

THE WORLD COMES HERE.

# TMS 2024

153<sup>rd</sup> Annual Meeting & Exhibition

MARCH 3–7, 2024

HYATT REGENCY ORLANDO | ORLANDO, FLORIDA, USA

#TMSAnnualMeeting | [www.tms.org/TMS2024](http://www.tms.org/TMS2024)



## CONFERENCE GUIDE

General Meeting Information, Maps, Exhibit Directory, and Awards Program Inside

FIND MORE MEETING DETAILS:



Download the  
TMS 2024 App

Powered by Engagefully  
(See page 3 for details).



Download the  
Technical Program  
PDF

CONFERENCE GUIDE SPONSORED BY:



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## WELCOME TO THE TMS 2024 ANNUAL MEETING & EXHIBITION!

Thank you for joining us in Orlando this week, and welcome to the meeting that brings the world's minerals, metals, and materials communities together. Here are a few tips to help you make the most of your time with us this week:

### Download the App

More than 4,000 presentations are planned this week in more than 100 symposia. You can use the TMS2024 App—which has been upgraded this year with improved search features—to locate sessions, speakers, and presentations of interest to you and to build your schedule for the week. (See page 3 for details.)

### Know Your Zones

Look at the maps, starting on page 5, and you'll see that the conference's technical programming is divided into zones based on broad technical topics. Find your zone and move easily between presentations in your general interest area.

### Make Time to Network

Beyond technical programming, your registration includes a number of informal networking events. I encourage you to add several of these to your schedule. They are excellent opportunities to meet future collaborators or renew previous acquaintances. See the full list of networking events planned for the week on page 18.

### Get Involved

Take the opportunity this week to deepen your connection with other members by joining a technical committee. View the schedule of committee meetings on page 27 to select the committee that best matches your interests. Then go to the meeting and introduce yourself to the chair. If you're new to committee activity, join us for the TMS Committee Membership Volunteer Fair on Monday from 3:00 p.m. to 4:30 p.m. This new event will give you an overview of committee participation and allow you to meet with committee leaders.

### Attend the Plenary

This year, instead of a single speaker, TMS will host a three-person panel for our all-conference plenary session on Tuesday afternoon. Come and hear their discussion on critical materials challenges, a topic sure to generate conversation throughout the week.

### Enjoy Our All-in-One Location

Take some time to familiarize yourself with the Hyatt Regency Orlando (maps found on pages 5-7) as this will be the sole location for programming and all-conference events for TMS2024. A number of lunch options are available on the premises so that you don't have to leave the resort to find a mid-day meal. See page 12 for lunch options.

Whether you're new to the TMS Annual Meeting & Exhibition experience, or a long-time attendee, I hope you find something that inspires you as you listen to presentations in the session rooms, talk to exhibitors in the exhibit hall, and engage in coffee break conversations with your fellow attendees.

Enjoy your week at TMS2024!



Brad Boyce, 2023 TMS President




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## CONNECT TO WI-FI



To access Wi-Fi in the meeting rooms and public areas of the Hyatt Regency Orlando, use the following:

 Network: **TMS2024**  
Password: **annualmeeting**

*Please note the letter case when typing passwords*

## EMERGENCY PROCEDURES AT TMS2024

If you experience a security or medical emergency, you may do any of the following for assistance:

Dial **911** for immediate emergency services

Dial extension **77** from a Hyatt house phone

Call the Hyatt security team at **1-407-309-5656**

For non-emergency items such as basic first aid, lost and found, and other general concerns, please visit the TMS hospitality desk located on the convention level near registration.

A listing of nearby hospitals, urgent care centers, and pharmacies is available through the TMS2024 App and the Attendee Toolbox section of the TMS2024 website.

## TIME ZONE IN ORLANDO

Please note that all times listed in this guide refer to **Eastern Standard Time (EST)**.

# APP, SCHEDULE, AND PHOTOGRAPHY INFORMATION

## DOWNLOAD THE TMS2024 APP

Powered by Engagefully



Search "**Engagefully**" on the App Store® or on Google Play™. Once you've downloaded the Engagefully app, search for TMS2024.

### Logging in to the TMS2024 App

You can use the TMS2024 app to build a personalized schedule, view the most up-to-date technical program information, and more. After selecting the event, use the "Log In with Email & Password" option. Enter the email address you used when you registered for TMS2024 and the password below.

App Password: **TMS2024**

### Improved Search Function

Use the search function of the app located in the "Schedule" tab to find sessions and events. Results display at the talk-level detail but will also show related sessions to your search terms. To find a specific speaker and the presentations they are providing, use the search function in the "Speakers" tab. You can also use filters to narrow your results and navigate the meeting with ease.

### Receive App Notifications

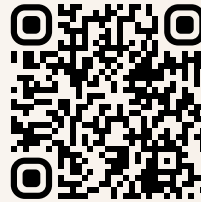
Enable notifications from the TMS2024 app to be alerted when key events are happening or important updates are announced.

### Access a Web-Based Version of the App

Visit <https://events.rdmobile.com/Events/Enter/16696> to access a web-based version of the app's tools.

## DOWNLOAD THE TECHNICAL PROGRAM

### Download Technical Program PDF



Scan the QR code or visit [www.tms.org/TMS2024/SchedulingTools](http://www.tms.org/TMS2024/SchedulingTools) to download a PDF of the complete Technical Program.

You can download a searchable PDF of the technical program from the TMS2024 website in either print-friendly or mobile-friendly format. For real-time programming updates, consult the app or view the online session sheets. All of these resources can be found at [www.tms.org/TMS2024/SchedulingTools](http://www.tms.org/TMS2024/SchedulingTools).

### How to Receive Updates

Stay up-to-date on major schedule changes and key announcements at the TMS 2024 Annual Meeting & Exhibition by enabling notifications from the TMS2024 App and by reading *TMS2024 News*, which is delivered to your mailbox each morning before conference activities begin. This daily newsletter provides a listing of the upcoming day's events, as well as photos and recaps from the previous day.

## SOCIAL MEDIA AND PHOTOS

### Post on Social Media

Use **#TMSAnnualMeeting** to post your own photos and updates for other TMS2024 attendees on social media.

### Capture Your TMS2024 Moments

See a TMS photographer? Don't be shy! If you spot one of our photographers feel free to ask them to take a photo. This is a perfect opportunity to capture the spirit of collaboration and networking that defines our membership.

### Find Your Photos and More on TMS's Flickr

In the weeks following the conference, TMS will curate photographs captured by our photographers and post them to our official Flickr account at [@tmssociety](https://www.flickr.com/photos/tmssociety/).

# MAPS AND FLOORPLANS | ORLANDO | TROLLEY MAP

MEETING INFORMATION



Daily Hours: 8:00 a.m. - 10:30 p.m.  
 Customer Service: 407-354-5656  
[www.IRideTrolley.com](http://www.IRideTrolley.com)



- **I-RIDE Trolleys operate daily, 8:00am to 10:30 pm**  
 The I-RIDE Trolley may be on a limited schedule.  
 For current schedule/status please visit: [IRideTrolley.com](http://IRideTrolley.com)
- **Single Cash Fare \$2.00 per ride**
- **Kids Cash Fare \$1.00** (ages 3-9 with paying adult)
- **Senior Cash Fare \$0.25 per ride** (65 and over)
- **Exact Change is Required.**
- **All Trolleys are green in color on both Red and Green Lines.**
- **Red Line Route Trolleys generally arrive at each stop approx. every 30 minutes.**
- **Green Line Route Trolleys arrive approx. every 45 minutes.**
- **Wait times for Trolleys may vary with traffic and season.**
- **Transfers are FREE! Transfer between lines at the designated transfer stops, which are represented on the map as stars.**
- **Unlimited Ride Passes:**
  - One Day Pass: \$ 6.00 per person
  - Three Day Pass: \$ 8.00 per person
  - Five Day Pass: \$10.00 per person
  - Seven Day Pass: \$16.00 per person
  - Fourteen Day Pass: \$20.00 per person
 Passes are not sold on Trolleys.  
 Passes are consecutive day use.

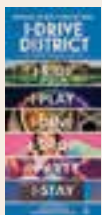


TROLLEY STOPS	
4	Red Line South Bound
15	Red Line North Bound
G9	Green Line South Bound
G12	Green Line North Bound
★	South Bound Transfers
★	North Bound Transfers

MAP LEGEND	
	Golf Course
	Hospital
	Highway Interchange
	Police/Sheriff
	Post Office
	UCF - Rosen College of Hospitality



To get predicted trolley time arrivals for each stop visit: [IRideTrolley.com](http://IRideTrolley.com)



Pick up your I-Drive District Official Guide / Map on the trolley for access to detailed listings and coupons.









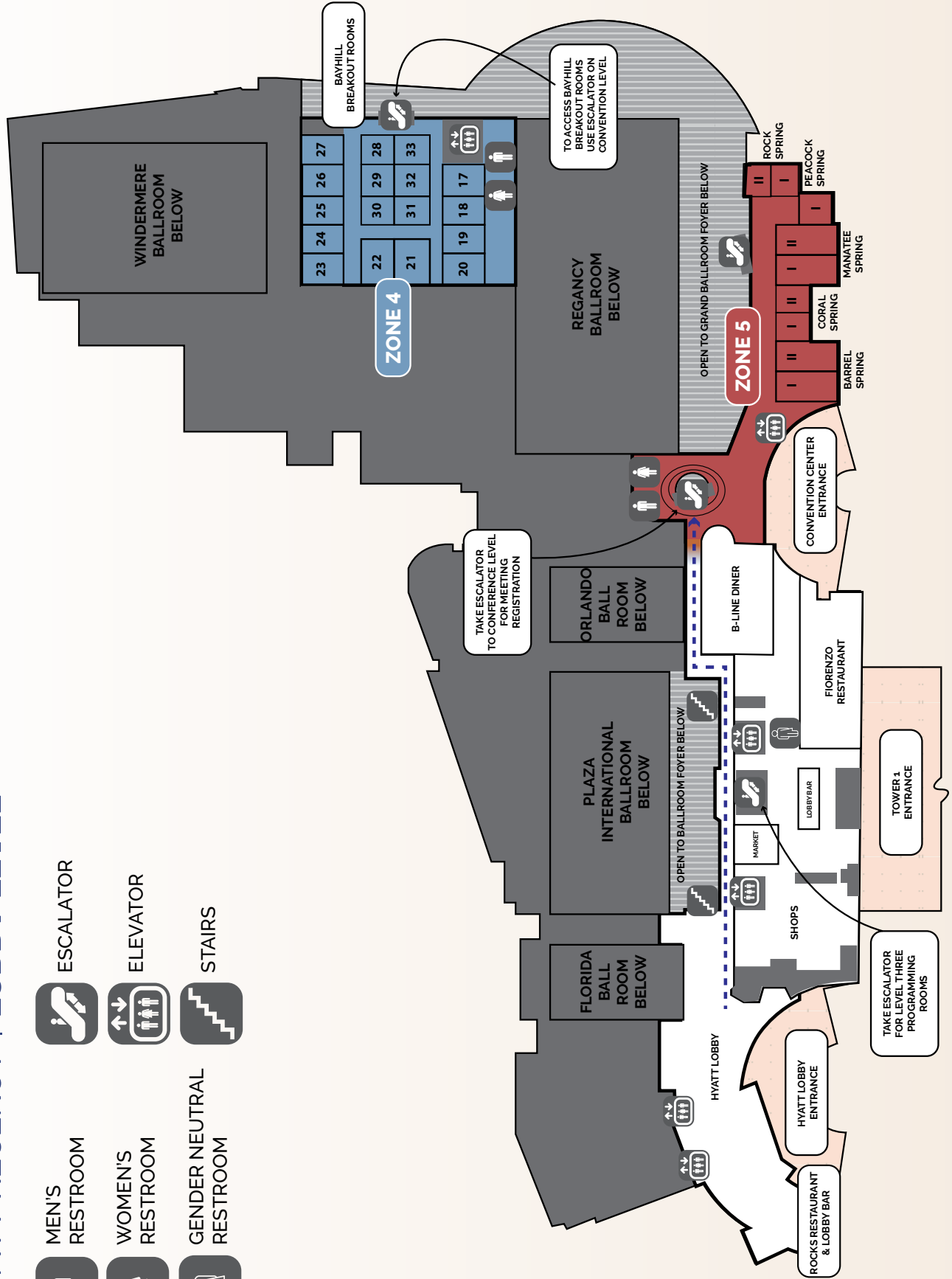
[www.InternationalDriveOrlando.com](http://www.InternationalDriveOrlando.com)









ADA 4-11-23 I-Ride Trolley Fare, Route and hours subject to change.

