE MON TUE WED WED WED WED WED WED WED WON TUE WON TUE WED WED WED	PM AM PM AM PM AM AM PM AM PM ials AM PM ials AM PM AM PM AM PM AM PM	A224 A224 A223 Exhibit Hall A A223 A223 c Scales V A225 A225 A225 A225 A225 Exhibit Hall A B234 B234 Exhibit Hall A B234 B234	33 48 100 66 83 53 70 86 23 105 23 105 17 33 49 100 66 83
Modelling Computation Assisted Materials Development for Improved Corrosion Resistance Session I Session II Computational Discovery, Understanding, and Design of Multi-principal Element Session I Poster Session Session II Session III Integration between Modeling and Experiments for Crystalline Metals: From Atc Session II Session III Multi Scale Modeling of Microstructure Deformation in Material Processing Poster Session NanomaterialS Controlled Synthesis & Patterning Functional Ceramics 2D Materials Poster Session Mechanical Properties & Microscopy Applications Functional Ceramics & Polymer-derived Ceramics Nan	MON TUE TUE TUE TUE WED WED WED WED MON TUE MON TUE MON TUE MON TUE WED WED WED WED WED TUE MON TUE WED WED WED WED TUE	PM AM PM AM PM AM AM PM AM PM ials AM PM ials AM PM AM PM AM PM AM AM PM	A224 A224 A224 Exhibit Hall A A223 A223 c Scales V A225 A225 A225 A225 A225 A225 Exhibit Hall A B234 B234 B234 Exhibit Hall A B234 B234	33 48 100 66 83 53 70 86 23 105 23 105 17 33 49 100 66 83 3

Program At A Glance

Topic Area/Symposium	Date	Time	Room	Page
Nuclear Energy				
Advanced Characterization of Materials for Nuclear, Radiation, and Extreme En	vironments I	V		
Microscopy I	MON	AM	A125	12
Microscopy II/Synchrotron/Acoustics	MON	PM	A125	30
Mechanical Testing/Thermal Properties	TUE	AM	A125	46
Poster Session	TUE	PM	Exhibit Hall A	97
Ceramics for a New Generation of Nuclear Energy Systems and Applications				
Ceramic Waste Forms	MON	AM	A124	16
Molten Salts and Shielding Materials	MON	PM	A124	32
Ceramic Fuels	TUE	AM	A124	47
Poster Session	TUE	PM	Exhibit Hall A	100
Complex Ceramics	WED	AM	A124	65
Radiation-induced Defects in Model Oxides	WED	PM	A124	82
Progressive Solutions to Improve Corrosion Resistance of Nuclear Waste Stora	ge Materials	I		
Modeling and Experimental: Structure Properties (Dissolution Kinetics.]			
Mechanical Properties, Sulfur Solubility) of Nuclear Waste Glasses	WED	AM	A125	75
Modeling Sensitivities of Environmental Stress Corrosion Cracking of Steel				
Canisters and Experiments for Protective Coatings	WED	PM	A125	89
Processing and Manufacturing				
Advanced Joining Technologies for Automotive Lightweight Structures				
Poster Session	TUE	PM	Exhibit Hall A	97
Friction Stir Welding (FSW) and Self-pierce Riveting (SPR)	WED	AM	B244/245	63
Resistance Spot Welding and Other Advanced Joining Technologies	WED	PM	B244/245	80
Advances in Surface Engineering			1	
Advances in Surface Engineering	MON	AM	B244/245	15
Poster Session	TUE	PM	Exhibit Hall A	99
Processing and Performance of Materials Using Microwaves, Electric and Magr	etic Fields. (Jltrasoun	d. Lasers. and	
Mechanical Work – Rustum Roy Symposium				
Session I	MON	AM	B235	25
Session II	MON	PM	B235	41
Poster Session	TUE	PM	Exhibit Hall A	106
Sustainability, Energy, and the Environment		1		
15th Symposium on Green and Sustainable Technologies for Materials Manufac	cturing and F	rocessing	1	
Advanced Ceramics Manufacturing I	MON	AM	B242/243	9
Advanced Ceramics Manufacturing II	MON	PM	B242/243	26
Polymeric and Metallic Materials, and Computational Methods	TUE	AM	B242/243	43
Poster Session	TUE	PM	Exhibit Hall A	93
Advanced Ceramics for Environmental Remediation				
Session I	TUE	AM	B244/245	46
Session II	WED	AM	B240/241	63
Session III	WED	PM	B240/241	80
Energy Materials for Sustainable Development		1		
D.T. Rankin Award Ceremony	MON	AM	B240/241	19
Energy Storage I; Energy Conversion and Harvesting I	MON	AM	B240/241	19
Energy Conversion and Harvesting II; Electrocatalyst and Photocatalyst	MON	PM	B240/241	35
Energy Storage II: Energy Conversion and Harvesting III	TUE	AM	B240/241	49
Poster Session	TUE	PM	Exhibit Hall A	100
Hybrid Organic-inorganic Materials for Alternative Energy			<u> </u>	
Hybrid Organic-inorganic Materials I	WED	AM	B242/243	70
Hybrid Organic-inorganic Materials II	WED	PM	B242/243	85
,			· - · - [



Topic Area/Symposium	Date	Time	Room	Page
Special Topics				
2023 Undergraduate Student Poster Contest				
2023 Undergraduate Student Poster Contest	TUE	PM	Exhibit Hall A	93
History of Materials Science and Engineering				
Material Classes and Choices	MON	AM	A213	21
People and Institutions	MON	PM	A213	37
Phenomena and Techniques I	TUE	AM	A213	52
Phenomena and Techniques II	WED	AM	A213	69
Late News Poster Session				
Late News Poster Session	TUE	PM	Exhibit Hall A	102



SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

15th Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Advanced Ceramics Manufacturing I

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Surojit Gupta, University of North Dakota; Mritunjay Singh, Ohio Aerospace Institute; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology; Hisayuki Suematsu, Nagaoka University of Technololgy; Enrico Bernardo, University of Padova; Rajiv Asthana, University of Wisconsin; Yiquan Wu, Alfred University; Zhengyi Fu, Wuhan University of Technology; Allen Apblett, Oklahoma State University

Monday AM | October 2, 2023 B242/243 | Greater Columbus Convention Center

Session Chairs: Bai Cui, University of Nebraska-Lincoln; Enrico Bernardo, University of Padova; Young-Wook Kim, University of Seoul

8:00 AM Invited

Advanced Manufacturing of Lunar Regolith Simulants for In-Situ Resource Utilization: *Bai Cui*¹; Xiang Zhang¹; Shayan Gholami²; Yong-Rak Kim²; Youngjae Kim³; ¹University of Nebraska-Lincoln; ²Texas A&M University; ³Korea Institute of Civil Engineering and Building Technology

8:30 AM Invited

Factors Affecting the Thermal Conductivity of Liquid-phase Sintered Silicon Carbide Ceramics: Young-Wook Kim¹; Hyun-Sik Kim¹; ¹University of Seoul

9:00 AM Invited

Structure and Stability of Cement-Zeolite Systems for Enhanced Carbon Uptake in Ambient Conditions: Atolo Tuinukuafe¹; *Jessica Rimsza*¹; ¹Sandia National Laboratories

9:30 AM

Fabrication and Material Properties of Silicon Nitride Bearing Grade Balls for Hybrid Ball Bearing Applications.: Jae-Woong Ko¹; Ha-Neul Kim¹; Young-Jo Park¹; Byung-Dong Hahn¹; Jong-Jin Choi¹; Dong-Won Lee¹; Mi-Ju Kim¹; Ho Jin Ma¹; Jae-Wook Lee¹; ¹Korea Institute of Materials Science

9:50 AM Break

10:10 AM Invited

Nanoclays in Biomaterials Design: From Regenerative Medicine to Invitro Disease Models: *Kalpana Katti*¹; Dinesh Katti¹; Sharad Jaswandkar¹; Hanmant Gaikwad¹; Preetham Ravi¹; Quyen Hoang¹; ¹North Dakota State University

10:40 AM Invited

Transparent Yttria Ceramics Fabricated Using Direct Ink Writing Printing and Vacuum Sintering: *Matthew Fiato*¹; Jiao Li¹; Guangran Zhang¹; Yiquan Wu¹; ¹Alfred University

BIOMATERIALS

3D Printing of Biomaterials and Devices - Session I

Sponsored by: ACerS Bioceramics Division

Program Organizers: Sahar Vahabzadeh, Northern Illinois University; Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University

Monday AM | October 2, 2023 A221 | Greater Columbus Convention Center

Session Chair: Susmita Bose, Washington State University; Abraham Joy, University of Akron

8:00 AM Invited

3D Printed Biodegradable Polyester Scaffolds that Address Wound Biofilms and Bacterial Colonization: *Abraham Joy*¹; Deliris Ortiz¹; ¹The University of Akron

8:40 AM

3D Biofabrication Strategies for Highly-aligned Fibrous Soft Tissues: *Rohan Shirwaiker*¹; ¹North Carolina State University

9:00 AM

Bone Tissue Engineering under Fluid Flow Conditions for Development of Invitro Testbeds of Cancer Metastasis: *Kalpana Katti*¹; Dinesh Katti¹; Haneesh Jasuja¹; Quyen Hoang²; Hanmant Gaikwad¹; Shrinwanti Ghosh¹; Preetham Ravi¹; Dipayan Sarkar¹; Kalidas Shetty¹; Anu Gaba²; Parth Vyas²; Sharad Jaswandkar¹; ¹North Dakota State University; ²Sanford Research

9:20 AM

3D Printing of Design-specific PEEK-based Standalone Bioactive Implants: *Prabaha Sikder*¹, ¹Cleveland State University

9:40 AM

Polymer Additive Manufacturing for Micro Medical Device Applications: Roger Narayan¹; ¹University of North Carolina

10:00 AM Break

10:20 AM

Effect of Release of Garlic Extract from CaP Bone Grafts for Bone Tissue Engineering Applications: *Priya Kushram*¹; Susmita Bose¹; ¹Washington State University

10:40 AM

Engineered Living Material with pH-responsive Shape-morphing Capability Fabricated by 3D Printing: *Shan Liu*¹; Weinan Xu¹; ¹The University of Akron

11:00 AM

Engineering Porosity for the Stiffness-Matching of Nickel-Titanium Mandibular Graft Fixation Plates: *Luis Olivas-Alanis*¹; Andrew Nguyen¹; Agnieszka Chmielewska¹; Sahil Khambhampati¹; Stephen Niezgoda¹; Ciro Rodriguez²; David Dean¹; ¹The Ohio State University; ²Tecnologico de Monterrey

11:20 AM

In Vivo and In Vitro Bio-corrosion of Zirconia-toughened Alumina (ZTA)-Ti6Al4V-Hydroxyapatite (HA) Load-bearing Articulation Implant Surfaces: Jose Avila¹; Stefano Guariento¹; Sushant Ciliveri¹; Susmita Bose¹; Amit Bandyopadhyay¹; ¹Washington State University



SPECIAL TOPICS

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

Sponsored by: ACerS/Education and Professional Development Council

Monday AM | October 2, 2023 B130 | Greater Columbus Convention Center

Session Chair: Krista Carlson, University of Nevada, Reno

9:00 AM Invited

Polymer Derived Ceramics-A New Class of Materials Unrivaled by Others: *Kathy Lu*¹, ¹University of Alabama at Birmingham

ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — AM Modeling, Simulation and Machine Learning - Process Modeling

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Computational Materials Science and Engineering Committee, TMS: ICME Committee

Program Organizers: Jing Zhang, Indiana University – Purdue University Indianapolis; Li Ma, Johns Hopkins University Applied Physics Laboratory; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Monday AM | October 2, 2023 C150 | Greater Columbus Convention Center

Session Chairs: Jing Zhang, Indiana University - Purdue University Indianapolis; Li Ma, Johns Hopkins University Applied Physics Laboratory; Brando McWilliams, CCDC Army Research Laboratory; Yeon-Gil Jung, Changwon National University

8:00 AM Keynote

Effect of Baseplate Temperature on the Residual Stress Evolution in a Nickel-Aluminum Bronze Wire-arc Additive Manufacturing Build: *Matthew Dantin*¹; Jack Canaday¹; Charles Fisher¹; ¹Naval Surface Warfare Center Carderock Division

8:20 AM

Physics-constrained, Inverse Design of High-temperature Strength Printable Aluminum Alloys with Low Cost and CO₂ Emissions for High Demand Industries: *Benjamin Glaser*¹; S. Mohadeseh Taheri-Mousavi¹; ¹Carnegie Mellon University

8:40 AM

A Molecular Dynamics Study on the Micro Cold Spray of Zinc Oxide Films: *Scott Burlison*¹; Michael Becker¹; Desiderio Kovar¹; ¹University Of Texas At Austin

9:00 AM

Gas Atomization of Mg-Zn-Ca-Mn Alloy Powder for Additive Manufacturing: *Daehyun Cho*¹; Avey Thomas¹; Agnieszka Chmielewska¹; David Dean¹; Alan Luo¹; ¹The Ohio State University

9:20 AM

Quantification of Carbide Pickup and Quality Control of SS 316L Manufactured via Binder Jet Printing: *Pooja Maurya*¹; P.Chris Pistorius¹; Alex Gaudio¹; Asim Smailagic¹; ¹Carnegie Mellon University

9:40 AM

Examining the Effect of an Oxide Layer on the Deposition of Tantalum Films via Micro-Cold Spray: *Stephen Bierschenk*¹; Michael Becker¹; Desiderio Kovar¹; ¹University of Texas at Austin

10:00 AM Break

10:20 AM

Simulating the 3D Printing Process of Hydroxyapatite Powders: Mohammad Ali Ausaf Qureshi¹; *Artemis Stamboulis*¹; William Griffiths¹; ¹University of Birmingham

10:40 AM

Open-source Numerical Simulations of Melt Pool Physics in Laser Powder Bed Fusion Processes: Craig Weeks¹; Jonathan Malen¹; Satbir Singh¹; ¹Carnegie Mellon University

11:00 AM

Optimizing the Surface Treatment Parameters for 718 Superalloy Using Probabilistic Finite Element Simulation: *Amir Yahyaeian*¹; Zhe Lu²; Xiaoping Du¹; Jing Zhang¹; ¹Indiana University – Purdue University Indianapolis; ²University of Science and Technology Liaoning

11:20 AM

Utilizing Cellular Automata to Resolve Process Parameter to Microstructure Correlations in LPBF Additively Manufactured Parts: *Michael Fazzino*¹; Serge Nakhmanson¹; Rainer Hebert¹; Lukasz Kuna²; ¹University of Connecticut; ²Naval Research Lab

11:40 AM

3-Dimensional Microstructure Characterization of Laser Powder Bed Fusion IN625 and IN718: *Edwin Schwalbach*¹; Michael Chapman¹; Megna Shah¹; Michael Uchic¹; Lyle Levine²; Brandon Lane²; Nik Hrabe²; Orion Kafka²; Newell Moser²; Robert Carson³; Jim Belak³; ¹Air Force Research Labroatory; ²National Institute of Standards and Technology; ³Lawrence Livermore National Laboratory



ADDITIVE MANUFACTURING

Additive Manufacturing of Ceramic-based Materials: Process Development, Materials, Process Optimization and Applications — Extrusion-based AM and Binder Jet

Sponsored by: ACerS Basic Science Division, ACerS Engineering Ceramics Division, ACerS Manufacturing Division

Program Organizers: Xuan Song, University of Iowa; Lei Chen, University of Michigan-Dearborn; Xiangyang Dong, Missouri Univ of Science and Technology; Yiquan Wu, Alfred University; Paolo Colombo, University of Padova; Rajendra Bordia, Clemson University; Long-Qing Chen, Pennsylvania State University

Monday AM | October 2, 2023 C161A/161B | Greater Columbus Convention Center

Session Chairs: Rodney Trice, Purdue University; Xuan Song, University of Iowa

8:00 AM

Aqueous Slurry Development and Characterization for Multiple-Oxide Direct Ink Writing: *Patrick Snarr*¹; Corson Cramer¹; Joseph Beaman²; Andrew Nelson¹; ¹Oak Ridge National Laboratory; ²The University of Texas at Austin

8:20 AM

Direct Ink Writing of Semiconductive Oxide-based Sensors for Hightemperature Applications: *Nicholas Winch*¹; Javier Mena¹; Margaret Raughley²; Katarzyna Sabolsky¹; Edward Sabolsky¹; Konstantinos Sierros¹; ¹West Virginia University; ²Harbison Walker International

8:40 AM

Additive Manufacturing of Solid-state Electrolytes for Lithium Metal Batteries: John Obielodan¹; Jacob Ferguson¹; Zhezhen Fu²; ¹University of Wisconsin-Platteville; ²Pennsylvania State University - Harrisburg

9:00 AM

Fused Deposition Modeling of Polycarbosilane to Manufacture Silicon Carbide-based Materials: *Maxime Cheype*¹; Fabrice Rossignol¹; Vincent Pateloup¹; Samuel Bernard¹; ¹IRCER-CNRS

9:20 AM

On the Thermal Shock Resistance of Additively Manufactured Aluminum Oxide: Jamieson Brechtl¹; Marco Martinez¹; Bola Yoon²; Joseph Cesarano³; Kashif Nawaz¹; Edgar Curzio¹; ¹Oak Ridge National Laboratory; ²Saint-Gobain; ³Robocasting Enterprises

9:40 AM Invited

The Influence of Print Layer Orientation on the Mechanical Properties of SIC and CF/SIC CMCS Formed via Direct Ink Writing: *Rodney Trice*¹, Kyle Cox¹; Jeffrey Youngblood¹; ¹Purdue University

10:10 AM Break

10:30 AM

Ceramic 3D Printing Utilizing Binder Jetting Technology for Medical Uses: Sagar K G¹; ¹Cambridge Institute of Technology

10:50 AM

Materials Development for Demanding Applications with Binderjet WC-Co: Paul Prichard¹; Zhuqing Wang¹; Matthew Bonidie¹; ¹Kennametal Inc.

11:10 AM Invited

Use of Powder Bed Fabrication Processes for Ceramic Additive Manufacturing: *Reeja Jayan*¹; Alexander Gourley¹; ¹Carnegie Mellon University

ADDITIVE MANUFACTURING

Additive Manufacturing of Metals: Microstructure, Properties and Alloy Development — Additive Manufacturing of Al-based Alloys

Program Organizers: Prashanth Konda Gokuldoss, Tallinn University of Technology; Jurgen Eckert, Erich Schmid Institute of Materials Science

Monday AM | October 2, 2023 C151 | Greater Columbus Convention Center

Session Chair: Christopher Ford, Oak Ridge National Laboratory

8:00 AM

Laser-scanning of Arc-melted Al Alloys: Are They Representative of Additively Manufactured Ones?: *Zhaoxuan Ge*¹; S. Mohadeseh Taheri-Mousavi¹; ¹Carnegie Mellon University

8:20 AM

Laser Powder-bed Fusion of Ternary Al-Ce-X Alloys with Slowdiffusing Transition Metals (Mn, Cr, V, Mo, W): *Clement Ekaputra*¹; Jovid Rakhmonov²; Christian Leinenbach³; David Dunand¹; ¹Northwestern University; ²Northwestern University, Oak Ridge National Laboratory; ³Empa Swiss Federal Laboratories for Materials Science & Technology, École Polytechnique Fédérale de Lausanne (EPFL)

8:40 AM

Development and Characterization of Aluminum Alloy A2OX Lattices: *Kevin Le*¹; Michael Brand¹; Robin Montoya¹; Colt Montgomery¹; John Carpenter¹; ¹Los Alamos National Laboratory

9:00 AM

Optimization of Aluminum Feedstock Powder for Cold Spray Additive Manufacturing Using a Through-process Experimental Approach: *Kyle Tsaknopoulos*¹; Bryer Sousa¹; Danielle Cote¹; ¹Worcester Polytechnic Institute

9:20 AM

Evaluation of Mechanical Property of Recycled AM AlSi10Mg: Mert Coskun¹; *Kerem Dizdar*²; Gurkan Tarakci¹; Gokhan Ozer¹; Derya Dispinar³; ¹FSMVU; ²Istanbul Technical University; ³Foseco

9:40 AM

Properties of AlSi10Mg/SiC Composites Manufactured by Laser Powder Bed Fusion: Achim Conzelmann¹; Hans Jürgen Seifert²; Hadi Mozaffari-Jovein¹; ¹Furtwangen University; ²Karlsruhe Institute of Technology

10:00 AM Break

10:20 AM

The Effect of Mg Content on the Process-structure Relationships of Cold Spray Deposited Al-Mg Alloys: Gregory Kubacki¹; *Lorena Perez-Andrade*¹; Munsu Kim¹; Luke Brewer¹; ¹University of Alabama



10:40 AM

Effect of Printing Parameters, Print Orientation, and Surface Finish Effects on the Mechanical and Fatigue Behavior of A6061-RAM2: *Matthew Jones*¹; Keeley Elliot²; Christopher Yakacki²; Carl Frick³; ¹University of Wyoming; ²University of Colorado Denver; ³Colorado School of Mines

11:00 AM

Novel, Elevated Temperature Al-Ce-Mo Alloy Designed for Additive Manufacturing: *Kevin Graydon*¹; Thinh Huynh¹; David Hicks²; Yongho Sohn¹; ¹University of Central Florida; ²ALMMII

11:20 AM

Prediction of Thermal Conductivity of Al-Alloys: Finite Element Simulations Combined with Statistical Analysis and Machine Learning: *Shuvodeep De*¹; Sunyong Kwon¹; Dongwon Shin¹; Yousub Lee¹; ¹ORNL

11:40 AM

Additive Manufacturing Wire Feedstocks Derived from Recycled Aluminum: *Jamie McIntyre*¹; John Carsley²; Amy Clarke¹; Kester Clarke¹; Jonah Klemm-Toole¹; ¹Colorado School of Mines; ²Novelis

12:00 PM

Powder Fabrication and Laser Powder Bed Fusion of Highlyreinforced Metal Matrix Composites: Ethan Parsons¹; ¹Massachusetts Institute of Tech Lincoln Lab

ADDITIVE MANUFACTURING

Additive Manufacturing of Titanium-based Materials: Processing, Microstructure and Material Properties — Session I

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Titanium Committee

Program Organizers: Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University

Monday AM | October 2, 2023 C171 | Greater Columbus Convention Center

Session Chair: Ola Harrysson, North Carolina State University

8:00 AM

Development of Clean Hot Isostatic Pressing for AM Ti64: *Chad Beamer*¹, ¹Quintus Technologies LLC

8:20 AM

Measurement of Residual Stresses with High Resolution EBSD in Additively Built Commercially Pure Titanium: *Claire Adams*¹; Amit Bandyopadhyay¹; David Field¹; ¹Washington State University

8:40 AM Invited

Process-Microstructure-property Relationships in AM Ti-6Al-4V: *Anthony Rollett*¹; ¹Carnegie Mellon University

9:20 AM

Microstructure Mechanical Property Relationship for Post Heattreated Electron Beam Melted Ti-6Al-4V Alloy: Amit Kumar Singh¹; Anish Ranjan¹; Sushil Mishra¹; ¹Indian Institute of Technology Bombay

9:40 AM

Rapid Assessment of the Fatigue Resistance of Electron Beam Melted Ti-6Al-4V Using a Multi-Step Test (MST): Jacob Pellicotte¹; Md Abir Hossain¹; Calvin Stewart¹, ¹The Ohio State University

10:00 AM Break

10:20 AM

Tensile and Fatigue Behavior of an Additively Manufactured Neartitanium Alloy: Yu Zou¹; ¹University of Toronto

10:40 AM

Studying Nanoscale Ti5Si3 Quasi-continuous Network in the Selective Laser Melted Titanium Matrix Nanocomposites: Dian Li¹; Xing Zhang²; Sydney Fields¹; Rongpei Shi³; Yiliang Liao²; *Yufeng Zheng*¹; ¹University of North Texas; ²Iowa State University; ³Harbin Institute of Technology, Shenzhen

11:00 AM

Understanding the Microstructure and Deformation Behavior in the Selective Laser Melted Ti-5Al-5Mo-5V-3Cr Alloy: Sydney Fields¹; Dian Li¹; Deepak Pillai¹; Yiliang Liao²; Yufeng Zheng¹; ¹University of North Texas; ²Iowa State University

11:20 AM

Comparing Fatigue Behavior of L-PBF Samples of Nb-48%Ti Produced with Two Different Types of Powder: Fernando Landgraf¹; Mario Boccalini²; Willy Moraes¹; Cesar Azevedo¹; ¹University of Sao Paulo; ²IPT- Instituto de Pesquisas Tecnológicas

NUCLEAR ENERGY

Advanced Characterization of Materials for Nuclear, Radiation, and Extreme Environments IV — Microscopy I

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Caitlin Kohnert, Los Alamos National Laboratory; Cody Dennett, Commonwealth Fusion Systems; Samuel Briggs, Oregon State University; Michael Short, Massachusetts Institute of Technology; Cheng Sun, Idaho National Laboratory; Khalid Hattar, University of Tennessee Knoxville; Yuanyuan Zhu, University of Connecticut

Monday AM | October 2, 2023 A125 | Greater Columbus Convention Center

Session Chair: Michael Short, Massachusetts Institute of Technology

8:00 AM Invited

Multimodal Characterization of Materials Corrosion in Molten Salts: Lingfeng He¹; ¹North Carolina State University

8:30 AM Invited

Probing Nanoscale Properties of Radioactive Material by Advanced Correlative Microscopy: *Shawn Riechers*¹; Joshua Silverstein¹; Andrew Casella¹; ¹Pacific Northwest National Laboratory

9:00 AM

Effect of Solutes on the Radiation Induced Segregation in Ferritic Alloys at 3- grain Boundaries: *Azza Rahmouni*¹; ¹Cea Paris-SACLAY



9:20 AM Invited

Mapping Elemental Distributions Across Thin Corrosion Films Formed on Nuclear Reactor Core and Structural Materials via Ex-situ And Insitu Atom Probe Tomography: *Elizabeth Kautz*¹; Angela Gerard²; Kayla Yano³; Sandra Taylor³; Sten Lambeets³; Daniel Perea³; Arun Devaraj³; John Scully²; Daniel Schreiber³; ¹Rensselaer Polytechnic Institute; ²University of Virginia; ³Pacific Northwest National Laboratory

9:50 AM

Four-dimensional Scanning Transmission Electron Microscopy (4D-STEM) Characterization of Intergranular Corrosion of Austenitic Stainless Steels in Lead-bismuth Eutectic: Yang Yang¹; *Zhiyu Zhang¹*; Sarah Wang²; Peter Hosemann³; Andrew Minor²; ¹Pennsylvania State University; ²Lawrence Berkeley National Laboratory; ³University of California, Berkeley

10:10 AM Break

10:30 AM Invited

Capturing 3D Evolution of Twin Networks in Titanium as a Function of Applied Strain: *Hi Vo*¹; P Pinney²; M.M. Schneider¹; R.J. McCabe¹; M. Arul Kumar¹; Carlos Tomé¹; Laurent Capolungo¹; ¹Los Alamos National Laboratory; ²University of Connecticut

11:00 AM

Advanced In-situ Strain Mapping for Zr Oxidation by 4D-STEM: Yongwen Sun¹; Yang Yang¹; Ying Han¹; Dan Zhou²; Hugo Garza²; Alejandro Perez³; Thanos Galanis³; ¹Penn State University; ²DENSsolutions; ³NanoMEGAS SPRL

MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Coatings for Wear and Corrosion Protection — Advanced Coatings for Wear and Corrosion Protection I

Program Organizers: Evelina Vogli, Flame Spray Inc.; Virendra Singh, SLB

Monday AM | October 2, 2023 A123 | Greater Columbus Convention Center

Session Chairs: Evelina Vogli, Flame Spray Inc.; Virendra Singh, Schlumberger

8:00 AM

Effects of BN Content on the Microstructure and Mechanical Properties of Cr3C2–NiCr-BN Composite Coatings Prepared by a Novel Ethanol-fueled HVOF Process: Mohammad Arab Pour Yazdi³; Shaowu Liu²; Jiri Nohava¹; Hongjian Wu³; Xinliang Xie⁴; Zexin Yu⁵; Michel Moliere⁶; Hanlin Liao⁶; ¹Anton-Paar Tritec; ²University of Lille, CNRS, INRAE; ³Helmut Schmidt University; ⁴Nanjing Technology University; ⁵Soochow University; ⁶Univ. Bourgogne Franche-Comté

8:20 AM

Ceramic Coating as a Diffusion Barrier to Prevent Saddle Marks in Continuous Homogenization of Aluminum 6000 Series: *Mojtaba Mohammad*¹; Carmo Perrella¹; Larry Pershin²; Javad Mostaghimi²; ¹Matalco; ²University of Toronto

8:40 AM

Benefits of Yttria-doping in Ytterbium Disilicate Environmental Barrier Coatings: Dawson Smith¹; Vincent Mika¹; Molly O'Connor²; Robert Golden³; Rodney Trice¹; *Michael Titus*¹; ¹Purdue University; ²Praxair Surface Technologies; ³Rolls Royce

9:00 AM

Novel Thermal Barrier Coatings Stable up to 1700°C: *Melina Endsley*¹; Collin Holgate¹; Akane Suzuki²; Joshua Margolies³; Carlos Levi¹; Tresa Pollock¹; ¹University of California Santa Barbara; ²GE Aerospace; ³GE Vernova

9:20 AM

Sustainable Development of Spray Parameters for Thermal Spray: Viswanathan Venkatachalapathy¹; ¹State University of NewYork, Stonybrrook

9:40 AM

Corrosion-Resistant Coatings for Storage Canister: *Evelina Vogli*¹; ¹Lm Group Holdings Inc.

10:00 AM Break

10:20 AM

Structural Integrity Assessment of Cold Spray Repaired High-Strength Aluminium Alloy 7075 Specimens: *Ali Bakir*¹; Xiang Zhang¹; Matthew Dore²; ¹Conventry University; ²The Welding Institue

10:40 AM

The dDevelopment of Resistance Seam Cladding for Corrosion Resistant Liners in Linepipe: *Jerry Gould*¹; ¹Edison Welding Institute

11:00 AM

The Importance of Controlling UV Coating Temperature to Stabilize Viscosity during Application to Reduce Energy Consumption: *Michael Bonner*¹, ¹Saint Clair Systems, Inc.

11:20 AM

Tribological and Anti-scaling Performance of Graphene-enriched Thin Polymer Coatings: Virendra Singh¹; Alireza Zolfaghari¹; Manuel Marya¹; ¹Schlumberger

IRON AND STEEL (FERROUS ALLOYS)

Advancements in Steel Structural Refinement — Advancements in Steel Structural Refinement

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee

Program Organizers: Charles Enloe, Steel Dynamics; Emmanuel De Moor, Colorado School of Mines

Monday AM | October 2, 2023 A212 | Greater Columbus Convention Center

Session Chairs: Charles Enloe, Steel Dynamics; Emmanuel De Moor, Colorado School of Mines

8:00 AM

Effect of Austempering Conditions on the Microstructure and Mechanical Properties of Bainitic Steels: *Je-Wook Jang*¹; Sangyoon Lee¹; ¹POSCO

8:20 AM

Microstructural Characterization of Austenite Decomposition Products in a 0.18C-0.15Si-1.9Mn-0.8Cr Steel Held Near M_s through Mössbauer Spectroscopy: Spencer Topper¹; Emmanuel De Moor¹; John Speer¹; ¹Colorado School of Mines



8:40 AM

Investigating the Effects of Si and Al on Microstructure and Properties of As-Cast AHSS Slabs: *Nhu Ngo*¹; Bryan Webler¹; P. Chris Pistorius¹; ¹Carnegie Mellon University

9:00 AM

Microstructural characterization during the annealing process in vanadium micro-alloyed cold rolled steel: *Cheoljun Bae*¹, Jongmyeong Kim¹; Jongryoul Kim²; ¹Hyundai Steel; ²Hanyang university

9:20 AM

The Effect of Initial Microstructure on the Recrystallization Behavior of Vanadium Micro-alloyed Cold Rolled Steel: *JongMyeong Kim*¹; Cheoljun Bae¹; Jongryoul Kim²; ¹Hyundai Steel; ²Hanyang university

9:40 AM

Grain Misorientation Characterization of Continuously-cooled Vanadium Microalloyed Steels for Ferrite Classification: Adam Church¹; Emmanuel De Moor¹; Lawrence Cho¹; Anastasiya Tselikova²; Rolf Schmidt²; Kip Findley¹; ¹Advanced Steel Processing and Products Research Center; ²Vantage Alloys

10:00 AM

Strengthening Effect Induced by Hierarchical Structured Nanoparticles in ODS Ferritic Alloy: *Peng Zhang*¹; Lin Zhang¹; Xuanhui Qu¹; Ye Liu²; ¹University of Science and Technology Beijing; ²Xiangtan University

CERAMIC AND GLASS MATERIALS

Advances in Dielectric Materials and Electronic Devices — Novel Processing of Functional Ceramics; Ferroelectrics and Piezoelectrics

Sponsored by: ACerS Electronics Division

Program Organizers: Amar Bhalla, University of Texas; Ruyan Guo, University of Texas at San Antonio; Rick Ubic, Boise State University; Matjaž Spreitzer, Jožef Stefan Institute; Tanmoy Maiti, IIT Kanpur

Monday AM | October 2, 2023 B231 | Greater Columbus Convention Center

Session Chair: Amar Bhalla, The University of Texas at San Antonio

8:00 AM

Additive Manufacturing of Flex Sensors: Characterization and Evaluation: *Carlos Acosta*¹; Sean Garnsey¹; Wasim Hafiz Dipon¹; Ruyan Guo¹; Amar Bhalla¹; ¹The University of Texas at San Antonio

8:20 AM

Cold Sintering Assisted Densification of High-performance Dielectric Materials: *Jing Guo*¹; Xiaomeng Li¹; Mingming Si¹; Hong Wang²; ¹Xi'an Jiaotong University; ²Southern University of Science and Technology

8:40 AM

Design for in-situ Computer Vision-based Automation of Drop-on-Demand Inkjet Drop Formation Optimization: Maximilian Estrada¹; Ruyan Guo¹; Amar Bhalla¹; ¹University of Texas at San Antonio

9:00 AM Invited

Domain Tailoring in Magnetic ZnFe2O4 Ferrite by Reactive Flash Sintering Technique: Soumyadeep Sur¹; Parmanand Tyagi¹; *Shikhar Jha*¹; ¹Indian Institute of Technology Kanpur

9:20 AM

Hybrid Solder Joints: Morphology and Shear Strength of Sn-3.5Ag Solder Joints Prepared Using Flux Doped with Ceramic Nanoparticles: *Irina Wodak*¹; ¹TU Wien

9:40 AM Invited

PLD Growth of Highly Crystalline STO and PZT on Graphene Oxide-Buffered Silicon Surface: *Matjaž Spreitzer*¹; Urška Trstenjak¹; Zoran Jovanovi²; ¹Jožef Stefan Institute; ²Vina Institute of Nuclear Sciences

10:00 AM Break

10:20 AM

Ferroelectricity in 2D Sn-based Monochalcogenides and Their Heterostructures: *Ramesh Paudel*¹; S. Pamir Alpay¹; ¹University of Connecticut

10:40 AM

Enhancement of Ferroelectric and Electrocaloric Properties in Relaxor Ceramics via Processing-related Microstructural Features: *Brigita Rozic*¹; Hana Ursic¹; Marko Vrabelj¹; Lovro Fulanovic²; Andraz Bradesko³; Venkata Ramana⁴; Barbara Malic¹; Tadej Rojac¹; Zdravko Kutnjak¹; ¹Jozef Stefan Institute; ²Technical University of Darmstadt; ³Laboratoire Structures, Propriétés et Modélisation des Solides, CentraleSupélec, Université ParisSaclay; ⁴I3N-Aveiro, University of Aveiro

11:00 AM

Polar Nanostructure in Composition Modulated Pb(Zr,Ti)O₃ Superlattice: Yukio Sato¹; Goki Kimura²; Sang Kweon²; Goon Tan³; Isaku Kanno²; ¹Kumamoto University; ²Kobe University; ³Osaka Metropolitan University

11:20 AM

Porous PZT Toughened via MgO Inclusions: *Ben Prevoznak*¹; Eric Neuman²; Geoff Brennecka¹; ¹Colorado School of Mines; ²Sandia National Laboratories

11:40 AM Invited

Piezopermittivity for Capacitance-based Stress/Strain Sensing: *Deborah Chung*¹; ¹State University of New York Buffalo

IRON AND STEEL (FERROUS ALLOYS)

Advances in Ferrous Metallurgy — Session I

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee

Program Organizers: Shannon Clark, ArcelorMittal Dofasco; Lijia Zhao, Northeastern University

Monday AM | October 2, 2023 A210 | Greater Columbus Convention Center

Session Chair: Siddhartha Biswas, Big River Steel

8:00 AM

Effect of Intercritical Annealing Parameters on the Mechanical Properties of a Medium-Mn Third Generation Advanced High Strength Steel: *Kazi Bhadhon*¹; Thomas Sydor¹; Ana Cardoso²; Frank Goodwin²; Joseph McDermid¹; ¹McMaster University; ²International Zinc Association



8:20 AM

Accurate Classification of Bainitic and Tempered Martensitic Steels with Advanced Deep Learning Methods: *Xiaohan Bie*¹; Juancheng Li¹; Manoj Arthanari¹; Evelin Barbosa de Melo¹; Jun Song¹; Steve Yue¹; ¹McGill University

8:40 AM

Localized Carbon Pickup Defect in Ultra-low Carbon Interstitial Free Steel: *Malavikha Rajivmoorthy*¹; William King¹; ¹Cleveland-Cliffs Research and Innovation Center

9:00 AM

Influence of Prestraining and Baking on Low-cycle Fatigue Characteristics of Complex Phase Steel: *Mei Zhang*¹; ¹Shanghai University

9:20 AM

Abrasive Wear Behaviour of Carbide Free Bainitic Steel: *Ajeet Rajput*¹; Sourav Das¹; ¹Indian Institute of Technology Roorkee

9:40 AM

High-Resolution, High-Speed Digital Holographic Microscopy of Ferrous Metals: Jose Albert Guevara¹; Junya Inoue¹; ¹The University of Tokyo

10:00 AM Break

10:20 AM

In-situ Laser Ultrasonic Measurements of Phase Transformation Kinetics on Dual-phase Steels During Stepped Cooling: Nobumasa Hayashi¹; *Mariana Rodrigues*¹; Matthias Miltzer¹; ¹The University of British Columbia

10:40 AM

Evolution of Heterogeneous Carbon Distribution during Austempering of TRIP Steel: Miku Watanabe¹; *Goro Miyamoto*¹; Satoshi Morooka²; Tadashi Furuhara¹; ¹Tohoku University; ²Japan Atomic Energy Agency

11:00 AM

Nb Forms and Distribution of the Weld Metal and the Underlying Mechanisms: Wenguang Liao¹; Xun Liu¹; ¹The Ohio State University

11:20 AM

Segregation-induced Transition during Early Stages of Liquid-metal Embrittlement in an Advanced High-strength Steel: Yuki Ikeda¹; Hsu-Chih Ni²; Hassan Ghassemi-Armaki³; Anirban Chakraborty⁴; Jim Zuo²; Reza Darvishi-Kamachali¹; *Robert Maass*¹; ¹Federal Institute of Materials Research and Testing (BAM); ²University of Illinois at Urbana-Champaign; ³General Motors R&D; ⁴ArcelorMittal Global Research and Development

11:40 AM

The Effects of Substrate Aluminum Content on Fe-Zn Intermetallic Reactions and Liquid Metal Embrittlement in Third Generation Advanced High Strength Steels: *Jake Colburn*¹; Jonah Klemm-Toole¹; John Speer¹; ¹Colorado School of Mines

PROCESSING AND MANUFACTURING

Advances in Surface Engineering — Advances in Surface Engineering

Sponsored by: TMS Surface Engineering Committee

Program Organizers: Rajeswaran Radhakrishnan, Faraday Technology Inc; Timothy Hall, Faraday Technology Inc; Michael Roach, University of Mississippi Medical Center; Sandip Harimkar, Oklahoma State University; Tushar Borkar, Cleveland State University; Rajeev Gupta, North Carolina State University; Bharat Jasthi, South Dakota School of Mines & Technology

Monday AM | October 2, 2023 B244/245 | Greater Columbus Convention Center

Session Chairs: Santosh More, Faraday Technology Inc; Alex Fertig, Faraday Technology Inc

8:00 AM

A Study on Surface Oxidation Behavior of Ferritic Stainless Steel for SOFC Interconnect: JungHyun Kong¹; JongHee Kim¹; JinSuk Kim¹; KwangMin Kim¹; KiHoon Jo¹; ¹POSCO/Stainless Steel Research Group

8:20 AM

Bio-inspired Surface Engineering of an La₂NiO₄, Electrode to Modify Electrochemical Activity for Electrolysis: *Cole Klemstine*¹; Yu Zhong²; Xingbo Liu¹; Wenyuan Li¹; Kathy Sabolsky¹; Edward Sabolsky¹; ¹West Virginia University; ²Worcester Polytechnic Institute

8:40 AM

Detection of Breath Acetone via Au-decorated V2O5 Thin Film/Ag Nanoparticles: *Bader Alghamdi*¹; Qasem Drmosh¹; Nawaf Alharbi¹; Mohammed Aburuzaizah¹; ¹King Fahd University of Petroleum and Minerals (KFUPM)

9:00 AM

Solid Lubricant Coatings Based on Nanoscrolls Prepared Using Reduced Graphene Oxide and Titanium Dioxide for High Lubricity Applications: *Pratik Sanjiv Kasbe*¹; Christopher Dellacorte¹; Weinan Xu¹; ¹The University of Akron

9:20 AM

Characterization of Laser Driven Shockwaves and Applications in Materials Testing and Processing: Stanley Bovid¹; *Kent Talbert*¹; Dietrich Kiesewetter¹; ¹LSP Technologies

9:40 AM

Exploring the Particle-substrate Interface in Cold Spray Applications via Single Particle Impacts: Veera Panova¹; Christopher Schuh¹; ¹Massachusetts Institute of Technology

10:00 AM Break

10:20 AM

Optimization of Coating Property of Zinc-aluminium Flake Coated Bolt for Construction Equipment: Seung Hyoun Nam¹; Gi Beom Kim¹; Jin Ho Kim²; Se Hun Cheon³; Ki Wook Kong³; Tae Dong Park¹; ¹Hyundai Construction Equipment; ²Korea Shipbuilding & Offshore Engineering; ³L'beste GAT LTD.

10:40 AM

Patterned Surface Deformation for Tuning Strength and Functionality: Sam Scott¹; Joby Anthony¹; *Mark Atwater*¹; ¹Liberty University



11:00 AM

Improved Performance of Stainless Steels with Low Temperature Surface Hardening: *Temitope Oluwafemi*¹; ¹Bodycote

11:20 AM

Effect of Plasma Process Parameters on the Microstructure and Corrosion Properties of a High Strength Al Alloy: *Priyanshi Agrawal*¹; Yong Chae Lim¹; Jiheon Jun¹; Zhili Feng¹; Bradley Lokitz¹; ¹Oak Ridge National Laboratory

ADDITIVE MANUFACTURING

Agile Additive Manufacturing by Employing Breakthrough Functionalities — Towards Agile and Adaptive AM

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Soumya Nag, Oak Ridge National Laboratory; John Carpenter, Los Alamos National Laboratory; Peeyush Nandwana, Oak Ridge National Laboratory; Lang Yuan, University of South Carolina; Alex Kitt, Edison Welding Institute

Monday AM | October 2, 2023 C160A/160B | Greater Columbus Convention Center

Session Chairs: John Carpenter, Los Alamos National Laboratory; Lang Yuan, University of South Carolina

9:00 AM Invited

Making, Measuring, and Modeling Gradient Materials: Peter Collins¹; ¹Iowa State University

9:30 AM Invited

Designing Against Failure in Additive Manufacturing: From Fracture in Monolithic Samples to Designing Functionally Graded Materials: *Allison Beese*¹, ¹Pennsylvania State University

10:00 AM Invited

Toward Control of Part Distortion and Quality for Hybrid Additive/ Subtractive Manufacturing: Yousub Lee¹; Thomas Feldhausen¹; Mithulan Paramanathan¹; Dennis Brown¹; Rangasayee Kannan¹; Lauren Heinrich¹; James Haley¹; Peeyush Nandwana¹; Christopher Fancher¹; Shuvo De¹; Srdjan Simunovic¹; Brian Post¹; ¹Oak Ridge National Laboratory

10:30 AM Break

10:50 AM Invited

Beyond 3D Printing of Metals: Toward Location-Specific Property and Behavior Control: *Raymundo Arroyave*¹; ¹Texas A&M University

11:20 AM Invited

Radial Bimetallic Structures Via Wire Arc Additive Manufacturing: Lile Squires¹; Ethan Roberts¹; Amit Bandyopadhyay¹; ¹Washington State University

EDUCATION AND CAREER DEVELOPMENT

Career Transition: How to Navigate the Job Market? Insights from Academia and Industry — Navigate your Career in an Evolving Professional Sphere

Sponsored by: ACerS President's Council of Student Advisors, ACerS PCSA-EPC Committee

Program Organizers: Srinivasa Kartik Nemani, Indiana University-Purdue University; Ian Slagle, Georgia Institute of Technology

Monday AM | October 2, 2023 A121 | Greater Columbus Convention Center

Session Chairs: Kartik Nemani, Purdue school of Engineering; Pattiya Pibulchinda, Northwestern University

9:20 AM

STEM Outreach in Ceramics and Glass: How to Inspire the Next Generation of Professionals: Amanda Engen¹; ¹The American Ceramic Society

9:50 AM

Navigating Career Choices: Identifying Personality and Professional Traits to Pursue the Right Path: Babak Anasori¹; ¹Purdue University Indianapolis

10:20 AM Break

10:40 AM

How to Catalyze Your Career with Professional Societies: Brad Boyce¹; ¹TMS President; Distinguished Staff, Sandia National Laboratories

11:10 AM

Professional Skills for Global Environments: *Theresa Davey*¹; ¹Tohoku University

NUCLEAR ENERGY

Ceramics for New Generation Nuclear Energy System Application — Ceramic Waste Forms

Sponsored by: ACerS Energy Materials and Systems Division, TMS: Nuclear Materials Committee

Program Organizers: Lingfeng He, North Carolina State University; Krista Carlson, University of Nevada, Reno; Maik Lang, University of Tennessee; Jake Amoroso, Savannah River National Laboratory; Brian Riley, Pacific Northwest National Laboratory; Enrique Saez, Clemson University; Jinsuo Zhang, Virginia Polytechnic Institute and State University

Monday AM | October 2, 2023 A124 | Greater Columbus Convention Center

Session Chairs: Maik Lang, University of Tennessee; Lingfeng He, North Carolina State University

8:00 AM Invited

Metal-halide Perovskites as Innovative and Cost-effective Salt Waste Form: *Jie Lian*¹; ¹Rensselaer Polytechnic Institute



8:30 AM Invited

AI/ML-assisted Design of Phosphate Nuclear Waste Forms: James Saal¹; Vinay Hegde¹; Sarah Allec¹; Jincheng Du²; Thiruvilla Mahadevan²; Jayani Kalahe²; Brian Riley³; John Vienna³; Saehwa Chong³; ¹Citrine Informatics; ²The University of North Texas; ³Pacific Northwest National Laboratory

9:00 AM

Iron-phosphate Glasses for the Immobilization of Dehalogenated Chloride-based Waste Salt: *Harmony Werth*¹; Paige Murray¹; Jade Beland¹; Brian Riley²; Krista Carlson¹; ¹University of Nevada Reno; ²Pacific Northwest National Laboratory

9:20 AM

A New Method for Measuring Refractory Corrosion of Ceramics in Glass: Matthew Page¹; Wenxia Li¹; Bruce Wiersma¹; Jake Amoroso¹; ¹Savannah River National Laboratory

9:40 AM

Crucible-scale Corrosion Testing of Monofrax® K-3 Refractory in Contact with Glass Melts: *Wenxia* Lⁱ; Matt Page¹; Bruce Wiresma¹; Jake Amoroso¹; ¹Savanah River National Lab

10:00 AM Break

10:20 AM Invited

Crystal Growth of Actinide Materials as Potential Nuclear Waste Forms: Hans-Conrad Zur Loye¹, ¹University of South Carolina

10:50 AM Invited

Decoding the Structural Descriptors Controlling Nepheline Crystallization in Borosilicate-based Nuclear Waste Glasses: Ashutosh Goel¹; Ambar Deshkar¹; Yingcheng Zhang¹; Ping Lu²; Randall Youngman³; Jinjun Ren⁴; Pierre Florian⁵; Jiri Brus⁶; Gregory Tricot⁷; Alfonso Pedone⁸; ¹Rutgers, The State University of New Jersey; ²Wuhan University of Technology; ³Corning Incorporated; ⁴Chinese Academy of Sciences; ⁵CNRS, Orleans; ⁶Academy of Sciences of the Czech Republic; ⁷CNRS, UMR 8516; ⁸University of Modena and Reggio Emilia

11:20 AM

Stability of Radiation–Induced Bixbyite Phase in δ –Sc₄Hf₃O₁₂: Masanari Iwasaki¹; Yusuke Kanazawa¹; Maulik Patel²; Gianguido Baldinozzi³; Kurt Sickafus⁴; Manabu Ishimaru¹; ¹Kyushu Institute of Technology; ²University of Liverpool; ³Centre National de la Recherche Scientifique; ⁴Los Alamos National Labolatry

11:40 AM

Microstructure and Mechanical Properties of Ceramics in Y-Ti-O System: *Lingfeng He*¹; Xiaofei Pu²; Eitan Hershkovitz³; Timothy Yoo³; Honggyu Kim³; Kaustubh Bawane⁴; Fidelma Giulia Di Lemma⁴; Tadachika Nakayama⁵; Hisayuki Suematsu⁵; Koichi Niihara⁵; ¹North Carolina State University; ²National Renewable Energy Laboratory; ³University of Florida; ⁴Idaho National Laboratory; ⁵Nagaoka University of Technology

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Nanomaterials Synthesis & Patterning

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Indiana University-Purdue University Indianapolis

Monday AM | October 2, 2023 B234 | Greater Columbus Convention Center

Session Chairs: Haitao Zhang, University of North Carolina at Charlotte; Babak Anasori, Indiana University–Purdue University Indianapolis

8:00 AM Invited

Micro- and Nanopatterning and Texturing of 3-dimensional Surfaces and Structures: Gary Zabow¹; ¹National Institute of Standards & Technology (NIST)

8:30 AM

Ultra-Resolution 3-Dimensional Nanopatterning of Functional Materials: Karla Del Cid-Ledezma¹; Luis Ortiz¹; Hurayra Lizu¹; Fei Wang¹; Adanma Akoma¹; *Bryan Huey*¹; ¹University of Connecticut

8:50 AM

Mold-Free Manufacturing of Highly Sensitive and Fast Response Pressure Sensors through High-Resolution 3D Printing and Conformal Oxidative Chemical Vapor Deposition Polymers: *Jinwook Baek*¹; Yujie Shan¹; Mitesh Mylvaganan¹; Yuxuan Zhang¹; Fei Qin¹; Han Wook Song²; Huachao Mao¹; Sunghwan Lee¹; ¹Purdue University; ²Korea Research Institute of Standards and Science

9:10 AM

Molecule-like Lanthanide-oxide Clusters in ZnO: Gunnar Westin¹; ¹Uppsala University

9:30 AM

Rubbing Powders: Interfacial Radical Formation in Compacted Nanoparticle Ensembles: Oliver Diwald¹; Thomas Schwab¹; Aicher Korbinian¹; Keith McKenna²; John Dunlop¹; ¹Paris Lodron Universitaet Salzburg; ²University of York

9:50 AM

Novel Insights into the Microwave-assisted Polyol Synthesis of Metal Nanoparticles for Catalytic Air Pollution Control: *Yunzi Xin*¹; Kunihiko Kato¹; Takashi Shirai¹; ¹Nagoya Institute of Technology

10:10 AM Break

10:30 AM Invited

Controlled Synthesis and Dimensionalities of Metal Halide Perovskites by Solution-based Approaches: Weiguang Zhu¹; *Jie Lian*¹; ¹Rensselaer Polytechnic Institute



11:00 AM

Catalyst Instability Induced Precursor Production and Growth of Sibased Nanostructures: Shifat Us Sami¹; *Haitao Zhang*¹; ¹University of North Carolina at Charlotte

11:20 AM

In Situ Solid-Phase Crystallization of Layered Complex Oxides from Amorphous Precursors in the Transmission Electron Microscope: Jenna Wardini¹; George F. Harrington²; Dennis Kemp³; Roger A. De Souza³; *William Bowman*¹; ¹Uc Irvine; ²University of Bath; ³RWTH Aachen University

11:40 AM

Developments of Perovskite-Structured Transparent Conducting Electrode for Perovskite Solar Cells: La-Doped SrSnO₃ Bulk and Thin Films: Yogesh Kumar¹; ¹Khalsa College, Garhdiwala

EDUCATION AND CAREER DEVELOPMENT

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

Sponsored by: TMS: Education Committee, TMS: Accreditation Committee

Program Organizers: Alison Polasik, Campbell University; Jeffrey Fergus, Auburn University

Monday AM | October 2, 2023 A120 | Greater Columbus Convention Center

Session Chair: Kester Clarke, Colorado School of Mines

8:00 AM Introductory Comments

8:05 AM

Innovation in the Undergraduate Curriculum: Advanced Instrumentation in Research Courses: Mario Affatigato¹; Steve Feller¹; ¹Coe College

8:25 AM

Improving Motivation and Learning of Computational Modeling in Undergraduate MSE Students: *Alison Polasik*¹; ¹Campbell University

8:45 AM

Using Jupyter Tools to Design Accessible, Scalable, and Interactive Learning Experiences in Materials Science and Engineering: *Enze Chen*¹; Mark Asta¹; Andrew Minor¹; ¹University of California, Berkeley

9:05 AM

New Course Design: "Teaching Materials Science & Engineering": *Vincent Sokalski*¹; ¹Carnegie Mellon University

9:25 AM

Undergraduate Research in Glass and Materials Science: An NSF Conference Grant: *Steve Feller*¹; Mario Affatigato¹; ¹Coe College

9:45 AM

ABET: Updates and Changes: *Gregg Janowski*¹; Janet Callahan²; ¹University of Alabama at Birmingham; ²Michigan Technological University

10:05 AM Break

10:25 AM Panel Discussion Preparing for Your ABET Visit - Panelists include Jeffrey Fergus, Janet Callahan, and Gregg Janowski.

FUNDAMENTALS AND CHARACTERIZATION

Emergent Materials Under Extremes and Decisive In Situ Characterizations — Next Generation X-ray and Neutron Technologies for Advanced Characterization

Sponsored by: ACerS Basic Science Division

Program Organizers: Xiaofeng Guo, Washington State University; Hongwu Xu, Los Alamos National Laboratory; Xujie Lu, Center for High Pressure Science & Technology Advanced Research; Hua Zhou, Argonne National Laboratory; Judith Driscoll, University of Cambridge; Andrew Strzelecki, Los Alamos National Laboratory

Monday AM | October 2, 2023 A220 | Greater Columbus Convention Center

Session Chair: Hua Zhou, Argonne National Laboratory

8:00 AM Invited

Magnetic Scattering and Spectroscopy at High Pressures at APS and APS-U: Daniel Haskel¹; ¹Argonne National Laboratory

8:30 AM Invited

Perspectives of IXS and NRS Studies in the APSU Era: *Jiyong Zhao*¹; ¹Advanced Photon Source, Argonne National Laboratory

9:00 AM Invited

Neutron Scattering for Studying Materials Under Extreme Conditions: Yaohua Liu¹; ¹Oak Ridge National Laboratory

9:20 AM Invited

In-situ/Operando Characterization of Emerging Materials with MeV Ultrafast Electron Diffraction at SLAC National Accelerator Laboratory: *Xiaozhe Shen*¹; ¹SLAC National Accelerator Laboratory

9:40 AM

Capturing Laser Induced Dynamics of Materials via Single-Shot Ultrafast Transmission Electron Microscopy: Volkan Ortalan¹; ¹University of Connecticut

10:00 AM Break

10:20 AM Invited

Modulation of Structure-function Motifs in Optoelectronic Metal Halides Using High Pressure: Xujie Lu¹; ¹Center for High Pressure Science & Technology Advanced Research

10:50 AM Invited

Pressure-induced Non-monotonic Crossover of Steady Relaxation Dynamics in a Metallic Glass: *Qiaoshi Zeng*¹; ¹Hpstar

11:10 AM Invited

HP-XAFS and Its Application to Topological Insulator Bi2Te3: *Xinguo Hong*¹; ¹Center for High Pressure Science and Technology Advanced Research

11:30 AM

Pressure Driving Dual-layer Superconductivity in 4Hb-TaSe2 TMD: *Wenge Yang*¹, ¹Center for High Pressure Science and Technology Advanced Research (HPSTAR)



11:50 AM

Polar Magnets in High-Pressure Exotic Perovskites: *Yifeng Han*¹; Alexandra Navrotsky¹; ¹Arizona State University

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — D.T. Rankin Award Ceremony

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Krista Carlson, University of Nevada, Reno; Kyle Brinkman, Clemson University; Armin Feldhoff, Leibniz University Hannover; Charmayne Lonergan, Missouri University of Science and Technology; Zhezhen Fu, Pennsylvania State University - Harrisburg; Dhruba Panthi, Kent State University; Janusz Tobola, AGH UST, Faculty of Physics and Applied Computer Science

Monday AM | October 2, 2023 B240/241 | Greater Columbus Convention Center

Session Chair: Krista Carlson, University of Nevada

8:00 AM Invited

D.T. Rankin Award Ceremony and Awardee's Talk: Krista Carlson¹; Jake Amoroso²; ¹University of Nevada, Reno; ²Savannah River National Laboratory

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Energy Storage I; Energy Conversion and Harvesting I

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Krista Carlson, University of Nevada, Reno; Kyle Brinkman, Clemson University; Armin Feldhoff, Leibniz University Hannover; Charmayne Lonergan, Missouri University of Science and Technology; Zhezhen Fu, Pennsylvania State University - Harrisburg; Dhruba Panthi, Kent State University; Janusz Tobola, AGH UST, Faculty of Physics and Applied Computer Science

Monday AM | October 2, 2023 B240/241 | Greater Columbus Convention Center

Session Chairs: Yang Bai, University of Oulu; Armin Feldhoff, Leibniz University Hannover

8:20 AM Keynote

Cation-Driven Assembly of Dissimilar Nanoflakes to Form Twodimensional Heterostructure Electrodes for Energy Storage: *Ekaterina Pomerantseva*¹; ¹Drexel University

9:00 AM Invited

Ferroelectric Nanocomposites for Enhanced Solar Energy Conversion: Joe Briscoe¹; ¹Queen Mary University of London

9:30 AM Invited

Charge Storage Mechanisms in Layered Oxide Supercapacitors: *Scott Misture*¹; ¹Alfred University

10:00 AM Break

10:20 AM Invited

Developing Fast Chargeable Safe and Inexpensive Li-ion Batteries: *Palani Balaya*¹, ¹National University of Singapore

10:50 AM

Electrically Conductive Electrets as a New Untapped Source of Electrical Energy: *Deborah Chung*¹; ¹State University of New York Buffalo

11:10 AM Invited

High Thermoelectric ZT in Half-Heusler Alloys: A Preview: Joseph Poon¹; ¹University of Virginia

11:40 AM

Performance Improvement of MXene-based Perovskite Solar Cells: Hugo Lemos¹; Jessica Rossato¹; Silvia Fernandes¹; *Carlos Graeff*¹; ¹UNESP

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Current Issues and Functional Applications — Glass Chemistry, Design, and Characterization

Sponsored by: ACerS Glass & Optical Materials Division

Program Organizers: Charmayne Lonergan, Missouri University of Science and Technology; Ashutosh Goel, Rutgers, The State University of New Jersey

Monday AM | October 2, 2023 B132 | Greater Columbus Convention Center

Session Chairs: Hrishikesh Kamat, James R. Glidewell Dental Ceramics Inc.; Charmayne Lonergan, Missouri University of Science and Technology

8:00 AM

Accelerating Glass Discovery Using Artificial Intelligence and Machine Learning: NMAnoop Krishnan¹; ¹Indian Institute of Technology Delhi

8:30 AM

The Influence of Divalent Cations on the Network Structures and Properties of Phosphate and Aluminophosphate Glasses: *Charmayne Lonergan*¹; Richard Brow¹; ¹Missouri University of Science and Technology

9:00 AM

Aluminum and Iron in Silicate Glasses and 5.1.8 Crystal: Raine Antonio¹; Malin Wilkins¹; John Bussey¹; John McCloy¹; ¹Washington State University

9:20 AM

The Ductility of Silicate Glasses is Driven by Topological Heterogeneity: *Mathieu Bauchy*¹, ¹University of California, Los Angeles



9:40 AM

Mixed Modifier Effects on Structural, Mechanical, Chemical, and Mechanochemical Properties of Sodium Calcium Aluminosilicate Glass: Hongshen Liu¹; *Andrew Ogrinc*¹; Yinan Lin¹; Collin Wilkinson²; Karan Doss¹; Aubrey Fry¹; Conghang Qu¹; Hongtu He³; Timothy Gross⁴; Nicholas Smith⁴; John Mauro¹; Seong Kim¹; ¹Penn State University; ²Alfred University; ³Southwest University of Science and Technology; ⁴Corning Inc

10:00 AM Break

10:20 AM

Deciphering the Structural Origins of High Sulfur Solubility in Vanadium-containing Borosilicate Glasses: *Rajan Saini*¹; Ashutosh Goel¹; Daniel R. Neuville²; Randall E. Randall E. Youngman³; ¹Rutgers University; ²IPGP CNRS; ³Corning Incorporated

10:40 AM

Rheological Behavior of Heavy-Metal Oxychloride Glass-Forming Liquids: Jacob Lov¹; Bruce Aitken²; Sabyasachi Sen¹; ¹University of California at Davis; ²Corning Incorperated

11:00 AM

Topological Phases and Melt Dynamics of the Equimolar Ternary Ge-As-S and Ge-P-Se Glass Systems: *Badriah Almutairi*¹; Aaron Welton²; Punit Boolchand²; ¹Princess Nourah Bint Abdulrahman University; ²University of Cincinnati

11:20 AM

Investigation of Glasses Containing Heavy Metal Oxides as a Replacement to Lead Oxide: *Elizabeth Tsekrekas*¹; Alexis Clare¹; ¹Alfred University

FUNDAMENTALS AND CHARACTERIZATION

Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-Performance Relationships — Microstructure

Sponsored by: ACerS Basic Science Division

Program Organizers: John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology; Shen Dillon, University of California, Irvine; Wolfgang Rheinheimer, University of Stuttgart; Catherine Bishop, University of Canterbury; Ming Tang, Rice University; Melissa Santala, Oregon State University

Monday AM | October 2, 2023 A215 | Greater Columbus Convention Center

Session Chairs: Catherine Bishop, University of Canterbury; Wolfgang Rheinheimer, FZ Juelich

8:00 AM Invited

A Potential Mechanism for Abnormal Grain Growth in Thin Films on c-sapphire: Dominique Chatain¹; Blandine Courtois¹; Gerhard Dehm²; ¹CNRS/CINAM; ²MPIE

8:30 AM Invited

Addressing the Stability and Reliability Challenges in Perovskite Solar Cells via Microstructural and Interfacial Tailoring: *Nitin Padture*¹; ¹Brown University

9:00 AM

The Role of Grain Boundary Stiffness during Grain Boundary Migration in Ni Polycrystals: *Zipeng Xu*¹; Fadi Abdeljawad²; Gregory Rohrer¹; ¹Carnegie Mellon University; ²Clemson University

9:20 AM

The effects of large pores on grain growth behavior in calcia doped alumina: *Daniel DeLellis*¹; Amanda Krause¹; ¹Carnegie Mellon University

9:40 AM

Anisotropic Interface Motion in Polycrystalline Films: Danny Hermawan¹; John Blendell¹; R. Edwin Garcia¹; ¹Purdue University

10:00 AM Break

10:20 AM

Modeling SiN Crystallization in Microelectronics Manufacturing Using Phase-field Method: *Aashique Rezwan*¹; Jennie Podlevsky¹; Calvin Parkin¹; Khalid Hattar²; James Lane¹; Tesia Janicki¹; Scott Grutzik¹; Edwin Chiu¹; Chris Bishop¹; Hojun Lim¹; ¹Sandia National Laboratories; ²University of Tennessee, Knoxville

10:40 AM

Direct Observation of Anisotropic Growth of Nickel Oxide Nanostructure by the Terrace-ledge-kink Mechanism: Boyi Qu¹; *Klaus van Benthem*¹; ¹University of California, Davis

11:00 AM

Examining Multiple Generations of Complexion Transitions in Eudoped MgAl2O4: *Alicia Koenig*¹; Caroline Riedel¹; Christopher Marvel²; Martin Harmer¹; ¹Lehigh University; ²Louisiana State University

11:20 AM

Segregation Engineering in Metal Oxide Nanoparticle-derived Ceramics: Oliver Diwald¹; Korbinian Aicher¹; Thomas Schwab¹; Gregor Zickler¹; ¹Paris Lodron Universitaet Salzburg

11:40 AM

Blacklight Sintering of Ceramics: *Wolfgang Rheinheimer*¹; Lukas Porz²; Michael Scherer²; Lovro Fulanovic²; Till Frömling³; Jürgen Rödel²; ¹Julich Research Center; ²TU Darmstadt; ³Fraunhofer IWKS

12:00 PM

Thermo-kinetic Analysis of Zinc Aluminate Nanoparticles Coarsening: *Ricardo Castro*¹; ¹Lehigh University



MATERIALS-ENVIRONMENT INTERACTIONS

High Temperature Corrosion and Degradation of Structural Materials — I. Carbon Dioxide, Steam, and Interfacial Stability

Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; Richard Oleksak, National Energy Technology Laboratory; David Shifler, Office of Naval Research; Raul Rebak, GE Global Research

Monday AM | October 2, 2023 A122 | Greater Columbus Convention Center

Session Chair: To Be Announced

9:00 AM Invited

Comparison and Mechanism of High-temperature Oxidation Behavior of Additively Manufactured Haynes 282 to Wrought Haynes 282 in Direct-fired Supercritical CO₂ Power Cycle Environments: *Casey Carney*¹; Nicholas Lamprinakos²; Richard Oleksak¹; Omer Dogan¹; Anthony Rollett²; ¹National Energy Technology Laboratory; ²Carnegie Mellon University

9:30 AM

Effect of Temperature and Impurities on the Oxidation Behavior of Ni-based Alloys in Hot CO2-rich Gases: *Richard Oleksak*¹; Joseph Tylczak¹; Lucas Teeter¹; Casey Carney¹; Ömer Doan¹; ¹National Energy Technology Laboratory

9:50 AM

Environmental Creep Behavior of Austenitic Steels in CO2: Richard Oleksak¹; Kyle Rozman¹; Ömer Doan¹; ¹National Energy Technology Laboratory

10:10 AM Break

10:30 AM

T91 Boiler Tube Oxidation Performance and Oxide Spallation in Supercritical Steam Thermal Cycling Conditions: Casey Carney¹; Gordon Holcomb¹; ¹National Energy Technology Laboratory

10:50 AM

Evolution of Interfacial Morphogenesis and Stability of Alloys in Harsh Environments: Krishnan Raja¹; ¹University of Idaho

SPECIAL TOPICS

History of Materials Science and Engineering — Material Classes and Choices

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee, TMS Phase Transformations Committee, TMS Shaping and Forming Committee, TMS: Steels Committee

Program Organizers: Robert Hackenberg, Los Alamos National Laboratory; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Olivier Hardouin Duparc, LSI - CNRS; Kester Clarke, Colorado School of Mines; Goro Miyamoto, Tohoku University

Monday AM | October 2, 2023 A213 | Greater Columbus Convention Center

Session Chairs: Tadashi Furuhara, Tohoku University; Robert Hackenberg, Los Alamos National Laboratory

8:00 AM Invited

History of Steel Research in Institute for Materials Research ("KINKEN") of Tohoku University: *Tadashi Furuhara*¹; ¹Institute for Materials Research, Tohoku University

8:30 AM Invited

Microalloyed Forging Steels – Evolution from Laboratory to Industrial Application: *Chester Van Tyne*¹, ¹Colorado School of Mines

9:00 AM Invited

History of Extra Super Duralumin Development and Its Spirit Inherited by UACJ: *Hideo Yoshida*¹; Mami Mihara-Narita²; Hidetoshi Uchida³; ¹ESD Laboratory; ²Nagoya Institute of Technology; ³UACJ Corporation

9:30 AM Invited

A Perspective on the Uses of Ceramics in Nuclear Reactors LA-UR-23-23416: Erik Luther¹, ¹Los Alamos National Laboratory

10:00 AM Break

10:20 AM

Experiments of a German Engineer Starting a Blast Furnace in Brazil, in 1818: *Fernando Landgraf*¹; ¹University of Sao Paulo

10:50 AM

The Development of Artificially-made Siliceous Ceramic Bodies (i.e. Stonepaste) in the Middle East between the 11th and 17th Centuries: *Moujan Matin*¹; ¹University of Toronto

11:20 AM

The Transition from Old Iron to New Steel in China: Tengshi Liu¹; ¹Shanghai University



CERAMIC AND GLASS MATERIALS

Manufacturing and Processing of Advanced Ceramic Materials — New Advances in Ceramic Processing I: Sintering

Sponsored by: ACerS Manufacturing Division

Program Organizers: Bai Cui, University of Nebraska-Lincoln; James Hemrick, Oak Ridge National Laboratory; Mike Alexander, Allied Mineral Products; Eric Faierson, Iowa State University; Keith DeCarlo, Blasch Precision Ceramics

Monday AM | October 2, 2023 B233 | Greater Columbus Convention Center

Session Chairs: William Fahrenholtz, Missouri University of Science and Technology; Fei Peng, Clemson University

8:00 AM Invited

Machine-Learning-Based, Online Estimation of Ceramic's Microstructure Upon the Laser Spot Brightness During Laser Sintering: Jianan Tang¹; Siddhartha Sarkar¹; Hua Huang¹; Xiao Geng¹; Jianhua Tong¹; Lionel Vargas-Gonzalez²; Nicholas Ku²; Dongsheng Li³; Hai Xiao¹; *Fei Peng*¹; ¹Clemson University; ²DEVCOM Army Research Laboratory; ³Advanced Manufacturing LLC

8:30 AM Invited

Nondestructive Materials Characterization Using Ultrasound: Towards a Deeper Understanding of the Cold Sintering Process: Andrea Arguelles¹; Haley Jones²; Christopher Wheatley²; Susan Trolier-McKinstry³; Clive Randall³; ¹Penn State University; Materials Research Institute, Millennium Science Complex ; ²Penn State University; ³Materials Research Institute, Millennium Science Complex; Penn State University

9:00 AM

Limitations on the Sintering of Graded Particle Systems: Daniel Delia¹; William Carty¹; ¹Alfred University

9:20 AM

Microstructure and Electrical Conductivity of Sol-gel Synthesized and Spark Plasma Sintered Doped-lanthanum Gallate: *Eliana Muccillo*¹; Shirley Reis¹; Cyrille Gonin²; Marcos Berton²; Reginaldo Muccillo¹; ¹Energy and Nuclear Research Institute; ²SENAI Institute for Innovation in Electrochemistry

9:40 AM

Micromechanical Properties and Microstructures of AC and DC Flash-sintered Alumina: *Chao Shen*¹; Tongjun Niu¹; Bo Yang¹; Jaehun Cho²; Zhongxia Shang¹; Tianyi Sun¹; Anyu Shang¹; R. Edwin Garcia¹; Haiyan Wang¹; Xinghang Zhang¹; ¹Purdue University; ²Kumoh National Institute of Technology

10:00 AM Break

10:20 AM Invited

Densification of Dual Phase High Entropy Boride-Carbide Ceramics by Pressureless Sintering: *William Fahrenholtz*¹; Steven Smith¹; Greg Hilmas¹; ¹Missouri University of Science and Technology

10:50 AM

Exploring New Flux Chemistries to Expand the Cold Sintering Process: *Julian Fanghanel*¹; Clive Randall¹; ¹Pennsylvania State University

11:10 AM

Manufacturing Feasibility of the Cold Sintering Process for Largescale Ceramic Dielectrics: *Christopher Wheatley*¹; Clive Randall¹; Andrea Argüelles¹; ¹Pennsylvania State University

CERAMIC AND GLASS MATERIALS

Mesoscale Phenomena in Functional Polycrystals and Their Nanostructures — Ferroelectric, Dielectric and Thermal Phenomena

Sponsored by: ACerS Electronics Division

Program Organizers: Serge Nakhmanson, University of Connecticut; Edward Gorzkowski, Naval Research Laboratory; James Wollmershauser, U.S. Naval Research Laboratory; Seungbum Hong, KAIST; Javier Garay, University of California - San Diego; Pierre-Eymeric Janolin, CentraleSupélec; Ilya Sochnikov, University of Connecticut

Monday AM | October 2, 2023 B230 | Greater Columbus Convention Center

Session Chairs: Serge Nakhmanson, University of Connecticut; Ilya Sochnikov, University of Connecticut

8:00 AM

Modeling Local Dielectric Dispersion in Ferroelectric BaTiO3 with Domain Walls: Ashok Gurung¹; John Mangeri²; Charles Schwarz¹; S Alpay¹; Serge Nakhmanson¹; ¹University of Connecticut; ²Luxembourg Institute of Science and Technology

8:20 AM Invited

Characterization of Phase and Domain Switching in Sn-doped BCZT Piezoceramics with Large Electromechanical Strains: Abhijit Pramanick¹; *Laurent Daniel*¹; Sarangi Venkateshwarlu²; Valentin Segouin¹; Yang Ren²; ¹GeePs-CentraleSupelec; ²City University of Hong Kong

8:50 AM

Processing and Electrical Characterization of Bulk Nano-grained Hafnia-based Ceramics: *Eric Patterson*¹; Sara Mills²; James Wollmershauser¹; Kevin Anderson¹; Boris Feigelson¹; Evan Anguish³; Jennifer Andrew³; ¹U.S. Naval Research Laboratory; ²ASEE Post Doctoral Associate, U.S. Naval Research Laboratory; ³University of Florida

9:10 AM Invited

Bidirectional Dynamic Mechanical Writing of Polar Bubbles: *Jaegyu Kim*¹; Yeongki Yeo¹; Yong-Jun Kwon¹; Jeongdae Seo¹; Chan-Ho Yang¹; ¹KAIST

9:40 AM

Strain-tuned Quantum Materials: *Ilya Sochnikov*¹; Joshua Bedard¹; Jacob Franklin¹; ¹University of Connecticut

10:00 AM Break

10:20 AM Invited

Mesoscale Dipoles via Strain Induced Correlations in an Atomic-layer Superlattice: Maitri Warusawithana¹; ¹University of North Florida

10:50 AM Invited

Causality and Machine Learning Models of Ferroics From Atomistic Simulations: Ayana Ghosh¹; ¹Oak Ridge National Laboratory



11:20 AM Invited

Heat-assisted Ferroelectric Reading for High Speed Ultrahighdensity Ferroelectric Data Storage: Yasuo Cho¹; ¹New Industry Creation Hatchery Center, Tohoku University

11:50 AM Invited

Hierarchical Ceramic Composites for Ultra-high Temperature Applications: *Laura Silvestroni*¹; Nicola Gilli²; Jeremy Watts³; William Fahrenholtz³; ¹CNR - ISTEC; ²CNR; ³Missouri University of Science and Technology

