



Technical Meeting and Exhibition

# MS&T24

MATERIALS SCIENCE & TECHNOLOGY

## ADVANCE PROGRAM

October 6-9, 2024

David L. Lawrence Convention Center  
Pittsburgh, PA

### WHERE MATERIALS INNOVATION HAPPENS

#### FEATURING

**TMS FALL MEETING**  
@ MATERIALS SCIENCE & TECHNOLOGY

**AIST** / STEEL PROPERTIES  
ASSOCIATION FOR IRON & STEEL & APPLICATIONS  
TECHNOLOGY

The American  
Ceramic  
Society  
ceramics.org  
**Annual Meeting**

#### CO-SPONSOR

**Society For  
Biomaterials**  
Giving life to a world of materials

#### CO-LOCATED

THE  
**Advanced  
Materials**  
SHOW USA

[matscitech.org/MST24](https://matscitech.org/MST24)

## PLENARY SESSIONS



### AMAR K. DE

Director of Quality and Product Development at Big River Steel, a US Steel Company

### AIST Adolf Martens Memorial Steel Lecture

*Thin-Slab Continuous Strip Processing Technology — Changing the Landscape of How We Make Greener and Leaner Advanced High-Strength Steels*

**Monday, October 7th**  
**8:00 – 9:00 am**

Thin-slab continuous strip processing technology has evolved quite rapidly over the last decade in how we can take advantage of its fast operational dynamics in making advanced steel grades that were difficult to make through discrete thick slab casting processing route. The integration of electric arc furnace steelmaking with most advanced steel refining technologies is making it possible to innovate and produce steel products that are significantly leaner and greener, and even eliminate the need for intermediate processing installations. Fundamentals of product development principles are also being revisited in light of fast reaction dynamics in solidification, slab heat retention and hot rolling processes. Many new frontiers of high-strength products for structural as well as automotive applications have been developed which can reshape the need for the conventional product mix. This presentation will discuss fundamentals of chemistry and process design for developing a nanoprecipitate-strengthened high-strength, single-phase, lean steel which has proven outstanding for some critical component applications.



### JULIE M. SCHOENUNG

Professor and Wofford Cain Chair III, Departments of Materials Science and Engineering and Mechanical Engineering, Texas A&M University

### TMS/ASM Distinguished Lectureship in Materials and Society

*Saving the Planet through Sustainability-Informed Selection, Design and Discovery of Materials*

**Monday, October 7th**  
**2:00 – 3:00 pm**

In today's world, when we think about saving the planet, we are likely thinking about reducing 'carbon footprint' and the negative effects of climate change. While these are important goals, within the field of materials science and engineering, we need to also think about what I will refer to here as the 'chemical footprint,' this chemical footprint arises from the consumption of goods, which require the production of materials, which requires the use of resources such as minerals, energy, and water, and can lead to emissions of toxic substances into the air, water, and soil. Consequences of this chemical footprint include increased exposure to humans, leading to cancer and other diseases, and increased damage to our environment. As experts in materials science and engineering, it is imperative that we not only strive for enhanced materials performance, thereby enabling technological development, but also endeavor to purposefully reduce the negative consequences of materials selection, design, and discovery. This multi-attribute objective function requires that we simultaneously address performance, economics, chemical safety (toxicity), energy demand, and materials circularity (waste). A rapidly evolving suite of decision tools and databases, including the strategic application of artificial intelligence and machine learning, can facilitate these essential sustainability-informed decisions.

## ACerS Edward Orton Jr. Memorial

*Silicon Carbide: The Versatile Ceramic Alloy*

**Tuesday, October 8th**  
**8:00 – 9:00 am**



### YOUNG- WOOK KIM

Senior Vice President, Worldex  
 Industry & Trading Co., Ltd. Professor  
 Emeritus, University of Seoul,  
 Republic of Korea

Silicon carbide-based ceramics are remarkably versatile materials, exhibiting chameleon-like properties that can transition between electrical insulator and conductor, heat-resistant and highly deformable, or thermally conductive and insulating states, depending on their composition and microstructure. This adaptability, achieved through the precise mixing of additives and meticulous microstructure control, positions SiC ceramics as a sophisticated form of ceramic alloy. This presentation will explore various strategies for developing SiC ceramics with tailored properties, focusing on electrically conductive, heat-resistant, tough, and thermally conductive variants. These advancements are realized through careful microstructure manipulation and the judicious selection of sintering additives. The presentation will also introduce two innovative processing strategies: one employing thermodynamic instability principle to achieve microcellular structures, and another demonstrating successful densification of fully ceramic microencapsulated nuclear fuels without applied pressure. Furthermore, practical applications of SiC ceramics in semiconductor processing parts will also be explored.

## PROGRAM AT A GLANCE

Materials Science & Technology (MS&T) is where materials innovation happens! Each year, MS&T's long-standing, recognized forum brings together scientists, engineers, students, suppliers, and business leaders to discuss current research and technical applications to shape the future of materials science and technology.