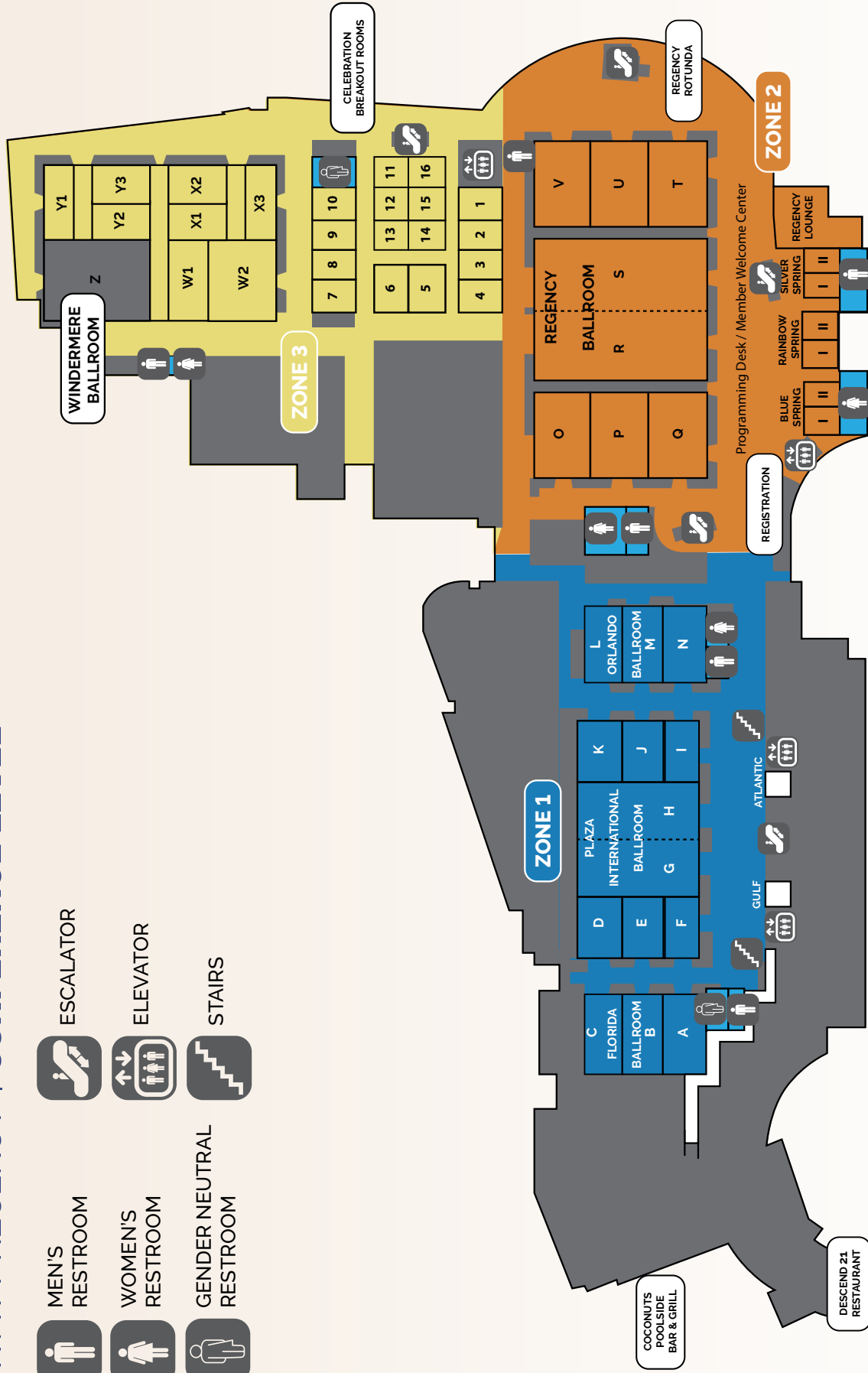
### HYATT REGENCY | LOBBY LEVEL

	MEN'S RESTROOM		ESCALATOR
	WOMEN'S RESTROOM		ELEVATOR
	GENDER NEUTRAL RESTROOM		STAIRS









### HYATT REGENCY | CONFERENCE LEVEL

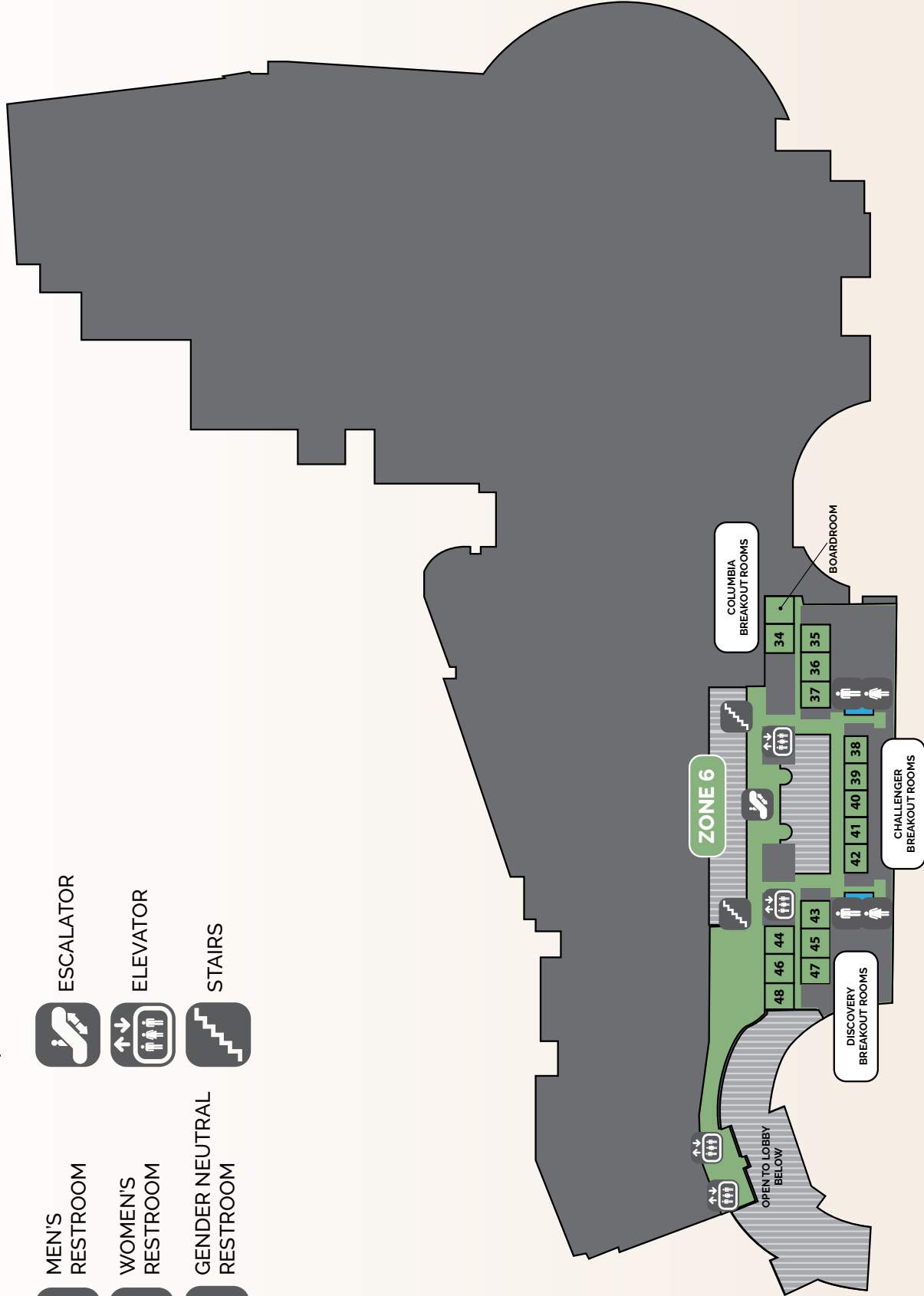
-  MEN'S RESTROOM
-  WOMEN'S RESTROOM
-  GENDER NEUTRAL RESTROOM
-  ESCALATOR
-  ELEVATOR
-  STAIRS





HYATT REGENCY | LEVEL 3

	MEN'S RESTROOM		ESCALATOR
	WOMEN'S RESTROOM		ELEVATOR
	GENDER NEUTRAL RESTROOM		STAIRS



# I-Form

Advanced Manufacturing  
Research Centre

A World  
Leading SFI  
Research  
Centre

Science  
Foundation  
Ireland **sfi**  
For what's next

## SHAPING THE FUTURE OF MANUFACTURING

The I-Form Centre is shaping the future of manufacturing through high-impact research into the application of digital technologies to materials processing.

A collaboration of 8 research institutes across Ireland, I-Form brings together a pool of expertise in materials science, engineering, data analytics and cognitive computing. I-Form is actively engaged across a range of different materials processing technologies, with a particular focus on Additive Manufacturing (3D printing).



We work with Industry to advance the low-cost, low-risk design of new products and the manufacture of high-value components exhibiting enhanced material performance, while reducing processing times and achieving improved process reliability.

**For more information, contact:**

**info@i-form.ie**

**[www.i-form.ie](http://www.i-form.ie)**

**@I\_Form\_Centre**



**I-Form is an SFI Research Centre funded under the Science Foundation  
Ireland Research Centres Programme**

## Meeting Badges

All attendees must wear registration badges at all times during the meeting to ensure admission to events included in the paid registration fee, such as technical sessions, exhibition, and receptions. "Exhibit Only" badges only provide admittance to the show floor for events in the exhibit hall. "Exhibit Only" attendees may not attend technical sessions.

## Guest Session and Function Access

Each full-conference attendee is permitted up to two guests for one session at which they are presenting. This does not include colleagues or exhibitors. This access is intended for family members who wish to listen to one talk presented by their relative. Please provide the names of the guests who will be attending your presentations when picking up your badge, so that your guests receive a ticket that allows them entry to your session. If your guest is under the age of 18, please refer to the TMS Policy on Minor Children at Events. Guests must follow all meeting policies, including the Meetings Code of Conduct.

## Minor Children at Events

In accordance with the TMS Policy on Minor Children at Events, no one under the age of 18 will be allowed on the exhibit floor, with the exception of Material Advantage or other university student registrants and nursing babies with their mothers.

## Refund Policy

The deadline for all refunds was January 31, 2024. No refunds will be issued at the meeting. Fees and tickets are nonrefundable. TMS is not responsible for "no-show" presenters. Presenters are scheduled and advertised in good faith, based on the presenter's proposal to be included in the program.

## Photography Policy

By registering for this meeting, all attendees acknowledge that they may be photographed by TMS personnel while at events, and that those photos may be used for promotional purposes, in TMS publications and websites, and on social media sites.

## Antitrust Compliance Policy

TMS complies with the antitrust laws of the United States. Attendees are encouraged to consult with their own corporate counsel for further guidance in complying with U.S. and foreign antitrust laws and regulations.


## TMS Diversity and Inclusion Statement

The Minerals, Metals & Materials Society (TMS) is committed to advancing diversity in the minerals, metals, and materials professions, and to promoting an inclusive professional culture that welcomes and engages all who seek to contribute to the field. TMS recognizes that a diverse minerals, metals, and materials workforce is critical to ensuring that all viewpoints, perspectives, and talents are brought to bear in addressing complex science and engineering challenges. To build and nurture this diverse professional community, TMS welcomes and actively engages the participation of underrepresented groups in all of its initiatives and endeavors.


## Meetings Code of Conduct

TMS is committed to providing a safe, inclusive, and welcoming environment for all attendees. For this reason, TMS does not tolerate harassment in any form and requires all participants to abide by TMS policies, including the Meetings Code of Conduct and Anti-Harassment Policy. For more information, or to report violations of these policies, go to [www.tms.org/CodeofConductPolicies](http://www.tms.org/CodeofConductPolicies) or see a TMS staff member.




## Americans with Disabilities Act

 TMS strongly supports the federal Americans with Disabilities Act (ADA) which prohibits discrimination against, and promotes public accessibility for, those with disabilities. In support of, and in compliance with, ADA we ask those requiring specific equipment or services to notify TMS staff at the TMS Member Welcome Center or the Registration desk.

## Cell Phone Use

 In consideration of attendees and presenters, TMS requests that you set cell phones and other devices on "silent" while in meeting rooms.

## Recording of Slides and Presentations

   TMS reserves the right to all audio and video reproductions of presentations at TMS-sponsored meetings. Any recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright without the express written consent of TMS and the individual authors is strictly prohibited. Attendees violating this policy may be asked to leave the session or the meeting without refund.

# MEET THE 2023–2024 TMS BOARD OF DIRECTORS

## OFFICERS

### 2023 TMS President



**Brad L. Boyce**  
*Distinguished Member of the Technical Staff, Sandia National Laboratories*

### 2023 Vice President/ Incoming 2024 President



**Srinu Chada**  
*Manager PM&P, General Dynamics Mission Systems*

### Incoming 2024 Vice President



**Dan Miracle**  
*Senior Scientist, Materials and Manufacturing Directorate, Air Force Research Laboratory*

### Past President



**W. Jud Ready**  
*Principal Research Engineer, Georgia Institute of Technology*

### Financial Planning Officer



**Alexis Lewis**  
*Deputy Division Director, National Science Foundation*

### TMS Secretary (non-voting)



**James J. Robinson**  
*Executive Director, TMS*

## FUNCTIONAL AREA DIRECTORS

### Content Director/Chair



**Jonathan Madison**

### Membership Diversity & Development Director/Chair



**Viola L. Acoff**  
*Dean of the School of Engineering, University of Mississippi*

### Professional Development Director/Chair



**Kester Clarke**  
*Group Leader, Los Alamos National Laboratory*

### Program Director/Chair



**Timothy Rupert**  
*Associate Professor, University of California, Irvine*

### Incoming Program Director/Chair



**Robert Maass**  
*Head, Materials Engineering Department, Federal Institute of Materials Research and Testing, Berlin*

### Public & Governmental Affairs Director/Chair



**Michael Titus**  
*Assistant Professor, Purdue University*

## TECHNICAL DIVISION DIRECTORS

### Extraction & Processing Division Director/Chair



**Elsa Olivetti**  
*Esther and Harold E. Edgerton Career Development Professor, Massachusetts Institute of Technology*

### Functional Materials Division Director/Chair



**Saryu Fensin**  
*Scientist and Team Leader, Los Alamos National Laboratory*

### Light Metals Division Director/Chair



**Edward Williams**  
*Manager, Molten Metal Group, Arconic Technology Center*

### Materials Processing & Manufacturing Division Director/Chair



**Paul Mason**  
*President, Thermo-Calc Software Inc.*

### Structural Materials Division Director/Chair



**Suveen Mathaudhu**  
*Professor, Colorado School of Mines*

# REGISTRATION AND HELP DESKS

## REGISTRATION DESK

The Registration Desk is located in the Regency Foyer of the Hyatt Regency Orlando and will be open Sunday through Thursday. See the Calendar of Events starting on page 22 or the TMS2024 app for operating hours.

### Registration Badges and Tickets

The TMS2024 name badge you received at registration must be worn for admission to technical sessions, the exhibition hall, social functions, and other events. Your full-meeting registration badge provides you access to:

- Sunday Night Welcome Reception
- Breakfast on Monday and Tuesday Morning
- More than 90 symposia in 10 technical tracks
- Featured keynote and plenary presentations, honorary symposia, special award lectures, and poster sessions
- A three-day pass to the TMS2024 Exhibit Hall
- Exhibit Hall Opening Reception and Poster Session I
- Exhibit Hall Happy Hour and Poster Session II
- 2024 TMS-AIME Awards Ceremony
- Electronic access to proceedings from select symposia, as well as the general meetings proceedings volume

Tickets for events are attached to your name badge.

Any additional luncheon or social function tickets that you purchased in advance will also be attached to your badge.

### Badge and Ticket Replacement

Please keep your badge and tickets with you at all times during the meeting. If you misplace your badge and tickets, replacements can be printed at the TMS2024 registration desks for a fee of \$25.

## HELP DESKS

For additional assistance during TMS2024, visit the following information booths.

### TMS Member Welcome Center

Visit the TMS Member Welcome Center to learn more about your TMS membership or your Material Advantage student membership or to ask general questions about TMS2024. Not a member? If you registered for TMS2024 at the non-member professional registration rate, 2024 TMS membership is included with your registration. Find out how you can use your new membership by visiting staff at the booth. The TMS Member Welcome Center is located in the Regency Foyer of the Hyatt Regency Orlando. See the Calendar of Events starting on page 22 or the TMS2024 app for operating hours.

### Programming and App Support Desk

Speakers, organizers, and session chairs can find answers to their questions about technical programming and all attendees can get help downloading and using the TMS2024 App at the Programming and App Support Desk, located in the Regency Foyer of the Hyatt Regency Orlando. See the Calendar of Events starting on page 22 or the TMS2024 app for operating hours.

### TMS Hospitality Desk

The TMS Hospitality Desk can help with general event and venue questions, non-emergency first aid needs, lost and found, and other miscellaneous needs. The Hospitality Desk is located in the Regency Foyer, Convention level, from Sunday to Thursday.

## WELCOME TO TMS MEMBERSHIP!

# TMS

Did you register for TMS2024 as a nonmember? Then your registration includes a 2024 professional membership in TMS.\*

Visit the TMS Member Welcome Center for information about your member benefits and how to begin accessing them.

*\*Professional members only; does not apply to students.*

# RESTAURANTS AND BUSINESS SERVICES

## TMS2024 ONSITE LUNCH OUTLETS

You don't have to leave the Hyatt to find a variety of options for lunch during the week. The following restaurants will be open Monday through Thursday for the convenience of TMS2024 attendees.

### Fast Casual Options

#### Market

Grab-and-go sandwiches, salads, pizza, and sushi plus snacks and beverages

*Lobby Level, Tower 1*

#### Fiorenzo Market—Exclusively for TMS guests

Daily build-your-own bowl specials and grab-and-go sandwiches and salads, plus seating

*Lobby Level, Tower 1*

#### Rocks Lobby Bar Market\*—Exclusively for TMS guests

Daily build-your-own bowl specials and grab-and-go sandwiches and salads, plus seating

*Lobby Level, Tower 2*

\*Seating in Rocks is open all week; the Market will be available on Monday and Tuesday only.

*Additional seating is available in the Regency Rotunda foyer on the Convention Level.*

### Full-Service Options

#### B-Line Diner

Deli-style sandwiches, burgers, salads, and homemade desserts

*Lobby Level, Tower 1*

#### Descend 21

Indoor/outdoor lounge with a pool view serving favorites including fish tacos, fresh salads, and house-made hummus and guacamole.

*Level One, Tower 2 (next to the main pool)*

#### Coconuts Bar & Grill

Fresh salads and sandwiches with waterfall views

*Level One, near Grotto pool*

**In-room dining is also available for Hyatt guests. Please order through the in-room dining QR code found in your guest room.**

### Lunch Hours

**Monday, March 4** | Noon to 2:00 p.m.

**Tuesday, March 5** | 11:30 a.m. to 2:30 p.m.

**Wednesday, March 6** | Noon to 2:00 p.m.

**Thursday, March 7** | Noon to 1:00 p.m.

## BUSINESS SERVICES

The 11th Hour® Business Solutions Center in the Hyatt Regency Orlando offers printing, shipping, and additional services to attendees for a fee. The business center is located in Tower 1 on the Convention Level of the Hyatt, across from Plaza G/H at the bottom of the escalators.