FUNDAMENTALS AND CHARACTERIZATION

Metal Powder Synthesis and Processing: Fundamental Aspects and Modeling — Session I

Sponsored by: TMS: Powder Materials Committee

Program Organizers: Kyle Tsaknopoulos, Worcester Polytechnic Institute; Timothy Prost, Uniformity Labs; Jordan Tiarks, Ames National Laboratory; Franz Hernandez, Ames Laboratory

Monday AM | October 2, 2023 A214 | Greater Columbus Convention Center

Session Chairs: Kyle Tsaknopoulos, Worcester Polytechnic Institute; Jordan Tiarks, Ames National Laboratory; Timothy Prost, Uniformity Labs

8:00 AM

Effect of Li Concentration on Morphology of Precipitates in Nanocrystalline Cu-3Ta: Joshua Smeltzer¹; B. Hornbuckle²; Kiran Solanki³; Martin Harmer¹; Kristopher Darling²; *Christopher Marvel*⁴; ¹Lehigh University; ²US Army Combat Capabilities Development Command; ³Arizona State University; ⁴Louisiana State University

8:20 AM

Microstructural Characterization of Zn-3Mg(wt.%) Processed by High-pressure Torsion: *Tanzilur Rahman*¹; Connor Wasick¹; Hakan Yilmazer²; Megumi Kawasaki³; Burak Dikici⁴; Kaveh Edalati⁵; Carl Boehlert¹; ¹Michigan State University; ²Yildiz Technical University; ³Oregon State University; ⁴Ataturk University; ⁵Kyushu University

8:40 AM

Resolving the Sintering Conundrum of Tungsten Alloys: *Lin Zhang*¹; Zhongyou Que¹; Xingyu Li¹; Xuanhui Qu¹; ¹University Of Science and Technology Beijing

9:00 AM

FEM Analysis of Temperature and Stress Distribution Behavior of Al2OCr2OFe25Ni25Mn10 High Entropy Alloy in Spark Plasma Sintering: Effect of Consolidation Time on Microstructure: *Lehlogonolo Kanyane*¹; M Tlotleng¹; N Malatji¹; ¹Tshwane University of Technology

9:20 AM

Vacuum Hot Pressing of Oxide-dispersion Strengthened (ODS) Ferritic Steel Powders Guided by Temperature-scanning Highenergy X-ray Powder Diffraction Analysis: Landon Hickman¹; Emma Cockburn²; Nicolas Argibay¹; Jordan Tiarks¹; Rameshawari (Sherry) Naorem¹; Iver Anderson¹; Sid Pathak²; ¹Ames Laboratory; ²Iowa State University

9:40 AM

Advanced Characterization of Defects in Superalloy Powders Atomized by Various Methods and Effects on Net-shape HIP Product: *Benjamin Georgin*¹; Hamish Fraser²; Brian Welk²; ¹Exponent; ²The Ohio State University

10:00 AM Break

10:20 AM

Flowability and Suitability of Mechanically Derived Powders for Additive Manufacturing: David Bahr¹; John Barnes²; John Martin³; ¹Purdue University; ²Metal Powder Works; ³HRL Laboratories

10:40 AM

Microstructure Alignment Effects from Engineered Cooling during

Additive Manufacturing of Alnico Magnets from Pre-alloyed Powder : *Iver Anderson*¹; Luke Gaydos¹; Tyler Rodriguez¹; Emrah Simsek²; Ryan Ott²; Emily Rinko³; Wei Tang²; Matthew Kramer²; Nicolas Argibay²; ¹Iowa State University Ames Laboratory; ²Ames National Lab; ³Kansas City National Security Campus

11:00 AM

Understanding the Geometry Accuracy and Surface Roughness of Thin Wall Structures for 316L Stainless Steel in Laser Powder Bed Fusion Additive Manufacturing: *Tianyu Zhang*¹; Loewer Matthew¹; Haralson Reid¹; Lang Yuan¹; ¹University of South Carolina

MODELING

Multi Scale Modeling of Microstructure Deformation in Material Processing — Multi Scale Modeling of Microstructure Deformation in Material Processing

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee

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 AM | October 2, 2023 A225 | Greater Columbus Convention Center

Session Chairs: Lukasz Madej, AGH University; Krzysztof Muszka, AGH University

8:00 AM Invited

Modeling Microstructure Evolution for Solidification During Additive Manufacturing Using Cellular Automata: Indranil Roy¹; John S Coleman¹; Matt R Rolchigo¹; Alex Plotkowski¹; Shuanglin Chen²; Ying Yang²; ¹Oak Ridge National Laboratory; ²Computherm LLC

8:30 AM

Explicit Separation of Edge and Screw Dislocation Mobility and Density Evolution Law in BCC Single Crystal Plasticity Model: *Cathy Bing*¹; Philip Eisenlohr¹; ¹Michigan State University

8:50 AM

Fine-tuning Superelastic Behavior of NiTi SMAs via Nanoscale Concentration Modulation Created by Ni4Ti3 Nanoprecipitate Dissolution: Zexu Chen¹; Hariharan Sriram¹; Longsheng Feng¹; Yunzhi Wang¹; ¹The Ohio State University



9:10 AM

An Experimental and Modeling Study of Vacancy Diffusion Creep and Segregation in Multicomponent Alloys: *Chaitanya Bhave*¹; Sriswaroop Dasari¹; Sourabh Kadambi¹; Boopathy Kombaiah¹; ¹Idaho National Laboratory

9:30 AM

A New Die Design for the Constrained Groove Pressing Process to Achieve Homogeneity and Uniform Properties: *Swapnil Sawalkari*; David Field¹; ¹Washington State University

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials I

Sponsored by: ACerS Bioceramics Division

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford; Shawn Allan, Lithoz America LLC

Monday AM | October 2, 2023 A222 | Greater Columbus Convention Center

Session Chairs: Min Wang, University of Hong Kong; Tanveer Tabish, University of Oxford

8:00 AM Invited

Designing and 3D Printing of Graded Tissue Engineering Scaffolds: Min Wang¹; ¹University of Hong Kong

8:20 AM

Chemical Risk Calculators (CHRIS): Regulatory Tools for Assessing Medical Device Leachables: David Saylor¹, ¹US FDA

8:40 AM Invited

3D Printing of Diamond as a Biomaterial Using 3DP Technologies: *Kate Fox*¹; ¹RMIT University

9:00 AM Invited

Nanostructured Biomaterial Derived From Reactive Organotrialkoxysilanes: Prem Pandey¹; ¹Indian Institute of Technology, BHU

9:20 AM

Synthesis and Characterization of Nanofibrous Chitosan/ Hydroxyapatite Microspheres: Song Chen¹; *Akiyoshi Osaka*²; ¹Taiyuan Univ Tech; ²Okayama University

9:40 AM

Nitric Oxide Releasing Two-dimensional Raphene: A Romance of Many Dimensions: Tanveer Tabish¹, ¹University of Oxford

10:00 AM Break

10:20 AM Invited

Salicylic Acid-loaded Gelatin Methacryloyl Microneedles as a Potential Drug Delivery System in Plants Diseases: *Oguzhan Gunduz*¹; ¹Marmara University

10:40 AM

Extracellular Matrix Inspired Biomaterials for Tissue Engineering: *Peter Ma*^{1, 1}University of Michigan

11:00 AM

Label-free Measurement of Cell Viability in Hydrogel Scaffolds Using Optical Coherence Tomography: Carl Simon¹; ¹National Institute of Standards & Technology

11:20 AM

Biofabrication Using Spider Silk Proteins: Thomas Scheibel¹; ¹Universität Bayreuth

11:40 AM

Using Matrix Assisted Pulsed Laser Evaporation to Create Biomedical Coatings: Andrew Sachan¹; Roger Narayan¹; ¹North Carolina State University

ADDITIVE MANUFACTURING

Phase Transformations and Microstructure Evolution during Post-Processing of Additively Manufactured Metals — Phase Transformations and Microstructure Evolution during Post Processing I

Sponsored by: TMS Phase Transformations Committee, TMS: Additive Manufacturing Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Bij-Na Kim, Carpenter Additive; Amy Clarke, Colorado School of Mines; Mark Aindow, University of Connecticut; Eric Lass, University of Tennessee-Knoxville; Richard Fonda, Naval Research Laboratory; Ashley Paz Y Puente, University of Cincinnati

Monday AM | October 2, 2023 C170 | Greater Columbus Convention Center

Session Chairs: Jonah Klemm-Toole, Colorado School of Mines; Bij-Na Kim, Carpenter Additive

8:00 AM Invited

Microstructure Engineering of Specialty Alloys via Post Advanced Manufacturing Thermal Treatments: Sophie Primig¹; ¹University of New South Wales

8:40 AM

Impact of Heat Treatment Rates on Phase Transformation in Additively Manufactured Gamma Prime Superalloys IN738LC: Marcus Lam¹; ¹Monash University

9:00 AM

Liquid-induced Heat Treatment for Eliminating the Anisotropy in Mechanical Properties of Laser Additive Manufactured IN718 Alloy: Xiaogang Hu¹; Zhuoyu Li¹; *Qiang Zhu*¹; ¹Southern University of Science and Technology

9:20 AM

Microstructural Evolution of One and Two Step Heat Treatments on Electron Beam Powder Bed Fusion Fabricated Haynes 282: Alivia Mourot¹; Avantika Gupta¹; Sriram Vijayan¹; Joerg Jinschek¹; Carolin Fink¹; ¹Ohio State University

9:40 AM

A Process Optimization Framework for Laser-wire Direct Energy Deposition Superalloy Haynes 282: Porosity, Microstructure, and Mechanical Properties: *Rui Feng*¹; Kristin Tippey¹; Chantal Sudbrack¹; ¹National Energy Technology Laboratory



10:00 AM Break

10:20 AM Invited

Influence of Post Processing Annealing on Precipitation and Deformation Behavior of Additvely Processed Beta Titanium Alloys: Srinivas Aditya Mantri¹; Mohan Sai Kiran Kumar Yadav Nartu¹; Sriswaroop Dasari¹; Abhishek Sharma¹; Riyadh Salloom¹; Fan Sun²; Srinivasan Srivilliputhur¹; Narendra Dahotre¹; Frederic Prima²; *Rajarshi Banerjee*¹; ¹University of North Texas; ²Institut de Recherche de Chimie Paris

11:00 AM

Microstructure-based Heat Treatment Design of Selective Laser Melted Ti-6Al-4V to Overcome Strength-Ductility Trade-off: *Yoon-Hwan Jo*¹; Hyun-Uk Hong¹; Chanhee Lee¹; Chiwon Kim²; Jungmin Han³; Yonghyuk Choi³; ¹Changwon National University; ²Korea Institute of Materials Science; ³Doosan Enerbility

11:20 AM

Tuning the Precipitate Microstructure in the Selective Laser Melted Ti-6Al-2Sn-4Zr-2Mo Alloy via Post Heat Treatment: Deepak Pillai¹; Sydney Fields¹; Dian Li¹; Yufeng Zheng¹; ¹University of Nevada, Reno

11:40 AM

Understanding the Microstructure Evolution Pathway During the Post Heat Treatment in the Direct Energy Deposited Ti-5Al-5Mo-5V-3Cr Alloy: *Sydney Fields*¹; Dian Li¹; Yufeng Zheng¹; ¹University of Nevada, Reno

PROCESSING AND MANUFACTURING

Processing and Performance of Materials Using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work – Rustum Roy Symposium — Session I

Sponsored by: ACerS Basic Science Division, ACerS Manufacturing Division

Program Organizers: Morsi Mahmoud, King Fahd University of Petroleum & Minerals; Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado; Christina Wildfire, National Energy Technology Laboratory; Zhiwei Peng, Central South University

Monday AM | October 2, 2023 B235 | Greater Columbus Convention Center

Session Chairs: Morsi Mahmoud, King Fahd University of Petroleum and Minerals; Daudi Waryoba, Penn State DuBois

8:00 AM Invited

Reviewing a Unified Phenomenological Comprehension on Nonthermal Effects in Microwave-assisted Materials Processing: Boon Wong¹; ¹No Affiliation (Retired)

8:20 AM

Fabrication of Large Stress Windows and High Cyclic Stability Functionally Graded NiTi Alloy Based on Direct Current Heat Treatment: *Qie Xi*¹; Zhao Zhihao¹; Lin Jianping¹; Min Junying¹; Xiao Yao¹; ¹TongJi University

8:40 AM

High-speed Synchrotron X-ray Imaging of Microstructural Refinement Mechanisms During Ultrasonic Melt Processing in Metal Additive Manufacturing: *Lovejoy Mutswatiwa*¹; Lauren Katch¹; Nathan Kizer¹; Tao Sun²; Samuel Clark³; Kamel Fezzaa³; Christopher Kube¹; ¹Pennsylvania State University; ²University of Virginia; ³Argonne National Laboratory

9:00 AM

Microstructure Evolution and Property Enhancement of 3D-printed Graphene via Cold Rolling: Vamsi Krishna Reddy Kondapalli¹; Kyle Brittingham¹; Mahnoosh Khosravifar¹; Vesselin Shanov¹; ¹University of Cincinnati

9:20 AM Invited

Inhibition of Biofilm Formation on Glass Specimens when Subjected to AC Electromagnetic Fields of 20 kHz to 30 kHz: *Hideyuki Kanematsu*¹; Dana Barry²; Natsu Aoyama¹; Hidekazu Miura³; Akiko Ogawa¹; Risa Kawai¹; Takeshi Kogo¹; Nobumitsu Hirai¹; Toshio Kamijo⁴; Takehito Kato⁵; Michiko Yoshitake⁶; ¹National Institute of Technology (KOSEN), Suzuka College; ²Clarkson University; ³Suzuka University of Medical Science; ⁴National Institute of Technology (KOSEN), Tsuruoka College; ⁵National Institute of Technology (KOSEN), Oyama College; ⁶National Institute for Materials Science

9:50 AM Invited

Microwave Sintering for Lunar Base Construction: Holly Shulman¹; ¹DrHollyShulman LLC

10:20 AM Break

10:40 AM Invited

Microwave Direct Iron Reduction Studies: Christina Wildfire¹; Ranjani Siriwardane¹; Chris Pistorius²; *Ashley Daniszewski*³; ¹National Energy Technology Laboratory; ²Carnegie Mellon University; ³National Energy Technology Laboratory, ORISE

11:10 AM Invited

The Role and Characterization of the Native Oxide Shell of Copper Metal Powder Spherical Particles During High Frequency Microwave Processing: *Morsi Mahmoud*¹; Guido Link²; Manfred Thumm²; ¹King Fahd University of Petroleum & Minerals; ²Karlsruhe Institute of Technology,

LIGHTWEIGHT ALLOYS

Recent Developments in Light-Weight Composites and Materials — Microstructures and Properties I

Sponsored by: TMS: Composite Materials Committee, TMS: Materials Characterization Committee

Program Organizers: Ramasis Goswami, Naval Research Laboratory; Tanjore Jayaraman, United States Air Force Academy; Nikhil Gupta, New York University; Aashish Rohatgi, Pacific Northwest National Laboratory; Sudip Bhattacharya, 6K Inc.

Monday AM | October 2, 2023 A211 | Greater Columbus Convention Center

Session Chair: Ramasis Goswami, US Naval Research Laboratory

8:00 AM Invited

Strengthening Mechanisms of Ultrasonically Refined A356 (Al-Si-Mg) Aluminum Alloy: *Katherine Rader*¹; Aashish Rohatgi¹; ¹Pacific Northwest National Laboratory



8:30 AM Invited

Engineering Superhardness in Carbides: *Kevin Anderson*¹; James Wollmershauser¹; Heonjune Ryou¹; Ramasis Goswami¹; Edward Gorzkowski¹; Boris Feigelson¹; ¹U.S. Naval Research Laboratory

9:00 AM Invited

Analysis of the Indentation Size Effect in the Vickers Microhardness Measurement in Alloy Ti5Al2.5Sn: Nathan Fleming¹; Samuel R Meyer¹; Ramachandra Canumalla¹; ¹Weldaloy Metallurgical Laboratory C/O Weldaloy Specialty Forgings

9:30 AM Invited

Development of Eutectic Aluminum Alloys for High Temperature Applications: Opemipo Adetan¹; Obidimma Ikeh¹; Aman Kshirsagar¹; *Dinc Erdeniz*¹; ¹University of Cincinnati

10:00 AM

Effect of Aging on the Strength and Failure Mechanisms of an Aluminum-Cerium Based Alloy: *Opemipo Adetan*¹; Dinc Erdeniz¹; ¹University of Cincinnati

BIOMATERIALS

Society for Biomaterials: Biological Response to Materials and Material's Response to Biological Environments — Society for Biomaterials: Biological Response to Materials and Material's Response to Biological Environments

Sponsored by: Society for Biomaterials

Program Organizers: Christopher Siedlecki, Penn State College of Medicine; Nicholas Ziats, Case Western Reserve University; Noelle Comolli, Villanova University; Anirban Sen Gupta, Case Western Reserve University

Monday AM | October 2, 2023 A223 | Greater Columbus Convention Center

Session Chair: Christopher Siedlecki, Penn State University

8:00 AM Invited

Antimicrobial Surface Engineering: Towards Infection Resistant Implants: Annabel Braem¹; Merve Kübra Aktan¹; Nur Hidayatul Nazirah Kamarudin²; Marie Van der Gucht³; Naiera Zayed⁴; Rob Lavigne³; Wim Teughels⁴; ¹KU Leuven Department of Materials Engineering; ²Universiti Kebangsaan Malaysia; ³KU Leuven Laboratory of Gene Technology; ⁴KU Leuven Department of Oral Health Sciences

8:40 AM

Development of Composite Si3N4-PEKK Biomaterial Coatings to Improve Ti6Al4V's Antibacterial Properties and Osteogenic Response: Jackson Hendry¹; Tony Decarmine²; James Porteus²; Douglas Hoxworth¹; B. Sonny Bal¹; Ryan Bock¹; Thomas Webster³; ¹SINTX Tchnologies Inc.; ²Oxford Performance Materials, Inc.; ³3School of Health Sciences and Biomedical Engineering

9:00 AM

Antimicrobial Coatings Based on Antimicrobial Peptides for Biomedical Applications: Artemis Stamboulis¹; ¹University of Birmingham

9:20 AM

Tailoring of Antimicrobial Surface Through Nanostructured Ceramic Coatings: Junghyun Cho¹; Shota Sakurai¹; Karin Sauer¹; ¹Binghamton University (State University of New York)

9:40 AM

Surface Modification Strategies for Inhibiting Biofilm Formation on Biomaterials: Christopher Siedlecki¹; Alyssa Ochetto²; Chen Chen³; Dongxiao Sun¹; Asma Khursheed¹; Harry Allcock³; Lichong Xu¹; ¹Penn State College of Medicine; ²Rowan University; ³Penn State University

10:00 AM Break

10:20 AM

Topographical Effect on Hs27 Fibroblast Response: *Chunghwan Kim*¹; Michael Robitaille²; Joseph Christodoulides²; Yisha Ng¹; Marc Raphael²; Wonmo Kang¹; ¹Arizona State University; ²Naval Research Laboratory

10:40 AM

Cancer Cell-substrate Microenvironment Crosstalk in Metastasis Progression in Tissue Engineering Scaffolds: Dinesh Katti¹; Sharad Jaswandkar¹; Hanmant Gaikwad¹; Kalpana Katti¹; ¹North Dakota State University

11:00 AM

Surface Modification of MgZnCa Alloys Using Plasma Electrolytic Oxidation to Assess Corrosion Resistance and Biocompatibility: *Emily England*¹; Guillermo Domínguez²; Paul Williams²; Carl Boehlert¹; Javier LLorca²; Mónica Echeverry-Rendón²; ¹Michigan State University; ²IMDEA Materials

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

15th Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Advanced Ceramics Manufacturing II

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Surojit Gupta, University of North Dakota; Mritunjay Singh, Ohio Aerospace Institute; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology; Hisayuki Suematsu, Nagaoka University of Technololgy; Enrico Bernardo, University of Padova; Rajiv Asthana, University of Wisconsin; Yiquan Wu, Alfred University; Zhengyi Fu, Wuhan University of Technology; Allen Apblett, Oklahoma State University

Monday PM | October 2, 2023 B242/243 | Greater Columbus Convention Center

Session Chairs: Federico Smeacetto, Politecnico di Torino; Hisayuki Suematsu, Nagaoka University of Technololgy; Surojit Gupta, University of North Dakota

2:00 PM Invited

Corrosion Resistant Coatings on Steel for Nuclear Energy Applications: *Kathy Lu*¹; Hyeon Joon Choi¹; ¹Virginia Polytechnic Institute and State University

2:30 PM Invited

Synthesis of a Novel Cuprate with Gold under a High Oxygen Partial Pressure: *Hisayuki Suematsu*¹; N. Yoshida¹; Z. Feng¹; T. M. D. Do¹; T. Nakayama¹; ¹Nagaoka University of Technololgy



3:00 PM

Molten Oxide Electrolysis for Reducing the Carbon Footprint of Technology-critical Metals: Kathryn Ford¹; Aaron Marshall¹; Matthew Watson¹; Catherine Bishop¹; ¹University of Canterbury

3:20 PM Break

3:40 PM Invited

Recycling Strategies for End-of-Life Solid Oxide Cell Materials: *Federico Smeacetto*¹; Simone Anelli¹; Sofia Saffirio¹; Alice Benedetto Mas¹; Silvia Fiore¹; Massimo Santarelli¹; Sergii Pylypko²; Sonia Fiorilli¹; ¹Politecnico di Torino; ²Elcogen

4:10 PM

Green Synthesis of Calcium Molybdate Using Bimetallic Precursors: *Allen Apblett*¹; Ahmed Moneeb¹; Cory Perkins¹; Bhawani Regmi¹; ¹Oklahoma State University

4:30 PM

Strategies for Patenting "Green" Technologies: Van Vekris¹; ¹Marks & Clerk

BIOMATERIALS

3D Printing of Biomaterials and Devices - Session II

Sponsored by: ACerS Bioceramics Division

Program Organizers: Sahar Vahabzadeh, Northern Illinois University; Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University

Monday PM | October 2, 2023 A221 | Greater Columbus Convention Center

Session Chair: Amit Bandyopadhyay, Washington State University; Sahar Vahabzadeh, Northern Illinois University

2:00 PM

Impact of Fluid Flow on Bone Metastasis of Prostate Cancer: Invitro Testbeds of Bone Metastasis: Dinesh Katti¹; Haneesh Jasuja¹; Quyen Hoang¹; Preetham Ravi¹; Parth Vyas²; Sharad Jaswandkar¹; Kalpana Katti¹; ¹North Dakota State University; ²Sanford Health

2:20 PM

Utilizing Chaotic Advection to Bioprint Hydrogel Sheets with User-Defined, High-Resolution Internal Cell Layers: *Ryan Hooper*¹; Cynthia González²; Amanee Abu Arish¹; Anna Beck¹; Caleb Cummings¹; Ciro Rodríguez²; Grissel Trujillo de Santiago²; Mario Moisés Alvarez²; David Dean¹; ¹The Ohio State University; ²Tecnológico de Monterrey

2:40 PM

Polycaprolactone Stent with Hexagonal Unit Structure for the Treatment of Trachea Stenosis: *Di Fan*¹; Yusuf Dikici¹; Ozan Akkus¹; ¹Case Western Reserve University

3:00 PM

Silica-Doped 3D Printed Scaffold Loaded with Carvacrol Nanoparticles for Bone Tissue Engineering: *Aditi Dahiya*¹; Susmita Bose¹; ¹Washington State University

3:20 PM Break

3:40 PM

Multifunctional Peptide Design for Functional Biomaterials: Candan Tamerler¹; ¹University of Kansas

4:00 PM

An Additive Manufacturing-oriented Design Approach: Hip Joint Case Study: Lakshana Mohee¹; ¹ANSYS Granta

4:20 PM

Multi-axis Melt Electrowriting Fabrication of Membranes with Curving Surfaces Using Novel Biomaterials: Javier Vazquez-Armendariz¹; Raquel Tejeda-Alejandre²; Anuja Kulkarni¹; Davita Watkins¹; Katelyn Swindle-Reilly¹; Ciro Rodriguez²; David Dean¹; ¹The Ohio State University; ²Tecnologico de Monterrey

4:40 PM

Three-Dimensional Printing of Low Viscosity Bioinks Utilizing a Gelatin Printing Support Bath: *Emily Lazarus*¹; Iris Rivero¹; ¹Rochester Institute of Technology

SPECIAL TOPICS

ACerS Richard M. Fulrath Award Session

Sponsored by: ACerS

Monday PM | October 2, 2023 B130 | Greater Columbus Convention Center

Session Chair: Michael Halbig, NASA Glenn Research Center

2:20 PM Invited

Understanding Microscopic Origin of Physical Properties in Functional Ceramics: Yukio Sato¹; ¹Kumamoto University

3:00 PM Invited

Next Generation Energy Storage Materials for Carbon Neutral Society: Fuminori Mizuno¹; ¹Toyota Motor Corporation

3:20 PM Break

3:40 PM Invited

Advanced Materials for Aerospace Propulsion and Power Systems: Amjad Almansour¹; ¹NASA Glenn Research Center

4:00 PM Invited

Dielectric Material for High Temperature Multilayer Ceramic Capacitors and Insulating Resistance Degradation Mechanism: Sanshiro Aman¹; ¹TDK Corporation

4:20 PM Invited

Defect-Informed Design and Discovery of Solid-State Ionics for Energy Applications: *Nicola Perry*¹; ¹University of Illinois Urbana-Champaign



ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — AM Modeling, Simulation and Machine Learning - Structure & Property I

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Computational Materials Science and Engineering Committee, TMS: ICME Committee

Program Organizers: Jing Zhang, Indiana University – Purdue University Indianapolis; Li Ma, Johns Hopkins University Applied Physics Laboratory; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Monday PM | October 2, 2023 C150 | Greater Columbus Convention Center

Session Chairs: Jing Zhang, Indiana University - Purdue University Indianapolis; Li Ma, Johns Hopkins University Applied Physics Laboratory

2:00 PM Keynote

Microstructure Evolution Simulation of Inconel 718 Superalloy during Laser Powder Bed Fusion (LPBF) Process: *Li Ma*¹; Ali Ramazani¹; ¹Johns Hopkins University Applied Physics Laboratory

2:20 PM

Effect of Size, Location, and Aspect Ratio of Pores on Ductility of PBF-LB Ti-6Al-4V: Experiments and Simulations: *Erik Furton*¹; Selda Nayir¹; Allison Beese¹; ¹Pennsylvania State University

2:40 PM

Predicting Microstructural Evolution in Laser Powder Bed Fusion Additive Manufacturing Using Physics-based Machine Learning: *Prahalad Rao*¹; Alex Riensche¹; Ben Bevans¹; Grant King²; Ajay Krishnan³; ¹Virginia Tech; ²University of Nebraska-Lincoln; ³Edison Welding Institute

3:00 PM

Simulation of Anisotropic Mechanical Behavior of Additively Manufactured Ti-6Al-4V Wall Structures using VPSC: *Rajib Halder*¹; Anthony Rollett¹; Jake Benzing²; ¹Carnegie Mellon University; ²National Institute of Standards and Technology

3:20 PM Break

3:40 PM Invited

Nano-scale High Entropy Alloys Design through Additive Manufacturing by Controlling Melting Mechanism and Screening Structural Evolutions during Process: *Ali Ramazani*¹; ¹Massachusetts Institute of Technology

4:00 PM

High-fidelity AM Simulation Using the Material Point Method: Sam Reeve¹; Kwitae Chong¹; Austin Isner¹; Stuart Slattery¹; Duan Zhang²; Jim Belak³; ¹Oak Ridge National Laboratory; ²Los Alamos National Laboratory; ³Lawrence Livermore National Laboratory

4:20 PM

Mechanical Properties of Truss-based Nanolattices: A Molecular Dynamics Study: Sahar Choukir¹; *Chandra Veer Singh*²; ¹University of Toronto; ²University of Toronto

4:40 PM

Modeling In-Situ Phase Transformation in Inconel 718 and EH36: A Study Using Phase Field and Phase Fraction Models: *Jakub Mikula*¹; Rajeev Ahluwalia¹; Robert Laskowski¹; Kewu Bai¹; Kai Ren²; Youxiang Chew³; Guglielmo Vastola¹; Yong-Wei Zhang¹; ¹Institutive of High Performance Computing (IHPC), Agency for Science, Technology and Research (A'STAR); ²State Key Laboratory of Fluid Power and Mechatronic Systems, School of Mechanical Engineering, Zhejiang University; Key Laboratory of Advanced Manufacturing Technology of Zhejiang Province, School of Mechanical Engineering, Zhejiang University; ³Singapore Institute of Manufacturing Technology (SIMTech), Agency for Science, Technology and Research (A'STAR)

5:00 PM

Multi-Model Monte Carlo Simulations of Mechanical Behavior of Additively Manufactured Metals: *Joshua Pribe*¹; Patrick Leser²; Saikumar Yeratapally¹; George Weber²; Brodan Richter²; Andrew Kitahara¹; Edward Glaessgen²; ¹National Institute of Aerospace; ²NASA Langley Research Center

ADDITIVE MANUFACTURING

Additive Manufacturing of Ceramic-based Materials: Process Development, Materials, Process Optimization and Applications — Vat Photopolymerization and Laser Powder Bed Fusion

Sponsored by: ACerS Basic Science Division, ACerS Engineering Ceramics Division, ACerS Manufacturing Division

Program Organizers: Xuan Song, University of Iowa; Lei Chen, University of Michigan-Dearborn; Xiangyang Dong, Missouri Univ of Science and Technology; Yiquan Wu, Alfred University; Paolo Colombo, University of Padova; Rajendra Bordia, Clemson University; Long-Qing Chen, Pennsylvania State University

Monday PM | October 2, 2023 C161A/161B | Greater Columbus Convention Center

Session Chair: Fei Peng, Clemson University

2:00 PM

Custom Manufacturing of Shape-conforming Battery Components Using VPP: Bharat Yelamanchi¹; Sina Bakhtar Chavari¹; Alexis Maurel²; Ana Martinez²; Cameroun Sherrard³; Eric MacDonald²; Pedro Cortes¹; ¹Youngstown State University; ²The University of Texas at El Paso; ³Marshall NASA

2:20 PM

Evaluation of Calibration Measurements for Accelerated Development of Ceramic Vat Photopolymerization Process and Postprocess Parameters: *Nellie Pestian*¹; Joy Gockel¹; ¹Colorado School of Mines

2:40 PM

Additive Manufacture of Cordierite Ceramic Materials via Digital Light Processing: Jung-Ting Tsai¹; Andrew Chihpin Chuang²; Dileep Singh²; ¹National Taiwan University of Science and Technology; ²Argonne National Laboratory



3:00 PM

Laser Powder Bed Fusion of Tungsten Carbide-Nickel Geometries Leveraging Thermomechanical Modeling: *Alexander Gourley*¹; Edgar Mendoza Jimenez¹; Reeja Jayan¹; Jack Beuth¹; ¹Carnegie Mellon University

3:20 PM Invited

Ultra-fast Laser Sintering of Ceramics and Glasses, and Machine Learning-based, Processing-microstructure-property Predictions for Laser-sintered Ceramics and Glasses: Xiao Geng¹; Jianan Tang¹; Siddhartha Sarkar¹; Yunfeng Shi²; Liping Huang²; Rajendra Bordia¹; Dongsheng Li³; Hai Xiao¹; *Fei Peng¹*; ¹Clemson University; ²Rensselaer Polytechnic Institute; ³Advanced Manufacturing LLC

ADDITIVE MANUFACTURING

Additive Manufacturing of Metals: Microstructure, Properties and Alloy Development — Additive Manufacturing of Cu-, Ni-, and W-based Alloys

Program Organizers: Prashanth Konda Gokuldoss, Tallinn University of Technology; Jurgen Eckert, Erich Schmid Institute of Materials Science

Monday PM | October 2, 2023 C151 | Greater Columbus Convention Center

Session Chair: Lorena Perea-Andrade , University Of Alabama

2:00 PM

Toward High Strength and High Conductivity Copper Alloys via Additive Manufacturing: *Keita Nomoto*¹; Kangwei Chen¹; Simon Ringer¹; ¹University of Sydney

2:20 PM

Evolution of the Texture and Variant Selection during Beta to Alpha Transformation in Wire Arc Additive Manufactured Nickel Aluminum Bronze: *Dillon Watring*¹; David Rowenhorst¹; Richard Fonda¹; ¹Naval Research Laboratory

2:40 PM

Study of Printability and Melt Pool Geometry in W&W-alloys by Additive Manufacturing: *Amaranth Karra*¹; Aditya Rohan Narra¹; Bryan Webler¹; ¹Carnegie Mellon University

3:00 PM

Process Structure Relationships of Pure Tungsten and Tungsten Alloys Fabricated via Electron Beam Powder Bed Fusion: Christopher Ledford¹; Patxi Fernandez-Zelai¹; Juilo Ortega Rojas¹; Michael Kirka¹; ¹Oak Ridge National Laboratory

3:20 PM Break

3:40 PM

Additive Manufacturing of Tungsten through Novel Multi Laser Processing: Cameron Gygi¹; ¹Cdme

4:00 PM

Nanoindentation Studies on the Surface Properties of Additively Manufactured Ni-base Alloys: *Oliver Bürgi*¹; Youxing Chen²; Liuqing Yang²; Alex Bridges³; John Shingledecker³; ¹The University of North Carolina at Charlotte, Karlsruhe Institute of Technology; ²The University of North Carolina at Charlotte; ³Electric Power Research Institute

4:20 PM

Identification of Phases in a NiCr-V FGM Fabricated via DED AM Through Experiments and Computational Modeling: *Beril Tonyali*¹; Hui Sun¹; Zi-Kui Liu¹; Allison Beese¹; ¹Pennsylvania State University

4:40 PM

Role of Microstructural Constituents on Deformation under Monotonic Tensile Strain of Additively Manufactured Ni-Al Bronze: *Veronika Mazanova*¹; Aeriel Leonard¹; ¹Ohio State University

5:00 PM

Thermal Analysis for Characterizing Effects of Metallurgical Conditions in LDED Fabricated Ti-rich NiTi Shape Memory Alloys: *Foster Feni*¹; Blake Miller¹; Reginald Hamilton¹; ¹The Pennsylvania State University

5:20 PM

Influences of Introduced Oxide Dispersions on Failure Modes in Additively Manufactured Superalloy: *Tim Gabb*¹; Christopher Kantzos¹; Timothy Smith¹; Henry DeGroh¹; Aaron Thompson²; QuynhGiao Nguyen¹; ¹NASA Glenn Research Center; ²NASA Glenn Research Center/HX5, LLC

ADDITIVE MANUFACTURING

Additive Manufacturing of Titanium-based Materials: Processing, Microstructure and Material Properties — Session II

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Titanium Committee

Program Organizers: Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University

Monday PM | October 2, 2023 C171 | Greater Columbus Convention Center

Session Chair: Ulf Ackelid, Freemelt AB

2:00 PM Invited

Correlating Laser Based Powder Bed Processing Conditions to the Fatigue Behavior of Additively Manufactured Ti-6Al-4V with As-Built Surfaces: Jayme Keist¹; Scott Tokarz¹; Edward Reutzel¹; Vernon Cole²; Debasis Sengupta²; ¹Pennsylvania State University; ²CFD Research Corporation

2:40 PM

Formation of the Equilibrium Phases (+) in Ti-6Al-4V Alloy via Powder Bed Fusion Using Laser Beam (PBF-LB): Bartlomiej Wysocki¹; Tatiana Zakharava¹; Michal Zietala¹; Wojciech Nowak¹; Agnieszka Chmielewska²; ¹Cardinal Stefan Wyszynski University in Warsaw; ²Ohio State University

3:00 PM

In-situ Synchrotron Diffraction Study of Tensile Deformation of Bimodal Microstructure in L-PBF Processed Ti-6Al-4V: Pushkar Dhekne¹, ¹KU Leuven

3:20 PM Break

3:40 PM

Microstructure Evolution Effects from Variable Preheat Temperature in Laser Powder-bed Fusion of Ti-6Al-4V: Evan Adcock¹; Anthony Rollett¹; ¹Carnegie Mellon University



4:00 PM

On Variant Selection and Texture Evolution in Laser Powder Bed Fusion (L-PBF) of Ti-6Al-4V: *Dina Fouad*¹; Moataz Attallah¹; ¹University of Birmingham

4:20 PM

Structural Developments and Nano-mechanical Properties of 3d Printed Zirconia Reinforced TI6AL4V: *Peter Olubambi*¹; Thato Sharon Tshephe¹; ¹University of Johannesburg

4:40 PM

Tensile and Fatigue Crack Growth Rate Assessment of Ti-6Al-4V ELI Alloy Produced By Laser Powder Bed Fusion: Akhilesh Goyal¹; Shyamprasad Karagadde¹; Bhallamudi Ravi¹; ¹IIT Bombay

5:00 PM

Variations Across Length Scales in Additively Manufactured Ti-6Al-4V Parts: Challenges to Repeatability and Reproducibility: *Venkatavaradan Sunderarajan*¹; Utkarsh Thakre¹; Suman Das¹; ¹Georgia Institute of Technology

ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Session I

Sponsored by: ACerS

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Monday PM | October 2, 2023 C160A/160B | Greater Columbus Convention Center

Session Chairs: Alina Kirillova, Iowa State University; Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech

2:00 PM Invited

Considerations and Challenges for Uniting 3D Printing and Implantable Medicine: Andrew Weems¹, ¹Ohio University

2:20 PM Invited

Additive Manufacturing of Embedded Metal Structures in a Polymer Matrix: SeungYeon Kang¹; ¹University of Connecticut

2:40 PM

Binder Jetting and Characterization of Porous Structures: Pierangeli Rodriguez de Vecchis¹; Andrew Zilavy¹; Teddi Sedlar¹; *Markus Chmielus*¹; ¹University of Pittsburgh

3:00 PM

GKN Aerospace Deposition of a Laser Wire DED 2.5m Titanium Aerostructure Demonstrator: *Leon Hill*¹; Jeremy Tylenda¹; ¹GKN Aerospace

3:20 PM Break

3:40 PM

Atomic Layer Deposition Coatings for Additive Manufacturing Feedstock Modification and Improvement: *Chris Gump*¹; Joseph Gauspohl¹; Brianna Boeyink¹; Brandon Castro¹; ¹Forge Nano

4:00 PM

Critical Comparison of Advanced Non-destructive Evaluation Technologies for Laser Powder Bed Fusion Components: *Jacque Berkson*¹; Antonio Ramirez¹; Desmond Bourgeois¹; ¹The Ohio State University

4:20 PM

Designing High-Strength Aluminum and Superalloys for Laser Powder Bed Fusion: Analyzing Cases of Success and Failure: Marcus Lam¹; ¹Monash University

4:40 PM

High-strength Aluminum Alloy Selection for Space Optical Instruments: *Walter Zimbeck*¹; Zachary Post¹; Steven Storck¹; Robert Mueller¹; Benjamin Stewart¹; William Swartz¹; Gerard Otter²; Floris van Kempen²; ¹Johns Hopkins University Applied Physics Laboratory; ²The Netherlands Organization for Applied Research (TNO)

5:00 PM

Electrochemical Surface Finishing of Additively Manufactured Materials: *Alex Fertig*¹; Huong Le¹; Stephen Snyder¹; Timothy Horn²; Timothy Hall¹; Maria Inman¹; ¹Faraday Technology; ²North Carolina State University

NUCLEAR ENERGY

Advanced Characterization of Materials for Nuclear, Radiation, and Extreme Environments IV — Microscopy II/Synchrotron/Acoustics

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Caitlin Kohnert, Los Alamos National Laboratory; Cody Dennett, Commonwealth Fusion Systems; Samuel Briggs, Oregon State University; Michael Short, Massachusetts Institute of Technology; Cheng Sun, Idaho National Laboratory; Khalid Hattar, University of Tennessee Knoxville; Yuanyuan Zhu, University of Connecticut

Monday PM | October 2, 2023 A125 | Greater Columbus Convention Center

Session Chair: Michael Short, Massachusetts Institute of Technology

2:00 PM Invited

STEM-based Mapping of Nanoscale Point Defects Produced via Temperature, Irradiation, And Corrosion: Sean Mills¹; Steven Zeltmann²; Peter Ercius³; Aaron Kohnert⁴; Blas Uberuaga⁴; Andrew Minor¹; ¹University of California, Berkeley; ²Cornell University; ³Lawrence Berkeley National Laboratory; ⁴Los Alamos National Laboratory

2:30 PM

Phase Stability of Delta-ZrH Under Ion Irradiation: Darren Parkison¹; Matheus Tunes²; Wei-Ying Chen³; Thomas Nizolek²; Yongqiang Wang²; Matthew Chancey²; Tarik Saleh²; Peter Hosemann¹; Caitlin Kohnert²; ¹University of California, Berkeley; ²Los Alamos National Laboratory; ³Argonne National Laboratory

2:50 PM

High-Temperature Irradiation Behavior of Piezoelectric Aluminum Nitride: Ryan Chesser¹; Marat Khafizov¹; ¹The Ohio State University



3:10 PM Break

3:30 PM Invited

Enabling Multiscale Materials Characterization with Machine Learning: Reeju Pokharel¹; ¹Los Alamos National Laboratory

4:00 PM

Structural Stability of REE-PO4 (REE=Sm,Tb) under Swift Heavy Ion Irradiation: *Cale Overstreet*¹; Eric O'Quinn¹; William Cureton²; Julia Leys³; Guido Deissmann⁴; Stefan Neumeier⁴; Chien-Hung Chen⁵; Maik Lang¹; ¹University of Tennessee Knoxville; ²Oak Ridge National Laboratory; ³Karlsruhe Institute of Technology; ⁴Forschungszentrum Jülich GmbH, Institute of Energy and Climate Research; ⁵Stanford University

4:20 PM

Transition Metal Carbonitride Materials Exposed to Swift Heavy Ions: *Jacob Minnette*¹; Evan Williams¹; Donald Chaney¹; Eric O'Quinn¹; William Cureton²; Matthew Kurley²; Changyong Park³; Christina Trautmann⁴; Maik Lang¹; ¹University of Tennessee, Knoxville; ²Oak Ridge National Laboratories; ³Argonne National Laboratories; ⁴GSI Helmholtz

MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Coatings for Wear and Corrosion Protection — Advanced Coatings for Wear and Corrosion Protection II

Program Organizers: Evelina Vogli, Flame Spray Inc.; Virendra Singh, SLB

Monday PM | October 2, 2023 A123 | Greater Columbus Convention Center

Session Chairs: Evelina Vogli, Flame Spray Inc.; Virendra Singh, Schlumberger

2:00 PM

Surface Preparation and Process Optimization on Thin Film Coating to Reduce Wafer Warpage for Advanced Packaging Applications in Semiconductor Industry: *Amit Kumar*¹, ¹Other

2:20 PM

Open-Air Plasma Assisted Organosilicon Coating on AM60 Mg Alloy for Corrosion Protection: *Jiheon Jun*¹; Yong Chae Lim¹; Yi-Feng Su¹; Daphne Pappas²; Ryan Robinson²; ¹Oak Ridge National Laboratory; ²Plasmatreat USA

2:40 PM

Effect of Sustainable Silica-rich Graphene Analogues to Achieve High-Performance Corrosion Resistance Coating for Carbon Steel: *Anu Verma*¹; Chandra Tiwary¹; Jayanta Bhattacharya¹; ¹Indian Institute of Technology, Kharagpur

3:00 PM

Development and Wear Behaviour of Compositional Gradient and Multi-layered Ni-W Alloy Coatings: *Nitin Wasekar*¹, ¹ARCI

3:20 PM Break

3:40 PM

Improvement of Cutting Performance of Titanium Based Vacuum Brazed Diamond Tools Excursively Coating via Physical Vapor Deposition: Yunus Emre Erbay¹; *Berrak Bulut*²; Il Kerti¹; ¹Yildiz Technical University; ²Marmara University

4:00 PM

Highly Robust CeO2/C3N4-modified NiP Electroless-plated Coatings: Christian Arro¹; Eman Fayyad¹; Mostafa Sliem¹; Kamel Eid¹; Noora Al-Qahtani¹; Aboubakr Abdullah¹; ¹Qatar University

4:20 PM

ZnO-doped C3N4 Nanocapsules-modified NiP Metallic Coating: Fatma Nabhan¹; Eman Fayyad¹; Kamel Eid¹; Mostafa Sliem¹; *Aboubakr Abdullah*¹; ¹Qatar University

4:40 PM

Effect of Micro-arc Oxidation Voltage on the Morphology and Electrochemical Properties of AZ31B Magnesium Alloy: Kaab Bin Tayyab¹; Ameeq Farooq¹; Ahsan Saleem¹; ¹University of the Punjab

CERAMIC AND GLASS MATERIALS

Advances in Dielectric Materials and Electronic Devices — Dielectrics & Metrology; Memristors & Transisitors

Sponsored by: ACerS Electronics Division

Program Organizers: Amar Bhalla, University of Texas; Ruyan Guo, University of Texas at San Antonio; Rick Ubic, Boise State University; Matjaž Spreitzer, Jožef Stefan Institute; Tanmoy Maiti, IIT Kanpur

Monday PM | October 2, 2023 B231 | Greater Columbus Convention Center

Session Chair: Ruyan Guo, The University of Texas at San Antonio

2:20 PM

Electrical-lead-related Stray Inductance Causing Overassessment of the Electrical Resistance Measured by Using the Two-probe Method: *Deborah Chung*¹; Min Kyoung Kim¹; ¹State University of New York Buffalo

2:40 PM

Investigation of the Effects of the Most Common Impurities of Bayer Alumina on the Dielectric Properties: *Alexander Schuster*¹; Antje Liersch¹; ¹Hochschule Koblnez

3:00 PM Invited

Performance of Distorted Perovskites for Dielectric Applications: *Krishna Machuga*¹; Meghan Brandt²; Narasimha Prasad³; Ching Hua Su⁴; Bradley Arnold²; Fow-Sen Choa²; Kamdeo Mandal¹; Vishnu Shankar Rai¹; Laxman Singh¹; Narsingh Singh²; ¹Indian Institute of Technology BHU; ²University of Maryland Baltimore County; ³NASA Langley Research Center; ⁴NASA Marshall Space Flight Center

3:20 PM Break

3:40 PM

Interfacial-type Memristive Devices for Neuromorphic Computing: Sundar Kunwar¹; Samip Karki¹; Nicholas Cuccineillo¹; Pinku Roy¹; Di Zhang¹; Alessandro Mazza¹; Reid Markland¹; *Aiping Chen*¹; ¹Los Alamos National Laboratory

4:00 PM

CMOS-compatible Oxide Memristors Based on SiO₂ for Adaptive Neuromorphic Computing: *Fei Qin*¹; Han Wook Song²; Sunghwan Lee¹; ¹Purdue University; ²Korea Research Institute of Standards and Science



4:20 PM

Engineering the Carrier Density for Thin Film Transistors Using Multimodal Encapsulation of p-SnOx: Donghun Lee¹; Joonsoo Choi¹; Han Wook Song²; Sunghwan Lee¹; ¹Purdue University; ²Korea Research Institute of Standard and Science

4:40 PM

Influence of Electron Beam Irradiation on the Electrical and Optical Properties of InGaZnO Thin Film Transistor: *Byung-Hyuk Jun*¹; Daejong Kim¹; Hyeon-Geun Lee¹; ¹Korea Atomic Energy Research Institute

IRON AND STEEL (FERROUS ALLOYS)

Advances in Ferrous Metallurgy — Session II

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee

Program Organizers: Shannon Clark, ArcelorMittal Dofasco; Lijia Zhao, Northeastern University

Monday PM | October 2, 2023 A210 | Greater Columbus Convention Center

Session Chairs: Krista Limmer, DEVCOM Army Research Laboratory; Charles Enloe, Steel Dynamics

2:00 PM

In Situ Microstructure Evaluation of Low Density Steel: Krista Limmer¹; Frank Kellogg²; ¹DEVCOM Army Research Laboratory; ²SURVICE Engineering

2:20 PM

Failure Investigation and Crack Characterization of a HSS Roll Spalling in Hot Strip Mill: Piyas Palit¹; Prabhas Gokarn¹; *Kuppili Padma Srr*¹; Soumendu Monia¹; Anup Kumar¹; ¹Tata Steel Ltd

2:40 PM

Electromagnetic Stirrer as a System to Control the High-quality Steel Production: *Monika Zielinska*¹; Hongliang Yang²; Lukasz Madej³; Lukasz Malinowski¹; ¹ABB Sp. z o. o.; ²ABB AB/Metallurgy, Sweden; ³AGH University of Science and Technology

3:00 PM

Effective Characterization of Highly Deformed Microstructures Using EBSD Pattern Matching Techniques: *Michael Hjelmstad*¹; Pat Trimby¹; Aimo Winkelmann²; ¹Oxford Instruments; ²ST Development GmbH

3:20 PM

A Novel Method of Size Reduction of Low Carbon Ferro Chrome and Other Hard to Crush Low Carbon Ferro Alloys: *Prabhash Gokarn*¹; Anup Kumar¹; Vijay Tiwari¹; Kamlesh Maurya¹; Siddharth Guha¹; Hari Om Bairwa¹; ¹Tata Steel

3:40 PM Break

4:00 PM

Investigation on Improving the Castability and Canceling the Ca Treatment for Low Carbon Aluminum Killed Steels: *Fubin Gao*¹; Fuming Wang¹; Xin-hua Wang¹; Min Jiang¹; Xiang Zhang²; ¹University of Science and Technology Beijing; ²Wuhan University of Science and Technology

4:20 PM

Failure Investigation of Edger Roll Housing Bolts in a Hot Strip Mill of an Integrated Steel Plant: *Soumendu Monia*¹; Piyas Palit¹; Hari Bairwa¹; Prabhash Gokarn¹; Anup Kumar¹; ¹Tata Steel

4:40 PM

Optimization of Electroslag Remelting Slag System and Its Physicochemical Properties for Nuclear Power Steel 18MnD5: *Qi Li*²; Yanhui Sun¹; ¹University of Science and Technology Beijing

5:00 PM

Segmentation of Microscopy Images of Lower Bainite (LB) and Tempered Martensite (TM) High Strength Steels: *Xiaohan Bie*¹; Manoj Arthanari¹; Evelin Barbosa de Melo¹; Jun Song¹; Steve Yue¹; ¹McGill University

5:20 PM

Innovative Electroslag Technology for the Restoration of Forged Steel Parts: *Borys Sereda*¹; Irina Kruhliak¹; Yuriy Petrusha²; Natalya Gura²; Dmytro Sereda¹; ¹DSTU; ²NUZP

NUCLEAR ENERGY

Ceramics for New Generation Nuclear Energy System Application — Molten Salts and Shielding Materials

Sponsored by: ACerS Energy Materials and Systems Division, TMS: Nuclear Materials Committee

Program Organizers: Lingfeng He, North Carolina State University; Krista Carlson, University of Nevada, Reno; Maik Lang, University of Tennessee; Jake Amoroso, Savannah River National Laboratory; Brian Riley, Pacific Northwest National Laboratory; Enrique Saez, Clemson University; Jinsuo Zhang, Virginia Polytechnic Institute and State University

Monday PM | October 2, 2023 A124 | Greater Columbus Convention Center

Session Chairs: Jie Lian, Rensselaer Polytechnic Institute; Laura Hawkins, Idaho National Laboratory

2:00 PM Invited

Engineered Ceramic Composites for Neutron Moderation and Shielding in Advanced Reactors: Jason Trelewicz¹; Bin Cheng¹; David Sprouster¹; Lance Snead¹; Edward Duchnowski²; Nicholas Brown²; Ethan Peterson³; ¹Stony Brook University; ²University of Tennessee Knoxville; ³Massachusetts Institute of Technology

2:30 PM

Metal Hydride Moderators: A Historical Perspective of Their Design and Implementation: *Aditya Shivprasad*¹; Caitlin Kohnert¹; Tyler Smith¹; Thomas Nizolek¹; Joseph Wermer¹; Vedant Mehta¹; Michael Cooper¹; Nolan Regis¹; James Torres¹; Alexander Long¹; Sven Vogel¹; Erik Luther¹; Holly Trellue¹; Christopher Matthews¹; Tarik Saleh¹; Venkateswara Dasari¹; ¹Los Alamos National Laboratory

2:50 PM

Development of Radiation Attenuating Geopolymer-particulate Composites: *Alex Fields*¹; Jianxin Zhou¹; Ali Ozer¹; Angela Di Fulvio¹; Waltraud Kriven¹; ¹University of Illinois Urbana-Champaign



3:10 PM

Welding Development of Cladding Materials for Ceramic Fuels: Lydia Mayer¹; ¹Idaho National Laboratory

3:30 PM Break

3:50 PM Invited

Scalable Manufacturing of Garnet Structured LLZO Ceramic Tubes With Applications in Next Generation Fusion Systems: Kyle Brinkman¹; ¹Clemson University

4:20 PM Invited

Evolution of the Chemical State in Molten Salt Reactors during Operation and Implications for Materials Behavior: *Theodore Besmann*¹; Juliano Schorne-Pinto¹; Mina Aziziha¹; Clara Dixon¹; Jorge Paz Soldan Palma¹; Ronald Booth¹; Amir Mofrad¹; ¹University of South Carolina

4:50 PM

Uncertainty Quantification and Propagation of NaCl-KCl-MgCl₂ Thermodynamic Functions for Molten Salt Applications: *Jorge Paz Soldan Palma*¹; Juliano Schorne-Pinto¹; Mina Aziziha¹; Ronald Booth¹; Theodore Besmann¹; ¹University of South Carolina

5:10 PM

Thermodynamic Assessment of Chromium and Nickel Corrosion in Molten Fluoride Salts: *Mina Aziziha*¹; Juliano Schorne-Pinto¹; Clara Dixon¹; Jacob Yingling¹; Jorge Paz Soldan Palma¹; Johnathan Ard¹; Theodore Besmann¹; ¹University of South Carolina

MODELING

Computation Assisted Materials Development for Improved Corrosion Resistance — Session I

Program Organizers: Rishi Pillai, Oak Ridge National Laboratory; Brian Gleeson, University of Pittsburgh

Monday PM | October 2, 2023 A224 | Greater Columbus Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Atomic Origin of CO2-promoted Oxidation Dynamics of Chromiaforming Alloys: *Guangwen Zhou*¹; ¹State University of New York

2:40 PM

Fundamental Design of Alloys Resistant to H-embrittlement: Simulation Insights on Nanoscale H-defects Interactions: Matthew Melfi¹; S. Mohadeseh Taheri-Mousavi¹; ¹Carnegie Mellon University

3:00 PM

Modeling Changes in Scale Formation on Copper-nickel Alloys in Response to Environment Changes: Steven Policastro¹; Rachel Anderson¹; ¹Naval Research Laboratory

3:20 PM Break

3:40 PM Invited

Phase-field Modeling of Internal Oxidation in High-temperature Ni-Cr Alloys: Peichen Wu¹; Rishi Pillai²; *Ankit Kumar*¹; ¹Arizona State University; ²Oak Ridge National Laboratory

4:20 PM

Phase Field Modeling of Molten Salt Dealloying Corrosion of NiCr Alloys: Nathan Bieberdorf¹; Xueyang Wu²; Laurent Capolungo²; Mark Asta¹; ¹University of California Berkeley; ²Los Alamos National Laboratory

4:40 PM

A Phase Field Model to Simulate Crack Initiation from Pitting Site in Isotropic and Anisotropic Elastoplastic Material: *Christian Mathew*¹; Yao Fu¹; Jie Song¹; Kelvin Sangoi¹; ¹Virginia Tech

5:00 PM

Investigate the Interfacial Behavior between Molten Fluoride Salt and Ni-Cr Alloy with ReaxFF Molecular Dynamics: Hamdy Arkoub¹; Swarit Dwivedi¹; Adri van Duin¹; Miaomiao Jin¹; ¹Penn State University

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Functional Ceramics

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Indiana University-Purdue University Indianapolis

Monday PM | October 2, 2023 B234 | Greater Columbus Convention Center

Session Chairs: Edward Gorzkowski, Naval Research Laboratory; Haitao Zhang, University of North Carolina at Charlotte

2:00 PM Invited

Tuning Nano/Microstructure and Properties by Densification of Metastable Powders: Gottlieb Uahengo¹; Darren Dewitt¹; Yasuhiro Kodera¹; Javier Garay¹; ¹University of California, San Diego

2:30 PM

Synthesis of TiO₂/Graphene Oxide Core-shell Nanoparticles via Catalyst-free Microwave-assisted Reaction for Highly Efficient Photocatalysis: *Kunihiko Kato*¹; Yunzi Xin¹; Takashi Shirai¹; ¹Nagoya Institute of Technology

2:50 PM

Structural and Compositional Analyses of Ba₂YbNbO₆-doped YBa₂Cu₃O_{7-x} Superconducting Thin Films: *Masanari Kuroki*¹; Manabu Ishimaru¹; Tomoya Horide¹; Kaname Matsumoto¹; Ryusuke Kita²; ¹Kyushu Institute of Technology; ²Shizuoka University

3:10 PM

Colossal Enhancement of the Thermoelectric Power Factor of LaO.7CaO.2NiO.25TiO.75CoO3 Epitaxial Thin Films by Exsolution: *Mohammad El Loubani*¹; Gene Yang¹; Tae-sik Oh²; Dongkyu Lee¹; ¹University of South Carolina; ²Auburn University



3:30 PM Break

3:50 PM Invited

The Role of Collagen Piezoelectricity in the Intrafibrillar Mineralization: Jinha Kwon¹; Hanna Cho¹; ¹The Ohio State University

4:20 PM

Influence of Powder Annealing on Spontaneous Polarization and Recombination Centers in BaTiO3 Nanocrystals: *Oliver Diwald*¹; Ellie Neige¹; Thomas Schwab¹; Maurizio Musso¹; Thomas Berger¹; Gilles Bourret¹; ¹Paris Lodron Universitaet Salzburg

4:40 PM

Metal Thiophosphates Under Pressure: Evolution of Magnetic and Ferroelectric Properties: *Michael Susner*¹; ¹AFRL Materials and Manufacturing Directorate

5:00 PM

Growth and Characterization of Novel Single Crystals as Potential Thermoelectric Materials: *Nusrat Yasmin*¹; Md Fahel Bin Noor¹; Tiglet Besara¹; ¹Missouri State University

5:20 PM

Synthesis and Exploration of Half-Heusler and two Other Ternary Intermetallic Single Crystals: *Md Fahel Bin Noor*¹; Nusrat Yasmin¹; Tiglet Besara¹; ¹Missouri State University

EDUCATION AND CAREER DEVELOPMENT

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

Sponsored by: TMS: Education Committee, TMS: Accreditation Committee

Program Organizers: Alison Polasik, Campbell University; Jeffrey Fergus, Auburn University

Monday PM | October 2, 2023 A120 | Greater Columbus Convention Center

Session Chair: Alison Polasik, Campbell University

2:00 PM Introductory Comments

2:05 PM

Inclusive Teaching: Team Based Approach to Driving Inclusion as a Route to Mutual Respect for Team Members: Steven Yalisove¹; ¹University of Michigan

2:25 PM

Reflective Learning for Engineering Students: *Natalie Van Tyne*¹; ¹Virginia Polytechnic Institute and State University

2:45 PM

Supporting Students through Seminars on Success Strategies: Susan Gentry¹, ¹University of California, Davis

3:05 PM Panel Discussion Supporting Diversity through Mentoring and Allyship - Panelist include Viola Acoff, Jeff Fergus, and Jenifer Locke

FUNDAMENTALS AND CHARACTERIZATION

Emergent Materials Under Extremes and Decisive In Situ Characterizations — In situ Characterization of Fuels and Ceramics Under Extreme Conditions

Sponsored by: ACerS Basic Science Division

Program Organizers: Xiaofeng Guo, Washington State University; Hongwu Xu, Los Alamos National Laboratory; Xujie Lu, Center for High Pressure Science & Technology Advanced Research; Hua Zhou, Argonne National Laboratory; Judith Driscoll, University of Cambridge; Andrew Strzelecki, Los Alamos National Laboratory

Monday PM | October 2, 2023 A220 | Greater Columbus Convention Center

Session Chair: Xiaofeng Guo, Washington State University

2:00 PM Invited

In Situ Characterization and Modeling of Spent UO2 Fuel under Ion Irradiation: *Lingfeng He*¹; Yunyuan Lu¹; Cameron Howard²; Chao Jiang²; Sudipta Biswas²; Dewen Yushu²; Jatuporn Burns²; Wei-Ying Chen³; ¹North Carolina State University; ²Idaho National Laboratory; ³Argonne National Laboratory

2:30 PM Invited

Irradiation Induced Structural and Thermal Conductivity Changes in Nuclear Fuels: *Linu Malakkal*¹; Amey Khanolkar¹; Zilong Hua¹; Marat Khafizov²; Chris Marianetti³; David Hurley¹; ¹Idaho National Laboratory; ²The Ohio State University; ³Columbia University

3:00 PM

In-situ Raman Studies on Synthesis and Oxidation of UC_{1-x}N_x⁻ Sam Karcher¹; Xiaofeng Guo¹; John McCloy¹; ¹Washington State University

3:20 PM Break

3:40 PM Invited

Structural Manipulation of Ceramic Materials via Extreme Conditions: Maik Lang¹; Eric O'Quinn¹; Alexandre Solomon¹; Casey Corbridge¹; Cale Overstreet¹; Christina Trautmann²; Antonio Fuentes³; ¹University of Tennessee; ²Gesellschaft fuer Schwerionenforschung; ³Cinvestav Unidad Saltillo

4:10 PM Invited

Will High-entropy Carbides Be Enabling Materials for Extreme Environments?: *Bai Cui*¹; Fei Wang¹; Lanh Trinh¹; Luke Wadle¹; Yongfeng Lu¹; Kaustubh Bawane²; Zilong Hua²; Linu Malakkal²; Lingfeng He³; Cody Dennett⁴; Frederic Monteverde⁵; ¹University of Nebraska-Lincoln; ²Idaho National Laboratory; ³North Carolina State University; ⁴Massachusetts Institute of Technology; ⁵National Research Council of Italy – Institute of Science, Technology and Sustainability for Ceramics

4:40 PM

In-situ Observations of the High Temperature Melting Behaviour of Ce-brannerite: *Malin Dixon Wilkins*¹; John McCloy¹; ¹Washington State University

5:00 PM

Characterization of Amorphous Ordering in Polymer-Derived Silicon Oxycarbide Ceramics with Electron Nanobeam Diffraction: Advaith Rau¹; Colin Ophus²; Mary Scott³; Karen Bustillo²; Kathy Lu¹; ¹Virginia Polytechnic Institute and State University; ²Lawrence Berkeley National Laboratory; ³University of California - Berkeley



SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Energy Conversion and Harvesting II; Electrocatalyst and Photocatalyst

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Krista Carlson, University of Nevada, Reno; Kyle Brinkman, Clemson University; Armin Feldhoff, Leibniz University Hannover; Charmayne Lonergan, Missouri University of Science and Technology; Zhezhen Fu, Pennsylvania State University - Harrisburg; Dhruba Panthi, Kent State University; Janusz Tobola, AGH UST, Faculty of Physics and Applied Computer Science

Monday PM | October 2, 2023 B240/241 | Greater Columbus Convention Center

Session Chairs: Zhenzhen Fu, Penn State; Ekaterina Pomerantseva, Drexel University

2:00 PM Invited

Texturing Ca3Co4-xO9- Ceramics via Electrospun Nanoribbons: A Route to High-performance Thermoelectrics: *Armin Feldhoff*¹; Katharina Kruppa¹; Itzhak Maor²; Frank Steinbach¹; Meirav Mann-Lahav²; Gideon Grader²; ¹Leibniz University Hannover; ²Technion

2:30 PM Invited

Twin Perovskie Nanocomposite Cathodes for High-Performance Protonic Ceramic Fuel Cells: Jiawei Zhang¹; Ashley Gomez¹; Ryo Kitamura¹; Minda Zhou¹; Jianhua Tong¹; ¹Clemson University

3:00 PM

Superconductors and Cryogenic Conductors for Electric Aircraft Propulsion Systems: *Mike Sumption*¹; ¹Ohio State University

3:20 PM Break

3:40 PM

Synergistic Photothermal-thermoelectric-photovoltaic Energy Generation via Transparent Nanohybrids of Porphyrin and Iron Oxide: Donglu Shi¹; Mengyao Lyu¹; Jou Lin¹; Yuxin Wang¹; John Krupczak²; ¹University of Cincinnati; ²Hope College

4:00 PM

The Effect of A-site Doping Elements and Concentrations on the Diffusivity and Ionic Conductivity of La2NiO4+ Studied by Ab Initio Calculations: Songge Yang¹; Wenyuan Li²; Xingbo Liu²; Edward Sabolsky²; Yu Zhong¹; ¹Worcester Polytechnic Institute; ²West Virginia University

4:20 PM

Metal Composite Nano-Catalysts for Enhanced Solid Oxide Fuel Cell Operation and Stability within Hydrocarbon Containing Fuels: *Saad Waseem*¹; Edward Sabolsky¹; Katarzyna Sabolsky¹; Richard Hart²; Seunghyuck Hong²; ¹West Virginia University; ²GE, Research Center

4:40 PM

Accelerated Investigation of Electrocatalysts with Integrated Computational Approaches: *Lingxiao Mu*¹; Susan Sinnott¹; ¹The Pennsylvania State University

5:00 PM

A Study of the Role of Molten Salt Treatment in the Observed Improved Water Splitting Ability of SrTiO3: *Nnamdi Ene*¹; Mingyi Zhang¹; Gregory Rohrer¹; Paul Salvador¹; ¹Carnegie Mellon University

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Current Issues and Functional Applications — Interactions of Glass with Water and Radiation

Sponsored by: ACerS Glass & Optical Materials Division

Program Organizers: Charmayne Lonergan, Missouri University of Science and Technology; Ashutosh Goel, Rutgers, The State University of New Jersey

Monday PM | October 2, 2023 B132 | Greater Columbus Convention Center

Session Chairs: Saurabh Kapoor, Sterlite Technologies Limited; Ashutosh Goel, Rutgers, The State University of New Jersey

2:00 PM

Water Content within Phosphate Glasses and Its Role as a Modifier: Lucas Greiner¹; Sierra Kucko¹; Doris Möncke¹; ¹Alfred University

2:20 PM

Revealing the Structure of the Sodium-leached Layer of Soda Lime Silica Glass: A Comprehensive Spectroscopic Analysis: Andrew Ogrinc¹; Yuxing Zhou¹; Seung Ho Hahn¹; Yen-Ting Lin¹; Seong Kim¹; ¹Penn State University

2:40 PM

Radiation Effects on Amorphous Chalcogenides: Spoogmay Khan¹; Gang Chen¹; ¹Ohio University

FUNDAMENTALS AND CHARACTERIZATION

Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-Performance Relationships — Atomistics

Sponsored by: ACerS Basic Science Division

Program Organizers: John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology; Shen Dillon, University of California, Irvine; Wolfgang Rheinheimer, University of Stuttgart; Catherine Bishop, University of Canterbury; Ming Tang, Rice University; Melissa Santala, Oregon State University

Monday PM | October 2, 2023 A215 | Greater Columbus Convention Center

Session Chairs: Hadas Sternlich, Lawrence Berkeley; Dylan Jennings, FZ Juelich

2:00 PM Invited

In-situ Air-free 4D-STEM Biasing of Model Lithium-sulfur Batteries: Hadas Sternlicht¹; Benjamin Savitzky²; Alpesh Shukla³; Colin Ophus²; Andrew Minor¹; ¹University of California, Berkeley and Lawrence Berkeley National Laboratory; ²Lawrence Berkeley National Laboratory; ³ZoNexus, LLC



2:30 PM Invited

Structural Defects and Functional Interfaces in Epitaxial Thin Films of Complex Oxide Materials: Nuria Bagues¹; Louise Colfer²; Elahe Farghadany³; Michael Schmidt²; Robert E. A. Williams¹; Alp Sehirlioglu³; Lynette Keeney²; *David McComb*¹; ¹Ohio State University; ²Tyndall National Institute; ³Case Western Reserve University

3:00 PM

Predicting Interface Stability and Oxygen Vacancy Formation at Misfit Dislocations in CeO2/SrTiO3 Heterostructures: *Kurt Dawson*¹; Pratik Dholabhai¹; ¹Rochester Institute of Technology

3:20 PM

Grand Canonical Optimization of Symmetric Tilt Grain Boundary Structure in Hexagonal Close-packed Titanium: *Enze Chen*¹; Tae Wook Heo²; Brandon Wood²; Mark Asta¹; Timofey Frolov²; ¹University of California, Berkeley; ²Lawrence Livermore National Laboratory

3:40 PM Break

4:00 PM

Anisotropy of Electric Field Effects on Grain Boundary Core Structures: William Hahn¹; *Klaus van Benthem*¹; ¹University of California, Davis

4:20 PM

Chemical Ordering Delays Grain Boundary Complexion Transitions in NbMoTaW: Ian Geiger¹; Timothy Rupert¹; ¹University of California Irvine

4:40 PM

Grain Boundary Phase Transformations in Segregated Metallic Alloys: *Timofey Frolov*¹; Vivek Devulapalli²; Tobias Brink²; Christian Liebscher²; ¹Lawrence Livermore National Laboratory; ²MPIE

5:00 PM

Characterization of Grain Boundary Phase Transformations: *Ian Winter*¹; Robert Rudd²; Tomas Oppelstrup²; Timofey Frolov²; ¹Sandia National Laboratories; ²Lawrence Livermore National Laboratory

FUNDAMENTALS AND CHARACTERIZATION

High Entropy Materials: Concentrated Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond IV — Processing and Properties

Sponsored by: TMS Alloy Phases Committee

Program Organizers: Mitra Taheri, Johns Hopkins University; Michael Gao, National Energy Technology Laboratory; Elaf Anber, Johns Hopkins University; Yu Zhong, Worcester Polytechnic Institute; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Yiquan Wu, Alfred University; Jian Luo, University of California, San Diego; Amy Clarke, Colorado School of Mines; Sebastian Lech, Johns Hopkins University

Monday PM | October 2, 2023 A216 | Greater Columbus Convention Center

Session Chairs: Peter Liaw, University of Tennessee; Bai Cui, University of Nebraska

2:00 PM Invited

Superior High-temperature Strength in a Supersaturated Refractory High-entropy Alloy: Rui Feng¹; Bojun Feng²; Michael Gao¹; Chuan Zhang³; Joerg Neuefeind⁴; Jonathan Poplawsky⁴; Yang Ren⁵; Ke An⁴; Michael Widom²; *Peter Liaw*⁶; ¹National Energy Technology Laboratory; ²Carnegie Mellon University; ³CompuTherm LLC; ⁴Oak Ridge National Laboratory; ⁵Argonne National Laboratory; ⁶The University of Tennessee, Knoxville

2:30 PM

Advanced Manufacturing of High-entropy Carbide Ceramics by Selective Laser Sintering and Spark Plasma Sintering: *Bai Cui*¹; Xiang Zhang¹; Fei Wang¹; Xin Chen¹; Yongfeng Lu¹; ¹University of Nebraska-Lincoln

2:50 PM

Mechanical Behaviour of a Low-SFE FCC Ternary Medium Entropy Alloy Subjected to High Pressure Torsion: *Saumya Jha*¹; Krishanu Biswas¹; Nilesh Gurao¹; ¹Indian Institute of Technology Kanpur

3:10 PM

On the Mesoscale Complexity of Macroscopically-smooth Plastic Flow in an Al-Containing High-Entropy Alloy: *Jamieson Brechtl*¹; Rui Feng¹; Peter Liaw²; Benoît Beausir³; Hafsa Jaber³; Tatiana Lebedkina³; Mikhail Lebyodkin³; ¹Oak Ridge National Laboratory; ²University of Tennessee; ³Université de Lorraine

3:30 PM Break

3:50 PM

Mechanical Properties of the Dual-phase Multi-Principal Element Alloy $W_{s}Mo_{15}Fe_{40}Ni_{40}$: *Riya Barua*¹; Thomas Balk¹; ¹University of Kentucky

4:10 PM

Stress Induced Martensite Transformation and Superelastic Effect in TiZrHfNbAl High Entropy Alloys: *Xidong Hui*¹; Lu Wang¹; Yandong Wang¹; ¹University of Science and Technology Beijing


4:30 PM

Study on Early-stage Irradiation Damage in Concentrated Solidsolution Alloys by Nanoindentation: *Liuqing Yang*¹; Youxing Chen¹; Jimmie Miller¹; William John Weber²; Yanwen Zhang³; ¹University of North Carolina at Charlotte; ²The University of Tennessee, Knoxville; ³Oak Ridge National Laboratory

4:50 PM

Dislocation-mediated Plasticity in Entropy Stabilized Oxides at Room Temperature: Xin Wang¹; Justin Cortez¹; Alexander Dupuy¹; Julie Schoenung¹; *William Bowman*¹; ¹University of California, Irvine

5:10 PM

Thermal Properties and Calcium-Magnesium-Aluminosilicate (CMAS) Corrosion Resistance of High Entropy Rare-earth Phosphate (Lu_{0.2}Yb_{0.2}Er_{0.2}Yo_{.2}Gd_{0.2})PO₄: A Novel Environmental Barrier Coating (EBC) Candidate: *Keith Bryce*¹; Yueh-Ting Shih¹; Liping Huang¹; Jie Lian¹; ¹Rensselaer Polytechnic Institute

5:30 PM

Nanocrystalline High-entropy Alloys: Synthesis, Mechanical Properties, and Thermal Stability: Yu Zou¹; ¹University of Toronto

MATERIALS-ENVIRONMENT INTERACTIONS

High Temperature Corrosion and Degradation of Structural Materials — II. Refractory and High Entropy Alloys

Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; Richard Oleksak, National Energy Technology Laboratory; David Shifler, Office of Naval Research; Raul Rebak, GE Global Research

Monday PM | October 2, 2023 A122 | Greater Columbus Convention Center

Session Chair: To Be Announced

2:00 PM Invited

On the Thermodynamic Properties of CrTaO₄: A Computational Perspective: *Adib Samin*¹; Tanner Gordon¹; Lucas Heaton¹; ¹Air Force Institute of Technology

2:30 PM

Cyclic Oxidation of NbTiZr Using a Resistive Heating System: Charlie Brandenburg¹; David Beaudry²; Jean-Philippe Couzinié³; Loïc Perrière³; Mitra Taheri²; Elizabeth Opila¹; ¹University of Virginia; ²Johns Hopkins University; ³Univ Paris Est Creteil, CNRS, ICMPE

2:50 PM

Oxidation and Hot Corrosion Performance of Fe-Cr-Ni Based Alloys: Haofei Sun¹; Jing Liu¹; ¹University of Alberta

3:10 PM

High Temperature Oxidation Behavior of Zr vs ZrC: *Connor Stephens*¹; Michael Richwine¹; Elizabeth Opila¹; ¹University of Virginia

3:30 PM

High-throughput Investigation of Microstructure & High Temperature Oxidation Behavior of CrMoNbTaW: *Md Imran Noor*¹; Paul Rottmann¹; ¹University of Kentucky

SPECIAL TOPICS

History of Materials Science and Engineering — People and Institutions

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee, TMS Phase Transformations Committee, TMS Shaping and Forming Committee, TMS: Steels Committee

Program Organizers: Robert Hackenberg, Los Alamos National Laboratory; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Olivier Hardouin Duparc, LSI - CNRS; Kester Clarke, Colorado School of Mines; Goro Miyamoto, Tohoku University

Monday PM | October 2, 2023 A213 | Greater Columbus Convention Center

Session Chairs: Kester Clarke, Colorado School of Mines; Ian Zuazo, ArcelorMittal Global R&D - Industeel

2:00 PM Invited

At the Beginning: Materials Science and Engineering at Northwestern: Peter Voorhees¹; ¹Northwestern University

2:30 PM Invited

John W Cahn: Architect of a Discipline: W Craig Carter¹; ¹Massachussetts Institute of Technology

3:00 PM Invited

Hub Aaronson and His Impact on the Field of Solid State Phase Transformations: *George Spanos*¹, ¹TMS

3:30 PM Break

3:50 PM Invited

Between Science and Engineering - The German Contribution to the Establishment of MSE: *Pedro Dolabella Portella*¹; Peter Gumbsch²; ¹Fraunhofer Inst Werkstoffmechanik IWM; ²Fraunhofer Inst Werkstoffmechanik IWM and Karlsruher Inst Technologie KIT

4:20 PM Invited

The Burgeoning of Materials Science and Engineering in France 1865 - 1914: Yves Bienvenu¹; Olivier Hardouin Duparc¹; ¹School of Mines paris

4:50 PM Invited

The History of IRSID, the French Steel Research Institute: Marc Grumbach¹; *Ian Zuazo*²; ¹ex-IRSID; ²ArcelorMittal Global R&D - Industeel

5:20 PM

Materials Science vs. Engineering – Paradoxes, Peculiarities, and Tensions in an Ever-Evolving Field: *Robert Hackenberg*¹; ¹Los Alamos National Laboratory



FUNDAMENTALS AND CHARACTERIZATION

Interface-mediated Phenomena in Structural Materials — Interface Structure and Kinetics

Sponsored by: TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Jian Wang, University of Nebraska-Lincoln; Nigel Shepherd, University of North Texas; Andres Bujanda, U.S. Army Research Laboratory; Lin Shao, Texas A&M University

Monday PM | October 2, 2023 A214 | Greater Columbus Convention Center

Session Chairs: Lin Zhou, AMES LAb and ISU; Reinhold Dauskardt, Stanford University

2:00 PM Keynote

Investigation of Dislocation-grain Boundary Interactions Through Insitu Direct Tensile Testing with High-resolution Electron Backscatter Diffraction: Dongyue Xie¹; Tongjun Niu¹; Muh-chang Chen²; Jonathan Gigax¹; Mohammed Zikry²; Abigail Hunter¹; Saryu Fensin¹; *Nan Li*¹; ¹Los Alamos National Laboratory; ²North Carolina State University

2:40 PM

Diffusion Bonding of Titanium to Vanadium: *Bernard Gaskey*¹; Sara Ricci¹; Cody Miller¹; Saryu Fensin¹; John Carpenter¹; ¹Los Alamos National Laboratory

3:00 PM

Effect of Silicate Ions with Different Structures on Solidification Behavior of Mechanochemically Activated Coal Ash Powders: *Takumi Sangu*¹; Yunzi Xin¹; Kunihiko Kato¹; Takashi Shirai¹; ¹Nagoya Institute of Technology

3:20 PM Invited

In-situ TEM Study of Grain Boundary Motion in 2D Skyrmion Lattice: A Combined Individual and Collective Particle Motion: *Lin Zhou*¹; Xiaotian Fang¹; Valeri Viteri-Pflucker¹; Jian Wang¹; Alexander King¹; ¹Ames Laboratory

3:50 PM Break

4:10 PM

Kinetics of Interfacial Defects Associated with the Formation of Special Boundaries Under Conditions of Synthesis of Complex Functionally Active Charges: Borys Sereda¹; Irina Kruhliak¹; Dmytro Sereda¹; Vitaliy Voloh¹; ¹DSTU

4:30 PM Keynote

Formation Mechanisms and Kinetics of Coating Deposition Using Open-air Spray-Plasma Processing: *Reinhold Dauskardt*¹; ¹Stanford University

5:00 PM

Interfacial Reactions in Co/Bi2Te3 and Co/Bi2Se3 Couples: Sinn-wen Chen¹; Jia-Ruei Chang¹; He-cheng Ang¹; ¹National Tsing Hua University

5:20 PM

Understanding Dislocation-interface Interactions during Recrystallization of Mg-Ca-Zn Alloys: *Rogine Gomez*¹; Aeriel Leonard¹; ¹The Ohio State University

5:40 PM

Understanding Grain Boundary Segregation in FeCr Alloys: Multiscale Modeling and Experiments: Sourabh Bhagwan Kadambi²; Mukesh Bachhav¹; Boopathy Kombaiah¹; Jia-Hong Ke¹; ¹Idaho National Laboratory

LIGHTWEIGHT ALLOYS

Light Metal Technology — Aluminum-rare Earth Alloys and Composites

Program Organizers: Xiaoming Wang, Purdue University; Alan Luo, Ohio State University

Monday PM | October 2, 2023 A212 | Greater Columbus Convention Center

Session Chair: Jianyue Zhang, The Ohio State University

2:00 PM

Solidification Evolution, Microstructure and Tensile Properties of Al-Mg-Sc Alloys: *Jose Spinelli*¹; Anderson Nunes¹; Guilherme Gouveia¹; Leonardo Gomes¹, ¹Ufscar

2:20 PM

Effect of Salt Flux and T6 Treatment of Al-Cu Alloy Using Rare-earth Element: Jose Marcelino Da Silva Dias Filho¹; Jonas Valloton¹; Ahmed Qureshi¹; Hani Henein¹; ¹University of Alberta

2:40 PM

Effect of Zr-Er-Y L12 Phase on Precipitation Behavior of Al-Zn-Mg Alloy: *Yong-You Kim*¹; Kwangjun Euh¹; Hyeon-woo Son¹; Zhirou Zhang¹; ¹Korea Institute of Materials Science

3:00 PM

Influence of Ce, Ni and Cu on Castability and Mechanical Properties of Al Piston Alloys: Kerim Kayikcioglu¹; Selim Temel²; Hayati Sahin¹; Ali Gungor²; *Derya Dispinar*¹; Kerem Dizdar³; ¹Foseco; ²Parsat Piston; ³Istanbul Technical University

3:20 PM

The Beneficial Effects of Ce Additions on High-Fe Secondary Al-Si Casting Alloys: *Michael Moodispaw*¹; Emre Cinkilic²; Alan Luo¹; ¹Ohio State University; ²Hakkari University

3:40 PM Break

4:00 PM

Selective Laser Melting of a TiB2/Al-Cu-Mg-Ni-Sc Composite: Chenglu Tang¹; *Xiaoming Wang*¹; ¹Purdue University

4:20 PM

Thermal Properties and Corrosion Response of Cast Al-Ce-Mg Alloy for Heat Exchanger Applications: *Jamieson Brechtl*¹; Mike Kesler¹; Melanie Moses-DeBusk¹; Xiaohua Hu¹; Ryan Lane²; David Weiss³; Kashif Nawaz¹; ¹Oak Ridge National Laboratory; ²Virginia Tech; ³Eck Industries, Inc.