The event's unmatched technical program fosters technical innovation at the intersection of materials science, engineering, and application—addressing structure, properties, processing, and performance across the materials community.

Join other materials science experts from three leading materials societies to discuss the latest advancements in your field.

### MS&T24 FEATURES THE FOLLOWING EVENTS:



#### **AIST STEEL PROPERTIES AND APPLICATIONS**

Technical developments  
 related to ferrous metallurgy  
 and the steel manufacturing



#### **ACERS 126TH ANNUAL MEETING**

Advancing the industry with  
 the latest research in ceramics  
 and glass



#### **TMS FALL MEETING**

Exploring the intersections  
 of development, synthesis,  
 and application

## LECTURES & AWARDS

### Plenary Sessions

#### AIST Plenary Session

8:00 – 9:00 am Monday, October 7th

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#### TMS Plenary Session

2:00 – 3:00 pm Monday, October 7th

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#### ACerS Plenary Session

8:00 – 9:00 am Tuesday, October 8th

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### Monday, October 7

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

9:20 – 10:20 am

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#### ACerS/ Richard M. Fulrath Award Session

2:20 – 4:40 pm

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### Tuesday, October 8

#### ACerS Alfred R. Cooper Award Session

9:20 am – 12:00 pm

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#### ACerS Bioceramics Awardees

9:40 am – 12:00 pm

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#### ACerS Frontiers of Science and Society – Rustum Roy Lecture

1:00 – 2:00 pm

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### Wednesday, October 9

#### ACerS Basic Science Division Robert B. Sosman Lecture

1:00 – 2:00 pm

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## TECHNICAL PROGRAM

- + Additive Manufacturing
- + Artificial Intelligence
- + Biomaterials
- + Ceramic and Glass Materials
- + Education and Career Development
- + Fundamentals and Characterization
- + Iron and Steel (Ferrous Alloys)
- + Lightweight Alloys
- + Materials-Environment Interactions
- + Modeling
- + Nanomaterials
- + Nuclear Energy
- + Processing and Manufacturing
- + Sustainability, Energy, and the Environment
- + Special Topics



## SPECIAL EVENTS

Visit the MS&T Special Events web page to see all special events, including dates and times.

### Sunday, October 6

#### **MS&T Partners' All-Conference Reception: Celebrating Our Materials Community and Its Diversity**

4:30 – 6:00 pm

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#### **MS&T LGBTQ+ and Allies Reception**

8:00 – 10:00 pm

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### Monday, October 7

#### **ACerS 126th Annual Membership Meeting**

1:00 – 2:00 pm

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#### **Navigating US Immigration: Overcoming a Barrier for Materials Professionals Workshop**, *sponsored by the TMS Professional Development Committee*

5:00 – 6:30 pm

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#### **ACerS Annual Honor and Awards Banquet\***

6:30 – 10:00 pm

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#### **ACerS Basic Science Division Ceramographic Exhibit & Competition**

Various Hours October 7th – October 9th

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### Tuesday, October 8

#### **Austenite Symposium Dinner in Memory of Mats Hillert\***

6:00 – 9:00 pm

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*\*Requires additional registration/ticket purchase.*

## STUDENT ACTIVITIES

Visit the MS&T Student Activities web page to see complete descriptions of all student events, including details for applying for Material Advantage chapter grants and individual travel grants.

- + ACerS Student Tour
- + AIST Student Plant Tour
- + AIST Steel to Students Recruiting Reception
- + Undergraduate Student Poster Contest
- + Graduate Student Poster Contest
- + Undergraduate Student Speaking Contest
- + Student Networking Mixer
- + Ceramic Mug Drop Contest
- + Ceramic Disc Golf Contest
- + Resume Coaching Workshop
- + Student Awards Ceremony
- + Chapter Officers Workshop

## HOTEL INFORMATION

### HOTEL RESERVATION DEADLINE: SEPTEMBER 12, 2024

MS&T has negotiated discounted hotel rates for MS&T attendees. You must make your hotel reservation through Orchid Events. Hotel reservations are taken on a first-come, first-served basis. Submit your request as soon as possible for the best opportunity of receiving your hotel choice.

#### **The Westin Pittsburgh (AIST/TMS HQ)**

**\$235/night + tax**

1000 Penn Avenue  
Pittsburgh, PA 15222  
Phone Number: (412) 281-3700

#### **Omni William Penn (ACerS HQ)**

**\$235/night + tax**

530 Omni William Penn Place  
Pittsburgh, PA 15219  
Phone Number: (412) 281-7100

#### **Drury Plaza Hotel Pittsburgh Downtown**

**\$204/night + tax**

745 Grant Street  
Pittsburgh, PA 15219  
Phone Number: (412) 281-2900

### DEADLINE

All reservations must be received by September 12, 2024 to guarantee availability and conference rates. After this date, reservations will be made based on availability and hotels may charge higher rates.