## EXCLUSIVE BENEFITS FOR TMS2024 ATTENDEES

If you booked your room at the Hyatt through TMS and onPeak, you have access to the following exclusive benefits during your stay:

- 10% discount at B-line Diner, Descend 21, and Fiorenzo
- Complimentary Wi-Fi in your guest room
- Significantly reduced daily resort fee of \$8 per day, which includes:
  - Two complimentary I-Ride trolley tickets (see the map on page 4 for details on the trolley routes)
  - Two complimentary bottles of water daily
  - 24-hour access to the Fitness Center
  - 10% off spa treatments and merchandise
- 50% discount on self parking

Remember to take advantage of these benefits during your stay this week, and thank you for booking your room through TMS!

## Free Proceedings Access

TMS2024 attendees in most registration classes receive free online access to the complete collection of proceedings publications.

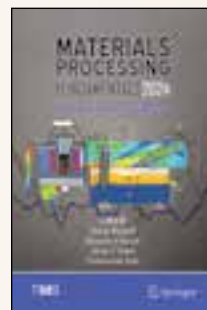
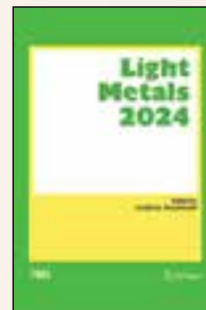
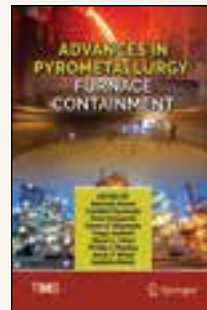
For access, visit [www.tms.org/TMS2024proceedings](http://www.tms.org/TMS2024proceedings).  
Enter your TMS2024 Registration ID# (usually formatted as 24-xxxx including the hyphen) and the full name you provided when you registered for the conference.

Please note that complimentary proceedings content must be downloaded by April 30, 2024, at which time standard pricing will take effect.

## Individual Volumes for Purchase

TMS members receive a 40% discount off hard copies of the TMS2024 proceedings volumes presented on this page. These books will be available for purchase at the Springer Nature Publications booth, located in the Regency Foyer at the Hyatt Regency Orlando.

Visit the online TMS Bookstore at [www.tms.org/Bookstore](http://www.tms.org/Bookstore) to search the complete inventory of available TMS publications, including past proceedings volumes.



## TMS2024 Proceedings Volumes

The following volumes will be included in the online proceedings access for most registrants, and hard copies will be available for purchase:

- *Advances in Pyrometallurgy: Furnace Containment*
- *Characterization of Minerals, Metals, and Materials 2024: Process-Structure-Property Relations and New Technologies*
- *Composite Materials: Sustainable and Eco-Friendly Materials and Application*
- *Energy Technology 2024: Carbon Dioxide Management and Other Technologies*
- *Light Metals 2024*
- *Magnesium Technology 2024*
- *Materials Processing Fundamentals 2024: Iron and Steel Production*
- *Rare Metal Technology 2024*
- *TMS 2024 153rd Annual Meeting & Exhibition Supplemental Proceedings*



# TMS

**Journal of Electronic  
Materials**  
**2.1**

~650k  
Downloads!

New  
Editor-in-Chief  
in 2024!

**Integrating Materials  
and Manufacturing  
Innovation**  
**3.3**

46% Increase  
in Downloads  
in 2023!

**JOM**  
**2.6**

1m+  
Downloads!

**Metallurgical and  
Materials Transactions A**  
**2.8**

Closing in on  
1.5m  
Downloads!

**Journal of Sustainable  
Metallurgy**  
**2.4**

39% Increase  
in Downloads!

New  
Co-Editor-in-  
Chief  
in 2023!

**Metallurgical and  
Materials Transactions B**  
**3.0**

650k+  
Downloads  
in 2023!



This book series covers the latest developments in the field and engages researchers, professionals, and students in discussions leading to further discovery.

**SPRINGER  
NATURE**  
[www.springer.com](http://www.springer.com)

Visit the Springer Nature  
booth in the Regency Foyer  
at the Hyatt Regency  
Orlando

**TMS Publications  
welcome your next  
submission!**





# TMS2024 ALL-CONFERENCE PLENARY SESSION

## Translating Scientific Discovery into Impactful Innovation to Solve Critical Materials Challenges: A Panel Discussion

**Date:** Tuesday, March 5 | **Time:** Noon to 1:00 p.m. | **Location:** Hyatt Regency Orlando, Plaza Int'l HIJK

The clean energy transition calls for unprecedented demand for critical materials. These materials—like lithium for electric vehicle (EV) batteries and neodymium for magnets in offshore wind turbine generators—face supply chain vulnerabilities and are often difficult to substitute. Yet, many of the technologies used to manufacture critical materials are not necessarily viable from a safety, economic, environmental, or social standpoint in the U.S. This calls for a departure from decade-old methods to meet the needs of the clean energy transition. Innovation can lead to sustainable approaches to developing critical material supply chains.

This panel will discuss how innovation in all forms—from advancing our understanding of materials at the atomic level to disruptive technologies—can be accelerated through intentional partnerships to meet the needs of the clean energy industrial base while preserving the future. The panelists will bring perspectives from industry, government, and the Critical Materials Innovation Hub (CMI), a public-private partnership led by Ames National Laboratory. This session will feature an interactive Q&A session with audience members.

### PANELISTS



**Helena Khazdozian**  
Co-Chair of the Critical Materials Collaborative (CMC), Advanced Materials & Manufacturing

Technologies Office, Energy Efficiency & Renewable Energy, U.S. Department of Energy



**Thomas Lograsso**  
Director, Critical Materials Innovation Hub, Ames National Laboratory



**Robert Miles**  
Chief Technology Officer and Co-Founder, Momentum Technologies, Inc.

## MODIFIED TUESDAY SCHEDULE

### ATTEND THE ALL-CONFERENCE PLENARY SESSION

TMS2024 technical programming sessions begin at 8:00 a.m. on Tuesday, March 5, and end at 6:00 p.m. so that all TMS2024 attendees can participate in this all-conference plenary session on Tuesday at noon.

**No other technical programming will be held at this time.**

### TECHNICAL PROGRAMMING HOURS

**Monday:** 8:30 a.m. to 5:30 p.m.

**Tuesday:** 8:00 a.m. to 6:00 p.m.

**Wednesday:** 8:30 a.m. to 5:30 p.m.

**Thursday:** 8:30 a.m. to 4:30 p.m.

# FEATURED SESSIONS AND SPECIAL LECTURES

Throughout the week, the following special sessions will feature speakers who have been invited to give talks on particular topics.

Visit [www.tms.org/TMS2024/FeaturedSessions](http://www.tms.org/TMS2024/FeaturedSessions) or scan this QR code to learn more about scheduled presenters and their topics.



## KEYNOTE SESSIONS

### Light Metals Keynote Session

**Decarbonization of Alumina and Primary Aluminum Production to be the Metal of Choice**

Monday, March 4, 8:30 a.m. to 12:30 p.m.  
Hyatt Regency Orlando, Plaza Int'l IJK

### Additive Manufacturing Keynote Session

Monday, March 4, 2:00 p.m. to 5:00 p.m.  
Hyatt Regency Orlando, Plaza Int'l IJK

### Acta Materialia Symposium

Tuesday, March 5, 2:30 p.m. to 5:00 p.m.  
Hyatt Regency Orlando, Regency O

### Nix Award and Lecture Symposium V

**The Search for Fatigue-Resistant Structural Materials**

Wednesday, March 6, 8:30 a.m. to Noon  
Hyatt Regency Orlando, Regency O

### Magnesium Technology 2024 Symposium Keynotes

Monday, March 4, through Wednesday, March 6  
(See times on the TMS2024 website or app)  
Hyatt Regency Orlando, Windermere Y-3

## FRONTIERS OF MATERIALS AWARDS SYMPOSIA

### Novel Ceramics Processes for Nuclear Applications

Tuesday, March 5, 9:00 a.m. to 11:00 a.m.  
Hyatt Regency Orlando, Celebration 16

### Physics-Informed Machine Learning for Modeling and Design of Materials and Manufacturing Processes

Monday, March 4, 2:00 p.m. to 6:00 p.m.  
Hyatt Regency Orlando, Plaza Int'l E

## HONORARY SYMPOSIA



### Materials Science for Global Development—Health, Energy, and Environment: An SMD Symposium in Honor of Wole Soboyejo

Monday, March 4, through Wednesday, March 6  
Hyatt Regency Orlando, Celebration 14



### Advanced Soft Magnets and Magnetocaloric Materials: An FMD Symposium Honoring Victorino Franco

Monday, March 4, through Wednesday, March 6  
Hyatt Regency Orlando, Bayhill 22



### High Temperature Electrochemistry: An FMD Symposium Honoring Uday B. Pal

Monday, March 4, and Tuesday, March 5  
Hyatt Regency Orlando, Bayhill 24



### An Atoms to Autos Approach for Materials Innovations for Lightweighting: An LMD Symposium in Honor of Anil K. Sachdev

Tuesday, March 5, and Wednesday, March 6  
Hyatt Regency Orlando, Windermere X-2



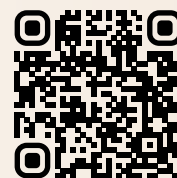
### Process Metallurgy and Environmental Engineering: An EPD Symposium in Honor of Takashi Nakamura

Tuesday, March 5, through Wednesday, March 6  
Hyatt Regency Orlando, Celebration 6

# FEATURED SESSIONS AND SPECIAL LECTURES

Hear from invited luncheon speakers, award lecturers, and other featured presenters.

Visit [www.tms.org/TMS2024/SpecialLectures](http://www.tms.org/TMS2024/SpecialLectures) or scan this QR code to learn more about these special lectures.



## LUNCHEON LECTURES

### Structural Materials Division/ Functional Materials Division Luncheon\*

**Jing Du**, Pennsylvania State University; **Arun Kumar Mannodi**, Purdue University; **Dong Liu**, University of Bristol; and **Christopher Zenk**, Friedrich-Alexander-Universität

Monday, March 4, Noon to 2:00 p.m.  
Hyatt Regency Orlando, Florida A

### Extraction & Processing Division/ Materials Processing & Manufacturing Division Luncheon\*

**Dierk Raabe**, Max-Planck Institut für Eisenforschung GmbH  
Tuesday, March 5, 1:00 p.m. to 3:00 p.m.  
Hyatt Regency Orlando, Florida A

### Light Metals Division Luncheon\*

**Glenn Pushis**, Aluminum Dynamics LLC  
Wednesday, March 6, Noon to 2:00 p.m.  
Hyatt Regency Orlando, Florida A

## NOMINATE NEXT YEAR'S AWARD LECTURERS

TMS awards move the field forward by offering valuable professional recognition and creating a platform to inspire others.

To view a list of available awards and learn how to apply or nominate a colleague, visit:  
[www.tms.org/awards](http://www.tms.org/awards)

## AWARD LECTURES

### Extraction & Processing Division Distinguished Lecturer

**George Demopoulos**, McGill University  
Monday, March 4, 8:30 a.m.  
Hyatt Regency Orlando, Celebration 3

### William Hume-Rothery Award

**Yunzhi Wang**, Ohio State University  
Monday, March 4, 8:30 a.m.  
Hyatt Regency Orlando, Bayhill 23

### Young Innovator in the Materials Science of Additive Manufacturing Award Lecture

**Minh-Son Pham**, Imperial College London  
Monday, March 4, 4:20 p.m.  
Hyatt Regency Orlando, Plaza Int'l IJK

### Institute of Metals/Robert Franklin Mehl Award

**Hamish Fraser**, Ohio State University  
Tuesday, March 5, 8:00 a.m.  
Hyatt Regency Orlando, Windermere X-1

### Emerging Professionals Tutorial Lecture

**Diletta Giuntini**, Eindhoven University of Technology, and **Atieh Moridi**, Cornell University  
Tuesday, March 5, 10:00 a.m. to 11:00 a.m.  
Hyatt Regency Orlando, Florida A

### William D. Nix Award Lecturer

**Tresa Pollock**, University of California Santa Barbara  
Wednesday, March 6, 8:30 a.m.  
Hyatt Regency Orlando, Regency O

\* Tickets required to receive a lunch at this event. (You are welcome to attend the lecture for free.) Tickets had to be purchased prior to the start of TMS2024. Any tickets you purchased will be attached to your name badge.

# NETWORKING EVENTS

Make new connections and meet up with colleagues at the following networking events.

Visit [www.tms.org/TMS2024/Networking](http://www.tms.org/TMS2024/Networking) or scan this QR code for more details on each of these networking events.



## NETWORKING EVENTS

### Welcome Reception

Sunday, March 3, 7:00 p.m. to 8:00 p.m.  
Hyatt Regency Orlando, Plaza Int'l GH

### LGBTQ+ and Allies Networking Mixer

*Event sponsored by Elsevier*  
Sunday, March 3, 8:00 p.m. to 10:00 p.m.  
Hyatt Regency Orlando, Florida A

### Monday Breakfast

Monday, March 4, 7:00 a.m. to 8:30 a.m.  
Hyatt Regency Orlando, Regency Rotunda

### TMS Committee Membership Volunteer

**Fair: Your Nucleation Site for Career Growth**  
Monday, March 4, 3:00 p.m. to 4:30 p.m.  
Hyatt Regency Orlando, Florida A

### Exhibit Opening Reception and Poster Session I

Monday, March 4, 5:30 p.m. to 6:30 p.m.  
Hyatt Regency Orlando, Regency RSTUV

### Networking Mixer, Presented by the Asian & Pacific Islander Working Group and the Emerging Professionals Committee of TMS

*Funding support provided by the University of Oxford, Engineering Science Department*  
Monday, March 4, 5:30 p.m. to 6:30 p.m.  
Hyatt Regency Orlando, Florida A

### Uday Pal Honorary Symposium Dinner\*

*Funding support provided by Boston University*  
Monday, March 4, 7:00 p.m. to 9:30 p.m.  
Hyatt Regency Orlando, Orchid (Level 4)

### Tuesday Breakfast

Tuesday, March 5, 7:00 a.m. to 8:00 a.m.  
Hyatt Regency Orlando, Regency Rotunda

### Exhibit Hall Happy Hour and Poster Session II

Tuesday, March 5, 5:30 p.m. to 6:30 p.m.  
Hyatt Regency Orlando, Regency RSTUV

### Takashi Nakamura Honorary Symposium Dinner\*

*Funding support is provided by JX Metal Corporation, Sumitomo Metal Mining, DOWA Metal Mining, Toho Zinc, Mitsui Mining & Smelting Co., Ltd, and Mitsubishi Materials Corporation*  
Tuesday, March 5, 7:00 p.m. to 9:00 p.m.  
Hyatt Regency Orlando, Orchid (Level 4)

### Fresh Coffee, Fresh Ideas: Diversity, Equity, and Inclusion Breakfast\*

*Event Sponsored by Elsevier*  
Wednesday, March 6, 7:00 a.m. to 9:00 a.m.  
Hyatt Regency Orlando, Florida A

### 2024 TMS-AIME Awards Ceremony & Reception

Wednesday, March 6  
Reception\*: 5:30 p.m. to 6:30 p.m.  
Hyatt Regency Orlando, Plaza Int'l H  
Awards Ceremony: 6:40 p.m. to 8:30 p.m.  
Hyatt Regency Orlando, Plaza Int'l IJK

\* Tickets required to attend this event. (Please note that no tickets are required to attend the TMS-AIME Awards Ceremony; tickets are only required for the reception.) Tickets had to be purchased prior to the start of TMS2024. Any tickets you purchased will be attached to your name badge.

# STUDENT AND EMERGING PROFESSIONALS EVENTS

The following events are planned especially for undergraduate students, graduate students, and early-career professionals at TMS2024.

Visit [www.tms.org/TMS2024/StudentEvents](http://www.tms.org/TMS2024/StudentEvents) or scan this QR code for more details on each of these student activities.