4:40 PM

The Myth on the Pore Formation in Aluminum Casting on the Alloying with Rare Earth Elements: *Hayati Sahin*¹; Gael Zaragoza¹; Derya Dispinar¹; ¹Foseco



5:00 PM

Development of Al-Ce-(Fe)-(Mg) Alloys for Elevated Temperature and High Strength Applications: *Michael Moodispaw*¹; Emre Cinkilic²; Alan Luo¹; ¹Ohio State University; ²Hakkari University

5:20 PM

Effect of Erbium and Europium Addition on Microstructure and Mechanical Properties of A356, A206 and A201 Alloys: *Hayati Sahin*¹; Derya Dispinar¹; ¹Foseco

CERAMIC AND GLASS MATERIALS

Manufacturing and Processing of Advanced Ceramic Materials — Processing of Carbides, Borides, and Nitrides

Sponsored by: ACerS Manufacturing Division

Program Organizers: Bai Cui, University of Nebraska-Lincoln; James Hemrick, Oak Ridge National Laboratory; Mike Alexander, Allied Mineral Products; Eric Faierson, Iowa State University; Keith DeCarlo, Blasch Precision Ceramics

Monday PM | October 2, 2023 B233 | Greater Columbus Convention Center

Session Chairs: Valerie Wiesner, NASA Langley Research Center; Surojit Gupta, University of North Dakota

2:00 PM Invited

Optimizing Ceramic Surfaces for Dust-tolerant Lunar Exploration: *Valerie Wiesner*¹; Christopher Wohl¹; Glen King¹; Jonathan Hernandez²; Keith Gordon¹; Lopamudra Das²; Samuel Ruiz³; Luke Wadle³; Bai Cui³; ¹NASA Langley Research Center; ²National Institute of Aerospace; ³University of Nebraska-Lincoln

2:30 PM

Effect of Binder Phase on TiB2-TiC Based Cermet Materials on the Microstructure and Mechanical Properties: *Zhezhen Fu*¹; ¹Pennsylvania State University - Harrisburg

2:50 PM

Embedded Wire CVD of Silicon Carbide for Homogeneous Joining and SiC-SiC Composite Fabrication: *Jeff Vervlied*¹; Mark Schaefer¹; ¹Free Form Fibers

3:10 PM

Phase and Nanostructure of Polymer Derived Monolithic SiC at Ultrahigh Temperatures: Rahul Anand¹; Kathy Lu¹; ¹Virginia Tech

3:30 PM Break

3:50 PM Invited

Design Paradigm for Fabricating MAB Phases: *Surojit Gupta*¹; ¹University of North Dakota

4:20 PM

Thermogravimetric Analysis of Converting Refractory Oxides to Multi-component Carbide: *Heonjune Ryou*¹; Austin Martin¹; Lavina Backman¹; Matthew Laskoski¹; James Wollmershauser¹; Edward Gorzkowski¹; ¹U.S. Naval Research Laboratory

4:40 PM

Reaction Flash Sintering of TiO.5ZrO.5N and TiO.5AlO.5N Ternary Metal Nitrides: *Suprabha Das*¹; Andriy Durygin¹; Vadym Drozd¹; Md Shariful Islam Sozal¹; Jesse Smith²; Zhe Cheng¹; ¹Florida International University; ²Argonne National Laboratory

5:00 PM

Mechanisms of Delamination within Co-extruded Silicon Carbide: *Olivia Brandt*¹; Rodrigo Orta¹; Jeffrey Youngblood¹; Rodney Trice¹; ¹Purdue University

ARTIFICIAL INTELLIGENCE

Materials Informatics for Images and Multidimensional Datasets — Session I

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division

Program Organizers: Amanda Krause, Carnegie Mellon University; Alp Sehirlioglu, Case Western Reserve University; Daniel Ruscitto, GE Research

Monday PM | October 2, 2023 A121 | Greater Columbus Convention Center

Session Chair: Katelyn Jones, Carnegie Mellon University

2:00 PM Invited

Nanoscale Metrology of Materials Studied by Advanced Electron Microscopy Imaging and Spectroscopy:: Nasim Alem¹; ¹Penn State University

2:30 PM

Rapid Grain Segmentation From Grayscale Micrograph Through Computer Vision Method: Yu-Tsen Yi¹; Junwon Seo¹; Nicholas Lamprinakos¹; Anthony Rollett¹; ¹Carnegie Mellon University

2:50 PM

Phase Segmentation of Steel Microstructures via Semi Supervised Deep Learning: *Nikhil Chaurasia*¹; Shikhar Jha¹; Sandeep Sangal¹; ¹Indian Institute of Technology Kanpur

3:10 PM

Microstructure Statistics for Property Prediction in Multifunctional Electrode Composites Using Random Forests: *William Huddleston*¹; Hugh Smith¹; Yinghui Wu¹; Alp Sehirlioglu¹; ¹Case Western Reserve University

3:30 PM Break

3:50 PM Invited

Structure-property Relationships Derived From Electron Microscope to Atomistic Simulations: *Ayana Ghosh*¹; ¹Oak Ridge National Laboratory

4:20 PM

Multi-modal Image Registration for Materials Characterization: Zachary Varley¹; Marc De Graef¹; Gregory Rohrer¹; Megna Shah²; Sean Donegan²; Michael Uchic²; ¹Carnegie Mellon University; ²Air Force Research Laboratory

4:40 PM

Informing Autonomous Processing via STEM-EELS Using Variational Autoencoders for Classification and Decision: Jonathan Hollenbach¹; Mitra Taheri¹; ¹Johns Hopkins University



5:00 PM Invited

Semi-automated Hierarchical Clustering Model for 4D-STEM Datasets: *Chuqiao Shi*¹; Nannan Mao²; Yao Yang³; Jing Kong²; Yimo Han¹; ¹Rice University; ²Massachusetts Institute of Technology; ³University of California, Berkeley

CERAMIC AND GLASS MATERIALS

Mesoscale Phenomena in Functional Polycrystals and Their Nanostructures — Thermal, Transport, Optical and Mechanical Phenomena

Sponsored by: ACerS Electronics Division

Program Organizers: Serge Nakhmanson, University of Connecticut; Edward Gorzkowski, Naval Research Laboratory; James Wollmershauser, U.S. Naval Research Laboratory; Seungbum Hong, KAIST; Javier Garay, University of California - San Diego; Pierre-Eymeric Janolin, CentraleSupélec; Ilya Sochnikov, University of Connecticut

Monday PM | October 2, 2023 B230 | Greater Columbus Convention Center

Session Chairs: Javier Garay, University of California, San Diego; Edward Gorzkowski, Naval Research Laboratory

2:00 PM

Modeling Thermoelectric Figure of Merit in Complex Materials at Mesoscale: Dharma Raj Basaula¹; Mohamad Daeipour¹; Boris Feygelson²; Serge Nakhmanson¹; ¹University of Connecticut; ²Naval Research Lab

2:20 PM

Computer Simulation as a Tool to Optimize Electronic Conduction.: *Chinonso Ugwumadu*¹; Kiran Prasai²; David Drabold¹; ¹Ohio University; ²Stanford University

2:40 PM

Enhanced Electron Transport in Metal-Carbon Composites: Kishor Nepal¹; Chinonso Ugwumadu¹; Keerti Kappagantula²; David Drabold¹; ¹Ohio University; ²Pacific Northwest National Laboratory

3:00 PM

Optical Behavior and Electro-optic Performance in Fine Grained Lead-free Ceramics: *Alexander Dupuy*¹; Javier Garay²; ¹University of California, Irvine; ²University of California, San Diego

3:20 PM Break

3:40 PM Keynote

Liquid Crystalline Diffractive Waveplates: Ultrathin, Planar Optics: *Jonathan Slagle*¹; ¹AFRL/RXEP

4:20 PM

Acoustic Phonon Spectra Modification and Light Emission Properties of Rare Earth Doped Polycrystalline Alumina: *Javier Garay*¹; ¹University of California, San Diego

4:40 PM

Optical Properties of Chalcophosphate Materials in the Visible and Infrared Range: Mariacristina Rumi¹; ¹Air Force Research Laboratory

5:00 PM

Structure Property Relationships in Complex, Multi-phase, Polycrystalline Materials: *Mir Al-Masud*¹; Naji Mashrafi¹; Adnan Taqi¹; Matthew Beck¹; ¹University of Kentucky

5:20 PM

Grain Size Dependence of Mechanical Properties of Nanocrystalline Magnesium Aluminate MgAl2O4: Seok-Woo Lee¹; Jessica Maita¹; Sarshad Rommel¹; James Wollmershauser²; Edward Gorzkowski²; Boris Feigelson²; Mark Aindow¹; ¹University of Connecticut; ²US Naval Research Laboratory

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials II

Sponsored by: ACerS Bioceramics Division

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford; Shawn Allan, Lithoz America LLC

Monday PM | October 2, 2023 A222 | Greater Columbus Convention Center

Session Chairs: Soshu Kirihara, Osaka University; Steven Naleway, University of Utah

2:00 PM Invited

Emerging Materials and Applications for Biophotonics and Optical Fiber Biosensing: *Roman Kostecki*¹; Heike Ebendorff-Heidepriem¹; ¹The University of Adelaide

2:20 PM

Freeze Casting of Porous Biomaterials: *Steven Naleway*¹; ¹University of Utah

2:40 PM Invited

Functional Biochips and Chemical Sensors Fabricated by Femtosecond Laser 3D Processing: *Koji Sugioka*¹; Shi Bai¹; Kotaro Obata¹; ¹RIKEN Center for Advanced Photonics

3:00 PM

Invited: Living-cell Environmental Sensing: *Pelagia-Irene Gouma*¹; ¹Ohio State University

3:20 PM Break

3:40 PM

Pathological Calcifications: More From Solid State NMR and Modeling: *Christian Bonhomme*¹; ¹Sorbonne University

4:00 PM Invited

Stability and Meta-stability of Zirconia Phases Would Explain Confusion of Zirconia Behaviors in Bio-ceramics: Masahiro Yoshimura¹; ¹National Cheng Kung University

4:20 PM

Stereolithographic Additive Manufacturing of Biological Ceramic Implants with Functionally Modulated Geometries: Soshu Kirihara¹; ¹Osaka University

4:40 PM Invited

Using Additive Manufacturing for Next Generation Biomaterials: Dan Thoma¹; ¹University of Wisconsin-Madison



5:00 PM Invited

Investigation of Initial Bone Tissue Reaction of Hydroxyapatite/ Collagen Bone-like Nanocomposite: Masanori Kikuchi¹; Tomoka Hasegawa²; Norio Amizuka²; ¹National Institute for Materials Science; ²Hokkaido University

ADDITIVE MANUFACTURING

Phase Transformations and Microstructure Evolution during Post-Processing of Additively Manufactured Metals — Phase Transformations and Microstructure Evolution during Post Processing II

Sponsored by: TMS Phase Transformations Committee, TMS: Additive Manufacturing Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Bij-Na Kim, Carpenter Additive; Amy Clarke, Colorado School of Mines; Mark Aindow, University of Connecticut; Eric Lass, University of Tennessee-Knoxville; Richard Fonda, Naval Research Laboratory; Ashley Paz Y Puente, University of Cincinnati

Monday PM | October 2, 2023 C170 | Greater Columbus Convention Center

Session Chairs: Eric Lass, University of Tennessee-Knoxville; Ashley Paz Y Puente, University of Cincinnati

2:00 PM Invited

Laser Reheating and Polishing of Powder-blown Directed Energy Deposition: Sarah Wolff¹; ¹The Ohio State University

2:40 PM

Additive Manufacturing of 718 Ni ODS Alloys and Haynes 230 Alloys with Nanoprecipitates: *Xinghang Zhang*¹; Ben Stegman¹; Bo Yang¹; Zhongxia Shang¹; Jack Lopez¹; William Jarosinski¹; ¹Purdue University

3:00 PM

Microstructure and Mechanical Characterization of As-deposited and Forged Wire Arc Additively Manufactured (WAAM) 316LSi: *Brett Ley*¹; Vishnu Ramasamy¹; John Lewandowski¹; ¹Case Western Reserve University

3:20 PM Break

3:40 PM

Use of In Situ TEM Heating to Study Transformation Pathways for Metastable Phases in New Candidate Alloys for Additive Manufacturing: *Mingxuan Li*¹; Baris Yavas¹; Mark Aindow¹; ¹University of Connecticut

4:00 PM

Observation of Structure Coarsening During Annealing of Additively Manufactured Ti-6Al-4V: *Aditya Bose-Bandyopadhyay*¹; David Field¹; ¹Washington State University

4:20 PM

Influence of Post-process Forging on Microstructure and Properties of LPBF AlSi10Mg: *Austin Ngo*¹; Svitlana Fialkova²; Noah Kohlhorst³; Glenn Daehn³; John Lewandowski¹; ¹Case Western Reserve University; ²North Carolina A&T University; ³The Ohio State University

PROCESSING AND MANUFACTURING

Processing and Performance of Materials Using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work – Rustum Roy Symposium — Session II

Sponsored by: ACerS Basic Science Division, ACerS Manufacturing Division

Program Organizers: Morsi Mahmoud, King Fahd University of Petroleum & Minerals; Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado; Christina Wildfire, National Energy Technology Laboratory; Zhiwei Peng, Central South University

Monday PM | October 2, 2023 B235 | Greater Columbus Convention Center

Session Chairs: Christina Wildfire, National Energy Technology Laboratory ; Hideyuki Kanematsu, Suzuka College

2:00 PM Invited

Post-processing of Irradiated FeCrAl by Electron Wind Force: Daudi Waryoba¹; Hajin Oh¹; Aman Aman¹; ¹Pennsylvania State University

2:30 PM

Microwave Synthesis of Cobalt Ferrite-reduced Graphene Oxide Composites: Soban Afzal¹; *Morsi Mahmoud*¹; Tawfik Salaeh¹; ¹King Fahd University of Petroleum & Minerals

2:50 PM

Effects of Heat Treatment under External Magnetic Field on Microstructure and Mechanical Properties of Ferritic/Martensitic Steels: Haluk Karaca¹; Kirk Lemmen¹; Osman Anderoglu²; Nan Li³; Stu Maloy⁴; XiaTong Yang²; Keaton Looper¹; ¹University Of Kentucky; ²University of New Mexico; ³Los Alamos National Laboratory; ⁴Pacific Northwest National Laboratory

3:10 PM

Effects on Aluminum Alloys During Heat Treatment in a Magnetic Field: *Kirk Lemmen*¹; Haluk Karaca¹; Paul Rottmann¹; Heather Murdoch²; Daniel Magagnosc²; Damilola Alewi¹; Keaton Looper¹; ¹University of Kentucky; ²US Army

3:30 PM

Ultrasonic Vibration Acoustic Softening Effect on Al2219 Varying Grain Size: Thomas Kang¹; Xun Liu¹; ¹The Ohio State University



LIGHTWEIGHT ALLOYS

Recent Developments in Light-Weight Composites and Materials — Machine Learning, Performance and Simulation

Sponsored by: TMS: Composite Materials Committee, TMS: Materials Characterization Committee

Program Organizers: Ramasis Goswami, Naval Research Laboratory; Tanjore Jayaraman, United States Air Force Academy; Nikhil Gupta, New York University; Aashish Rohatgi, Pacific Northwest National Laboratory; Sudip Bhattacharya, 6K Inc.

Monday PM | October 2, 2023 A211 | Greater Columbus Convention Center

Session Chair: Tanjore Jayaraman, United States Air Force Academy

2:00 PM

Numerical and Experimental Ballistic Performance Investigation of Carbon-Aramid and Carbon-ultrahigh Molecular Weight Polyethylene Composites for Ballistic Applications: *Ricardo Sirot*¹; Lorenzo Matilac¹; Eduardo Magdaluyo¹; ¹University of the Philippines

2:20 PM Invited

Selection and Future Directions of Conventional High-temperature Titanium Alloys for Aeroengines Applying Decision-science Methods: *Ramachandra Canumalla*¹; Tanjore Jayaraman²; ¹Weldaloy Specialty Forgings; ²United States Air Force Academy

3:00 PM

Ballistic Performance Simulation of Ultrahigh Molecular Weight Polyethylene – Abaca Fiber-reinforced Composites Using Finite Element Analysis: Aljohn Jay Punongbayan¹; *Ricardo Sirot*¹; Raymart Bonete¹; Eduardo Magdaluyo¹; ¹University of the Philippines

3:20 PM Invited

Machine Learning on Li-based Battery Materials: Suchismita Goswami¹; ¹Mest

3:50 PM Break

4:10 PM Invited

Dielectric Behavior of Carbon Fiber Polymer-matrix Structural Composites and Its Relevance to Structural Self-sensing: Deborah Chung¹; ¹State University of New York Buffalo

4:40 PM

Unprecedented Sensing of the Twisting in Fiber Tows, as Shown for Carbon Fiber by Inductance-based Self-sensing, which Provides Fast, Low-cost and Large-format Sensing: *Deborah Chung*¹; Min Kyoung Kim¹; ¹State University of New York Buffalo

BIOMATERIALS

Society for Biomaterials: Biomaterial Applications in Today's Industry: Development, Translation & Commercialization — Biomaterials Development, Translation & Commercialization

Sponsored by: Society for Biomaterials

Program Organizers: Katelyn Swindle-Reilly, The Ohio State University; Stephanie Steichen, DuPont; J. Zach Hilt, University of Kentucky

Monday PM | October 2, 2023 A223 | Greater Columbus Convention Center

Session Chairs: Katelyn Swindle-Reilly, The Ohio State University; Stephanie Steichen, DuPont; J. Zach Hilt, University of Kentucky

2:00 PM

Water-responsive 4D Printing Ink From a Maize Protein Zein: Ali Raza¹; Yubei Zhang¹; Huajie Wang²; *Jin-Ye Wang*¹; ¹Biomedical Engineering, Shanghai JiaoTongue University; ²Jiaxing Yaojiao Medical Device Co. Ltd.

2:20 PM

The Impact of Cerium Oxide Nanoparticles on ROS Release Rate in Mice Organs: A Minireview: Ikhazuagbe Ifijen¹; Doreen Omorogbe¹; Best Atoe²; ¹Rubber Research Institute of Nigeria; ²Worldwide Heallthcare

2:40 PM

Development of 3D-Printed Antimicrobial Si3N4-PEEK Cervical Spine Devices: Paul DeSantis¹; Cemile Başgül¹; Tabitha Derr¹; Chelsey McMinn²; Jackson Hendry²; Douglas Hoxworth²; Thomas Schaer³; B. Sonny Bal²; Noreen Hickok⁴; Steven Kurtz¹; *Ryan Bock*²; ¹Drexel University; ²SINTX Technologies; ³University of Pennsylvania; ⁴Thomas Jefferson University

3:00 PM

Nanostructured K-wires, Potential Biomedical Applications for UFG 316L: Bahram Saleh¹; Manoj Kodigudla²; David Dick²; Amey Kelkar²; Vijay Goel²; Girius Antanaitis³; Fumie Yusa¹; Yasuaki Osawa⁴; Ryosuke Mizuno⁴; Takafumi Komatsu⁴; Hassan Serhan¹; ¹Rosies Base LLC; ²The University of Toledo; ³GA Medical Pty Ltd; ⁴Komatsuseiki Kosakusho Co., Ltd.

3:20 PM

Introducing Highly Translucent Grades and Additive Manufacturing to the Dental Zirconia Workflow: *Andraž Kocjan*¹; Tadej Mirt²; Martin Schwentenwein³; Raul Bermejo⁴; Peter Jevnikar²; ¹Jožef Stefan Institute; ²Faculty of Medicine, University of Ljubljana; ³Lithoz GmbH; ⁴Montanuniversität Leoben



SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

15th Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Polymeric and Metallic Materials, and Computational Methods

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Surojit Gupta, University of North Dakota; Mritunjay Singh, Ohio Aerospace Institute; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology; Hisayuki Suematsu, Nagaoka University of Technololgy; Enrico Bernardo, University of Padova; Rajiv Asthana, University of Wisconsin; Yiquan Wu, Alfred University; Zhengyi Fu, Wuhan University of Technology; Allen Apblett, Oklahoma State University

Tuesday AM | October 3, 2023 B242/243 | Greater Columbus Convention Center

Session Chairs: Surojit Gupta, University of North Dakota; Lan Li, Boise State University; Santosh More, Faraday Technology Inc.

8:00 AM

A Sustainable and Energy-efficient Electrochemical Technology for Dewatering of Cellulosic Nanomaterials: Santosh Vijapur¹; Santosh More¹; Timothy Hall¹; EJ Taylor¹; Maria Inman¹; Stephen Snyder¹; Kim Nelson²; ¹Faraday Technology Inc.; ²AVAPCO LLC

8:20 AM

Computational Methods for Designing Effective Compatibilizers for Recycled Polymer Blends: *Manav Bhati*¹; Mohammad Atif Faiz Afzal¹; Andrea Browning¹; Mathew Halls¹; ¹Schrodinger Inc.

8:40 AM

Development of Novel Functional Materials from Biomass: *Surojit Gupta*¹; ¹University of North Dakota

9:00 AM

Little Known Nylon: Bio-Based Feedstocks and Synthesis for Nylon 5,9: *Abigail Stanlick*¹; Peter Meyer¹; Ting-Han Lee¹; Prerana Carter¹; Michael Forrester¹; Eric Cochran¹; ¹Iowa State University

9:20 AM

Energy Efficiency and Thermo-mechanically Affected Zone Size in Solid-state Welding: *Blake Barnett*¹; Anupam Vivek¹; Glenn Daehn¹; ¹Ohio State University

9:40 AM

The Roles of Co and Ni Additions to High Solute Content Fecontaminated Al Alloys in Beneficing Microstructure and Tensile Properties: Jose Spinelli¹; Marcella Xavier¹; ¹Ufscar

10:00 AM Break

10:20 AM

The Investigation of an Energy-efficient Coking Technique Based on the Hot Tamping Operation: *Qingwen Wei*¹; Keliang Pang²; Cai Liang¹; ¹Southeast University; ²Ansteel Beijing Research Institute

10:40 AM

Coke Gasification Pulverization and Carbon Bearing Powder Characteristics in a Blast Furnace: Ji Wu^{1} ; Cai Liang¹; ¹Southeast University

ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — AM Modeling, Simulation and Machine Learning - Machine Learning and Artificial Intelligence

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Computational Materials Science and Engineering Committee, TMS: ICME Committee

Program Organizers: Jing Zhang, Indiana University – Purdue University Indianapolis; Li Ma, Johns Hopkins University Applied Physics Laboratory; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Tuesday AM | October 3, 2023 C150 | Greater Columbus Convention Center

Session Chairs: Li Ma, Johns Hopkins University Applied Physics Laboratory; Jing Zhang, Indiana University - Purdue University Indianapolis

8:00 AM

3D Deep Learning for Porosity Analysis in Additive Manufacturing: *Daniel Diaz*¹; Xingyang Li¹; Yuheng Nie¹; Elizabeth Holm²; Anthony Rollett¹; ¹Carnegie Mellon University; ²University of Michigan

8:20 AM

Analyzing and Predicting Surface Roughness in Laser Powder Bend Fusion: Miguel Correa¹; *Nathan Post*²; Andrew Neils²; Jack Lesko²; ¹University of Notre Dame; ²Roux Institute, Northeastern University

8:40 AM

Predicting Material Properties in Additive Manufacturing Using Acoustic Signatures and Machine Learning: *Alec Mangan*¹; Dan Thoma¹; ¹University of Wisconsin Madison

9:00 AM

Use of Machine Learning to Identify Process-Structure-Property Relationships in PBF-LB AlSi10Mg: *Qixiang Luo*¹; Allison Beese¹; ¹Pennsylvania State University

9:20 AM

Quantification of Spatter Counts and Trajectories in Laser Powder Bed Fusion using Machine Learning Analysis of High Speed Imaging: Christian Gobert¹; Jack Beuth¹; ¹Carnegie Mellon University

9:40 AM

Physics Informed Reduced Order Model for Directed Energy Deposition Simulations in MALAMUTE: Anant Raj¹; Hany Abdel-Khalik¹; Luis Nunez²; Yifeng Che²; Wen Jiang²; Rongjie Song²; ¹Purdue University; ²Idaho National Laboratory

10:00 AM Break

10:20 AM

Computational and Experimental Study of Up-/Down-surface Characteristics of Sloped Samples in L-PBF Process: Nismath V H¹; Santosh Rauniyar¹; Kevin Chou¹; ¹University of Louisville



10:40 AM

Self-supervised Learning of Spatiotemporal Thermal Signatures in Additive Manufacturing Using Reduced Order Physics Models and Transformers: *Patxi Fernandez-Zelai*¹; Sebastien Dryepondt¹; Amir Ziabari¹; Michael Kirka¹; ¹Oak Ridge National Laboratory

11:00 AM

Crystal Plasticity Finite Element Creep Modeling of Powder Bed Fused 316H Steel: Sagar Bhatt¹; Mark Messner¹; ¹Argonne National Laboratory

11:20 AM

A Unified Treatment of Alloy Dependent Material Properties and Process Parameters for Accurate Solidification Simulations for AM Based on CALPHAD: *Paul Mason*¹; Amer Malik²; Quang Minh Do²; Johan Jeppsson²; Andreas Markstrom²; ¹Thermo-Calc Software Inc.; ²Thermo-Calc Software AB

ADDITIVE MANUFACTURING

Additive Manufacturing of Ceramic-based Materials: Process Development, Materials, Process Optimization and Applications — Novel and Emerging Ceramic AM Processes

Sponsored by: ACerS Basic Science Division, ACerS Engineering Ceramics Division, ACerS Manufacturing Division

Program Organizers: Xuan Song, University of Iowa; Lei Chen, University of Michigan-Dearborn; Xiangyang Dong, Missouri Univ of Science and Technology; Yiquan Wu, Alfred University; Paolo Colombo, University of Padova; Rajendra Bordia, Clemson University; Long-Qing Chen, Pennsylvania State University

Tuesday AM | October 3, 2023 C161A/161B | Greater Columbus Convention Center

Session Chair: Lisa Rueschhoff, Air Force Research Laboratory

8:00 AM

A Novel Integrated Additive Manufacturing and Laser Processing Method for Protonic Ceramic Energy Devices: Hua Huang¹; Tianyi Zhou¹; Minda Zou¹; Patrick Kuzbary¹; Jacob Conrad¹; Kyle S. Brinkman¹; Hai Xiao¹; Fei Peng¹; Jianhua Tong¹; ¹Clemson University

8:20 AM

Additive Continuous Microwave Sintering for Lunar Construction: Holly Shulman¹, ¹DrHollyShulman LLC

8:40 AM

Learning and Challenges to Scale Ceramics Additive Manufacturing to Industrial Scale: *Francois Beauchaud*¹; Nikolai Sauer¹; ¹Bosch Advanced Ceramics

9:00 AM Invited

Hydrothermal-assisted Jet Fusion: A Selective Cold Sintering Approach: Xuan Song¹; ¹University of Iowa

9:30 AM Invited

Challenges and Future Directions for Ceramic Additive Manufacturing in Incorporation of Fiber Reinforcements and Machine Learning Strategies: *Lisa Rueschhoff*¹; Luke Baldwin¹; James Hardin¹; Jonathan Kaufman¹; ¹Air Force Research Laboratory

ADDITIVE MANUFACTURING

Additive Manufacturing of Metals: Microstructure, Properties and Alloy Development — Additive Manufacturing of Fe-based Alloys

Program Organizers: Prashanth Konda Gokuldoss, Tallinn University of Technology; Jurgen Eckert, Erich Schmid Institute of Materials Science

Tuesday AM | October 3, 2023 C151 | Greater Columbus Convention Center

Session Chair: Ethan Parsons, Massachusetts Institute of Technology Lincoln Lab

8:00 AM

Processing-Microstructure-Properties Relations in Open Air Additive Manufacturing of Stainless Steel 316L: Hunter Rauch¹; Mala Sharma¹; Wes Mitchell¹; Ted Reutzel¹; ¹Penn State

8:20 AM

Corrosion Fatigue Characteristics of Laser Powder Bed Fused 316L Stainless Steels in Chloride-containing Solution: *Kevin Sangoi*¹; Jie Song¹; Yao Fu¹; ¹Virginia Tech

8:40 AM

Effect of Post-processing on Porosity, Secondary Phases, and Mechanical Behavior of Binder Jet Fabricated Stainless Steels: *Nancy Huang*¹; Olivia Cook¹; Christopher Kube¹; Andrea Argüelles¹; Allison Beese¹; ¹Pennsylvania State University

9:00 AM

Effects of Process Parameters on Mechanical Behavior of Wire Arc Additively Manufactured (WAAM) AISI 316LSi: Vishnu Ramasamy¹; John Lewandowski¹; ¹Case Western Reserve University

9:20 AM

Investigating the Processing-structure-property Relationship for AISI M2 High-speed Tool Steel Processed on Binder Jetting: Amit Choudhari¹; Tushar Borkar¹; ¹Cleveland State University

9:40 AM

Maraging Steel 350 Manufactured by Laser Powder Bed Fusion: *Elias Jelis*¹; Matthew Feurer¹; ¹US Army DEVCOM AC

10:00 AM Break

10:20 AM

Materials Characterization of AISI 8620 Steel Manufactured through DED System: *Ipfi Mathoho*^{1, 1}CSIR Pretoria

10:40 AM

Mechanical and Magnetostrictive Properties of Additively Manufactured Fe_{a1}Al₁₉ Rods: *Nicholas Jones*¹; Jin Yoo¹; Bryan Kessel¹; Thomas Mion²; Emily Holcombe¹; Paul Lambert¹; ¹Naval Surface Warfare Center, Carderock Division; ²Naval Research Laboratory

11:00 AM

Laser Powder Directed Energy Deposition of 17-7 PH Stainless Steel: Alex Barbosa¹; Fabio Mariani¹; Rodrigo Dourado da Silva¹; Piter Gargarella²; Reginaldo Coelho³; *Kahl Zilnyk*¹; Antonio Ramirez⁴; ¹Aeronautics Institute of Technology; ²Federal University of São Carlos; ³University of São Paulo; ⁴The Ohio State University



11:20 AM

Parameter Optimization and Flaw Type Dependent Tensile Properties of 15-5PH Stainless Steel Manufactured by Laser Powder Bed Fusion: *Nicolas Ayers*¹; Cameron Lucas²; Asif Mahmud¹; Andrew Ostrowski¹; Nemanja Kljestan³; Marco Knezevic³; Yongho Sohn¹; ¹University of Central Florida; ²SV Microwave; ³University of New Hampshire

11:40 AM

Understanding Processing-Microstructure-Property Relationships for WAAM and LP-DED in Duplex Stainless Steels: Grant Johnson¹; Maria Quintana¹; Sougata Roy²; Peter Collins¹; ¹Iowa State University; ²University of North Dakota

ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Session II

Sponsored by: ACerS

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday AM | October 3, 2023 C160A/160B | Greater Columbus Convention Center

Session Chairs: SeungYeon Kang, University of Connecticut; Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech

8:00 AM Keynote

Monitoring Additive Manufacturing in Real-Time via Image-Based Machine Learning Techniques: Peter Warren¹; Md Shahjahan Hossain²; Pranta Sarkar²; Asher Perez²; Daniel Homa³; Gary Pickrell³; Ranajay Ghosh²; Ramesh Subramanian⁴; Subith Vasu²; *Navin Manjooran*¹; ¹Solve; ²University of Central Florida; ³Virginia Tech; ⁴Siemens Energy Inc.

8:20 AM Invited

3D-Printed Composite Scaffolds for Biomedical Applications: *Alina Kirillova*¹; ¹Iowa State University

8:40 AM

Development of Eco-efficient Cement Compositions for 3D Printing Using the Concepts of Rheology: Francisco Jordão Nunes de Lima¹; José Augusto Ferreira Sales de Mesquita¹; *Roberto Cesar de Oliveira Romano*¹; Rafael Giuliano Pileggi¹; ¹University of Sao Paulo

9:00 AM

In-process Orbiting Laser-assisted Material Extrusion-based Additive Manufacturing for the Improvement of Mechanical and Geometrical Properties: *Pu Han*¹; Shams Torabnia¹; M Faisal Riyad¹; Mohammed Bawareth¹; Keng Hsu¹; ¹Arizona State University

9:20 AM

Mechanical Characterization of As-built and Post-processed In-situ Alloyed Cu-4 at% Cr-2 at% Nb Made via Laser Powder Bed Fusion: *Jackson Smith*¹; David Scannapieco¹; David Ellis²; John Lewandowski¹; ¹Case Western Reserve University; ²NASA Glenn Research Center

9:40 AM

Solid State Welding of Additively Manufactured Type 304L SS: Paul Korinko¹; Jeremy Rogers¹; Timothy Krentz¹; ¹Savannah River National Laboratory

10:00 AM Break

10:20 AM

Design for Inspectability as a Challenge: *Cindy Waters*¹; ¹Naval Surface Warfare Center Carderock Div

10:40 AM

Process Mapping of Fe-3.5Si Produced through Laser Powder Bed Fusion and Relevant Properties: *Patrick Faue*¹; Behzad Rankouhi¹; Dan Thoma¹; Frank Pfefferkorn¹; ¹University of Wisconsin - Madison

11:00 AM

Mechanical Properties of SA508 Gr.3 Low Alloy Steel Using Directed Energy Deposition: *Wonjong Jeong*¹; Young-Bum Chun²; Suk Hoon Kang²; Chang Kyu Rhee²; Chang Hyoung Yoo³; Seongjin Yoo³; Hongmul Kim³; Ho Jin Ryu¹; ¹Korea Advanced Institute of Science & Technology; ²Korea Atomic Energy Research Institute; ³HANA AMT

11:20 AM

Identifying True Cracking States: Challenges and Practices for Crack-Susceptible Alloys in Additive Manufacturing: *Marcus Lam*¹; ¹Monash University

11:40 AM Keynote

Real-time Binder Deposition Tracking and Modeling via Machine Learning Image Processing Methods: Peter Warren¹; Md Shahjahan Hossain²; Pranta Sarkar²; Daniel Homa³; Gary Pickrell³; Ranajay Ghosh²; Ramesh Subramanian⁴; Jayanta Kapat²; *Navin Manjooran*¹; ¹Solve; ²University of Central Florida; ³Virginia Tech; ⁴Siemens Energy Inc

ADDITIVE MANUFACTURING

Additive Manufacturing: Equipment, Instrumentation and In-Situ Process Monitoring — Directed Energy Deposition

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Sneha Prabha Narra, Carnegie Mellon University; Joy Gockel, Colorado School of Mines; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University

Tuesday AM | October 3, 2023 C170 | Greater Columbus Convention Center

Session Chair: Craig Brice, Colorado School Of Mines

8:00 AM Invited

Customized Glove Box for In Situ Monitoring of Laser Directed Energy Deposition: Sarah Wolff¹; Marwan Haddad²; ¹Texas A&M University; ²The Ohio State University

8:40 AM

Two-color Melt Pool Thermal Imaging on Powder-blown Laser-DED to Advance Understanding of Melt Pool Thermal-fluid Physics: *Alexander Myers*¹; Guadalupe Quirarte¹; Jack Beuth¹; Jonathan Malen¹; ¹Carnegie Mellon University

9:00 AM

Real Time Observations of In-Situ Alloying Molybdenum and Ti-6Al-4V in Laser Directed Energy Deposition Additive Manufacturing: *Marwan Haddad*¹; Aslan Bafahm Alamdari¹; Kristina May¹; Hui Wang²; Benjamin Gould³; Sarah Wolff¹; ¹Ohio State University; ²Texas A&M college station; ³Advanced Performance Materials, The Chemours Company



9:20 AM

Exploring a Supervisory Control System Using ROS2 and IoT Sensors: Matthew Roach¹; Bradley Jared¹; ¹University of Tennessee, Knoxville

9:40 AM

Fill Impact Welding: Additive Manufacturing through Ballistic Impact of Metallic Sheets: *Anupam Vivek*¹; Mohammed Abdelmaola¹; Jianxiong Li²; Yu Mao³; Glenn Daehn¹; ¹The Ohio State University; ²Cornell University; ³Applied Impulse Inc.

10:00 AM

Melt Pool Scale Process Monitoring for Laser Hot Wire Additive Directed Energy Deposition: Brandon Abranovic¹; Elizabeth Chang-Davidson¹; Jack Beuth¹; ¹Carnegie Mellon University

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Advanced Ceramics for Environmental Remediation — Session I

Sponsored by: ACerS Engineering Ceramics Division, ACerS Energy Materials and Systems Division

Program Organizers: Alberto Vomiero, Lulea University of Technology; Elisa Moretti, Ca' Foscari University of Venice; Tofik Shifa, Ca'Foscari University of Venice; Clara Santato, Ecole Polytechnique Montreal

Tuesday AM | October 3, 2023 B244/245 | Greater Columbus Convention Center

Session Chair: To Be Announced

8:00 AM Invited

Advanced Materials for Photocatalytic and Photoelectrochemical CO2 Reduction: *Oomman Varghese*¹; ¹University of Houston

8:30 AM Invited

Confinement and Heterointerface Re-construction in 2D Materials for Water Oxidation Catalysis: Kassa Ibrahim¹; ¹Ca'Foscari University of Venice

9:00 AM Invited

Photocatalysis and Photosensitization Using Atomically Precise Metal Nanoclusters for Solar Energy Harvesting and Conversion: *Nicola Pinna*¹; Ye Liu¹; Yu Wang¹; ¹Humboldt-Universitaet zu Berlin

9:30 AM Invited

Copper Oxide Nanoparticles as a Metal Ion Source for Enhanced Catalytic Stability of Laccase: *Olivia Graeve*¹; F. Javier Suarez¹; Sergio Ojeda Santillán¹; Rafael Vazquez-Duhalt²; ¹University of California San Diego; ²Universidad Nacional Autónoma de México

10:00 AM Break

10:20 AM Invited

The Multipurpose Aspect of Thin Film Ceramic Materials for Photovoltaics and Photocatalysis: *Alessandro Romeo*¹; Elisa Artegiani¹; Narges Thorabi¹; ¹University of Verona

10:50 AM Invited

Highly Performing Solar-Light-Driven Photodegradation of Metronidazole by Nickel Hexacyanoferrate Nanocubes: *Federico Polo*¹; Edlind Lushaj¹; Matteo Bordin¹; Letizia Liccardo¹; ¹Ca' Foscari University of Venice

NUCLEAR ENERGY

Advanced Characterization of Materials for Nuclear, Radiation, and Extreme Environments IV — Mechanical Testing/Thermal Properties

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Caitlin Kohnert, Los Alamos National Laboratory; Cody Dennett, Commonwealth Fusion Systems; Samuel Briggs, Oregon State University; Michael Short, Massachusetts Institute of Technology; Cheng Sun, Idaho National Laboratory; Khalid Hattar, University of Tennessee Knoxville; Yuanyuan Zhu, University of Connecticut

Tuesday AM | October 3, 2023 A125 | Greater Columbus Convention Center

Session Chair: Michael Short, Massachusetts Institute of Technology

8:00 AM Invited

Accelerated Creep Testing for High-Temperature and Nuclear Applications: *Calvin Stewart*¹; Jacob Pellicotte¹; Md Abir Hossain¹; ¹The Ohio State University

8:30 AM

Effect of Strain Rate on Tensile Properties of C250 Maraging Steel: *Makhan Singh*¹; Fisseha Weldemariam¹; Naresh Bhatnagar¹; ¹Indian Institute of Technology Delhi

8:50 AM

In Situ SEM Nanomechanics at Cryogenic Temperatures: *Eric Hintsala*¹; Kevin Schmalbach¹; Sanjit Bhowmick¹; Douglas Stauffer¹; ¹Bruker Nano Surfaces and Metrology

9:10 AM Invited

Assessing the Ability of Nuclear Fuel Performance Codes to Predict Radially Resolved Properties in Oxide Fuels: *Marat Khafizov*¹; Joshua Ferrigno¹; Aysenur Toptan²; Fabiola Cappia²; Tsvetoslav Pavlov²; ¹Ohio State University; ²Idaho National Laboratory

9:40 AM

Accelerated Assessment of Microstructure-Mechanical Property Relationships in Ni Based Superalloys: *Kevin Schmalbach*¹; Toshio Osada²; Eric Hintsala¹; Douglas Stauffer¹; Takahito Ohmura²; ¹Bruker Nano; ²National Institute for Materials Science

10:00 AM Break

10:20 AM

Interdiffusion Behaviour of UN with Zircaloy-4 via Diffusion Couple Studies: Max Salata-Barnett¹; James Buckley¹; James Paul²; Dave Goddard³; Tim Abram¹; ¹University of Manchester; ²The National Nuclear Laboratory; ³The National Nuclear Laboratory

10:40 AM

Thermodynamic Modeling and Calculation of Phase Formation Processes Under Irradiation Conditions of Uranium-plutonium Nitride Fuel: *Alexander Slobodov*¹; Alexey Krasikov¹; Mikhail Radin¹; Anna Ivanova¹; ¹St.Petersburg Institute of Technology; ITMO University



CERAMIC AND GLASS MATERIALS

Advances in Dielectric Materials and Electronic Devices — Thermoelectrics & Magnetoelectrics; Ionic Conduction, EM Sheiding, & Quantum 2.0

Sponsored by: ACerS Electronics Division

Program Organizers: Amar Bhalla, University of Texas; Ruyan Guo, University of Texas at San Antonio; Rick Ubic, Boise State University; Matjaž Spreitzer, Jožef Stefan Institute; Tanmoy Maiti, IIT Kanpur

Tuesday AM | October 3, 2023 B231 | Greater Columbus Convention Center

Session Chair: Matjaz Spreitzer, Jozef Stefan Institute

8:00 AM Invited

Anderson's Localization in Perovskites: Excellent Tool to Decouple Electron and Heat Transport in Oxide Thermoelectrics: *Tanmoy Maiti*¹; IIT Kanpur

8:20 AM

Finite Elements Simulation of Magnetoelectric Materials Fabricated by Additive Manufacturing: *William Flynn*¹; Ruyan Guo¹; Amar Bhalla¹; ¹University of Texas at San Antonio

8:40 AM

Magnetically Assisted High-specificity Targeted Drug Delivery Using Magnetoelectric Nanorobots: Nandan Murali¹; Simran Kaur Rainu¹; Neetu Singh¹; Soutik Betal¹; ¹Indian Institute of Technology Delhi, New Delhi

9:00 AM

Magnetoelectric Nanorobot - A Revolutionary Nanoscale Device for Targeted Treatment: *Soutik Betal*¹; Amar Bhalla²; Ruyan Guo²; ¹IIT Delhi; ²University of Texas- San Antonio

9:20 AM

Processing and Properties of Diamond Crystals for Quantum Applications: Lakshmi Ramasubramanian¹; Manish Singh¹; *Raj Singh*¹; ¹Oklahoma State University

9:40 AM

Fabrication of Fexible Nanocomposites Based on PVC, Electrical and Magnetic Nano-fillers for the Shielding Against Unwanted Electromagnetic Waves: *HM Fayzan Shakir*¹; Tingkai Zhao¹; Khadija Zubair¹; ¹Northwestern Polytechnical University

10:00 AM

VQE Simulation of Van Der Walls Materials: *Matthew Trippy*¹; Amar Bhalla¹; Ruyan Guo¹; ¹University of Texas at San Antonio

NUCLEAR ENERGY

Ceramics for New Generation Nuclear Energy System Application — Ceramic Fuels

Sponsored by: ACerS Energy Materials and Systems Division, TMS: Nuclear Materials Committee

Program Organizers: Lingfeng He, North Carolina State University; Krista Carlson, University of Nevada, Reno; Maik Lang, University of Tennessee; Jake Amoroso, Savannah River National Laboratory; Brian Riley, Pacific Northwest National Laboratory; Enrique Saez, Clemson University; Jinsuo Zhang, Virginia Polytechnic Institute and State University

Tuesday AM | October 3, 2023 A124 | Greater Columbus Convention Center

Session Chairs: Wen Jiang, North Carolina State University; Michael Moorehead, Idaho National Laboratory

8:00 AM Invited

Status and Outlook of Tristructural Isotropic Coated Particle Fuel Technology: *Tyler Gerczak*¹; John Hunn¹; ¹Oak Ridge National Laboratory

8:30 AM

Thermal Property Mapping of Surrogate TRISO Particles: Michael Moorehead¹; Zilong Hua¹; Boone Beausoleil¹; David Hurley¹; ¹Idaho National Laboratory

8:50 AM

Analysis of Radially Resolved Thermal Conductivity in High Burnup Mixed Oxide Fuel: Joshua Ferrigno¹; Tsvetoslav Pavlov²; Narayan Poudel²; Daniele Salvato²; Brian Merritt³; Alex Hansen³; Troy Munro³; Fabiola Cappia²; Marat Khafizov¹; ¹The Ohio State University; ²Idaho National Laboratory; ³Brigham Young University

9:10 AM Invited

Modeling of Pressure-driven Inter-granular Fracture in High Burnup Structure UO2 during LOCA Using a Phase-field Approach: Wen Jiang¹; ¹North Carolina State University

9:40 AM

Creep Predictions in UO₂ by Atomistic to Meso-scale Simulations: Conor Galvin¹; William Neilson¹; Christopher Matthews¹; David Andersson¹; Michael Cooper¹; ¹Los Alamos National Laboratory

10:00 AM Break

10:20 AM Invited

Advanced Characterization of Nuclear Fuels to Support Qualification of Nuclear Fuels: *Joshua White*¹; ¹Los Alamos National Laboratory

10:50 AM Invited

Thermal Oxidation and Thermodynamics of Uranium Nitride and Uranium Carbide: *Xiaofeng Guo*¹; Vitaliy Goncharov¹; Juejing Liu¹; Sam Karcher¹; Emma Carlsen¹; John McCloy¹; Arjen van Veelen²; Andrew Strzelecki²; Hongwu Xu²; Joshua White²; ¹Washington State University; ²Los Alamos National Laboratory

11:20 AM

High Density Uranium Nitride Fuels for Advanced Nuclear Reactors: *Ryan Finkelstein*¹; Sarah Cole¹; Allyssa Bateman¹; Elizabeth Sooby²; Brian Jaques¹; ¹Boise State University; ²University of Texas San Antonio



11:40 AM

Phase Equilibria and Thermodynamics of Uranium Mononitride Fuel Undergoing Burn-Up in a Lead-cooled Reactor: *Ronald Booth*¹; E. Reece McManus¹; Antoine Claisse²; Theodore Besmann¹; ¹University of South Carolina; ²Westinghouse

MODELING

Computation Assisted Materials Development for Improved Corrosion Resistance — Session II

Program Organizers: Rishi Pillai, Oak Ridge National Laboratory; Brian Gleeson, University of Pittsburgh

Tuesday AM | October 3, 2023 A224 | Greater Columbus Convention Center

Session Chair: To Be Announced

8:00 AM Invited

Dissolution of Metal Nanoparticles in Solution: Atomic-scale Computational Investigation: *Susan Sinnott*¹; Robert Slapikas²; Ismaila Dabo¹; ¹Pennsylvania State University; ²Army Research Laboratory

8:40 AM

Classical Molecular Dynamics Simulation of Electrochemical Oxidation and Dissolution of Platinum Alloy Nanoparticles: *Stephen Holoviak*¹; Ismaila Dabo¹; Susan Sinnott¹; ¹Pennsylvania State University

9:00 AM Invited

Nanoporous High Entropy Alloys: A New Class of Materials with Remarkable Mechanical and Corrosion Properties: *Celine Hin*¹; Jarod Worden¹; ¹Virginia Tech

9:40 AM

On the Effects of Texture and Grain Morphology on Hydrogen Transport Towards Notch Tips: *Alireza Tondro*¹; Hamidreza Abdolvand¹; ¹University of Western Ontario

10:00 AM Break

10:20 AM Panel Discussion

MODELING

Computational Discovery, Understanding, and Design of Multi-principal Element Materials — Session I

Sponsored by: TMS Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Shuozhi Xu, University of Oklahoma; Douglas Spearot, University of Florida; Jia Li, Hunan University; Michael Gao, National Energy Technology Laboratory; Levente Vitos, Royal Institute of Technology (KTH)

Tuesday AM | October 3, 2023 A223 | Greater Columbus Convention Center

Session Chairs: Douglas Spearot, University of Florida; Liang Qi, University of Michigan

8:30 AM Keynote

Computational Studies of Deformation Twinning in BCC Complex Concentrated Alloys: Ganlin Chen¹; Amir Zahiri¹; *Liang Qi*¹; ¹University of Michigan

9:10 AM

ML-Based High-Throughput Search to Identify Refractory High Entropy Alloy with Trade-off Mechanical Properties: *Stephen Giles*¹; Debasis Sengupta¹; Hugh Shortt²; Peter Liaw²; ¹CFD Research Corp; ²University of Tennessee

9:30 AM

A New Modified Embedded Atom Method Potential to Understand Plasticity in VNbTaTiZr High Entropy Alloy: Mashroor Shafat Nitol¹; Khanh Dang¹; Chanho Lee²; Saryu Fensin¹; ¹Los Alamos National Laboratory; ²Auburn University

9:50 AM

The Elastic Properties and Stacking Fault Energy of FeNiMoW: Sarah O'Brien¹; Matthew Beck¹; ¹University of Kentucky

10:10 AM

Effects of Short-range Order in Medium Entropy Alloy CoCrNi: *Shuozhi Xu*¹; Wu-Rong Jian²; Irene Beyerlein³; ¹University of Oklahoma; ²Stanford University; ³University of California, Santa Barbara



NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — 2D Materials

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Indiana University-Purdue University Indianapolis

Tuesday AM | October 3, 2023 B234 | Greater Columbus Convention Center

Session Chairs: Michael Naguib, Tulane University ; Babak Anasori, Indiana University–Purdue University Indianapolis

8:00 AM Keynote

Hydroxide Derived Nanomaterials and Their Properties: Michel Barsoum¹; Hussain Badr¹; ¹Drexel University

8:40 AM Invited

MXenes Beyond Ti₃C₂T_x: Controlling Optical, Electronic, and Thermal Properties through Chemistry: *Christopher Shuck*¹, ¹Rutgers University

9:10 AM

Accelerating MXene Synthesis: High-Yield Ti3C2Tx Flake Production through Shortened Etching and Controlled Delamination Processes: *Valeriia Poliukhova*¹; Babak Anasori¹; ¹Indiana University - Purdue University Indianapolis

9:30 AM

Rapid and Scalable Solid-state Synthesis of 2D Transition Metal Carbo-chalcogenides (TMCCs): Ahmad Majed¹; Michael Naguib¹; ¹Tulane University

9:50 AM

Graphene-metal Composites as High-temperature Electrical Conductors: Hamzeh Kashani¹; Won June Choi¹; Chunghwan Kim¹; *Wonmo Kang*¹; ¹Arizona State University

10:10 AM Break

10:30 AM Invited

Unveiling Nanoscale Strain in Two-dimensional Semiconductors via Near-field Optical Microscopy: Jin Myung Kim¹; Peiwen Ma¹; Soyeong Kwon¹; *SungWoo Nam*¹; ¹University of California, Irvine

11:00 AM

Design of Ordering in Double Transition Metal Mo2Nb2C3Tx MXenes: Brian Wyatt¹; Anupma Thakur¹; Kat Nykiel¹; Zachary Hood²; Shiba Adhikari²; Krista Pulley¹; Wyatt Highland¹; Alejandro Strachan¹; Babak Anasori¹; ¹Purdue University; ²Argonne National Laboratory

11:20 AM

Effect of 2D MXenes on the Properties of ZrC-Ti3C2 Composites: Nithin Chandran¹; Austin Vohrees²; Yooran Im³; *Srinivasa Kartik Nemani*²; Ravi Kumar N V¹; Babak Anasori²; ¹IIT Madras; ²Indiana University-Purdue University; ³Colorado School of Mines

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Energy Storage II; Energy Conversion and Harvesting III

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Krista Carlson, University of Nevada, Reno; Kyle Brinkman, Clemson University; Armin Feldhoff, Leibniz University Hannover; Charmayne Lonergan, Missouri University of Science and Technology; Zhezhen Fu, Pennsylvania State University - Harrisburg; Dhruba Panthi, Kent State University; Janusz Tobola, AGH UST, Faculty of Physics and Applied Computer Science

Tuesday AM | October 3, 2023 B240/241 | Greater Columbus Convention Center

Session Chairs: Eva Hemmer, University of Ottawa; Joe Briscoe, Queen Mary University of London

8:00 AM

Towards Designing Mn- and Fe-rich Cathode Materials in Sodiumion Batteries: *Hugh Smith*¹; Iwnetim Abate¹; ¹Massachusetts Institute of Technology

8:20 AM

Processing and Characterization of Epitaxial Cathode-electrolyte Interfaces in All-solid-state Thin-film Lithium-ion Batteries: *Yumi Ikuhara*¹; Shunsuke Kobayashi¹; Kei Nakayama¹; Craig Fisher¹; Akihide Kuwabara¹; Yuichi Ikuhara²; ¹Japan Fine Ceramics Center; ²The University of Tokyo

8:40 AM

Ceramics Nanocomposite Materials for Novel Energy Harvesting and Heat Management: Zdravko Kutnjak¹; Brigita Rozic¹; Zouhair Hanani¹; Daoud Mezzane²; Mimoun El Marssi³; Hana Ursic¹; Matjaz Spreitzer¹; ¹Jozef Stefan Institute; ²Cadi Ayyad University; ³Univerity of Picardie Jules Verne

9:00 AM

Facile Routes to Synthesis Electrochemical Energy Storage Materials and Their Patterned Deposition to Construct Planar Microsupercapacitors: *Muxuan Yang*¹; Weinan Xu¹; ¹University of Akron

9:20 AM

Modeling and Performance Evaluation of Barocaloric Refrigeration: Naveen Weerasekera¹; Bikram Bhatia¹; ¹University of Louisville

9:40 AM

Oxide-halide Perovskite Composites for Simultaneous Recycling of Piezoceramics and Solar Cells: Yang Bai³; ¹University of Oulu

10:00 AM Break

10:20 AM

Processing and Performance of High Entropy Oxide as Anodes for Lithium-ion Batteries: *Ting Shen*¹; Guozhong Cao²; Rajendra Bordia¹; ¹Clemson University; ²University of Washington

10:40 AM

Tailoring the Sulfur Electrode for Enhanced Kinetics and Longevity of Li-S Batteries: Yuxuan Zhang¹; Han Wook Song²; Sunghwan Lee¹; ¹Purdue University West Lafayette; ²Korea Research Institute of Standards and Science



11:00 AM

Application of Coal-derived Graphites as Lithium-ion Battery Anodes: Kody Wolfe¹; Caleb Gula¹; Abigail Paul¹; Yahya Al-Majali¹; John Staser¹; Jason Trembly¹; ¹Ohio University

CERAMIC AND GLASS MATERIALS

Engineering Ceramics: Microstructure-Property-Performance Relations and Applications — Engineering Ceramics: Microstructure Characterization and Related Properties

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Young-Wook Kim, University of Seoul; Hua-Tay Lin, Guangdong University of Technology; Junichi Tatami, Yokohama National University; Michael Halbig, NASA Glenn Research Center

Tuesday AM | October 3, 2023 B232 | Greater Columbus Convention Center

Session Chairs: Young-Wook Kim, University of Seoul; Junichi Tatami, Yokohama National University

8:00 AM Keynote

Grain Boundary Atomic Structures, Segregation, Diffusion and Migration in Al2O3: Yuichi Ikuhara¹; ¹University of Tokyo

8:40 AM Invited

In Situ Observations of Local Atomic Behavior Upon Deformation and Fracture Phenomena in Ceramic Materials: *Eita Tochigi*¹; ¹The University of Tokyo

9:10 AM Invited

Heterointerface and Grain Boundary Energies, Chemical Segregation, and Their Influence on Microstructure in Multiphase Ceramics: Komal Syed¹; Nadjia Motley¹; *William Bowman*¹; ¹University of California, Irvine

9:40 AM Invited

Strategy to Estimate Mechanical Properties of Engineering Ceramics by Using AI-determined Grain Information and Simulation: *Manabu Fukushima*¹; Kiyoshi Hirao¹; Yuki Nakashima¹; Kimiya Aoki²; Shingo Ozaki³; Wataru Nakao³; ¹National Institute of Advanced Industrial Science and Technology (AIST); ²Chukyo University; ³Yokohama National University

10:10 AM Break

10:30 AM Invited

Fabrication of High Strength Alumina with Residual Stress by EPD in Strong Magnetic Field: *Tohru Suzuki*¹; Atsushi Nagase²; Hajime Kiyono²; Tetsuo Uchikoshi¹; ¹National Institute for Materials Science; ²Shibaura Institute of Technology

11:00 AM

Synthesis and Microstructural Evolution of Novel Polymer-Derived Silicon Oxycarbide – Exfoliated Montmorillonite Ceramic Nanocomposites: Advaith Rau¹; Kathy Lu¹; ¹Virginia Polytechnic Institute and State University

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Current Issues and Functional Applications — Cooper Distinguished Lecture

Sponsored by: ACerS Glass & Optical Materials Division

Program Organizers: Charmayne Lonergan, Missouri University of Science and Technology; Ashutosh Goel, Rutgers, The State University of New Jersey

Tuesday AM | October 3, 2023 B132 | Greater Columbus Convention Center

Session Chair: Steve Martin, Iowa State University

8:00 AM Invited

Glassy Disorder and Macroscopic Properties: Lothar Wondraczek¹; ¹University of Jena, Germany

8:40 AM Invited

Salt Formation and Detection in Nuclear Waste Glasses: John Bussey¹; ¹Washington State University

9:00 AM Invited

Developing a Method to Characterize the Crystallization and Viscosity Behaviors of Glassy Solid-state Electrolytes: *Stuart Leland*¹; ¹Iowa State University

9:20 AM Invited

StriderNET: A Graph Reinforcement Learning Approach to Optimize Glassy Structures on Rough Energy Landscapes: Vaibhav Bihani¹; ¹Indian Institute of Technology Delhi

9:40 AM Invited

Extending the Glass Formation of Alkali Tellurites: *Yi Wei*¹; Aaron Philips¹; Nils Empen¹; Brittany Brittany²; Lisa Tarman³; Steve Feller¹; ¹Coe College; ²Northeast Community College; ³William Penn High School



FUNDAMENTALS AND CHARACTERIZATION

Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-Performance Relationships — Grain Boundary Properties

Sponsored by: ACerS Basic Science Division

Program Organizers: John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology; Shen Dillon, University of California, Irvine; Wolfgang Rheinheimer, University of Stuttgart; Catherine Bishop, University of Canterbury; Ming Tang, Rice University; Melissa Santala, Oregon State University

Tuesday AM | October 3, 2023

A215 | Greater Columbus Convention Center

Session Chairs: Moritz Kindelmann, FZ Juelich; William Bowman, UC Irvine

8:00 AM Invited

Which Interfaces Matter Most? Variability in Grain Boundary Defect Chemistry and Conductivity in a Concentrated Solid Electrolyte

: Hasti Vahidi¹; Alejandro Mejia²; Shengquan Xuan¹; Angel Cassiadoro²; Abednego Abdi²; David Mebane²; *William Bowman*¹; ¹University of California, Irvine; ²West Virginia University

8:30 AM Invited

Grain Boundary-property Relation in an Improper Ferroelectric Polycrystal: Jan Schultheiss¹; ¹Universitaet Augsburg

9:00 AM

Predicting Grain Boundary States and Transitions in Ferroelectrics: *Catherine Bishop*¹; R. Edwin García²; K.S.N Vikrant³; ¹University of Canterbury; ²Purdue University; ³IIT Delhi

9:20 AM

Influence of Ba Non-stoichiometry and Dopants on the Processing and Properties of Doped BaZrO₃: *Julian Ebert*¹; Dylan Jennings¹; Doris Sebold¹; Qianli Ma¹; Wolfgang Rheinheimer¹; ¹Forschungszentrum Jülich GmbH

9:40 AM

Investigation of Grain Boundaries in SrTiO₃: Correlation of Space Charge and Non-Arrhenius Grain Growth: *Pascal Zahler*¹; Dylan Jennings¹; Wolfgang Rheinheimer¹; ¹Forschungszentrum Juelich

10:00 AM Break

10:20 AM Invited

Highly Conductive Grain Boundaries in Cold Sintered BaZr_{0.7}Ce_{0.2}Y_{0.1}O₃₋₁₉₄₈ Proton Conductors: *Moritz Kindelmann*¹; Sonia Escolastico²; Laura Almar²; Ashok Vayalla¹; Dylan Jennings¹; Wendelin Deibert¹; Wilhelm Albert Meulenberg¹; Wolfgang Rheinheimer¹; Martin Bram¹; Jose Serra²; Joachim Mayer¹; Olivier Guillon¹; ¹Forschungszentrum Jülich GmbH; ²Universitat Politècnica de València

10:50 AM

Mixed Ionic Electronic Conduction Caused by Phase Transformation and Interfacial Segregation in an Entropy Stabilized Oxide: *William Bowman*¹; Hasti Vahidi¹; ¹University of California, Irvine

11:10 AM

Elemental Segregation in Iron Strontium Titanate Solid Solutions: *Dylan Jennings*¹; M. Pascal Zahler¹; Di Wang²; Qianli Ma¹; Wendelin Deibert¹; Christian Kübel³; Stefan Baumann¹; Joachim Mayer⁴; Wolfgang Rheinheimer¹; ¹Institute for Energy and Climate Research, Materials Synthesis and Processing (IEK-1), Forschungszentrum Jülich; ²Institute of Nanotechnology & Karlsruhe Nano Micro Facility, Karlsruhe Institute of Technology; ³Institute of Nanotechnology & Karlsruhe Nano Micro Facility, Karlsruhe Institute of Technology, Technical University Darmstadt; ⁴Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons, Materials Science and Technology (ER-C 2), Forschungszentrum Jülich

11:30 AM

The Formation of Stacking Faults in Barium Zirconate Type Perovskites: *Dylan Jennings*¹; Julian Ebert¹; Hongchu Du²; Qianli Ma¹; Laura-Alena Schäfer¹; Doris Sebold¹; Joachim Mayer²; Wolfgang Rheinheimer¹; ¹Institute for Energy and Climate Research, Materials Synthesis and Processing (IEK-1), Forschungszentrum Jülich; ²Ernst Ruska-Centre for Microscopy and Spectroscopy of Electrons, Materials Science and Technology (ER-C-2), Forschungszentrum Jülich

FUNDAMENTALS AND CHARACTERIZATION

High Entropy Materials: Concentrated Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond IV — Materials Design and Discovery

Sponsored by: TMS Alloy Phases Committee

Program Organizers: Mitra Taheri, Johns Hopkins University; Michael Gao, National Energy Technology Laboratory; Elaf Anber, Johns Hopkins University; Yu Zhong, Worcester Polytechnic Institute; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Yiquan Wu, Alfred University; Jian Luo, University of California, San Diego; Amy Clarke, Colorado School of Mines; Sebastian Lech, Johns Hopkins University

Tuesday AM | October 3, 2023 A216 | Greater Columbus Convention Center

Session Chairs: Michael Titus, Purdue University; Elaf Anber, Johns Hopkins University

8:00 AM Invited

Machine Learning Oxidation Resistance in Refractory Alloys and High-throughput Experiments: Sharmila Karumuri¹; Saswat Mishra¹; Akhil Bejjipurapu¹; Vincent Mika¹; Collin Scott¹; Noah Hallberg¹; Kenneth Sandhage¹; Ilias Bilionis¹; Alejandro Strachan¹; *Michael Titus*¹; ¹Purdue University

8:30 AM Invited

High-Temperature Oxidation of Refractory High Entropy Alloys: Role of Reactive Elements on Scale formation.: *Elaf Anber*¹; David Beaudry¹; Sebastian Lech¹; Nathan Smith²; Michael Waters²; Loic Perriere³; Jean-Phillippe Couzinie³; James Rondinelli²; Chris Wolverton²; Elizabeth Opila⁴; Mitra Taheri¹; ¹Johns Hopkins University; ²Northwestern University; ³University Paris-Est Créteil (UPEC) - IUT; ⁴University of Virginia



9:00 AM

Data and Decision Science-driven Selection of High-entropy Alloy Coatings for Hot Forging Dies: *Tanjore Jayaraman*¹; Ramachandra Canumalla²; ¹United States Air Force Academy; ²Weldaloy Specialty Forgings

9:20 AM

Development of BCC-B2 Microstructure in Nb-Ti-Ru Refractory Superalloys: *Melanie Moczadlo*¹; Eric Lass¹; ¹University of Tennessee-Knoxville

9:40 AM

Computational and Experimental Investigation of High Entropy Superalloys for Enhanced Creep Resistance: Hemanth Maradani¹; Dinc Erdeniz¹; ¹University of Cincinnati

10:00 AM Break

10:20 AM

Entropy Boosting Ionic Conductivity in Crystalline Solids: Yan Chen¹; Hui Wang²; ¹Oak Ridge National Laboratory; ²University of Louisville

10:40 AM

Surface Enhancement of Refractory Multi-principal Element Alloys Containing Al by Gas Nitriding: Yu-Hsuan Lin¹; David Poerschke¹; ¹University of Minnesota

11:00 AM

Understanding Oxidation Behavior and Microstructure Evolution of Si-based Coatings Formed on Refractory Multi-principal Element Alloys: Brady Bresnahan¹; David Poerschke¹; ¹University of Minnesota

MATERIALS-ENVIRONMENT INTERACTIONS

High Temperature Corrosion and Degradation of Structural Materials — III. Molten Salts & Harsh Environments

Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; Richard Oleksak, National Energy Technology Laboratory; David Shifler, Office of Naval Research; Raul Rebak, GE Global Research

Tuesday AM | October 3, 2023 A122 | Greater Columbus Convention Center

Session Chair: To Be Announced

9:00 AM Invited

High Temperature Materials Study for HCl+SO2 and HF+P2O5 Environments: *Ken Kane*¹; Cassidy Carroll¹; Cavin Mooers¹; James Johnson¹; John Mathews¹; David Blanchard¹; ¹JHU/APL

9:30 AM

Liquid Metal Embrittlement Assessment of F82H in Li: Marie Romedenne¹; Charles Hawkins¹; Dean Pierce¹; Bruce Pint¹; ¹Oak Ridge National Laboratory

9:50 AM

Corrosion Behavior of Compositionally Gradient Additively Manufactured 316L Stainless Steel Doped with Hafnium in Eutectic NaCl-MgCl₂ Molten Salt at 700 °C: *Laura Hawkins*¹; Jingfan Yang²; Michael Woods¹; Ruchi Gakhar¹; Lin Shao³; Xiaoyuan Lou²; Daniel Murray¹; Lingfeng He⁴; ¹Idaho National Laboratory; ²Purdue University; ³Texas A&M University; ⁴North Carolina State University

10:10 AM Break

10:30 AM

Evaluating Corrosivity of Molten Salts Using Halide Optical Basicity Index: *Krishnan Raja*¹; Dev Chidambaram²; ¹University of Idaho; ²University of Nevada, Reno

10:50 AM

Stress Assisted Corrosion Behavior of AlO.1CrCoFeNi High Entropy Alloy in a Molten NaCl-Na2SO 4 Salt: *Wylie Simpson*¹; James Earthman¹; ¹University of California Irvine

11:10 AM

Effect of Gaseous Environments and Alloy/Coatings Composition on the Mixed Deposit-induced Degradation of Advanced Alloys/ Coatings: Atharva Chikhalikar¹; David Poerschke¹; ¹University of Minnesota, Twin Cities

SPECIAL TOPICS

History of Materials Science and Engineering — Phenomena and Techniques I

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee, TMS Phase Transformations Committee, TMS Shaping and Forming Committee, TMS: Steels Committee

Program Organizers: Robert Hackenberg, Los Alamos National Laboratory; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Olivier Hardouin Duparc, LSI - CNRS; Kester Clarke, Colorado School of Mines; Goro Miyamoto, Tohoku University

Tuesday AM | October 3, 2023 A213 | Greater Columbus Convention Center

Session Chairs: Goro Miyamoto, Tohoku University; Robert Hackenberg, Los Alamos National Laboratory

8:00 AM Invited

Corrosion Science Over the Past Century: *Gerald Frankel*¹; ¹Ohio State University

8:30 AM Invited

A Historical Overview of the Development of Grain Coarsening Theory: *Eric Payton*¹; Burton Patterson²; ¹University of Cincinnati; ²University of Florida

9:00 AM

The History of Quantitative Fractography and Fractal Geometry in Ceramics: John Mecholsky¹; 1 University of Florida

9:30 AM Invited

A Brief History of Texture and Anisotropy: *Anthony Rollett*¹; Guenter Gottstein²; ¹Carnegie Mellon University; ²RWTH Aachen University

10:00 AM Break

10:20 AM

Floris Osmond and the Discovery of Steel Microstructures: *Ian Zuazo*¹; David Quidort²; ¹ArcelorMittal Global R&D - Industeel; ²Industeel France