### WAYS TO BOOK HOTEL RESERVATIONS



#### **Online**

[CLICK HERE](#) for new reservation OR to modify or cancel an existing hotel reservation.



#### **Telephone**

Agents available 9:00 am to 4:00 pm Mountain Time, Monday through Friday

Toll-free (US): (800) 219-6547

### DEPOSIT

All reservation requests must be accompanied by a credit card guarantee for a deposit of one night's room and tax for each room reserved. Your credit card **WILL NOT BE CHARGED** during this initial stage and will be held as a **GUARANTEE** only. Credit Cards must be valid through the end of October 2024.

### ACKNOWLEDGMENTS

Orchid Events will send reservation acknowledgments within 24 hours via email if booked online or by telephone. If you do not receive your acknowledgment in this time frame, contact Orchid Events. You will not receive a written confirmation from the hotel.

### CANCELLATIONS & CHANGES

Any reservation cancelled within 72 hours of arrival date will be charged one night's room and tax. Please refer to your reservation acknowledgment for your individual hotel cancellation policy. Through September 12, 2024, changes and cancellations can be made online or by contacting Orchid Events via e-mail at [help@orchid.events](mailto:help@orchid.events). After September 12, 2024, contact your hotel to make changes and/or cancellations.

### QUESTIONS OR SPECIAL REQUESTS?

For questions or special requests, please contact Orchid Events at (800) 219-6547 or e-mail to [help@orchid.events](mailto:help@orchid.events). Special requests are not guaranteed. Hotels will assign specific room types upon check-in, based on availability.



## EXHIBITION

The Advanced Materials Show, partnered with MS&T24 is a free-to-attend exhibition dedicated to end-users, product developers, OEM's and the entire material manufacturing supply chain.

Spread over two days, the show will give visitors attending a unique insight into current and future materials development. Leaders in R&D, materials science and engineering will use the show to source the latest advanced materials, along with the scientific instruments and processing equipment necessary for the development, manufacture and processing of advanced materials. Those who visit will have a shared focus on seeking the latest materials, innovations and technology and will find new products, suppliers and partners all under one roof.

The Advanced Materials Show will host a Technology Showcase on day one of the expo, where exhibitors will have the chance to introduce themselves on the main stage and gives them an opportunity to share new products, ideas and latest technologies to a prestigious audience during fifteen-minute presentations.

On day two of the expo, The Graphene Council will be hosting a conference on graphene technology in the exhibit hall. This conference will bring together experts, thought leaders, and innovators from the field of graphene. The Graphene Council is the leading global authority on the commercialization of graphene and is involved in setting industry standards, testing and characterizing materials, verifying graphene production and products, and the monitoring and supporting of regulatory compliance.

To find out more about exhibiting, sponsoring or advertising at The Advanced Materials Show and MS&T, visit [www.advancedmaterialsshowusa.com/get-involved/](http://www.advancedmaterialsshowusa.com/get-involved/) or contact: Natasha Burke-Krause, Exhibition Manager on +44 (0)1273 957118 or email [natasha.burke-krause@event-partners.com](mailto:natasha.burke-krause@event-partners.com).

### Reserve your booth today!

Exhibitors of The Advanced Materials Show can attend the MS&T technical conference at a special rate of \$825. Contact The Advanced Materials Show team for more information.

## EXHIBIT SHOW HOURS

### Tuesday, October 8, 2024

#### Exhibition

9:00 am – 4:30 pm

#### Technology Showcase

10:00 am – 3:00 pm

#### Networking Reception Hosted by The Graphene Council

4:30 pm – 6:00 pm

### Wednesday, October 9, 2024

#### Exhibition

9:00 am – 3:00 pm

#### The Graphene Council Application Sessions

10:00 am – 3:00 pm

*Times are tentative and can be subject to change.*

## REGISTRATION

Visit the registration page to see what your registration includes.

REGISTRATION RATES	ON OR BEFORE AUGUST 22, 2024	AFTER AUGUST 22, 2024
Member	<b>\$825</b>	<b>\$975</b>
Non-Member	<b>\$1,025</b>	<b>\$1,175</b>
Undergraduate Student Member	<b>\$25</b>	<b>\$75</b>
Undergraduate Student Non-Member	<b>\$25</b>	<b>\$75</b>
Graduate Student Member	<b>\$200</b>	<b>\$250</b>
Graduate Student Non-Member	<b>\$225</b>	<b>\$275</b>
Expo Visitor	<b>\$0</b>	<b>\$0</b>

**MS&T conference registration includes access to:**

- MS&T Technical Meeting
- The Advanced Materials Show  
Co-located with MST24

**Expo Visitor registration includes access to:**

- The Advanced Materials Show  
Co-located with MST24

**For more information, visit our website online  
[matscitech.org/MST24](https://matscitech.org/MST24)**