## STUDENT EVENTS

### TMS Materials Bowl and Networking Reception

Sunday, March 3

Competition: 4:30 p.m. to 6:00 p.m.

Hyatt Regency Orlando, Plaza Int'l IJK

Networking Reception: 6:00 p.m. to 7:00 p.m.

Hyatt Regency Orlando, Florida A

### Technical Divisions Student Poster Showing and Judging

Monday, March 4, 5:00 p.m. to 6:30 p.m.

Hyatt Regency Orlando, Regency R

### Bladesmithing Competition Awards Ceremony

Tuesday, March 5, 5:00 p.m. to 5:30 p.m.

Hyatt Regency Orlando, Plaza Int'l IJK

### TMS Launch Your Career Workshop, sponsored by the TMS Emerging Professionals Committee

Tuesday, March 5, 4:00 p.m. to 5:30 p.m.

Hyatt Regency Orlando, Florida A

## EMERGING PROFESSIONALS EVENTS

### Emerging Professionals Committee Meeting

Monday, March 4, 4:30 p.m. to 5:30 p.m.

Hyatt Regency Orlando, Florida A

### Networking Mixer, Presented by the Asian & Pacific Islander Working Group and the Emerging Professionals Committee of TMS

*Funding support provided by the University of Oxford, Engineering Science Department*

Monday, March 4, 5:30 p.m. to 6:30 p.m.

Hyatt Regency Orlando, Florida A

### Emerging Professionals Tutorial Lecture

Tuesday, March 5, 10:00 a.m. to 11:00 a.m.

Hyatt Regency Orlando, Florida A

## SPOTLIGHT ON EMERGING PROFESSIONALS

The 2024 Emerging Professionals Tutorial Lecture features presentations by **Diletta Giuntini**, Eindhoven University of Technology, and **Atieh Moridi**, Cornell University, recipients of the 2024 TMS Early Career Faculty Fellow Award.

## COME SEE THE FOLLOWING BLADESMITHING ENTRIES IN THE TMS2024 EXHIBIT HALL

- Arizona State University, **Sunblade**
- Colorado School of Mines, **Relic Fusion**
- Illinois Institute of Technology, **Haladie Dagger**
- Imperial College London, **Sustaining the Falchion**
- Instituto Tecnológico de Morelia, **Mystic Blade Steel**
- McMaster University, **The SwordBreaker**
- Missouri University of Science and Technology, **Kris-topher**
- Purdue University, **Gladius Maximus**
- Queen's University, **QBlade 1.0**
- Rice University, **The Talon of Athena**
- Royal Melbourne Institute of Technology, **Antipodean Iron**
- South Dakota School of Mines and Technology, **Mitigation Period Pattern Welded Sword**
- Sweet Briar College, **Vetus Vulpes Belli**
- Texas A&M University, **M1 Bayonet**
- Texas A&M University, **Modernized Khanda**
- University of Alberta, **Recycled Higonokami Knife**
- University of Arizona, **CopperHead**
- University of British Columbia, **Southern Tutchone Dagger**
- University of Illinois Urbana-Champaign, **Holdfast**
- University of Minnesota, **Éire Sword**
- University of North Texas, **The Zhànshi Jian**
- University of Texas at El Paso, **Khopesh Blade**
- US Air Force Academy, **Mosaic Damascus Chopper**
- West Virginia University, **Ol'Smokie**

**COMING IN 2025**

# TMS GRADUATE STUDENT PROGRAM

**Introducing a membership package that meets the unique needs of graduate students**

The new TMS Graduate Student Membership—set to launch in January 2025—offers a program designed specifically to support our members during the transition from undergraduate student to full-fledged professional.

**As a graduate student member, you can:**

**Network:**

Connect with industry professionals, national lab scientists, post docs, and fellow graduate students from around the world.

**Build your Resume:**

Participate actively in TMS, connect with leaders in your technology area, and take on volunteer roles through TMS technical committee membership.

**Contribute Your Ideas:**

Sit on the Graduate Student Advisory Council and share your insights with TMS leadership.

**And much more!**

**“TMS has significantly benefited my work and professional development during my attendance at the TMS 2023 Annual Meeting & Exhibition, where I was able to present my research and connect with other researchers working in similar areas.”**

**—Cynthia Rodenkirchen,**  
*2024 International Symposium on Superalloys Graduate Scholarship Recipient*



Learn more about plans for this special professional development opportunity and sign up to learn more at:  
[www.tms.org/GradStudents](http://www.tms.org/GradStudents)



**TMS**  
**BLADESMITHING**  
**COMPETITION**



**VISIT THE**  
**2024 TMS BLADESMITHING**  
**COMPETITION DISPLAY**

Teams of university students rose to the challenge of forming a blade though hand hammering or trip hammer forging in the fourth TMS Bladesmithing Competition. These blades, along with their accompanying poster and video submissions, are on display for your enjoyment in the Exhibit Hall, located in the Hyatt Regency Orlando, Regency STUV.

**EXPLORE THE COLLECTION DURING THE FOLLOWING HOURS:**

**Monday, March 4 | 11:00 a.m. to 6:30 p.m.**

**Tuesday, March 5 | 11:00 a.m. to 6:30 p.m.**

**Wednesday, March 6 | 10:00 a.m. to 2:00 p.m.**

**AND THE WINNER IS...**

The winning entries will be revealed during the 2024 Bladesmithing Competition Awards Ceremony.

**Tuesday, March 5 | 5:00 p.m.**  
Hyatt Regency Orlando Plaza Int'l IJK.

*All TMS2024 registrants are welcome to attend.*



# CALENDAR OF EVENTS

Please note that all times listed refer to Eastern Standard Time (EST).

Title of Function	Start Time	End Time	Room	Access
<b>Sunday, March 3, 2024</b>				
Registration	7:00 AM	7:00 PM	Regency Foyer	Open to All
TMS2024 Hospitality Desk	7:00 AM	7:00 PM	Regency Foyer	Open to All
Welcome to Orlando Information Desk	7:00 AM	7:00 PM	Regency Foyer	Open to All
TMS Member Welcome Center	7:00 AM	6:00 PM	Regency Foyer	Open to All
Springer Nature Publications Booth	8:00 AM	6:00 PM	Regency Foyer	Open to All
Board of Directors Business Meeting	8:00 AM	1:00 PM	Florida B	Restricted
Hydrogen as Energy Carrier and Reductant in Metallurgical Applications Course	8:30 AM	5:00 PM	Gulf	Ticketed
Metal Additive Manufacturing Processes Workshop	1:00 PM	5:30 PM	Atlantic	Ticketed
Magnesium Committee Meeting	1:30 PM	3:00 PM	Discovery 43	Open to All
Recycling & Environmental Technologies Committee Meeting	1:30 PM	3:00 PM	Discovery 44	Open to All
TMS Nominating Committee	1:30 PM	3:30 PM	Columbia 37	Restricted
Programming & App Support Desk	2:00 PM	6:00 PM	Regency Foyer	Open to All
Aluminum Committee Meeting	2:00 PM	4:00 PM	Plaza Int'l D	Open to All
Bladesmithing Competition: Blade Check-In	2:00 PM	5:00 PM	Regency STUV	Open to All
Materials Characterization Committee Meeting	2:30 PM	4:00 PM	Discovery 45	Open to All
Pyrometallurgy Committee Meeting	3:00 PM	4:30 PM	Discovery 46	Open to All
Light Elements Technology Committee Meeting	3:30 PM	4:30 PM	Discovery 47	Open to All
Hydrometallurgy & Electrometallurgy Committee Meeting	4:00 PM	5:00 PM	Discovery 43	Open to All
TMS Program Committee Meeting	4:00 PM	6:00 PM	Florida B	Invitation
TMS Fellows and Invited Guests Reception	4:30 PM	6:30 PM	Regency Lounge	Invitation
TMS Materials Bowl	4:30 PM	7:00 PM	Plaza Int'l IJK	Open to All
Process Technology & Modeling Committee Meeting	5:00 PM	6:00 PM	Discovery 45	Open to All
Thin Films & Interfaces Committee Meeting	5:00 PM	6:00 PM	Discovery 46	Open to All
Additive Manufacturing Committee Meeting	5:30 PM	7:00 PM	Plaza Int'l E	Open to All
TMS Materials Bowl Post Game Networking Reception	6:00 PM	7:00 PM	Florida A	Open to All
Nanomechanical Materials Behavior Committee Meeting	6:00 PM	7:30 PM	Plaza Int'l F	Open to All
TMS Welcome & Division Networking Reception	7:00 PM	8:00 PM	Plaza Int'l GH	Open to All
Alloy Phases Committee Meeting	7:30 PM	9:00 PM	Discovery 44	Open to All
Mechanical Behavior of Materials Committee Meeting	7:30 PM	9:00 PM	Plaza Int'l F	Open to All

## SUNDAY PROFESSIONAL DEVELOPMENT EVENTS

*Advance registration is required to attend these professional development events.*

### Hydrogen as Energy Carrier and Reductant in Metallurgical Applications Course

8:30 a.m. to 5:00 p.m.  
Hyatt Regency Orlando, Gulf

### Metal Additive Manufacturing Processes Workshop

1:00 p.m. to 5:30 p.m.  
Hyatt Regency Orlando, Atlantic



Please note that all times listed refer to Eastern Standard Time (EST).

# CALENDAR OF EVENTS

Title of Function	Start Time	End Time	Room	Access
Phase Transformations Committee Meeting	7:30 PM	9:00 PM	Orlando L	Open to All
LGBTQ+ and Allies Networking Mixer	8:00 PM	10:00 PM	Florida A	Open to All
<b>Monday, March 4, 2024</b>				
Programming & App Support Desk	7:00 AM	6:00 PM	Regency Foyer	Open to All
Registration	7:00 AM	6:00 PM	Regency Foyer	Open to All
TMS2024 Hospitality Desk	7:00 AM	6:00 PM	Regency Foyer	Open to All
Welcome to Orlando Information Desk	7:00 AM	6:00 PM	Regency Foyer	Open to All
TMS Member Welcome Center	7:00 AM	6:00 PM	Regency Foyer	Open to All
Monday Breakfast	7:00 AM	8:30 AM	Regency Rotunda	Open to All
TMS President Breakfast with Young Leaders Professional Development Award Recipients	7:30 AM	8:30 AM	Discovery 48	Invitation
TMS Membership Diversity & Development Committee Meeting	7:30 AM	9:00 AM	Columbia 34	Invitation
Springer Nature Publications Booth	8:00 AM	6:00 PM	Regency Foyer	Open to All
Exhibitor Move-In	8:00 AM	10:00 AM	Regency STUV	Restricted
Technical Programming Sessions	8:30 AM	12:00 PM	Various	Open to All
Light Metals Keynote Session	8:30 AM	12:10 PM	Plaza Int'l IJK	Open to All
Light Metals Subject Awards Presentation	8:35 AM	8:45 AM	Plaza Int'l IJK	Open to All
Executive Committee Meeting	9:00 AM	11:30 AM	Columbia 36	Restricted
Morning Break	9:50 AM	10:30 AM	Various	Open to All
Education Committee Meeting	10:00 AM	11:00 AM	Columbia 34	Invitation
TMS2024 Exhibition	11:00 AM	6:30 PM	Regency STUV	Open to All
Bladesmithing Competition: Display Booth	11:00 AM	6:30 PM	Regency STUV	Open to All
Poster Session I Installation	12:00 PM	2:00 PM	Regency R	Open to All
Past Presidents Luncheon and Meeting	12:00 PM	1:30 PM	Fiorenzo Restaurant	Restricted
Structural Materials Division / Functional Materials Division (SMD/FMD) Luncheon	12:00 PM	2:00 PM	Florida A	Ticketed
Technical Divisions Student Posters Installation	12:00 PM	2:00 PM	Regency R	Open to All
Workshop Sponsored by Glencore Technology: How to Recover Critical Metals from End-of-Life Consumer Materials using ISACYCLE™ Technology	12:15 PM	1:30 PM	Celebration 5	Open to All
Integrated Computational Materials Engineering Committee Meeting	12:15 PM	1:45 PM	Windermere W-2	Open to All
Powder Materials Committee Meeting	1:15 PM	2:30 PM	Discovery 43	Open to All
Additive Manufacturing Keynote Session	2:00 PM	5:00 PM	Plaza Int'l IJK	Open to All
Technical Programming Sessions	2:00 PM	5:30 PM	Various	Open to All
Poster Session I Gallery Viewing	2:00 PM	5:30 PM	Regency R	Open to All
Federal Program Manager Panel and Meet & Greet	2:30 PM	4:00 PM	Plaza Int'l D	Open to All
TMS Foundation Board of Trustees Meeting	3:00 PM	5:00 PM	Florida B	Restricted
TMS Committee Membership Volunteer Fair: Your Nucleation Site for Career Growth	3:00 PM	4:30 PM	Florida A	Open to All
Afternoon Break	3:20 PM	4:00 PM	Various	Open to All
DMMM5 Organizing Committee Meeting	4:00 PM	5:00 PM	Columbia 34	Open to All

# CALENDAR OF EVENTS

Please note that all times listed refer to Eastern Standard Time (EST).

Title of Function	Start Time	End Time	Room	Access
TMS Emerging Professionals Committee Meeting	4:30 PM	5:30 PM	Florida A	Open to All
Technical Divisions Student Poster Showing and Judging	5:00 PM	6:30 PM	Regency R	Open to All
Poster Session I & Exhibition Reception	5:30 PM	6:30 PM	Regency RSTUV	Open to All
Networking Mixer presented by the Asian & Pacific Islander Working Group and the Early Career Committee	5:30 PM	6:30 PM	Florida A	Open to All
Biomaterials Committee Meeting	6:00 PM	7:00 PM	Celebration 12	Open to All
Chemistry & Physics of Materials Committee Meeting	6:00 PM	7:00 PM	Discovery 43	Open to All
Nanomaterials Committee Meeting	6:00 PM	7:00 PM	Discovery 45	Open to All
Refractory Metals & Materials Committee Meeting	6:00 PM	7:00 PM	Discovery 46	Open to All
Shaping & Forming Committee Meeting	6:00 PM	7:30 PM	Celebration 13	Open to All
Steels Committee Meeting	6:00 PM	7:00 PM	Discovery 47	Open to All
Solidification Committee Meeting	6:00 PM	7:00 PM	Celebration 7	Open to All
Computational Materials Science & Engineering Committee Meeting	6:15 PM	7:45 PM	Celebration 6	Open to All
Composite Materials Committee Meeting	6:30 PM	7:30 PM	Discovery 44	Open to All
Poster Session I Dismantle	6:30 PM	6:30 PM	Regency R	Open to All
Advanced Characterization, Testing & Simulation Committee Meeting	7:00 PM	8:00 PM	Celebration 10	Open to All
Uday Pal Honorary Symposium Banquet	7:00 PM	9:30 PM	Orchid	Ticketed
<b>Tuesday, March 5, 2024</b>				
Registration	7:00 AM	5:00 PM	Regency Foyer	Open to All
TMS2024 Hospitality Desk	7:00 AM	5:00 PM	Regency Foyer	Open to All
Welcome to Orlando Information Desk	7:00 AM	5:00 PM	Regency Foyer	Open to All
Tuesday Breakfast	7:00 AM	8:00 AM	Regency Rotunda	Open to All
Programming & App Support Desk	7:00 AM	6:00 PM	Regency Foyer	Open to All
TMS Member Welcome Center	7:00 AM	6:00 PM	Regency Foyer	Open to All
Energy Conversion & Storage Committee Meeting	7:30 AM	8:30 AM	Discovery 44	Open to All
Fellow Award Subcommittee Meeting	7:30 AM	8:30 AM	Columbia 37	Restricted
Springer Nature Publications Booth	8:00 AM	6:00 PM	Regency Foyer	Open to All
Technical Programming Sessions	8:00 AM	11:30 AM	Various	Open to All
Bladesmithing Competition: Judges Deliberations	8:00 AM	11:00 AM	Columbia 34	Restricted
Honors & Professional Recognition Committee Meeting	8:30 AM	9:30 AM	Columbia 37	Restricted
Morning Break	9:20 AM	10:00 AM	Various	Open to All
Emerging Professionals Tutorial Lecture	10:00 AM	11:00 AM	Florida A	Open to All
TMS2024 Exhibition	11:00 AM	6:30 PM	Regency STUV	Open to All
Bladesmithing Competition: Display Booth	11:00 AM	6:30 PM	Regency STUV	Open to All
Technical Divisions Student Poster Viewing	11:00 AM	6:30 PM	Regency R	Open to All
Electronic Packaging & Interconnection Materials Committee Meeting	12:00 PM	1:00 PM	Discovery 45	Open to All
Poster Session II Installation	12:00 PM	2:00 PM	Regency R	Open to All
All-Conference Plenary	12:00 PM	1:00 PM	Plaza Int'l HIJK	Open to All
Public and Governmental Affairs Committee	1:00 PM	3:00 PM	Columbia 37	Open to All

Please note that all times listed refer to Eastern Standard Time (EST).