10:50 AM

Pierre Armand Jacquet and Electrolytic Polishing: *Olivier Hardouin Duparc*¹; ¹LSI - CNRS



MODELING

Integration between Modeling and Experiments for Crystalline Metals: From Atomistic to Macroscopic Scales V — Session I

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Shaping and Forming Committee, TMS: Materials Characterization Committee, TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Mariyappan Arul Kumar, Los Alamos National Laboratory; Irene Beyerlein, University of California, Santa Barbara; Levente Balogh, Queen's University; Caizhi Zhou, University of South Carolina; Lei Cao, University of Nevada; Josh Kacher, Georgia Institute of Technology

Tuesday AM | October 3, 2023 A225 | Greater Columbus Convention Center

Session Chair: To Be Announced

8:00 AM Invited

Hole Expansion Testing of Thin Sheet Materials at Various Strain Rates for Advanced Constitutive Model Calibration: *Jeremy Seidt*¹; Yannis Korkolis¹; Carter Fietek¹; Hojun Lim²; ¹The Ohio State University; ²Sandia National Laboratories

8:30 AM

Coupled Crystal Plasticity and Phase-field Fracture Model for Single Crystal Plastic Deformation and Failure Prediction: *Aashique Rezwan*¹; Nicole Aragon¹; Hojun Lim¹; ¹Sandia National Laboratories

8:50 AM

Crystal Plasticity Modeling of Ti-6Al-4V Alloy under Uncertainty with Surrogate Optimization and Experimental Validation: *Mohamed Elleithy*¹; Pinar Acar¹; ¹Virginia Tech

9:10 AM

Prediction of Forming Limits for Austenitic Stainless Steel Tubes: Krishna Raju¹; P. Reddy²; Sandeep Saahu¹; *K. Narasimhan*¹; ¹India Institute of Technology Bombay; ²JNTU Anantha Pur

9:30 AM

The Role of Plastic Anisotropy on the Reorientation Trajectories of BCC Polycrystals: *Matthew Kasemer*¹; Ezra Mengiste¹; Dominic Piedmont²; Xuan Zhang³; Mark Messner³; Jun-Sang Park³; ¹University of Alabama; ²University of Illinois at Urbana-Champaign; ³Argonne National Laboratory

9:50 AM

Deformation Behavior of Lightweight Clad Sheet: Experiment and Modeling: *Yongju Kim*¹; Gang Hee Gu¹; Rae Eon Kim¹; Min Hong Seo²; Hyoung Seop Kim¹; ¹POSTECH; ²POSCO

10:10 AM Break

10:30 AM

Plastic Deformation and Failure Predictions of Al-6061 with Inhomogeneities Using Finite Element Modeling Techniques Across Different Length Scales: *Nicole Aragon*¹; Aashique Rezwan¹; Ill Ryu²; Hojun Lim¹; ¹Sandia National Laboratories; ²The University of Texas at Dallas

10:50 AM

Micromechanical Modeling of Additively Manufactured Inconel 625 Informed by in situ High-energy X-ray Diffraction: *Reilly Knox*¹; Robert Carson²; Matt Rolchigo³; Katherine Shanks⁴; Jim Belak²; Darren Pagan¹; ¹Pennsylvania State University; ²Lawrence Livermore National Laboratory; ³Oak Ridge National Laboratory; ⁴Cornell High Energy Synchrotron Source

11:10 AM

The Contribution of the Platform MaterialDigital (PMD) in Building Up a Materials Data Space – Application to Mechanical Testing: *Pedro Dolabella Portella*¹; Peter Gumbsch²; ¹Fraunhofer Inst Werkstoffmechanik IWM; ²Fraunhofer Inst Werkstoffmechanik IWM and Karlsruher Institut für Technologie KIT

FUNDAMENTALS AND CHARACTERIZATION

Interface-mediated Phenomena in Structural Materials — Interface-related Mechanics

Sponsored by: TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Jian Wang, University of Nebraska-Lincoln; Nigel Shepherd, University of North Texas; Andres Bujanda, U.S. Army Research Laboratory; Lin Shao, Texas A&M University

Tuesday AM | October 3, 2023 A214 | Greater Columbus Convention Center

Session Chairs: Xinghang Zhang, Purdue University; Liming Xiong, North Carolina State University

8:00 AM Invited

Mechanical Behavior and Thermal Stability of Nanotwinned Al Alloys: *Xinghang Zhang*¹; Nicholas Richter¹; Yifan Zhang²; Mingyu Gong³; Jian Wang⁴; ¹Purdue University; ²Los Alamos National Laboratory; ³Shanghai Jiaotong University; ⁴University of Nebraska, Lincoln

8:40 AM

Atomistic Dynamics of Pre-existing Edge Dislocations in FCC Metals at High Strain Rates: Arrhenius to Non-Arrhenius Transition: Akarsh Verma¹; Sandeep Singh²; Shigenobu Ogata¹; ¹Osaka University; ²Indian Institute of Technology Roorkee

9:00 AM

Effects of Phase Boundaries on Enhanced Hardness in a Microstructurally Stable Nanocrystalline Ni-based Alloy: Mari-Therese Burton¹; Alicia Koenig¹; Helen Chan¹; Christopher Marvel²; Martin Harmer¹; ¹Lehigh University; ²Louisiana State University

9:20 AM

3D Interface-enabled High Strength and Deformability in Cu/ Nb Nanolaminates: *Justin Cheng*¹; Shuozhi Xu²; Eric Hintsala³; Jon Baldwin⁴; Youxing Chen⁵; Nicolas Fuchs-Lynch⁶; Mauricio De Leo¹; Irene Beyerlein⁶; Nathan Mara¹; ¹University of Minnesota Twin Cities; ²University of Oklahoma; ³Bruker Nano Surfaces; ⁴Los Alamos National Laboratory; ⁵University of North Carolina Charlotte; ⁶University of California Santa Barbara

9:40 AM Invited

Modeling the Interface-Mediated Mechanical, Thermal, Mass Transport and Their Interactions from Atomistic to Microscale: Methodology, Mechanisms, and Applications: *Liming Xiong*¹, Thanh Phan²; ¹North Carolina State University; lowa State University; ²Iowa State University



10:20 AM Break

10:40 AM

Mesoscale Description of Interface-mediated Plasticity: *Jinxin Yu*¹; Jian Han¹; David Srolovitz²; Ngan Alfonso²; ¹City University of Hong Kong; ²Hong Kong University

11:00 AM

Influence of Grain Boundary Sliding on Plastic Deformation in FCC Nanocrystalline Metals: *Jonathan Cappola*¹; Jian Wang²; Lin Li¹; ¹Arizona State University; ²University of Nebraska-Lincoln

11:20 AM

Interface Strengthening in As-cast and Laser-modified Al-Si Eutectic Alloys: Wenqian Wu¹; Bingqiang Wei¹; Amit Misra²; Jian Wang¹; ¹University of Nebraska-Lincoln; ²University of Michigan

11:40 AM

Mechanistic-design of Advanced Hierarchical Ti-Ti₂AlC Metal-MAX Multilayered Nanolaminates: *Skye Supakul*¹; Sid Pathak¹; Krishna Yaddanapudi²; Garritt Tucker³; ¹Iowa State University; ²University of California, Davis; ³Colorado School of Mines

ARTIFICIAL INTELLIGENCE

Leveraging Integrated Computational Materials Engineering for High-fidelity Physics-based and Machine Learning Models — Session I

Sponsored by: TMS: ICME Committee

Program Organizers: William Frazier, Pacific Northwest National Laboratory; Philip Goins, Army Research Laboratory; Lei Li, Pacific Northwest National Laboratory; Yucheng Fu, Pacific Northwest National Laboratory

Tuesday AM | October 3, 2023 A120 | Greater Columbus Convention Center

Session Chair: Evan Lieberman, Los Alamos National Laboratory

8:00 AM

A Machine Learning Framework for Material-systems Intelligence: Christopher Rudolf¹; ¹US Naval Research Laboratory

8:20 AM

Digital Polycrystalline Microstructure Generation Using Diffusion Probabilistic Models: Patxi Fernandez-Zelai¹; Jiahao Cheng¹; Jason Mayeur¹; Amir Ziabari¹; Michael Kirka¹; ¹Oak Ridge National Laboratory

8:40 AM

Application of Machine Learning Framework in Predicting Creep Response of High Temperature Alloys: *Md Abir Hossain*¹; Jacob Pellicotte¹; Calvin Stewart¹; ¹The Ohio State University

9:00 AM

Simulating Macroscale Microstructures Using Advanced Programming and Numerical Methods: Evan Lieberman¹; Caleb Yenusah¹; Adrian Diaz¹; Ricardo Lebensohn¹; Nathaniel Morgan¹; ¹Los Alamos National Laboratory

9:20 AM

Hybrid Simulation Method Based on Molecular Dynamics and Machine Learning to Improve Property Prediction with Lower Computational Cost in Complex System: *Owais Ahmad*¹; Somnath Bhowmick¹; ¹IIT Kanpur

9:40 AM

New Refractory High Entropy Alloys Discovery by Physics Discovery: Lele Luan¹; Chen Shen¹; Scott Oppenheimer¹; Feng Zhang¹; Ryan Jacobs¹; Liping Wang¹; ¹GE Research

10:00 AM Break

10:20 AM

Novel Convolutional-Recurrent Hybrid Neural Network for Predicting Fission Gas Release in UO₂ Nuclear Fuel: *Peter Toma*¹; Md Muntaha¹; Joel Harley¹; Michael Tonks¹; ¹University of Florida

10:40 AM

Robotic Bending of Craniomaxillofacial Graft Fixation Plates: Brian Thurston¹; Javier Vazquez-Armendariz¹; Luis Olivas-Alanis¹; Tobias Mahan¹; Ciro Rodriguez¹; Michael Groeber¹; Stephen Niezgoda¹; Hany Emam¹; Roman Skoracki¹; Jian Cao¹; Glenn Daehn¹; David Dean¹; ¹The Ohio State University

LIGHTWEIGHT ALLOYS

Light Metal Technology — Aluminum Casting and Diecasting

Program Organizers: Xiaoming Wang, Purdue University; Alan Luo, Ohio State University

Tuesday AM | October 3, 2023 A212 | Greater Columbus Convention Center

Session Chair: Jiashi Miao, Ohio State University

8:00 AM

Assessment of Mechanical Behavior of Tilt Poured A201 and Nb Doped A356 Alloy in Correlation of CT Scan Metrics with Finite Element Simulations: *Kamil Armagan Gul*¹; Can Dizdar¹; Ozgur Aslan²; Derya Dispinar¹; Eyüp Kayali¹; ¹Istanbul Technical University; ²Atilim University

8:20 AM

Assessment of Material Behavior Models to Simulate Cast Aluminum Alloy Mechanical Behaviors: *Kamil Armagan Gul*¹; Derya Dispinar²; Eyüp Kayali¹; Ozgur Aslan³; ¹Istanbul Technical University; ²Foseco Non Ferrous; ³Atilim University

8:40 AM

Characterisation of A2O1 Alloy Produced by Low Pressure Die Casting into Resin Sand Moulds: *Ali Kalkanli*¹; Ahmet Altun²; Cem Cetinkaya²; Levent Subasi³; Bars Bilal Altıntas³; Erdem Bektas³; Guray Akbulut³; ¹Middle Technical University; ²Altun Foundry; ³TE

9:00 AM

Effect of Melt Thermal-rate Treatment on Microstructure and Mechanical Properties in Al-Zn-Mg-Cu Alloy Billets Fabricated by Direct-chill Casting: *Byung-joo Kim*¹; Young-Hee Cho¹; Hyun-Seok Cheon¹; Jisu Kim¹; Su-Hyeon Kim¹; ¹Korea Institute of Materials Science

9:20 AM

Evolution of Spheroidal -AlFeSi Phase in 1200 Aluminum by 3D Visualization Using FIB-SEM: *Mami Narita*¹; Hisashi Sato¹; Yoshimi Watanabe¹; Tetsuya Motoi²; Hideo Yoshida³; ¹Nagoya Institute of technology; ²UACJ Foil Corporation; ³ESD Laboratory



9:40 AM

Role of Alloying Elements and Solidification Conditions on the Evolution of Fe-rich Intermetallic Phases in Recycled Al-Si Alloys with Higher Fe: *Nagasivamuni Balasubramani*¹; Michael Moodispaw¹; Gabriel Garcia¹; Chuan Zhang²; Alan Luo¹; ¹The Ohio State University; ²CompuTherm

10:00 AM Break

10:20 AM

Mechanical Property Comparison of Al11Si Wheels Grain Refined by Ti, Nb and Nucleant 1582: Ferhat Aydogan¹; Kerem Dizdar²; Hayati Sahin³; Elvan Mentese¹; *Derya Dispinar*³; ¹Doktas Wheels; ²Istanbul Technical University; ³Foseco

10:40 AM

Mechanical Property of Nb Grain Refined AlSi11 Alloy: Kerem Dizdar¹; Semih Ates¹; Ozan Guler²; Gokhan Basman³; Derya Dispinar⁴; Fahir Arisoy¹; ¹Istanbul Technical University; ²Kormetal; ³Eti Krom; ⁴Foseco

11:00 AM

Optimization of Die Casting Process with Various Oxygen Concentration: *Gi-Geun Hong*¹; Yoon Suk Choi²; Youngcheol Lee¹; ¹Korea Institute of Industrial Technology; ²Pusan National University

11:20 AM

Investigation on the Grain Refinement of Mg-Al Alloys by Superheating Process Using Rapid Solidification Process: Sungsu Jung¹; Yongho Park²; Youngcheol Lee¹; ¹Korea Institute of Industrial Technology; ²Pusan National University

CERAMIC AND GLASS MATERIALS

Manufacturing and Processing of Advanced Ceramic Materials — New Advances in Ceramic Processing II: Conventional vs. Additive Manufacturing

Sponsored by: ACerS Manufacturing Division

Program Organizers: Bai Cui, University of Nebraska-Lincoln; James Hemrick, Oak Ridge National Laboratory; Mike Alexander, Allied Mineral Products; Eric Faierson, Iowa State University; Keith DeCarlo, Blasch Precision Ceramics

Tuesday AM | October 3, 2023 B233 | Greater Columbus Convention Center

Session Chairs: Alexis Lewis, National Science Foundation; Eduardo Saiz Gutierrez, Imperial College London

8:00 AM Invited

Trends and Opportunities in Manufacturing and Processing of Advanced Ceramic Materials at the National Science Foundation: *Alexis Lewis*¹; ¹National Science Foundation

8:30 AM Invited

Ceramic Powder Processing ("Think Like a Particle?" or Perhaps "Think Like a Defect?"): *William Carty*¹; Hyojin Lee¹; ¹New York State College of Ceramics at Alfred University

9:00 AM

In Situ Video Monitoring of Zirconium Active Braze Alloy for Joining Al₂O₃ to Kovar: *Anthony McMaster*¹; Anne Grillet¹; Pankaj Kumar²; Patrick Price¹; ¹Sandia National Laboratories; ²University of New Mexico

9:20 AM

Design of a Polymer-Metal-Nanoparticle System for Polymer Infiltration and Pyrolysis to Form Ceramic Composites: Jared Delcamp¹; Kara Martin²; Nicholas Posey¹; Katherine Acord²; Christina Thompson³; Matthew Dickerson²; ¹UES/AFRL; ²AFRL; ³University of Kentucky/AFRL

9:40 AM Invited

Embedded Printing in Ceramics: *Eduardo Saiz*¹; Shitong Zhou¹; Iuliia Tirichenko¹; Harry Payne¹; Yinglun Hong¹; Florian Bouville¹; Xun Zhang²; Philip Withers²; ¹Imperial College of London; ²University of Manchester

10:10 AM Break

10:30 AM Invited

Additive Manufacturing of Transparent Optical Ceramics: *Yiquan Wu*¹, ¹Alfred University

11:00 AM Invited

Tailoring Thermal Insulation Ceramic Architectures from Additive Manufacturing: Shenqiang Ren¹; ¹University at Buffalo, The State University of New York

11:30 AM Invited

Binder Jet Additive Manufacturing for Advanced Ceramics: *Nicholas Ku*¹; Animesh Bose²; Mathew Ivill¹; Lee Magness¹; Jeffrey Swab¹; Steven Kilczewski¹; Kristopher Behler¹; Lionel Vargas-Gonzalez¹; ¹DEVCOM - Army Research Laboratory; ²Optimus Alloys

ARTIFICIAL INTELLIGENCE

Materials Informatics for Images and Multidimensional Datasets — Session II

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division

Program Organizers: Amanda Krause, Carnegie Mellon University; Alp Sehirlioglu, Case Western Reserve University; Daniel Ruscitto, GE Research

Tuesday AM | October 3, 2023 A121 | Greater Columbus Convention Center

Session Chair: Daniel Ruscitto, GE Research

8:00 AM Invited

The Conundrum of Ambiguous Feature Sets in Materials Informatics for Images: *Kevin Field*¹; Gabriella Bruno¹; Matthew Lynch¹; Ryan Jacobs²; Dane Morgan²; ¹University of Michigan; ²University of Wisconsin

8:30 AM

Machine Learning Segmentation Methods for Fatigue Fracture Surface Defect Analyses: Austin Ngo¹; *Oluwatumininu Adeeko*¹; David Scannapieco¹; John Lewandowski¹; ¹Case Western Reserve University

8:50 AM

Using Computer Vision to Cluster Fatigue Life Based on Small Crack Characteristics: *Katelyn Jones*¹; Paul Shade²; Reji John²; Elizabeth Holm³; Anthony Rollett¹; ¹Carnegie Mellon University; ²Air Force Research Lab; ³University of Michigan



9:10 AM Invited

Efficient Void Shape Optimization Using Deep Generative Convolutional Neural Networks: Zihan Wang¹; Anindya Bhaduri²; Sandipp Krishnan Ravi²; Piyush Pandita²; Changjie Sun²; Liping Wang²; ¹University of Connecticut; ²GE Research

9:40 AM

Out-of-Domain Prediction of Material Property Using Deep Learning: Thomas Lu¹; Aarti Singh¹; ¹Carnegie Mellon University

10:00 AM Break

10:20 AM

Predicting the Occurrence and Mechanism of Liquid Metal Embrittlement Using Machine Learning: *Benjamin Begley*¹; Justin Norkett¹; Cameron Frampton¹; Victoria Miller¹; ¹University of Florida

10:40 AM

Topic Modelling Framework for Rapid Digestion of Additive Manufacturing Literature: *Benjamin Glaser*¹; ¹Carnegie Mellon University

NANOMATERIALS

Nanotechnology for Energy, Environment, Electronics, Healthcare and Industry — Session I

Sponsored by: ACerS

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday AM | October 3, 2023 B235 | Greater Columbus Convention Center

Session Chairs: Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech; Xin Gui, University of Pittsburgh

8:00 AM Invited

Sustainable and Distinctive Access to Metal-Organic Frameworks: Wenyang Gao¹, ¹Ohio University

8:20 AM Invited

Magnetism Induced in a New High-temperature Phase of MnBi Crystals Stabilized by Crystallographic Disorder: Xin Gui¹; ¹University of Pittsburgh

8:40 AM Keynote

Nanocomposite Mechanics Predicted for High Volume Fractions with Particle Contact Methods and Piezospectroscopy: Peter Warren¹; Ranajay Ghosh²; Seetha Raghavan³; Daniel Homa⁴; Gary Pickrell⁴; *Navin Manjooran*¹; ¹Solve; ²University of Central Florida; ³Embry-Riddle University; ⁴Virginia Tech

9:00 AM

Nanoparticles Against Various Types of Bacteria: A Concise Review: Ikhazuagbe Ifijen¹; Presley Ohikhena²; Best Atoe³; *Doreen Omorogbe*⁴; ¹Rubber Research Institute of Nigeria; ²Roadmap Construction Company Limited; ³Worldwide Healthcare; ⁴University Basic Education

9:20 AM

Cool Coat: A Wearable Solution for Advanced Thermal Management: *Qichen Fang*¹; Ayush Raut¹; Kyle Brittingham¹; Vamsi Krishna Reddy Kondapalli¹; Myoungok Kim¹; Ashley Kubley¹; Vesselin Shanov¹; ¹University of Cincinnati

9:40 AM

Development and Dissemination of Reference Materials of SWCNT Dispersions as Conductive Additive for Secondary Battery Electrode: Jooyeon Ha¹; Boram Jeon¹; Hoyoun Yoo¹; ¹Korea Testing Laboratory

10:00 AM Break

10:20 AM

Coating and Embedding Selenide Nanocrystals for Optical Applications: Hong Huang¹; ¹Wright State University

10:40 AM

Nanoscale GDC Catalyst Infiltration for Mitigating Fuel Electrode Degradation in SOECs: *Emily Ghosh*¹; John-In Lee¹; Jillian Mulligan¹; Uday Pal¹; Srikanth Gopalan¹; Soumendra Basu¹; ¹Boston University

11:00 AM Invited

Materials and Devices for Room-temperature Quantum Memories and Sensors: *Lee Bassett*¹, ¹University of Pennsylvania

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials III

Sponsored by: ACerS Bioceramics Division

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford; Shawn Allan, Lithoz America LLC

Tuesday AM | October 3, 2023 A222 | Greater Columbus Convention Center

Session Chairs: Bikramjit Basu, Indian Institute of Science; Annabel Braem, Katholieke Universiteit Leuven; Sahar Vahabzadeh, Northern Illinois University

8:00 AM

A Novel Polymethylmethacrylate Silicon Nitride Bone Cement: Elia Marin¹; Qing Yang²; Obinna Ajunwa²; Enrico Marsili³; *Bryan McEntire*⁴; Guiseppe Pezzotti¹; ¹Kyoto Institute of Technology; ²Nazarbayev University; ³Nottingham Ningbo China Beacons of Excellence Research and Innovation Institute; ⁴SINTX Technologies, Inc.

8:20 AM

Better Osteogenesis of Electrically Active Hydroxyapatite-Calcium Titanate Biocomposites in a Rabbit Animal Model: *Prafulla Mallik*¹; Bikramjit Basu²; Kantesh Balani³; ¹Indira Gandhi Institute of Technology Sarang; ²IISc Bangalore ; ³IIT Kanpur

8:40 AM Invited

Organic/Inorganic Hybrid Micelle Nanostructure for Near Infrared Biomedical Photonics: *Kohei Soga*¹; Masakazu Umezawa¹; Masao Kamimura¹; ¹Tokyo University of Science

9:00 AM

Surface Modification of Titanium by Physical and Chemical Routes for Hard Tissue Regeneration: Sahar Vahabzadeh¹; Dexter Kling¹; ¹Northern Illinois University

9:20 AM Invited

3D Printing and Natural Medicine: Convergence of Knowledge to Treat Bone Disorders: *Susmita Bose*¹; ¹Washington State Universit



BIOMATERIALS

Next Generation Biomaterials — American Ceramics Society Bioceramics Division Awards Presentations

Sponsored by: ACerS Bioceramics Division

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford; Shawn Allan, Lithoz America LLC

Tuesday AM | October 3, 2023 A222 | Greater Columbus Convention Center

Session Chairs: Bikramjit Basu, Indian Institute of Science; Annabel Braem, Katholieke Universiteit Leuven; Hrishikesh Kamat, James R. Glidewell Dental Ceramics Inc.

9:40 AM Introductory Comments

9:50 AM Invited

Larry L. Hench Lifetime Achievement Award: Regenerative Engineering and Bioceramics: Cato Laurencin¹; ¹University of Connecticut

10:30 AM Break

10:50 AM Invited

Tadashi Kokubo Award: Design of Glasses for Soft Tissue Engineering - Challenges and Future Research Directions From the Perspective of a Materials Scientist: *Ashutosh Goel*¹; Aditya Kumar²; ¹Rutgers, The State University of New Jersey; ²Missouri S&T

11:20 AM Invited

Global Young Bioceramicist Award: Silicate Based Bioactive Glasses: What Have We Learned So Far?: Saurabh Kapoor¹; ¹Sterlite Technologies

11:40 AM Invited

Bioceramics Young Scholar: Novel Solution to Resolve Machine Default 'Core-Shell' Mode of Bioceramics Binderjetting: Validation in Microstructure and Mechanical Properties: *Srimanta Barui*¹; Deepa Mishra²; Gowtham NH²; Bikramjit Basu²; ¹University of Connecticut Health; ²Indian Institute of Science

LIGHTWEIGHT ALLOYS

Recent Developments in Light-Weight Composites and Materials — Microsrtuctures and Properties II

Sponsored by: TMS: Composite Materials Committee, TMS: Materials Characterization Committee

Program Organizers: Ramasis Goswami, Naval Research Laboratory; Tanjore Jayaraman, United States Air Force Academy; Nikhil Gupta, New York University; Aashish Rohatgi, Pacific Northwest National Laboratory; Sudip Bhattacharya, 6K Inc.

Tuesday AM | October 3, 2023 A211 | Greater Columbus Convention Center

Session Chair: Ramchandra Canumala, Weldaloy

8:00 AM

Effect of Cooling Rate on High Temperature Mechanical Properties Al-Ce Based Alloys: *Obidimma Ikeh*¹; Dinc Erdeniz¹; ¹University of Cincinnati

8:30 AM Invited

Mitigating the Recrystallization Process in Cold Worked Cu-Al2O3 Composite: Ramasis Goswami^{1, 1}Naval Research Laboratory

9:00 AM

Influence of Cryo-FSP on Microstructural Evolution and Mechanical Behaviour of Stir Cast AA5083-SiC Nanocomposite: *Gaurav Rajan*¹; Suhrit Mula¹; ¹IIT Roorkee

9:20 AM

Energy Absorption Property of Aluminum Foam Developed by Reinforcing Aluminum Alloy(LM24) with Cermet Hollow Spheres (CHS) of Diameters Ranging from 3 to 6 mm.: *Fisseha Zewdie Weldemariam*¹; Makhan Singh¹; Naresh Bhatnagar¹; ¹Indian Institute of Technology

9:40 AM

Thermal Expansion of Al-Ca Deformation Processed Metal-metal Composites: Dustin Hickman¹; Trevor Riedemann²; Iver Anderson²; ¹Iowa State University; ²Ames National Laboratory

10:00 AM Invited

High Strength Light-weight Al Matrix Composites Reinforced with Al-Cu-Fe Quasicrystal: Yagnesh Shadangi¹; *Nilay Mukhopadhyay*²; ¹Indian Institute of Technology (BHU); Seoul National University; ²Indian Institute of Technology (BHU)



BIOMATERIALS

Society for Biomaterials: Student Poster Contest + Rapid Fire — Presentations

Sponsored by: Society for Biomaterials

Program Organizers: Roger Narayan, University of North Carolina; Katelyn Swindle-Reilly, The Ohio State University; David Kohn, University of Michigan; Christopher Siedlecki, Penn State College of Medicine

Tuesday AM | October 3, 2023 A221 | Greater Columbus Convention Center

Session Chair: Hamid Hamedi, Ohio State University

8:00 AM Rapid Fire Poster Presentations

FUNDAMENTALS AND CHARACTERIZATION

Synthesis, Characterization, Modeling and Applications of Functional Porous Materials — Porous Materials I

Sponsored by: ACerS Electronics Division, ACerS Basic Science Division

Program Organizers: Lan Li, Boise State University; Winnie Wong-Ng, National Institute of Standards and Technology; Kevin Huang, University of South Carolina; Di Wu, Washington State University

Tuesday AM | October 3, 2023 A220 | Greater Columbus Convention Center

Session Chairs: Lan Li, Boise State University; Winnie Wong-Ng, National Institute of Standards and Technology (NIST)

8:00 AM Keynote

Thermodynamic Stability of Boron Imidazolate Frameworks (BIFs) Synthesized by Mechanochemistry: *Alexandra Navrotsky*¹; Gerson Leonel¹; Cameron Lenox²; Tomislav Friščić²; ¹Arizona State University; ²McGill University

8:40 AM Invited

CO₂ Conversion Catalyzed by Open Metal Sites in Porous Framework Materials: *Wei Zhou*¹; ¹National Institute of Standards and Technology

9:10 AM Invited

Neutron and X-ray Scattering Measurements of Materials for Hydrogen Storage: *Ryan Klein*¹; Craig Brown²; ¹National Renewable Energy Laboratory; ²National Institute of Standards and Technology

9:40 AM Invited

Structure and Sorption Properties of Nickel-3-Amino-Isonicotinate (Ni-NH₂-INA), a Microporous Material for CO₂ Capture Application: *Winnie Wong-Ng*¹; Jeffrey Culp²; Yu-Sheng Chen³; Peter Zavalij⁴; Daniel Siderius¹; Tieyan Chang³; Mingjian Zhang³; ¹National Institute of Standards and Technology; ²National Energy Technology Laboratory; ³University of Chicago; ⁴University of Maryland

10:10 AM Break

10:30 AM Invited

Accelerating Development of Porous Sorbents for Direct Air Capture Using High Throughput Computing and Machine Learning: David Sholl¹; Logan Brabson²; Xiaohan Yu²; Sihoon Choi²; Andrew Medford²; Anuroop Sriram³; ¹Oak Ridge National Laboratory; ²Georgia Institute of Technology; ³Meta AI Research

11:00 AM Invited

Utilizing, Tuning, and Modeling Adsorption in Flexible MOFs for Improved Separation of Binary Mixtures: *Lukas Bingel*¹; Krista Walton¹; ¹Georgia Institute of Technology

11:30 AM

Structures of MOF: More Insight from 17O Solid State NMR: Christian Bonhomme¹; Yining Huang²; Christel Gervais¹; ¹Sorbonne University; ²University of Western Ontario

11:50 AM Invited

Implications of Nanoscale Amorphous Metal Oxide Electrode Materials for Lithium Ion Batteries: *Hui Xiong*¹; ¹Boise State University

CERAMIC AND GLASS MATERIALS

The American Ceramic Society Journal Awards Symposium — American Ceramic Society Journal Awards Session

Sponsored by: ACerS

Program Organizer: John Mauro, Pennsylvania State University

Tuesday AM | October 3, 2023 B230 | Greater Columbus Convention Center

Session Chair: John Mauro, The Pennsylvania State University

8:00 AM Invited

NZSP-MS/PEO-NaBF4 Ceramic-polymer Composite-electrolyte for Conformal Solid-state Na-ion Batteries: Sushmita Dwivedi¹; Sudharshan Vasudevan¹; *Palani Balaya*¹; ¹National University of Singapore

8:30 AM Invited

SiOC-based Strain Gauge with Ultrahigh Piezoresistivity at High Temperatures: *Emanuel Ionescu*¹; Emmanuel Ricohermoso²; Ralf Riedel²; ¹Fraunhofer IWKS; ²TU Darmstadt

9:00 AM Invited

Synchrotron X-ray Multiscale Tomography: Visualization of Heterogeneous Microstructures, Defects, and Microfractures in Ceramics: Gaku Okuma¹; Fumihiro Wakai¹; ¹National Institute for Materials Science

9:30 AM Invited

Vacancy Ordering in Substoichiometric Zirconium Carbide: *Theresa* Davey¹; Ying Chen¹; ¹Tohoku University

10:00 AM Break

10:30 AM Invited

Vibrational Spectroscopy Analysis of Silica and Silicate Glass Networks: Hongshen Liu¹; Huseyin Kaya²; Yen-Ting Lin¹; Andrew Ogrinc¹; Seong Kim¹; ¹Penn State University; ²Corning Inc



11:00 AM Invited

2nd Century Trailblazers Award Lecture: Mechanical Tailoring of Dislocations in Ceramics at Room Temperature: A Perspective: *Xufei Fang*¹; ¹Technical University of Darmstadt; Karlsruhe Institute of Technology

MATERIALS-ENVIRONMENT INTERACTIONS

Thermodynamics of Materials in Extreme Environments — Frontiers of Thermodynamics

Sponsored by: ACerS Basic Science Division, ACerS Energy Materials and Systems Division

Program Organizers: Xiaofeng Guo, Washington State University; Kristina Lilova, Arizona State University; Kyle Brinkman, Clemson University; Alexandra Navrotsky, Arizona State University; Jake Amoroso, Savannah River National Laboratory; Xingbo Liu, West Virginia University; Gustavo Costa, NASA Glenn Research Center

Tuesday AM | October 3, 2023 A123 | Greater Columbus Convention Center

Session Chair: Xiaofeng Guo, Washington State University

8:00 AM Invited

ACerS Navrotsky Award: Thermodynamic Stability, Radiation Damage and Leaching Effects in Tunnel Structured Hollandite Materials: *Kyle Brinkman*¹; ¹Clemson University

8:40 AM Invited

Deep Learning for Large-scale Prediction of Melting Temperature and Materials Properties: *Qijun Hong*¹, ¹Arizona State University

9:10 AM Invited

New Classes of Phase Diagrams for Materials in Extreme Environments: *Wenhao Sun*¹, ¹University of Michigan

9:40 AM Invited

Heat Capacity of Microgram Oxide Samples by Fast Scanning Calorimetry: *Alexandra Navrotsky*¹; Laura Bonatti¹; Ben Brugman¹; Tamilarasan Subramani¹; Kurt Leinenweber¹; ¹Arizona State University

10:10 AM

Formation of Carbon Nanotubes from Multilayered Graphene in Astrophysical Settings: *Abhishek Thakur*¹; Krishna Muralidharan¹; Abu Asaduzzaman²; Thomas Zega¹; Lucy Ziurys¹; ¹University of Arizona; ²The Pennsylvania State University

SPECIAL TOPICS

ACerS Frontiers of Science and Society: The Rustum Roy Lecture

Sponsored by: ACerS

Tuesday PM | October 3, 2023 B130 | Greater Columbus Convention Center

Session Chair: Young-Wook Kim, University of Seoul

1:00 PM Invited

Strategically Aligned Additive Manufacturing: Disruptor to Global Supply Chains and Enabler of Sustainable Societal Development: *Mritunjay Singh*¹; ¹Ohio Aerospace Institute

SPECIAL TOPICS

MS&T23 Plenary Session

Tuesday PM | October 3, 2023 Union Station A | Greater Columbus Convention Center

2:00 PM Welcome Comments

2:05 PM Introductory Comments

2:10 PM Plenary

ACerS Edward Orton, Jr. Memorial Lecture: Microscopy is All You Need: The Rise of Autonomous Science: Sergei Kalinin¹; ¹University of Tennessee, Knoxville

2:50 PM Award Presentation

2:55 PM Introductory Comments

3:00 PM Plenary

AIST Adolf Martens Memorial Steel Lecture: Practical Applications of Physical Metallurgy to Industrial Steel Product Development: *Keith Taylor*¹, ¹SSAB Americas' R&D Department

3:40 PM Award Presentation

3:45 PM Introductory Comments

3:50 PM Plenary

TMS Plenary Speaker: Lightweight Materials and Sustainable Manufacturing: The Role of Integrated Computational Materials Engineering (ICME): Alan Luo¹; ¹Ohio State University

4:30 PM Award Presentation

4:35 PM Concluding Comments



ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — AM Modeling, Simulation and Machine Learning - Structure & Property II

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Computational Materials Science and Engineering Committee, TMS: ICME Committee

Program Organizers: Jing Zhang, Indiana University – Purdue University Indianapolis; Li Ma, Johns Hopkins University Applied Physics Laboratory; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Wednesday AM | October 4, 2023 C150 | Greater Columbus Convention Center

Session Chairs: Jing Zhang, Indiana University - Purdue University Indianapolis; Li Ma, Johns Hopkins University Applied Physics Laboratory

8:00 AM

Finite Element Simulation Based on Constitutive Model of Cellularstructured Metals Produced by Additive Manufacturing: *Hyoung Seop Kim*¹; ¹Pohang University of Science and Technology

8:20 AM

The Effect of Disorder and Constitutive Material on the Mechanical Properties of Bioinspired Honeycombs: Sahar Choukir¹; *Chandra Veer Singh*¹; ¹University of Toronto

8:40 AM

Better Understanding of Cracking Phenomena in High-Strength Superalloys through Multiphysics Modeling in Additive Manufacturing: *Marcus Lam*¹, ¹Monash University

ADDITIVE MANUFACTURING

Additive Manufacturing of High and Ultra-high Temperature Ceramics and Composites: Processing, Characterization and Testing — SLA/Binder Jet and Miscellaneous Techniques

Sponsored by: ACerS Engineering Ceramics Division, ACerS Manufacturing Division, ACerS Young Professionals Network

Program Organizers: Corson Cramer, Oak Ridge National Laboratory; Greg Hilmas, Missouri University of Science and Technology; Lisa Rueschhoff, Air Force Research Laboratory; David Mitchell, Oak Ridge National Laboratory

Wednesday AM | October 4, 2023 C161A/161B | Greater Columbus Convention Center

Session Chairs: David Mitchell, Oak Ridge National Laboratory; Lisa Rueschhoff, Air Force Research Laboratory

8:00 AM

Anisotropic Shrinkage of Additively Manufactured Ceramics Via Stereolithography: Kevin Strong¹; *Brian Lester*¹; Dale Cillessen¹; ¹Sandia National Laboratories

8:30 AM

Residual Stress in Additively Manufactured Alumina via Stereolithography: James Nance¹; Kevin Strong¹; Dale Cillessen¹; ¹Sandia National Laboratories

8:50 AM

Additive Manufacturing of Silicon Nitride Using Stereolithography: *Corson Cramer*¹; Beth Armstrong¹; Trevor Aguirre¹; Steve Bullock¹; David Mitchell¹; ¹Oak Ridge National Laboratory

9:10 AM

Vat Photopolymerization-based Additive Manufacturing of Different Non-oxide Ceramics: Martin Schwentenwein¹; *Shawn Allan*²; ¹Lithoz GmbH; ²Lithoz America LLC

9:40 AM

Towards Binder Jet Additive Manufacturing of High-temperature Ceramics - Understanding the Fundamentals to Overcome Processing Challenges: Daniel Oropeza¹; ¹University of California, Santa Barbara

10:10 AM Break

10:30 AM

Preceramic Polymer Binders for Binder Jet Additive Manufacturing of Silicon Carbide: *Dustin Gilmer*¹; Amy Elliott²; Steve Bullock²; Corson Cramer²; ¹UT-Oak Ridge Innovation Institute; ²Oak Ridge National Laboratory

10:50 AM

Interpenetrating Phase Heterogeneous Ceramic-refractory Metal Composite Materials Created via Additive Manufacturing: David Mitchell¹; Christopher Ledford¹; Trevor Aguirre¹; Corson Cramer¹; Steven Bullock¹; Michael Kirka¹; Michael Lance¹; Tomas Grejtak¹; ¹Oak Ridge National Laboratory

11:10 AM

Carbide Based Fiber Growth by Laser Chemical Vapor Deposition: Kenan Fronk¹; Charlie Cook¹; *Gregory Thompson*¹; ¹University of Alabama



ADDITIVE MANUFACTURING

Additive Manufacturing of Metals: Microstructure, Properties and Alloy Development — Additive Manufacturing - Miscellaneous Section I

Program Organizers: Prashanth Konda Gokuldoss, Tallinn University of Technology; Jurgen Eckert, Erich Schmid Institute of Materials Science

Wednesday AM | October 4, 2023 C151 | Greater Columbus Convention Center

Session Chair: Nathan Crane, Brigham Young University

8:00 AM

Characterization of Biodegradable Mg-1.2Zn-0.5Ca-0.5Mn Alloy Powder for Additive Manufacturing: *Agnieszka Chmielewska*¹; Daehyun Cho¹; Thomas Avey¹; Alan Luo¹; David Dean¹; ¹The Ohio State University

8:20 AM

Development of Titanium-Zirconium-Molybdenum Alloy for Structural Material Usage in Microreactors: John Carpenter¹; Michael Brand¹; Joseph Goodrich¹; Rose Bloom¹; ¹Los Alamos National Laboratory

8:40 AM

Hot Deformation Behaviour of TiAlMn Alloys Fabricated Using Laser Engineered Net Shaping (LENS): *Sibusisiwe Motha*¹; Monnamme Tlotleng²; Nthabiseng Maledi¹; Michael Bodunrin¹; ¹University of the Witwatersrand; ²Council for Scientific and Industrial Research

9:00 AM

Monolithic and Bimetallic M250 Structures via WAAM: Amit Bandyopadhyay¹; Aruntapan Dash¹; *Lile Squires*¹; Jose Avila¹; Susmita Bose¹; Victor Champagne²; ¹Washington State University; ²US Army Research Laboratory

9:20 AM

On the Origin of Cracking in Laser Powder Bed Fusion Processed LaCe(Fe,Mn,Si)13, and the Impact of Post-Processing: *Kun Sun*¹; Moataz Attallah¹; ¹University of Birmingham

9:40 AM

CALPHAD Aided Design of Aluminum Alloys for Additive Manufacturing: *Emily Moore*¹; ¹Lawrence Livermore National Laboratory

10:00 AM Break

10:20 AM

Development of Metal Powders for Additive Manufacturing: *Lorena Perez*¹; Luke Brewer¹; ¹University of Alabama

10:40 AM

Energy-efficient 4D Printing of Green Metals: *Chaolin Tan*¹; ¹Singapore Institute of Manufacturing Technology(SIMTech), A*STAR

11:00 AM

Environmental Degradation of AM-fabricated Structural Alloys: *Guy Ben Hamu*¹; ¹SCE - Shamoon College of Engineering

11:20 AM

Multi-scale Processing-structure-property Relationships for Directed Energy Deposition: *William Kunkel*¹; Dan Thoma¹; ¹University of Wisconsin-Madison

11:40 AM

Origin of Epitaxy Loss in Laser Powder Bed Fusion: *Prosenjit Biswas*¹; Ji Ma¹; ¹University of Virginia

ADDITIVE MANUFACTURING

Additive Manufacturing of Polymeric-based Materials: Challenges and Potentials — Revolutionizing Applications and Unleashing the Potential of Polymerbased Additive Manufacturing

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Ola Rashwan, Pennsylvania State University-Harrisburg: Matthew Caputo, Pennsylvania State University -Shenango; Daudi Waryoba, Pennsylvania State University

Wednesday AM | October 4, 2023 C171 | Greater Columbus Convention Center

Session Chairs: Ola Rashwan, Penn State Harrisburg; Matt Caputo, Penn State Shenango

8:00 AM Introductory Comments

8:05 AM

NdFeB and SmFeN Anisotropic Permanent Magnets in a Polyamide Matrix Made with Additive Manufacturing: James Kemp¹; Haobo Wang²; *M. Parans Paranthaman*¹; ¹Oak Ridge National Laboratory; ²The University of Tennessee, Knoxville

8:25 AM Invited

Polymer Additive Manufacturing of Low-cost Agile Tooling for Sheet Metal Forming: Sam Storts¹; Ryan Hahnlen²; Alex Miller¹; Muheeb Hijazeen¹; Carley Miller¹; Belquis Mbayu¹; Rohan Madan¹; Jacob Ross¹; *Jason Walker*¹; ¹The Ohio State University; ²Honda Development & Manufacturing of America, LLC

8:55 AM

Quick Cure Silicones for Nontraditional Architectures: Anna Guell Izard¹; Lemuel Perez Perez¹; Jeremy Lenhardt¹; Todd Weisgraber¹; Ilse Van Meerbeek¹; A. Melody Golobic¹; ¹LLNL

9:15 AM

Beyond Throughput-resolution-flexibility Tradeoffs with Mutliplexed Fused Fabrication: Jeremy Cleeman¹; Rajiv Malhotra¹; ¹Rutgers University

9:35 AM Question and Answer Period

9:45 AM Break

10:05 AM

Manufacturing of High-Quality Polymer Powders for Selective Laser Sintering Using Thermally Induced Phase Separation and In-situ Sol Gel Process: *Muxuan Yang*¹; Weinan Xu¹; ¹University of Akron

10:25 AM

3D Printing of Silicone-Based Flexible Materials with Embedded Sensors for Soft Robotic Actuator Applications: *Emrah Demirkal*¹; Konstantinos Sierros¹; Derrick Banerjee¹; John Burke¹; Rowan Barto¹; Katarzyna Sabolsky¹; Edward Sabolsky¹, ¹West Virginia University

10:45 AM Question and Answer Period



ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Session III

Sponsored by: ACerS

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Wednesday AM | October 4, 2023 C160A/160B | Greater Columbus Convention Center

Session Chairs: Sean Dobson, University of Cincinnati; Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech

8:00 AM

Development of an Inconel Heat Exchanger via Binder Jetting Additive Manufacturing: *Mark Du*¹; Joseph Hayes²; Kyle Myers²; Wenhua Yu¹; Dileep Singh¹; ¹Argonne National Laboratory; ²ExOne Operating LLC

8:20 AM

Mechanical Properties of Hybrid Additively Manufactured Stainless Steel 316L: Andrew Neils¹; David Hayrikyan²; Gerard Desjardins²; Nathan Post¹; Jack Lesko¹; ¹Roux Institute at Northeastern University; ²bluShift Aerospace

8:40 AM

Sensitivity of Surface Porosity in Powder Bed Fusion to Process Parameters: Corey Smithson¹; Taylor Davis¹; Tracy Nelson¹; *Nathan Crane*¹; ¹Brigham Young University

9:00 AM

Intellectual Property and Legal Challenges for Additive Manufacturing: Van Vekris¹; ¹Marks & Clerk

9:20 AM

Evaluation of Environmentally Assisted Cracking on Wire Arc Additively Manufactured (WAAM) AISI 316LSi: Vishnu Ramasamy¹; John Lewandowski¹; ¹Case Western Reserve University

9:40 AM

Fabrication of Auxetic Metal Structures through Sacrificial Template Replication: Aref Golsorkhi¹; Dinc Erdeniz¹; ¹University of Cincinnati

10:00 AM Break

10:20 AM

The Control of Tailored Microstructure and Thermoelectric Properties in Additively Manufactured Materials: *Connor Headley*¹; Roberto Herrera del Valle¹; Ji Ma¹; Prasanna Balachandran¹; Vijayabarathi Ponnambalam²; Saniya LeBlanc²; Dylan Kirsch³; Joshua Martin³; ¹University of Virginia; ²George Washington University; ³National Institute of Standards and Technology

10:40 AM

Ultra-High Temperature Performance of Additively Manufactured Refractory Alloys: *Kelly Orsborn*¹; Eric Brizes²; Omar Mireles³; Antonio Ramirez¹; ¹Ohio State University; ²NASA GRC; ³NASA MSFC

11:00 AM

Processing of Inconel 718 Structures Via Wire Arc Additive Manufacturing: *Lile Squires*¹; Amit Bandyopadhyay¹; Victor Champagne²; ¹Washington State University; ²US Army Research Laboratory

11:20 AM Invited

Additive Manufacturing High Performance Thermal Systems: Anju Gupta¹; ¹University of Toledo

11:40 AM Keynote

Artificial Grain Image Generation for CNN-Based Segmentation Training in Additively Manufactured Components: Peter Warren¹; Md Shahjahan Hossain²; Pranta Sarkar²; Asher Perez²; Daniel Homa³; Gary Pickrell³; Ranajay Ghosh²; Ramesh Subramanian⁴; Jayanta Kapat²; *Navin Manjooran*¹; ¹Solve; ²University of Central Florida; ³Virginia Tech; ⁴Siemens Energy Inc.

ADDITIVE MANUFACTURING

Additive Manufacturing: Equipment, Instrumentation and In-Situ Process Monitoring — Laser Powder Bed Fusion

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Sneha Prabha Narra, Carnegie Mellon University; Joy Gockel, Colorado School of Mines; Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University

Wednesday AM | October 4, 2023 C170 | Greater Columbus Convention Center

Session Chair: Craig Brice, Colorado School Of Mines

8:00 AM Invited

Quantification of Build Interruptions through In-Process Monitoring and Mechanical Test: *Cameron Gygi*¹, ¹Cdme

8:40 AM

Robust Detection of L-PBF Process Anomalies Using High-speed Onaxis Melt Pool Pyrometry: *Brendan Croom*¹; Steven Storck¹; Vincent Pagan¹; Mary Daffron¹; Ari Lax¹; Robert Mueller¹; ¹JHU Applied Physics Laboratory

9:00 AM

Investigating the Effect of Part Geometry on Microstructure for Laser Powder Bed Fusion of Bismuth Telluride using In-Situ Process Monitoring: *Clay Perbix*¹; Nellie Pestian¹; Joe Walker²; Saniya LeBlanc³; Joy Gockel¹; ¹Colorado School of Mines; ²Arctos; ³George Washington University

9:20 AM

An Efficiency Study of Multi-Mode Laser Profiles: *Austin Tiley*¹; Ersilia Cozzolino²; Edward Herderick³; Antonio Ramirez¹; ¹The Ohio State University; ²University of Naples Ferico II; ³NSL Analytical

9:40 AM Invited

Detecting Failures in Laser Powder Bed Fusion Additive Manufacturing of Lattice Structures Using Multi-sensor Data and Machine Learning: *Prahalad Rao*¹; Anis Asad¹; Ben Bevans¹; Aiden Martin²; Nick Calta²; Brian Giera²; Gabe Gauss²; Philip DePond²; ¹Virginia Tech; ²Lawrence Livermore National Labs



10:20 AM Break

10:40 AM

In-situ Pyrometric Sensing for Real-time AM Process Monitoring and Control: *Steven Storck*¹; Vincent Pagán¹; Brendan Croom¹; MAry Daffron¹; Ari Lax¹; Robert Mueller¹; Mark Foster²; Colin Goodman²; Morgan Trexler¹; ¹Johns Hopkins Applied Physics Laboratory; ²Johns Hopkins University

11:00 AM

Reinforcement Learning for In-situ Melt Pool Control during Laser Powder Bed Fusion: Anant Raj¹; Latif Adurzada¹; Benjamin Stegman¹; Charlie Owen¹; Hany Abdel-Khalik¹; Xinghang Zhang¹; John Sutherland¹; ¹Purdue University

11:20 AM

Implementing Statistical Process Control in Laser Powder Bed Fusion Metal Additive Manufacturing: *Venkatavaradan Sunderarajan*¹; Suman Das¹; ¹Georgia Institute of Technology

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Advanced Ceramics for Environmental Remediation — Session II

Sponsored by: ACerS Engineering Ceramics Division, ACerS Energy Materials and Systems Division

Program Organizers: Alberto Vomiero, Lulea University of Technology; Elisa Moretti, Ca' Foscari University of Venice; Tofik Shifa, Ca'Foscari University of Venice; Clara Santato, Ecole Polytechnique Montreal

Wednesday AM | October 4, 2023 B240/241 | Greater Columbus Convention Center

Session Chair: To Be Announced

8:00 AM Invited

Multifunctional Materials for Emerging Technologies: Federico Rosei¹; ¹INRS Centre for Energy, Materials and Telecommunications

8:30 AM Invited

Building Oxide Semiconductor Structures; From Atom Structure to Microstructure: *Gunnar Westin*¹; ¹Uppsala University

9:00 AM Invited

Design and Structuring of Microporous Ceramics for CO2 Capture and Utilization: *Farid Akhtar*¹; ¹Lulea University of Technology

9:30 AM Invited

In Situ Vibrational Spectroscopy Studies of CO2 Electroreduction at Cu-based Electrocatalysts: *Heng-Liang Wu*¹; ¹National Taiwan University

10:00 AM Break

10:20 AM Invited

Small yet Bright?! Microwave-assisted Synthesis of Upconverting Nanoparticles: *Eva Hemmer*¹; ¹University of Ottawa

10:50 AM

Ceramic Materials for Sustainable Capture and Reuse of Plant Nutrients as Fertilizer: *Allen Apblett*¹; Ciara Kelley¹; Patrick Kitzel¹; ¹Oklahoma State University

PROCESSING AND MANUFACTURING

Advanced Joining Technologies for Automotive Lightweight Structures — Friction Stir Welding (FSW) and Self-pierce Riveting (SPR)

Sponsored by: TMS: Aluminum Committee, ACerS Manufacturing Division

Program Organizers: Yan Huang, Brunel University London; Yingchun Chen, Dura Automotive Systems

Wednesday AM | October 4, 2023 B244/245 | Greater Columbus Convention Center

Session Chairs: Michael Bonner, Saint Clair Systems, Inc.; Yan Huang, Brunel University London

8:00 AM Invited

Multi-materials Dissimilar Joints by Friction Self-piercing Riveting for Lightweight Vehicle Applications: Yong Chae Lim¹; Yuan Li¹; Hui Huang¹; Zhili Feng¹; ¹Oak Ridge National Laboratory

8:30 AM

Dissimilar Material Joining of Superwood to Aluminum by Self-Pierce Riveting and Rivbonding: *Matt Hartsfield*¹; Ali Nassiri¹; Liangbing Hu²; Alan Luo¹; ¹The Ohio State University; ²University of Maryland

8:50 AM

Lightweight Welds of Armor Steels Using Friction Stir Welding: Jhoan Guzman¹; Paul Lida¹; Martin McDonnell²; Antonio Ramirez¹; ¹The Ohio State University; ²The United States Army Combat Capabilities Development Command (DEVCOM) Ground Vehicle Systems Center (GVSC)

9:10 AM

A Novel Self-reacting Tool Design to Weld Thick Aluminium Plates Using Friction Stir Welding - Weld Characteristics and Performance Analysis: Aishwary Mishra¹; Ilyas Hussain²; Jose Immanuel Rajan²; ¹IIST Trivandrum ; ²IIT Bhilai

9:30 AM

Resistance Sintering Technique for Advance Metal Matrix Composite Creation: *Olga Eliseeva*¹; Srinath Kistampally²; Jerry Gould¹; ¹Ewi; ²Martinrea

9:50 AM

The Role of Material Selection and Thermal Cycling on Tool Life in Refill Friction Stir Spot Welding: *Michael Eff*¹; Rafael Giorjao¹; Arnold Wright²; Dave Hofferbert²; ¹Ewi; ²BOND Technologies



MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Materials for Harsh Environments — Session I

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Wednesday AM | October 4, 2023 A120 | Greater Columbus Convention Center

Session Chairs: Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech; Christopher Weinberger, Colorado State University

8:20 AM Keynote

Microstructure and Mechanical Properties of Molded Martian and Lunar Regolith Compressed Pellet Samples: Peter Warren¹; Md Shahjahan Hossain²; Pranta Sarkar²; Asher Perez²; Daniel Homa³; Gary Pickrell³; Ranajay Ghosh²; *Navin Manjooran*¹; ¹Solve; ²University of Central Florida; ³Virginia Tech

8:40 AM

Corrosion Phenomena in Additively Manufactured Aluminum Alloys Containing Quasicrystalline Dispersoids: *Sarshad Rommel*¹; Mingxuan Li¹; Thomas Watson²; Callie Benson³; Rainer Hebert¹; Mark Aindow¹; ¹University of Connecticut; ²Pratt & Whitney; ³Collins Aerospace

9:00 AM

Effect of Laser Surface Treatment on the Corrosion and Fatigue Performance of AA5456-H116 Alloys: Rajaguru Jeyamohan¹; Mohammed A. Shabana¹; Ji Ma¹; James T. Burns¹; John R. Scully¹; ¹University of Virginia

9:20 AM

Performance of High Z and High-density Multifunctional Materials in Harsh Environments: Aria Tauraso¹; Ching Hua Su²; Bradley Arnold¹; Fow-Sen Choa¹; Narasimha Prasad³; Krishna Machuga³; Meghan Brandt¹; Amalthea Trobare¹; Eric Bowman¹; Narsingh Singh¹; *Nicholas Schmidt*³; Leslie Scheurer³; ¹University of Maryland Baltimore County; ²NASA Marshall Space Flight Center; ³NASA Langley Research Center

9:40 AM

Understanding SCC Resistance and Failure in AF96 Welded Joints: Mary Cefaratti¹; Antonio Ramirez¹; *Jenifer Locke*¹; ¹Ohio State University

10:00 AM Break

10:20 AM

Crack Tip pH Measurements in Al-Cu-Mg and Al-Zn-Mg Alloys to Understand Differences In Corrosion Fatigue Behavior: *Gabby Montiel*¹; Jenifer Locke¹; ¹The Ohio State University

10:40 AM

Ceramic Far-Field Passive Wireless Sensors for High Temperature Measurement: *Kevin Tennant*¹; Brian Jordan¹; Noah Strader¹; Daryl Reynolds¹; Mark Jerabek¹; Jay Wilhelm²; Edward Sabolsky¹; ¹West Virginia University; ²Ohio University

11:00 AM

Coarsening and Globularization in Eutectic Ni-Ce Alloys: *Syeda Bushra Haider*¹; Eric Lass¹; ¹University of Tennessee, Knoxville

IRON AND STEEL (FERROUS ALLOYS)

Advances in Understanding of Martensite in Steels II — Crystallography and Modelling

Sponsored by: TMS: Steels Committee

Program Organizers: Ian Zuazo, ArcelorMittal Global R&D - Industeel; Mohsen Asle Zaeem, Colorado School of Mines; Janelle Wharry, Purdue University; Eric Payton, University of Cincinnati; Goro Miyamoto, Tohoku University; Eric Lass, University of Tennessee-Knoxville; Amy Clarke, Colorado School of Mines; MingXin Huang, University of Hong Kong; Kester Clarke, Colorado School of Mines

Wednesday AM | October 4, 2023 A211 | Greater Columbus Convention Center

Session Chairs: Ian Zuazo, ArcelorMittal Global R&D - Industeel; Mohsen Asle Zaeem , Colorado School of Mines; Eric Payton, University of Cincinnati

8:00 AM Invited

Substructure and Crystallographic Features of As-quenched Lath Martensitic Steels: Akinobu Shibata¹; Goro Miyamoto²; Shigekazu Morito³; Akiko Nakamura¹; Taku Moronaga¹; Houichi Kitano¹; Ivan Gutierrez-Urrutia¹; Toru Hara¹; Kaneaki Tsuzaki¹; ¹National Institute for Materials Science; ²Tohoku University; ³Shimane University

8:30 AM Invited

Geometrical Aspect of Variant-pairing of Martensite in Steel: *Tomonari Inamura*¹; Nozomi Takahashi¹; Yuri Shinohara¹; Yasuaki Tanaka²; Hiroyuki Kawata²; ¹Tokyo Institute of Technology; ²Nippon Steel

9:00 AM Invited

Excess Solute Carbon and Retained Tetragonality in Autotempered and Tempered Fe-C Lath Martensite: *Naoki Maruyama*¹; Shinichiro Tabata²; ¹Osaka University; ²Nippon Steel Corporation

9:30 AM

Low Temperature Martensitic Transformations in Fe-Ni Alloys: Insight from Iron Meteorite Analyses: *Frederic Danoix*¹; Raphaele Danoix¹; Fabien Cuvilly¹; Jerome Gattacceca²; Clara Maurel²; Matthieu Gounelle³; Mathieu Roskosz³; Louna Perez³; Mohamed Gouné⁴; ¹Groupe de Physique des Matériaux - CNRS Univ. Rouen Normandy; ²CNRS, Aix-Marseille Univ, IRD, INRAE, CEREGE, Aix en Provence, France; ³Museum National d'Histoire Naturelle; ⁴Institut de Chimie et de la Matière Condensée de Bordeaux

9:50 AM

Phase Field Study of Tempering in Maraging Steels: *Rajeev Ahluwalia*¹; Jakub Mikula¹; Yingzhi Zheng¹; Robert Laskowski¹; Kewu Bai¹; Guglielmo Vastola¹; Yongwei Zhang¹; ¹Institute of High Performance Computing (IHPC), Agency for Science, Technology and Research (A*STAR)

10:10 AM

Substructure Boundary Sliding in Lath Martensite Quantitatively Investigated by Using Molecular Dynamics (MD) Simulation and Experiment: *Meng Zhang*¹; Shuang Gong¹; Junya Inoue¹; ¹The University of Tokyo



CERAMIC AND GLASS MATERIALS

Ceramics and Glasses Modeling by Simulations and Machine Learning — Simulations and Machine Learning I

Sponsored by: ACerS Glass & Optical Materials Division

Program Organizers: Mathieu Bauchy, University of California, Los Angeles; Peter Kroll, University of Texas at Arlington; N. M. Anoop Krishnan, Indian Institute of Technology Delhi

Wednesday AM | October 4, 2023 B231 | Greater Columbus Convention Center

Session Chairs: Mathieu Bauchy, University of California, Los Angeles; Peter Kroll, University of Texas at Arlington

8:00 AM Invited

Using Deep Learning to Develop a Smart and Sustainable Cement Manufacturing Process: Aditya Kumar¹; Taihao Han¹; Jardel P. Gonçalves²; Gaurav Sant³; Narayanan Neithalath⁴; ¹Missouri University of Science and Technology; ²Federal University of Bahia; ³University of California, Los Angeles; ⁴Arizona State University

8:40 AM

Development of a Machine Learned Interatomic Potential for Shock Simulations of Boron Carbide: *Kimia Ghaffari*¹; Salil Bavdekar¹; Douglas Spearot¹; Ghatu Subhash¹; ¹University of Florida

9:00 AM

Comparison of Core Level Chemical Shift in CH₃NH₃PbBr₃ Perovskite Due to Surface Terminations and Orientations of CH₃NH₃ Ion: *Prakash Khanal*¹; Alisha Adhikari¹; Marton Kollar²; Endre Horvath²; Laszlo Forro²; Matthias Muntwiler²; J. Hugo Dil²; Andrew Weber³; Paul Rulis¹; ¹University of Missouri Kansas City; ²Institute of Physics; ³ICFO-Institut de Ciencies Fotoniques

9:20 AM

Generation of Spectral Neighbor Analysis Potentials for Alpha Boron and Comparison of the Results with the Angular Dependent Potential: *Prakash Khanal*¹; Paul Rulis¹; ¹University of Missouri Kansas City

9:40 AM

Lithium Dopant and Surface Effects on the Band Gap of Calcium Hexaboride (CaB6) Using DFT Methods: *Roxana Morton*¹; Alan Hirales²; Victor Vasquez¹; Olivia Graeve²; ¹University of Nevada; ²University of California, San Diego

10:00 AM Break

10:20 AM Invited

Decoding the Structural Genome of Silicate Glasses: *Qi Zhou*¹; ¹UCLA

11:00 AM

Combining Experimental and Simulation Datasets in Machine Learning for Glass Properties Prediction: *Mathieu Bauchy*¹; ¹University of California, Los Angeles

11:20 AM

Machine Learning Prediction of Heat Capacity for Solid Mixtures of Pseudo-binary Oxides: *Julian Barra*¹; Simone Audesse¹; Rajni Chahal¹; Stephen Lam¹; ¹University of Massachusetts Lowell

11:40 AM

Fracture Resistance of Rare-earth Phosphates as Environmental Barrier Coatings under CMAS Corrosion: *Subrato Sarkar*¹; Rahul Rahul¹; Kartik Josyula¹; Keith Bryce¹; Jie Lian¹; Liping Huang¹; Lucy Zhang¹; Suvranu De²; ¹Rensselaer Polytechnic Institute; ²FAMU-FSU College of Engineering

NUCLEAR ENERGY

Ceramics for New Generation Nuclear Energy System Application — Complex Ceramics

Sponsored by: ACerS Energy Materials and Systems Division, TMS: Nuclear Materials Committee

Program Organizers: Lingfeng He, North Carolina State University; Krista Carlson, University of Nevada, Reno; Maik Lang, University of Tennessee; Jake Amoroso, Savannah River National Laboratory; Brian Riley, Pacific Northwest National Laboratory; Enrique Saez, Clemson University; Jinsuo Zhang, Virginia Polytechnic Institute and State University

Wednesday AM | October 4, 2023 A124 | Greater Columbus Convention Center

Session Chairs: Blas Uberuaga, Los Alamos National Laboratory; Kaustubh Bawane, Idaho National Laboratory

8:00 AM Invited

Development Strategy for SiC/SiC Composite Accident Tolerant Fuel Cladding: *Takaaki Koyanagi*²; Yutai Katoh¹; ¹Oak Ridge National Laboratory

8:30 AM Invited

Disordered Enthalpy-entropy Descriptor for High-entropy Ceramics Discovery: Stefano Curtarolo^{1, 1}Duke University

9:00 AM Invited

Processing of High Entropy Metal Carbides: A New Class of Ultrahigh Temperature, Irradiation Resistant Ceramics: *Olivia Graeve*¹; Ved Vakharia¹; ¹University of California San Diego

9:30 AM Invited

Investigating the Effects of Irradiation on Microstructure, Micromechanical and Thermal Properties of High Entropy Carbide Ceramics: *Kaustubh Bawane*¹; Lanh Trinh²; Fei Teng¹; Zilong Hua¹; Linu Malakkal¹; Samuel Ruiz²; Fei Wang²; Bai Cui²; Lingfeng He³; ¹Idaho National Laboratory; ²University of Nebraska-Lincoln; ³North Carolina State University

10:00 AM Break

10:20 AM Invited

Non-Equilibrium Ionic Transport in Oxides: *Blas Uberuaga*¹; ¹Los Alamos National Laboratory

10:50 AM Invited

Investigating the Radiation Response of Oxide Materials with Neutron Scattering: *Eric O'Quinn*¹; Jorg Neuefeind²; Clara Grygiel³; Christina Trautmann⁴; Maik Lang¹; ¹University of Tennessee, Knoxville; ²Oak Ridge National Laboratory; ³CIMAP, CEA-CNRS-ENSICAEN-UNICAEN, 14070 Caen Cedex 5, France; ⁴GSI Helmholtzzentrum für Schwerionenforschung, Technische Universität Darmstadt



11:20 AM Invited

Oxygen Vacancy Formation Energetics in MgO-based High Entropy Oxides from DFT and Experimental Validation: Oriyomi Opetebu¹; Ting Shen¹; Rajendra Bordia¹; *Dilpuneet Aidhy*¹; ¹Clemson University

MODELING

Computational Discovery, Understanding, and Design of Multi-principal Element Materials — Session II

Sponsored by: TMS Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Shuozhi Xu, University of Oklahoma; Douglas Spearot, University of Florida; Jia Li, Hunan University; Michael Gao, National Energy Technology Laboratory; Levente Vitos, Royal Institute of Technology (KTH)

Wednesday AM | October 4, 2023 A223 | Greater Columbus Convention Center

Session Chairs: Shuozhi Xu, University of Oklahoma; Yunzhi Wang, Ohio State University

8:30 AM Keynote

Computational Microstructural Design for Multi-phase Multiprincipal Element Alloys: Shalini Roy Koneru¹; Kamal Kadirvel²; Zachary Kloenne¹; Hamish Fraser¹; *Yunzhi Wang*¹; ¹Ohio State University; ²CompuTherm LLC

9:10 AM

Yield Strength-Plasticity Trade-off and Uncertainty Quantification in ML-based Design of Refractory High-entropy Alloys: *Stephen Giles*¹; Debasis Sengupta¹; Hugh Shortt²; Peter Liaw²; ¹CFD Research Corp; ²University of Tennessee

9:30 AM

Critical Shear Stress Distribution and Average Dislocation Mobility in FeNiCrCoCu High Entropy Alloys Computed via Atomistic Simulations: Yixi Shen¹; Douglas Spearot¹; ¹University of Florida

9:50 AM

Phase Field Simulation of AgCuNi Ternary Alloy: Exploring Ag-CuNi Precipitation and Immiscibility: Serzat Safaltin¹; Pamir Alpay¹; ¹University of Connecticut

10:10 AM Break

10:30 AM Invited

Hybrid Machine Learning Approach for Designing Refractory High Entropy Alloys: *Debasis Sengupta*¹; Stephen Giles¹; Hugh Shortt²; Peter Liaw²; ¹CFD Research Corp; ²University of Tennessee

11:00 AM

Modelling and Simulation on Mechanical Behavior of High-entropy Alloys: Yang Chen¹; Baobin Xie¹; Weizheng Lu¹; Jia Li¹; ¹Hunan University

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Mechanical Properties & Microscopy Applications

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Indiana University-Purdue University Indianapolis

Wednesday AM | October 4, 2023 B234 | Greater Columbus Convention Center

Session Chairs: Wonmo Kang, Arizona State University; Edward Gorzkowski, Naval Research Laboratory

8:00 AM Invited

Microstructure and Micromechanical Behavior of Flash-sintered TiO2: Xinghang Zhang¹; Bo Yang¹; Haiyan Wang¹; ¹Purdue University

8:30 AM Invited

Mechanical and Thermal Properties of Entropy Stabilized Oxides: Ravi Kumar¹; ¹IIT Madras

9:00 AM

Designing Nanostructures in Complex Concentrated and Entropy Stabilized Oxide Thin Films: Huiming Guo¹; *William Bowman*¹; ¹University of California, Irvine

9:20 AM

Graphene-coated Wires for Structural Application: Improved Mechanical Properties, Outstanding Strength Efficiency, and Enhancement Mechanism: *Won June Choi*¹; Maxwel Kulak¹; Uschuas Das¹; Chunghwan Kim¹; Wonmo Kang¹; ¹Arizona State University

9:40 AM Invited

Mechanical Characterization of Thin Films via Constant Strain Rate Membrane Deflection Experiments: Hojang Kim¹; Jae-Hoon Choi¹; Zhuo Feng Lee¹; *Gi-Dong Sim*¹; ¹KAIST

10:10 AM Break

10:30 AM Invited

Nanostructured Surfaces for Quantitative Live Cell Microscopy Applications: Michael Robitaille¹; Joseph Christodoulides¹; Jeff Byers¹; *Marc Raphael*¹; ¹Naval Research Laboratory

11:00 AM

Graphene-metal Composites for Enhanced Mechanical and Electrical Properties: *Jonghyun Eun*¹; Wonjune Choi¹; Jiali Yao¹; Wonmo Kang¹; ¹Arizona State University

11:20 AM

Iron Nanoparticles for Magnetic Imaging Applications: Aleia Williams¹; Lu Liu¹; Charles Johnson¹; Jacqueline Johnson¹; ¹University of Tennessee Space Institute



CERAMIC AND GLASS MATERIALS

Engineering Ceramics: Microstructure-Property-Performance Relations and Applications — Engineering Ceramics: Advanced Processing and Properties

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Young-Wook Kim, University of Seoul; Hua-Tay Lin, Guangdong University of Technology; Junichi Tatami, Yokohama National University; Michael Halbig, NASA Glenn Research Center

Wednesday AM | October 4, 2023 B232 | Greater Columbus Convention Center

Session Chairs: Amjad Almansour, Glenn Research Center-NASA; Jingyang Wang, Institute of Metal Research, Chinese Academy of Sciences

8:00 AM Invited

Unique Route to Grow Oxide Single-crystals Electrochemically: Nobuhito Imanaka¹; ¹Osaka University

8:30 AM Invited

Design and Processing of Advanced Glass and Ceramics for Energy Conversion: Challenges and Perspectives: Federico Smeacetto¹; Milena Salvo¹; Monica Ferraris¹; ¹Politecnico di Torino

9:00 AM

Degradation of SOEC Air Electrodes After Sintering: Brian Gorman¹; Heather Slomski¹; Nicholas Strange²; Sarah Shulda³; Michael Dzara³; David Ginley³; ¹Colorado School of Mines; ²SLAC; ³National Renewable Energy Laboratory

9:20 AM

Mechanical and Thermal Properties and Plasma Resistance of Y-Al-O-Based Ceramics: *Katsumi Yoshida*¹; Shunya Yamamoto¹; Anna Gubarevich¹; Kento Matsukura²; Tetsuya Goto³; ¹Tokyo Institute of Technology; ²Nippon Yttrium Co., Ltd.; ³Tohoku University

9:40 AM

Two Step Sintering of Calcined Alumina Formed by Different Methods: Daniel Delia¹; Hyojin Lee¹; William Carty¹; ¹Alfred University

10:00 AM Break

10:20 AM Invited

Stereolithographic Additive Manufacturing of Ceramic Components with Functionally Geometric Structures: Soshu Kirihara¹; Fiona Spirrett¹; ¹Osaka University

10:50 AM

Developing Defect Pyrochlores with Low Thermal Conductivity: *Sepideh Akhbarifar*¹; ¹Catholic University of America -Vitreous State Lab

11:10 AM

Porous Silicon Nitride Ceramics for RF Radomes Fabricated by Slip Casting: Averyonna Kimery¹; Rodney Trice¹; Carlos Martinez¹; ¹Purdue University

11:30 AM

A Backbone Polymer Investigation into the Impact of α-Al₂O₃ Particulate Morphology on the Rheological Properties of High Ceramic Solid Loading Slips for Slip Casting: *Erin Valenzuela-Heeger*¹; ¹University of Birmingham

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Current Issues and Functional Applications — Glass Research for Optical and Energy-Related Challenges

Sponsored by: ACerS Glass & Optical Materials Division

Program Organizers: Charmayne Lonergan, Missouri University of Science and Technology; Ashutosh Goel, Rutgers, The State University of New Jersey

Wednesday AM | October 4, 2023 B132 | Greater Columbus Convention Center

Session Chairs: N. M. Anoop Krishnan, Indian Institute of Technology Delhi; Steve Feller, Coe College

8:00 AM

Effect of Strain Rate on Mechanical and Fractographic Behaviour of Silica Based Optical Fibers: Saurabh Kapoor¹; ¹Sterlite Technologies

8:20 AM

Pushing Compositional Limits of Optical Fibers Fabricated Using the Molten Core Method: *Miranda Stone*¹; Thomas Hawkins¹; John Ballato¹; ¹Clemson University

8:40 AM

Volatile Crystalline Semiconductor Core Fibers: Thomasina Zaengle¹; John Ballato¹; Ursula Gibson¹; Thomas Hawkins¹; Colin McMillen¹; ¹Clemson University

9:00 AM

New Composition Design to Improve Impact Resistance of Ultrathin Glass for Foldable Display: *Seungho Kim*¹; Gyuin Shim¹; Jinsu Nam¹; Woon Jin Chung²; ¹Samsung Display Co. Ltd.; ²Kongju National University

9:20 AM

Optical Characteristics of Transition Metal Doped II-VI Multifunctional Crystals: Aria Tauraso¹; Amalthea Trobare¹; Leslie Scheurer¹; Ching Hua Su²; Bradley Arnold¹; Fow-Sen Choa¹; Brian Cullum¹; Nicholas Schmidt¹; Narsingh Singh¹; ¹University of Maryland Baltimore County; ²NASA Marshall Space Flight Center

9:40 AM

Er/Yb Co-doped Fully Transparent Yttrium-Lanthanum-Tellurite Glass-Ceramics for ~3 μ m Emission: *Pritha Patra*¹; Annapurna Kalyandurg¹; ¹CSIR-Central Glass and Ceramic Research Institute

10:00 AM Break

10:20 AM

Progress Towards New Sodium Glassy Solid Electrolytes: *Steve Martin*¹; Madison Olson¹; Alec Wakefield¹; Nicholas Oldham¹; Noah Riley¹; Mary Okkema¹; Christopher Martin¹; ¹Iowa State University

10:40 AM

Revealing the Superior Scratch-resistance of Graphene-glass Surfaces: *Sourav Sahoo*¹; Zuhaa Khan²; Sajid Mannan¹; Utkarsh Tiwari¹; N M Anoop Krishnan¹; Nitya Nand Gosvami¹; ¹Indian Institute of Technology (IIT) Delhi; ²National Institute of Technology Srinagar



11:00 AM

Bismuth Borosilicate Glass Containing Eu2O3 Stabilized Gold Nanoparticles with High Third-order Optical Nonlinearity: *Shivani Singla*¹; Venu Achanta²; Om Pandey³; Gopi Sharma⁴; ¹Chandigarh University, Mohali; ²National Physical Laboratory; ³Thapar Institute of Engineering & Technology; ⁴Kanya Maha Vidyalaya

FUNDAMENTALS AND CHARACTERIZATION

Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-Performance Relationships — Mechanics

Sponsored by: ACerS Basic Science Division

Program Organizers: John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology; Shen Dillon, University of California, Irvine; Wolfgang Rheinheimer, University of Stuttgart; Catherine Bishop, University of Canterbury; Ming Tang, Rice University; Melissa Santala, Oregon State University

Wednesday AM | October 4, 2023 A215 | Greater Columbus Convention Center

Session Chairs: R. Edwin García, Purdue University; Shen Dillon, UC Irvine

8:00 AM Invited

Charged Dislocations in Ionic Ceramics: K.S.N. Vikrant¹; *R. Edwin Garcia*²; ¹IIT; ²Purdue University

8:30 AM Invited

Disordered Interfaces in Nanocrystalline Al-Ni-Ce: Origins of Microstructural Stability and Mechanical Performance: *Glenn Balbus*¹; Johann Kappacher²; David Sprouster³; Fulin Wang⁴; Jungho Shin⁵; Yolita Eggeler⁶; Timothy Rupert⁷; Jason Trelewicz³; Daniel Kiener²; Verena Maier-Kiener²; Daniel Gianola⁸; ¹Air Force Research Laboratory, Materials and Manufacturing Directorate; ²Montanuniversität Leoben; ³Stony Brook University; ⁴Shanghai Jiao Tong University; ⁵Gangneung-Wonju National University; ⁶Laboratory for Electron Microscopy, Karlsruhe Institute of Technology; ⁷University of California, Irvine; ⁸University of California, Santa Barbara

9:00 AM

In-situ Measurement of Interfacial Energies at High Temperature Using Micromechanics and Microscopy: *Devon Coffman*¹; Khalid Hattar²; Shen Dillon³; ¹University of Illinois Urbana-Champaign, and CINT at Sandia National Laboratory; ²University of Tennessee, Knoxville; ³University of California, Irvine

9:20 AM

Correlation Between Segregation Behaviors of Ca and Y Doping Atoms and Mechanical Properties in Magnesium Aluminate Spinel: *Alexander Campos Quiros*¹; Metri Zughbi¹; Animesh Kundu¹; Masashi Watanabe¹; ¹Lehigh University

9:40 AM

Cold-rolling of NiTiCu Shape Memory Alloys at Different Temperatures and Post-deformation Annealing and the Study of Interplay between Rolling Temperature, Microstructure, Mechanical and Physical Properties: Shashi Varukuti¹; K S Suresh¹; ¹IIT Roorkee

10:00 AM

A Molecular Dynamics Based Atomistic-scale Study to Investigate Mechanical Properties of 3 Incoherent Non-Arrhenius Grain Boundary: T Dora¹; Sandeep Singh²; *Akarsh Verma*³; Shigenobu Ogata³; Radha Mishra¹; ¹Birla Institute of Technology And Science, Pilani; ²Indian Institute of Technology Roorkee; ³Osaka University

FUNDAMENTALS AND CHARACTERIZATION

High Entropy Materials: Concentrated Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond IV — Theory and Modeling

Sponsored by: TMS Alloy Phases Committee

Program Organizers: Mitra Taheri, Johns Hopkins University; Michael Gao, National Energy Technology Laboratory; Elaf Anber, Johns Hopkins University; Yu Zhong, Worcester Polytechnic Institute; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Yiquan Wu, Alfred University; Jian Luo, University of California, San Diego; Amy Clarke, Colorado School of Mines; Sebastian Lech, Johns Hopkins University

Wednesday AM | October 4, 2023 A216 | Greater Columbus Convention Center

Session Chairs: Michael Gao, National Energy Technology Laboratory; Chandra Veer Singh, University of Toronto

8:00 AM Invited

Predicting Thermodynamic, Thermal, and Mechanical Properties of MoNbTaTi-based Refractory High Entropy Alloys: *Michael Gao*¹; Saro San¹; Yi Wang¹; Vishnu Raghuraman²; Mike Widom²; John Sharon³; ¹National Energy Technology Laboratory; ²Carngie Mellon University; ³Raytheon Technologies Research Center

8:30 AM

Advancing Fast-ionic Conductors Through Rare-earth High Entropy Oxides: MaryKate Caucci¹; Jacob Sivak¹; Saeed Almishal¹; Billy Yang¹; Sai Venkata Gayathri Ayyagari¹; Jerry Bejger²; Jon-Paul Maria¹; Nasim Alem¹; Ismaila Dabo¹; Christina Rost²; Susan Sinnott¹; ¹The Pennsylvania State University; ²James Madison University

8:50 AM

Machine Learning-assisted Property Mapping of Al-Co-Cr-Fe-Ni High-Entropy Alloys from First-principles Calculations: Guangchen Liu¹; Songge Yang¹; Yu Zhong¹; ¹Worcester Polytechnic Institute

9:10 AM

Ordering in Multi-principal Component UHTC Carbides: *Theresa Davey*¹; Ying Chen¹; ¹Tohoku University

9:30 AM

Machine Learning-driven Design of High Entropy Alloys to Catalyze CO2 Reduction Reaction: Chandra Veer Singh¹; Zhi Chen¹; ¹University of Toronto

9:50 AM

Elastic Constants Predictions in Multi-Principal Element Alloys from DFT and Machine Learning: Nathan Linton¹; *Dilpuneet Aidhy*¹; ¹Clemson University



10:10 AM Break

10:30 AM

Dislocation Dynamics in NbMoTaW, Body Centered Cubic Multiprincipal Element Alloy: *Abu Anand*¹; Chandraveer Singh¹; ¹University of Toronto

10:50 AM

A First-principles Study of Calculation Parameters Affecting Vacancy Formation Energy in CoCrNi and CoCrFeNiMn High-entropy Alloys, with Comparison to Creep Activation Energy: Christopher Lafferty¹; Peter Liaw¹; Chelsey Hargather¹; ¹New Mexico Institute of Mining and Technology

11:10 AM

Prediction of the Ordering Behavior of Alloying Atoms and Diverse Properties of Alloy Phases with Complex Compositions and/or Complex Structures: *Bo Wu*¹; Panhong Zhao¹; Cheng Qian¹; Yang Qiao¹; Longju Su¹; ¹Fuzhou University

11:30 AM

Investigation of Mechanical Properties and Ductility-strength Trade-offs in Multi-Principal Element Alloys through First-principles Database: Abu Anand¹; Szu-Jia Liu¹; *Chandraveer Singh*¹; ¹University of Toronto

MATERIALS-ENVIRONMENT INTERACTIONS

High Temperature Corrosion and Degradation of Structural Materials — IV. Ceramics Composites

Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; Richard Oleksak, National Energy Technology Laboratory; David Shifler, Office of Naval Research; Raul Rebak, GE Global Research

Wednesday AM | October 4, 2023 A122 | Greater Columbus Convention Center

Session Chair: To Be Announced

9:00 AM Invited

Solid Particle Erosion of Ceramic Matrix Composites and Environmental Barrier Coatings: Current Progress and Future Direction: *Michael Presby*¹; Jamesa Stokes¹; Bryan Harder¹; ¹NASA Glenn Research Center

9:30 AM

Ablation Resistance of Ultra-high Temperature Polymer-derived Ceramic-matrix Composites: *Elia Zancan*¹; Jon Binner¹; ¹University of Birmingham

9:50 AM

Intermediate Temperature Oxidation of Melt Infiltrated SiC/BN/SiC CMCs: Sarah Beth Holles¹; Elizabeth Opila¹; Katie Detwiler²; ¹University of Virginia; ²Air Force Research Laboratory

10:10 AM

Oxidation of Additively Manufactured AM-ZrB2-30vol%SiC under CO2 Exposure: Marharyta Lakusta¹; William Fahrenholtz¹; Jeremy Watts¹; Gregory Hilmas¹; David Lipke¹; ¹Missouri University of Science and Technology

SPECIAL TOPICS

History of Materials Science and Engineering — Phenomena and Techniques II

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee, TMS Phase Transformations Committee, TMS Shaping and Forming Committee, TMS: Steels Committee

Program Organizers: Robert Hackenberg, Los Alamos National Laboratory; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Olivier Hardouin Duparc, LSI - CNRS; Kester Clarke, Colorado School of Mines; Goro Miyamoto, Tohoku University

Wednesday AM | October 4, 2023 A213 | Greater Columbus Convention Center

Session Chairs: Olivier Hardouin Duparc, LSI - CNRS; Ashley Paz y Puente, University of Cincinnati

8:00 AM Invited

Larry Kaufman, CALPHAD, Digitization of Thermodynamics, and Materials Design: Zi-Kui Liu¹; *Shun-Li Shang*¹; ¹Pennsylvania State University



8:30 AM Invited

The History of Field Ion Microscopy and Atom Probe Tomography: The First Images of Atoms: *Thomas Kelly*¹; Frederic Danoix²; ¹Steam Instruments, Inc.; ²Universite de Rouen

9:00 AM Invited

The Effect of the Kirkendall Effect: The Metastable States and the Energy Barriers to Its Discovery and Acceptance: Ashley Paz Y Puente¹; ¹University of Cincinnati

9:30 AM Invited

200 Years of Recrystallization Studies: *Dorte Juul Jensen*¹; ¹Technical University of Denmark

10:00 AM Break

10:20 AM Invited

Historical Aspects of Polycrystal Plasticity: Ronald Armstrong¹; ¹University of Maryland

10:50 AM

Raman vs. Born, after Eddington vs. Chandrasekhar: Crystals and Stars: Olivier Hardouin Duparc¹; ¹LSI - CNRS

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Hybrid Organic-inorganic Materials for Alternative Energy — Hybrid Organic-inorganic Materials I

Sponsored by: ACerS

Program Organizers: Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Stanciu, Purdue University; Mihaela Jitianu, William Paterson University

Wednesday AM | October 4, 2023 B242/243 | Greater Columbus Convention Center

Session Chairs: Alessandro Martucci, University of Padova; Andrei Jitianu, Lehman College of The City University of New York

8:00 AM Invited

Biomolecular Engineering for Electrochemical Applications in Fuel Cells/Electrolyzers and Beyond: Julie Renner¹; ¹Case Western Reserve University

8:30 AM Invited

Tuned Wettability of Sol-gel Hybrid Coatings for Humid Air and Saturated Vapor Condensation: *Alessandro Martucci*¹; ¹University of Padova

9:00 AM Invited

A Universal Synthesis Strategy for Tuneable Metal-organic Framework Nanohybrid: *Nicola Pinna*¹; Wei Zhang¹; ¹Humboldt-Universitaet Zu Berlin

9:30 AM Invited

2D Double-Transition Metal Carbides (MXenes) for Hydrogen Evolution Reaction: Anupma Thakur¹; Brian Wyatt¹; Babak Anasori¹; ¹Purdue University Indianapolis

10:00 AM Break

10:20 AM Invited

Coarse-Grained Simulations of Polymer-Grafted Nanoparticle Monolayers: Lisa Hall¹; ¹The Ohio State University

10:50 AM Invited

Exfoliated Ceramics for Catalytic Applications: *Alp Sehirlioglu*¹; Kevin Pachuta¹; Benjamin Hirt¹; Huaixuan Cao²; Micah Green²; Emily Pentzer²; ¹Case Western Reserve University; ²Texas A&M University

11:20 AM

Self-healing Engineered Multilayers Coatings for Protection of Magnesium Alloy AZ31B: Andrei Jitianu¹; Mario Aparicio²; Jadra Mosa²; Zainab Abd Al-Jaleel¹; Jennifer Guzman¹; Lisa Klein³; ¹Lehman College of The City University of New York; ²Instituto de Cerámica y Vidrio, Consejo Superior de Investigaciones Científicas (CSIC), Spain; ³Rutgers University

MODELING

Integration between Modeling and Experiments for Crystalline Metals: From Atomistic to Macroscopic Scales V — Session II

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Shaping and Forming Committee, TMS: Materials Characterization Committee, TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Mariyappan Arul Kumar, Los Alamos National Laboratory; Irene Beyerlein, University of California, Santa Barbara; Levente Balogh, Queen's University; Caizhi Zhou, University of South Carolina; Lei Cao, University of Nevada; Josh Kacher, Georgia Institute of Technology

Wednesday AM | October 4, 2023 A225 | Greater Columbus Convention Center

Session Chair: To Be Announced

8:00 AM Invited

A Rule-free Computational Prediction of the Slip-interface Reaction and the Subsequent Microstructure Evolution in Heterogeneous Materials under Deformation: *Liming Xiong*¹; Thanh Phan²; ¹North Carolina State University; Iowa State University; ²Iowa State University

8:30 AM

Modeling Grain Boundary Mediated Plasticity with Massively Parallel Atomistic Simulations: *Timofey Frolov*¹; Nicolas Bertin¹; Alexander Chernov¹; Ian Winter¹; Tomas Oppelstrup¹; ¹Lawrence Livermore National Laboratory

8:50 AM

An Investigation on the Microstructural Uncertainty in Molecular Dynamic Simulations of Polycrystalline Nickel: *Meizhong Lyu*¹; Anqi Qiu²; Elizabeth Holm¹; ¹University of Michigan; ²Carnegie Mellon University

9:10 AM

Effects of Defects on Stress- and Thermally-induced Martensitic Transformation of Nanocrystalline NiTi Alloys: A Molecular Dynamics Study: Zhihao Zhao¹; Jianping Lin¹; Yao Xiao¹; Junying Min¹; ¹Tongji University

9:30 AM Invited

Measurement and Modeling of Hydride Induced Rotation and Dislocation Fields in Zirconium Polycrystals: Hamidreza Abdolvand¹; Masoud Taherijam¹; Saiedeh Marashi¹; ¹The University of Western Ontario



10:00 AM Break

10:20 AM

Quantifying the Role of Coarse Intermetallic Particles on Twinning Behavior: Benjamin Anthony¹; Victoria Miller¹; ¹University of Florida

10:40 AM

Unravelling the Nucleation and Growth Mechanism of {11-22} Twin in Titanium: Andriy Ostapovets¹; *Ritu Verma*²; Anna Serra³; ¹Institute of Physics of Materials, Czech Academy of Sciences; ²Central European Institute of Technology - Brno University of Technology; ³Universitat Politécnica de Catalunya, Campus Nord

11:00 AM

Assessing the Predictive Capabilities of Precipitation Strengthening Models for Deformation Twinning in Mg Alloys Using Phase-field Simulations: Darshan Bamney¹; Laurent Capolungo¹; ¹Los Alamos National Laboratory

11:20 AM

Misorientation Effects in Single Crystal Plasticity Finite Element Modeling: John Shimanek¹; Zi-Kui Liu¹; Allison Beese¹; ¹Penn State

FUNDAMENTALS AND CHARACTERIZATION

Interface-mediated Phenomena in Structural Materials — Interfaces in Advanced Materials

Sponsored by: TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Jian Wang, University of Nebraska-Lincoln; Nigel Shepherd, University of North Texas; Andres Bujanda, U.S. Army Research Laboratory; Lin Shao, Texas A&M University

Wednesday AM | October 4, 2023 A214 | Greater Columbus Convention Center

Session Chairs: Yu Zou, University of Toronto; Peter Collins, Iowa State University

8:00 AM Invited

Co-deformation Behavior of Additively Manufactured Nanolamellar Eutectic High-entropy Alloys: Yu Zou¹; ¹University of Toronto

8:40 AM

Atomistic Simulations of the Effect of Alloying on Solid/Liquid Interfacial Free Energies: *Ian Winter*¹; Michael Chandross¹; ¹Sandia National Laboratories

9:00 AM Invited

The Role of Interfaces on Second Phase Nucleation and Attendant Mechanical Response in Structural High Entropy Alloys: Sriswaroop Dasari¹; Abhishek Sharma¹; Bharat Gwalani²; Deep Choudhuri³; Srinivasan Srivilliputhur¹; *Rajarshi Banerjee*¹; ¹University of North Texas; ²North Carolina State University; ³New Mexico Institute of Mining and Technology

9:40 AM

Heterogeneous Nucleation of γ' Precipitates at Annealing Twin Boundaries in Superalloys: A Phase Field Study: Vignesh Karunakaran¹; Longsheng Feng¹; Hariharan Sriram¹; Semanti Mukhopadhyay¹; Michael Mills¹; Yunzhi Wang¹; ¹The Ohio State University

10:00 AM Break

10:20 AM Keynote

On the Importance of Interfaces in Gradient Materials for Structural Applications: Katie O'Donnell¹; Matt Dolde¹; Peyman Samimi¹; Iman Ghamarian¹; Maria Jose Quintana¹; *Peter Collins*¹; ¹Iowa State University

11:00 AM

Role of Heterogeneity on Formability in Al1050/Steel/Al1050 Laminated Sheets: Rae Eon Kim¹; Yeon Taek Choi¹; Hyoung Seop Kim¹; ¹Postech

11:20 AM

Gradation of Additive Manufactured Polymer-Metal Interfaces for Increased Toughness: Carlos Mora Salcedo¹; Mathew Kuttolamadom¹; ¹Texas A&M

11:40 AM

Molecular Dynamics Simulations of Austenite-Martensite Interfaces in NiTi Shape Memory Alloys: *Gabriel Plummer*¹; Mikhail Mendelev¹; John Lawson¹; ¹NASA Ames Research Center

LIGHTWEIGHT ALLOYS

Light Metal Technology — Hexagonal Structured Lightweight Alloys

Program Organizers: Xiaoming Wang, Purdue University; Alan Luo, Ohio State University

Wednesday AM | October 4, 2023 A212 | Greater Columbus Convention Center

Session Chair: Alan Luo, Ohio State University

8:00 AM

Improved Strength in Mg-Al Dissimilar Impact Welding by Surface Nanocrystallization of Mg Alloy Sheet: *Jianyue Zhang*¹; Jianxiong Li¹; Jiashi Mao¹; Yu Mao¹; Xuejun Huang¹; Anupam Vivek¹; Glenn Daehn¹; Alan Luo¹; ¹The Ohio State University

8:20 AM

Effects of Pass Strains of Multi-directional Forging and Additive Cold Rolling of Pure Ti on the Microstructural Evolution and Mechanical Properties: *Hiromi Miura*¹; Yojiro Oba¹; Masakazu Kobayashi¹; Chihiro Watanabe²; ¹Toyohashi University of Technology; ²Kanazawa University

8:40 AM

Elastic-plastic Approach on Transformation of LPSO Phases in a Mg-RE Alloy by Nanoindentation: *Petra Maier*¹; Merle Schmahl²; Claudia Fleck²; ¹University of Applied Sciences Stralsund; ²Technische Universität Berlin

9:00 AM

Precipitate-strengthened Micromechanical Behaviors of Magnesium Alloy Under Cyclic Loading: Chuhao Liu¹; Di Xie²; Yanfei Gao²; Peter Liaw²; *Huamiao Wang*¹; ¹Shanghai Jiao Tong University; ²The University of Tennessee

9:20 AM

Production of Titanium Wire from Scrap Material Using Continuous Extrusion Machine: *Michal Duchek*¹; David Hradil¹; ¹COMTES FHT



9:40 AM

Role of Guinier-Preston Zones in Achieving High Strength-ductility in a New Mg-Zn-Al-Ca-Mn-Ce Sheet Alloy: *Jiashi Miao*¹; Fei Xue²; Tian Liu²; Thomas Avey¹; Emmanuelle Marquis²; Alan Luo¹; ¹Ohio State University; ²University of Michigan, Ann Arbor

10:00 AM Break

10:20 AM

Role of Interfaces on the Orientation Dependent Spheroidization Response of á-colonies in Ti-6Al-4V Alloy: *Shibayan Roy*¹; Antony Rollett²; ¹Indian Institute of Technology (IIT) Kharagpur; ²Carnegie Mellon University

10:40 AM

Observation of Impact Deformation and Fracture on Severe Plastic Deformed Ti by Using Synchrotron Radiation: Masakazu Kobayashi¹; Yojiro Oba¹; Hiromi Miura¹; Chihiro Watanabe²; Shogo Furuta¹; ¹Toyohashi University of Technology; ²Kanazawa University

CERAMIC AND GLASS MATERIALS

Manufacturing and Processing of Advanced Ceramic Materials — Novel Processing of Oxide Ceramics

Sponsored by: ACerS Manufacturing Division

Program Organizers: Bai Cui, University of Nebraska-Lincoln; James Hemrick, Oak Ridge National Laboratory; Mike Alexander, Allied Mineral Products; Eric Faierson, Iowa State University; Keith DeCarlo, Blasch Precision Ceramics

Wednesday AM | October 4, 2023 B233 | Greater Columbus Convention Center

Session Chairs: Keith DeCarlo, Blasch Precision Ceramics; Andrea Arguelles, Pennsylvania State University

8:00 AM Invited

Processing Ceramic Powders in Non-aqueous Mediums - How Polarity of the Suspension Medium Effects Dispersion: *Keith DeCarlo*¹; ¹Blasch Precision Ceramics

8:30 AM

Surface Area Reduction During the Sintering of Alumina: Daniel Delia¹; Hyojin Lee¹; William Carty¹; ¹Alfred University

8:50 AM

The Influence of Cr on Microstructural Evolution of Alumina: Yathreb Shalabi¹; Rachel Marder¹; *Wayne Kaplan*¹; ¹Technion - Israel Institute of Technology

9:10 AM

Manipulating Instrument Setup Parameters to Increase the Range for Particle Size Measurement: *Emelia Enke*¹; Daniel Delia¹; Hyojin Lee¹; William Carty¹; ¹Alfred University

9:30 AM

Measurement of High Temperature Mechanical Property Data for Modeling Applications: Hyojin Lee¹; John Castle¹; William Carty¹; ¹Alfred University

9:50 AM Invited

Basic Research Opportunities from the Army Research Laboratory: Michael Bakas¹, ¹Army Research Office

10:20 AM Break

10:40 AM Invited

From Flash Sintering to Ultrafast Sintering without an Electric Field and Electrochemically Controlled Microstructural Evolution: Jian Luo¹; ¹University of California, San Diego

11:10 AM

Surface Reactivity and Processing Properties of Metal Oxide Nanoparticles for Ceramics: *Oliver Diwald*¹; Thomas Schwab¹; Hasan Razouq¹; Gregor Zickler¹; ¹Paris Lodron Universitaet Salzburg

11:30 AM

Demystifying Sol-gel Processing of Rare-earth Disilicates for Environmental Barrier Coatings: *Alejandro Salanova*¹; Jon Ihlefeld¹; ¹University of Virginia

11:50 AM

A Cold Sintering Study of ZnO and Dopants - With a View Towards Varistor Characteristics: *Sevag Momjian*¹; Julian Fanghanel¹; Zhongming Fan¹; Clive Randall¹; ¹Pennsylvania State University

ARTIFICIAL INTELLIGENCE

Materials Processing and Fundamental Understanding Based on Machine Learning and Data Informatics — AI/ML Aided Materials Design and Study

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Kathy Lu, University of Alabama Birmingham; Pinar Acar, Virginia Tech; Yi Je Cho, Sunchon National University

Wednesday AM | October 4, 2023 A121 | Greater Columbus Convention Center

Session Chairs: Kathy Lu, Virginia Tech; Mohamed Elleithy, Virginia Tech

8:00 AM Invited

Computing Grain Boundary "Phase" Diagrams: From Thermodynamic Models and Atomistic Simulations to Machine Learning: Jian Luo¹; ¹University of California, San Diego

8:30 AM

Autonomous Learning of Phase Trajectories via Physics-inspired Graph Neural Networks: James Chapman¹; Bamidele Aroboto¹; Shaohua Chen²; Yang Jiao²; Tim Hsu³; Brandon Wood³; ¹Boston University; ²Arizona State University; ³Livermore National Laboratory

8:50 AM

AI/ML Aided Drug Biomolecule and Materials Design: *Mehdi Yazdani-Jahromi*¹; Ali Khodabandeh Yalabadi¹; Aida Tayebi¹; Niloofar Yousefi¹; Elayaraja Kolanthai¹; Craig J. Neal¹; Sudipta Seal¹; Ozlem Ozmen Garibay¹; ¹University of Central Florida

9:10 AM

High-throughput, Ultra-fast Laser Fabrication of Alumina sample arrays and Deep-learning Based Prediction of Realistic Alumina Microstructure from Hardness: *Xiao Geng*¹; Jianan Tang¹; Siddhartha Sarkar¹; Tianyi Zhou¹; Jianhua Tong¹; Rajendra Bordia¹; Hai Xiao¹; Dongsheng Li²; Fei Peng¹; ¹Clemson University; ²Advanced Manufacturing LLC


9:30 AM

Online Mechanical Properties Control for Steel Coils Using Machine Learning Model: Junho Park¹; Joo Hyun Ryu¹; Kyung Rae Jo¹; Tae Kyo Han¹; ¹Posco

9:50 AM

Process Cycle Modeling with AI: Vyacheslav Romanov¹; ¹DOE-NETL

10:10 AM Break

10:30 AM Invited

Development of Machine Learning Interatomic Potentials to Model Materials Processing & Performance in Multicomponent Systems: *Ridwan Sakidja*¹; Marium Mou¹; Nur Octoviawan¹; Tyler McGilvry-James¹; Gaige Riggs¹; ¹Missouri State University

11:00 AM

Optimizing Heat Treatment Routes for Ni-based Alloys Using Monte Carlo Tree Search: *Vickey Nandal*¹; Sae Dieb¹; Dmitry Bulgarevich¹; Toshio Osada¹; Toshiyuki Koyama²; Satoshi Minamoto¹; Masahiko Demura¹; ¹NIMS; ²Nagoya University

11:20 AM

Optical and Photothermal Property Prediction of Gold Nanoparticle/ polymer Hybrid Films Through Machine Learning and Finite Element Modeling: *Yi Je Cho*¹; Kathy Lu²; ¹Sunchon National University; ²Virginia Tech

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials Parallel Session I

Sponsored by: ACerS Bioceramics Division

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford; Shawn Allan, Lithoz America LLC

Wednesday AM | October 4, 2023 A221 | Greater Columbus Convention Center

Session Chairs: Songül Ulağ, Marmara University; Shih-Jung Liu, Chang Gung University

8:00 AM

3D-printed Dental Membrane Scaffolds From Polyvinly Alcohol/ Starch/Nano-Hydroxyapatite Enriched Antimicrobial Punica granatum L. Extract: *Hatice Karabulut*¹; ¹Marmara University

8:20 AM

3D Printed Drug-eluting Implants for Orthopedic Applications: *Shih-Jung Liu*¹; ¹Chang Gung University

8:40 AM Invited

3D Printing and Evaluation of Hydrogel-blend Scaffolds Based on Methacrylate-modified Chitosan for Tissue Regeneration: Xiaodie Chen¹; Jinwei Liu¹; *Min Wang*¹; ¹University of Hong Kong

9:00 AM

3D Printing of PRP-loaded Gelatin/Sodium Alginate/Hydroxyapatite Composite Scaffolds for Bone Tissue Engineering Applications: *Tufan Arslan Tut*¹; ¹Marmara University

9:20 AM

Continuous Monitoring of Biomarkers with Minimally-invasive Wearable Microneedle Patch Sensors: *Andreas Stein*¹; Yevedzo Chipangura¹; Vilma Brandao¹; Xiaohang Zhi¹; Sarah Swisher¹; Philippe Buhlmann¹; Elizabeth Lusczek¹; Eric Wise¹; Greg Beilman¹; ¹University of Minnesota

9:40 AM

Engineered Porosity Bone Scaffold Bioceramics via Directional Freeze Casting: *Komalakrushna Hadagalli*¹; Bikramjit Basu²; Rajendra Bordia¹; ¹Clemson University; ²Indian Institute of Science

10:00 AM Break

10:20 AM

Engineering Elastin-like Peptides to Control Solid Surface Properties: Julie Renner¹; ¹Case Western Reserve University

10:40 AM Invited

Fabrication of Drug-loaded Hydrogel-based Microneedles (HBM) for the Treatment of Epilepsy: Songul Ulag¹; ¹Marmara University

11:00 AM

Viral Behaviors and the Evaluation on Stainless Steels: *Hideyuki Kanematsu*¹; Dana Barry²; Toma Tamura¹; Ruka Matsumoto¹; Akiko Ogawa¹; Risa Kawai¹; Takeshi Kogo¹; Nobumitsu Hirai¹; Toshio Kamijo³; Takehito Kato⁴; Michiko Yoshitake⁵; ¹National Institute of Technology (KOSEN), Suzuka College; ²Clarkson University; ³NIT (KOSEN), Tsuruoka College; ⁴NIT (KOSEN), Oyama College; ⁵National Institute for Materials Science (NIMS)

11:20 AM Invited

Combining Traditional Electronics Packaging and NanoJet Aerosol Printing to Develop an Implantable High-density In-line Connector: Janet Gbur¹; William Kozak²; Anuvi Gupta²; Marcelino Essien³; Dave Keicher³; Douglas Shire⁴; ¹VA Northeast Ohio Healthcare System; Case Western Reserve University; ²Case Western Reserve University; ³Integrated Deposition Systems, Inc.; ⁴VA Northeast Ohio Healthcare System

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials Parallel Session II

Sponsored by: ACerS Bioceramics Division

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford; Shawn Allan, Lithoz America LLC

Wednesday AM | October 4, 2023 A222 | Greater Columbus Convention Center

Session Chairs: Miroslawa El Fray, West Pomeranian University of Technology; Jose Avila, Washington State University

8:00 AM

Gentamicin-loaded Polyvinyl Alcohol (PVA)/Sucrose Solution Coated on Microneedles for Transdermal Drug Delivery: Esra Pilavci¹; ¹Marmara University

8:20 AM Invited

Molecularly Imprinted Polymer Nanogels: Synthetic Peptide Antibodies for Biomedical Therapy and Diagnostics: Karsten Haupt¹; ¹Compiègne University of Technology



8:40 AM

Next Generation Injectable Biomaterials for Soft Tissue Repair: *Miroslawa El Fray*¹; Gokhan Demirci¹; Malwina Niedźwiedź¹; ¹West Pomeranian University of Technology

9:00 AM

Production of Individualized Symblepharon Rings: Musa Ayran¹; ¹Marmara University

9:20 AM

Strontium Silicate: A Potential Bioceramic for Clinical Applications: Shinn-Jyh Ding¹; ¹Chung Shan Medical University

9:40 AM

Surface-Roughness-Induced Plasticity in a Biodegradable Zn Alloy: Zhangzhi Shi¹; Meng Li¹; Xiangmin Li¹; *Lu-Ning Wang*¹; ¹University of Science and Technology Beijing

10:00 AM Break

10:20 AM

Synthesis and Characterization of Biodegradable Polydisulfide From Renewable Resources: Peter Polyak¹; Aswathy Sasidharan Pillai¹; Kristof Molnar¹; Judit Puskas¹; ¹The Ohio State University

10:40 AM

Understanding BioTribological Performances of 3D Printed TiTaCu Alloys: *Jose Avila*¹; Sushant Ciliveri¹; Amit Bandyopadhyay¹; ¹Washington State University

11:00 AM

Programmable Microbial Biosynthesis of Hierarchical Biomimetic Composites in 3D Printed Soft Bioreactors: *Shan Liu*¹; Weinan Xu¹; ¹The University of Akron

11:20 AM Invited

Protein Microarrays on a Nonfouling Polymer Brush for Point of Care Detection: *Chilkoti Ashutosh*¹, ¹Duke University

11:40 AM Invited

Bio-inspired Multifunctional Carbon Scaffolds for Tissue Engineering: *Sharmila Mukhopadhyay*¹; Wenhu Wang¹; Soham Parikh²; ¹University of Maine; ²Wright State University

CERAMIC AND GLASS MATERIALS

Phase Transformations in Ceramics: Science and Applications — Session I

Sponsored by: ACerS Basic Science Division

Program Organizers: Pankaj Sarin, Oklahoma State University; Waltraud Kriven, University of Illinois at Urbana-Champaign; Sanjay V. Khare, University of Toledo; Scott Mccormack, University Of California, Davis; Theresa Davey, Tohoku University

Wednesday AM | October 4, 2023 B230 | Greater Columbus Convention Center

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

8:00 AM Invited

Spinodal Decomposition in Ferroelectric Crystals: *Catherine Bishop*¹; ¹University of Canterbury

8:30 AM

Effect of Cations Decoration on Ti3C2Tx MXene, its Stability and Phase Transformation at High Temperatures: *Srinivasa Kartik Nemani*¹; Austin Vohrees¹; Yooran Im²; Nithin Chandran³; Anupma Thakur¹; Babak Anasori¹; ¹Indiana University-Purdue University; ²Colorado School of Mines; ³IIT Madras

8:50 AM

Elevated Temperature Phase Control of Two-dimensional Mo2TiC2Tx Carbide Through Defect Engineering: Brian Wyatt¹; Matthew Boebinger²; Paul Kent²; Zachary Hood³; Shiba Adhikari³; Srinivasa Nemani¹; Murali Muraleedharan²; Annabelle Bedford¹; Wyatt Highland¹; Babak Anasori¹; ¹Purdue University; ²Oak Ridge National Laboratory; ³Argonne National Laboratory

9:10 AM Invited

Phase Transformations in Ceramic Materials under Extreme External Forcing: *Eric O'Quinn*¹; Alexandre Solomon¹; Casey Corbridge¹; Maik Lang¹; ¹University of Tennessee

9:40 AM

Structural Evolution of MgAl2O4 and NiAl2O4 Disordered Spinel Oxides Studied via In Situ Neutron Total Scattering: John Hirtz¹; Eric O'Quinn¹; Igor Gussev¹; Joerg Neuefeind²; Maik Lang¹; ¹University of Tennessee; ²Oak Ridge National Laboratory

10:00 AM Break

10:20 AM Invited

Phase Stability and Cation Partitioning in Multi-rare Earth Aluminates and Zirconates: Yueh-Cheng Yu¹; *David Poerschke*¹; ¹University of Minnesota

10:50 AM

Progress on Phase Stability of Substituted Rare Earth Disilicate Compositions for Environmental Barrier Coatings: *Christine Brockman*¹; V. V. Rohit Bukka¹; Amjad Almansour²; Pankaj Sarin¹; ¹Oklahoma State University; ²NASA Glenn Research Center

11:10 AM

Microstructural Evolution and Associated Kinetics of Seeded Solid State Single Crystal Growth of CoTi2O5: Junyan Zhang¹; Connor McNamara¹; Kevin Anderson²; Animesh Kundu¹; Helen Chan¹; Jeffrey Rickman¹; ¹Lehigh University; ²U.S. Naval Research Laboratory

11:30 AM Invited

Crystal Structure Solution and Phase Transformations of CaZr4(PO4)6 and SrZr4(PO4)6: *Benjamin Hulbert*¹; Julia Brodecki¹; Waltraud Kriven¹; ¹University of Illinois at Urbana Champaign



NUCLEAR ENERGY

Progressive Solutions to Improve Corrosion Resistance of Nuclear Waste Storage Materials — Modeling and Experimental: Structure Properties (Dissolution Kinetics, Mechanical Properties, Sulfur Solubility) of Nuclear Waste Glasses

Sponsored by: TMS: Energy Committee, TMS: Nuclear Materials Committee

Program Organizers: Madeleine Jordache, Stevens Institute of Technology; Gary Pickrell, Virginia Tech; Daniel Cassar, Brazilian Center for Research in Energy and Materials (CNPEM)

Wednesday AM | October 4, 2023 A125 | Greater Columbus Convention Center

Session Chairs: Madeleine Jordache, Stevens Institute of Technology; Daniel Cassar, Brazilian Center for Research in Energy and Materials (CNPEM); Gary Pickrell, Virginia Tech

8:00 AM Introductory Comments

8:05 AM Invited

An Integrated Data-driven and Physics-driven Approach Towards Discovering Optimal Nuclear Waste Immobilization Glass: *N M Anoop Krishnan*¹, ¹Indian Institute of Technology Delhi

8:35 AM Invited

Structural Descriptors Controlling Sulfur Solubility in Borosilicate Glasses: Ashutosh Goel¹; Rajan Saini¹; Xinyi Xu¹; Randall Youngman²; Hellmut Eckert³; John McCloy⁴; ¹Rutgers, The State University of New Jersey; ²Corning Incorporated; ³Sao Paulo University; ⁴Washington State University

9:05 AM Invited

Gel Layer Structures and Properties of Silicate Glasses: Understanding the Corrosion of Glasses for Nuclear Waste Disposal: Jincheng Du¹; ¹University of North Texas

9:35 AM Invited

Topological Model of the Dissolution Kinetics of Borosilicate Glasses: Mathieu Bauchy¹; ¹University of California, Los Angeles

BIOMATERIALS

Society for Biomaterials: Biomaterial Applications — Nanotechnology

Sponsored by: Society for Biomaterials

Program Organizers: David Kohn, University of Michigan; Guigen Zhang, University of Kentucky; Claudia Loebel, University of Michigan; William Wagner, McGowan Institute for Regen Med

Wednesday AM | October 4, 2023 A224 | Greater Columbus Convention Center

Session Chairs: Claudia Loebel, University of Michigan; Andre Palmer, Ohio State University

8:00 AM

Oxidative Stress Responsive Nanoparticles for Sustained Protein Delivery in Treatment of Ocular Degeneration: *Megan Allyn*¹; Sheigo Tamiya¹, Katelyn Swindle-Reilly¹; Andre Palmer¹; ¹The Ohio State University

8:20 AM

Novel Biocompatible Nanoparticle Emulsion for Sustained Therapeutic Drug Delivery: Ruth Negru¹; Fernando Borges¹; Fouad Teymour¹; Georgia Papavasiliou¹; *Marcella Vaicik*¹; ¹Illinois Institute of Technology

8:40 AM

Selective Cellular Interaction of PEI Functionalized Silver Nanoparticles with Pathogenic Microorganisms: Prem Pandey¹; *Atul Tiwari*¹; ¹Indian Institute of Technology, BHU

9:00 AM

Antimicrobial Activity of Silicon Nitride Infiltrated Fabrics: Brittany Heath¹; Chelsey McMinn²; Sherry Van Mondfrans²; Jackson Hendry²; Douglas Hoxworth²; B. Sonny Bal²; Kylene Kehn-Hall¹; *Ryan Bock*²; ¹Virginia Polytechnic Institute and State University; ²SINTX Technologies

9:20 AM

Multifunctional Lanthanide-doped Nanomaterials for Imaging and Sensing: *Eva Hemmer*¹; ¹University of Ottawa

9:40 AM

Recent Advancement in Materials for Biomedical and Biosensor Technology: Osama Butt¹; Bushra Rashid²; ¹University of the Punjab; ²National Defense University of Malaysia

10:00 AM Break

10:20 AM

Molecular Weight of Polyethylenime Dependent Formation of Gold Nanoparticles and Their Biomedical Application: Prem Pandey¹; *Govind Pandey*¹; ¹Indian Institute of Technology, BHU

10:40 AM

Structural and Some Mechanical Properties of Parquetina Nigrescens Pod Nanoparticles Reinforced Polylactic Acid Composites: Sefiu Bello¹; Boluwatife Olukunle¹; *Abdul Ganiyu Alabi*²; Raphael Adeyemo²; ¹Kwara State University, Malete; ²Gateway (ICT) Polytechnic, Saapade

11:00 AM Invited

Eumelanin: A Promising Material for Bio-based Electronics: Carlos Graeff¹; ¹UNESP



CERAMIC AND GLASS MATERIALS

Solid-state Optical Materials and Luminescence Properties — Session I

Sponsored by: ACerS Basic Science Division

Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Akio Ikesue, World-Lab. Co., Ltd; Rong-Jun Xie, Xiamen University; Mathieu Allix, Laboratoire CEMHTI; Kiyoshi Shimamura, National Institute for Materials Science; Liangbi Su, Shanghai Institute of Ceramics; Dariusz Hreniak, Polish Academy of Sciences

Wednesday AM | October 4, 2023 B235 | Greater Columbus Convention Center

Session Chairs: Yiquan Wu, Alfred University; Woohong (Rick) Kim, Naval Research Laboratory

8:00 AM Invited

Overview of Optical Materials at NRL: *Woohong (Rick) Kim*¹; Shyam Bayya¹; Jesse Frantz¹; Brandon Shaw¹; Colin Baker¹; Vinh Nguyen¹; Darryl Boyd¹; Dan Gibson¹; Dan Rhonehouse¹; Adam Floyd¹; Joshua Gild¹; Lynda Busse¹; Rafael Gattass¹; Bryan Sadowski¹; Fred Kung¹; Geoff Chin¹; Tony Zhou¹; Robert Nicol¹; Jasbinder Sanghera¹; ¹Naval Research Laboratory

8:20 AM Invited

Fabrication and Optical Properties of Transparent Zinc Gallate Spinel Ceramics: Sebastien Chenu^{1, 1}ISCR - Glass and Ceramic Team

8:40 AM

Ultraviolet Excitation of Trivalent Europium in Alumina: John Krebs¹; Alex Sobey-Strick¹; ¹Franklin & Marshall College

9:00 AM

A New Family of Multinary Telluride Nanocrystals for Infrared Applications: *Soubantika Palchoudhury*¹; Sohini Sengupta¹; Fajer Almanea¹; Venkateswar Rao¹; Sarah Maglosky¹; ¹University of Dayton

9:20 AM

Ultrafast Laser-induced Damage and Non-linear Optical Properties of Metal Thiophosphates: *Mohamed Yaseen Noor*¹; Ryan Siebenallar¹; Aamir Mushtaq¹; Gulsum Kilic¹; Justin Twardowski¹; Conrad Kuz¹; Adam Fisher¹; Liam Clink¹; Michael Susner²; Enam Chowdhury¹; ¹The Ohio State University; ²Airforce Research Laboratory

9:40 AM Invited

Study of Surface Effects in Yb³⁺ Doped Garnet Nanopowders for Understanding Grain Boundary Processes in Laser Ceramics: Fabrication and Spectroscopic Properties: Vitalii Boiko¹; Sebastian Cieśla²; Mariusz Stefański¹; Dariusz Hreniak¹; ¹Institute of Low Temperature and Structure Research; ²Wroclaw University of Science and Technology

10:00 AM Break

10:20 AM

Photoluminescent Behaviors of Mixed Metal Thiophosphates XSCP₂S₆ (X=Ag, Cu) Above and Below Bandgap: *Ryan Siebenaller*¹; Mohamed Noor¹; Rahul Rao²; Michael Susner²; Enam Chowdhury¹; ¹Ohio State University; ²Air Force Research Lab

10:40 AM

Processing and Optical Properties of Noncubic RE-doped Ga2O3 Transparent Ceramics: *Jiao* Li¹; Guangran Zhang¹; Matthew Fiato¹; Yiquan Wu¹; ¹Alfred University

11:00 AM

Surface Morphology and Fracturing of Femtosecond Laser-irradiated Calcium Fluoride: Emma DeAngelis¹; Justin Twardowski¹; Conrad Kuz¹; Enam Chowdhury¹; ¹The Ohio State University

11:20 AM

Study of Garnet Scintillating Single Crystal Fiber Grown by Laser Heated Pedestal Growth Method: *Xibin Wang*¹; Anhua Wu¹; Junfeng Chen¹; Liangbi Su¹; Zhonghan Zhang¹; Huamin Kou¹; Xiang Li¹; Yun Dai¹; Zheng Zhang¹; Jiang Li¹; ¹Shanghai Institute of Ceramics, Chinese Academy of Sciences

IRON AND STEEL (FERROUS ALLOYS)

Steels for Sustainable Development II — Steels for Sustainable Development I

Sponsored by: TMS: Steels Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Kester Clarke, Colorado School of Mines; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Matthias Militzer, University of British Columbia; Ana Araujo, CBMM North America Inc.; Mahesh Somani, University of Oulu; Ilchat Sabirov, Imdea Materials Institute

Wednesday AM | October 4, 2023 A210 | Greater Columbus Convention Center

Session Chairs: Ana Araujo, CBMM North America Inc.; Kester Clarke, Colorado School of Mines

8:00 AM Invited

Microstructural Engineering and Accelerated Test Method Development to Achieve Low Cost, High Performance Solutions for Hydrogen Storage and Delivery: *Kip Findley*¹; Lawrence Cho¹; Pawan Kathayat¹; Jason Kong¹; John Speer¹; Chris San Marchi¹; Joseph Ronevich¹; Samantha Lawrence¹; Mary O'Brien¹; Ashok Saxena¹; Don Brown¹; Bjorn Clausen¹; ¹Colorado School of Mines

8:40 AM

Effect of Strength on Fracture Toughness of Line Pipe Steel Under High Pressure Hydrogen Environment: *Hikaru Imayama*¹; Daichi Izumi¹; Junji Shimamura¹; Yoshihiro Nishihara¹; Hiroshi Okano¹; ¹JFE Steel Corporation

9:00 AM

Investigation of Microstructure and Fracture Performance of 9 wt.% Nickel Steel for Application Laser Arc Hybrid Welding: *Jeong Yeol Park*¹; Changwook Ji¹; Jooyong Cheon¹; Hyun Uk Jun¹; ¹Korea Institute of Industrial Technology

9:20 AM

The Relationship Between Microstructure and Mechanical Properties in the Coarse-grain Heat-affected Zone of Line Pipe Steels: Sabyasachi Roy¹; *Matthias Militzer*¹; Warren Poole¹; ¹The University of British Columbia

9:40 AM

Enabling the Design of Industrial Heat Treatments with Inductioncoupled Thermomagnetic Processing Using Multiscale Modeling and Simulation: *Michael Tonks*¹; Richard Hennig¹; Dallas Trinkle²; Ling Li³; Charlie Li⁴; ¹University of Florida; ²University of Illinois, Urbana-Champaign; ³Virginia Tech; ⁴DANTE Solutions



10:00 AM Break

10:20 AM Invited

Pathways for Steel Decarbonization-A Comparative Study with Alternative Material: *Sridhar Seetharaman*¹; ¹Arizona State University

11:00 AM

Simulation of Accelerated Cooling of Thick Steel Products: Matthew Sztanko¹; Shixin Zhou¹; Vladan Prodanovic¹; Matthias Militzer¹; ¹The Centre for Metallurgical Process Engineering/University of British Columbia

FUNDAMENTALS AND CHARACTERIZATION

Synthesis, Characterization, Modeling and Applications of Functional Porous Materials — Porous Materials II

Sponsored by: ACerS Electronics Division, ACerS Basic Science Division

Program Organizers: Lan Li, Boise State University; Winnie Wong-Ng, National Institute of Standards and Technology; Kevin Huang, University of South Carolina; Di Wu, Washington State University

Wednesday AM | October 4, 2023 A220 | Greater Columbus Convention Center

Session Chairs: Winnie Wong-Ng, National Institute of Standards and Technology (NIST); Kevin Huang, University of South Carolina

8:00 AM Invited

Density Functional Theory Studies of the Carbonation of Portlandite and Brucite: *Eric Cockayne*¹; ¹National Institute of Standards and Technology

8:30 AM Invited

High-throughput, Ultra-fast Laser Sintering of Ceramics and Machine-learning Based Prediction on Processing-Microstructure-Property Relationships: Jianan Tang¹; Xiao Geng¹; Siddhartha Sarkar¹; Yunfeng Shi²; Jianhua Tong¹; Rajendra Bordia¹; Dongsheng Li³; Hai Xiao¹; *Fei Peng*¹; ¹Clemson University; ²Rensselaer Polytechnic Institute; ³Advanced Manufacturing LLC

9:00 AM Invited

Uncovering Structure-property Relationships in Complex, Inhomogeneous Materials: High-throughput Calculation of Stochastic Materials: Matthew Beck¹; ¹University of Kentucky

9:30 AM Invited

Powder Design for Additive Manufacturing of Porous Metals: Braden Jones¹; Mark Atwater¹; ¹Liberty University

10:00 AM Break

10:20 AM Invited

Development of Low-cost Nanoporous Ceramic Composite Membranes for Micro/Ultra-filtration: V. V. Rohit Bukka¹; Christine Brockman¹; Pankaj Sarin¹; ¹Oklahoma State University

10:50 AM Invited

Direct Conversion of the Captured CO2 into Valuable Products Using CO2 Transport Membrane Reactor: Kangkang Zhang¹; *Kevin Huang*¹; ¹University of South Carolina

11:20 AM

Fabricating Nitinol Microtubes via Gas-phase Alloying: A Computational and Experimental Feasibility Study: Sravya Josyula¹; Ravi Kumar¹; Ugochukwu Ochieze¹; Abdulquadri Oriola¹; Eric Payton¹; Ashley Paz y Puente¹; ¹University of Cincinnati

MATERIALS-ENVIRONMENT INTERACTIONS

Thermodynamics of Materials in Extreme Environments — Thermodynamics of Ceramic and Intermetallic Systems

Sponsored by: ACerS Basic Science Division, ACerS Energy Materials and Systems Division

Program Organizers: Xiaofeng Guo, Washington State University; Kristina Lilova, Arizona State University; Kyle Brinkman, Clemson University; Alexandra Navrotsky, Arizona State University; Jake Amoroso, Savannah River National Laboratory; Xingbo Liu, West Virginia University; Gustavo Costa, NASA Glenn Research Center

Wednesday AM | October 4, 2023 A123 | Greater Columbus Convention Center

Session Chair: Xiaofeng Guo, Washington State University

8:00 AM Invited

Thermodynamic and Kinetic Considerations of CMAS Reactions with Rare-earth Monosilicates: Cameron Miller¹; *Elizabeth Opila*¹; ¹University of Virginia

8:30 AM Invited

Stability and use of Nitride and Carbide Nuclear Fuels in Advanced Reactors and Nuclear Propulsion in Space: *Theodore Besmann*¹; Ronald Booth¹; Reece McManus¹; Juliano Schorne-Pinto¹; Jhonathan Rosales²; Antoine Claisse³; ¹University of South Carolina; ²National Aeronautical and Space Administraction; ³Westinghouse Electric Company

9:00 AM Invited

Thermodynamics of Bicrystal Metal-oxide Interfacial Failure at High Temperature: Shen Dillon¹; ¹University of California, Irvine

9:30 AM

Thermochemistry of Co Transition Metal Nitrides: Laura Bonatti¹; Tamilarasan Subramani¹; Kristina Lilova¹; Alexandra Navrotsky¹; ¹Arizona State University

9:50 AM

Mixing Behaviors in Group IV and V Oxides and Diborides: *Stuart Ness*¹; Scott McCormack¹; ¹University of California, Davis

10:10 AM Break

10:30 AM

Thermodynamic Assessment of Ce₃In by Experimental and Computational Methods: Andrew Strzelecki¹; Sajib Barman¹; Cody Cockreham¹; Samantha Couper¹; S. Parker¹; Najeb Abdul-Jabbar¹; Mark Wartenbe¹; Young-Jay Ryu²; Emma Carlsen³; Stella Chariton²; Vitali Prakapenka²; Maddury Somayazulu⁴; Curtis Kenny-Benson⁴; Bethany Chidester¹; Margaret Reece¹; W. Phelan¹; Paul Tobash¹; Hakim Boukhalfa¹; Sarah Hernadez¹; Eric Bauer¹; Jeremy Mitchell¹; Hongwu Xu⁵; ¹Los Alamos National Laboratory; ²University of Chicago; ³Washington State University; ⁴Argonne National Laboratory; ⁵Los Alamos National Laboratory & Arizona State University



10:50 AM

Thermodynamics of Cr-alloy Coated Zr-alloy Cladding Systems: Theresa Davey¹; Ying Chen¹; ¹Tohoku University

11:10 AM

Thermodynamic Modelling Possibilities of High-persistent (Thermally, Mechanically, Chemically) Functional Materials: *Alexander Slobodov*¹; Andrey Evdokimov¹; Sergey Bogdanov¹; Roman Efimov¹; Aiman Baibulanova¹; ¹St. Petersburg Institute of Technology; ITMO University

SPECIAL TOPICS

ACerS Robert B. Sosman Award Symposium — Sosman Presentation

Sponsored by: ACerS Basic Science Division

Wednesday PM | October 4, 2023 B130 | Greater Columbus Convention Center

Session Chair: Wolfgang Rheinheimer, University of Stuttgart

1:00 PM Invited

Defect Disorder in Electronic Ceramics: Designing Functionality: *Elizabeth Dickey*¹; ¹Carnegie Mellon University

ADDITIVE MANUFACTURING

Additive Manufacturing of High and Ultra-high Temperature Ceramics and Composites: Processing, Characterization and Testing — Extrusion/DIW/ Robocasting

Sponsored by: ACerS Engineering Ceramics Division, ACerS Manufacturing Division, ACerS Young Professionals Network

Program Organizers: Corson Cramer, Oak Ridge National Laboratory; Greg Hilmas, Missouri University of Science and Technology; Lisa Rueschhoff, Air Force Research Laboratory; David Mitchell, Oak Ridge National Laboratory

Wednesday PM | October 4, 2023 C161A/161B | Greater Columbus Convention Center

Session Chair: Corson Cramer, Oak Ridge National Laboratory

2:00 PM

3D Printing of Ceramic Composites: *Eduardo Saiz*¹; Shitong Zhou¹; Iuliia Tirichenko¹; Florian Bouville¹; Qiaosong Cai¹; Victoria Vilchez¹; Rohit Malik¹; ¹Imperial College

2:30 PM

Robocasting Sintered SiC and Alumina for Extreme Applications: Joe Cesarano¹; Mathew Esquibel¹; Nik Ninos²; Sajjad Bigham³; Kashif Nawaz⁴; ¹Robocasting Enterprises; ²Calix Ceramics; ³North Carolina State University; ⁴Oak Ridge National Labs

2:50 PM

Extrusion Based 3-D Printing of Reinforced SiC Using Hydrogel Pastes: Anthony Brandl¹; Scott Misture¹; Junjun Ding¹; ¹Alfred University

3:10 PM

Additive Manufacturing for Functionally Graded Advanced Ceramics: Nicholas Ku¹; Joshua Pelz²; Matthew Guziewski¹; Franklin Kellogg¹; Michael Golt¹; Clara Mock¹; Samuel Hirsch¹; Phillip Goins¹; Lionel Vargas-Gonzalez¹; ¹US Army Research Laboratory; ²University of California, San Diego

3:40 PM Break

4:00 PM

Additive Manufacturing of Silicon Carbide Ceramics at the Micron-/ nano- Particle Size for Hypersonic Capabilities: *Grant Baldwin*¹; Kun Wang¹; ¹Alfred University

4:20 PM

Effect of Variations in Carbon Fiber Loading of Silicon Carbide and Zirconium Diboride Cmcs Through Direct Ink Writing: Jonathan Kaufman¹; Connor Wyckoff¹; Benjamin Lam²; Christopher Kassner¹; Katherine Acord²; Lisa Rueschhoff²; ¹UES Inc; ²Air Force Research Laboratory

4:40 PM

High Temperature Materials Focus at LLNL: *Gabriella King*¹; James Cahill¹; ¹Lawrence Livermore National Laboratory

ADDITIVE MANUFACTURING

Additive Manufacturing of Metals: Microstructure, Properties and Alloy Development — Additive Manufacturing of Multi-material, Functionally-graded Materials and High Entropy Alloys

Program Organizers: Prashanth Konda Gokuldoss, Tallinn University of Technology; Jurgen Eckert, Erich Schmid Institute of Materials Science

Wednesday PM | October 4, 2023 C151 | Greater Columbus Convention Center

Session Chair: John Carpenter, Los Alamos National Laboratory

2:00 PM

A Material Binning Approach to Laser Powder Manufacturing of Multi-material Composition Structures: Suyash Niraula¹; Naiyer Shokri¹; Thomas Berfield¹; ¹University of Louisville

2:20 PM

En-Situ Alloying by Powder Bed Doping to form Functionally Graded Materials with LPBF: McKay Sperry¹; David Carter¹; *Nathan Crane*¹; ¹Brigham Young University

2:40 PM

Functionally Graded Materials Compositional Path Design Considering Cracking Using Scheil and Equilibrium Simulations: Zhening Yang¹; Hui Sun¹; Allison Beese¹; ZI-Kui Liu¹; ¹Penn State University

3:00 PM

In-situ Carbide-driven CoCrFeMnNi High-entropy Alloy Matrix Nanocomposites Manufactured by Laser Powder Bed Fusion: Carbon Content and Heat Treatment Effects on Microstructure, Room and Cryogenic Tensile, High Temperature Creep Properties: *Kee-Ahn Lee*¹; Young-Kyun Kim¹; So-Yeon Park¹; Sangsun Yang²; ¹Inha University; ²Korea Institute of Materials Science



3:20 PM

Extraordinary Combination of Strength and Ductility in an Additively Manufactured Fe-based Medium Entropy Alloy through In Situ Formed ŋ-nanoprecipitate and Heterogeneous Microstructure: *Farahnaz Haftlang*¹; Eun Seong Kim¹; Jihye Kwon¹; Yoon-Uk Heo¹; Hyoung Seop Kim¹; ¹POSTECH

ADDITIVE MANUFACTURING

Additive Manufacturing of Metals: Microstructure, Properties and Alloy Development — Additive Manufacturing of Ni-based Alloys

Program Organizers: Prashanth Konda Gokuldoss, Tallinn University of Technology; Jurgen Eckert, Erich Schmid Institute of Materials Science

Wednesday PM | October 4, 2023 C150 | Greater Columbus Convention Center

Session Chair: Emily Moore, Lawrence Livermore National Laboratory

2:00 PM

Deformation Mechanisms of Additively Manufactured Hastealloy-X: A Neutron Diffraction Experiment and Crystal Plasticity Modeling: Hamidreza Abdolvand¹; Ali Bonakdar²; Ahmed Aburakhia¹; Amirhosein Mozafari¹; ¹The University of Western Ontario; ²Siemens Energy Canada Limited

2:20 PM

Laser Powder Bed Fusion of Crack-free High Gamma Prime Rene 77 Superalloy: Processing, Heat Treatment, Mechanical Properties and Applications: Marcus Lam¹; ¹Monash University

2:40 PM

Microstructure and Mechanical Properties of Alloy 718 Blocks by Wire Arc Additive Manufacturing: *Bing Han*¹; Manuel Marya¹; Srinand Karuppoor¹; ¹Schlumberger

3:00 PM

Stress Relaxation Testing to Assess the Creep Performance of Inoculated Alloy 230 Processed with Laser Powder Bed Fusion: Daniel McConville¹; Ben Rafferty²; Kevin Eckes²; Jeremy Iten²; Amy Clarke¹; Jonah Klemm-Toole¹; ¹Colorado School of Mines; ²Elementum 3D

3:20 PM Break

3:40 PM

Surpassing know Creep Resistance for Haynes 282 through Wire Arc Additive Manufacturing: Sophia Hill¹; Jonah Klemm-Toole¹; ¹Colorado School of Mines

4:00 PM

Processing-structure-property Relationship of 3D Printed Metals via Hot Wire Direct Energy Deposition: *Bharat Yelamanchi*¹; Virgil Solomon¹; Andrew Prokop¹; Brian Vuksanovich¹; John Carballo¹; Jackie Ruller¹; Aayush Alok¹; Mukesh Kalel¹; Holly Martin¹; Pedro Cortes¹; ¹Youngstown State University

4:20 PM

Densification and Microstructural Evolution and Characterization of Binder Jet Printed and Sintered Porous Ni-Mn-Ga Magnetic Shape-Memory Alloys: *Pierangeli Rodriguez De Vecchis*¹; Amir Mostafaei²; Markus Chmielus¹; ¹University of Pittsburgh; ²Illinois Institute of Technology

ADDITIVE MANUFACTURING

Additive Manufacturing of Polymeric-based Materials: Challenges and Potentials — Exploring the Additive Manufacturing Frontier of Polymeric Composites

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Ola Rashwan, Pennsylvania State University-Harrisburg; Matthew Caputo, Pennsylvania State University -Shenango; Daudi Waryoba, Pennsylvania State University

Wednesday PM | October 4, 2023 C171 | Greater Columbus Convention Center

Session Chairs: Matt Caputo, Penn State Shenango; Ola Rashwan, Penn State Harrisburg

2:00 PM Introductory Comments

2:05 PM

Characterization of Processing and Performance Properties of Ammonium Perchlorate Composite Propellant for Use in an Additivemanufacture System: Dylan Purcell¹; *Chelsey Hargather*¹; ¹New Mexico Institute of Mining and Technology

2:25 PM Invited

Material Extrusion Additive Manufacturing of Thermoset-based Short Fiber Composites: Brett Compton¹; ¹University of Tennessee

2:55 PM

Extrusion of Compounded rPET with Graphite Powder into Filament for Material Extrusion (MEX) Additive Manufacturing Technology: *Trent Townsend*¹; Ola Rashwan¹; Matthew Caputo²; ¹Pennsylvania State University - Harrisburg; ²Pennsylvania State University - Shenango

3:15 PM Question and Answer Period

3:25 PM Break

3:45 PM

Enhancing Interphase Strength of Glass Fiber Polymer Matrix Composites - A Molecular Dynamics Study: Xiawa Wu¹; ¹Penn State Behrend

4:05 PM

Investigating Antimicrobial Efficacy of Printed PEEK Coated with AgNPs: Caden Kurzenknabe¹; Ola Rashwan¹; ¹Penn State University-Harrisburg

4:25 PM

Photopolymer-metal Composites Based on Metal Foil Deposition on Additive Manufactured Substrates: Sagar K G¹; ¹Cambridge Institute of Technology

4:45 PM Question and Answer Period



ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Session IV

Sponsored by: ACerS

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Wednesday PM | October 4, 2023 C160A/160B | Greater Columbus Convention Center

Session Chairs: Ashley Paz y Puente, University of Cincinnati; Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech

2:00 PM Invited

Additive Manufacturing at (Sur)face Value: Correlating L-PBF Surface Features with Part Quality and Microstructure: Ashley Paz y Puente¹; ¹University of Cincinnati

2:20 PM

Surface Patterning of Sacrificial Nodules Using L-PBF in Improving Corrosion Properties of Lightweight Al-Mg Alloy: *Fanyue Kong*¹; Minh Tran¹; Elena Romanovskaia¹; Valentin Romanovski¹; Ji Ma¹; John Scully¹; ¹University of Virginia

2:40 PM

Additive Manufacturing of Graded Tungsten Lattices for Radioactive Material Transport: Caleb Hatler¹; Zachary Persha¹; Jason Benkoski²; Dan Thoma¹; ¹University of Wisconsin Madison; ²Los Alamos National Laboratory

3:00 PM

Aiming the Susceptibility to Weld Solidification Cracking in Laser Powder Bed Fusion 316L Stainless Steel: Jhoan Guzman¹; Jacque Berkson¹; Samuel Casto¹; Antonio Ramirez¹; ¹The Ohio State University

3:20 PM Break

3:40 PM

Co-designing and LPBF Additive Manufacturing of Complex Thermofluidic Components of Concentrating Solar-Thermal Power Plants - A Comprehensive Study of Printing Heat Exchangers and Solar Receivers: Junwon Seo¹; Nicholas Lamprinakos¹; Erfan Rasouli²; Ines-Noelly Tano²; Austin Marshall²; Daniel Satko³; Subbarao Raikar⁴; Ansel Blumenthal⁵; Andrea Ambrosini⁵; Owen Hildreth⁴; Ayman Salem³; Vinod Narayanan²; Anthony Rollett¹; ¹Carnegie Mellon University; ²University of California, Davis; ³MRL Materials Resources LLC; ⁴Colorado School of Mines; ⁵Sandia National Laboratories

4:00 PM

Structural Robustness in Additively Manufactured Lattice Structures: *Mrinaal Lorengo*¹; Ji Ma¹, ¹University of Virginia

4:20 PM

Acoustic Energy Assisted Metal Powder Consolidation for Additive Manufacturing: *M Faisal Riyad*¹; Pu Han¹; Shams Torabnia¹; Mohammed Bawareth¹; Keng Hsu¹; ¹Arizona State University

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Advanced Ceramics for Environmental Remediation — Session III

Sponsored by: ACerS Engineering Ceramics Division, ACerS Energy Materials and Systems Division

Program Organizers: Alberto Vomiero, Lulea University of Technology; Elisa Moretti, Ca' Foscari University of Venice; Tofik Shifa, Ca'Foscari University of Venice; Clara Santato, Ecole Polytechnique Montreal

Wednesday PM | October 4, 2023 B240/241 | Greater Columbus Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Plasmonic Gas Sensors for Environmental Monitoring: Alessandro Martucci²; ¹University of Padova

2:30 PM Invited

Porous 2D Materials for Water Remediation and Diagnostics: *Giovanni Fanchini*¹; ¹University of Western Ontario

3:00 PM

Engineered Ceramics for Enhanced Weathering CO2 Capture: Brian Gorman¹; David Nowacek²; ¹Colorado School of Mines; ²Ironstone Strong, Ltd

3:20 PM

Stripping and Regeneration of Magnetite Adsorbent Used in an Ion Exchange System: *Trevor Russell*¹; Jerome Downey¹; Richard LaDouceur¹; Gary Wyss¹; ¹Montana Technological University

PROCESSING AND MANUFACTURING

Advanced Joining Technologies for Automotive Lightweight Structures — Resistance Spot Welding and Other Advanced Joining Technologies

Sponsored by: TMS: Aluminum Committee, ACerS Manufacturing Division

Program Organizers: Yan Huang, Brunel University London; Yingchun Chen, Dura Automotive Systems

Wednesday PM | October 4, 2023 B244/245 | Greater Columbus Convention Center

Session Chairs: Yong Chae Lim, Oak Ridge National Laboratory; Yan Huang, Brunel University London

2:00 PM Keynote

Achieving Success Joining Advanced Structural Materials with Automated Adhesive and Sealer Dispensing Systems: Michael Bonner¹; ¹Saint Clair Systems, Inc.

2:30 PM

Application of an Innovative Interlayer Technology on Advanced Materials for the Automotive Industry: *Liya Amanuel*¹; Antonio Ramirez¹; ¹Ohio State University



2:50 PM

Design of Shape Memory Wire Actuators by Impact Welding: Biswanath Paira¹; *Boyd Panton*¹; Anupam Vivek¹; Brian Thurston¹; Glenn Daehn¹; ¹Ohio State University

3:10 PM

Effect of Spreading Behavior of Adhesives in Resistance Spot Welding Bonding (RSWB): *Henry León-Henao*¹; Antonio Ramirez¹; ¹The Ohio State University

3:30 PM Break

3:50 PM

Design and Development of 3D Printed Fastening Mechanisms for Similar Material Single-lap Joints: *Haris Khan*¹; Maqsoora Nazim¹; Farooq Akram¹; ¹National University of Sciences and Technology

4:10 PM

Development of an Analytical Model for Electrode Wear during Resistance Spot Welding: *Rafael Giorjao*¹; Olga Eliseeva¹; Jerry Gould¹; ¹EWI

4:30 PM

Quality Improvement Method of Resistance Spot Welding Process Aluminum Alloy: *Changwook Ji*¹; Sugwook Kang¹; Jaehun Kim¹; Jooyong Cheon¹; Jeong Yeol Park¹; ¹Korea Institute of Industrial Technology

MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Materials for Harsh Environments — Session II

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Wednesday PM | October 4, 2023 A120 | Greater Columbus Convention Center

Session Chairs: Xiao Li, University of North Texas; Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech

2:00 PM Invited

Virtual Characterization Tools for Understanding Material Response in Harsh Conditions: Avanish Mishra¹, ¹Los Alamos National Laboratory

2:20 PM Invited

Blue Phase Liquid Crystal Templated Nucleation and Growth of Inorganic Materials: Tejal Pawale¹; Xiao Li¹; ¹University of North Texas

2:40 PM Invited

Smart Phase Transforming Metal Ceramic Multilayers: Carter Stotts¹; Michael Large¹; Gregory Thompson¹; *Christopher Weinberger*¹; ¹Colorado State University

3:00 PM

Behavior of Select Refractories in Plastics Gasification Environments: Omer Doğan¹; *Griffin Patterson*²; Kristin Tippey¹; Jinichiro Nakano¹; Anna Nakano¹; Hugh Thomas¹; ¹National Energy Technology Laboratory; ²Harbison Walker International

3:20 PM

Castable Eutectic Ni-Ce Superalloys Strengthened by a γ / γ Microstructure: S. Bushra Haider¹; Elizabeth Heon¹; Eric Lass¹; ¹University of Tennessee-Knoxville

3:40 PM Break

4:00 PM

Computational Design of Yttrium-Rare Earth Alloyed Disilicates as Environmental Barrier Coatings: *Shiqiang Hao*¹; Richard Oleksak¹; Ömer Doan¹; Michael Gao¹; ¹National Energy Technology Laboratory

4:20 PM

Heat Treatment Design of Inconel 740H and Modified Superalloy for Microstructure Stability and Creep Properties Enhancement: *CheolHyeok Yang*¹; DongMin Kim¹; ChiWon Kim¹; HiWon Jeong²; HyunUk Hong¹; ¹Changwon University; ²Korea Institute of Materials Science

4:40 PM

Cold-rolled 3D Graphene Sheets as a Protective Material in the Fluorocarbon Plasma Environment: Vamsi Krishna Reddy Kondapalli¹; Kyle Brittingham¹; Guangqi Zhang¹; Mahnoosh Khosravifar¹; Vesselin Shanov¹; ¹University of Cincinnati

5:00 PM

Doped Lanthanum Chromite-refractory Based Composites Sensors for High Temperature Monitoring in Harsh Environments Systems: Javier Mena¹; Edward Sabolsky¹; Konstantinos Sierros¹; Katarzyna Sabolsky¹; Rowan Barto¹; Nicholas Voorstad¹; ¹West Virginia University

IRON AND STEEL (FERROUS ALLOYS)

Advances in Understanding of Martensite in Steels II — Microstructure Evolution and Properties

Sponsored by: TMS: Steels Committee

Program Organizers: Ian Zuazo, ArcelorMittal Global R&D - Industeel; Mohsen Asle Zaeem, Colorado School of Mines; Janelle Wharry, Purdue University; Eric Payton, University of Cincinnati; Goro Miyamoto, Tohoku University; Eric Lass, University of Tennessee-Knoxville; Amy Clarke, Colorado School of Mines; MingXin Huang, University of Hong Kong; Kester Clarke, Colorado School of Mines

Wednesday PM | October 4, 2023 A211 | Greater Columbus Convention Center

Session Chairs: Goro Miyamoto, Tohoku University; Janelle Wharry, Purdue University

2:00 PM

In-situ Neutron Diffraction Analysis of Deformation-induced Transformation Behavior in High-strength and High-ductility Metastable Austenitic Stainless Steel Produced by Cold-rolling and Partitioning Method: *Yuta Matsumura*¹; Goro Miyamoto²; Yongie Zhang²; Tadashi Furuhara²; Yo Tomota³; ¹Tokushu Kinzoku Excel Co., Ltd.; ²Tohoku University; ³National Institute of Advanced Industrial Science and Technology

2:20 PM

Evolution of Dislocation Structure during Plastic Deformation in Lath Martensite of Low-Carbon Steel Observed by ECCI: Shuang Gong¹; Junya Inoue¹; ¹The University of Tokyo

2:40 PM

Investigation on Gigapascal Martensitic Microstructures for Higher Bendability of Advanced High-strength Hot Stamped Steel: *Byung-Gil Yoo*¹; Jewoosoo Kim¹; Seok-Hyeon Kang¹; Seong Kyung Han¹; Tae Woo Kwon¹; Jae-il Jang²; ¹Hyundai Steel; ²Hanyang University



3:00 PM

Effect of Thermomechanical Strategy and Ni-Mo Alloying on High Strength Quenched and Tempered Thick Plates: Xabier Azpeitia¹; Nerea Isasti¹; Hardy Mohrbacher²; Eric Detemple³; *Pello Uranga*¹; ¹CEIT and TECNUN (University of Navarra); ²NiobelCon bvba; ³AG der Dillinger Hüttenwerke

3:20 PM Break 3:20 - 3:40 PM

3:40 PM

Influence of Strain Rate on Mechanical Behavior and Microstructure Evolution of Fe-0.10C-5Mn Medium Manganese Steel: *Mei Zhang*¹; ¹Shanghai University

4:00 PM

Achieving 1.4 GPa Tensile Strength with Good Ductility in a Novel Low-alloy Low-carbon Martensite Steel: *Pravendra Singh*¹; Murugesh R.¹; Suhrit Mula¹; Sadhan Ghosh¹; ¹Indian Institute of Technology Roorkee

CERAMIC AND GLASS MATERIALS

Ceramics and Glasses Modeling by Simulations and Machine Learning — Simulations and Machine Learning II

Sponsored by: ACerS Glass & Optical Materials Division

Program Organizers: Mathieu Bauchy, University of California, Los Angeles; Peter Kroll, University of Texas at Arlington; N. M. Anoop Krishnan, Indian Institute of Technology Delhi

Wednesday PM | October 4, 2023 B231 | Greater Columbus Convention Center

Session Chairs: Mathieu Bauchy, UCLA; Aditya Kumar, MS&T

2:00 PM Invited

A B-C Story, Investigated by A.I. and CALPHAD: Olivier Hardouin Duparc¹; Romuald Béjaud²; Antoine Jay³; Olivier Rapaud⁴; Nathalie Vast¹; ¹LSI-CNRS-CEA; ²CEA-DAM-DIF; ³Université Toulouse; ⁴CEC Limoges

2:40 PM Invited

Atomistic Perspectives in Characterizing Crystalline Defect Formation in Amorphous Silicon Nitride: *Tesia Janicki*¹; Carlos Chacon¹; Edwin Chiu¹; Jason Gibson²; Scott Grutzik¹; Khalid Hattar³; Richard Hennig²; Hojun Lim¹; Calvin Parkin¹; Jennie Podlevsky¹; Aashique Rezwan¹; Chris Bishop¹; J. Matthew Lane¹; ¹Sandia National Laboratories; ²University of Florida; ³University of Tennessee Knoxville

3:20 PM

Defect Chemistry and Electrical Properties of Doped BaTiO3: *Yuki Sakai*¹; Minoru Ryu¹; Yoshiki Iwazaki¹; ¹Taiyo Yuden Co., Ltd.