# CALENDAR OF EVENTS

Title of Function	Start Time	End Time	Room	Access
Extraction & Processing Division / Materials Processing & Manufacturing Division (EPD/MPMD) Luncheon	1:00 PM	3:00 PM	Florida A	Ticketed
Poster Session II Gallery Viewing	2:00 PM	5:30 PM	Regency R	Open to All
Technical Programming Sessions	2:30 PM	6:00 PM	Various	Open to All
Afternoon Break	3:50 PM	4:30 PM	Various	Open to All
TMS Launch Your Career Workshop	4:00 PM	5:30 PM	Florida A	Open to All
Surface Engineering Committee Meeting	5:00 PM	6:00 PM	Discovery 43	Open to All
Bladesmithing Competition: Awards Presentation	5:00 PM	5:30 PM	Plaza Int'l IJK	Open to All
Poster Session II & Exhibition Reception	5:30 PM	6:30 PM	Regency RSTUV	Open to All
High Temperature Alloys Committee Meeting	5:45 PM	6:45 PM	Celebration 4	Open to All
Energy Committee Meeting	6:00 PM	7:00 PM	Discovery 44	Open to All
Nuclear Materials Committee Meeting	6:00 PM	7:30 PM	Celebration 5	Open to All
Titanium Committee Meeting	6:00 PM	7:00 PM	Discovery 46	Open to All
TMS Professional Development Committee Meeting	6:00 PM	7:30 PM	Columbia 34	Invitation
Poster Session II Dismantle	6:30 PM	6:30 PM	Regency R	Open to All
Technical Divisions Student Poster Dismantle	6:30 PM	6:30 PM	Regency R	Open to All
Corrosion & Environmental Effects Committee Meeting	6:45 PM	7:45 PM	Celebration 4	Open to All
Magnetic Materials Committee Meeting	7:00 PM	8:00 PM	Discovery 47	Open to All
Takashi Nakamura Honorary Symposium Dinner	7:00 PM	9:00 PM	Orchid	Ticketed
<b>Wednesday, March 6, 2024</b>				
Programming & App Support Desk	7:00 AM	6:00 PM	Regency Foyer	Open to All
Registration	7:00 AM	5:00 PM	Regency Foyer	Open to All
TMS2024 Hospitality Desk	7:00 AM	5:00 PM	Regency Foyer	Open to All
Welcome to Orlando Information Desk	7:00 AM	5:00 PM	Regency Foyer	Open to All
TMS Member Welcome Center	7:00 AM	6:00 PM	Regency Foyer	Open to All
Fresh Coffee, Fresh Ideas: Diversity and Inclusion Breakfast	7:00 AM	9:00 AM	Florida A	Ticketed
Springer Nature Publications Booth	8:00 AM	6:00 PM	Regency Foyer	Open to All
Technical Programming Sessions	8:30 AM	12:00 PM	Various	Open to All
Morning Break	9:50 AM	10:30 AM	Various	Open to All
TMS2024 Exhibition	10:00 AM	2:00 PM	Regency STUV	Open to All
Bladesmithing Competition: Display Booth	10:00 AM	2:00 PM	Regency STUV	Open to All
Light Metals Division (LMD) Luncheon	12:00 PM	2:00 PM	Florida A	Ticketed
International Affairs Committee Meeting	12:00 PM	2:00 PM	Discovery 48	Restricted
Workshop Sponsored by Glencore Technology: How to Reproduce Your Emissions and Cut Your Operating Costs with ISACONVERT™ Technology	12:15 PM	1:30 PM	Celebration 5	Open to All
Technical Programming Sessions	2:00 PM	5:30 PM	Various	Open to All
Bladesmithing Competition: Mandatory Blade Check Out	2:00 PM	3:00 PM	Regency STUV	Restricted
Exhibitor move-out	2:00 PM	5:00 PM	Regency STUV	Restricted
TMS Board of Directors Business Meeting - Closed Session	3:00 PM	5:00 PM	Florida B	Restricted
Afternoon Break	3:20 PM	4:00 PM	Various	Open to All

Title of Function	Start Time	End Time	Room	Access
TMS-AIME Awards Ceremony Reception	5:30 PM	6:30 PM	Plaza Int'l H	Ticketed
TMS-AIME Awards Ceremony	6:40 PM	8:30 PM	Plaza Int'l IJK	Open to All
<b>Thursday, March 7, 2024</b>				
Programming & App Support Desk	7:00 AM	4:30 PM	Regency Foyer	Open to All
Registration	7:00 AM	4:30 PM	Regency Foyer	Open to All
TMS2024 Hospitality Desk	7:00 AM	4:30 PM	Regency Foyer	Open to All
TMS Member Welcome Center	7:00 AM	4:30 PM	Regency Foyer	Open to All
Springer Nature Publications Booth	8:00 AM	2:00 PM	Regency Foyer	Open to All
Nuclear Science User Facilities Annual Users' Meeting	8:00 AM	5:00 PM	Plaza Int'l D	Open to All
Annual Meeting of the Membership and Open Business Meeting of the TMS Board of Directors	8:00 AM	8:30 AM	Discovery 43	Open to All
Technical Programming Sessions	8:30 AM	12:00 PM	Various	Open to All
TMS Board of Directors - TMS Foundation Board of Trustees Retreat	9:00 AM	12:00 PM	Florida B	Restricted
Morning Break	9:50 AM	10:30 AM	Various	Open to All
Technical Programming Sessions	1:00 PM	4:30 PM	Various	Open to All
Afternoon Break	2:20 PM	3:00 PM	Various	Open to All

## TMS MEETING OF THE MEMBERSHIP

The Minerals, Metals & Materials Society, Inc. (TMS), in accordance with its bylaws (Article II, Section 2.6, and Article III, Section 3.7) will hold its 2024 Annual Meeting of the Membership with Open Board of Directors Meeting, on **Thursday, March 7, 2024, at 8:00 a.m. at the Hyatt Regency Orlando**, during the TMS 2024 Annual Meeting & Exhibition in Orlando, Florida.

## GET MORE INVOLVED WITH TMS: ATTEND A TMS TECHNICAL COMMITTEE MEETING

The first step to becoming a more active member of TMS is to join a technical committee. View the Technical Committee Meeting schedule on page 27 to identify the committee that best matches your interests. Then add the meeting to your schedule. Be sure to introduce yourself to the committee chair as a potential new member when you arrive.

You can also attend the **TMS Committee Membership Volunteer Fair: Your Nucleation Site for Career Growth** to learn more about committee involvement. This event will be held in the Florida A Room of the Hyatt Regency Orlando on Monday, March 4, from 3:00 p.m. to 4:30 p.m.

# TECHNICAL COMMITTEE MEETING SCHEDULE

Please note that all times listed refer to Eastern Standard Time (EST).

Committee	Start Time	End Time	Room
<b>Sunday, March 3</b>			
Magnesium Committee	1:30 PM	3:00 PM	Discovery 43
Recycling & Environmental Technologies Committee	1:30 PM	3:00 PM	Discovery 44
Aluminum Committee	2:00 PM	4:00 PM	Plaza Int'l D
Materials Characterization Committee	2:30 PM	4:00 PM	Discovery 45
Pyrometallurgy Committee	3:00 PM	4:30 PM	Discovery 46
Light Elements Technology Committee	3:30 PM	4:30 PM	Discovery 47
Hydrometallurgy & Electrometallurgy Committee	4:00 PM	5:00 PM	Discovery 43
Process Technology & Modeling Committee	5:00 PM	6:00 PM	Discovery 45
Thin Films & Interfaces Committee	5:00 PM	6:00 PM	Discovery 46
Additive Manufacturing Committee	5:30 PM	7:00 PM	Plaza Int'l E
Nanomechanical Materials Behavior Committee	6:00 PM	7:30 PM	Plaza Int'l F
Alloy Phases Committee	7:30 PM	9:00 PM	Discovery 44
Mechanical Behavior of Materials Committee	7:30 PM	9:00 PM	Plaza Int'l F
Phase Transformations Committee	7:30 PM	9:00 PM	Orlando L
<b>Monday, March 4</b>			
Integrated Computational Materials Engineering Committee	12:15 PM	1:45 PM	Windermere W-2
Powder Materials Committee	1:15 PM	2:30 PM	Discovery 43
Advanced Characterization, Testing & Simulation Committee	7:00 PM	8:00 PM	Celebration 10
Biomaterials Committee	6:00 PM	7:00 PM	Celebration 12
Chemistry & Physics of Materials Committee	6:00 PM	7:00 PM	Discovery 43
Nanomaterials Committee	6:00 PM	7:00 PM	Discovery 45
Refractory Metals & Materials Committee	6:00 PM	7:00 PM	Discovery 46
Solidification Committee	6:00 PM	7:00 PM	Celebration 7
Steels Committee	6:00 PM	7:00 PM	Discovery 47
Shaping & Forming Committee	6:00 PM	7:30 PM	Celebration 13
Composite Materials Committee	6:30 PM	7:30 PM	Discovery 44
Computational Materials Science & Engineering Committee	6:15 PM	7:45 PM	Celebration 6
<b>Tuesday, March 5</b>			
Energy Conversion & Storage Committee	7:30 AM	8:30 AM	Discovery 44
Electronic Packaging & Interconnection Materials Committee	12:00 PM	1:00 PM	Discovery 45
High Temperature Alloys Committee	5:45 PM	6:45 PM	Celebration 4
Energy Committee	6:00 PM	7:00 PM	Discovery 44
Surface Engineering Committee	5:00 PM	6:00 PM	Discovery 43
Titanium Committee	6:00 PM	7:00 PM	Discovery 46
Nuclear Materials Committee	6:00 PM	7:30 PM	Celebration 5
Corrosion & Environmental Effects Committee	6:45 PM	7:45 PM	Celebration 4
Magnetic Materials Committee	7:00 PM	8:00 PM	Discovery 47

# MARK YOUR CALENDAR FOR **TMS MEETINGS**

CONNECT WITH THE GLOBAL MINERALS, METALS, AND MATERIALS COMMUNITY



**2024**  
Offshore Technology Conference  
LEADING THE GLOBAL ENERGY REVOLUTION

May 6–9, 2024  
Houston, Texas, USA  
**REGISTER NOW**  
[www.2024.otcnet.org](http://www.2024.otcnet.org)



**TMS SPECIALTY CONGRESS 2024**

June 16–20, 2024  
Cleveland, Ohio, USA  
**DISCOUNT REGISTRATION DEADLINE:**  
APRIL 30, 2024  
[www.tms.org/SpecialtyCongress2024](http://www.tms.org/SpecialtyCongress2024)



**SUPERALLOYS 2024**

September 8–12, 2024  
Champion, Pennsylvania, USA  
**DISCOUNT REGISTRATION DEADLINE:**  
JULY 31, 2024  
[www.tms.org/Superalloys2024](http://www.tms.org/Superalloys2024)



**TMS FALL 2024**  
@ MATERIALS SCIENCE & TECHNOLOGY

October 6–9, 2024  
Pittsburgh, Pennsylvania, USA  
**ABSTRACT SUBMISSION DEADLINE:**  
MAY 1, 2024  
[www.tms.org/TMSFall2024](http://www.tms.org/TMSFall2024)



THE WORLD COMES HERE.  
**TMS 2025**  
154<sup>th</sup> Annual Meeting & Exhibition

March 23–27, 2025  
Las Vegas, Nevada, USA  
**BOOK YOUR ROOM TODAY**  
[www.tms.org/TMS2025](http://www.tms.org/TMS2025)



**TMS SPECIALTY CONGRESS 2025**

June 15–19, 2025  
Anaheim, California, USA  
**SAVE THE DATE**  
[www.tms.org/SpecialtyCongress2025](http://www.tms.org/SpecialtyCongress2025)



**TMS FALL 2025**  
@ MATERIALS SCIENCE & TECHNOLOGY

September 28–October 1, 2025  
Columbus, Ohio, USA  
**SYMPOSIUM PROPOSAL DEADLINE:**  
JUNE 10, 2024  
[www.tms.org/TMSFall2025](http://www.tms.org/TMSFall2025)



**COPPER 2025**

November 16–20, 2025  
Phoenix, Arizona, USA  
**ABSTRACT SUBMISSION DEADLINE:**  
NOVEMBER 1, 2024  
[www.extractionmeeting.org/2025](http://www.extractionmeeting.org/2025)



**TMS 2026**  
155<sup>th</sup> Annual Meeting & Exhibition

March 15–19, 2026  
San Diego, California, USA  
**SAVE THE DATE**  
[www.tms.org/AnnualMeeting](http://www.tms.org/AnnualMeeting)



[www.tms.org/UpcomingMeetings](http://www.tms.org/UpcomingMeetings)

# GUIDE TO THE TMS2024 POSTER SESSION

View a changing display of posters in Regency R. Please join us for two separate poster presentation sessions, grouped by topic areas, on Monday and Tuesday evening. Presenters will be on hand during these sessions to discuss their work.

## POSTER SESSION SCHEDULE (for Poster Presenters)

The poster sessions, which are coupled with networking activities in the exhibit hall, are typically well-attended events. Poster presenters are encouraged to take advantage of this opportunity to discuss their work one-on-one with fellow attendees. If you are presenting a poster, please note the following information for your assigned poster session.

### Schedule for Poster Session I: Monday, March 4

*Held in conjunction with the Exhibit Opening Reception*

- **Noon to 2:00 p.m.** Poster Installation
- **2:00 p.m. to 5:30 p.m.** Gallery Viewing (Posters will be on display for visitors to browse; presenters do *not* need to be present.)
- **5:30 p.m. to 6:30 p.m.** Poster Presentations (Please stand by your poster at this time to discuss your research with attendees)
- **6:30 p.m.** Poster Removal (You should remove your poster immediately following the conclusion of the poster session. Entries from the Technical Division Student Poster Contest, however, will be asked to leave their posters up until Tuesday evening.)

### Schedule for Poster Session II: Tuesday, March 5

*Held in conjunction with the Exhibit Hall Happy Hour*

- **Noon to 2:00 p.m.** Poster Installation
- **2:00 p.m. to 5:30 p.m.** Gallery Viewing (Posters will be on display for visitors to browse; presenters do *not* need to be present.)
- **5:30 p.m. to 6:30 p.m.** Poster Presentations (Please stand by your poster at this time to discuss your research with attendees)
- **6:30 p.m.** Poster Removal (You should remove your poster immediately following the conclusion of the poster session. Please also remove all remaining posters included in the Technical Division Student Poster Contest at this time.)

## NAVIGATING THE POSTER SESSIONS (for Attendees)

Two poster sessions will be held in the TMS2024 Exhibit Hall:

- **Poster Session I** - held in conjunction with the Exhibit Opening Reception  
Monday, March 4 | 5:30 p.m. to 6:30 p.m.
- **Poster Session II** - held in conjunction with the Exhibit Hall Happy Hour  
Tuesday, March 5 | 5:30 p.m. to 6:30 p.m.

Confirmed posters are grouped by topic according to the listing on this page.