3:40 PM Break

4:00 PM

An ICME Approach for Short Fiber Reinforced Ceramic Matrix Composite via Direct Ink Writing: Jason Sun¹; James Chen¹; ¹University at Buffalo

4:20 PM

First-Principles Modeling of Thermodynamics and Kinetics of Thin-Film Tungsten Carbides: *Jiayang Wang*¹; Alexander Sredenschek¹; David Sanchez¹; Da Zhou¹; Mauricio Terrones¹; Susan Sinnott¹; ¹Penn State University

NUCLEAR ENERGY

Ceramics for New Generation Nuclear Energy System Application — Radiation-induced Defects in Model Oxides

Sponsored by: ACerS Energy Materials and Systems Division, TMS: Nuclear Materials Committee

Program Organizers: Lingfeng He, North Carolina State University; Krista Carlson, University of Nevada, Reno; Maik Lang, University of Tennessee; Jake Amoroso, Savannah River National Laboratory; Brian Riley, Pacific Northwest National Laboratory; Enrique Saez, Clemson University; Jinsuo Zhang, Virginia Polytechnic Institute and State University

Wednesday PM | October 4, 2023 A124 | Greater Columbus Convention Center

Session Chairs: Marat Khafizov, Ohio State University; Krista Carlson, University of Nevada, Reno

2:00 PM Invited

Interface Effect on the Distributions of Radiation Induced Defects: Farida Selim¹; ¹Bowling Green State University

2:30 PM Invited

Atomistic Understanding of Thermal Conductivity Degradation in Irradiated Oxide Fuels: *Marat Khafizov*¹; Saqeeb Adnan¹; Erika Nosal¹; Miaomioa Jin²; Linu Malakkal³; Amey Khanolkar³; Shuxiang Zhou³; Zilong Hua³; Kaustubh Bawane³; Boopathy Kombaiah³; Chao Jiang³; Lingfeng He⁴; Michael Manley⁵; David Hurley³; ¹Ohio State University; ²Pennsylvania Satate University; ³Idaho National Laboratory; ⁴North Carolina State University; ⁵Oak Ridge National Laboratory

3:00 PM Invited

Thermal Energy Transport in Solids with Extended Defects: A New Insight from Phonon Scattering in Extended Strain Fields: Anter El-Azab¹; Ryan Deskins¹; ¹Purdue University

3:30 PM Break

3:50 PM Invited

Proton Irradiation and Characterization of ThO2, UxTh1-xO2, CeO2, UO2 and Zr:UO2 Single Crystals: James Mann¹; Karl Rickert²; Timothy Prusnick²; Cody Dennett³; David Turner⁴; Lin Shao⁵; ¹Air Force Research Laboratory; ²KBR; ³Massachusetts Institute of Technology; ⁴Azimuth Corporation; ⁵Texas A&M University

4:20 PM

Phonon Modal Analysis of Thermal Transport in ThO2 with Defects: Beihan Chen¹; Linu Malakkal²; Marat Khafizov³; Miaomiao Jin¹; ¹Pennsylvania State University; ²Idaho National Laboratory; ³Ohio State University



4:40 PM

Modeling the Effect of Point Defect Scattering on the Thermal Conductivity of ThO2: *Erika Nosal*¹; Saqeeb Adnan¹; Miaomiao Jin²; Linu Malakkal³; Marat Khafizov¹; ¹The Ohio State University; ²The Pennsylvania State University; ³Idaho National Laboratory

5:00 PM

Impact of Phonon Resonant Scattering on Thermal Conductivity of Uranium-doped ThO2: *Saqeeb Adnan*¹; Zilong Hua²; Erika Nosal¹; Amey Khanlokar²; David Hurley²; Marat Khafizov¹; ¹Ohio State University; ²Idaho National Laboratory

MODELING

Computational Discovery, Understanding, and Design of Multi-principal Element Materials — Session III

Sponsored by: TMS Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Shuozhi Xu, University of Oklahoma; Douglas Spearot, University of Florida; Jia Li, Hunan University; Michael Gao, National Energy Technology Laboratory; Levente Vitos, Royal Institute of Technology (KTH)

Wednesday PM | October 4, 2023 A223 | Greater Columbus Convention Center

Session Chairs: Dilpuneet Aidhy, Clemson University; Shunli Shang, Pennsylvania State University

2:00 PM Keynote

Charge-Density based Convolutional Neural Networks for Property Prediction in High Entropy Alloys: Jacob Fisher¹; Serveh Kamrava²; Pejman Tahmasebi²; *Dilpuneet Aidhy*¹; ¹Clemson University; ²Colorado School of Mines

2:40 PM

Microstructural Engineering via Heat Treatments in Multi-principal Element Alloy Systems with Miscibility Gaps: *Shalini Roy Koneru*¹; Kamal Kadirvel²; Zachary Kleonne¹; Hamish Fraser¹; Yunzhi Wang¹; ¹Ohio State University; ²CompuTherm LLC

3:00 PM

Effect of Elasticity in Microstructural Evolution of Multi-component, Multi-phase System: Jeonghwan Lee¹; *Kunok Chang*¹; ¹Kyung Hee University

3:20 PM Break

3:40 PM Invited

Predicting Ideal Shear Strength of Dilute Multicomponent Ni-based Alloys by an Integrated First-principles, CALPAHD, and Correlation Analysis: Shuang Lin¹; Shun-Li Shang¹; John Shimanek¹; Yi Wang¹; Allison M Beese¹; Zi-Kui Liu¹; ¹Penn State University

4:10 PM

Ab-Initio Investigation of Jahn-Teller Distortions within High Entropy Oxide Systems Using Recently Developed Meta-GGA Functionals: Jacob Sivak¹; MaryKate Caucci¹; Saeed Almishal¹; Christina Rost²; Ismaila Dabo¹; Jon-Paul Maria¹; Susan Sinnott¹; ¹Pennsylvania State University; ²James Madison University

4:30 PM

First-principles Study for Discovery of High-entropy MXenes: *HyunWoo Seong*¹; Min Seok Lee¹; Ho Jin Ryu¹; ¹KAIST

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Functional Ceramics & Polymer-derived Ceramics

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Indiana University-Purdue University Indianapolis

Wednesday PM | October 4, 2023 B234 | Greater Columbus Convention Center

Session Chairs: Kathy Lu, Virginia Tech; Gurpreet Singh, Kansas State University

2:00 PM Invited

Enabling Materials Chemistry for Functional Ceramics: *Shenqiang Ren*¹; ¹University at Buffalo, The State University of New York

2:30 PM Invited

Intrinsic and Extrinsic Control in Gas Phase Deposition Processes for Functional Ceramics: *Thomas Fischer*¹; Sanjay Mathur¹; ¹University of Cologne

3:00 PM

Polymer Grafted Zirconia Nanoparticles as a Processible Precursor to Zirconium-based Ceramics: James Ponder¹; Nicholas Posey¹; Kara Martin¹; Matthew Dickerson²; ¹UES, Inc.; ²AFRL

3:20 PM Break

3:40 PM

Polymer Derived Hierarchically Porous Silicon Oxycarbide Ceramics through Bio-templating: *Ummen Sabu*¹; Rajendra Bordia¹; ¹Clemson University

4:00 PM

Preceramic Nanomaterials from Ionically Complexed Polymers and Particles: Nicholas Posey¹; Jared Delcamp¹; Matthew Dickerson²; ¹UES, Inc.; ²AFRL

4:20 PM

Phase Formation and High Temperature Electrical Conductivity in Novel Polymer-Derived Silicon Oxycarbide – $Ti_3C_2T_x$ MXene Nanocomposites: Advaith Rau¹; Kathy Lu¹; ¹Virginia Polytechnic Institute and State University

4:40 PM

Investigation of Sodium and Potassium Ion Storage Behavior of WS2 Nanosheet Loaded Polymer Derived SiOC Fibers: *Sonjoy Dey*¹; Gurpreet Singh¹; ¹Kansas State University



CERAMIC AND GLASS MATERIALS

Engineering Ceramics: Microstructure-Property-Performance Relations and Applications — Engineering Ceramics: Ceramic Matrix Composites and Applications

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Young-Wook Kim, University of Seoul; Hua-Tay Lin, Guangdong University of Technology; Junichi Tatami, Yokohama National University; Michael Halbig, NASA Glenn Research Center

Wednesday PM | October 4, 2023 B232 | Greater Columbus Convention Center

Session Chairs: Federico Smeacetto, Politecnico di Torino; Jie Zhang, Institute of Metal Research, Chinese Academy of Sciences

2:00 PM

Densification, Microstructure, and Thermal Properties of Zirconium Diboride (ZrB2) with Carbon Additions: *Yue Zhou*¹; William Fahrenholtz¹; Gregory Hilmas¹; ¹Missouri University of Science and Technology

2:20 PM

Development of Binary B4C-TiB2 and Ternary B4C-SiC-TiB2 Ceramicmatrix Composites for Armor Applications: *Emirhan Karadagli*¹; Besim Dara¹; Ahmet Toksoy¹; Bura Çiçek²; ¹Roketsan Missiles Inc.; ²Yldz Technical University

2:40 PM

Thermal Property and Corrosion Resistance of Xenotime-type Rare Earth Phosphates for Environmental Barrier Coatings: *Bishnu Majee*¹, Keith Bryce¹, Jie Lian¹, Liping Huang¹, ¹Rensselaer Polytechnic Institute

3:00 PM

Comparison of Alternate Methods of Fracture Toughness Determination via Strength Analysis: Nhu Dinh¹; John Mecholsky¹; ¹University of Florida

3:20 PM Break

3:40 PM

Al2O3-WC Ceramic Composites with Extremely Improved Mechanical Strength by Interfacial Segregation of Dilute Dopants: *Tomohiro Nishi*¹; Tomoko Hishida¹; Yusuke Katsu¹; Yasuyuki Okimura¹; Takeshi Mitsuoka¹; Katsuyuki Matsunaga²; ¹Niterra Co., Ltd.; ²Nagoya Univ.

4:00 PM

Mechanical, Thermal and Oxidation Properties of $Al_4SiC_4/Y_3Al_5O_{12}$ Ceramics: Atsuko Tanaka¹; Anna Gubarevich¹; Katsumi Yoshida¹, ¹Tokyo Institute of Technology

4:20 PM

Designing Novel Dielectric Composites with High Thermal Conductivity via Cold Sintering: Javier Mena-Garcia¹; Arnaud Ndayishimiye¹; Zhongming Fan¹; Steven Perini¹; Wenjie Li¹; Bed Poudel¹; Shashank Priya¹; Brian Foley²; John Gaskins²; Clive Randall¹; ¹The Pennsylvania State University; ²Laser Thermal

FUNDAMENTALS AND CHARACTERIZATION

High Entropy Materials: Concentrated Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond IV — Materials Structure and Characterization

Sponsored by: TMS Alloy Phases Committee

Program Organizers: Mitra Taheri, Johns Hopkins University; Michael Gao, National Energy Technology Laboratory; Elaf Anber, Johns Hopkins University; Yu Zhong, Worcester Polytechnic Institute; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Yiquan Wu, Alfred University; Jian Luo, University of California, San Diego; Amy Clarke, Colorado School of Mines; Sebastian Lech, Johns Hopkins University

Wednesday PM | October 4, 2023 A216 | Greater Columbus Convention Center

Session Chairs: Milan Heczko, Ohio State University; Elaf Anber, Johns Hopkins University

2:00 PM

Multi-scale Characterization of 3D Printable CrCoNi-based ODS-MPEA Designed for High-temperatures and Extreme Environments: *Milan Heczko*¹; Timothy Smith²; Christopher Kantzos²; Veronika Mazanova¹; Antonin Dlouhy³; Michael Mills¹; ¹Ohio State University; ²NASA Glenn Research Center; ³Institute of Physics of Materials CAS

2:20 PM

Study of Microstructure and Deformation Behavior of MnFeNi Medium Entropy Alloy: Jiashi Miao¹; Xuejun Huang¹; Alan Luo¹; ¹Ohio State University

2:40 PM

Effect of Surface Microstructure Modification on the Oxidation Behavior of a TaTiCr RMPEA: *Noah Welch*¹; Maria Quintana¹; Todd Butler²; Peter Collins¹; ¹Iowa State University; ²Air Force Research Laboratory, WPAFB

3:00 PM

Oxidation and Microstructures of Non-body Centered High Entropy Alloys: Mckenna Hitter¹; SK Varma¹; ¹University of Texas at El Paso

3:20 PM Break

3:40 PM

Effect of Phase Interface on Stretch-flangeability of Metastable Ferrous Medium-entropy Alloys: *Yeon Taek Choi*¹; Peyman Asghari-Rad²; Jae Wung Bae³; Hyoung Seop Kim¹; ¹Pohang University of Science and Technology; ²Pennsylvania State University; ³Pukyong National University

4:00 PM

Synthesis and Characterization of High Entropy Nitrides: *Suprabha Das*¹; Vadym Drozd¹; Andriy Durygin¹; Md Shariful Islam Sozal¹; Mike Cinibulk²; Jesse Smith³; Xianming Bai⁴; Yong Ding⁵; Zhe Cheng¹; ¹Florida International University; ²Air Force Research Laboratory; ³Argonne National Laboratory; ⁴Virginia Institute of Technology; ⁵Georgia Institute of Technology

4:20 PM

Nanograin Stabilization in High Entropy Alloy Without the Need for "Extra" Solute: *Moses Adaan-Nyiak*¹; Ahmed Tiamiyu¹; ¹University of Calgary



MATERIALS-ENVIRONMENT INTERACTIONS

High Temperature Corrosion and Degradation of Structural Materials — V. Thermal/Environmental Barrier Coatings

Program Organizers: Kinga Unocic, Oak Ridge National Laboratory; Richard Oleksak, National Energy Technology Laboratory; David Shifler, Office of Naval Research; Raul Rebak, GE Global Research

Wednesday PM | October 4, 2023 A122 | Greater Columbus Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Impact of Environmental Barrier Coating Chemistries on the Oxidation of Si-base Materials: *Mackenzie Ridley*¹; Michael Lance¹; Trevor Aguirre¹; Kenneth Kane²; Bruce Pint¹; ¹Oak Ridge National Laboratory; ²Johns Hopkins Applied Physics Laboratory

2:30 PM

Discovery of High Entropy Rare Earth Disilicates for Extreme Environments: Laura Doumaux¹; Milena Milich²; Hunter Schonfeld²; Mackenzie Ridley³; Davide Robba⁴; Luka Vlahovic⁴; Kostantinos Boboridis⁴; Elizabeth Opila¹; Patrick Hopkins²; ¹University of Virginia, Materials Science and Engineering; ²University of Virginia, Mechanical and Aerospace Engineering; ³Oak Ridge National Laboratory; ⁴European Commission, Joint Research Centre (JRC), Karlsruhe, Germany

2:50 PM

Thermophysical Properties of Xenotime Inspired Rare Earth Phosphate EBCs: Pádraigín Stack¹; William Riffe¹; Elizabeth Opila¹; ¹University of Virginia

3:10 PM

Investigating Fifth Oxide Effect on CMXAS Glass Properties: Clark Luckhardt¹; Elizabeth Opila¹; ¹University of Virginia

3:30 PM Break

3:50 PM

Development of Ablation-Resistant, High Emittance Coatings for Carbon/Carbon Composites for Hypersonic Application: Abdullah Al Saad¹; Carlos Martinez¹; Rodney Trice¹; ¹Purdue University

4:10 PM

Oxidation of B2-(Ru,Pd)Al Alloys for Bond Coat Applications: *Yueh-Cheng Yu*¹; David Poerschke¹; ¹University of Minnesota

4:30 PM

Surface Coatings Providing Protection Against High Temperatures and Corrosion in the Production of Coke: Borys Sereda¹; Irina Kruhliak¹; *Dmytro Sereda*¹; ¹DSTU

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Hybrid Organic-inorganic Materials for Alternative Energy — Hybrid Organic-inorganic Materials II

Sponsored by: ACerS

Program Organizers: Andrei Jitianu, Lehman College, City University of New York; Lisa Klein, Rutgers University; Lia Stanciu, Purdue University; Mihaela Jitianu, William Paterson University

Wednesday PM | October 4, 2023 B242/243 | Greater Columbus Convention Center

Session Chair: Chang-Yong Nam, Brookhaven National Laboratory

2:00 PM Invited

Hybrid Materials Based on Carbon Nanotube – Copper: Noe Alvarez¹; ¹University of Cincinnati

2:30 PM Invited

Potassium-based Batteries: Advantages and Challenges: Yiying Wu¹; ¹Ohio State University

3:00 PM Invited

Static and Dynamic Mechanical Characteristics of Li-Ion Conducting Polymer/Ceramic Composite Membranes: Hong Huang¹; ¹Wright State University

3:30 PM Break

3:50 PM Invited

Two-dimensional Material Additives in Hybrid Perovskite Solar Cells for Improving Performance and Stability: Chang-Yong Nam¹; ¹Brookhaven National Laboratory

4:20 PM Invited

Two-dimensional Transition Metal Carbo-Chalcogenides, MXenes, and their Hybrids for Electrochemical Energy Storage and Conversion: Ahmed Majed¹; Elham Loni¹; Kun Liang¹; *Michael Naguib*¹; ¹Tulane University



MODELING

Integration between Modeling and Experiments for Crystalline Metals: From Atomistic to Macroscopic Scales V — Session III

Sponsored by: TMS: Computational Materials Science and Engineering Committee, TMS: Shaping and Forming Committee, TMS: Materials Characterization Committee, TMS: Advanced Characterization, Testing, and Simulation Committee

Program Organizers: Mariyappan Arul Kumar, Los Alamos National Laboratory; Irene Beyerlein, University of California, Santa Barbara; Levente Balogh, Queen's University; Caizhi Zhou, University of South Carolina; Lei Cao, University of Nevada; Josh Kacher, Georgia Institute of Technology

Wednesday PM | October 4, 2023 A225 | Greater Columbus Convention Center

Session Chair: To Be Announced

2:00 PM Invited

Monte Carlo Grain Growth Simulations of Discontinuous Changes in Grain Boundary Velocity Induced by Grain Boundary Transformations: *Christopher Marvel*¹; Caroline Riedel²; Houliang Zhou²; Ben Zalatan²; Brian Chen²; Martin Harmer²; ¹Louisiana State University; ²Lehigh University

2:30 PM

A Solid Solution Strengthening Model with Ab Initio Calculations and Experiments for Solid Solution Al Alloys: *Taiwu Yu*¹; Thomas Barkar²; Bartek Kaplan²; Paul Mason¹; ¹Thermo-Calc Software Inc; ²Thermo-Calc Software AB

2:50 PM

Prediction and Quantification of Suzuki Segregation at Stacking Faults in FCC-based Alloys and Compounds: Victoria Tucker¹; Dongsheng Wen²; Thomas Mann¹; Michael Fahrmann³; *Michael Titus*¹; ¹Purdue University; ²University of Liverpool; ³Haynes International

3:10 PM

Validation Experiments Developed for Casting Modeling: Jonah Duch¹; Meghan Gibbs¹; Mathew Hayne¹; ¹Los Alamos National Laboratory

3:30 PM Break

3:50 PM

Diffusion in Curved Grain Boundaries: *Anqi Qiu*¹; Ian Chesser²; Elizabeth Holm³; ¹Carnegie Mellon University; ²Los Alamos National Laboratory; ³University of Michigan, Ann Arbor

4:10 PM

From Anti-Arrhenius to Arrhenius Behavior in a Dislocation-obstacle Bypass: Mohammad Nahavandian¹; Enrique Martinez Saez¹; Soumit Sarkar¹; ¹Clemson University

FUNDAMENTALS AND CHARACTERIZATION

Interface-mediated Phenomena in Structural Materials — Interface-promoted Deformation

Sponsored by: TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Jian Wang, University of Nebraska-Lincoln; Nigel Shepherd, University of North Texas; Andres Bujanda, U.S. Army Research Laboratory; Lin Shao, Texas A&M University

Wednesday PM | October 4, 2023 A214 | Greater Columbus Convention Center

Session Chairs: Nan Li, Los Alamos National Lab; Carl Boehlert, Michigan State University

2:00 PM Keynote

Localized Phase Transformation (LPT) at Stacking Faults and Twin Boundaries and Their Impact on Properties: Yuchi Wang¹; Longsheng Feng¹; Yipeng Gao¹; Ashton Egan¹; Timothy Smith²; Hao Tang³; Qing-Jie Li³; Ju Li³; Michael Mills¹; *Yunzhi Wang*¹; ¹The Ohio State University; ²NASA Glenn Research Center; ³Massachusetts Institute of Technology

2:40 PM

Experimental Constraints on the Grain Growth Kinetics of Rhenium: *Christopher Thom*¹; Todd Leonhardt¹; ¹Rhenium Alloys, Inc.

3:00 PM

Understanding the Interface Strain Induced HCPBCC Phase Transformation in Nanolaminate Mg: Kevin Jacob¹; Siddhartha Pathak¹; ¹Iowa State University

3:20 PM Break

3:40 PM Keynote

Investigating the Deformation Mechanisms for Allvac 718Plus Superalloy Containing Bi-modally Distributed ' Precipitates: Geeta Kumari¹; *Carl Boehlert*¹; M Sundararaman²; S Sankaran²; ¹Michigan State University; ²IIT Madras

4:20 PM Invited

Computing Grain Boundary "Phase" Diagrams: From Thermodynamic and Structural Characters to Mechanical Properties and an Emergent Concept of High-Entropy Grain Boundaries (HEGBs): Jian Luo¹; ¹University of California, San Diego

5:00 PM

A Novel Spinel Ferrite-Hexagonal Ferrite Composite for Enhanced Magneto-electric Coupling in a Composite with PZT: *Sujoy Saha*¹; Bhabindra Dawadi¹; Rao Bidthanapally¹; Gopalan Srinivasan¹; ¹Oakland University

5:20 PM

Nanoscale Hydration at the Collagen-mineral Interface's Role in Overall Tissue Strength of Human Cortical Bone: *Elizabeth Montagnino*¹; Samantha Ferengul¹; Thomas Siegmund¹; John Howarter¹; ¹Purdue University



LIGHTWEIGHT ALLOYS

Light Metal Technology — Smart Manufacturing Light Weight Metals and Alloys

Program Organizers: Xiaoming Wang, Purdue University; Alan Luo, Ohio State University

Wednesday PM | October 4, 2023 A212 | Greater Columbus Convention Center

Session Chair: Xiaopeng Li, University of New South Wales

2:00 PM Invited

A Machine-learning Assisted Optimization Approach and Microstructure Characterization Method for Laser Powder Bed Fusion: *Xiaopeng Li*¹, ¹University of New South Wales

2:20 PM

A Case of Update on 330kA Aluminium Potline in China: Hong Li¹; ¹Guangxi GIG Yinhai Aluminium Group

2:40 PM

Assessment of the Mechanical Properties of an AlMg7Cu2 Alloy with TiBZrMoV Alloying at Different T6 Solution Heat Treatment Conditons and Modeling of Its Behavior by Continuum Mechanics Approach: Kamil Armagan Gul¹; Kerem Can Dizdar¹; Eyüp Kayali¹; Ozgur Aslan²; *Derya Dispinar*³; ¹Istanbul Technical University; ²Atilim University; ³Foseco Non Ferrous

3:00 PM

Investigating Hydrogen Porosity in Aluminum Laser Welding Using a Three-dimensional Cellular Automaton Model: *Nicole Trometer*¹; Michael Moodispaw¹; Wayne Cai²; Teresa Rinker²; Shardul Kamat²; Zachary Velasco²; Alan Luo¹; ¹The Ohio State University; ²General Motors Company

3:20 PM

Importance of Runner Design in the Reproducibility of Tensile Tests: Hayati Sahin¹; Derya Dispinar¹; ¹Foseco

3:40 PM Break

4:00 PM

Phase Stability in Laser Melted Microstructures of Al-X (X=Zr, Nb, V) Alloys: *Alice Perrin*¹; Weicheng Zhong¹; Ke An¹; Yuri Osetskiy¹; Alex Plotkowski¹; Kevin Sisco²; Ying Yang¹; ¹Oak Ridge National Laboratory; ²University of Tennessee-Knoxville

4:20 PM

Physics-constrained, Inverse Design of High-temperature, Highstrength, Creep-resistant Printable Al Alloys Using Machine Learning Methods: S. Mohadeseh Taheri-Mousavi¹; ¹Carnegie Mellon University

4:40 PM

Study on the Improvement of the Mechanical Properties Heavy Commercial Vehicle's Wheel by the Molten-forged on the A356 Alloy: *Min Seok Moon*¹; Myeong Han Yoo²; Ki Won Kim¹; James Kim³; ¹ Squared M Co., Ltd.; ²Korea Carbon Industry Promotion Agency; ³ARTEXG Co., Ltd.

5:00 PM

Through-thickness Heterogeneity in the Mechanical Properties of Hot Rolled AA7075-T651: *Damilola Alewi*¹; Paul Rottmann¹; Haluk Karaca¹; Kirk Lemmen¹; ¹University of Kentucky

5:20 PM

Inductance-based Structural Self-sensing, as Shown for Sensing Shape-changing Deformation In Aluminum: *Deborah Chung*¹; Min Kyoung Kim¹; ¹State University of New York Buffalo

ARTIFICIAL INTELLIGENCE

Materials Processing and Fundamental Understanding Based on Machine Learning and Data Informatics — Machine Learning for High Performance Materials

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Kathy Lu, University of Alabama Birmingham; Pinar Acar, Virginia Tech; Yi Je Cho, Sunchon National University

Wednesday PM | October 4, 2023 A121 | Greater Columbus Convention Center

Session Chairs: Yi Je Cho, Sunchon National University; Kathy Lu, Virginia Tech

2:00 PM Invited

Machine Learning-assisted Exploration of the Chemistry-processing Design Space Under Additive Manufacturing: Application to an FCC HEA Space: *Raymundo Arroyave*¹, ¹Texas A&M University

2:30 PM Invited

Accurate Prediction of Oxygen Vacancy Concentration with Disordered A-site Cations in High-entropy Perovskite Oxides: *Jiyun Park*¹; Boyuan Xu¹; Jie Pan²; Dawei Zhang³; Stephan Lany⁴; Xingbo Liu⁵; Jian Luo³; Yue Qi¹; ¹Brown University; ²Michigan State University; ³University of California San Diego; ⁴National Renewable Energy Laboratory; ⁵West Virginia University

3:00 PM

Machine Learning-based Prediction of the Mechanical Properties of Microalloyed Steel Subjected to Thermomechanical Controlled Processing: Sushant Sinha¹; Denzel Guye¹; Xiaoping Ma²; Kashif Rehman²; Stephen Yue¹; Narges Armanfard¹; ¹McGill University; ²Algoma Steel Inc.

3:20 PM

Machine Learning for Phase Prediction of High-entropy Alloys Assisted by Imbalance Learning: Yoon Suk Choi¹; *Libin Zhang*¹; Dae-Geun Nam²; ¹Pusan National University; ²Korea Institute of Industrial Technology

3:40 PM Break

4:00 PM

Physics-informed Machine Learning for Crystal Plasticity Model Calibration of Ti-7Al Alloy: Mohamed Elleithy¹; Ender Eger¹; Arulmurugan Senthilnathan¹; Mahmudul Hasan¹; Pinar Acar¹; ¹Virginia Tech

4:20 PM Invited

Prediction of the Mechanical Response of Zirconia-reinforced Metal-matrix Composite Using Deep Learning Approaches: Maryam Shakiba¹; Marwa Yacouti¹; ¹University of Colorado - Boulder



4:50 PM Invited

Representation, Regeneration and Prediction of Microstructure in Additive Friction Stirring via Deep Regeneration Neural Network: Yunhui Zhu¹; Xiaofeng Wu¹; Hang Yu¹; ¹Virginia Tech

BIOMATERIALS

Next Generation Biomaterials — Next Generation Biomaterials IV

Sponsored by: ACerS Bioceramics Division

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford; Shawn Allan, Lithoz America LLC

Wednesday PM | October 4, 2023 A222 | Greater Columbus Convention Center

Session Chair: Sierra Kucko, Alfred University

2:00 PM

Polycaprolactone-based Polymerized High Internal Phase Emulsions with Bioceramic Inclusions: *Sierra Kucko*¹; Timothy Keenan¹; ¹Alfred University

2:20 PM

Curcumin and Epigallocatechin Gallate Enhance Osteogenic and Antibacterial Properties of HA-coated Titanium Implant: *Priya Kushram*¹; Susmita Bose¹; ¹Washington State University

2:40 PM

Exploring the Potential of Carvacrol for Orthopaedic Applications: In Vitro Gene Expression and In Vivo Studies: *Aditi Dahiya*¹; Susmita Bose¹; ¹Washington State University

3:00 PM

Fabrication of PLA/Bismuth Ferrite Scaffolds and Investigation of the Release Potential of Amoxicillin Under the Influence of Magnetic Field: *Zekiye Akdag*¹, ¹Marmara University

3:20 PM

Investigation of Tin Addition on Mechanical and Corrosion Behavior of Mg-Zn-Si Alloy: Gaurav Gupta¹; Sourav Ganguly²; Jayant Jain³; Sudhanshu Singh¹; ¹IIT Kanpur; ²CSIR-Institute of Minerals & Materials Technology (CSIR-IMMT); ³Indian Institute of Technology Delhi

CERAMIC AND GLASS MATERIALS

Phase Transformations in Ceramics: Science and Applications — Session II

Sponsored by: ACerS Basic Science Division

Program Organizers: Pankaj Sarin, Oklahoma State University; Waltraud Kriven, University of Illinois at Urbana-Champaign; Sanjay V. Khare, University of Toledo; Scott Mccormack, University Of California, Davis; Theresa Davey, Tohoku University

Wednesday PM | October 4, 2023 B230 | Greater Columbus Convention Center

Session Chair: Pankaj Sarin, Oklahoma State University

2:00 PM

Computational Study of Site-disordered AgSbl₄: *Chinmay Khare*¹; Victor Barone²; Richard Irving²; ¹Ottawa Hills High School; ²University of Toledo

2:20 PM

Using Total Scattering Techniques to Explore Fundamental Aspects of the Structural Organization in Weberite-type Tantalate Oxides: *Igor Gussev*¹; Gianguido Baldinozzi²; Eric O'Quinn¹; Joerg Neuefeind³; Maik Lang¹; ¹University of Tennessee; ²Université Paris-Saclay; ³Oak Ridge National Laboratory

2:40 PM

Enhancing Oxidation Resistance of Silicon Nitride Using Ca²⁺ Stabilizer: *Prapassorn Numkiatsakul*¹; Waltraud Kriven¹; Tonghun Lee¹; Kenneth Kim²; Chol-Bum Kweon²; ¹University of Illinois Urbana Champaign; ²Combat Capabilities Development Command Army Research Laboratory



NUCLEAR ENERGY

Progressive Solutions to Improve Corrosion Resistance of Nuclear Waste Storage Materials — Modeling Sensitivities of Environmental Stress Corrosion Cracking of Steel Canisters and Experiments for Protective Coatings

Sponsored by: TMS: Energy Committee, TMS: Nuclear Materials Committee

Program Organizers: Madeleine Jordache, Stevens Institute of Technology; Gary Pickrell, Virginia Tech; Daniel Cassar, Brazilian Center for Research in Energy and Materials (CNPEM)

Wednesday PM | October 4, 2023 A125 | Greater Columbus Convention Center

Session Chairs: Madeleine Jordache, Stevens Institute of Technology; Gary Pickrell, Virginia Tech; Daniel Cassar, Brazilian Center for Research in Energy and Materials (CNPEM)

2:00 PM Introductory Comments

2:05 PM Invited

Evaluating the Sensitivities of an Environmental Cracking LEFMbased Model for Use in Realistic Lifetime Predictions of Nuclear Waste Storage Casks: Sarah Blust¹; James Burns¹; ¹University of Virginia

2:35 PM

Chloride-induced Stress Corrosion Crack in Spent Nuclear Fuel Canisters: Understanding and Mitigating: *Haozheng Qu*¹; Janelle Wharry¹; ¹Purdue University

2:55 PM

SiON Protective Coatings for U-shaped Stainless Steel: Hyeon Joon Choi²; Kathy Lu¹; ¹Virginia Polytechnic Institute and State University

BIOMATERIALS

Society for Biomaterials: Biomaterial Applications — Tissue Engineering and Wound Healing

Sponsored by: Society for Biomaterials

Program Organizers: David Kohn, University of Michigan; Guigen Zhang, University of Kentucky; Claudia Loebel, University of Michigan; William Wagner, McGowan Institute for Regen Med

Wednesday PM | October 4, 2023 A224 | Greater Columbus Convention Center

Session Chairs: Sam Senyo , CWRU; Aishwarya Menon, Purdue University

2:00 PM

Magnetoactive Hydrogels to Fabricate Tissue Patterns: Claudia Loebel¹; Avinava Roy¹; Zhang Zenghao¹; Abdon Pena-Francesch¹; ¹University of Michigan

2:20 PM

Cell Encapsulation and Delivery in Tissue Engineering Using Bijelsderived Bicontinuous Structures: Haoran Sun¹; William Lu¹; *Min Wang*¹; ¹University of Hong Kong

2:40 PM

Therapeutic Potential of Mesoporous Nanoparticles Loaded Cardiac Patch for Mending Broken Hearts: Syed Baseeruddin Alvi¹; Muhamad Mergaye¹; Divya Sridharan¹; Abbey Forehand¹; Niki Blackstone¹; Uzair Ahmed¹; Xianyao Xu¹; Heather Powell¹; Mahmood Khan¹; ¹Ohio State University

3:00 PM

Crosslinked Microfluidic Protein-based Microgels for Cardiac Tissue Engineering: *Chao Liu*¹; Douglas Wu¹; Valinteshley Pierre¹; Yiwen Gao¹; Sam Senyo¹; ¹Case Western Reserve University

3:20 PM Break

3:40 PM

UV Crosslinking for Micropatterning Decellularized Heart Matrix: *Valinteshley Pierre*¹; Chao Liu¹; Elif Ertugral²; Douglas Wu¹; Chandrasekhar Kothapalli²; Samuel Senyo¹; ¹Case Western Reserve University; ²Cleveland State University

4:00 PM

Bioinspired Adhesives for Surgical Glue Applications: *Julie Liu*¹; ¹Purdue University

4:20 PM Invited

Electroadhesion of Hydrogels to Tissues: A Simple Way to Perform Suture-less Surgical Repair: Srinivasa Raghavan¹; ¹University of Maryland

4:40 PM

Double-Crosslinking-Double-Network Injectable Hydrogels Design for Wound Treatment: *Lei Wang*¹; ¹Beijing University of Science and Technology

CERAMIC AND GLASS MATERIALS

Solid-state Optical Materials and Luminescence Properties — Session II

Sponsored by: ACerS Basic Science Division

Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Akio Ikesue, World-Lab. Co., Ltd; Rong-Jun Xie, Xiamen University; Mathieu Allix, Laboratoire CEMHTI; Kiyoshi Shimamura, National Institute for Materials Science; Liangbi Su, Shanghai Institute of Ceramics; Dariusz Hreniak, Polish Academy of Sciences

Wednesday PM | October 4, 2023 B235 | Greater Columbus Convention Center

Session Chairs: Yiquan Wu, Alfred University; Woohong (Rick) Kim, Naval Research Laboratory

2:00 PM Invited

Leveraging Material Microstructure and Linear/Non-linear Absorption for Pulsed Laser Welding of Ceramics: Javier Garay¹; ¹University of California, San Diego



2:20 PM Invited

Development of Non-cubic Fluorapatite Laser Ceramics: *Hiroaki Furuse*¹; Koji Morita¹; Byung-Nam Kim¹; Tohru Suzuki¹; ¹National Institute for Materials Science

2:40 PM Invited

Crystallography, Phase Stability and Luminescence Behavior of Eu-doped Ca_{4-x}Sr_xLaO(BO₃)₃ Compounds: Olivia Graeve¹; Senam Tamakloe¹; ¹University of California San Diego

IRON AND STEEL (FERROUS ALLOYS)

Steels for Sustainable Development II — Steels for Sustainable Development II

Sponsored by: TMS: Steels Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Kester Clarke, Colorado School of Mines; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Matthias Militzer, University of British Columbia; Ana Araujo, CBMM North America Inc.; Mahesh Somani, University of Oulu; Ilchat Sabirov, Imdea Materials Institute

Wednesday PM | October 4, 2023 A210 | Greater Columbus Convention Center

Session Chairs: Matthias Militzer, University of British Columbia; Jonah Klemm-Toole, Colorado School of Mines

2:00 PM Invited

Coating-free Press Hardening Steels with Low Carbon Footprint: *Jianfeng Wang*¹; Zhou Wang¹; Mingfeng Shi¹; Sarah Tedesco¹; ¹General Motors Global Research and Development

2:40 PM

Effects of Enriched Copper Content on the Welding Behavior of Scrap-based Low Carbon Steels: *Henry Geerlings*¹; Jonah Klemm-Toole¹; Amy Clarke¹; Kester Clarke¹; Sridhar Seetharaman¹; ¹Colorado School of Mines

3:00 PM

Mitigating Cu-induced Hot-shortness in Recycled Steel Products through Thermomechanical Processing: *Lionel Promel*¹; David Landi¹; Sridhar Seetharaman²; Jonah Klemm-Toole¹; Amy Clarke¹; Kester Clarke¹; ¹Colorado School of Mines; ²Arizona State University

FUNDAMENTALS AND CHARACTERIZATION

Synthesis, Characterization, Modeling and Applications of Functional Porous Materials — Porous Materials III

Sponsored by: ACerS Electronics Division, ACerS Basic Science Division

Program Organizers: Lan Li, Boise State University; Winnie Wong-Ng, National Institute of Standards and Technology; Kevin Huang, University of South Carolina; Di Wu, Washington State University

Wednesday PM | October 4, 2023 A220 | Greater Columbus Convention Center

Session Chairs: Lan Li, Boise State University; Di Wu, Washington State University

2:00 PM Invited

Porosity at the Molecular Level in C₆₀ **Fullerene-based Structures**: *Lawrence Cook*¹; Gregory Brewer¹; Winnie Wong-Ng²; ¹Catholic University of America; ²NIST

2:30 PM Invited

Selective Lithium Extraction from Brines and Production Of Battery-Grade LiOH Using Porous H2TiO3 Ion Sieve Adsorbents Integrated with Electrodialysis: Greeshma Gadikota¹; *Rajashekhar Marthi*¹; Hassnain Asgar¹; Akanksh Mamidala¹; John McLennan¹; Michael McKibben¹; ¹Cornell University

3:00 PM Invited

Optimized Porous Superhydrophobic Coating to Prevent Carbon Steel Corrosion: *Fangming Xiang*¹; David Hopkinson¹; ¹National Energy Technology Laboratory

3:30 PM Break

3:50 PM Invited

Synergizing Structural and Functional Hierarchy in Porous Catalysts and Sensors for Mitigation of Aqueous Pollutants.: Sharmila Mukhopadhyay¹; Sanskar Shresta¹; Manisha Choudhary¹; Wenhu Wang¹; ¹University of Maine

4:20 PM

Preparation of Porous Catalytic Intermetallic Alloys Under Conditions of Synthesis of Complex Functionally Active Charges: *Borys Sereda*¹; Yuriy Belokon¹; Irina Kruhliak¹; Dmytro Sereda¹; ¹DSTU

4:40 PM

Facile Synthesis, Structural and Catalytic Performances of the Porous Carbon Foam Composites Containing Carbon Nanotubes and Graphene Oxide as Reinforcements: *Muhammad Khan*¹; Emrah Unalan¹; ¹Middle East Technical University

5:00 PM

Novel Method for Continuous Production of Coal-derived Carbon Foam: Caleb Gula¹; Yahya Al-Majali¹; ¹Institute for Sustainable Energy and the Environment



MATERIALS-ENVIRONMENT INTERACTIONS

Thermodynamics of Materials in Extreme Environments — Thermodynamics of Molten Salt Systems

Sponsored by: ACerS Basic Science Division, ACerS Energy Materials and Systems Division

Program Organizers: Xiaofeng Guo, Washington State University; Kristina Lilova, Arizona State University; Kyle Brinkman, Clemson University; Alexandra Navrotsky, Arizona State University; Jake Amoroso, Savannah River National Laboratory; Xingbo Liu, West Virginia University; Gustavo Costa, NASA Glenn Research Center

Wednesday PM | October 4, 2023 A123 | Greater Columbus Convention Center

Session Chair: Kyle Brinkman , Clemson University

2:00 PM Invited

An Ab Initio Study of the Thermodynamic and Thermophysical Properties of Pu-bearing Salts: *Benjamin Beeler*¹; Kai Duemmler¹; David Andersson²; ¹North Carolina State University; ²Los Alamos National Laboratory

2:30 PM Invited

Molecular Dynamics Simulations of the Structures and Transport properties of UCln (n=3, 4) in NaCl and MgCl2 Molten Salts: *Bo Li*¹; ¹Vanderbilt University

3:00 PM Invited

Thermodynamics of Molten Salts for the Fluoride Salt Cooled Hightemperature Reactor: Jacob McMurray¹; Gus Merwin¹; Francesco Carotti¹; Som Mossadeghian¹; Ryan Gallagher¹; Kaitlin Johnson¹; Kevin Chan¹; Matt Denman¹; George Young¹; ¹Kairos Power

3:30 PM Break

3:50 PM Invited

Exploring and Implementing Thermodynamic Models for Liquid and their Applications to Thermodynamic Modeling of Molten Salts: Rushi Gong¹; Shun-Li Shang¹; Vitaliy Goncharov²; Bryn Merrill²; Xiaofeng Guo²; Zi-Kui Liu¹; ¹Pennsylvania State University; ²Washington State University

4:20 PM

Thermodynamic Assessment of the MgCl2-NaCl-KCl-CsCl Pseudoquaternary System for Calculation of Volatile Fission Product (Cesium) Behavior in Molten Chloride Reactors: *Clara Dixon*¹; Juliano Schorne-Pinto¹; Mina Aziziha¹; Jorge Paz Soldan Palma¹; Theodore Besmann¹; ¹University Of South Carolina

4:40 PM

Determination of Mixing Enthalpy of La and U in Chloride Molten Salt: *Xiaofeng Guo*¹; Vitaliy Goncharov¹; Bryn Merrill¹; William Smith¹; Hongwu Xu²; Rushi Gong³; Shunli Shang³; Zi-Kui Liu³; Aurora Clark⁴; ¹Washington State University; ²Los Alamos National Laboratory; ³Pennsylvania State University; ⁴University of Utah

Technical Meeting and Exhibition



October 1–4, 2023 | Columbus, Ohio

POSTER SESSION with Presenters

Monday, October 2		
Poster Installation	2:00 p.m. – 4:00 p.m.	
Tuesday, October 3		
Poster Installation	8:00 a.m. – 9:00 a.m.	(if you cannot set-up your poster on Monday)
Poster Session Viewing	2:00 p.m. – 4:30 p.m.	
Poster and Exhibit Reception	4:30 p.m. – 6:00 p.m.	
Poster Presentations	4:40 p.m. – 6:00 p.m.	(please stand by your poster at this time to discuss your research with attendees)
Wednesday, October 4		
Poster Session Viewing	9:00 a.m. – 2:00 p.m.	
Poster Removal	3:00 p.m. – 4:00 p.m.	



SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

15th Symposium on Green and Sustainable Technologies for Materials Manufacturing and Processing — Poster Session

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Surojit Gupta, University of North Dakota; Mritunjay Singh, Ohio Aerospace Institute; Tatsuki Ohji, National Institute of Advanced Industrial Science and Technology; Hisayuki Suematsu, Nagaoka University of Technololgy; Enrico Bernardo, University of Padova; Rajiv Asthana, University of Wisconsin; Yiquan Wu, Alfred University; Zhengyi Fu, Wuhan University of Technology; Allen Apblett, Oklahoma State University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

O-1: Briquetting Waste Glass Fines to Enable Recycling: *River Pao*¹; Scott Misture¹; ¹Alfred University

O-2: Effect of Heating Rate during Sulfurization on the Growth of Ethanol Based Solution Processed Cu2ZnSnS4 Thin Films: *Rahul Jain*¹; Indu Gupta²; Bhaskar Mohanty³; ¹Chandigarh Group of Colleges, Jhanjeri; ²Chandigarh University; ³Thapar Institute of Engineering and Technology

O-3: Facile Growth of Cu2ZnSn(SSe)4 Thin Films with Controlled Phase and Microstructure from Ethanol Based Molecular Solutions: *Indu Gupta*¹; Rahul Jain²; Bhaskar Mohanty³; ¹Chandigarh University; ²Chandigarh Group of Colleges, jhanjeri; ³Thapar Institute of Engineering and Technology

O-4: Mesoporous Silica Material with Yolk Shell Morphology for Effective Removal of Environmental Pollutants: Zafar Ali^a; ¹POFs pakistan

O-5: Rapid Method Development and Optimization for Environmental Monitoring by Gas Chromatography Using ProEZGC – A Free Webbased Software: *Erica Pack*¹; ¹Restek

O-6: Response of Ghana's Akokorowa Iron Ore to Reduction by Carbonaceous Material Generated from Pyrolytic Chars of End-of-Life Tyres: James Dankwah¹; Georgina Thompson¹; Jessica Dankwah²; Awan Abdul Rashid Mohammed³; ¹University of Mines and Technology; ²Goldfields Ghana Limited (Damang Mine); ³Ghana Geological Survey Authority

STUDENT EVENTS

2023 Undergraduate Student Poster Contest — Poster Session

Program Organizer: Yolanda Natividad, American Ceramic Society

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

A Coupled Multi-phase-Field modeling and Experimental Damage Characterization in CMCs: *Lucas Rackers*¹; Jeremy Watts¹; Arezoo Emdadi¹; ¹Missouri University of Science and Technology

A Water-based Method for Direct Recycling of Lithium-ion Battery Anode Scraps: Jakob Scroggins¹; Lu Yu²; Yaocai Bai²; ¹University of Tennessee Knoxville; ²Oak Ridge National Laboratory

Analyzing Defects In Glasses Using Optical Microscopy: Raine Antonio¹; Maria Vega-Martinez²; Nicholas Sharp²; Jamie Weaver²; ¹Washington State University; ²National Institute of Standards and Technology

Applying Aerosol Jet Printing to Create Instrumented Prosthetic Liners: Lexi Miskey¹; Daniel Rakowsky¹; Janet Gbur²; ¹Case Western Reserve University; ²VA Northeast Ohio Health Care System

Automated Surface Evolution Tracking for In-situ Experiments: A Computational Alternative to Three-dimensional Digital Image Correlation (DIC): *Madison Morrison*¹; Khalid El-Awady¹; Jaafar El-Awady²; ¹Johns Hopkins University; ²Hopkins Extreme Materials Insitute

Carbon Sequestration Through Olivine Glass Bricks: *Elizabeth Pritchett*¹; Akhil Gupta¹; Jillian Scott¹; Myles Murphy¹; Brian Gorman¹; ¹Colorado School of Mines

Controlling the Optoelectronic Properties of V₂O₅ Nanoparticles via SnCl₂ Reduction: *Marlena Alexander*¹; Miranda Gonzalez²; Michelle Smeaton³; Jeffery Blackburn³; Andrew Ferguson³; Lance Wheeler³; ¹University of Tennessee Knoxville; ²Arizona State University ; ³The National Renewable Energy Laboratory

Detectron2 is a Machine Learning Object Detection Algorithm That Was Utilized for the Automated Detection of Fibers Within Composite Materials: *Diana Johnson*¹; Craig Przybyla²; Ashley Hilmas²; Mathew Schey²; ¹SOCHE; ²AFRL/RXNC

Developing Icephobic Surfaces for Aircraft Industry Applications: *Alexa Goldstein*¹; ¹University of Michigan

Development of a Novel Multi-laser Scan Strategy to Increase Density and Reduce Micro-Cracking in Additively Manufactured Tungsten: Cameron Gygi¹; *Emmaline Hutchison*¹; ¹The Ohio State University

Development of Gas Atomization for Polymer Processing: *Abigail Stanlick*¹, Jordan Tiarks²; Iver Anderson²; ¹Iowa State University; ²Ames National Laboratory

Effect of Nitrogen Vacancies on the Photoconductivity of Sputtered Al., Gd, N: Joshua Park¹; Keisuke Yazawa²; ¹Northwestern University; ²National Renewable Energy Lab



Effects of Aerosol Jet Printing Parameters on the Fabrication of Flexible Circuits: Daniel Rakowsky¹; Lexi Miskey¹; Mitchell Melander¹; Janet Gbur²; ¹Case Western Reserve University; ²Advanced Platform Technology Center, VA Northeast Ohio Health Care System

Electronic Insights into Water Splitting at Metal Interfaces: *Vyom Mehta*¹; ¹Pennsylvania State University

Enabling Rapid Materials Discovery via Surface-based Mechanical Property Determination Methods: *Erik DeMeyere*¹; Hailong Huang²; Rameshwari Naorem²; Iver Anderson²; Nicolas Argibay²; ¹Iowa State University; ²Ames National Labratory

Engineered Ex Vivo Co-culture Lung Model as a Platform for Testing Biomaterial-induced Cancer Cell-specific Cytotoxicity: *Miriam Stevens*¹, ¹University of Michigan

Engineering Proton Exchange Membrane Properties: Dante Migliaccio¹, ¹Rutgers, The State University of New Jersey

Examining the Effects of Mixing Time, Particle Size, and Volume Fraction on the Dispersion of Micron-sized Particles in a Ferrous Alloy: *Malachi Chou-Green*¹; ¹Carnegie Mellon University

Exploratory Study and Characterization of Electron-beam Curing Versus Thermal Curing of Polymeric Composite Matrix Precursor: *Caleb Wasserbeck*¹, ¹Wright State University

Exploring the Synthesis, Structure, and Ionic Conductivity of Li5TiN3: *Kayla Huang*¹; Christopher Rom²; ¹University of Illinois Urbana Champaign; ²National Renewable Energy Laboratory

Exploring Thermochromism and Bandgap Tunability in Layered Metal Halides: *Akhil Gupta*¹; Annalise Maughan¹; Austin Shotwell¹; ¹Colorado School of Mines

Fabrication of Magnetoelectric Composite Materials and Application in Communication at Low Frequency: *Tong Zhang*¹; ¹Wuhan University of Technology

Failure of Garage Door Spring: Ashley Ohmstede1; 1Ohio State University

Generalized Self-assembly of Two-dimensional Transition Metal Carbides to Metal Powders: *Jacob Patenaude*¹; Brian Wyatt¹; ¹Indiana University, Purdue University - Indianapolis

Grain Characterization of Titanium After Friction Stir Process: Sebastian Walker¹; ¹Washington State University

Graphene-like Materials in Coal: *Adam Levedakis*¹; ¹Pennsylvania State University

Growth and Doping of \945-(Al_xGa_{1,x})₂O₃ Using Suboxide Molecularbeam Epitaxy: *Kira Martin*¹; Jacob Steele²; Darrell Schlom²; ¹University of Illinois Urbana-Champaign; ²Cornell University

Hydrogels for Biomedical Applications: *Rebecca Patush*¹; Alina Kirillova¹; ¹Iowa State University

Iron Phosphate Waste Forms: Jade Beland¹; Harmony Werth¹; Paige Murray¹; Brian Riley²; Krista Carlson¹; ¹University of Nevada, Reno; ²Pacific Northwest National Laboratory

LionGlass: A Sustainable Phosphate-based Glass Composition: Julianne Chen¹; ¹Penn State University

Low Cost, Open-source Method for Wire Arc Additive Manufacturing: Anthony Lino¹; Justin Christensen¹; Michael Carlstrom¹; Yiyang Sun¹; Joseph Chen¹; Bathlomew Ebika¹; Baxter Hovis¹; Vishnu Ramasamy¹; John Lewandowski¹; ¹Case Western Reserve University Machine Learning Model Explainability for the Development of Highentropy Alloys: *David Flores*¹; Wesley Reinhart¹; Arindam Debnath¹; ¹Pennsylvania State University

Measuring Hydrophobicity of Nanoparticles: *Catherine Cal*¹; Christine Payne²; ¹Carnegie Mellon University; ²Duke University

Mimicking Respiratory Tissue Dynamics with Dynamic Hydrogel Platforms: *Alan Shi*¹; Avinava Roy¹; Zenghao Zhang¹; Madeline Eiken¹; Abdon Pena-Francesch¹; Claudia Loebel¹; ¹University of Michigan

Ni Single Atoms on MoS2 Nanosheets Enabling Enhanced Kinetics of Li-S Batteries: *Chenxu Dong*¹, ¹Wuhan University of Technology

Optimization of Diluted Silver Nanoparticle Ink for Aerosol Jet Printing: *Caroline Kromalic*¹; Sylvie Crowell¹; Mitchell Melander¹; James Wolfe²; Janet Gbur³; ¹Case Western Reserve University; ²Youngstown State University; ³VA Northeast Ohio Health Care System

Optimizing Heat Treatment Parameters to Unveil the Mechanical Response of Nano-scale Ultrastructure of the Precipitates: *Kapil Sharma*¹; Kaustav Barat²; Sudipta Patra²; Anish Karmakar¹; ¹Indian Institute of Technology Roorkee; ²CSIR-National Aerospace Laboratories, Bangalore

Optimizing the Adhesion of Aerosol Jet Printing Silver Ink onto Surface Treated Silicone: *Anuvi Gupta*¹; Janet Gbur²; ¹Case Western Reserve University; ²VA Northeast Ohio Health Care System

Phase and Atomic Occupancy Stability Analysis of Double Transition Metal MAX Phases: A Step Toward Machine Learning Discovery of New 2D Materials: *Bethany Wright*¹; Brian Wyatt¹; Babak Anasori¹; ¹Purdue School of Engineering & Technology and Integrated Nanosystems Development Institute, Indiana University Purdue University Indianapolis

Preparation of Two-dimensional Ca2NaNb4O13 Perovskite Nanosheet Inks and Study on Inkjet Printing High-performance Microcapacitors: Yang Xie¹; ¹Wuhan University of Technology

Quantitative Analysis of Crack Propagation in Doped MgAl2O4 Spinel: *Metri Zughbi*¹; Alexander Campos-Quiros¹; Animesh Kundu¹; Masashi Watanabe¹; ¹Lehigh University

Reduction Time-Temperature-Transformation Analysis of Hydrogelbased Additively Manufactured Copper, Nickel, and Copper-Nickel Oxide(s) Under Forming Gas: Maria Azcona Baez¹; Seneca Velling¹; Wenxin Zhang¹; Thomas Tran¹; Sammy Shaker¹; Julia Greer¹; ¹California Institute of Technology

Rheological Analysis of Flow-induced Crystallization of Isotactic Propylene: Examining Temperature Variations and Specific Work Effects: Jongkyeong Kim¹; Benson Jacob¹; Ralph Colby¹; ¹Pennsylvania State University

Structural Phase Patterning of MoS2: Christopher Barns¹; ¹West Chester University

Study on Low Temperature Electrolyte of Sodium Ion Battery: Keyu Du^{1} ; ¹Wuhan University of Technology

Synthesis of Fe_xO_y Nanoparticles Through a Gas-phase Flame Reactor: Juliana Davoglio Estradioto¹; Claudia López-Cámara²; Sabrina Schleich²; Paolo Fortugno²; Hartmut Wiggers²; ¹Northwestern University; ²University of Duisburg-Essen

The Content and Distribution of Steel Fiber in Ultra-high Performance Concrete (UHPC) Based on Non-destructive Testing: Zhoulong Huang¹; Zhonghe Shui¹; ¹Wuhan University of Technology



The Mechanical Properties of Solvent-exchanged Physically Crosslinked PS-PEO-PS Triblock Copolymer Hydrogel Fibers: Marcus Choates¹; Robert Hickey¹; Elisabeth Lloyd¹; ¹Pennsylvania State University

Thickness Measurement of Gallium Phosphide Films on Silicon Using X-ray Fluorescence: Evan Freeland¹; Donald Windover²; Lauren Kaliszewski¹; Tyler Grassman¹; ¹Ohio State University; ²NIST

Transition Metal Tuned Nanoceria: Implications in Biomedicine, Oxidative Stress, and Cancer Models: Samantha Stoltz¹; Sudipta Seal²; Elayaraja Kolanthai²; Craig Neal²; Yifei Fu²; ¹University of Central Florida Burnett Honors College; ²AMPAC Lab, UCF

Two-point Bend Measurements of Failure Strain for Alkali Silicate Glasses: *Taylor Murphy*¹; Richard Brow¹; ¹Missouri University of Science and Technology

Type I Hot Corrosion of Refractory Metal-silicides: *Ekin Senvardarli*¹; Katharina Beck²; Till König²; Ceyhun Oskay²; Mathias Galetz²; ¹Northwestern University; ²DECHEMA-Forschungsinstitut

Understanding the Evolution of Microstructure and Precipitates in Wire Arc Additive Manufactured Nickel-Aluminum-Bronze Alloy: *Elisabeth Kuebel*¹; Aeriel Leonard²; ¹The Ohio State University; ²The Ohio State University

Windows into STEM - The Discovery of Glass Science Through STEM Outreach: Aidan Manjarrez¹; ¹Colorado School of Mines

BIOMATERIALS

3D Printing of Biomaterials and Devices — Poster Session

Sponsored by: ACerS Bioceramics Division

Program Organizers: Sahar Vahabzadeh, Northern Illinois University; Susmita Bose, Washington State University; Amit Bandyopadhyay, Washington State University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

C-1: 3D Bioprinting for Ophthalmic Applications: *Peter Jansen*¹; Mia Jeter¹; Vedshree Deshmukh¹; Cynthia Roberts¹; Katelyn Swindle-Reilly¹; ¹The Ohio State University

C-2: Core/shell PCL/PLGA for Controlled Release of Antibiotic and Tissue Engineering: Sahar Vahabzadeh¹; Dexter Kling¹; Aaron Strickland²; James Gras²; Farid Ahmadpour Esmaeilabadi¹; ¹Northern Illinois University; ²iFyber

C-3: D-Flate: Exoskeletal Venous Pump Made Using 3D-Printed Metamaterial: *Gianna Lambert*¹; Yusuf Dikici¹; Karem Harth¹; Ozan Akkus¹; ¹Case Western Reserve University

C-4: Measurement of Volumetric Tribo-corrosion of Zirconiatoughened Alumina (ZTA)-Ti6Al4V-Hydroxyapatite (HA) Composite Femoral Heads Articulating Against Ultra-high Molecular Weight Polyethylene (UHMWPE): Jose Avila¹; Amit Bandyopadhyay¹; ¹Washington State University C-5: Release of Natural Medicines from 3D Printed CaP Improves Bone Formation: *Priya Kushram*¹; Susmita Bose¹; ¹Washington State University

C-6: Synergistic Effects of Carvacrol and Curcumin Nanoparticle on 3D Printed Scaffold for Bone Tissue Engineering: *Aditi Dahiya*¹; Susmita Bose¹; ¹Washington State University

ADDITIVE MANUFACTURING

Additive Manufacturing Modeling, Simulation, and Machine Learning: Microstructure, Mechanics, and Process — Poster Session

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Computational Materials Science and Engineering Committee, TMS: ICME Committee

Program Organizers: Jing Zhang, Indiana University – Purdue University Indianapolis; Li Ma, Johns Hopkins University Applied Physics Laboratory; Brandon McWilliams, US Army Research Laboratory; Yeon-Gil Jung, Korea Institute of Ceramic Engineering & Technology

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chair: Jing Zhang, Indiana University - Purdue University Indianapolis

A-1: 3D Printed Ceramics for Solid-state Battery Components: Richard Sullivan¹; Adedapo Ajayi¹; Wiljones Djoutsop¹; Trista Rehmel¹; Sumandeep Kaur¹; Amir Yahyaeian¹; Jing Zhang¹; ¹Indiana University – Purdue University Indianapolis

A-2: Deep Learning Assisted Material Structure Property Linkage of 3D Printed AlSi10Mg Alloy: *Ibrahim Khalilullah*¹; Constantin Solomon¹; ¹Youngstown State University

A-3: Density Functional Theory Based Methods for Predicting Interfacial Strengths in Thermal Barrier Coatings with MXene Using Spark Plasma Sintering: *Tejesh Dube*¹; Amir Yahyaeian¹; Hassan Fatahbeygi¹; Mahdi Ghanati¹; Junseong Kim²; Yeon-Gil Jung²; Jing Zhang¹; ¹Indiana University – Purdue University Indianapolis; ²Changwon National University

A-4: Developing Virtual Reality Models to Simulate Additive Manufacturing Process: Ethan Clark¹; Jing Zhang¹; ¹Indiana University – Purdue University Indianapolis

A-5: Extrusion Based 3D Printing of Silicon Carbide: Ryan Mathews¹; Andrei Petrusca¹; Maddie Soderstrom¹; Jing Zhang¹; ¹Indiana University – Purdue University Indianapolis

A-6: Inkjet 3D Printing of Biodegradable Materials: Andrew Gillespie¹; Ben Yap¹; Aliana Shahimi¹; Mahdi Ghanati¹; Amir Yahyaeian¹; Jing Zhang¹; ¹Indiana University – Purdue University Indianapolis

A-7: Modeling Laser Heating Phenomenon in Refractory Metal Powder Bed Fusion Process: *Hassan Fatahbeygi*¹; Mahdi Ghanati¹; Amir Yahyaeian¹; Jing Zhang¹; ¹Indiana University – Purdue University Indianapolis



A-8: Simulation of Shell Thickness and Inclusions Trajectory in Casting Mold of Round Steel Billet Continuous Casting: Ya Chi Chang¹; *Huey-Jiuan Lin*¹; Zi Qi Gao²; Kuan Yu Chen²; Hsuan Chung Wu²; Ho Yen Hsieh³; Cheng Wen Chen³; Ming Hao Xu³; ¹National United University; ²Ming Chi University of Technology; ³Walsin Lihwa Corporation

ADDITIVE MANUFACTURING

Additive Manufacturing of High and Ultra-high Temperature Ceramics and Composites: Processing, Characterization and Testing — Poster Session

Sponsored by: ACerS Engineering Ceramics Division, ACerS Manufacturing Division, ACerS Young Professionals Network

Program Organizers: Corson Cramer, Oak Ridge National Laboratory; Greg Hilmas, Missouri University of Science and Technology; Lisa Rueschhoff, Air Force Research Laboratory; David Mitchell, Oak Ridge National Laboratory

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

A-9: Advanced Manufacturing of Complex Zirconium Carbide Structures for Space Nuclear Propulsion: *Jackie Stone*¹; Ryan Finkelstein¹; Jhonathan Rosales²; Brian Jaques¹; ¹Boise State University; ²National Aeronautics and Space Administration

ADDITIVE MANUFACTURING

Additive Manufacturing of Polymeric-based Materials: Challenges and Potentials — Poster Session

Sponsored by: TMS: Additive Manufacturing Committee

Program Organizers: Ola Rashwan, Pennsylvania State University-Harrisburg; Matthew Caputo, Pennsylvania State University -Shenango; Daudi Waryoba, Pennsylvania State University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

A-10: Synthesis and Characterization of Electroplated Alloys on 3D Printed Preforms: *Grace Marhulik*¹; Matthew Caputo¹; ¹Pennsylvania State University - Shenango

ADDITIVE MANUFACTURING

Additive Manufacturing of Titanium-based Materials: Processing, Microstructure and Material Properties — Poster Session

Sponsored by: TMS: Additive Manufacturing Committee, TMS: Titanium Committee

Program Organizers: Ulf Ackelid, Freemelt AB; Ola Harrysson, North Carolina State University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

A-11: In-situ Detection and Ex-situ Characterization of Porosity in Laser Powder-bed Fusion (LPBF): *Nismath V H*¹; Kevin Chou¹; ¹University of Louisville

A-12: Surface Color Relation to Alpha Case Formation in Ti-6Al-4V: Michaela von Schaumburg¹; Eric Payton²; Katrina Petro³; Matthew Hartshorne³; Michael Hirsch³; ¹The Greene Townhomes; ²University of Cincinnati; ³AFRL

ADDITIVE MANUFACTURING

Additive Manufacturing: Design, Materials, Manufacturing, Challenges and Applications — Poster Session

Sponsored by: ACerS

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chairs: Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech

A-13: Comparison of Mechanical Properties of AZ-31 Mg alloy by Wire-based Arc Additive Manufacturing: *Changwook Ji*¹; Jae-Deuk Kim¹; Jooyong Cheon¹; Jeong Yeol Park¹; ¹Korea Institute of Industrial Technology

A-14: Data Management for Additive Manufacturing: *Matthew Roach*¹; Dominik Kozjek²; Clayton Cooper³; Kathy Babusci⁴; Bradley Jared¹; ¹University of Tennessee, Knoxville; ²Northwestern University; ³Case Western Reserve University; ⁴The Ohio State University



NUCLEAR ENERGY

Advanced Characterization of Materials for Nuclear, Radiation, and Extreme Environments IV — Poster Session

Sponsored by: TMS: Nuclear Materials Committee

Program Organizers: Caitlin Kohnert, Los Alamos National Laboratory; Cody Dennett, Commonwealth Fusion Systems; Samuel Briggs, Oregon State University; Michael Short, Massachusetts Institute of Technology; Cheng Sun, Idaho National Laboratory; Khalid Hattar, University of Tennessee Knoxville; Yuanyuan Zhu, University of Connecticut

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

M-1: Novel Method for Fabricating and Analysis of 3D Printed Composite for Radiation Shielding Containing Metalized Halloysite Nanotube: HM Nain¹; *David Mills*¹; ¹Louisiana Tech University

MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Coatings for Wear and Corrosion Protection — Poster Session

Program Organizers: Evelina Vogli, Flame Spray Inc.; Virendra Singh, SLB

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chairs: Evelina Vogli, Flame Spray Inc.; Virendra Singh, Schlumberger

J-1: Development of Fusion Bonded Epoxy Coatings on Steel Components for the Improved UV and Corrosion Resistance Performance: *Abdullah Alnuzha*¹; Arumugam Kumar¹; ¹KFUPM University

J-2: Obtaining Protective Coatings TiAl, TiSi under Conditions of Synthesis of Complex Functionally Active Charges: *Borys Sereda*¹; Irina Kruhliak¹; Dmytro Sereda¹; ¹DSTU

PROCESSING AND MANUFACTURING

Advanced Joining Technologies for Automotive Lightweight Structures — Poster Session

Sponsored by: TMS: Aluminum Committee, ACerS Manufacturing Division

Program Organizers: Yan Huang, Brunel University London; Yingchun Chen, Dura Automotive Systems

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chair: Yan Huang, Brunel University London

N-1: Prediction of Tensile Strength of Electric Vehicle Parts Applying Dissimilar Material Friction Stir Welding Using Machine Learning: Sungwook Kang¹; Kwangjin Lee¹; ¹Korea Institute of Industrial Technology (KITECH)

MATERIALS-ENVIRONMENT INTERACTIONS

Advanced Materials for Harsh Environments — Poster Session

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chairs: Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech

J-3: Material Properties of High-strength High Chromium TWIP Steels with Increased Corrosion Resistance: *Pavel Podany*¹; Tomas Studecky¹; ¹COMTES FHT a.s.