- Each topic area is assigned a letter code
- Each poster within that topic is assigned a number
- You can search in the mobile app and mobile-friendly PDF for specific posters and poster numbers.
- Posters that were not confirmed will be in the Open Poster Area and are not numbered.

### Poster Session I

**Monday, March 4** | 5:30 p.m. to 6:30 p.m.

#### Featuring Posters on:

Electronic, Magnetic, and Energy Materials (A)
Materials Degradation and Degradation by Design (B)
Materials Synthesis and Processing (C)
Mechanics of Materials (D)
Nuclear Materials (E)

### Poster Session II

**Tuesday, March 5** | 5:30 p.m. to 6:30 p.m.

#### Featuring Posters on:

Additive Manufacturing (F)
Advanced Characterization Methods (G)
Biomaterials (H)
Data-driven and Computational Materials Design (J)
Light Metals (K)

# PROGRAM AT-A-GLANCE

Symposium Name	ROOM	MON AM	MON PM	POSTER	TUE AM	TUE PM	POSTER	WED AM	WED PM	THU AM	THU PM
		<b>Additive Manufacturing</b>									
Additive Manufacturing and Innovative Powder/Wire Processing of Multifunctional Materials	Plaza Int'l D	•			•	•	•		•		
Additive Manufacturing and Innovative Powder/Wire Processing of Multifunctional Materials	Bayhill 22									•	
Additive Manufacturing Fatigue and Fracture: Towards Rapid Qualification	Plaza Int'l E	•			•	•		•	•		
Additive Manufacturing Keynote Session	Plaza Int'l IJK		•								
Additive Manufacturing Materials in Energy Environments	Atlantic					•	•	•	•		
Additive Manufacturing Modeling, Simulation and Machine Learning	Orlando N	•			•	•	•	•	•	•	•
Additive Manufacturing of Refractory Metallic Materials	Rainbow Spring II	•			•	•	•	•	•		
Additive Manufacturing: Advanced Characterization with Synchrotron, Neutron, and In Situ Laboratory-scale Techniques III	Orlando M	•			•	•	•	•	•	•	•
Additive Manufacturing: Length-Scale Phenomena in Mechanical Response	Plaza Int'l F	•			•	•	•	•	•		
Additive Manufacturing: Length-Scale Phenomena in Mechanical Response	Rainbow Spring II									•	
Additive Manufacturing: Materials Design and Alloy Development VI – Closed-Loop Alloy Design	Windermere W-1	•					•				
Additive Manufacturing: Materials Design and Alloy Development VI – Closed-Loop Alloy Design	Bayhill 28				•						
Additive Manufacturing: Materials Design and Alloy Development VI – Closed-Loop Alloy Design	Plaza Int'l D							•			
Additive Manufacturing: Process-induced Microstructures and Defects	Florida C	•			•	•	•	•	•	•	•
Agile Additive Manufacturing by Employing Breakthrough Functionalities	Atlantic	•	•		•						
Cold Spray Additive Manufacturing: Part Quality and Performance	Gulf					•	•	•	•		
Incorporating Additive Manufacturing in Material Science and Engineering Education (2024 Student-led Symposium)	Celebration 2				•	•					
Nano and Micro Additive Manufacturing	Gulf	•	•		•		•				
<b>Advanced Characterization Methods</b>											
Advanced Characterization Techniques for Quantifying and Modeling Deformation	Celebration 1	•	•		•	•	•	•	•	•	
Advanced Real Time Imaging	Blue Spring II	•	•		•	•	•	•			



# PROGRAM AT-A-GLANCE

Symposium Name	ROOM	MON AM	MON PM	POSTER	TUE AM	TUE PM	POSTER	WED AM	WED PM	THU AM	THU PM
		Characterization of Minerals, Metals and Materials 2024: Process-Structure-Property Relations and New Technologies	Regency O	•	•		•		•		
Characterization of Minerals, Metals and Materials 2024: Process-Structure-Property Relations and New Technologies	Windermere X-3					•					
Characterization of Minerals, Metals and Materials 2024: Process-Structure-Property Relations and New Technologies	Celebration 2							•	•	•	
Novel Strategies for Rapid Acquisition and Processing of Large Datasets from Advanced Characterization Techniques	Blue Spring I				•	•	•	•			
Recent Advances in Electron Back-Scattered Diffraction and Related Techniques	Blue Spring I	•	•								
<b>Biomaterials</b>											
Advanced Biomaterials for Biomedical Implants	Celebration 12	•	•		•	•	•				
Advances in Biomaterials for 3D Printing of Scaffolds and Tissues	Celebration 16	•	•				•				
Biological Materials Science	Celebration 15	•	•		•	•	•	•	•		
Bio-Nano Interfaces and Engineering Applications	Celebration 12						•		•	•	•
Materials Science for Global Development--Health, Energy, and Environment: An SMD Symposium in Honor of Wole Soboyejo	Celebration 14	•	•		•	•	•	•			
Materials Science for Global Development--Health, Energy, and Environment: An SMD Symposium in Honor of Wole Soboyejo	Windermere W-2								•		
Mechanics and Physiological Adaptation of Hard and Soft Biomaterials and Biological Tissues	Celebration 13	•	•								
<b>Data-Driven and Computational Material Design</b>											
AI/Data Informatics: Computational Model Development, Verification, Validation, and Uncertainty Quantification	Bayhill 32	•	•		•	•	•	•	•	•	•
Algorithm Development in Materials Science and Engineering	Bayhill 28	•				•	•	•	•	•	•
Chemistry and Physics of Interfaces	Bayhill 25	•	•		•	•	•	•			
Computational Discovery and Design of Materials	Bayhill 22								•		
Computational Discovery and Design of Materials	Bayhill 33	•	•		•	•					
Computational Thermodynamics and Kinetics	Bayhill 29	•	•		•	•	•	•	•	•	•
High Performance Steels	Bayhill 31					•	•	•	•	•	•
Hume-Rothery Symposium on Alloy Microstructure Science and Engineering	Bayhill 23	•	•		•	•		•	•		

TECHNICAL PROGRAM

# PROGRAM AT-A-GLANCE

Symposium Name	ROOM	MON AM	MON PM	POSTER	TUE AM	TUE PM	POSTER	WED AM	WED PM	THU AM	THU PM
		Local Ordering in Materials and Its Impacts on Mechanical Behaviors, Radiation Damage, and Corrosion	Bayhill 30					•		•	•
Local Ordering in Materials and Its Impacts on Mechanical Behaviors, Radiation Damage, and Corrosion	Windermere X-2		•								
Thermodynamics and Kinetics of Alloys II	Bayhill 31	•	•		•		•				
<b>Electronic, Magnetic, and Energy Materials</b>											
2D Materials – Preparation, Properties, Modeling & Applications	Celebration 16			•		•		•	•	•	•
2D Materials – Preparation, Properties, Modeling & Applications	Orlando N		•								
Advanced Functional and Structural Thin Films and Coatings	Bayhill 25								•		
Advanced Functional and Structural Thin Films and Coatings	Bayhill 26	•	•	•	•						
Advanced Materials for Energy Conversion and Storage 2024	Celebration 13			•	•	•		•	•	•	•
Advanced Soft Magnets and Magnetocaloric Materials: An FMD Symposium Honoring Victorino Franco	Bayhill 22	•	•	•	•	•		•			
Advances in Magnetism and Magnetic Materials	Bayhill 27							•	•	•	•
Advances in Magnetism and Magnetic Materials	Bayhill 28		•	•							
Alloys and Compounds for Thermoelectric and Solar Cell Applications XII	Bayhill 26			•		•		•	•	•	•
Electronic Packaging and Interconnection Materials	Bayhill 25									•	
Electronic Packaging and Interconnection Materials	Bayhill 27	•	•	•	•	•					
Energy Technologies and CO2 Management	Bayhill 33			•				•	•	•	•
Functional Nanomaterials 2024	Bayhill 21	•	•	•	•	•		•	•	•	•
High Temperature Electrochemistry: An FMD Symposium Honoring Uday B. Pal	Bayhill 24	•	•	•	•	•					
Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XXIII	Bayhill 30	•	•	•	•						
Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XXIII	Celebration 12							•			
Printed Electronics and Additive Manufacturing: Advanced Functional Materials, Processing Concepts, and Emerging Applications	Orlando L	•		•	•	•		•	•	•	
<b>Light Metals</b>											
2024 Light Metals Keynote Session	Plaza Int'l IJK	•									
Advances in Titanium Technology	Windermere X-1	•	•		•	•	•	•	•		

# PROGRAM AT-A-GLANCE

Symposium Name	ROOM	MON AM	MON PM	POSTER	TUE AM	TUE PM	POSTER	WED AM	WED PM	THU AM	THU PM
		Alumina & Bauxite	Windermere X-3							•	•
Aluminum Alloys: Development and Manufacturing	Windermere W-1		•		•	•	•	•	•		
Aluminum Reduction Technology	Celebration 15									•	
Aluminum Reduction Technology	Windermere Y-2		•		•	•		•	•		
An Atoms to Autos Approach for Materials Innovations for Lightweighting: An LMD Symposium in Honor of Anil K. Sachdev	Windermere X-2				•	•		•	•		
Electrode Technology for Aluminum Production	Windermere W-2				•	•		•			
Magnesium Technology 2024	Windermere Y-3	•	•		•	•	•	•	•		
Melt Processing, Casting and Recycling	Windermere Y-1		•		•	•	•	•			
Scandium Extraction and Use in Aluminum Alloys	Windermere X-3				•						
<b>Materials Degradation and Degradation by Design</b>											
Accelerated Testing to Understand the Long Term Performance of High Temperature Materials	Windermere X-3	•	•								
Advances in the State-of-the-Art of High Temperature Alloys	Bayhill 17	•	•		•						
Environmental Degradation of Multiple Principal Component Materials	Coral Spring I	•	•	•	•						
Environmentally Assisted Cracking: Theory and Practice	Bayhill 17			•		•		•	•	•	•
Environmentally Assisted Cracking: Theory and Practice	Plaza Int'l F		•								
Materials and Chemistry for Molten Salt Systems	Bayhill 20	•	•	•	•	•		•	•	•	
Measurement and Control of High-temperature Processes	Celebration 5					•		•	•		
Nanostructured Materials in Extreme Environments II	Bayhill 19	•	•	•	•	•		•	•	•	
Phase Stability in Extreme Environments II	Bayhill 18							•	•	•	•
Refractory Metals 2024	Bayhill 18	•	•	•	•	•					
Simulations/Experiments Integration for Next Generation Hypersonic Materials	Rock Spring I and II	•	•								
<b>Materials Synthesis and Processing</b>											
Advances in Ceramic Materials and Processing	Celebration 10	•	•	•	•	•		•			
Advances in Pyrometallurgy: Furnace Containment	Celebration 5	•	•	•	•	•					
Advances in Surface Engineering VI	Celebration 9			•					•	•	

TECHNICAL PROGRAM

# PROGRAM AT-A-GLANCE

Symposium Name	ROOM	MON AM	MON PM	POSTER	TUE AM	TUE PM	POSTER	WED AM	WED PM	THU AM	THU PM
		Composite Materials: Sustainable and Eco-Friendly Materials and Application	Celebration 4			•				•	•
Defects and Properties of Cast Metals	Celebration 8			•				•	•	•	•
Electrical Steels	Celebration 14			•					•	•	
Formability and Spring-back Issues in Ultra-High Strength Steels and High Strength Aluminum Alloys	Celebration 2	•	•	•							
Functionally Graded Materials, Coatings and Claddings: Toward Microstructure and Property Control	Celebration 5									•	•
Materials Processing Fundamentals Featuring Iron and Steel Production	Celebration 8	•	•	•	•	•					
Materials Processing and Kinetic Phenomena: from Thin Films and Micro/Nano Systems to Advanced Manufacturing	Celebration 11	•	•		•	•		•	•		
Measurement and Control of High-temperature Processes	Celebration 5					•		•	•		
Phase Transformations and Microstructural Evolution	Celebration 7	•	•	•	•	•		•	•	•	•
Powder Materials Processing and Fundamental Understanding	Celebration 9	•	•	•	•	•		•			
Process Metallurgy and Environmental Engineering: An EPD Symposium in Honor of Takashi Nakamura	Celebration 6			•	•	•		•	•		
Rare Metal Extraction & Processing	Celebration 3	•	•	•	•	•		•			
Solidification in External Fields	Celebration 6	•	•								
Towards a Future of Sustainable Production and Processing of Metals and Alloys	Celebration 4	•	•	•	•	•					
Ultrafine-grained and Heterostructured Materials (UFGH XIII)	Celebration 10			•					•	•	•
<b>Mechanics of Materials</b>											
Accelerated Discovery and Insertion of Next Generation Structural Materials	Barrel Spring I	•	•								
Advances in Multi-Principal Element Alloys III: Mechanical Behavior	Barrel Spring II	•	•	•	•	•		•	•	•	•
Defects and Interfaces: Modeling and Experiments	Coral Spring II	•	•	•	•	•		•	•	•	•
Dynamic Behavior of Materials X	Coral Spring I			•		•		•	•	•	•
Fatigue in Materials: Fundamentals, Multiscale Characterizations and Computational Modeling	Manatee Spring II	•	•		•	•		•		•	
Fatigue in Materials: Fundamentals, Multiscale Characterizations and Computational Modeling	Plaza Int'l E								•		
Mechanical Behavior at the Nanoscale VII	Manatee Spring I	•	•	•	•	•		•	•	•	•
Mechanical Response of Materials Investigated through Novel In-situ Experiments and Modeling	Barrel Spring I			•	•	•		•	•	•	

# PROGRAM AT-A-GLANCE

Symposium Name	ROOM	MON AM	MON PM	POSTER	TUE AM	TUE PM	POSTER	WED AM	WED PM	THU AM	THU PM
		Structure-Property Relationships of Bulk Metallic Glasses	Orlando M		•	•					
Structure-Property Relationships of Bulk Metallic Glasses	Rock Spring I and II				•	•		•	•	•	•
<b>Nuclear Materials</b>											
Accelerated Qualification of Nuclear Materials Integrating Experiments, Modeling, and Theories	Blue Spring I								•	•	•
Accelerated Qualification of Nuclear Materials Integrating Experiments, Modeling, and Theories	Regency Q	•	•	•	•	•		•			
Ceramics and Ceramic-based Composites for Nuclear Fission Applications	Rainbow Spring I							•	•	•	•
Irradiation Testing: Facilities, Capabilities, and Experimental Designs	Rainbow Spring I	•	•	•	•	•					
Materials Corrosion Behavior in Advanced Nuclear Reactor Environments	Silver Spring I-II	•	•	•	•	•					
Materials Informatics to Accelerate Nuclear Materials Investigation	Rainbow Spring II		•	•							
Materials Informatics to Accelerate Nuclear Materials Investigation	Silver Spring I-II							•	•	•	
Seaborg Institutes: Emerging Topics in Actinide Materials and Science	Blue Spring II								•	•	
Seaborg Institutes: Emerging Topics in Actinide Materials and Science	Regency P	•	•		•	•		•			
<b>Special Topics</b>											
2024 Technical Division Student Poster Contest	Regency R			•							
All-Conference Plenary	Plaza Int'l HIJK					•					
Acta Materialia Symposium	Regency O					•					
Frontiers of Materials Award Symposium: Novel Ceramics Processes for Nuclear Applications	Celebration 16				•						
Frontiers of Materials Award Symposium: Physics-Informed Machine Learning for Modeling and Design of Materials and Manufacturing Processes	Plaza Int'l E		•								
Nix Award and Lecture Symposium V	Regency O							•			
The Future of Work in Materials Science	Bayhill 24							•			

# TMS 2024 TMS-AIME AWARDS CEREMONY

WEDNESDAY, MARCH 6, 2024

6:40 p.m. to 8:30 p.m.

Hyatt Regency Orlando  
Plaza International IJK



## CEREMONY HOSTS:

**Brad Boyce**, *Sandia National Laboratories*,  
2023 TMS President

**Srinivas Chada**, *General Dynamics Mission  
Systems*, 2024 TMS President

**Elizabeth Holm**, *University of Michigan*, AIME  
President

**Carolyn Hansson**, *University of Waterloo*,  
Acta Materialia Executive Secretary

**George "Rusty" Gray III**, *Los Alamos  
National Laboratory*, Acta Materialia Chair &  
Treasurer

**Jenifer Locke**, *The Ohio State University*  
2023 Frank Crossley Diversity Award

**Donald Sadoway**, *Massachusetts Institute of  
Technology*, 2021 TMS Fellow

**William Nix**, *Stanford University*, 1988 TMS  
Fellow

## AIME HENRY DEWITT SMITH SCHOLARSHIP

Funded by AIME (American Institute of Mining, Metallurgical, and Petroleum Engineers), two \$2,000 scholarships are available to graduate students majoring in the field of minerals, metals, and/ or materials engineering. Issued under the TMS Foundation.



**Sylvie Crowell**,  
Case Western  
Reserve  
University



**Pierangeli  
Rodriguez De  
Vecchis**,  
University of  
Pittsburgh

## AIME ROBERT LANSING HARDY AWARD

This award recognizes a young person in the broad fields of metallurgy and materials science for exceptional promise of a successful career. Issued under the TMS Foundation.



**Darren C. Pagan**, Pennsylvania State  
University

## AIME CHAMPION H. MATHEWSON AWARD

This award began in 1934 and recognizes a paper, or series of closely related papers with at least one common author, which represents the most notable contribution to metallurgical science in the award period. "Evolution of the Microstructure of Laser Powder Bed Fusion Ti-6Al-4V During Post-Build Heat Treatment," *Metallurgical and Materials Transactions A*, December 2021.



**Donald Brown**,  
Los Alamos  
National  
Laboratory



**Nathan S.  
Johnson**,  
Zeiss Research  
Microscopy  
Solutions



**Veronica  
Anghel**, Los  
Alamos  
National  
Laboratory



**Darren C.  
Pagan**,  
Pennsylvania  
State  
University



**Bjorn Clausen**,  
Los Alamos  
National  
Laboratory



**Lucas Ravkov**,  
Queens  
University

Not pictured: **Ramon Martinez**, Los Alamos National Laboratory; **Levente Baloch**, Queens University; **Gennady Rafailov**, Nuclear Research Center of the Negev; **Maria Strantz**, Lawrence Livermore National Laboratory; and **Eloisa Zepeda-Alarcon**, Los Alamos National Laboratory.

### AIME ROSSITER W. RAYMOND MEMORIAL AWARD

This award was established in 1945 and recognizes the best paper published by AIME in a given period where the lead author is a member under 35 years of age. This award honors one of the Institute's founders who served as President and Secretary and was an Honorary Member.

"Microwave-Assisted Carbothermic Reduction of Discarded Rare Earth Magnets for Recovery of Neodymium and Iron Values," *JOM*, January 2021



**Himanshu Tanvar**, Worcester Polytechnic Institute

Not pictured: **Nikhil Dhawan**, Indian Institute of Technology - Roorkee

### TMS/SME/AIME JAMES DOUGLAS GOLD MEDAL

Established in 1922, this award recognizes distinguished achievement in nonferrous metallurgy, including both the beneficiation of ores and the alloying and utilization of nonferrous metals. James Douglas, founder of Phelps Dodge Corporation and twice President of AIME, was an industrialist, a mining engineer, a metallurgical engineer, and a noted inventor of metallurgical equipment.



**Thomas Battle**, Extractive Metallurgy Consultant

### AIME HONORARY MEMBERSHIP AWARD

AIME Honorary Membership is one of the highest honors that the Institute can bestow on an individual. This award, established in 1872, recognizes outstanding service or distinguished scientific or engineering achievement in the fields embracing the activities of AIME and its Member Societies.



**Carolyn Hansson**, University of Waterloo

### ACTA MATERIALIA UNDERGRADUATE SCHOLARSHIP

Two \$5,000 scholarships are available to undergraduate students majoring in metallurgical engineering, materials science and engineering, or to undergraduate students with a significant interest in the materials area. This scholarship is supported by the generosity of Acta Materialia, Inc. and issued under the TMS Foundation.



**Soren Hellyer**, Iowa State University



**Matthew Sherman**, Missouri University of Science and Technology

### ACTA MATERIALIA MARY FORTUNE GLOBAL DIVERSITY AWARD

The award recognizes one or more of the following in the field of Materials Science and Engineering:

- Promotion of, or representation of, women and other under-represented groups in the materials science and engineering field
- Contributions to the field of materials science and engineering, including teaching, professional service or research
- Demonstrated commitment to mentoring students and young professionals
- Promotion of materials science and related professional activities in the broader community.



**Lynnette Madsen**, Cornell University/  
National Science Foundation

### ACTA MATERIALIA HOLLOMON MATERIALS & SOCIETY AWARD

This is an international award presented by Acta Materialia, Inc. in memory of J. Herbert Hollomon, principal instigator of the journal *Acta Metallurgica*. This award recognizes an outstanding contributor to the interactions between materials technology and societal concerns.



**Iver Anderson**, Iowa State University Ames Laboratory

### ACTA MATERIALIA SILVER MEDAL AWARD

This award honors and recognizes scientific contributions and leadership from academic, industry, and public sector leaders in the midst of their careers. The Silver Medal is established to recognize significant research contributions that are recent and timely.



**Jean-Philippe Couzinie**, CNRS and  
Universite Paris Est Creteil

### ACTA MATERIALIA GOLD MEDAL AWARD

This award was established by Acta Materialia, Inc. in 1973 as an international award to recognize leadership in materials research.



**Kazuhiro Hono**, National Institute for  
Materials Science

### Kaufman CALPHAD Scholarship

This scholarship recognizes the memory of Dr. Larry Kaufman for his contributions to computational thermodynamics and its applications. It is supported by CALPHAD Inc. and the TMS Foundation.



**Jakob Scroggins**, University of Tennessee  
Knoxville

### YOUNG LEADERS INTERNATIONAL SCHOLAR AWARD

The Japan Institute of Metals and Materials (JIMM) established a joint Young Leaders International Scholar Program with TMS to promote young member activities and strengthen the collaborations between the two international societies. These collaborations have resulted in an exchange program, which offers select young members the opportunity to present papers at international sessions. This award is funded through the TMS Foundation.

#### TMS/JIMM Young Leaders International Scholar



**Jessica Krogstad**,  
University of  
Illinois Urbana  
Champaign

#### 2024 JIMM Young Leaders International Scholar



**Asuka Suzuki**,  
Nagoya  
University

The Korean Institute of Metals and Materials (KIM) and The Minerals, Metals & Materials Society (TMS) established a joint Young Leader International Scholar Program for the promotion of young member activities in, as well as the strengthening of, the international mutual collaboration between TMS and KIM. This award is funded through the TMS Foundation.

#### TMS/KIM Young Leaders International Scholar



**Anne Campbell**,  
Oak Ridge  
National  
Laboratory

#### 2024 KIM Young Leaders International Scholar



**Jahyun Koo**,  
Korea  
University  
School of  
Biomedical  
Engineering

### FRONTIERS OF MATERIALS AWARD

This award is given competitively to a top-performing early career professional capable of organizing a Frontiers of Materials Event comprising a hot or emergent technical topic. The recipient will organize an event in the form of a full symposium or single-session symposium.



**Pinar Acar**,  
Virginia  
Polytechnic  
Institute  
and State  
University



**Takaaki Koyanagi**,  
Oak Ridge  
National  
Laboratory

### EARLY CAREER FACULTY FELLOW AWARD

This award recognizes an assistant professor for his or her accomplishments that have advanced the academic institution where employed, and for abilities to broaden the technological profile of TMS. This award is funded through the TMS Foundation.



**Diletta Giuntini**,  
Eindhoven  
University of  
Technology



**Atieh Moridi**,  
Cornell  
University

### ELLEN SWALLOW RICHARDS DIVERSITY AWARD

This award recognizes an individual, who in the remarkable pioneering spirit of Ellen Swallow Richards, has helped or inspired others to overcome personal, professional, educational, cultural, or institutional adversity to pursue a career in minerals, metals, and/or materials. Recipients are awarded through the TMS Foundation.



**Andrea Hodge**, University of Southern  
California



### FRANK CROSSLEY DIVERSITY AWARD

The award recognizes an individual who has personally overcome personal, professional, educational, cultural, or institutional adversity to pursue a career in minerals, metals, and/or materials. Recipients are awarded through the TMS Foundation.



**Jonathan Madison**

### BRIMACOMBE MEDALIST – CLASS OF 2024

This mid-career award recognizes members with sustained excellence and achievement in business, technology, education, public policy, or science related to materials science and engineering, and a record of continuing service to the profession. The intent is to recognize professionals in the middle portion of their career.



**Mohsen Asle Zaeem**,  
Colorado School of Mines



**Saryu Fensin**,  
Los Alamos National Laboratory



**Gisele Azimi**,  
University of Toronto



**Daniel Kiener**,  
Montanuniversität Leoben



**Allison Beese**,  
Pennsylvania State University



**C. Cem Tasan**,  
Massachusetts Institute of Technology



**Laurent Capolungo**,  
Los Alamos National Laboratory

### WILLIAM HUME-ROTHERY AWARD

This award recognizes a scientific leader for exceptional scholarly contributions to the science of alloys by inviting him/her to be an honored presenter at the William Hume-Rothery Memorial Symposium. The awardee participates with the Alloy Phases Committee in organizing this symposium held in conjunction with the TMS Annual Meeting.



**Yunzhi Wang**, The Ohio State University

### INSTITUTE OF METALS/ROBERT FRANKLIN MEHL AWARD

This award recognizes an outstanding scientific leader by inviting him/her to present a lecture at the Society's annual meeting on a technical subject of particular interest to members in the materials science and application of metals program areas.



**Hamish Fraser**, The Ohio State University

### BRUCE CHALMERS AWARD

This award recognizes an individual who has made outstanding contributions to the science and/or technology of materials processing.



**Enrique Lavernia**, Texas A&M University

### MORRIS COHEN AWARD

This award recognizes an individual who has made outstanding contributions to the science and/or technology of materials properties.



**Javier Llorca**, Polytechnic University of Madrid and IMDEA Materials Institute

### OLEG D. SHERBY AWARD

This award recognizes an individual, or small group of collaborators, who has made significant contributions to the understanding of the behavior of materials at high temperatures.



**Alan Ardell**, University of California, Los Angeles

### CYRIL STANLEY SMITH AWARD

This award recognizes an individual who has made outstanding contributions to the science and/or technology of materials structure.



**Long-Qing Chen**, Pennsylvania State University

### ALEXANDER SCOTT DISTINGUISHED SERVICE AWARD

This award recognizes a member's outstanding contributions to TMS. This award is typically presented for 10 or more years of TMS service in one or more of the following areas: membership development, student chapters, education and professional affairs, or other society-level activities.



**David Bahr**, Purdue University

### RESEARCH TO INDUSTRIAL PRACTICE AWARD

This award recognizes an individual who has demonstrated outstanding achievement in transferring research results or findings in some aspect of the fields of metallurgy and materials into commercial production and practical use as a representative of an industrial, academic, governmental, or technical organization.



**Bruce Pint**, Oak Ridge National Laboratory

### LEADERSHIP AWARD

This award recognizes exceptional leadership in the fields of metallurgy and materials as a representative of an industrial, academic, governmental, or technical organization.



**Noam Eliaz**, Tel Aviv University

### JULIA & JOHANNES WEERTMAN EDUCATOR AWARD

This award recognizes an individual who has made outstanding contributions to education in metallurgical engineering and/or materials science and engineering. The Weertmans rose to prominence in materials science and engineering through their pioneering research accomplishments which have profound effects on technology. This award is funded through the TMS Foundation.



**Kannan Krishnan**, University of Washington

### SADOWAY MATERIALS INNOVATION AND ADVOCACY AWARD

This award recognizes a mid-career individual with impactful and broad materials science and engineering achievements and a unique ability at championing of their work and the materials science and engineering field through education, public advocacy, or entrepreneurship, particularly in areas related to sustainability. This award is funded through the TMS Foundation.



**Yiannis Pontikes**, Katholieke Universiteit Leuven

### WILLIAM D. NIX AWARD

This award is established to honor William D. Nix and the tremendous legacy that he has developed and shared with the minerals, metals, and materials community, and to highlight and promote continued progress and innovation relevant to research into the underlying mechanisms and mechanical behavior of macro-, micro-, and nanoscale materials. The award is funded through the TMS Foundation.



**Tresa Pollock**, University of California, Santa Barbara

## SUBMIT NOMINATIONS FOR 2025 TMS AWARDS

Recognize the work of a deserving colleague by nominating them for a 2025 TMS award. The nomination deadline for most awards is April 1, 2024. Learn more at [awards.tms.org](https://awards.tms.org).

## TMS FELLOW – CLASS OF 2024

This award recognizes members of TMS who are qualified for elevation to the Class of Fellow by reason of outstanding contributions to the practice of metallurgy, materials science, and technology. To be inducted, the TMS member must have a good personal reputation and distinction as an eminent authority in some aspect of the practice of metallurgy, materials science, and technology.



**John Agren,**  
Royal Institute  
of Technology



**Scott Mao,**  
University of  
Pittsburgh



**Eugene  
Olevsky,**  
San Diego  
State  
University



**Yunzhi Wang,**  
The Ohio State  
University



**Jaroslaw  
Drelich,**  
Michigan  
Technological  
University



**Roger Narayan,**  
University of  
North Carolina  
at Chapel Hill/  
North Carolina  
State University



**Qigui Wang,**  
General  
Motors

## ADDITIONAL 2024 AWARD RECIPIENTS

### EXTRACTIONS & PROCESSING DIVISION (EPD)

#### EPD DISTINGUISHED LECTURER AWARD

**George Demopoulos,** McGill University

#### EPD DISTINGUISHED SERVICE AWARD

**Joel Kapusta,** BBA, Inc

#### EPD TECHNOLOGY AWARD

"Direct Conversion of Electric Arc Furnace Dust to Zinc Ferrite by Roasting: Effect of Roasting Temperature," *Journal of Sustainable Metallurgy*, February 2023.

**Huimin Tang, Zhiwei Peng, Mingjun Rao, and Guanghui Li;** Central South University

**Liancheng Wang,** Central South University/Guangxi Liuzhou Iron and Steel Group Ltd

**Anton Anzulevich,** Chelyabinsk State University

#### EPD PYROMETALLURGY BEST PAPER AWARD

"Influence of a Prior Oxidation on the Reduction Behavior of Magnetite Iron Ore Ultra-Fines Using Hydrogen," *Metallurgical and Materials Transactions B*, February 2022.

**Thomas Wolfinger, Paul Wurth, and Daniel Spreitzer;** Primetals Technologies Austria GmbH

**Heng Zheng and Johannes Schenk,** Montanuniversitaet Leoben

#### EPD/LMD JOURNAL OF SUSTAINABLE METALLURGY BEST PAPER AWARD

"The Twelve Principles of Circular Hydrometallurgy," *Journal of Sustainable Metallurgy*, March 2023.

**Koen Binnemans and Peter Tom Jones,** Katholieke Universiteit Leuven

#### NAGY EL-KADDAH AWARD FOR BEST PAPER IN MHD IN MATERIAL PROCESSING

"Mathematical Study of the Formation Mechanisms of Complex Oxide Inclusions in Si-Mn-Killed Steel," *Metallurgical and Materials Transactions B*, December 2022.

**Angshuman Podder, Kenneth Coley, and Andre Phillion** McMaster University

#### EPD MATERIALS CHARACTERIZATION BEST PAPER AWARD

#### FIRST PLACE

"Evaluation of Feature Engineering Methods for the Prediction of Sheet Metal Properties by an Artificial Neural Network from Punching Force Curves," *Characterization of Minerals, Metals, and Materials*, February 2023.

**Marcel Goerz, Mathias Liewald, Kim Riedmüller, and Adrian Schenek;** Institute for Metal Forming Technology

## SECOND PLACE

"Conversion of Ferronickel Slag to Thermal Insulation Materials by Microwave Sintering: Effect of Fly Ash Cenosphere Addition," *Characterization of Minerals, Metals, and Materials*, February 2023.