J-4: Metal-coated Halloysite Nanotube-Based Antimicrobial Filtration System for Space Mission Applications: David Mills; *Mohammed Bappy*¹; ¹Louisiana Tech University



IRON AND STEEL (FERROUS ALLOYS)

Advancements in Steel Structural Refinement — Poster Session

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee

Program Organizers: Charles Enloe, Steel Dynamics; Emmanuel De Moor, Colorado School of Mines

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

G-1: Effect of High Temperature Exposure on the Tensile Behavior of Carbide Free Bainitic Steel - An In-situ Study: *Kishore Sakthivel*¹; Sourav Das¹; Suhrit Mula¹; ¹IIT Roorkee

G-2: Effect of Strain on Variant Behavior and Strengthening Mechanism of Hot-rolled Nb-V High Strength Steel: *Murugesh kumar Ramar*¹; Pravendra Singh¹; Sadhan Ghosh¹; ¹Indian Institute of Technology, Roorkee

CERAMIC AND GLASS MATERIALS

Advances in Dielectric Materials and Electronic Devices — Poster Session

Sponsored by: ACerS Electronics Division

Program Organizers: Amar Bhalla, University of Texas; Ruyan Guo, University of Texas at San Antonio; Rick Ubic, Boise State University; Matjaž Spreitzer, Jožef Stefan Institute; Tanmoy Maiti, IIT Kanpur

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

D-1: Designing Rare Earth Free High Entropy Oxide with Tungsten Bronze Structure for Thermoelectric Application: Subhra Jana¹; Tanmoy Maiti¹; ¹IIT Kanpur

D-2: Effect of Solvent Selection for In-film Reactions Yielding Zinc Oxide Nanostructures: Sean Garnsey¹; William Flynn¹; Carlos Acosta¹; Ruyan Guo¹; Amar Bhalla¹; ¹University of Texas at San Antonio

D-3: Enhanced Thermoelectric Performance of Nanocomposite with New Generation 2D Material MXene: Pragya Dixit¹; *Tanmoy Maiti*¹; ¹IIT Kanpur

D-5: Influence of the Synthesis Conditions on the Structural and Microstructural Properties of PbTiO₃ Ferroelectric Thin Films: Marcos Aparecido dos Santos Mariano¹; Ariano de Giovanni Rodrigues²; Elton Carvalho de Lima³; Ruyan Guo⁴; Amar Bhalla⁴; *Jose de los Santos Guerra*¹; ¹Universidade Federal de Uberlandia; ²Universidade Federal de Sao Carlos; ³Universidade Federal do Tocantins; ⁴The University of Texas at San Antonio

D-7: Investigation of the Dielectric Response in AgNbO₃-based Ferroelectric Ceramics: Tawan Hathenher Toledo Rosa¹; Atair Carvalho da Silva¹; Ruyan Guo²; Amar S. Bhalla²; *Jose de los Santos Guerra*¹; ¹Universidade Federal de Uberlandia; ²The University of Texas at San Antonio

D-6: Investigation of Charge Transport Mechanism in Ba Doped Sr2CrMoO6 Double Perovskite Mixed Ionic Electronic Conductor: Vivek Kumar¹; Sudha Saini¹; *Tanmoy Maiti*¹; ¹Indian Institute of Technology Kanpur

D-8: Transition Metal Chalcogenide Perovskites for Energy Applications: Sanjukta Mukherjee¹; ¹IIT Kanpur

IRON AND STEEL (FERROUS ALLOYS)

Advances in Ferrous Metallurgy — Poster Session

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee

Program Organizers: Shannon Clark, Arcelor Mittal Dofasco; Lijia Zhao, Northeastern University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

G-3: New Properties of Bimetallic Steel Blanks Produced by Original Electroslag Technology: Borys Sereda¹; Irina Kruhliak¹; Yuriy Petrusha²; Natalya Gura²; *Dmytro Sereda*¹; ¹DSTU; ²NUZP

G-4: Numerical Simulation of Blast Furnace Process with Injection of Coke Oven Gas through Tuyere: *Hsuan-Chung Wu*¹; Kuan-Yu Chen¹; Huey-Jiuan Lin²; Shan-Wen Du³; Tsung-Yen Huang³; Bo-Jhih Lin³; ¹Ming Chi University of Technology; ²National United University; ³China Steel Corporation

G-5: Production of Rolled Steel 8640 with a Diameter of More than 240 mm: *Borys Sereda*¹; Irina Kruhliak¹; Dmytro Sereda¹; ¹DSTU

IRON AND STEEL (FERROUS ALLOYS)

Advances in Ferrous Metallurgy — Student Poster Session

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee

Program Organizers: Shannon Clark, ArcelorMittal Dofasco; Lijia Zhao, Northeastern University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

G-6: Anisotropy in Tensile and Charpy Impact Properties of Three API X70 Linepipe Steels for ERW Manufacturing Process: *Dong-Kyu Oh*¹; Seung-Hyeok Shin¹; Byoungchul Hwang¹; ¹Seoul National University of Science and Technology



G-7: Comparative Study on the Properties and Microstructure of TMCP and QT Q550D: *Zheng Lei Tang*¹; ¹University of Science and Technology Beijing

G-8: Comparative Study on the Role of Phosphorus and Sulfur Grain Boundary Segregation on the Hot Ductility in Low Carbon Steel: Soo Hyun Kim¹; Sang Hum Kwon²; Jae Sang Lee¹; Yoon Uk Heo¹; ¹POSTECH; ²POSCO

G-9: Effect of Casting Speed on Mixed Grade in Each Strand of Tundish during the Low Tundish-level Steel Grade Transition: Sicheng Song¹; ¹University of Science and Technology Beijing

G-10: Effect of Tundish Refractories System on Nonmetallic Inclusions in Heavy-rail Steel U75V Deoxidized by Si-Mn: *Guo Zhijie*^{1, 1}USTB

PROCESSING AND MANUFACTURING

Advances in Surface Engineering — Poster Session

Sponsored by: TMS Surface Engineering Committee

Program Organizers: Rajeswaran Radhakrishnan, Faraday Technology Inc; Timothy Hall, Faraday Technology Inc; Michael Roach, University of Mississippi Medical Center; Sandip Harimkar, Oklahoma State University; Tushar Borkar, Cleveland State University; Rajeev Gupta, North Carolina State University; Bharat Jasthi, South Dakota School of Mines & Technology

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chair: Santosh More, Faraday Technology Inc

N-2: Development and Application of Green Corrosion Inhibitor for Oil and Gas Pipeline-steels in Produced Water Media: Anaum Nawaz¹; Haider Waseem¹; Shabib Ishraq¹; Kashif Deen²; ¹Central Michigan University; ²The University of British Columbia

N-3: Evaluation of Mechanical Properties of AISI 8620 Steel's Surface Modified through TIG Arcing Process: Sachin Balbande¹; Sourav Das¹; ¹Indian Institute of Technology Roorkee

N-4: The Effects of Boronizing on TRIP Steel Surface Integrity: Eric Noé Hernández Rodríguez¹; Alfredo Márquez-Herrera¹; Gustavo Capilla-González¹; Ricardo Mis-Fernández²; ¹University of Guanajuato; ²CINVESTAV

EDUCATION AND CAREER DEVELOPMENT

Career Transition: How to Navigate the Job Market? Insights from Academia and Industry — Poster Session

Sponsored by: ACerS President's Council of Student Advisors, ACerS PCSA-EPC Committee

Program Organizers: Srinivasa Kartik Nemani, Indiana University-Purdue University; Ian Slagle, Georgia Institute of Technology

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chairs: Pattiya Pibulchinda, Northwestern University; Kartik Nemani, Purdue school of Engineering

E-1: ACerS President's Council of Student Advisors' Development of ACerS Section Outreach Kit Initiative: Shannon Rogers¹; Michael Thuis²; Nathan McIlwaine³; *Hugh Smith*⁴; John Bussey⁵; ¹Colorado School of Mines; ²Northwestern University; ³Pennsylvania State University; ⁴Massachusetts Institute of Technology; ⁵Washington State University

E-2: Building Bridges: Engaging the Next Generation through Outreach Programs by the Ceramic and Glass Industry Foundation: Helen Widman¹; Amanda Engen¹; ¹The American Ceramic Society

E-3: Glass, Not Waste: Reduce-Reuse-Recycle: Amir Ashjari¹; Lucas Greiner¹; Doris Möncke¹; ¹Alfred University

E-4: Insights and Lessons on Running a Student Leadership Program (PCSA): *Michael Thuis*¹; Fox Thorpe²; ¹Northwestern University; ²University of California Davis

E-5: Short Lived Glasses as Support for Photochemical Tissue Bonding: *Sierra Kucko*¹; Lucas Greiner¹; Doris Möncke¹; ¹Alfred University

E-6: Sinks for Recycling Glass – New Applications that Avoid Landfills: Lucas Greiner¹; William LaCourse¹; Doris Möncke¹; ¹Alfred University

CERAMIC AND GLASS MATERIALS

Ceramics and Glasses Modeling by Simulations and Machine Learning — Poster Session

Sponsored by: ACerS Glass & Optical Materials Division

Program Organizers: Mathieu Bauchy, University of California, Los Angeles; Peter Kroll, University of Texas at Arlington; N. M. Anoop Krishnan, Indian Institute of Technology Delhi

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

D-9: Discrete Element Simulation of Delamination in Thermal Barrier Coating: *Yafeng Li*¹; Zhengzhao Ji¹; Jing Zhang²; ¹Tiangong University; ²Indiana University – Purdue University Indianapolis

D-10: Enhancing Toughness of Metal-organic Framework Glass by Incorporating Silicate Crystals: *Jiayu Yue*¹; Neng Li¹; ¹Wuhan University of Technology



NUCLEAR ENERGY

Ceramics for New Generation Nuclear Energy System Application — Poster Session

Sponsored by: ACerS Energy Materials and Systems Division, TMS: Nuclear Materials Committee

Program Organizers: Lingfeng He, North Carolina State University; Krista Carlson, University of Nevada, Reno; Maik Lang, University of Tennessee; Jake Amoroso, Savannah River National Laboratory; Brian Riley, Pacific Northwest National Laboratory; Enrique Saez, Clemson University; Jinsuo Zhang, Virginia Polytechnic Institute and State University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

M-2: Synthesis of Uranium Nitride Nuclear Fuel: *Sarah Cole*¹; Ryan Finkelstein¹; Allyssa Bateman¹; Elizabeth Sooby²; Brian Jaques¹; ¹Boise State University; ²University of Texas at San Antonio

MODELING

Computational Discovery, Understanding, and Design of Multi-principal Element Materials — Poster Session

Sponsored by: TMS Alloy Phases Committee, TMS: Computational Materials Science and Engineering Committee, TMS: Mechanical Behavior of Materials Committee

Program Organizers: Shuozhi Xu, University of Oklahoma; Douglas Spearot, University of Florida; Jia Li, Hunan University; Michael Gao, National Energy Technology Laboratory; Levente Vitos, Royal Institute of Technology (KTH)

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

K-1: Ontology-based Digital Representations of Materials Testing in the MaterialDigital initiative: *Hossein Beygi Nasrabadi*¹; Thomas Hanke²; Birgit Skrotzki¹; ¹Bundesanstalt für Materialforschung und -prüfung (BAM); ²Fraunhofer-Institut für Werkstoffmechanik (IWM), Freiburg, Germany

NANOMATERIALS

Controlled Synthesis, Processing, and Applications of Structural and Functional Nanomaterials — Poster Session

Sponsored by: ACerS Basic Science Division, ACerS Electronics Division, ACerS Engineering Ceramics Division

Program Organizers: Haitao Zhang, University of North Carolina at Charlotte; Gurpreet Singh, Kansas State University; Kathy Lu, University of Alabama Birmingham; Edward Gorzkowski, Naval Research Laboratory; Michael Naguib, Tulane University; Sanjay Mathur, University of Cologne; Wonmo Kang, Arizona State University; Babak Anasori, Indiana University-Purdue University Indianapolis

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

L-2: Improved Electrochemical Properties of SiOC Composite for High Li Storage: *Shakir Bin Mujib*¹; Mohammed Rasheed¹; Gurpreet Singh¹; ¹Kansas State University

L-3: SiC Fiber-reinforced CMCs: Towards High-temperature Structural Materials: *Mohammed Rasheed*¹; Shakir Bin Mujib¹; Gurpreet Singh¹; ¹Kansas State University

L-4: Synthesis of High-Temperature Ceramics Based on Hafnium Carbide from a Precursor: Shakir Bin Mujib¹; Mohammed Rasheed¹; Saravanan Arunachalam²; Gurpreet Singh¹; ¹Kansas State University; ²Spirit AeroSystems

L-5: Ultra-low Content CNTs Enhanced the Mechanical Properties of Carbon Black/Nature Rubber Composites: *Ying Liu*¹; Wenduo Chen¹; Dazhi Jiang¹; ¹Sun Yat-sen University

SUSTAINABILITY, ENERGY, AND THE ENVIRONMENT

Energy Materials for Sustainable Development — Poster Session

Sponsored by: ACerS Energy Materials and Systems Division

Program Organizers: Yang Bai, University of Oulu; Eva Hemmer, University of Ottawa; Krista Carlson, University of Nevada, Reno; Kyle Brinkman, Clemson University; Armin Feldhoff, Leibniz University Hannover; Charmayne Lonergan, Missouri University of Science and Technology; Zhezhen Fu, Pennsylvania State University - Harrisburg; Dhruba Panthi, Kent State University; Janusz Tobola, AGH UST, Faculty of Physics and Applied Computer Science

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chair: Jianhua Tong, Clemson University

O-7: Bandgap-engineered Ferroelectric Ceramics for Photoelectric and Photovoltaic Applications: Yang Bai¹; ¹University of Oulu



O-8: Bimetallic Indium-Tin Metal-Organic Framework Catalyst for CO2 Conversion to Formic Acid: *Nawaf Alharbi*¹; Munzir Suliman¹; Bader Alghamdi¹; Muhammad Usman¹; ¹King Fahad University of Petroleum and Minerals

O-9: Computational Modeling of Correlated Ion Transport in Polymer-Ceramic Composite Electrolytes: Lauren Shepard¹; Susan Sinnott¹; ¹The Pennsylvania State University

O-10: Electron Transfer Mechanism of Near-infrared-response ZnO/ CuInS₂ S-scheme Photocatalyst for H_2O_2 Synthesis and Glycerol Oxidation: *Kai Meng*¹; ¹Wuhan University of Technology

O-11: Smart Shoe Electricity Generation via Piezo-electric Transducers: *Siva Reddy Olpu*¹; ¹G. Pullaiah College of Engineering and Technology

CERAMIC AND GLASS MATERIALS

Engineering Ceramics: Microstructure-Property-Performance Relations and Applications — Poster Session

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Young-Wook Kim, University of Seoul; Hua-Tay Lin, Guangdong University of Technology; Junichi Tatami, Yokohama National University; Michael Halbig, NASA Glenn Research Center

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chair: Michael Halbig, Glenn Research Center-NASA

D-11: Glass Foams Produced from Glass Waste with No CO₂ Emission in the Foaming Process: *Evaldo Kubaski*¹; Sergio Tebcherani²; Robson da Silva¹; ¹State University of Ponta Grossa; ²Universidade Tecnológica Federal do Paraná

CERAMIC AND GLASS MATERIALS

Glasses and Optical Materials: Current Issues and Functional Applications — Poster Session

Sponsored by: ACerS Glass & Optical Materials Division

Program Organizers: Charmayne Lonergan, Missouri University of Science and Technology; Ashutosh Goel, Rutgers, The State University of New Jersey

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

D-12: Assessing the Chemical Durability of Soda-lime-silica Glass with Beverages: *Vedant Badoni*¹; Qinahui Qin²; Ashutosh Goel²; ¹Edison Academy Magnet School; ²Rutgers, The State University of New Jersey

D-13: Novel Fibers for Quantum Computing: Kristin Chapman¹; Thomas Hawkins¹; Kasra Sardashti¹; John Ballato¹; ¹Clemson University

D-14: Redistribution of Nat Ions in Mixed Alkali-lime Glasses: *Jacob Kaspryk*¹; William LaCourse¹; ¹Alfred University

D-15: Structural Effects of Alkali/Alkali Earth Cations on the Nickeldoped BK7 Type Borosilicate Glasses: *Amir Ashjari*¹; Lucas Greiner¹; Doris Möncke¹; ¹Alfred University

D-16: Structure and Properties of Lead Borate and Lead Aluminoborate Glasses: *Elizabeth Tsekrekas*¹; Nagia Tagiara²; Randall Youngman³; Efstratios Kamitsos²; Alexis Clare¹; ¹Alfred University; ²National Hellenic Research Foundation; ³Corning Incorporated

FUNDAMENTALS AND CHARACTERIZATION

Grain Boundaries, Interfaces, and Surfaces: Fundamental Structure-Property-Performance Relationships — Poster Session

Sponsored by: ACerS Basic Science Division

Program Organizers: John Blendell, Purdue University; Wayne Kaplan, Technion - Israel Institute of Technology; Shen Dillon, University of California, Irvine; Wolfgang Rheinheimer, University of Stuttgart; Catherine Bishop, University of Canterbury; Ming Tang, Rice University; Melissa Santala, Oregon State University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chair: John Blendell, Purdue University

F-1: Understanding the Influence of Interfaces on the Texture Development in Mg-(Ca, Zn) Alloys during Recrystallization: *Rogine Gomez*¹; Aeriel Leonard¹; ¹The Ohio State University

FUNDAMENTALS AND CHARACTERIZATION

High Entropy Materials: Concentrated Solid Solutions, Intermetallics, Ceramics, Functional Materials and Beyond IV — Poster Session

Sponsored by: TMS Alloy Phases Committee

Program Organizers: Mitra Taheri, Johns Hopkins University; Michael Gao, National Energy Technology Laboratory; Elaf Anber, Johns Hopkins University; Yu Zhong, Worcester Polytechnic Institute; Xingbo Liu, West Virginia University; Peter Liaw, University of Tennessee; Yiquan Wu, Alfred University; Jian Luo, University of California, San Diego; Amy Clarke, Colorado School of Mines; Sebastian Lech, Johns Hopkins University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

F-2: Additive Manufacturing feasibility of MoNbTi Refractory Complex Concentrated Alloys: *Abdulquadri Oriola*¹; Ravi Kumar¹; Ugochukwu Ochieze¹; Sravya Josyula¹; Balbus Glenn¹; Ashley Paz y Puente¹; Eric Payton¹; ¹University of Cincinnati

F-3: Effect of Composition and Temperature on the Formation of Intermetallic Coatings Based on Nickel and Aluminum on Iron and Titanium Surfaces during Laser Surface Treatment: *Alexander Slobodov*¹; Dmitriy Gerashenkov¹; Andrey Evdokimov¹; Alexander Melentiev¹; ¹St. Petersburg Institute of Technology; ITMO University



F-4: Effect of Heat Treatment on Microstructures and Mechanical Characteristics of Quaternary High Entropy Alloys: Orifion Mikhliev¹; Sarvar Rozikhodjaev¹; Khasanjon Shanazarov¹; Elyorjon Jumaev¹; ¹FDI «Uzliti Engineering» LLC

F-5: Effects of Laser Shock Peening Surface Modification on Oxidation Behavior of NbTi-X

Refractory Complex Concentrated Alloys: Ugochukwu Ochieze¹; Abdulquadri Oriola¹; Ravi Kumar¹; Sravya Josyula¹; Matthew Steiner¹; Eric Payton¹; ¹University of Cincinnati

F-6: Formation of Intermetallic Alloys of the Ti-Al System with Lowmelting Eutectic and Ti-Al under Conditions of Synthesis of Complex Functionally Active Charges: *Borys Sereda*¹; Yuriy Belokon¹; Irina Kruhliak¹; Dmytro Sereda¹; ¹DSTU

F-7: Lightweight Refractory High Entropy Alloys with Excellent Specific Strength and Enhanced Ductility By In-situ Heterogeneous Structure: *Lianxi Hu*¹; Yu Sun¹; Yuan Yuan¹; Fei Gao¹; ¹Harbin Institute of Technology

F-8: Microstructure and Strengthening Mechanisms of Novel Lightweight TiAlVO.5CrMo Refractory High-entropy Alloy Fabricated by Mechanical Alloying and Spark Plasma Sintering: Yu Sun¹; Fei Gao¹; ¹Harbin Institute of Technology

F-9: Stretch Formability and Cryogenic Environmental Applicability of Fex(CoNi)90-xCr10 Ferrous Medium-entropy Alloys: Yeon Taek Choi¹; Rae Eon Kim¹; Jihye Kwon¹; Do Won Lee¹; Jae Wung Bae²; Hyoung Seop Kim¹; ¹Pohang University of Science and Technology; ²Pukyong National University

F-10: The Effect of W Concentration on the Thermodynamic Properties of MoNbTaW: Sarah O'Brien¹; Matthew Beck¹; ¹University of Kentucky

F-11: The Research Thermochemical Pressing Modes of Dual-phase Special Alloys for Obtaining Rational Intermetallic Structure: Borys Sereda¹; Yuriy Belokon¹; Irina Kruhliak¹; *Dmytro Sereda*¹; ¹DSTU

F-12: Thermal, Electrical, and Magnetic Properties of Multi-Principal Element Alloys: *Ravi Kumar*¹; Ugochukwu Ochieze¹; Bal Adhikari¹; Abdulquadri Oriola¹; Sravya Josyula¹; Sarah Watzman¹; Eric Payton¹; ¹University of Cincinnati, Ohio

FUNDAMENTALS AND CHARACTERIZATION

Interface-mediated Phenomena in Structural Materials — Poster Session

Sponsored by: TMS: Nanomechanical Materials Behavior Committee

Program Organizers: Jian Wang, University of Nebraska-Lincoln; Nigel Shepherd, University of North Texas; Andres Bujanda, U.S. Army Research Laboratory; Lin Shao, Texas A&M University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chair: Jian Wang, University of Nebraska - Lincoln

F-13: Synergistic Hardening and Damage Evolution on the Stretchability of Al1050/steel/Al1050 Sheets: *Rae Eon Kim*¹; Yeon Taek Choi¹; Hyoung Seop Kim¹; ¹Postech

SPECIAL TOPICS

Late News Poster Session — Additive Manufacturing

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

A-15: Additive Manufacturing in High Performance Thermal Systems: *Alireza Rozati*¹; Anju Gupta¹; ¹The University of Toledo

A-16: Exploring Rapid Prototyping for Studio Ceramics Based on Indirect 3D Printing Technique: *Oluwafemi Adelabu*¹; Adekoya Adebowale¹; ¹The Federal University of Technology

A-17: In Situ Residual Stress Measurements for 9Cr1Mo (Gr 91) Stainless Steel Using Ultrasound: Nathan Kizer¹; Corey Dickman¹; Edward Reutzel¹; Christopher Kube¹; ¹Pennsylvania State University

A-18: Microstructure and Mechanical Properties of STS316L and P21 Tool Steel Laser Laminated Functionally Graded Materials: *Dae-Geun Nam*¹; Myeongji Jo²; Hyo-Seong Kim³; Gwangjoo Jang¹; Taibong Son⁴; Myungsub Roh⁵; Byoungkoo Kim¹; ¹Korea Institute of Industrial Technology; ²Vitzro Nextech Co.; ³Korea Shipbuilding & Offshore Engineering Co.; ⁴Korea Nuclear Industry Research Association; ⁵Daekyung Engineering Co.

A-19: Modifying the Energy Density Formula: Uncovering Fundamental L-PBF Material Differences: Sean Dobson¹; Ashley Paz y Puente¹; ¹University of Cincinnati

A-20: Thermally Dynamic Ripening Induced Multi-modal Precipitation Strengthened NiTi Shape Memory Alloys by LENS: Jiaqi Lu¹; ¹Wuhan University of Technology

A-21: Towards Metal Additive Manufacturing Using Alternate Powders: Harish Dhami¹; Koushik Viswanathan¹; ¹Indian Institute of Science

SPECIAL TOPICS

Late News Poster Session — Artificial Intelligence

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

B-3: Characterization of Cements and Concretes Using 3D Automated Quantitative Mineralogy and Enhanced Deep-learning Reconstruction via X-ray Microscopy: *Ria Mitchell*¹; John Provis²; Dan Geddes²; Giacomo Torelli²; Antonia Yorkshire²; Richard Taylor¹; Andy Holwell¹; ¹ZEISS Microscopy; ²University of Sheffield

B-4: The Effects of Physical Constraints on Deep-learning Based Surrogate Models: *Kyle Farmer*¹; Elizabeth Holm¹; ¹University of Michigan



SPECIAL TOPICS

Late News Poster Session — Ceramic and Glass Materials

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

D-21: Designing Novel Dielectric Composites with High Thermal Conductivity via Cold Sintering: *Javier Mena-Garcia*¹; Clive Randall¹; ¹The Pennsylvania State University

D-22: Oxygen Exchange-mediated Behaviors in Ferrite Perovskite Oxides: Crystallization and a Photo-ionic Effect: *Haley Buckner*¹; Emily Skiba¹; Nicola Perry¹; ¹University of Illinois at Urbana-Champaign

D-23: Processing and Properties of Thin Solution-based Sb₂Se₃ Thin Films for Phase Change Materials: *Casey Schwarz*¹; Rashi Sharma²; Daniel Wiedeman²; Brian Mills³; Novia Berriel²; Marie Sykes¹; Jasper Stackawitz¹; Jake Klucinec¹; Parag Banerjee²; Kathleen Richardson²; JueJen Hu³; ¹Ursinus College; ²University of Central Florida; ³Massachusetts Institute of Technology

D-24: Structural Rearrangements during Relaxation of Lithium Disilicate Glass: *Ricardo Felipe Lancelotti*¹; Sabyasachi Sen²; Edgar Zanotto¹; ¹Federal University of Sao Carlos; ²University of California at Davis

D-25: Surface Energy Measurements of Yttrium Oxide: Kavan Joshi¹; Jeremy Mason²; Ricardo Castro¹; ¹Lehigh University; ²University of California Davis

D-26: Synthesis of Spinel-type High-entropy Oxides for the Development of Light-element-containing Multication Magnetic Materials: Jun Fukushima¹; ¹Tohoku University

SPECIAL TOPICS

Late News Poster Session — Fundamentals and Characterization

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

F-14: Calculation of Stress Intensity Factors for a Multiple Crack-hole Interaction Problem: *Asif Khawaja*¹; Wieslaw Binienda¹; ¹The University of Akron, Ohio

F-15: Capacitive Discharge in Flash Experiments under Air and Ar Atmosphere: *Seohyeon Jo*¹; Minhyea Lee¹; Ian Leahy¹; Xavier Vendrell²; Rishi Raj¹; ¹University of Colorado Boulder; ²University of Barcelona

F-16: Deformation and Fracture Response of Single-crystal MAX Phases: *Milos Dujovic*¹; Miladin Radovic¹; Ankit Srivastava¹; Thierry Ouisse²; ¹Texas A&M University; ²Université Grenoble Alpes,

F-17: Existence of Single Crystal Structure in Congruent Melting Intermetallic Compound – Ni5Ge3: *Nafis Ul Haque*¹; Oluwatoyin E. Jegede²; Andrew Mullis²; ¹NED University of Engineering & Technology; ²University of Leeds F-18: Novel Techniques in X-ray Nanotomography and High Resolution FESEM Imaging: Linking Structure and Properties of Heterogeneous and Automotive Catalysts in 2D and 3D: *Ria Mitchell*¹; Andy Holwell¹; Markus Boese¹; Dogan Ozkaya²; Aakash Varambhia²; ¹ZEISS Microscopy; ²Johnson Matthey

SPECIAL TOPICS

Late News Poster Session — Iron and Steel (Ferrous Alloys)

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

G-12: Characteristic Deformation Behavior of Heterogeneous-Nano structured SUS316LN Autenitic Stainless Steel at a Cryogenic Temperature: *Chihiro Watanabe*¹; Norimitsu Koga¹; Masakazu Kobayashi²; Hiromi Miura²; ¹Kanazawa University; ²Toyohashi University of Technology

G-13: Development and Characterization of a Cast Steel Reinforced with Primary Carbides for High Strength and Severe Wear Applications: *Héctor Valdes Vera*¹; ¹Conacyt

SPECIAL TOPICS

Late News Poster Session — Materials-Environment Interactions

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

J-10: Assessing Wear Rate Based on Cutting Power Measurement: *Usma Riaz*¹; ¹Korea Institute of Energy Research

SPECIAL TOPICS

Late News Poster Session — Modeling

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

K-6: Microstructure Based Modeling Approach for the Fatigue Life Prediction of Hypo-eutectoid Steels: *Jonghoon Shin*¹; Yoon Suk Choi¹; Hyunki Kim²; Minwoo Kang²; Seunghyun Hong²; ¹Pusan National University; ²Metallic Material Research Lab, Hyundai Motor Group

K-7: Numerical Analysis on the Local Deformation Behavior of the Fir Tree of Ni-based Superalloy Turbine Blade: *Tae Yang Bang*¹; Yoon Suk Choi¹; Seen Chan Kim²; Seong Hun Park¹; Han Jong Kim¹; Tae Jun Yun³; Jun Young Jeon⁴; ¹Pusan National University; ²SK Energy; ³Doosan Enerbility; ⁴Korea Institute of Materials Science



SPECIAL TOPICS

Late News Poster Session — Nanomaterials

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

L-9: Atomic Layer Deposition of MoO_x Thin Films Using $Mo(PrCp)_2H_2$ and O_3 : *Ethan Hendrix*¹; Ben Garland¹; Vamseedhara Vemuri¹; Nicholas Strandwitz¹; ¹Lehigh University

L-10: Boron-based Nanomaterials for Advancing Boron Neutron Capture Therapy: Synthesis, Characterization, and Impressive Anti-tumor Outcomes: *Manjot Kaur*¹; Akshay Kumar²; ¹Chandigarh University; ²Sardar Patel University Mandi

L-11: Development of an Antibacterial Nanocomposite Film from Cocoa Residues: *Lesly Tejeda-Benitez*¹; Maria Garcia-Espiñeira¹; Barbara Arroyo-Salgado¹; ¹University of Cartagena

L-12: Investigating Na+ ion Storage Behavior of WS2NT Encapsulated SiOC Fibers: Sonjoy Dey¹; Gurpreet Singh¹; ¹Kansas State University

L-13: Laser-induced PVD Coatings - A New Method to Fabricate Thin Layers that Show the Properties of Free Nanoparticles: *Ralph Domnick*¹; ¹Ara-Coatings GmbH & Co. KG

L-14: Manufacturing and Characterization of Ferromagnetic Nanoclusters in Si by One-step Diffusion for Microfluidic Based CTC Separation System: Levent Trabzon¹; Mavlonov Giyosiddin²; Sobirjon Isamov²; Shaxboz Ibadillayev²; ¹Istanbul Teknik Üniversitesi; ²Taskhent Tashkent State Technical University

L-15: Regulating Na+ and K+ Ion Storage into TMD Alloys: Effect of Upper Voltage Cut-off Technique: *Sonjoy Dey*¹; Arijit Roy¹; Gurpreet Singh¹; ¹Kansas State University

L-16: Vanadium Ion Beam Induced Modification in RF - Magnetron Sputter Deposited ZnO Thin Films: Structural and Optical Properties: *Olakunle Oluwaleye*¹; ¹Council for Scientific and Industrial Research (CSIR)

SPECIAL TOPICS

Late News Poster Session — Nuclear Energy

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

M-3: Proton Irradiation Damage and Corrosion Behaviour of Al and/ or Zr Added Fe-Ni Based ODS Alloy: *Arpan Arora*¹; Suhrit Mula¹; ¹IIT Roorkee

SPECIAL TOPICS

Late News Poster Session — Processing and Manufacturing

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

N-9: Correlation between the Laser Beam Shape and the Weldability of Thin Stainless Steel Plates: *Danbi Song*¹; Su-Jin Lee¹; Ryoonhan Kim¹; Kwangdeok Choi¹; Dongsig Shin¹; ¹Korea Institute of Machinery and Materials

N-10: Effect of Laser Welding on Corrosion and Microstructure in Underwater Environment: *Danbi Song*¹; Su-Jin Lee¹; Jungsoo choi¹; Dongsig Shin¹; ¹Korea Institute of Machinery and Materials

N-11: Microstructure Evolution of Al-Cu-Li Alloy during Electricallyassisted Thermomechanical Treatment: *Zhenhai Xu*¹; Shaoxi Xue¹; ¹Harbin Institute of Technology

N-12: Powder Metallurgy of Electrical Contacts: *Mahesh Darji*¹; ¹Squared-Schneider Electric North America

SPECIAL TOPICS

Late News Poster Session — Sustainability, Energy, and the Environment

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

O-12: A High-Performance Li-Ion Battery Based on Polymer-Derived Silicon-Oxycarbide/Graphene Nanoplatelets Composites: Dillip Panda¹; Gangadhar Jella²; Nawraj Sapkota¹; Michelle Greenough¹; Apparao Rao¹; Ravindran Sujith²; Rajendra Bordia¹; ¹Clemson University; ²BITS Hyderabad, India

O-13: Permeation of Carbon Dioxide in Tungsten-doped Lanthanum Molybdenum Oxide/Lithium-Sodium-Potassium Carbonates Dual Composite Ceramic Membranes: Midilane Medina¹; Sabrina Carvalho¹; Francisco Tabuti¹; Eliana Muccillo¹; Fabio Fonseca¹; *Reginaldo Muccillo*¹; ¹IPEN-USP



LIGHTWEIGHT ALLOYS

Light Metal Technology — Poster Session

Program Organizers: Xiaoming Wang, Purdue University; Alan Luo, Ohio State University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

H-1: Numerical Simulation of Effect of Process Parameters on Solidification Structure in Titanium Alloy TC4 Vacuum Arc Remelting Process: *Zhenquan Jing*¹; Yanhui Sun¹; Rui Liu¹; ¹University of Science and Technology Beijing

ARTIFICIAL INTELLIGENCE

Materials Processing and Fundamental Understanding Based on Machine Learning and Data Informatics — Poster Session

Sponsored by: ACerS Engineering Ceramics Division

Program Organizers: Kathy Lu, University of Alabama Birmingham; Pinar Acar, Virginia Tech; Yi Je Cho, Sunchon National University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chair: Kathy Lu, Virginia Tech

B-1: Multi-objective Optimization for Improving Mechanical Properties of Aluminum Alloys: A Data Analytics Approach with Machine Learning and Genetic Algorithms: *Su-Jeong Kim*¹; Yoon-Suk Choi¹; Su-Hyeon Kim²; ¹Pusan National University; ²Korea Institute of Materials Science

B-2: Simple Data Analytics Approach Coupled with Physics-based Model

for Improved Prediction of Creep Rupture Life: *TaeJoo Lee*¹; Yoon Suk Choi¹; Chang Ho Lee¹; ¹Pusan National University

CERAMIC AND GLASS MATERIALS

Mesoscale Phenomena in Functional Polycrystals and Their Nanostructures — Poster Session

Sponsored by: ACerS Electronics Division

Program Organizers: Serge Nakhmanson, University of Connecticut; Edward Gorzkowski, Naval Research Laboratory; James Wollmershauser, U.S. Naval Research Laboratory; Seungbum Hong, KAIST; Javier Garay, University of California - San Diego; Pierre-Eymeric Janolin, CentraleSupélec; Ilya Sochnikov, University of Connecticut

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

D-17: Alchemy of Graphite: The Many Faces of Coal: Chinonso Ugwumadu¹; David Drabold¹; ¹Ohio University

D-18: High-throughput Approach for Predicting Optical Properties of Crystals: *Fatin Ishtiyaq*¹; Sanjeev K. Nayak¹; Serge Nakhmanson¹; ¹University of Connecticut

D-19: Numerical Analysis of the Influence of the Second-phase Particle Morphology on the Alloy Microstructure Evolution: *M Nabil Bhuiyan*¹; Serge Nakhmanson¹; Lesley Frame¹; ¹University of Connecticut

MODELING

Multi Scale Modeling of Microstructure Deformation in Material Processing — Poster Session

Sponsored by: AIST Metallurgy — Processing, Products & Applications Technology Committee

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

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chairs: Krzysztof Muszka, AGH University; Lukasz Madej, AGH University

K-2: Data Transfer Methods in the Coupled Random Cellular Automata Finite Element Model of Dynamic Recrystallisation: Mateusz Sitko¹; Kacper Pawlikowski¹; *Lukasz Madej*¹; ¹AGH University of Science and Technology

K-4: Modeling the Effect of Recovery Treatment on the Mechanical Response of Nano Structure Material: *Khaled Adam*¹; ¹Georgia Southern University

K-5: Assessment of the Elastic Properties of FeMnNiCoMo System Based on the Nanoindentation Measurements and Molecular Dynamic Simulations: *Krzysztof Muszka*¹; Kamil Cichocki¹; Jakub Kawałko¹; Piotr Baa¹; ¹AGH University of Science and Technology



NANOMATERIALS

Nanotechnology for Energy, Environment, Electronics, Healthcare and Industry — Poster Session

Sponsored by: ACerS

Program Organizers: Navin Manjooran, Solve; Gary Pickrell, Virginia Tech

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chairs: Navin Manjooran, Chairman, Solve; Gary Pickrell, Virginia Tech

L-6: Characterization of Aging Behavior and Chemistry of Silver Nanoparticle Ink for Aerosol Printing: *Sylvie Crowell*¹; Caroline Kromalic¹; Mitchell Melander¹; Janet Gbur¹; ¹Case Western Reserve University

L-7: Optimization of Extraction Methods for Maximum Recovery of Quercetin and Total Flavonoids from Red Onion Peel Wastes: Zeinab Velisdeh¹; David Mills¹; ¹Louisiana Tech University

L-8: Thermal Transport in Electrically Tunable Thermal Switches Based on Multilayer Graphene and CNT: Saqeeb Adnan¹; Pietro Steiner²; Coskun Kocabas²; Marat Khafizov¹; ¹The Ohio State University; ²The University of Manchester

BIOMATERIALS

Next Generation Biomaterials — Poster Session

Sponsored by: ACerS Bioceramics Division

Program Organizers: Roger Narayan, University of North Carolina; Tanveer Tabish, University of Oxford; Shawn Allan, Lithoz America LLC

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

C-7: Antimicrobial Coatings Composed of Chitosan, Poly Vinyl Alcohol, and Zinc-coated Halloysite Nanotubes (HNTs): Sindhu Datla¹; David Mills¹; ¹Louisiana Tech University

C-8: Electrospun Bilayer Vascular Grafts with Excellent Mechanical Strength and Anticoagulation Property: Jizhuo Chen¹; *Min Wang*¹; ¹University of Hong Kong

PROCESSING AND MANUFACTURING

Processing and Performance of Materials Using Microwaves, Electric and Magnetic Fields, Ultrasound, Lasers, and Mechanical Work – Rustum Roy Symposium — Poster Session

Sponsored by: ACerS Basic Science Division, ACerS Manufacturing Division

Program Organizers: Morsi Mahmoud, King Fahd University of Petroleum & Minerals; Dinesh Agrawal, Pennsylvania State University; Guido Link, Karlsruhe Institute of Technology; Motoyasu Sato, Chubu University; Rishi Raj, University of Colorado; Christina Wildfire, National Energy Technology Laboratory; Zhiwei Peng, Central South University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

N-6: Improving Reliability of Ultrasonic Fatigue Testing through Comparative Analysis of Conventional and Ultrasonic Fatigue Tests on SS400 Material: *Sungsu Jung*¹; Youngcheol Lee¹; ¹Korea Institute of Industrial Technology

N-7: Research on Green Laser Welding Process and Monitoring Technologies for Manufacturing Parts of Electric Vehicles: *Heeshin Kang*¹; Hyunjong Yoo¹; Jiwhan Noh¹; Jiyeon Choi¹; Soojin Choi¹; Junsu Park¹; Myungjin Kim¹; Jongsik Kim¹; Eunjoon Chun¹; ¹Korea Institute of Machinery and Materials

BIOMATERIALS

Society for Biomaterials: Biological Response to Materials and Material's Response to Biological Environments — Poster Session

Sponsored by: Society for Biomaterials

Program Organizers: Christopher Siedlecki, Penn State College of Medicine; Nicholas Ziats, Case Western Reserve University; Noelle Comolli, Villanova University; Anirban Sen Gupta, Case Western Reserve University

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

C-9: Dual Function of Plasma Nanocoatings in Cardiovascular Stent Applications: *Thi Thu Ha Phan*¹; Meng Chen²; Qingsong Yu³; John Jones²; ¹University of Missouri and Thai Nguyen University of Technology -Vietnam; ²Nanova Biomaterials, Inc.; ³University of Missouri



BIOMATERIALS

Society for Biomaterials: Biomaterial Applications — Poster Session

Sponsored by: Society for Biomaterials

Program Organizers: David Kohn, University of Michigan; Guigen Zhang, University of Kentucky; Claudia Loebel, University of Michigan; William Wagner, McGowan Institute for Regen Med

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

C-10: A Study on the Stress Analysis of the Vertebral Body According to the Posture of Patients Undergoing Lumbar Bone Implant Surgery: *Sungwook Kang*¹; Jong-Moon Hwang²; ¹Korea Institute of Industrial Technology (KITECH); ²Kyungpook National University Hospital

C-11: Lens Epithelial Cell Response to Polymer Surface Chemistry, Mechanical Properties and Micropatterns: Hamid Hamedi¹; Katelyn Swindle-Reilly¹; Raima Puri¹; Heather Chandler¹; Derek Hansford¹; Hanna Cho¹; Michael Lee¹; ¹Ohio State University

BIOMATERIALS

Society for Biomaterials: Biomaterial Applications in Today's Industry: Development, Translation & Commercialization — Poster Session

Sponsored by: Society for Biomaterials

Program Organizers: Katelyn Swindle-Reilly, The Ohio State University; Stephanie Steichen, DuPont; J. Zach Hilt, University of Kentucky

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chairs: Katelyn Swindle-Reilly, The Ohio State University; Stephanie Steichen, DuPont; J. Zach Hilt, University of Kentucky

C-12: NOMAD: Novel Biomaterials to Prevent Dental Peri-implant Infections: *Annabel Braem*¹; Merve Kübra Aktan¹; Jef Vleugels¹; Bart Van Meerbeek²; Wim Teughels²; Isabelle François³; Laurent Gremillard⁴; Yann Chevolot⁵; Emmanuelle Laurenceau⁵; Mariano Sanz⁶; Ariana Barlic⁷; Nestor Rodriguez⁸; Henny van der Mei⁹; Nicolas Courtois¹⁰; John Hanrahan¹¹; Melissa Courtney¹¹; Shane Keaveney¹²; Manuela Sonja Killian¹³; Karin Thevissen¹⁴; ¹KU Leuven Department of Materials Engineering; ²KU Leuven Department of Oral Health Sciences; ³Health House; ⁴Centre National de la Recherche Scientifique Lyon; ⁵Ecole Centrale de Lyon; ⁶Universidad Complutense de Madrid; ⁷Educell; ⁸Atrineo; ⁹University Medical Center Groningen; ¹⁰Anthogyr; ¹¹Glantreo; ¹²Croom Precision Tooling; ¹³Universität Siegen; ¹⁴KU Leuven Centre of Microbial and Plant Genetics

BIOMATERIALS

Society for Biomaterials: Student Poster Contest + Rapid Fire — Poster Session

Sponsored by: Society for Biomaterials

Program Organizers: Roger Narayan, University of North Carolina; Katelyn Swindle-Reilly, The Ohio State University; David Kohn, University of Michigan; Christopher Siedlecki, Penn State College of Medicine

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

C-13: Bioelectricity and Biomarker Acid Dual Targeting Fe3O4 Cu2-xS Nanoparticles for Photothermal Cancer Cell Killing: Zicheng Deng¹; Yuxin Wang¹; Donglu Shi¹; ¹University of Cincinnati

C-14: Bio-responsive Nanomedicine for Targeted Inhibition of NETosis in Treating Deep Vein Thrombosis: Keren Hu¹; ¹Case Western Reserve University

C-15: Blow Spinning of Polyvinyl Alcohol (PVA) and Polyvinylpyrrolidone (PVP) Scaffolds Embedded with Zinc Halloysite Nanotubules (HNTs): Anthony Monistere¹; David Mills¹; ¹Louisiana Tech University

C-16: Carvacrol and Curcumin: Potential Therapeutic Agents for Bone Defects Treatment: *Aditi Dahiya*¹; Susmita Bose¹; ¹Washington State University

C-17: Effect of Patient-specific Blood Biomarkers on Nanoparticlecell Interactions: Veronica Contreras¹; Wilson Poon¹; ¹University of Texas at El Paso

C-18: Electrochemical Performance of EF-hand Peptide Conjugated with Tyrosine as an Aptamer for the Biosensing of Rare Earth Elements: Sogol Asae¹; Julie Renner¹; ¹Case Western Reserve University

C-19: Formulation of Biodegradable Polysaccharide Blend As Replacement of Single Use Plastic: Sarina Krishnaswamy¹; ¹Virginia Tech Student

C-20: Identifying Fouling Mechanisms of Polyproline II Helix Peptides on Gold Surface: *Rebecca Ahn*¹; Julie Renner¹; ¹Case Western Reserve University

C-21: Improvement and Validation of Computational Model of Biliary Stent Behavior: *Ainsley Westbrook*¹; Morgan Verheyen¹; Aeryn Cronin¹; Joanna Thomas¹; ¹Mercer University

C-22: Investigation of Strontium-Copper-Dopped Sol-gel Bioglass for Soft-tissue Repair: Danielle Perry¹; ¹Alfred University

C-23: Loading and Elution Efficiency of T2DA Loaded on Electrospun Chitosan Decanoic and Hexanoic Modified Membranes via Soaking Method: *Tibirni Yusuf*¹; ¹University of Memphis

C-24: Mimicking Respiratory Tissue Dynamics with Dynamic Hydrogel Platforms: *Alan Shi*¹; Avinava Roy¹; Zenghao Zhang¹; Madeline Eiken¹; Abdon Pena-Francesch¹; Claudia Loebel¹; ¹University of Michigan

C-25: Mixed Brownian Alignment and Néel Rotations in Superparamagnetic Iron Oxide Nanoparticle Suspensions Driven by an AC Field: Saqlain Shah¹; ¹Forman Christian College (University) Lahore



C-26: Nanoparticle-based drug delivery for the degradation of recalcitrant blood clots: *Hanyang Wang*¹; Dante Disharoon¹; Shruti Raghunathan¹; Yolanda Fortenberry¹; Anirban Sen Gupta¹; ¹Case Western Reserve University

C-27: Natural Medicinal Compounds Enhance Osteogenic and Antibacterial Properties of Calcium Phosphate-coatedTitanium: *Priya Kushram*¹; Susmita Bose¹; ¹Washington State University

C-28: Raman and SEM-EDAX Analysis of Lithium and Gallium Doped Silicate and Borosilicate Sol Gel Bio Glasses for Anti Inflammatory Response: Andrew Barnikel¹; ¹Alfred University

C-29: Synthesis and Characterization of Mesoporous -Tricalcium Phosphate Powders Using Spray Drying for Orthopedic Applications: *Andualem Belachew Workie*¹; ¹National Taiwan University of Science and Technology

C-30: The Flow Properties of Snake Venom: Madison Forstner¹; ¹University of Michigan: Bioinspired Materials Lab

C-31: Evaluation of Hemostatic Properties of Procoagulant Synthetic Platelets: *Jenny Lian*¹; Norman Luc¹; Dante Disharoon PhD¹; Anirban Sen Gupta PhD¹; ¹Case Western Reserve University

C-32: Detection of TIC-relevant Phenotypes with a Multichannel Miniaturized Dielectric Coagulometer Incorporating Bioactive Reagent-functionalized Electrodes: *Si Young Song*¹; Michael Suster¹; Sina Pourang¹; Christopher Delianides¹; Dante Disharoon¹; Selvin Hernandez¹; Calvin Abonga¹; Hanif Alizadeh¹; Sanjay Ahuja¹; Matthew Neal¹; Anirban Sen Gupta¹; Pedram Mohseni¹; ¹Case Western Reserve University

CERAMIC AND GLASS MATERIALS

Solid-state Optical Materials and Luminescence Properties — Poster Session

Sponsored by: ACerS Basic Science Division

Program Organizers: Yiquan Wu, Alfred University; Jas Sanghera, Naval Research Laboratory; Akio Ikesue, World-Lab. Co., Ltd; Rong-Jun Xie, Xiamen University; Mathieu Allix, Laboratoire CEMHTI; Kiyoshi Shimamura, National Institute for Materials Science; Liangbi Su, Shanghai Institute of Ceramics; Dariusz Hreniak, Polish Academy of Sciences

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

D-20: Fabrication and Optical Property Characterization of Silver Thin Film Using Magnetron Sputtering Method: *Mahdi Ghanati*¹; Hassan Fatahbeygi¹; Jing Zhang¹; ¹Indiana University – Purdue University Indianapolis

IRON AND STEEL (FERROUS ALLOYS)

Steels for Sustainable Development II — Poster Session

Sponsored by: TMS: Steels Committee

Program Organizers: Jonah Klemm-Toole, Colorado School of Mines; Kester Clarke, Colorado School of Mines; Ian Zuazo, ArcelorMittal Global R&D - Industeel; Matthias Militzer, University of British Columbia; Ana Araujo, CBMM North America Inc.; Mahesh Somani, University of Oulu; Ilchat Sabirov, Imdea Materials Institute

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chairs: Jonah Klemm-Toole, Colorado School of Mines; Ian Zuazo, ArcelorMittal Global R&D - Industeel

G-11: Effect of Cooling Rate and Tempering Temperature on Hydrogen Embrittlement of Tempered Martensitic Steel for High-pressure Hydrogen Storage: Sang-Gyu Kim¹; Hee-Chang Shin¹; Byoungchul Hwang¹; ¹Seoul National University of Science and Technology


MATERIALS-ENVIRONMENT INTERACTIONS

Thermodynamics of Materials in Extreme Environments — Poster Session

Sponsored by: ACerS Basic Science Division, ACerS Energy Materials and Systems Division

Program Organizers: Xiaofeng Guo, Washington State University; Kristina Lilova, Arizona State University; Kyle Brinkman, Clemson University; Alexandra Navrotsky, Arizona State University; Jake Amoroso, Savannah River National Laboratory; Xingbo Liu, West Virginia University; Gustavo Costa, NASA Glenn Research Center

Tuesday PM | October 3, 2023 Exhibit Hall A | Greater Columbus Convention Center

Session Chair: Xiaofeng Guo, Washington State University

J-5: Role of Anion in Extraction of Lithium from the [Li-Al] Layered Double Hydroxides: A Thermodynamic Insight: Jayanthi Kumar¹; Parans Paranthaman¹; Alexandra Navrotsky²; ¹Oak Ridge National Laboratory; ²Arizona State University

J-6: Determination of the Activation Energy of the Formation of Intermetallic Compounds in the Ni-Al and Ti-Al System during Thermochemical Pressing: *Borys Sereda*¹; Yuriy Belokon¹; Irina Kruhliak¹; Dmytro Sereda¹; ¹DSTU J-7: Effect of Temperature on the Solubility of Corrosion Products of Structural Materials in the Form of Spinels (Fe–Cr–Ni Systems): *Alexander Slobodov*¹; Ann Ivanova²; Vladimir Kritsky³; Anton Gavrilov³; Yulia Vorozhtsova²; Dmitry Kremnev¹; ¹St. Petersburg State Institute of Technology; ²ITMO University; ³JSC "Atomenergoproekt"

J-8: Influence of pH of the Coolant, Concentration of Corrosion Products on the Rate of Formation of Deposits in the Internal Circuit Equipment of Power Units: *Ann Ivanova*¹; Alexander Slobodov²; Vladimir Kritsky³; Anton Gavrilov³; Sergey Shornikov³; ¹ITMO University; ²St. Petersburg State Institute of Technology; ³Vernadsky Institute of Geochemistry and Analytical Chemistry of Russian Academ of Sciences

J-9: Thermodynamic Properties of Special Alloys of the Ti-Al System Formed during Synthesis: *Borys Sereda*¹; Yuriy Belokon¹; Irina Kryhliak¹; Dmytro Sereda¹; ¹DSTU



A

11
Abate, I
Abdeljawad, F 20
Abdel-Khalik, H
Abdelmaola, M
Abdi. A
Abdolvand H 48, 70, 79
Abdul-Jabbar N 77
Abdullah A 31
Abonga C 108
Abram T 46
Abranovic B 46
Abu Arish A 27
Aburakhia A 70
Aburuzoizoh M
Abur uzaizaii, Ivi
Acal, P
Ackelia, U12, 29, 45, 62, 96
Acord, K
Acosta, C
Adaan-Nyiak, M
Adam, K
Adams, C
Adcock, E
Adebowale, A 102
Adeeko, O 55
Adelabu, O
Adetan, O 26
Adeyemo, R75
Adhikari, A 65
Adhikari, B 102
Adhikari, S 49, 74
Adnan, S
Adurzada, L
Affatigato, M
Afzal, M
Afzal, S 41
Agrawal, D
Agrawal, P
Aguirre, T
Abluwalia R 28.64
Ahmad O 54
Ahmadnour Esmaeilabadi E 95
Ahmed II 89
Ahn P 107
Ahuja S 109
Airuja, S
Aidhy D
Aindow M 24.40.41.64
Aindow, M
Aitken, B
Ajayı, A
Ajunwa, O

Akbulut, G54
Akdag, Z 88
Akhbarifar, S 67
Akhtar, F 63
Akkus, O 27, 95
Akoma, A 17
Akram, F 81
Aktan, M26, 107
Alabi, A 75
Alem, N 39, 68
Alewi, D
Alexander, M 22, 39, 55, 72, 93
Alfonso, N
Alghamdi, B15, 101
Alĥarbi, N
Ali, Z
Alizadeh, H
Allan, S 24, 40, 56, 57, 60, 73, 88, 106
Allcock, H
Allec, S
Allix, M76, 89, 108
Allyn, M
Al-Majali, Y
Almanea, F
Almansour, A
Almar, L
Al-Masud, M
Almishal S 68.83
Almutairi, B
Alnuzha, A 97
Alok A 79
Alpay P 66
Alpay S 14 22
Al-Oahtani N 31
Altintas B 54
Altun A 54
Alvarez N 85
Aman A /1
Aman S 27
Amanuel I 80
Ambrosini A
Amizuka N 41
A moreoso I = 16 17 10 32 47 50 65
77 82 91 100 109
Anand A 69
Anand R 30
Anasori B 16 17 33 A 66 70 7 A
21111111111, D 10, 17, 33, 47, 00, 70, 74, Q2 Q1 100
03, 94, 100 Anber F 26 51 68 94 101
Anderoglu Ω 41
Anderson I 22 57 02 04
Anderson K 22, 37, 93, 94
Anderson, R22, 20, /4

Anderson, R 33
Andersson, D
Andrew, J
Anelli, S 27
Ang, H
Anguish, E 22
An, K 36, 87
Antanaitis, G 42
Anthony, B
Anthony, J 15
Antonio, R 19, 93
Aoki, K 50
Aoyama, N
Aparicio, M
Apblett, A
Arab Pour Yazdi, M 13
Aragon, N
Araujo, A
Ard. I
Argibay, N
Arguelles A 22.72
Argüelles A 22, 44
Arisov F 55
Arkoub H 33
Armanfard N 87
Armstrong B 60
Armstrong P 70
Arnold P 21 64 67
Ambota P 72
Arous A 104
Arora, A
Arro, C
Arroyave, R 16, 8/
Arroyo-Salgado, B104
Artegiani, E 46
Arthanari, M
Arul Kumar, M
Arunachalam, S 100
Asad, A
Asaduzzaman, A 59
Asaei, S
Asgar, H
Asghari-Rad, P 84
Ashjari, A
Ashutosh, C 74
Aslan, O 54, 87
Asle Zaeem, M
Asta, M
Asthana, R9, 26, 43, 93
Ates, S 55
Atoe, B
Attallah, M
Atwater, M15, 77

Audesse, S
Avey, T
Avila, J
Aydogan, F 55
Ayers, N
Ayran, M 74
Ayyagari, S 68
Azcona Baez, M94
Azevedo, C
Aziziha, M
Azpeitia, X

B

Ba a, P 105
Babusci, K
Bachhav, M 38
Backman, L 39
Badoni, V
Badr, H
Bae, C14
Bae, J
Baek, J
Bafahm Alamdari, A 45
Bagues, N
Başgül, C 42
Bahr, D 23
Baibulanova, A
Bai, K
Bairwa, H
Bai, S 40
Bai, X
Bai, Y19, 35, 49, 93, 100
Bakas, M
Bakas, M
Bakas, M
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99 Balbus, G 68
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99 Balbus, G 68 Baldinozzi, G 17, 88
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99 Balbus, G 68 Baldinozzi, G 78
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99 Balbus, G 68 Baldinozzi, G 17, 88 Baldwin, G 53
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99 Balbus, G 68 Baldinozzi, G 17, 88 Baldwin, J 53 Baldwin, L 44
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Bal, B 26, 42, 75 Balbande, S 99 Balbus, G 68 Baldinozzi, G 17, 88 Baldwin, J 53 Baldwin, L 44 Balk, T 36
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99 Baldinozzi, G 17, 88 Baldwin, J 53 Baldwin, L 44 Balk, T 36 Ballato, J 67, 101
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99 Balbus, G 68 Baldinozzi, G 17, 88 Baldwin, J 53 Baldwin, J 53 Ballato, J 67, 101 Balogh, L 53, 70, 86
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99 Balbus, G 68 Baldwin, G 78 Baldwin, J 53 Ballato, J 67, 101 Balogh, L 53, 70, 86 Bamney, D 71
Bakas, M 72 Baker, C 76 Bakir, A 13 Balachandran, P 62 Balani, K 56 Balasubramani, N 55 Balaya, P 19, 58 Bal, B 26, 42, 75 Balbande, S 99 Balbus, G 68 Baldwin, G 78 Baldwin, J 53 Ballato, J 67, 101 Balogh, L 53, 70, 86 Bamney, D 71 Bandyopadhyay, A 9, 12, 16, 27, 61,

Banerjee, D
Banerjee, P
Banerjee, R
Bang, T
Bappy, M
Barat, K
Barbosa, A
Barbosa de Melo, E
Barkar, T
Barlic, A
Barman, S
Barnes, J
Barnett, B
Barnikel, A108
Barns, C
Barone, V
Barra, J
Barry, D
Barsoum, M
Barto, R 61, 81
Barua, R
Barui, S
Basaula, D
Baseeruddin Alvi, S 89
Basman, G 55
Bassett, L
Basu, B
Basu, S
Bateman, A
Bauchy, M
Bauer, E
Baumann, S
Bavdekar, S
Bawane, K
Bawareth, M
Bavva, S
Beaman, I
Beamer, C 12
Beauchaud, F
Beaudry, D
Beausir, B
Beausoleil, B
Beck, A
Becker, M 10
Beck, K
Beck, M
Bedard, J
Bedford, A
Beeler, B
Beese, A 16, 28, 29, 43, 44, 71, 78, 83
Begley, B
Behler, K
,

Beilman, G
Béjaud, R
Bejger, J 68
Bejjipurapu, A 51
Bektas, E
Belak, J10, 28, 53
Beland, J17, 94
Bello, S
Belokon, Y90, 102, 109
Benedetto Mas, A27
Ben Hamu, G 61
Benkoski, J
Benson, C 64
Benzing, J
Berfield, T 78
Berger, T
Berkson, J
Bermejo, R
Bernardo, E 9, 26, 43, 93
Bernard, S 11
Berriel, N
Bertin, N
Berton, M
Besara, T
Besmann, T
Betal. S
Beuth, J
Bevans, B
Beverlein, I
Bevgi Nasrabadi. H
Bhadhon, K
Bhaduri. A 56
Bhalla, A 14, 31, 47, 98
Bhatia B 49
Bhati M 43
Bhatnagar N 46.57
Bhattacharva I 31
Bhattacharva S 25 42 57
Bhatt S 44
Bhave C 24
Bhowmick S 46 54
Bhuiwan M 105
Bidthanapally P
Bishardarf N 23
Diepuenu V 27
Dienvehu, I
Dierschenk, S 10
Die, A
Digitam, 5
Binani, V
Billionis, I
Bing, C
Bingel, L



Binienda, W 103
Bin Mujib, S 100
Binner, J
Bin Tayyab, K 31
Bishop, C 20, 27, 35, 51, 68, 74, 82, 101
Biswas, K
Biswas, P 61
Biswas, S
Blackburn, J
Blackstone, N
Blanchard, D
Blendell, J
Bloom, R
Blumenthal, A
Blust, S
Boboridis, K
Boccalini M 12
Bock R 26.42.75
Bodunrin M 61
Boebinger M 74
Boehlert C 23 26 86
Boese M 103
Bowink B 20
Bogdapov S
Doguallov, S
DOIKO, V
Bonakdar, A
Bonatti, L
Bonete, R
Bonhomme, C 40, 58
Bonidie, M 11
Bonner, M
Boolchand, P
Booth, R
Bordia, R 11, 28, 29, 44, 49, 66, 72,
73, 77, 83, 104
Bordin, M 46
Borges, F
Borkar, T15, 44, 99
Bose, A
Bose-Bandyopadhyay, A 41
Bose, S 9, 27, 56, 61, 88, 95, 107, 108
Boukhalfa, H 77
Bourgeois, D
Bourret, G 34
Bouville, F 55, 78
Bovid, S 15
Bowman, E 64
Bowman, W18, 37, 50, 51, 66
Boyce, B
Boyd, D
Brabson, L
Bradesko, A

Braem, A
Bram, M 51
Brandao, V
Brandenburg, C 37
Brandl, A
Brand, M 11, 61
Brandt, M
Brandt, O
Brechtl, I
Brennecka, G
Bresnahan, B 52
Brewer G 90
Brewer, L. 11, 61
Brice C 45.62
Bridges A 29
Briggs S $12 \ 30 \ 46 \ 97$
$\begin{array}{cccccccccccccccccccccccccccccccccccc$
77 01 100 100
Rrink T 24
DIIIIK, I
Dilscoe, J
Drittingham V 25 56 91
Drittingham, K
Drizes, E
Drockillall, C
Drouecki, J
Brown, C
Brown, D
Browning, A 43
Brown, N
Brow, R
Brugman, B
Bruno, G
Brus, J
Bryce, K
Buckley, J
Buckner, H
Buhlmann, P
Bujanda, A
Bukka, V74, 77
Bulgarevich, D73
Bullock, S 60
Bulut, B 31
Bürgi, O
Burke, J 61
Burlison, S
Burns, J
Burton, M 53
Bushra Haider, S 64
Busse, L
Bussey, J
Bustillo, K 34
Butler, T

Byers, J 66
С
Cahill, J
Cai, C
Cai, Q
Cai, W
Callahan, J
Calta, N 62
Campos Quiros, A 68
Campos-Quiros, A
Canaday, J
Canumala, R
Canumalla, R
Cao. G
Сао. Н 70
Cao I 54
Cao I 53 70 86
Capilla-González G 99
Capolungo I 13 33 71
Cappia E 46.47
Cappela I 54
Caputo M $61.70.94$
$Carballo I \qquad 70$
Cardoso Λ 14
Carlson = 47,77
Carlson K 10 16 17 10 32 35 47
Carlson, K 10, 16, 17, 19, 32, 35, 47,
Carlston, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100
Carlston, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M
Carlson, K. 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C. 21 Carotti, F. 91 Carpenter, J. 11, 16, 38, 61, 78 Carroll, C. 52 Carsley, J. 12 Carson, R. 10, 53 Carter, D. 78 Carter, W. 37
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C 21 Carotti, F 91 Carpenter, J 11, 16, 38, 61, 78 Carroll, C 52 Carsley, J 12 Carson, R 10, 53 Carter, D 78 Carter, W 37 Carty, W 22, 55, 67, 72
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C 21 Carotti, F 91 Carpenter, J 11, 16, 38, 61, 78 Carroll, C 52 Carsley, J 12 Carson, R 10, 53 Carter, D 78 Carter, W 37 Carty, W 22, 55, 67, 72 Carvalho da Silva, A 98
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C 21 Carotti, F 91 Carpenter, J 11, 16, 38, 61, 78 Carroll, C 52 Carsley, J 12 Carson, R 10, 53 Carter, D 78 Carter, W 37 Carty, W 22, 55, 67, 72 Carvalho da Silva, A 98 Carvalho de Lima, E 98
Carlson, K. 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C. 21 Carotti, F. 91 Carpenter, J. 11, 16, 38, 61, 78 Carroll, C. 52 Carsley, J. 12 Carson, R. 10, 53 Carter, D. 78 Carter, W. 37 Carty, W. 22, 55, 67, 72 Carvalho da Silva, A. 98 Carvalho, S. 104
Carlson, K. 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C. 21 Carotti, F. 91 Carpenter, J. 11, 16, 38, 61, 78 Carroll, C. 52 Carsley, J. 12 Carson, R. 10, 53 Carter, D. 78 Carter, W. 37 Carty, W. 22, 55, 67, 72 Carvalho da Silva, A. 98 Carvalho, S. 104 Casella, A. 12
Carlson, K. 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C. 21 Carotti, F. 91 Carpenter, J. 11, 16, 38, 61, 78 Carroll, C. 52 Carsley, J. 12 Carson, R. 10, 53 Carter, D. 78 Carter, W. 37 Carty, W. 22, 55, 67, 72 Carvalho da Silva, A. 98 Carvalho, S. 104 Cassella, A. 12 Cassar, D. 75, 89
Carlson, K. 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C. 21 Carotti, F. 91 Carpenter, J. 11, 16, 38, 61, 78 Carroll, C. 52 Carsley, J. 12 Carson, R. 10, 53 Carter, D. 78 Carter, W. 37 Carty, W. 22, 55, 67, 72 Carvalho da Silva, A. 98 Carvalho, S. 104 Cassella, A. 12 Cassar, D. 75, 89 Cassiadoro, A. 51
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C 21 Carotti, F 91 Carpenter, J 11, 16, 38, 61, 78 Carroll, C 52 Carsley, J 12 Carson, R 10, 53 Carter, D 78 Carter, W 37 Carty, W. 22, 55, 67, 72 Carvalho da Silva, A. 98 Carvalho, S 104 Cassiadoro, A 51 Cassiadoro, A 51 Castle, J 72
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C 21 Carotti, F 91 Carpenter, J 11, 16, 38, 61, 78 Carroll, C 52 Carsley, J 12 Carson, R 10, 53 Carter, D 78 Carter, P 43 Carter, W 37 Carty, W 22, 55, 67, 72 Carvalho da Silva, A 98 Carvalho de Lima, E 98 Carvalho, S 104 Cassiadoro, A 51 Castle, J 72 Casto, S 80
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C 21 Carotti, F 91 Carpenter, J 11, 16, 38, 61, 78 Carroll, C 52 Carsley, J 12 Carson, R 10, 53 Carter, D 78 Carter, P 43 Carter, W 37 Carty, W 22, 55, 67, 72 Carvalho da Silva, A 98 Carvalho de Lima, E 98 Cassar, D 75, 89 Cassiadoro, A 51 Castle, J 72 Casto, S 80 Castro, B 30
Carlson, K 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C 21 Carotti, F 91 Carpenter, J 11, 16, 38, 61, 78 Carroll, C 52 Carsley, J 12 Carson, R 10, 53 Carter, D 78 Carter, P 43 Carter, W 37 Carvalho da Silva, A 98 Carvalho de Lima, E 98 Cassiadoro, A 51 Cassiadoro, A 51 Castro, B 30 Castro, R 20, 103
Carlson, K. 10, 16, 17, 19, 32, 35, 47, 49, 65, 82, 94, 100 Carlstrom, M. 94 Carney, C. 21 Carotti, F. 91 Carpenter, J. 11, 16, 38, 61, 78 Carroll, C. 52 Carsley, J. 12 Carson, R. 10, 53 Carter, D. 78 Carter, W. 37 Carty, W. 22, 55, 67, 72 Carvalho da Silva, A. 98 Carvalho, S. 104 Cassella, A. 12 Cassar, D. 75, 89 Castle, J. 72 Casto, S. 80 Castro, B. 30 Castro, R. 20, 103 Castro, R. 20, 103

Cesarano, J11, 78
Cetinkaya, C 54
Chacon, C
Chahal, R
Chakraborty, A 15
Champagne, V
Chancev, M
Chandler, H
Chandran N 49.74
Chandross M 71
Chaney D 31
Chang-Davidson F 46
Chang I 39
Chang V 92
Chang, K
Chang, 1
Chang, Y
Chan, H
Chan, K
Chapman, J
Chapman, K 101
Chapman, M 10
Chariton, S
Chatain, D
Chaurasia, N
Chavari, S
Chen, A
Chen, B
Chen, C
Chen, E 18, 36
Chen, G
Cheng, B
Cheng I 53 54
Cheng 7 39.84
Chen I 76 82 94 106
Chen K 20.06.08
Chen I 11 29 44
Chen M 22 106
Chen, M
Chen, S
Chenu, S
Chen, W
Chen, X
Chen, Y 29, 37, 52, 53, 58, 63, 66, 68,
78, 80, 97
Chen, Z 23, 68
Cheon, H
Cheon, J76, 81, 96
Cheon, S 15
Chernov, A
Chesser, I
Chesser, R
Chevolot, Y 107
Chew, Y

Che, Y 43
Chevpe, M
Chidambaram D 52
Chidester B 77
Childbalikar A 57
Chin C 76
Chinengung V 72
$Chipangura, 1 \dots 73$
Chiu, E
Chmielewska, A
Chmielus, M
Choa, F
Choates, M95
Cho, D
Cho, H
Choi, H
choi, J
Choi, J9, 32, 66, 106
Choi, K
Choi, S
Choi, W
Choi, Y 25, 55, 71, 84, 87, 102, 103, 105
Cho, J
Cho. L
Chong, K
Chong S 17
Choudhari A 44
Choudhary M 90
Choudhuri D 71
Chou Green M
$Chou V \qquad \qquad 42.06$
$Choultin S \qquad 29.60$
Choudir, 5
Chowanury, E
Cho, Y 23, 54, 72, 73, 87, 105
Christensen, J
Christodoulides, J
Chuang, A
Chun, E 106
Chung, D14, 19, 31, 42, 87
Chung, W 67
Chun, Y 45
Church, A14
Çiçek, B
Cichocki, K 105
Cieśla, S 76
Ciliveri, S
Cillessen, D 60
Cinibulk, M
Cinkilic, E
Claisse, A
Clare, A
Clark, A
Clark E 95
Churry D

Clarke, A 12, 24, 36, 41, 51, 64, 68, 79,
Clarke, K12, 18, 21, 37, 52, 64, 69, 76,
81, 90, 108
Clark, S14, 25, 32, 98
Clausen, B 76
Cleeman, J
Clink, L
Cochran, E
Cockayne, E
Cockburn, E
Cockreham, C
Coelho, R
Coffman, D
Colburn, I
Colby R 94
Coleman I 23
Cole S 47100
Cole V
Colfer I 36
Colling D 16 45 71 84
Columba D = 11 28 44
Concelli: N 26, 106
Commun. N
Conrad, J
Contreras, V 107
Conzelmann, A 11
Cook, C
Cook, L
Cook, O
Cooper, C
Cooper, M
Corbridge, C
Correa, M
Cortes, P
Cortez, J
Coskun, M
Costa, G
Cote, D
Couper, S
Courtney, M 107
Courtois, B 20
Courtois, N
Couzinie, J
Couzinié, I
Cox. K
Cozzolino, E
Cramer, C
Crane. N
Cronin, A 107
Croom B 62.63
Crowell S 94 106
<u></u> ,,,,,,,



Cuccineillo, N	
Cui, B 9, 22, 34, 36, 39, 55, 65, 72	
Cullum, B	
Culp, J	
Cummings, C	
Cureton, W 31	
Curtarolo, S 65	
Curzio, E 11	
Cuvilly, F 64	

D

Dabo, I
Daehn, G41, 43, 46, 54, 71, 81
Daeipour, M 40
Daffron, M
Dahiya, A27, 88, 95, 107
Dahotre, N
Dai, Y
Dang, K 48
Daniel, L 22
Daniszewski, A
Dankwah, J 93
Danoix, F 64, 70
Danoix, R 64
Dantin, M 10
Dara, B
Darji, M
Darling, K 23
Darvishi-Kamachali, R15
Dasari, S24, 25, 71
Dasari, V 32
Dash, A
Da Silva Dias Filho, J
da Silva, R 101
Das, L
Das, S 15, 30, 39, 63, 84, 98, 99
Das, U 66
Datla, S 106
Dauskardt, R 38
Davey, T16, 58, 68, 74, 78, 88
Davis, T
Davoglio Estradioto, J94
Dawadi, B 86
Dawson, K 36
Dean, D9, 10, 27, 54, 61
DeAngelis, E76
Debnath, A94
DeCarlo, K 22, 39, 55, 72
Decarmine, T 26
Deen, K
de Giovanni Rodrigues, A 98
De Graef, M

DeGroh, H
Dehm, G 20
Deibert, W
Deissmann, G
Delcamp. I
Del Cid-Ledezma K 17
Del ellis D 20
De Leo M 53
Delia D $22.67.72$
Delianides C 108
Dellacorte C
de los Santos Guerra I 98
DeMeyere E
Demiryi C 74
Demirkal E
Delliikai, E
De Moor, E
Demura, M
Deng, Z 10/
Denman, M
Dennett, C
de Oliveira Romano, R
DePond, P
Derr, T
De, S 12, 16, 65
DeSantis, P
Deshkar, A
Deshmukh, V
Desjardins, G 62
Deskins, R
De Souza, R
Detemple, E
Detwiler, K
Devaraj, A 13
Devulapalli, V
Dewitt, D 33
Dey, S
Dhami, H 102
Dhekne, P
Dholabhai, P
Diaz, A
Diaz, D
Dick, D
Dickerson, M
Dickey, E
Dickman, C
Dieb, S
Di Fulvio, A
Dikici, B
Dikici, Y
Di Lemma, F 17
Dil, J
Dillon, S 20, 35, 51, 68, 77, 101

Ding, J
Ding, S
Ding, Y
Dinh, N
Dipon, W14
Disharoon, D
Disharoon PhD, D 108
Dispinar, D
Diwald, O
Dixit, P
Dixon, C
Dixon Wilkins, M
Dizdar, C
Dizdar, K
Dioutsop, W
Dlouhy, A
Doğan, Ö
Dobson, S
Dogan, O
Dolabella Portella. P
Dolde M 71
Domínguez G 26
Domnick R 104
Donegan S 39
Dong C 94
Dong X 11 28 44
Dora T 68
Dore M 13
dos Santos Mariano M 98
Doss K 20
Do T 26
Doumaux I 85
Dourado da Silva R 44
Downey I 80
Downey, $j = 100$ Drabold D 40 105
$\begin{array}{c} \text{Driscall I} \\ 18 34 \end{array}$
$Drmoch \qquad 15$
Drozd V 30.84
Druepondt S 44
Dube T 05
Duckelt M 71
Duchek, M
$Duch, j \dots 80$
Duemmier, K
Du, H
Du, J
Dujovic, M
Du, K
Du, M
Dunand, D
Dunlop, J
Dupuy, A

Durygin, A Du, S	
Du, X Dwivedi, S Dzara, M	

Ε

Earthman, J
Ebendorff-Heidepriem, H40
Ebert, J
Ebika, B
Echeverry-Rendón, M26
Eckert, H
Eckert, J
Eckes, K
Edalati, K
Eff, M
Efimov, R
Egan, A
Eger, E
Eggeler, Y
Eid, K
Eiken, M
Eisenlohr, P23
Ekaputra, C
El-Awady, J
El-Awady, K
El-Azab, A
El Fray, M
Eliseeva, O
Elleithy, M
Elliot, K
Elliott, A
Ellis, D
El Loubani, M
El Marssi, M
Emam, H
Emdadi, A
Empen, N
Endslev. M
Ene. N
Engen. A
England, E
Enke, E
Enloe, C
Erbay, Y
Ercius, P
Erdeniz, D
Ertugral, E
Escolastico, S
Esquibel, M
Essien, M

Estrada, M	14
Euh, K	38
Eun, J	66
Evdokimov, A	01

IEII

F

Fahrenholtz, W22, 23, 69, 84	4
Fahrmann, M 80	6
Faierson, E22, 39, 55, 72	2
Fancher, C	6
Fanchini, G	0
Fan, D	7
Fanghanel, J	2
Fang, Q	6
Fang, X	9
Fan, Z	4
Farghadany, E	6
Farmer, K	2
Farooq, A	1
Fatahbeygi, H	8
Faue, P	5
Fayyad, E	1
Fazzino, M10	0
Feigelson, B	0
Feldhausen, T 10	6
Feldhoff, A	0
Feller, S	7
Feng, B	6
Feng, L	6
Feng, R	6
Feng, Z16, 26, 6	3
Feni, F	9
Fensin, S	8
Ferengul, S	6
Fergus, I	4
Ferguson, A	3
Ferguson, I	1
Fernandes, S	9
Fernandez-Zelai, P	4
Ferraris. M.	7
Ferrigno, I	7
Fertig. A 15.3	, 0
Feurer M 4	4
Fevgelson, B 4	0
Fezzaa, K 2	5
Fialkova S 4	1
Fiato M 9.7	6
Field D 12 24 4	1
Field, K 5	1 5
Fields A 3	2
Fields S 12.2	5
Fietek C.	3
	~

Findley, K
Fink. C
Finkelstein R 47 96 100
Fiore S 27
Fiorilli S 27
Fischer T
Fischer A 76
Fisher C 10.40
Fisher, C 10, 49
Fisher, $j \dots 83$
$Fleck, C \dots / 1$
Fleming, N
Flores, D
Florian, P 17
Floyd, A
Flynn, W 47, 98
Foley, B
Fonda, R
Fonseca, F 104
Ford, C
Ford, K 27
Forehand, A 89
Forrester, M
Forro, L
Forstner, M 108
Fortenberry, Y108
Fortugno, P
Foster, M
Fouad, D
Fox, K
Frame, L
Frampton, C
François, I 107
Frankel, G 52
Franklin, I
Frantz, J
Fraser, H
Frazier. W
Freeland E 95
Frick C 12
Friščić T 58
Frolov T 36 70
$\frac{11000}{\text{Frömling T}}$
Fronk K
$E_{ry} \Lambda \qquad $
$Fiy, A \dots 20$ Euche Lynch N 53
Fuchts-Lynch, IN
Fuences, A
Fukushima M
Fukusiiiiia, W
$Fundition(C, L, \dots, 14, 20)$
Furtion, E
rurunara, 1
Furuse, H



Furuta, S	72
Fu, Y	33, 44, 54, 95
Fu, Z 9, 11, 19, 26, 35, 39	, 43, 49, 93, 100

G

Gaba, A
Gabb, T
Gadikota, G90
Gaikwad, H 9, 26
Gakhar, R
Galanis, T
Galetz, M
Gallagher, R
Galvin, C
Ganguly S
Gao, F
Gao, M
100.101
Gao. W
Gao, Y
Gao, Z
Garay, J
Garcia-Espiñeira M 104
Garcia G 55
Garcia R 20. 22. 68
García R 51 68
Gargarella P 44
Garland B 104
Garney S 14.98
Garra H 13
Gaskey B 38
Gasking I 84
Gattacceca I 64
Cattage P 76
Gaudio A 10
Causabl I 30
Gauss C 62
$\begin{array}{c} \text{Gauss, G.} \\ \text{Courilov} & 100 \end{array}$
Gavinov, A
Gaydos, L
Goul, J
Geddes, D 102
Geerings, fi
Geiger, 1
Geng, A
Gentry, 5
Georgin, B
Gerard, A
Gerasnenkov, D 101
Gerczak, 1
Gervais, C
Ghaffari, K

Ghamarian, I 71
Ghanati, M
Ghassemi-Armaki, H 15
Gholami, S
Ghosh, A
Ghosh, E
Ghosh, R
Ghosh, S
Gianola, D
Gibbs, M
Gibson, D
Gibson, I
Gibson, U 67
Giera B 62
Gigay I 38
Gild I 76
Giles \$
Cillesnie Λ 05
Cilli N 22
Giliii, N
Cinley D
$C_{\text{indices}} D \qquad (2.01)$
$GIOF JIO, K \dots 03, 81$
$Givesiaain, M \dots 104$
Jlaessgen, E 28
Glaser, B 10, 56
Glaser, B 10, 56 Gleeson, B 33, 48
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67,
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, Goel, V. 42
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 Goel, V. 42 Goins, P. 54, 78
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A. 93
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 Goel, V. 42 Goins, P. 54, 78 Golden, R. 13 Goldstein, A. 93 Golobic, A. 61
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, Goel, V. 42 Goins, P. 54, 78 Golden, R. 13 Goldstein, A 93 Golobic, A. 61 Golsorkhi, A 62
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 Goel, V. 42 Goins, P. 54, 78 Golden, R. 13 Goldstein, A. 93 Golobic, A. 61 Golsorkhi, A. 78
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Golden, R. 13 Goldstein, A. 93 Golosorkhi, A. 61 Golsorkhi, A. 78 Gomes, L. 38
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Golobic, A. 61 Golsorkhi, A. 62 Golt, M. 78 Gomes, L. 38 Gomez, A. 35
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A 93 Golobic, A. 61 Golsorkhi, A 62 Golt, M. 78 Gomes, L 38 Gomez, R. 35
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A 93 Golobic, A. 61 Golsorkhi, A. 62 Golt, M. 78 Gomes, L. 38 Gomez, R. 35 Gomez, R. 38, 101 Gonçalves, J. 65
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A 93 Golobic, A 61 Golsorkhi, A 62 Golt, M. 78 Gomes, L 38 Gomez, R. 38, 101 Gonçalves, J. 65 Goncharov, V 47, 91
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A. 93 Golobic, A. 61 Golsorkhi, A. 62 Golt, M. 78 Gomes, L. 38 Gomez, R. 35 Gonçalves, J. 65 Goncharov, V. 47, 91 Gong, M. 53
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A 93 Golobic, A. 61 Golsorkhi, A 62 Golt, M. 78 Gomez, A. 35 Gonçalves, J. 65 Goncharov, V. 47, 91 Gong, M. 53 Gong, R. 91
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A. 93 Golobic, A. 61 Golsorkhi, A. 62 Golt, M. 78 Gomes, L. 38 Gonçalves, J. 65 Goncharov, V. 47, 91 Gong, M. 53 Gong, R. 91 Gong, S. 64, 81
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A 93 Golobic, A 61 Golsorkhi, A 62 Golt, M. 78 Gomes, L 38 Gomez, R. 38, 101 Gonçalves, J. 65 Gondarov, V 47, 91 Gong, M. 53 Gong, R. 91 Gong, S. 64, 81 Gonin, C. 22
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A 93 Golobic, A. 61 Golsorkhi, A 62 Golt, M. 78 Gomes, L 38 Gomez, R. 35 Goncharov, V 47, 91 Gong, M. 53 Gong, R. 91 Gong, S. 64, 81 Gonin, C. 22 González, C. 27
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A 93 Golobic, A. 61 Golsorkhi, A. 62 Golt, M. 78 Gomes, L. 38 Gomez, R. 35 Gonçalves, J. 65 Goncharov, V 47, 91 Gong, M. 53 Gong, S. 64, 81 Gonin, C. 22 González, C. 27 Gonzalez, M. 93
Glaser, B. 10, 56 Gleeson, B. 33, 48 Glenn, B. 101 Gobert, C. 43 Gockel, J. 28, 45, 62 Goddard, D. 46 Goel, A. 17, 19, 20, 35, 50, 57, 67, 75, 101 Goel, V. 42 Goins, P. 54, 78 Gokarn, P. 32 Golden, R. 13 Goldstein, A 93 Golobic, A. 61 Golsorkhi, A. 62 Golt, M. 78 Gomes, L. 38 Gomez, R. 35 Gonçalves, J. 65 Goncharov, V 47, 91 Gong, M. 53 Gong, R. 91 Gong, S. 64, 81 Gonin, C. 22 González, M. 93 Goodman, C. 63

Goodrich, J 61
Goodwin, F 14
Gopalan, S
Gordon, K
Gordon, T
Gorman, B
Gorzkowski, E 17, 22, 26, 33, 39, 40,
49, 66, 83, 100, 105
Gosvami, N
Goswami, R
Goswami, S
Goto, T
Gottstein, G
Gould, B
Gould, J
Gouma, P
Gounelle, M
Gouné, M
Gourley, A
Gouveia, G
Goval. A
Grader, G
Graeff, C
Graeve, O
Gras. I
Grassman, T
Gravdon, K 12
Green, M
Greenough, M 104
Greer, J
Greiner, L
Greitak, T
Gremillard, L
Griffiths, W
Grillet, A 55
Groeber, M
Gross, T
Grumbach, M
Grutzik, S
Grygiel, C
Guariento, S
Gubarevich, A
Guell Izard, A 61
Guevara, J
Gu, G
Guha. S
Guillon, O
Gui, X
Gula, C
Guler, O
Gul, K
Gumbsch, P

Gump, C 30
Gunduz, O 24
Gungor, A 38
Guo, H
Guo, J
Guo, R14, 31, 47, 98
Guo, X 18, 34, 47, 59, 77, 91, 109
Gupta, A 24, 62, 73, 93, 94, 102
Gupta, G
Gupta, I
Gupta, N
Gupta, R15, 99
Gupta, S9, 26, 39, 43, 93
Gura, N
Gurao, N
Gurung, A
Gussev, I
Gutierrez-Urrutia, I 64
Guye, D
Guziewski, M
Guzman, J63, 70, 80
Gwalani, B
Gygi, C29, 62, 93

Η

Hackenberg, R
Hadagalli, K
Haddad, M
Haftlang, F
Hahn, B
Hahnlen, R 61
Hahn, S
Hahn, W
Haider, S
На, Ј
Halbig, M27, 50, 67, 84, 101
Halder, R
Haley, J
Hallberg, N
Hall, L
Halls, M
Hall, T15, 30, 43, 99
Hamedi, H58, 107
Hamilton, R 29
Hanani, Z 49
Han, B
Han, J 25, 54
Hanke, T 100
Han, P 45, 80
Hanrahan, J 107
Han, S 81
Hansen, A

Hansford, D	. 107
Han, T	5, 73
Han, Y13, 1	9, 40
Hao, S	81
Haque, N	. 103
Hara, T	64
Harder, B	69
Hardin, J	44
Hardouin Duparc, O 21, 37, 5	2, 69,
7	70, 82
Hargather, C	59, 79
Harimkar, S 1	5, 99
Harley, J	54
Harmer, M20, 23, 5	53, 86
Harrington, G	18
Harrysson, O12, 29, 45, 6	52, 96
Harth, K	95
Hart, R	35
Hartsfield, M	63
Hartshorne, M	96
Hasan, M	87
Hasegawa, T	41
Haskel, D	18
Hathenher Toledo Rosa, T	98
Hatler, C	80
Hattar, K 12, 20, 30, 46, 68, 8	32, 97
Haupt, K	
	73
Hawkins, C	73
Hawkins, C	73 52 32,52
Hawkins, C	73 52 32,52 7,101
Hawkins, C	73 52 32,52 7,101 15
Hawkins, C	73 52 32,52 7,101 15 62
Hawkins, C	73 52 32,52 7,101 15 62 86
Hawkins, C	73 52 32, 52 7, 101 15 62 86 62
Hawkins, C 3 Hawkins, L 3 Hawkins, T 67 Hayashi, N 67 Hayes, J 67 Hayne, M 67 Hayrikyan, D 67 Headley, C 67	73 52 32,52 7,101 15 62 62 62 62
Hawkins, C	73 52 32,52 7,101 15 62 62 62 75
Hawkins, C	73 52 32,52 7,101 15 62 62 62 62 75 37
Hawkins, C	73 52 32, 52 7, 101 15 62 62 62 75 37 .0, 64
Hawkins, C 3 Hawkins, L 3 Hawkins, T 67 Hayashi, N 67 Hayes, J 67 Hayes, J 67 Hayne, M 67 Headley, M 67 Headley, C 67 Heath, B 67 Heaton, L 10 Hebert, R 11 Heczko, M 11	73 52 32, 52 7, 101 15 62 62 62 75 37 .0, 64 84
Hawkins, C 3 Hawkins, L 3 Hawkins, T 67 Hayashi, N 67 Hayes, J 67 Hayes, J 67 Hayne, M 67 Hayne, M 67 Hayne, M 67 Hayrikyan, D 67 Headley, C 68 Heath, B 68 Heaton, L 16 Hebert, R 17 Heczko, M 17 Hegde, V 18	73 52 52 52 101 15 62 62 62 75 37 .0, 64 84 17
Hawkins, C 3 Hawkins, I 3 Hawkins, T 67 Hayashi, N 67 Hayes, J 67 Hayes, J 67 Hayne, M 67 Hayrikyan, D 67 Headley, C 67 Heath, B 67 Heaton, L 10 Hebert, R 11 Heczko, M 11 Hegde, V 11 He, H 11	73 52 32, 52 7, 101 15 62 62 62 62 62 37 .0, 64 84 17 20
Hawkins, C 3 Hawkins, L 3 Hawkins, T 67 Hayashi, N 67 Hayes, J 67 Headley, C 67 Heaton, L 1 Heczko, M 1 Hegde, V 1 He, H 1 Heinrich, L 1	73 52 32, 52 7, 101 15 62 62 62 62 75 37 .0, 64 84 17 20 16
Hawkins, C 3 Hawkins, L 3 Hawkins, T 67 Hayashi, N 67 Hayes, J 67 Hayes, J 67 Hayes, J 67 Hayes, J 67 Headley, C 16 Heaton, L 17 Hebert, R 18 Heeton, L 19 Hegde, V 10 Hegde, V 10 Heinrich, L 12 He, L 12 16 17 32 34 4	73 52 32, 52 7, 101 15 62 86 62 62 75 37 .0, 64 84 17 20 16 7, 52,
Hawkins, C 3 Hawkins, L 3 Hawkins, T 67 Hayashi, N 67 Hayashi, N 9 Hayre, J 9 Hayne, M 9 Hayrikyan, D 9 Headley, C 9 Heath, B 9 Hebert, R 1 Heczko, M 9 Hegde, V 9 Heinrich, L 12, 16, 17, 32, 34, 4 65, 82 82	
Hawkins, C 3 Hawkins, L 3 Hawkins, T 67 Hayashi, N 67 Hayashi, N 9 Hayes, J 9 Hayne, M 9 Hayne, M 9 Hayne, M 9 Hayne, M 9 Hayrikyan, D 9 Headley, C 9 Headley, C 9 Heaton, L 9 Hebert, R 10 Hebert, R 11 Heczko, M 9 Hegde, V 9 Heinrich, L 10 Heinrich, L 12 Henmer, E 19 Henmer, E 19	73 52 32, 52 7, 101 15 62 86 62 62 75 37 .0, 64 17 20 16 7, 52, 2, 100 5, 100
Hawkins, C Hawkins, L Hawkins, T Hayashi, N Hayashi, N Hayes, J Hayne, M Hayrikyan, D Headley, C Heath, B Hebert, R Hebert, R Hegde, V Heinrich, L Heinrich, L Hemmer, E 19, 35, 49, 63, 75 Hemrick, J	73 52 52 52 52 15 62 62 62 62 62 62 62 62 75 37 .0.64 16 16 16 16 16 16 16 17 16 17 16 17 17 17 15 15 15 15 15 15 15 15 15 15 15 15 15 15 15 17 17 17 17 17 17 17 17 17 17 17 17 16 100 100 100 100 100 100
Hawkins, C	73 52 32, 52 7, 101 15 62 62 62 62 62 75 37 .0, 64 17 20 16 7, 52, 2 .100 5, 72 104
Hawkins, C	73 52 32, 52 7, 101 15 62 86 62 62 75 37 .0, 64 84 17 20 16 7, 52, 2 , 100 5, 72 104 42, 75
Hawkins, C	73 52 32, 52 7, 101 15 62 86 62 62 75 37 .0, 64 84 17 20 16 7, 52, 2 , 100 5, 72 104 38
Hawkins, C	73 52 52 52 52 52 62 62 62 62 62 62 62 62 75 37 37 37 37 10 16 7, 52, 9 100 16 7, 52, 2 100 16 7, 52, 2 100 16 7, 52, 38 38 38 38 38 38 38 37 38
Hawkins, C	73 52 52 52 52 52 62 62 62 62 62 62 62 75 37 .0, 64 84 17 20 16 7, 52, 2 . 100 55, 72 38 76, 82 81
Hawkins, C	73 52 32, 52 7, 101 15 62 62 62 62 75 37 .0, 64 17 20 16 7, 52, 2 100 5, 70 100 5, 72 38 76, 82 38 76, 82 36

IEII

Heo, Y
Herderick, E
Hermawan, D 20
Hernadez, S
Hernandez, F
Hernandez, J
Hernández Rodríguez, E
Hernandez, S
Herrera del Valle, R 62
Hershkovitz, E
Hickey, R
Hickman, D
Hickman, L
Hickok, N
Hicks, D
Highland, W
Hijazeen, M
Hildreth, O 80
Hill, L
Hill, S
Hilmas, A
Hilmas, G
Hilt, I
Hin, C
Hintsala, E
Hirai, N
Hirales, A
Hirales, A
Hirales, A
Hirales, A
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B 70 Hirtz, J. 74 Hishida, T. 84
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hitter, M. 84
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hitter, M. 84 Hjelmstad, M. 32
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hitter, M. 84 Hjelmstad, M. 32 Hoang, Q. 9, 27
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hitter, M. 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B 70 Hirtz, J. 74 Hishida, T 84 Hilelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holcomb, G. 21
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B 70 Hirtz, J. 74 Hishida, T 84 Hitter, M 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holcomb, G. 21 Holgate, C. 13
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hitter, M. 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holgate, C. 13 Hollenbach, J. 39
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hitter, M. 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holcomb, G. 21 Holgate, C. 13 Hollenbach, J. 39 Holles, S. 69
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hitter, M. 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holgate, C. 13 Hollenbach, J. 39 Holles, S. 69 Holm, E. 43, 55, 70, 86, 102
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holgate, C. 13 Hollenbach, J. 39 Holles, S. 69 Holm, E. .43, 55, 70, 86, 102 Holoviak, S. 48
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B 70 Hirtz, J. 74 Hishida, T 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holgate, C. 13 Hollenbach, J. 39 Holles, S. 69 Holm, E. 43, 55, 70, 86, 102 Holoviak, S. 48 Holwell, A. 102, 103
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B 70 Hirtz, J. 74 Hishida, T 84 Hiter, M 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E 44 Holcomb, G. 21 Holgate, C 13 Hollenbach, J. 39 Holles, S 69 Holm, E 43, 55, 70, 86, 102 Holowiak, S 48 Holwell, A 102, 103 Homa, D 45, 56, 62. 64
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B 70 Hirtz, J. 74 Hishida, T 84 Hitter, M 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E 44 Holcomb, G. 21 Holgate, C 13 Hollenbach, J. 39 Holles, S 69 Holm, E .43, 55, 70, 86, 102 Holowiak, S 48 Holwell, A 102, 103 Homa, D .45, 56, 62, 64 Hong, G. 55
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holgate, C. 13 Hollenbach, J. 39 Holwell, A. 102, 103 Hoow, D. 45, 56, 62, 64 Hong, G. 55 Hong, H. 25, 81
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B 70 Hirtz, J. 74 Hishida, T 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holgate, C. 13 Hollenbach, J. 39 Hollen, E. 43, 55, 70, 86, 102 Holwell, A. 102, 103 Homa, D. 45, 56, 62, 64 Hong, G. 55 Hong, H. 25, 81
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B. 70 Hirtz, J. 74 Hishida, T. 84 Hjelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holgate, C. 13 Hollenbach, J. 39 Holles, S. 69 Holwell, A. 102, 103 Homa, D. 45, 56, 62, 64 Hong, G. 55 Hong, H. 25, 81 Hong, Q. 59 Hong, S. 22, 35, 40, 103, 105
Hirales, A. 65 Hirao, K. 50 Hirsch, M. 96 Hirsch, S. 78 Hirt, B 70 Hirtz, J. 74 Hishida, T 84 Hilter, M 84 Higelmstad, M. 32 Hoang, Q. 9, 27 Hofferbert, D. 63 Holcombe, E. 44 Holgate, C. 13 Hollenbach, J. 39 Hollen, E. 43, 55, 70, 86, 102 Holowiak, S. 48 Holwell, A. 102, 103 Hong, G. 55 Hong, H. 25, 81 Hong, Q. 59 Hong, S. 22, 35, 40, 103, 105 Hong, X. 18



Hood, Z	
Hooper, R	
Hopkinson, D	
Hopkins, P	
Horide, T	
Hornbuckle, B	
Horn, T	
Horvath, E	65
Hosemann, P	13, 30
Hossain, M12	45, 46, 54, 62, 64
Hovis, B	
Howard, C	
Howarter, I	
Hoxworth, D	
Hrabe, N	10
Hradil D	71
Hreniak D	76 89 108
Hsieh H	96
Hen K	
Ноц, К Ноц Т	
Huang H 22	<i>AA</i> 56 63 85 9 <i>A</i>
Huang K	58 77 00 04
Huang I	20 37 65 84
Huang M	29, 37, 03, 84
Huang N	
Huang, N	
Huang, I	
Huang, Y	
Huang, Z	
Hua, \angle	.34, 47, 65, 82, 83
Huddleston, W	
Huey, B	
Hui, X	
Hu, J	
Hu, K	
Hu, L	63, 102
Hulbert, B	
Hunn, J	
Hunter, A	
Hurley, D	34, 47, 82, 83
Hussain, I	63
Hutchison, E	93
Hu, X	
Huynh, T	12
Hwang, B	
Hwang, J	107

I

Ibadillayev, S	
Ibrahim, K 46	
Ifijen, I	
Ihlefeld, J 72	

Ikeda, Y 15
Ikeh, O
Ikesue, A
Ikuhara, Y
Imanaka, N 67
Imayama, H
Im, Y
Inamura, T
Inman, M
Inoue, J
Ionescu, E
Irving, R
Isamov, S
Isasti, N
Ishimaru, M
Ishraq, S
Ishtiyaq, F 105
Isner, A
Iten, J
Ivanova, A
Ivill, M 55
Iwasaki, M
Iwazaki, Y
Izumi, D

J

Jaber, H
Jacob, B
Jacob, K 86
Jacobs, R
Jain, J
Jain, R
Jana, S
Jang, G
Jang, J
Janicki, T
Janolin, P 22, 40, 105
Janowski, G
Jansen, P
Jaques, B
Jared, B 46, 96
Jarosinski, W
Jasthi, B15, 99
Jasuja, H9, 27
Jaswandkar, S 9, 26, 27
Jay, A
Jayan, R 11, 29
Jayaraman, T
Jegede, O 103
Jelis, E
Jella, G
Jennings, D

Jeon, B 56
Jeong, H
Jeong, W
Jeon, J
Jeppsson, J 44
Jerabek, M
Jeter, M
Jevnikar, P
Jeyamohan, R 64
Jha, S
Jiang, C
Jiang, D
Jiang, M
Jiang, W
lianping. L
lian W 48
Jian V 72
Ii C 76 81 96
ling 7 105
Jing, Z
Jin, Wi
Jilischek, J
Jitianu, A
Jilianu, M
JI, Z
J. Neal, C
Jonn, R
Johnson, C
Johnson, D
Johnson, G
Johnson, J
Johnson, K
Jo, K 15, 73
Jo, M 102
Jones, B
Jones, H
Jones, J 106
Jones, K
Jones, M
Jones, N
Jordache, M75, 89
Jordan, B 64
Jo, S 103
Joshi, K
Josyula, K
Josyula, S
Jovanovi , Z 14
Jo, Y
Joy, A
Jumaev, E
Jun, B
Jung, S
Jung, Y 10. 28. 43. 60. 95
, , , , , , , , , , , , , , , , , , , ,

Jun, H		•			 	•				•			76
Jun, J		•				•	•		•	•	1	6,	31
Junying, M		•		•		•	•	•	•	•			25
Juul Jensen, D													70

K

Kacher, J53, 70, 8
Kadambi, S
Kadirvel, K
Kafka, O 10
Kalahe, J
Kalel, M
Kalinin, S
Kaliszewski, L
Kalkanli, A
Kalyandurg, A 6
Kamarudin, N
Kamat, H
Kamat, S
Kamijo, T
Kamimura, M 50
Kamitsos, E 10
Kamrava, S
Kanazawa, Y 1
Kane, K
Kanematsu, H
Kang, H 10
Kang, M
\mathcal{O}^{i}
Kang, S
Kang, S.
Kang, S. .30, 45, 81, 97, 10 Kang, T. .4 Kang, W. .17, 26, 33, 49, 66, 83, 10 Kannan, R .16 Kanno, I. .17 Kantzos, C. .29, 8 Kanyane, L. .2 Kapat, J. .45, 6 Kaplan, B. .8 Kapoor, S. .35, 51, 68, 72, 10 Kapoor, S. .35, 57, 6 Kappagantula, K. .4 Karabulut, H. .7 Karaca, H. .41, 8
Kang, S. .30, 45, 81, 97, 10 Kang, T. .4 Kang, W. .17, 26, 33, 49, 66, 83, 100 Kannan, R .14 Kanno, I. .17 Kantzos, C. .29, 8 Kanyane, L. .2 Kaplan, B. .45, 6 Kaplan, W. .20, 35, 51, 68, 72, 10 Kapoor, S. .35, 57, 6 Kappagantula, K. .44 Karabulut, H. .7 Karadagli, E. .8
Kang, S.
Kang, S. .30, 45, 81, 97, 10 Kang, T. .4 Kang, W. .17, 26, 33, 49, 66, 83, 10 Kannan, R. .16 Kanno, I. .17 Kantzos, C. .29, 8 Kanyane, L. .2 Kaplan, B. .86 Kaplan, W. .20, 35, 51, 68, 72, 10 Kapoor, S. .35, 57, 6 Kappagantula, K. .41, 8 Karadagli, E. .88 Karagadde, S. .34, 4
Kang, S. .30, 45, 81, 97, 10 Kang, T. .4 Kang, W. .17, 26, 33, 49, 66, 83, 10 Kannan, R. .16 Kanno, I. .17 Kantzos, C. .29, 8 Kanyane, L. .2 Kaplan, B. .45, 6 Kaplan, W. .20, 35, 51, 68, 72, 10 Kapoor, S. .35, 57, 6 Kappagantula, K. .41, 8 Karadagli, E. .8 Karadagli, E. .3 Karadagli, S. .34, 4 Karki, S. .34, 4
Kang, S. .30, 45, 81, 97, 10 Kang, T. .4 Kang, W. .17, 26, 33, 49, 66, 83, 10 Kannan, R .16 Kanno, I. .17 Kantzos, C. .29, 8 Kanyane, L. .2 Kapat, J. .45, 6 Kaplan, B. .8 Kaplan, W. .20, 35, 51, 68, 72, 10 Kapoor, S. .35, 57, 6 Kappagantula, K. .4 Karadagli, E. .8 Karadagli, E. .3 Karcher, S. .34, 4 Karki, S. .3 Karmakar, A. .9
Kang, S. .30, 45, 81, 97, 10 Kang, T. .4 Kang, W. .17, 26, 33, 49, 66, 83, 10 Kannan, R .16 Kanno, I. .17 Kantzos, C. .29, 8 Kanyane, L. .2 Kapat, J. .45, 6 Kaplan, B. .8 Kaplan, W. .20, 35, 51, 68, 72, 10 Kapoor, S. .35, 57, 6 Kappacher, J. .6 Karabulut, H. .7 Karadagli, E. .8 Karagadde, S. .3 Karnekar, A. .9 Karra, A. .2
Kang, S. .30, 45, 81, 97, 10 Kang, T. .4 Kang, W. .17, 26, 33, 49, 66, 83, 10 Kannan, R .1 Kanno, I. .1 Kantzos, C. .29, 8 Kanyane, L. .2 Kapat, J. .45, 6 Kaplan, B. .8 Kaplan, W. .20, 35, 51, 68, 72, 10 Kapoor, S. .35, 57, 6 Kappagantula, K. .4 Karadagli, E. .8 Karadagli, E. .3 Karaki, S. .3 Karmakar, A. .9 Karumuri, S. .5
Kang, S. .30, 45, 81, 97, 10 Kang, T. .4 Kang, W. .17, 26, 33, 49, 66, 83, 10 Kannan, R. .16 Kanno, I. .17 Kanno, I. .16 Kanno, I. .17 Kanno, I. .16 Kanno, I. .17 Kanno, I. .16 Kanno, I. .17 Kantzos, C. .29, 8 Kanyane, L. .2 Kapat, J. .45, 6 Kaplan, B. .86 Kaplan, W. .20, 35, 51, 68, 72, 10 Kapoor, S. .35, 57, 6 Kappagantula, K. .44 Karabulut, H. .7 Karadagli, E. .88 Karadagli, E. .88 Karadagli, E. .34, 4 Karki, S. .33 Karmakar, A. .94 Karra, A. .94 Karumuri, S. .55 Karumakaran, V. .7

Kasbe, P
Kasemer, M
Kashani, H
Kaspryk I 101
Kasener C 78
Katsh I 25
Katell, L
Katilayat, F
Kato, K
Kato, T 25, 73
Katsu, Y 84
Katti, D
Katti, K9, 26, 27
Kaufman, J 44, 78
Kaur, M 104
Kaur, S 95
Kautz, E 13
Kawai, R
Kawałko, J 105
Kawasaki, M
Kawata, H
Kava H 58
Kayali F 54.87
Kayan, L
Keaveney, 5
Keeney, L
Kehn-Hall, K
Keicher, D
Keist, J
Ke, J 38
Kelkar, A 42
Kelley, C 63
Kellogg, F
Kelly, T
Kemp, D
Kemp, J
Kenny-Benson, C
Kent. P
Kerti I 31
Kesler M 38
Kassal B 4/
$V \subset S$ 11.70
K G, S 11, /S What you M 20. 24 46 47 92 92 100
Knanzov, M 30, 34, 46, 47, 82, 83, 100
Khalilullah, I
Khambhampati, S
Khanal, P 65
Khan, H
Khanlokar, A
Khan, M
Khanolkar, A
Khan, S

Khan, Z 67
Khare, C 88
Khare, S
Khawaja, A 103
Khodabandeh Yalabadi, A72
Khosravifar, M
Khursheed, A
Kiener, D
Kiesewetter, D15
Kikuchi, M
Kilczewski, S
Kilic, G
Killian, M
Kim, B
Kim C 25. 26. 49. 66. 81
Kim D 32 81
Kim F 79
Kimery Δ 67
Kim G 15
$Kim, G \dots 17 45 53 60 66 71 70$
Rini, 11 9, 17, 49, 99, 00, 00, 71, 79, 84, 102, 103
Vim I 14 15 22 40 54 81 87
$\begin{array}{c} \text{NIIII, } j \dots \dots 14, 15, 22, 49, 54, 61, 67, \\ 04, 05, 06, 106 \end{array}$
Vim V 15 97 99
NIII, N 15, 8/, 88
$KIIII, WI, \ldots, Y, YI, $
Vina D 52 71 102 104
Kim, R



Klemstine, C
Kleonne, Z
Kling, D 56, 95
Kljestan, N 45
Kloenne, Z 66
Klucinec, J
K. Nayak, S 105
Knezevic, M 45
Knox, R 53
Kobayashi, M71, 72, 103
Kobayashi, S 49
Kocabas, C 106
Kocjan, A 42
Kodera, Y
Kodigudla, M 42
Koenig, A 20, 53
Koga, N
Kogo, T
Kohlhorst, N
Kohn, D
Kohnert, A
Kohnert, C 12, 30, 32, 46, 97
Ko I 9
Kolanthai F 72 95
Kollar M 65
Komatsu T A2
1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
Kombajah B 24 38 82
Kombaiah, B
Kombaiah, B .24, 38, 82 Konda Gokuldoss, P .11, 29, 44, 61, 78, 79 Kondapalli, V .25, 56, 81 Koneru, S .66, 83 Kong, F .80 Kong, K .15, 40, 76 Korig, T .95 Korbinian, A .17 Korkolis, Y .53 Kostecki, R .40 Kothanalli
Kombaiah, B .24, 38, 82 Konda Gokuldoss, P .11, 29, 44, 61, 78, 79 Kondapalli, V .25, 56, 81 Koneru, S .66, 83 Kong, F .80 Kong, J .15, 40, 76 Korbinian, A .17 Korkolis, Y .53 Kostecki, R .40 Kothapalli, C .89
Kombaiah, B .24, 38, 82 Konda Gokuldoss, P .11, 29, 44, 61, 78, 79 Kondapalli, V .25, 56, 81 Koneru, S .66, 83 Kong, F .80 Kong, J .15, 40, 76 Korbinian, A .17 Korkolis, Y .53 Kostecki, R .40 Kothapalli, C .89 Kou, H .76
Kombaiah, B .24, 38, 82 Konda Gokuldoss, P .11, 29, 44, 61, 78, 79 Kondapalli, V .25, 56, 81 Koneru, S .66, 83 Kong, F .80 Kong, J .15, 40, 76 Korig, T .95 Korbinian, A .17 Korkolis, Y .53 Kostecki, R .40 Kothapalli, C .89 Kou, H .76 Kovar, D .10
Kombaiah, B
Kombaiah, B
Kombaiah, B
Kombaiah, B .24, 38, 82 Konda Gokuldoss, P .11, 29, 44, 61, 78, 79 Kondapalli, V .25, 56, 81 Koneru, S .66, 83 Kong, F .80 Kong, J .15, 40, 76 Korig, T .95 Korbinian, A .17 Korkolis, Y .53 Kostecki, R .40 Kothapalli, C .89 Kou, H .76 Kovar, D .10 Koyamagi, T .65 Kozak, W .73 Koziek, D .96
Kombaiah, B .24, 38, 82 Konda Gokuldoss, P .11, 29, 44, 61, 78, 79 Kondapalli, V .25, 56, 81 Koneru, S .66, 83 Kong, F .80 Kong, J .15, 40, 76 Korig, T .95 Korbinian, A .17 Korkolis, Y .53 Kostecki, R .40 Kothapalli, C .89 Kou, H .76 Kovar, D .10 Koyamagi, T .65 Kozak, W .73 Kozak, D .96 Kramer, M .27
Kombaiah, B .24, 38, 82 Konda Gokuldoss, P .11, 29, 44, 61, 78, 79 Kondapalli, V .25, 56, 81 Koneru, S .66, 83 Kong, F .80 Kong, J .15, 40, 76 Korbinian, A .15 Korkolis, Y .53 Kostecki, R .40 Kothapalli, C .89 Kou, H .76 Kovar, D .10 Koyamagi, T .65 Kozak, W .73 Kozjek, D .96 Krasikov, A .40
Kombaiah, B .24, 38, 82 Konda Gokuldoss, P .11, 29, 44, 61, 78, 79 Kondapalli, V .25, 56, 81 Koneru, S .66, 83 Kong, F .80 Kong, J .15, 40, 76 Korig, T .95 Korbinian, A .17 Korkolis, Y .53 Kostecki, R .40 Kothapalli, C .89 Kou, H .76 Kovar, D .10 Koyamagi, T .65 Kozak, W .73 Kozjek, D .96 Kramer, M .23 Krasikov, A .46
Kombaiah, B .24, 38, 82 Konda Gokuldoss, P. .11, 29, 44, 61, 78, 79 Kondapalli, V .25, 56, 81 Koneru, S .66, 83 Kong, F. .80 Kong, J .15, 40, 76 Kong, K .15 König, T .95 Korbinian, A .17 Korkolis, Y .53 Kostecki, R .40 Kothapalli, C .89 Kou, H .76 Koyama, T .73 Kozak, W .73 Koziek, D .96 Kramer, M .23 Krause, A .20, 39, 55 Krebs, J .76
Kombaiah, B

Krishnan, A 28
Krishnan, N
Krishnaswamy, S
Kritsky, V
Kriven, W
Kroll, P65, 82, 99
Kromalic, C
Kruhliak, I
102, 109
Krupczak, J
Kruppa, K
Kryhliak, I
Kshirsagar, A
Kubacki, G
Kubaski, E
Kube, C
Kübel, C
Kubley, A
Kucko S 35, 88, 99
Kuehel E 95
Kulak M 66
Kulkarni A 27
Kumar A 31 32 33 57 65 82 97 104
Kumari, G 86
Kumar I 109
Kumar M 13
Kumar, P
Kumar, R
Kumar, V
Kumar, Y
Ku, N
Kuna, L
Kundu, A
Kung, F
Kunkel, W
Kunwar, S
Kurley, M
Kuroki, M
Kurtz, S
Kurzenknabe, C
Kushram, P
Kutniak, Z
Kuttolamadom, M
Kuwabara, A
Kuzbary, P
Kuz, C
Kweon, C
Kweon, S 14
Kwon, J
Kwon, S
Kwon, T
Kwon, Y
,

т
L

LaCourse, W
LaDouceur, R
Lafferty, C 69
Lakusta, M
Lam, B
Lambeets, S 13
Lambert, G
Lambert, P
Lam, M
Lamprinakos, N
Lam, S
Lancelotti, R 103
Lance, M
Landgraf, F 12, 21
Landi, D
Lane, B
Lane, I
Lane, R
Lang, M
82. 88. 100
Lany S 87
Large M 81
Laskoski M 39
Laskowski R 28.64
Lass. E
Laurenceau, E 107
Laurencin C 57
Lavigne R 26
Lawrence S 76
Lawson I 71
Law A 62 63
Lazarus F 27
Leaby I 103
Lebedkina T 36
Lebensohn R 54
LeBlanc S 62
Lebrade, 6
Lech S 36 51 68 84 101
Ledford, C 29.60
Lee C 25, 48, 105
Lee D 9 32 33 102
Lee H 32 55 67 72
Lee I 9 56 83 99
Lee, K 78, 97
Lee, M 83, 103, 107
Lee, S 13. 17. 31. 32. 40. 49. 104
Lee, T
Lee, Y
Lee, Z
Le. H
Leinenbach, C 11

Leinenweber, K 59	Li
Le, K	Li
Leland, S	Li
Lemmen, K 41, 87	Li
Lemos, H	Li
Lenhardt, J	Li
Lenox, C	Li
Leonard, A	Li
Leonel, G	Li
Leonhardt, T	Li
León-Henao, H	Li
Leser, P	Li
Lesko, J	
Lester, B	Li
Levedakis, A	Li
Levi, C	Li
Levine, L	Li
Lewandowski, J41, 44, 45, 55, 62, 94	Li
Lewis, A	Li
Lev. B	Li
Levs, J	LI
Liang, C	Ll
Liang, K	Lo
Lian, J	Lo
Liao, H	Lo
Liao, W	Lo
Liao, Y 12	Lo
Liaw P 36 48 51 66 68 69 71 84 101	Lo
Li B 91	Lo
Li C 76	Lá
Liccardo I 46	L
Li D 12 22 25 29 72 77	L
Lida P 63	L
Lieberman F 54	L
Liebscher C 36	L
Liersch A 31	L
Li H 87	L
Li, II 9 15 46 48 66 71 76 83 86 100	L
Li, J J, 13, 40, 40, 00, 71, 70, 03, 00, 100 Li I 43 54 58 76 77 90	L
Lilova K 59 77 91 109	L
Li M // 64 74	ы
$\lim_{n \to \infty} H = 20.53.82$	T.
Lim, 11	L
Lim V 16 31 63 80	T.
Lini, 110, 51, 05, 80 Li N 29, 41, 96, 00	L
Li, IX	LL L
$ \text{Lin, } \mathbf{D} \dots \dots$	- Ll Т,
Lin, 11	
Link G 25 41 106	
Link, G	
Lino, A	LL T.
Lill, o	
LIIIIOII. IN	1.1

Lin, Y20, 35, 52, 58
Lipke, D
Li, Q
Liu, C
Liu, G
Liu, H
Liu, J
Liu, L
Liu, R
Liu, S9, 13, 69, 73, 74
Liu, T
Liu, X 15, 35, 36, 41, 51, 59, 68, 77
84, 87, 91, 101, 109
Liu, Y14, 18, 46, 100
Liu, Z
Li, W
Li, X 14, 23, 43, 74, 76, 81, 87
Li, Y63, 99
Li, Z
Lizu, H
LLorca, J
Llovd, E
Locke, J
Loebel, C
Lokitz, B
Lonergan, C 19, 35, 49, 50, 67, 100, 101
Long, A
Loni, E
Looper, K
López-Cámara, C
Lopez, I
Lorengo, M
Lou. X
Lovi, I
Luan, L
Lucas, C
Luckhardt, C
Luc, N
Lu, J
Lu, K 10, 17, 26, 33, 34, 39, 49, 50,
66, 72, 73, 83, 87, 89, 100, 105
Luo, A
63, 71, 72, 84, 87, 105
Luo, J 36, 51, 68, 72, 84, 86, 87, 101
Luo, O
Lu. P
Lusczek, E
Lushai, E
Lu, T
Luther, E
Lu, W
Lu, X

Lu, Y	 	34, 36
Lu, Z	 	10
Lynch, M	 	55
Lyu, M	 	35, 70

Μ

Maass, R 15
MacDonald, E 28
Machuga, K
Madan, R 61
Madej, L23, 32, 105
Magagnosc, D
Magdaluyo, E
Maglosky, S 76
Magness, L 55
Ma, H9
Mahadevan, T 17
Mahan, T
Mahmoud, M25, 41, 106
Mahmud, A 45
Maier-Kiener, V
Maier, P
Maita, J
Maiti, T
Ma, J
Majed, A
Majee, B
Ma, L
Malakkal, L
Malatii. N
Maledi, N
Malen, I
Malen, J 10, 45 Malhotra, R
Malen, J
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik R 78
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski I 32
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Malik P 56
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy S 41
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala 90
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal K 31
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangan, A 43
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangan, A 43 Mangeri, J 22
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangeri, J 22 Manjarrez, A 90
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangan, A 43 Manjarrez, A 95 Manjooran, N 30, 45, 56, 62, 64, 80,
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangeri, J 22 Manjaoran, N 30, 45, 56, 62, 64, 80, 81, 96, 97, 106 Marker, M 82
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangeri, J 22 Manjaoran, N 30, 45, 56, 62, 64, 80, 81, 96, 97, 106 Manley, M 82
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangan, A 43 Manjorra, N 30, 45, 56, 62, 64, 80, 81, 96, 97, 106 Manley, M 82 Mannan, S 67
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangan, A 43 Manjooran, N 30, 45, 56, 62, 64, 80, 81, 96, 97, 106 Manley, M 82 Mannan, S 67 Mann, J 82
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangan, A 43 Manjooran, N 30, 45, 56, 62, 64, 80, 81, 96, 97, 106 Manley, M 82 Mannan, S 67 Mann, J. 82 Mann-Lahav, M 35
Malen, J 10, 45 Malhotra, R 61 Malic, B 14 Malik, A 44 Malik, R 78 Malinowski, L 32 Mallik, P 56 Maloy, S 41 Mamidala, A 90 Mandal, K 31 Mangan, A 43 Manjooran, N 30, 45, 56, 62, 64, 80, 81, 96, 97, 106 Manley, M 82 Mannan, S 67 Mann, J. 82 Mann, T 86



Mao, H
Mao, J
Mao, N $\ldots \ldots 40$
Maor, I
Mao, Y 46, 71
Ma, P 24, 49
Ma, Q
Maradani, H 52
Mara, N 53
Marashi, S
Marder, R
Margolies, J 13
Marhulik, G
Maria, J
Marianetti, C 34
Mariani, F 44
Marin, E 56
Markland, R
Markstrom, A 44
Márquez-Herrera, A
Marguis, E
Marshall, A
Marsili, E
Marthi, R
Martin, A
Martin, C
Martinez, A
Martinez, C
Martinez, M
Martinez Saez. E
Martin, H
Martin, I
Martin, K
Martin, S
Martucci, A
Maruvama, N
Marvel, C
Marva M 13.79
Mashrafi N 40
Mason I 103
Mason P 44 86
Mathew C 33
Mathews I 52
Mathews R 95
Mathews, R
Mathur S 17 33 40 66 83 100
Matilac I 42
Matin M 21
Mateukura K 67
Matsumoto K 22
Matsumoto R 72
Matsumura V 01
iviaiouillula, 1

Matsunaga, K 84
Matthew, L 23
Matthews, C 32, 47
Maughan, A 94
Maurel, A 28
Maurel, C 64
Mauro, J
Maurya, K 32
Maurya, P 10
Ma, X
Mayer, J
Mayer, L
Mayeur, J
May, K
Mazanova, V
Mazza, A 31
Mbayu, B
McCabe, R
McCloy, J
McComb, D
McConville, D
Mccormack, S
McCormack, S
McDermid, J
McDonnell, M 63
McEntire, B
McGilvry-James, T73
McIlwaine, N
McIntvre, J
McKenna, K 17
McKibben, M 90
McLennan, J
McManus, E
McManus, R
McMaster, A
McMillen, C
McMinn, C
McMurray, J
McNamara, C
McWilliams, B
Mebane, D
Mecholsky I 52.84
Medford, A 58
Medina M 104
Mehta V 32.94
Meija A 51
Melander. M 94 106
Melentiev A 101
Melfi M 33
Mena-Garcia I 84 103
Mena, I
Mendeley, M

Mendoza Jimenez, E
Mengiste, E 53
Meng, K
Menon, A 89
Mentese, E
Mergave, M
Merrill B 91
Merritt B 47
Merwin G 91
Messner M 44 53
Meylenberg W 51
Mever P /3
$Mavor S \qquad $
$Mergane D \qquad \qquad 40$
Mino I 54 72 84
$\begin{array}{c} \text{Midlo}, j \dots \dots j \\ \text{Midlogeid}, D \end{array} $
Milgilaccio, D
Miliara-Marita, M
$M1Ka, V \dots 13, 51$
M1Kula, J
Milich, M
Militzer, M
Miller, A 61
Miller, B
Miller, C
Miller, J
Miller, V
Mills, B
Mills, D
Mills, M
Mills, S
Miltzer, M 15
Minamoto, S
Minh Do, Q 44
Min, J
Minnette, J
Minor, A13, 18, 30, 35
Mion, T 44
Mireles, O 62
Mirt, T
Mis-Fernández, R 99
Mishra, A 63, 81
Mishra, D
Mishra, R
Mishra, S 12, 51
Miskey, L
Misra, A
Misture, S
Mitchell, D
Mitchell, J
Mitchell, R102, 103
Mitchell, W 44

Mitsuoka, T
Miura, H25, 71, 72, 103
Miyamoto, G 15, 21, 37, 52, 64, 69, 81
Mizuno, F
Mizuno, R 42
Mock, C
Moczadlo, M
Mofrad, A 33
Mohammad, M 13
Mohammed, A
Mohanty, B
Mohee, L
Mohrbacher, H
Mohseni, P
Moisés Alvarez, M 27
Moliere, M
Molnar, K
Momijan, S
Möncke D 35.99.101
Moneeh A 27
Monia S 32
Monistere A 107
Montagnino F
Monteverde E 34
Montgomery C
Montial C 64
Montova P 11
Montoya, K
Mooare C 52
Moor M
Moore E (1.70
Moore, E
Moorenead, M
Moraes, W
Mora Salcedo, C
More, S
Moretti, E
Morgan, D
Morgan, N
Morita, K
Morito, S
Moronaga, T 64
Morooka, S 15
Morrison, M
Morton, R
Mosa, J
Moser, N 10
Moses-DeBusk, M 38
Mossadeghian, S91
Mostafaei, A
Mostaghimi, J 13
M-4- C (1
Motna, 5

Motoi, T
Mou, M73
Mourot, A
Mozafari, A
Mozaffari-Jovein, H
Muccillo, E
Muccillo, R
Mueller, R
Mujib, S
Mukherjee, S
Mukhopadhyay, N
Mukhopadhyay, S71, 74, 90
Mu, L
Mula, S
Mulligan, J
Mullis, A
Munro, T
Muntaha, M
Muntwiler, M65
Muraleedharan, M 74
Muralidharan, K 59
Murali, N
Murdoch, H
Murphy, M
Murphy, T
Murray, D
Murray, P
Mushtaq, A
Musso, M
Muszka, K
Mutswatiwa, L 25
Myers, A 45
Myers, K 62
Mylvaganan, M17

Ν

Nabhan, F 31
Nagase, A 50
Nag, S 16
Naguib, M 17, 33, 49, 66, 83, 85, 100
Nahavandian, M
Nain, H
Nakamura, A
Nakano, A
Nakano, J
Nakao, W
Nakashima, Y 50
Nakayama, K
Nakayama, T
Nakhmanson, S 10, 22, 40, 105
Naleway, S
Nam, C

Nam, D
Nam, J
Nam, S 15, 49
Nance, J 60
Nandal, V73
Nandwana, P16
Naorem, R 23, 94
Narasimhan, K 53
Narayanan, V
Narayan, R9, 24, 40, 56, 57, 58, 73,
. 88, 106, 107
Narita, M
Narra, A
Narra, S
Nartu, M 25
Nassiri, A
Natividad. Y
Navrotsky, A 19, 58, 59, 77, 91, 109
Nawaz, A 99
Nawaz K 11 38 78
Navir S 28
Nazim M 81
Ndavishimive A
Neal C 95
Noal M 108
Nogru D 75
Noigo E 34
Neige, E
Nells, A
Neitheleth N
Nelson A
Nelson, A 11
Nelson, K
Nelson, 1
Nemani, K 16, 99
Nemani, S 16, 49, 74, 99
Nepal, K
Ness, S
Neuefeind, J
Neuman, E
Neumeier, S
Neuville, D
Ngo, A
Ngo, N
Nguyen, A
Nguyen, Q 29
Nguyen, V
Ng, Y 26
NH, G 57
Nicol, R
Niedźwiedź, M74
Nie, Y
Niezgoda, S 9, 54



Ni. H
Nijhara K 17
Ninga N 70
Ninos, N
Niraula, S 78
Nishihara, Y
Nishi, T
Nitol, M
Niu, T
Nizolek, T
Nohava, J
Noh, J
Nomoto, K
Noor, M
Norkett, J
Nosal, E
Nowacek, D
Nowak, W
Numkiatsakul, P
Nunes, A
Nunes de Lima, F 45
Nunez, L
N V, R
Nykiel, K

0

Obata, K
Oba, Y
Obielodan, J
O'Brien, M
O'Brien, S
Ochetto, A
Ochieze, U
O'Connor, M
Octoviawan, N
O'Donnell, K
Ogata, S
Ogawa, A
Ogrinc, A
Oh, D
Oh, H
Ohikhena, P
Ohji, T9, 26, 43, 93
Ohmstede, A
Ohmura, T
Oh, T
Ojeda Santillán, S 46
Okano, H
Okimura, Y
Okkema, M 67
Okuma, G 58
Oldham, N
Oleksak, R

Olivas-Alanis, L
Olpu, S
Olson, M 67
Olubambi, P 30
Olukunle, B75
Oluwafemi, T 16
Oluwaleye, O
Omorogbe, D 42, 56
Opetebu, O 66
Ophus, C 34, 35
Opila, E
Oppelstrup, T 36, 70
Oppenheimer, S 54
O'Quinn, E31, 34, 65, 74
O'Quinn, E 88
Oriola, A77, 101, 102
Oropeza, D 60
Orsborn, K
Ortalan, V 18
Orta, R
Ortega Rojas, J 29
Ortiz, D
Ortiz, L 17
Osada, T46, 73
Osaka, A
Osawa, Y 42
Osetskiy, Y 87
Oskay, C 95
Ostapovets, A
Ostrowski, A 45
Otter, G 30
Ott, R 23
Ouisse, T 103
Overstreet, C
Owen, C 63
Ozaki, S 50
Ozer, A
Ozer, G 11
Ozkaya, D103
Ozmen Garibay, O

Р

Pachuta, K
Pack, E
Padma Sri, K 32
Padture, N
Pagan, D 53
Pagan, V
Pagán, V
Page, M 17
Paira, B
Palchoudhury, S 76

Palit, P 32
Palmer, A
Pal, U 56
Panda, D 104
Pandey, G
Pandey, O
Pandey, P
Pandita, P
Pang, K
Pan, J
Panova, V
Panthi, D
Panton, B
Pao, R
Papavasiliou, G75
Pappas, D
Paramanathan, M
Paranthaman, M
Paranthaman, P 109
Parikh S 74
Park C 31
Parker S 77
Parkin C 20.82
Parkison D 30
Park I 53 73 76 81 87 93 96 106
$\begin{array}{c} \text{Park S} \\ \text{S} \\ \text{Tark S} \\ Ta$
Dark T 15
Dark V 0 55
$\begin{array}{c} \text{Tark, 1} \dots $
Patel M 17
1 alci, 1vi
Dataloup V 11
Pateloup, V
Pateloup, V
Pateloup, V 11 Patenaude, J 94 Pathak, S 23, 54, 86 Patra, B 67
Pateloup, V 11 Patenaude, J 94 Pathak, S 23, 54, 86 Patra, P 67 Patra 94
Pateloup, V 11 Patenaude, J 94 Pathak, S 23, 54, 86 Patra, P 67 Patra, S 94 Patra, S 94
Pateloup, V 11 Patenaude, J 94 Pathak, S 23, 54, 86 Patra, P 67 Patra, S 94 Patterson, B 52 Patterson, F 23
Pateloup, V 11 Patenaude, J 94 Pathak, S 23, 54, 86 Patra, P 67 Patra, S 94 Patterson, B 52 Patterson, E 22
Pateloup, V 11 Patenaude, J 94 Pathak, S 23, 54, 86 Patra, P 67 Patra, S 94 Patterson, B 52 Patterson, E 22 Patterson, G 81
Pateloup, V 11 Patenaude, J 94 Pathak, S 23, 54, 86 Patra, P 67 Patra, S 94 Patterson, B 52 Patterson, E 22 Patterson, G 81 Patush, R 94
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S. 94 Patterson, B 52 Patterson, E 22 Patterson, G 81 Patush, R 94
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S. 94 Patterson, B. 52 Patterson, E. 22 Patterson, G. 81 Patush, R 94 Paudel, R 14 Paul, A 50
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S 94 Patterson, B 52 Patterson, E 22 Patterson, G 81 Patush, R 94 Paudel, R 14 Paul, J 46
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S 94 Patterson, B 52 Patterson, E 22 Patterson, G 81 Patush, R 94 Paudel, R 14 Paul, J 46 Pavlov, T 46, 47
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S 94 Patterson, B 52 Patterson, E 22 Patterson, G 81 Patush, R 94 Paudel, R 14 Paul, J 46 Pavlov, T 46, 47 Pawale, T 81
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S 94 Patterson, B 52 Patterson, E 22 Patterson, G 81 Patuel, R 94 Paudel, R 14 Paul, J 46 Pavlov, T 46, 47 Pawlikowski, K 105
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S. 94 Patterson, B 52 Patterson, E 22 Patterson, G 81 Paudel, R 14 Paul, J 46 Pavlov, T 46, 47 Pawale, T 81 Pawlikowski, K 105 Payne, C 94
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S. 94 Patterson, B. 52 Patterson, E. 22 Patterson, G. 81 Patuel, R 94 Paudel, R 14 Paul, J. 46 Pavlov, T. 46, 47 Pawale, T 81 Pawlikowski, K 105 Payne, H. 55
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S. 94 Patterson, B. 52 Patterson, E. 22 Patterson, G. 81 Paudel, R 94 Paudel, R 14 Paul, J. 46 Pavlov, T. 46, 47 Pawale, T 81 Pawlikowski, K 105 Payne, C. 94 Payne, H. 55 Payton, E 52, 64, 77, 81, 96, 101, 102
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S. 94 Patterson, B. 52 Patterson, E. 22 Patterson, G. 81 Patush, R 94 Paudel, R 14 Paul, J. 46 Pavlov, T. 46, 47 Pawale, T 81 Pawlikowski, K 105 Payne, C. 94 Payne, H. 55 Payton, E 52, 64, 77, 81, 96, 101, 102 Paz Soldan Palma, J 33, 91
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S 94 Patterson, B 52 Patterson, E 22 Patterson, G 81 Patush, R 94 Paudel, R 14 Paul, J 46 Pavlov, T 46, 47 Pawale, T 81 Pawlikowski, K 105 Payne, C 94 Payne, H 55 Payton, E 52, 64, 77, 81, 96, 101, 102 Paz Soldan Palma, J 33, 91 Paz y Puente, A
Pateloup, V 11 Patenaude, J. 94 Pathak, S 23, 54, 86 Patra, P. 67 Patra, S 94 Patterson, B 52 Patterson, E 22 Patterson, G 81 Patush, R 94 Paudel, R 14 Paul, J 46 Pavlov, T 46, 47 Pawale, T 81 Pawlikowski, K 105 Payne, C 94 Payne, H 55 Payton, E 52, 64, 77, 81, 96, 101, 102 Paz Soldan Palma, J 33, 91 Paz Y Puente, A 69, 77, 80, 101, 102

Pellicotte, J	. 12, 46,	54
Pelz, J		78
Pena-Francesch, A	89, 94, 1	07
Peng, F	, 44, 72,	77
Peng, Z	25, 41, 1	06
Pentzer, E		70
Perbix, C		62
Perea-Andrade, L		29
Perea, D		13
Perez, A	, 45, 62,	64
Perez-Andrade, L		11
Perez, L	61,	64
Perez Perez, L		61
Perini, S		84
Perkins, C		27
Perrella, C		13
Perriere, L		51
Perrière L		37
Perrin A	•••••	87
Perry D	· · · · · · · 1	07
Perry N	27 1	07
Dersha 7	2/,1	80 80
$\begin{array}{c} \textbf{Fershin}, \textbf{L} \\ \textbf{Dorshin}, \textbf{I} \end{array}$	• • • • • • •	12
Persinin, L	 20	13
Pestian, N	28,	02
Peterson, E	• • • • • • •	32
Petro, K	• • • • • • •	96
Petrusca, A	• • • • • • •	95
Petrusha, Y		98
Pezzotti, G	• • • • • • •	56
Ptefferkorn, F	• • • • • • •	45
Phan, T	53, 70, 1	06
Phelan, W		77
Philips, A		50
Pibulchinda, P	16,	99
Pickrell, G 30, 45, 56, 62,	64, 75, 8	80,
81, 89,	96, 97, 1	06
Piedmont, D		53
Pierce, D		52
Pierre, V		89
Pilavci, E		73
Pileggi, R		45
Pillai, D	12,	25
Pillai, R	33,	48
Pinna, N	46,	70
Pinney, P		13
Pint, B	52,	85
Pistorius, C	,	25
Pistorius, P	10.	14
Plotkowski, A		87
Plummer, G.		71
Podany P		97
		11
Podlevsky, I		82

Poerschke, D
Pokharel, R
Polasik A 18.34
Policastro S 33
Poliukhova V 40
Della dr T 12
Polo, F
Polyak, P
Pomerantseva, E
Ponder, J
Ponnambalam, V 62
Poole, W
Poon, J
Poon, W107
Poplawsky, J
Porteus, J
Porz, L
Posey, N
Post, B
Post, N
Post, Z
Poudel, B
Poudel N 47
Pourang S 108
Powell H 89
Prakanenka V 77
Dramanick A 22
Drosad N 21.64
$\begin{array}{c} \text{Prasai} \ V \\ \end{array} $
Prasal, K
Presby, M
Prevoznak, B
Pribe, J
Price, P
Prichard, P
Prima, F
Primig, S
Pritchett, E
Priya, S
Prodanovic, V
Prokop, A
Promel, L
Prost,
Prost, T
Provis, J 102
Prusnick, T
Przybyla, C93
Pulley, K
Punongbayan, A
Purcell, D
Puri, R
Puskas, I
Pu. X
,

Dylypko S																								27
Ругурко, 5	••	• •	• •	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	21

Q

IEII

Qian, C 69
Qiao, Y
Qi, L
Qin, F17, 31
Qin, Q 101
Qiu, A
Qi, Y
Qu, B
Qu, C
Que, Z
Qu, H
Quidort, D
Quintana, M
Quirarte, G
Qureshi, A
Qureshi, M 10
Qu, X

R



Ramirez, A 30, 44, 62	2, 63, 64, 80, 81
Randall, C	.22, 72, 84, 103
Randall E. Youngman, R	
Ranjan, A	
Rankouhi, B	45
Rao, A	104
Rao, P	
Rao, R	
Rao, V	
Rapaud, O	
Raphael, M	
Rasheed, M	
Rashid. B	
Rashwan, O	61, 79, 96
Rasouli F	80
	34 50 83
Rau, M	
Rauch, II	11
Rauginey, Wi	
Raul, A	
$Kav1, B \dots $	
$Rav1, P \dots$	
Kavı, S	
Raza, A	
Razouq, H	72
Rebak, R	1, 37, 52, 69, 85
Reddy, P	53
Reece, M	77
Reeve, S	
Regis, N	32
Regmi, B	
Rehman, K	87
Rehmel, T	95
Reid, H	
Reinhart, W	94
Reis, S	
Ren, J	
Ren, K	
Renner, J	70,73,107
Ren, S	
Ren. Y	
Reutzel. E.	
Reutzel T	
Revnolds D	64
Regular Δ	20 53 82
$\frac{1}{2}$	
$\frac{1}{2} \frac{1}{2} \frac{1}$	E1 60 70 101
Phonehouse D	, 51, 00, 70, 101 74
	/0
$\operatorname{Ria}_{\mathcal{L}}, \cup \ldots \ldots$	
NICCI, S	
Kicnardson, K \dots	
Kichter, B	

Richter, N
Richwine, M
Rickert, K 82
Rickman, I 74
Ricohermoso E 58
Ridley M 85
Riechers S 12
Riedel C 20.86
Riedel R 58
Riedemann T 57
Piensche A 28
$Diff_{P} W \qquad \qquad$
Piggs C 73
$\begin{array}{cccccccccccccccccccccccccccccccccccc$
$\begin{array}{c} \text{Riley, D, 10, 17, 52, 47, 03, 62, 94, 100} \\ \text{Dilay, N} \end{array} $
Riley, N
Riilisza, J
Ringer, 5
Rinker, I
Rinko, E
Rivero, 1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$
R., M
Roach, M
Robba, D
Roberts, C
Roberts, E
Robinson, R
Robitaille, M
Rödel, J 20
Rodrigues, M
Rodriguez, C9, 27, 54
Rodríguez, C 27
Rodriguez de Vecchis, P 30
Rodriguez De Vecchis, P
Rodriguez, N
Rodriguez, T
Rogers, J 45
Rogers, S 99
Rohatgi, A25, 42, 57
Roh, M
Rohrer, G
Rojac, T
Rolchigo, M23, 53
Rollett, A 12, 21, 28, 29, 39, 43, 52,
55, 72, 80
Romanovskaia, E 80
Romanovski, V
Romanov, V73
Rom, C
Romedenne, M
Romeo, A 46
Rommel, S

Rondinelli, J
Ronevich, J
Rosales, J
Rosei, F
Roskosz, M
Rossato, J
Rossignol, F11
Ross, J
Rost, C 68, 83
Rottmann, P
Rowenhorst, D
Roy, A
Roy, I
Roy, P
Roy, S
Rozati, A
Rozic, B14, 49
Rozikhodjaev, S 102
Rozman, K 21
R. Scully, J
Rudd, R
Rudolf, C 54
Rueschhoff, L44, 60, 78, 96
Ruiz, S 39, 65
Rulis, P
Ruller, J
Rumi, M 40
Rupert, T
Ruscitto, D
Russell, T
Ryou, H
Ryu, H 45, 83
Ryu, I 53
Ryu, J
Ryu, M
Ryu, Y

S

Sahoo, S 67
Saini, R20, 75
Saini, S
Saiz, E 55, 78
Saiz Gutierrez, E 55
Sakai, Y
Sakidja, R73
Sakthivel, K
Sakurai, S 26
Salaeh, T
Salanova, A
Salata-Barnett, M 46
Saleem, A
Saleh, B 42
Saleh, T 30, 32
Salem, A
Sales de Mesquita, J 45
Salloom, R
Salvador, P
Salvato, D
Salvo, M
Samimi, P
Samin, A
Sami, S 18
Sanchez, D
Sandhage, K
Sangal, S
Sanghera, I
Sangoi, K
Sangu, T
Sankaran, S
San Marchi C 76
San S 68
Santala M 20 35 51 68 101
Santarelli M 27
Santato C 46.63.80
Sant G 65
Sanz M 107
Sankota N 104
Sardashti K 101
Sarin D $74.77.88$
Sarkar D 0
Sarkar, D
Sarkar S 22 20 65 72 77 86
Salkal, S
Sasiullarali Fillal, A
Sato H 54
Sato M 25.41.106
Sato, V 14.27
Sauor V 26
Sauer, N
Sauel, IN

Sawalkar, S24
Saxena. A
Savlor, D
S Bhalla, A 98
Scannapieco D 45.55
Schaefer M
Schaer T
Schäfer I 51
Scheibel T
Scherer M
Scheurer I 64.67
Schov M 02
Schloich S $0/$
Schlem D
Schloff, D
Schmalbach, K \dots 40
Schmidt, N. $64, 67$
Schmidt, R
Schneider, M
Schoenung, J
Schonfeld, H
Schorne-Pinto, J
Schreiber, D
Schuh, C
Schultheiss, J
Schuster, A
Schwab, T17, 20, 34, 72
Schwalbach, E 10
Schwarz, C
Schwentenwein, M
Scott, C 51
Scott, J
Scott, M 34
Scott, S
Scroggins, J
Scully, J
Seal, S
Sebold, D
Sedlar, T
Seetharaman, S
Segouin, V
Sehirlioglu, A
Seidt, J
Seifert, H
Selim, F
Sen Gupta, A
Sengupta, D
Sen Gupta PhD. A 108
Sengupta S
Sen S 20 102
Senthilnathan A
oeneminaulail, 11

Int

Senvardarli, E
Senyo, S
Seo, J
Seo, M
Seong, H
Sereda, B
102 109
Sereda D 32 38 85 90 97 98
102 100
Sorban H 42
Serinall, 11
Sella, A
Serra, J
Shabana, M
Shadangi, Y
Shade, P 55
Shahimi, A
Shah, M 10, 39
Shah, S
Shaker, S
Shakiba, M
Shakir, H
Shalabi, Y
Shanazarov, K 102
Shang, A
Shang, S
Shang Z 22, 41
Shanks K 53
Shanov V 25 56 81
Shan V 17
Shao I 38 52 53 71 82 86 102
Sharma A $25, 71, 02, 00, 102$
Sharma C 69
Sharma, G
Sharma, K
Sharma, M
Sharma, R
Sharon, J
Sharp, N
Shaw, B
Shen, C 22, 54
Shen, T
Shen, X 18
Shen, Y 66
Shepard, L 101
Shepherd, N
Sherrard, C
Shetty, K
Shi, A
Shibata, A
Shi C 40
Shi D 35 107
Shifa T 46.62.00
Shifler D 21 27 52 60 05
3111101, D $ 21$, $3/$, 52 , 69 , 85



Shih, Y
Shi, M
Shimamura, J
Shimamura, K76, 89, 108
Shimanek, J
Shim, G
Shin, D12, 104
Shingledecker, J
Shin, H 108
Shin, J
Shinohara, Y
Shin, S
Shi, R 12
Shirai, T
Shire, D
Shirwaiker, R
Shivprasad, A
Shi Y 29.77
Shi Z 74
Shokri N 78
Sholl D 58
Shornikov S 109
Short M 12 30 46 97
Shortt H 49.66
Shotu, 11
Shrotwell, A
Shirely C 40
Shuck, C
Snui, Z
Snukla, A
Shulda, S
Shulman, H
Sickafus, K
Siderius, D
Siebenallar, R
Siebenaller, R
Siedlecki, C
Siegmund, T
Sierros, K
Sikder, P
Silverstein, J 12
Silvestroni, L
Si, M 14
Sim, G 66
Simon, C 24
Simpson, W
Simsek, E
Simunovic, S
Singh, A 12, 56
Singh, C
Singh, D
Singh, G 17, 33, 49, 66, 83, 100, 104
Singh, L

Singh, M 9, 26, 43, 46, 47, 57, 59, 93
Singh, N
Singh, P 82, 98
Singh, R
Singh, S
Singh, V
Singla, S
Sinha, S
Sinnott, S
Siriwardane, R 25
Sirot R 42
Sisco K
Sitko M
Sivak I 68.83
Skiba F 103
Skoracki R 54
Skrotzki B 100
Skillizki, D
Slagle, I $\ldots \ldots $
Slagle, $J = 1 + 1 + 2$
Slapikas, K
Stattery, 5
Silem, M
Slobodov, A
SIOMSKI, H
Smeacetto, F26, 2/, 6/, 84
Smeaton, M
Smeltzer, J
Smith, D
Smith, H
Smith, J
Smith, N 20, 51
Smith, S 22
Smithson, C 62
Smith, T
Smith, W
Snarr, P
Snead, L
Snyder, S
Sobey-Strick, A
Sochnikov, I
Soderstrom, M
Soga, K
Sohn, Y 12, 45
Sokalski, V
Solanki, K
Solomon, A 34, 74
Solomon, C 95
Solomon, V
Somani, M
Somayazulu, M
Song, D
-

Song, H
Song, I
Song R 43
Song S 99 108
Song Y $11.28.44$
Solig, X_{1}, \dots, X_{n}
$S_{\text{on}} = T_{\text{on}} = 102$
Soll, $1 \dots 102$
Soudy, E
Sousa, D \dots 11
Sozal, M
Spanos, G_{1} , G_{2} , $G_$
Spear I $12 15 76$
Speer, J
Specify, $M_1 \dots M_n$
Spinieni, J
Spirieu, F
Spreuzer, M
Sprouster, D
Squires, L
Sredenschek, A
Sridnaran, D
Srinivasan, G
Sriram, A
Sriram, H
Srivastava, A 103
Srivilliputhur, S
Srolovitz, D
Stackawitz, J
Stack, P
Stamboulis, A 10, 26
Stanciu, L
Stanlick, A
Staser, J
Stauffer, D
Steele, J
Stefański, M
Stegman, B
Steichen, S
Stein, A73
Steinbach, F 35
Steiner, M
Steiner, P 106
Stephens, C 37
Sternlich, H
Sternlicht, H 35
Stevens, M
Stewart, B 30
Stewart, C12, 46, 54
Stokes, J 69
Stoltz, S 95
Stone, J
Stone, M

Strachan, A 49, 51 Strandwitz, N 104 Strickland, A 95 Subramanian, R 45, 62 Suliman, M 101 Sun, C.....12, 30, 46, 56, 97 Sunderarajan, V 30, 63 Supakul, S 54 Sutherland, J 63 Suzuki, T 50, 90 Swab, J 55 Swindle-Reilly, K . . 27, 42, 58, 75, 95, 107

Szeliga, D)	••	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	2	3	,	1	05
Sztanko, i	М																						77

11111111111111111

Τ

Tabata, S					. 64
Tabish, T	24, 40	, 56,	57,7	73, 88,	106
Fabuti, F					. 104
Fagiara, N					. 101
Taherijam, M					. 70
Taheri, M	36, 37	, 39,	51,6	58, 84,	101
Taheri-Mousavi,	S		.10,	11, 3	3, 87
Tahmasebi, P					. 83
Fakahashi, N					. 64
Talbert, K					. 15
Famakloe, S					. 90
Famerler, C					. 27
Гатіуа, S					. 75
Famura, T					. 73
Tanaka, A					. 84
Fanaka, Y					. 64
Гап, С					. 61
Гап, G					. 14
Tang, C					. 38
Гang, Н					. 86
Tang, J			.22,	29, 72	2,77
Гang, М		.20,	35, 5	51, 68,	101
Гang, W		• • • •			. 23
Tang, Z		• • • •			99
Гапо, I				• • • • •	. 80
Гаqі, А		• • • •		• • • • •	. 40
Tarakci, G		• • • •		• • • • •	. 11
Farman, L		• • • •		• • • • •	50
Tatami, J		• • • •	50, 6	57, 84,	101
Tauraso, A		• • • •		64	4, 67
Tayebi, A		• • • •		• • • • •	72
Faylor, E		• • • •	• • • • •	• • • • •	. 43
Taylor, K		••••	• • • • •	• • • • •	59
Taylor, R		••••	• • • • •	• • • • •	. 102
Faylor, S		• • • •	• • • • •	• • • • •	. 13
Г. Burns, J		•••	• • • • •	• • • • •	. 64
Tebcherani, S		• • • •	• • • • •	• • • • •	. 101
Tedesco, S		••••		••••	90
Гееter, L		••••		••••	21
Tejeda-Alejandro	e, R	• • • •	• • • •	• • • • •	27
Tejeda-Benitez, I	L	• • • •	• • • •	• • • • •	. 104
Temel, S		• • • •	• • • •	• • • • •	38
Геng, F		••••		• • • • •	. 65
Fennant, K		• • • •	• • • •	••••	. 64
l'errones, M	• • • • • •	• • • •	• • • •	••••	. 82
l'eughels, W	• • • • • •	• • • •	• • • •	26,	, 107
l'eymour, F	• • • • • •	• • • •	• • • •	••••	. 75
Ihakre, U		• • • •		• • • • •	30

Thakur, A	
Thevissen, K	
Thoma, D	40, 43, 45, 61, 80
Thomas, A	
Thomas, H	
Thomas, J	
Thom, C	
Thompson, A	
Thompson, C	
Thompson, G	
Thorabi, N	
Thorpe, F	
Thuis, M	
Thumm, M	
Thurston, B	
Tiamiyu, A	
Tiarks, J	
Tiley, A	
Tippey, K	
Tirichenko, I	
Titus, M	
Tiwari, A	
Tiwari, U	
Tiwari, V	
Tiwary, C	
Tlotleng, M	
Tobash, P	
Tobola, J	
Tochigi, E	
Tokarz, S	
Toksoy, A	
Toma, P	
Tomé, C	
Tomota, Y	
Tondro, A	
Tong, J	22, 35, 44, 72, 77, 100
Tonks, M	
Tonyali, B	
Topper, S	
Toptan, A	
Torabnia, S	
Torelli, G	
Torres, J	
Townsend, T	
Trabzon, L	
Tran, M	
Tran, T	
Trautmann, C	
Trelewicz, J	
Trellue, H	
Trembly, J	
Trexler, M	



Trice, R11, 13, 39, 67, 85	5
Tricot, G	7
Trimby, P	2
Trinh, L	5
Trinkle, D	6
Тгірру, М 42	7
Trobare, A	7
Trolier-McKinstry, S 22	2
Trometer, N	7
Trstenjak, U 14	4
Trujillo de Santiago, G22	7
Tsai, J	8
Tsaknopoulos, K11, 23	3
Tsekrekas, E	1
Tselikova, A 14	4
Tshephe, T	0
Tsuzaki, K 64	4
Tucker, G	4
Tucker, V	6
Tuinukuafe, A	9
Tunes, M 30	0
Turner, D	2
Tut, T	3
Twardowski, J	6
Tyagi, P	4
Tylczak, J	1
Tylenda, J	0

U

Uahengo, G 33
Uberuaga, B 30, 65
Ubic, R14, 31, 47, 98
Uchic, M 10, 39
Uchida, H
Uchikoshi, T 50
Ugwumadu, C40, 105
Ulağ, S
Umezawa, M
Unalan, E
Unocic, K
Uranga, P
Ursic, H
Usman, M 101

V

Vahabzadeh, S9, 27, 56, 95
Vahidi, H
Vaicik, M
Vakharia, V
Valdes Vera, H 103
Valenzuela-Heeger, E
Valloton, J

van Benthem, K 20, 3	6
Van der Gucht, M	6
van der Mei, H 10'	7
van Duin, A	3
van Kempen, F	0
Van Meerbeek, B	7
Van Meerbeek, I 6	1
Van Mondfrans, S	5
Van Tyne, C 2	1
Van Tyne, N	4
van Veelen, A	7
Varambhia, A 10	3
Vargas-Gonzalez, L	8
Varghese, O	6
Varley, Z	9
Varma, S	4
Varukuti, S	8
Vasquez, V	5
Vast. N	2
Vastola, G	4
Vasudevan, S	8
Vasu. S	5
Vavalla, A 5	1
Vazquez-Armendariz, I 27, 5	4
Vazquez-Duhalt, R 4	6
Veer Singh, C. 6	0
Vega-Martinez, M 9	3
Vekris V 27.6	2 2
Velasco Z	7
Velisdeh Z. 10	, 6
Velling S 9	4
Vemuri V 10	1 4
Vendrell X 10	3
Venkatachalanathy V	3
Venkataenalapatny, v	ז כ
Verheven M 10'	27
Verma A 31 53 6	/ Q
Verma \mathbf{P} 7	1
Vervlied I 30	1 0
VH N /2 0	9 6
$V_{11}, N_{11}, \dots, V_{43}, \mathcal{I}$	7
Vienna, J	/ 2
Vijapur, S	, ∕
Vijayaii, 524 Vikropt K 51.6	• •
Vilchoz V 7	0
Vincinez, V \dots 10	o n
Viswaiiauiaii, K10. Vitori Dfluckor V	2 0
Viteo I 49 66 92 10	ø
v_{HOS} , L	1
vivek, A	1
Vianović, L	с 7
$v_{1} = 1 $	/
vogei, S	2

Vogli, E13, 31, 97
Vo, H
Vohrees, A
Voloh, V
Vomiero, A
von Schaumburg, M96
Voorhees, P
Voorstad, N
Vorozhtsova, Y 109
Vrabelj, M 14
Vuksanovich, B
Vyas, P 9, 27

W

Wadle, L
Wagner, W75, 89, 107
Wakai, F
Wakefield, A
Walker, J
Walker, S
Walton, K
Wang, D
Wang, F
Wang, H 14, 22, 42, 45, 52, 61, 66,
71, 108
Wang, J 38, 42, 53, 54, 67, 71, 82, 86,
90, 102
Wang, K
Wang, L
Wang, M
Wang, S 13
Wang, W
Wang, X 32, 37, 38, 54, 71, 76, 87, 105
Wang, Y23, 30, 35, 36, 46, 66, 68, 71,
Wang, Y23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107
Wang, Y23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z11, 56, 90
Wang, Y23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z11, 56, 90 Wardini, J18
Wang, Y23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z11, 56, 90 Wardini, J18 Warren, P45, 56, 62, 64
Wang, Y23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z11, 56, 90 Wardini, J18 Warren, P45, 56, 62, 64 Wartenbe, M77
Wang, Y23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z11, 56, 90 Wardini, J18 Warren, P45, 56, 62, 64 Wartenbe, M77 Warusawithana, M22
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z 11, 56, 90 Wardini, J 18 Warren, P
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z 11, 56, 90 Wardini, J 18 Warren, P 45, 56, 62, 64 Wartenbe, M 77 Warusawithana, M 22 Waryoba, D 25, 41, 61, 79, 96 Waseem, H 99 Waseem, S 35 Wasekar, N 31 Wasick, C 23 Wasserbeck, C
Wang, Y23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z11, 56, 90 Wardini, J18 Warren, P45, 56, 62, 64 Wartenbe, M77 Warusawithana, M22 Waryoba, D25, 41, 61, 79, 96 Waseem, H99 Waseem, S31 Wasick, C23 Wasserbeck, C
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z 11, 56, 90 Wardini, J 18 Warren, P 45, 56, 62, 64 Wartenbe, M 77 Warusawithana, M 22 Waryoba, D 25, 41, 61, 79, 96 Waseem, H 99 Waseem, S 31 Wasker, N 31 Wasserbeck, C
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z
Wang, Y 23, 30, 35, 36, 46, 66, 68, 71, 83, 86, 107 Wang, Z 11, 56, 90 Wardini, J

Watring, D
Watson, M
Watson, T 64
Watts, J23, 69, 93
Watzman, S
Weaver, J
Weber, A
Weber, G
Weber, W
Webler, B
Webster, T
Weeks, C 10
Weems, A
Weerasekera, N
Wei, B
Weinberger, C
Wei, O
Weisgraber, T
Weiss D 38
Wei Y 50
Welch N 84
Weldemariam F 46 57
Welk B 23
Welton A 20
Wen D 86
Wermor I 32
Worth H 17.04
Westbrook 4 107
Westbrook, A 10/
Westill, G
Wharry, J
wheatley, C
wheeler, L
White, J
Widman, H
Widom, M
Wiedeman, D 103
Wiersma, B 17
Wiesner, V 39
Wiggers, H
Wildfire, C25, 41, 106
Wilhelm, J 64
Wilkins, M 19
Wilkinson, C 20
Williams, A 66
Williams, E 31
Williams, P
Williams, R 36
Winch, N
Windover, D
Winkelmann, A 32
Winter, I
Wiresma, B 17

Wise, E
Withers, P
Wodak, I
Wohl, C
Wolfe, J
Wolfe, K
Wolff, S
Wollmershauser, J22, 26, 39, 40, 105
Wolverton, C
Wondraczek, L
Wong, B
Wong-Ng, W
Wood, B
Woods, M
Worden, J
Workie, A
Wright, A
Wright, B
Wu, A
Wu, B 69
Wu, D
Wu, H13, 63, 96, 98
Wu, J
Wu, P
Wu, W
Wu, X
Wu, Y9, 11, 26, 28, 36, 39, 43, 44, 51,
55, 68, 76, 84, 85, 89, 93, 101, 108
Wyatt, B 49, 70, 74, 94
Wyckoff, C
Wysocki, B 29
Wyss, G 80

HIT

X

Xavier, M
Xiang, F
Xiao, H
Xiao, Y
Xie, B
Xie, D
Xie, R76, 89, 108
Xie, X
Xie, Y
Xin, Y17, 33, 38
Xiong, H 58
Xiong, L
Xi, Q
Xuan, S 51
Xu, B
Xue, F
Xue, S
Xu, H

Xu, L	
Xu, M	
Xu, S	48, 53, 66, 83, 100
Xu, W	9, 15, 49, 61, 74
Xu, X	
Xu, Z	

Y

Yacouti, M 87
Yaddanapudi, K 54
Yahyaeian, A 10, 95
Yakacki, C 12
Yalisove, S
Yamamoto, S
Yang, B22, 41, 66, 68
Yang, C 22, 81
Yang, G
Yang, H 32
Yang, J 52
Yang, L
Yang, M 49, 61
Yang, Q 56
Yang, S 35, 68, 78
Yang, W 18
Yang, X 41
Yang, Y 13, 23, 40, 87
Yang, Z
Yano, K
Yao, J
Yao, X
Yap, B 95
Yasmin, N 34
Yavas, B 41
Yazawa, K
Yazdani-Jahromi, M72
Yelamanchi, B
Yenusah, C 54
Yeo, Y 22
Yeratapally, S 28
Yilmazer, H
Yingling, J 33
Yi, Y 39
Yoo, B
Yoo, C 45
Yoo, H56, 106
Yoo, J
Yoo, M
Yoon, B 11
Yoo, S
Yoo, T
Yorkshire, A 102
Yoshida, H21, 54



Yoshida, K
Yoshida, N
Yoshimura, M
Yoshitake, M
Youngblood, J
Young, G
Youngman, R
Yousefi, N
Yuan, L 16, 23
Yuan, Y 102
Yue, J
Yue, S
Yu, H
Yu, J
Yu, L
Yun, T
Yu, O
Yusa, F
Yushu, D
Yusuf, T 107
Yu, T
Yu, W
Yu, X
Yu, Y
Yu, Z13

Z

Zabow, G
Zaengle, T
Zahiri, A
Zahler, M
Zahler, P 51
Zainab Abd Al-Jaleel
Zakharava, T 29
Zalatan, B
Zancan, E 69
Zanotto, E 103
Zaragoza, G 38
Zavalij, P 58
Zayed, N
Zega, T 59
Zeltmann, S 30
Zenghao, Z 89
Zeng, Q 18

Zhang, C
Zhang, D
Zhang, F
Zhang, G
Zhang, H 17, 18, 33, 49, 66, 83, 100
Zhang I 10, 16, 28, 32, 35, 38, 43, 47.
60 65 71 74 82 84 95
99 100 108
Zhang K 77
Zhang I 14 23 65 87
Zhang M 15 35 58 64 82
Zhang P 14
Zhang T 23.94
Zhang, 1
Zhang Y 0 12 13 22 32 36 41 53
Zilailg, A 9, 12, 13, 22, 52, 50, 41, 55, 55 63 66
$\frac{53, 03, 00}{7 \text{hang V}} = \frac{17, 29, 37, 42, 40, 53, 64, 91}{17, 29, 37, 42, 40, 53, 64, 91}$
Zhang 7 13 29 76 04 107
Zhang, Z
Zhao J 14 22 09
Zilido, L14, 52, 96
Zhao, P
Zhao 7 70
Zhao, Z
Zheng, 1
Zhijie, G
Zh1, X
Zhong, W
Zhong, Y 15, 35, 36, 51, 68, 84, 101
Zhou, C
Zhou, D
Zhou, G 33
Zhou, H
Zhou, J
Zhou, L
Zhou, M
Zhou, Q 65
Zhou, S55, 77, 78, 82
Zhou, T44, 72, 76
Zhou, W 58
Zhou, Y 35, 84
Zhu, Q 24
Zhu, W17
Zhu, Y12, 30, 46, 88, 97
Ziabari, A

Ziats, N
Zickler, G 20, 72
Zielinska, M
Zietala, M
Zikry, M
Zilavy, A
Zilnyk, K 44
Zimbeck, W
Ziurys, L 59
Zolfaghari, A13
Zou, M
Zou, Y12, 37, 71
Zuazo, I. 21, 37, 52, 64, 69, 76, 81, 90, 108
Zubair, K 47
Zughbi, M68, 94
Zuo, J
Zur Loye, H17
-