**Xiaolei Fang, Zhiwei Peng, Mingjun Rao, Lei Yang, and Guangyan Zhu;** Central South University

## THIRD PLACE

"The Power and Limitation of Ion Beam Imaging in Focused Ion Beam Microscopes," *Characterization of Minerals, Metals, and Materials*, February 2023.

**Pei Liu,** Natural Resources Canada

## MATERIALS CHARACTERIZATION BEST POSTER AWARD

## FIRST PLACE

"An Innovative Instrument Determines Chemistry at the Scale of 3D Printing"

**Jonathan Putman, Ellen Williams, and Peyton Willis** Exum Instruments

## FUNCTIONAL MATERIALS DIVISION (FMD)

### FMD DISTINGUISHED SCIENTIST/ENGINEER AWARD

**Hannes Schniepp,** William & Mary

### FMD JOHN BARDEEN AWARD

**Darrell Schlom,** Cornell University

### FMD JOURNAL OF ELECTRONIC MATERIALS BEST PAPER AWARD

"Ultrathin V3S4 Embedded in Three-Dimensional Carbon Framework with V-C Bonding Towards Alkali-Ion Batteries," *Journal of Electronic Materials*, July 2023.

**Jing Chen, Jiancheng Tang, Nan Ye, and Chenyu Zhang;** Nanchang University

## LIGHT METALS DIVISION (LMD)

### LMD TECHNOLOGY AWARD

**Kevin Anderson,** Brunswick Corporation

### LMD JOM BEST PAPER AWARD

"Performance and Durability of Reversible Solid Oxide Cells with Nano-electrocatalysts Infiltrated Electrodes," *JOM*, December 2022.

**Miao Yu, Bhaskar Reddy Sudireddy, and Ming Chen** University of Denmark

**Xiaofeng Tong** North China Electric Power University

### LMD MAGNESIUM TECHNOLOGY BEST PAPER AWARD - APPLICATION

"Development of Compound-vertical-retort Technology for Magnesium Production and its Application," *Magnesium Technology 2023*.

**Rongbin Li and Fengqin Liu** University of Science and Technology Beijing

**Jinhui Liu, Peixu Yang, and Shaojun Zhang** Zhengzhou University

**Michael Ren** Sunlightmetal Consulting Inc.

### LMD MAGNESIUM TECHNOLOGY BEST PAPER AWARD - FUNDAMENTAL RESEARCH

"In Situ Study of the Degradation Behaviour Under Load of Mg<sub>1.8</sub>YO<sub>0.6</sub>Zn(1Ag) Using Synchrotron Tomography," *Magnesium Technology 2023*.

**Birte Hindenlang, Jan Bohlen, Jianan Gu, Anais Louapre, Florian Wieland, Fabian Wilde, and Domonkos Tolnai;** Helmholtz-Zentrum Hereon

**Joao Pereira da Silva,** UFSCar

### LMD MAGNESIUM TECHNOLOGY AWARD - STUDENT PAPER

"Processing Map and Performance of a Low-cost Wrought Mg Alloy: ZAXEM11100," *Magnesium Technology 2023*.

**Thomas Avey, Alan Luo, and Jiashi Miao;** The Ohio State University

**Josh Caris,** Terves Inc

**Anil Sachdev,** General Motors Global Research and Development

### LMD MAGNESIUM TECHNOLOGY AWARD - BEST POSTER

"Flammability Resistant Magnesium Alloys Processed by Equal Channel Angular Pressing," *Magnesium Technology 2023*.

**Robert Král, Peter Minárik, Jitka Stráská, and Jozef Veselý;** Charles University

**Jiří Kubásek,** University of Chemistry and Technology

### LIGHT METALS AWARD

"Material Evaluation Framework of Additively Manufactured Aluminum Alloys for Space Optical Instruments," *Light Metals 2023*.

**Zachary J. Post, Walter R. Zimbeck, Steven M. Storck, John D. Boldt, Steven R. Szczesniak, Ryan H. Carter, Robert K. Mueller, Salahudin M. Nimer, Douglas B. Trigg, Michael A. Berkson, M. Frank Morgan, and William H. Swartz;** Johns Hopkins University

**Floris van Kempen, Gerard C.J. Otter, and Ludger van der Laan;** The Netherlands Organization for Applied Scientific Research

### **LIGHT METALS SUBJECT AWARD - ALUMINA/BAUXITE**

"Reduction of GHG Emissions and Increase Operational Reliability Using Immersed Electrode Boiler in an Alumina Refinery," *Light Metals 2023*.

**Fernando Melo, Everton Mendonca, Erinaldo Filho, and Jeferson Carneiro;** Hydro Alunorte - Alumina do Norte do Brasil

**Rodrigo Neves,** Ma'aden Bauxite and Alumina

### **LIGHT METALS SUBJECT AWARD - ALUMINUM REDUCTION TECHNOLOGY**

"Preheat, Start-Up and Early Operation of DX+ Ultra Pots at 500 kA," *Light Metals 2023*.

**Mustafa Mustafa, Nadia Ahli, Abdalla Alzarooni, Konstantin Nikandrov, Aslam Khan, Hassan Al Hayas, Marwan Al Ustad, and Sajid Hussain;** Emirates Global Aluminium

### **LIGHT METALS SUBJECT AWARD - ELECTRODE TECHNOLOGY FOR ALUMINUM PRODUCTION**

"AHEX Full Scale Experiences at TRIMET Aluminium SE," *Light Metals 2023*.

**Anders Sorhuus and Eivind Holmefjord;** REEL ECS

**Vrauke Zeibig and Omer Mercan,** TRIMET Aluminium SE

**Elmar Sturm,** Elmar Sturm Consulting

### **LIGHT METALS SUBJECT AWARD - WARREN PETERSON CAST SHOP FOR ALUMINUM PRODUCTION**

"Defect Minimisation in Vacuum Assisted Plaster Mould Investment Casting through Simulation of High Value Aluminium Alloy Components," *Light Metals 2023*.

**Emanuele Pagone, Christopher Jones, Mark Jolly, and Konstantinos Salonitis,** Cranfield University

**John Forde and William "Ben" Shaw,** Sylatech Ltd.

### **LIGHT METALS SUBJECT AWARD - RECYCLING**

"Recovery of Value Added Products from Bauxite Residue," *Light Metals 2023*.

**Himanshu Tanvar and Brajendra Mishra,** Worcester Polytechnic Institute

### **LMD/EPD ENERGY BEST PAPER AWARD - PROFESSIONAL**

"Corrosion and Erosion Protection to Accelerate Deployment of Sustainable Biomass," *Energy Technology 2023*, February 2023.

**Aida Amroussia, Patrick Brennan, Voramon Dheeradhada, Phil Gilston, Anteneh Kebbede, Steve Lombardo, Tamara Russell, Patrick Shower, Martin Morra, and Scott Weaver;** General Electric

**Suresh Babu and Michael Pagan,** University of Tennessee

**Bruce Pint,** Oak Ridge National Laboratory

### **LMD/EPD ENERGY BEST PAPER AWARD - STUDENT**

"Carbon Footprint Assessment of Waste PCB Recycling Process through Black Copper Smelting Route in Australia," *Energy Technologies 2023*, February 2023.

**Nawshad Haque,** CSIRO Energy

**Aulia Qisthi Mairizal, M. Akbar Rhamdhani, Agung Yoga Sembada, and Kwong Ming Tse,** Swinburne University of Technology

## **MATERIALS PROCESSING & MANUFACTURING DIVISION (MPMD)**

**MPMD DISTINGUISHED SCIENTIST/ENGINEER AWARD**  
**Rajiv Mishra,** University of North Texas

**MPMD DISTINGUISHED SERVICE AWARD**  
**Megan Cordill,** Erich Schmid Institute of Materials Science

## **STRUCTURAL MATERIALS DIVISION (SMD)**

**SMD DISTINGUISHED SCIENTIST/ENGINEER AWARD**  
**Catherine Rae,** Emmanuel College

**SMD DISTINGUISHED SERVICE AWARD**  
**Brad Boyce,** Sandia National Laboratories

**SMD JOM BEST PAPER AWARD**

"Machine Learning-Guided Exploration of Glass-Forming Ability in Multicomponent Alloys," *JOM*, December 2022.

**Yi Yao, Feng Yan, and Lin Li;**  
Arizona State University

**Timothy Sullivan IV and Jiaqi Gong;** University of Alabama

**YOUNG LEADERS AWARDS****EPD YOUNG LEADERS PROFESSIONAL DEVELOPMENT**

**Sougata Roy,** Iowa State University

**Matthew Zappulla,** Los Alamos National Laboratory

**FMD YOUNG LEADERS PROFESSIONAL DEVELOPMENT**

**Ling Li,** Virginia Polytechnic Institute

**Steven Naleway,** University of Utah

**Changhong Cao,** McGill University

**LMD YOUNG LEADERS PROFESSIONAL DEVELOPMENT**

**Thomas Dorin,** Deakin University

**Sridhar Niverty,** Pacific Northwest National Laboratory

**Brian Zukas,** Alcoa Corp

**MPMD YOUNG LEADERS PROFESSIONAL DEVELOPMENT**

**Emma White,** DEHEMA

**Brady Butler,** United States Army Research Laboratory

**Arunima Singh,** Arizona State University

**SMD YOUNG LEADERS PROFESSIONAL DEVELOPMENT**

**Anne Campbell,** Oak Ridge National Laboratory

**Grace Gu,** University of California, Berkeley

**Zachary Sims,** University of Tennessee

**YOUNG INNOVATOR IN THE MATERIALS SCIENCE OF ADDITIVE MANUFACTURING AWARD**

**Minh-Son Pham,** Imperial College London

**STUDENT SCHOLARSHIPS****FMD Gilbert Chin Scholarship**

**Anush Singhal,** Georgia Institute of Technology

**EPD Scholarship**

**Josh Black,** McMaster University

**MPMD Scholarship**

**Mary England,** McMaster University

**SMD Scholarship**

**Conway Zheng,** Drexel University

**TMS International Symposium on Superalloys Scholarship**

**Semanti Mukhopadhyay,** The Ohio State University

**Cynthia Rodenkirchen,** Imperial College London

**ACTA MATERIALIA INC. STUDENT POSTER AWARDS**

"Anelastic-like Nature of the Rejuvenation of Metallic Glasses by Cryogenic Thermal Cycling,"

**Miguel Frausto de Brito Costa**

"Impact of F and S Doping on (Mn, Fe)<sub>2</sub>(P, Si) Giant Magnetocaloric Materials,"

**Fengqi Zhang**

"Five-parameter Grain Boundary Character of Nanocrystalline Materials Revealed by Three-dimensional Orientation Mapping in the TEM,"

**Wanquan Zhu**

"Tissue-adhesive Hydrogel for Multimodal Drug Release to Immune Cells in Skin,"

**Nicole Day**

"An Ultrastructural 3D Reconstruction Method for Observing the Arrangement of Collagen Fibrils and Proteoglycans in the Human Aortic Wall Under Mechanical Load,"

**Anna Pukaluk**

"Detecting Thermally-induced Spinodal Decomposition with Picosecond Ultrasonics in Cast Austenitic Stainless Steel,"

**Saleem Aldajani**

"Influence of Forming Methods on the Microstructure of 3YSZ Flash-sintered Ceramics,"

**Isabela Lavagnini**

"Determination of the Friction Stir Welding Window from the Solid-state-bonding Mechanics Under Severe Thermomechanical Conditions,"

**Xue Wang**



**The TMS Foundation is the proud sponsor of many of the awards and programs being highlighted at TMS2024.**

The Foundation works to strengthen the profession through education, collaboration, and fostering a diverse workforce.

You can make a difference and be a part of future success stories by making a contribution to the TMS Foundation.

**Thank you for your generous support.**

[www.TMSFoundation.org](http://www.TMSFoundation.org)



# Congratulations to the 2024 Acta Materialia Award Recipients

Medalists will present their award-winning research at the Acta Materialia Symposium



#### Gold Medal

**Kazuhiro Hono**, President of the National Institute for Materials Science (Japan), and Professor of Materials Science and Engineering at the University of Tsukuba (Japan).



#### Silver Medal

**Jean-Philippe Couzinié**, Professor at the University of Paris Est-Créteil (France), Professor at the Institute of Chemistry and Materials Science Paris-Est at CNRS (France), Adjunct Professor in the Department of Materials Science and Engineering at Ohio State University (USA).



#### Mary Fortune Global Diversity Medal

**Lynnette D. Madsen**, Visiting Professor and Scholar at Cornell University (USA), and Program Director at the U.S. National Science Foundation (USA).



#### Hollomon Award for Materials and Society

**Iver E. Anderson**, Senior Metallurgist at Ames National Laboratory (USA), Adjunct Professor in the Department of Materials Science and Engineering at Iowa State University (USA).



YOU'RE INVITED  
ACTA MATERIALIA SYMPOSIUM:

Tuesday, March 5th at 2:30PM.

Location: Hyatt, Room: Regency

VIEW PROGRAM



EXPLORE  
ACTA MATERIALIA:

[www.sciencedirect.com/journal/acta-materialia](http://www.sciencedirect.com/journal/acta-materialia)



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# TMS 2024

153<sup>rd</sup> Annual Meeting & Exhibition

MARCH 3–7, 2024

HYATT REGENCY ORLANDO | ORLANDO, FLORIDA, USA

#TMSAnnualMeeting | [www.tms.org/TMS2024](http://www.tms.org/TMS2024)



## 38<sup>TH</sup> EXHIBITION

Located in the Regency STUV Rooms  
at the Hyatt Regency Orlando

### EXHIBIT HOURS AND EVENTS

#### Monday, March 4

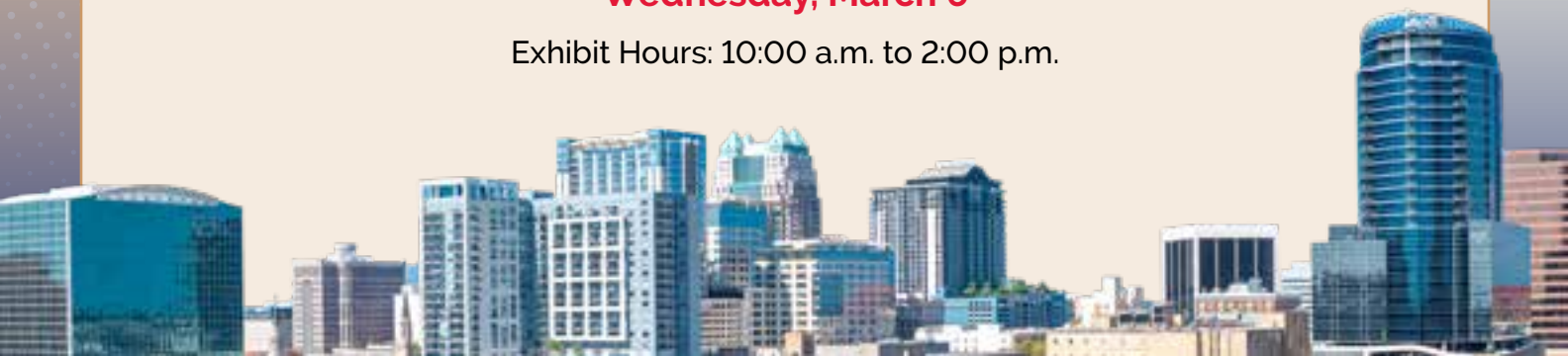
Exhibit Hours: 11:00 a.m. to 6:30 p.m.  
Exhibit Opening Reception & Poster Session I: 5:30 p.m. to 6:30 p.m.

#### Tuesday, March 5

Exhibit Hours: 11:00 a.m. to 6:30 p.m.  
Exhibit Hall Happy Hour & Poster Session II: 5:30 p.m. to 6:30 p.m.

#### Wednesday, March 6

Exhibit Hours: 10:00 a.m. to 2:00 p.m.



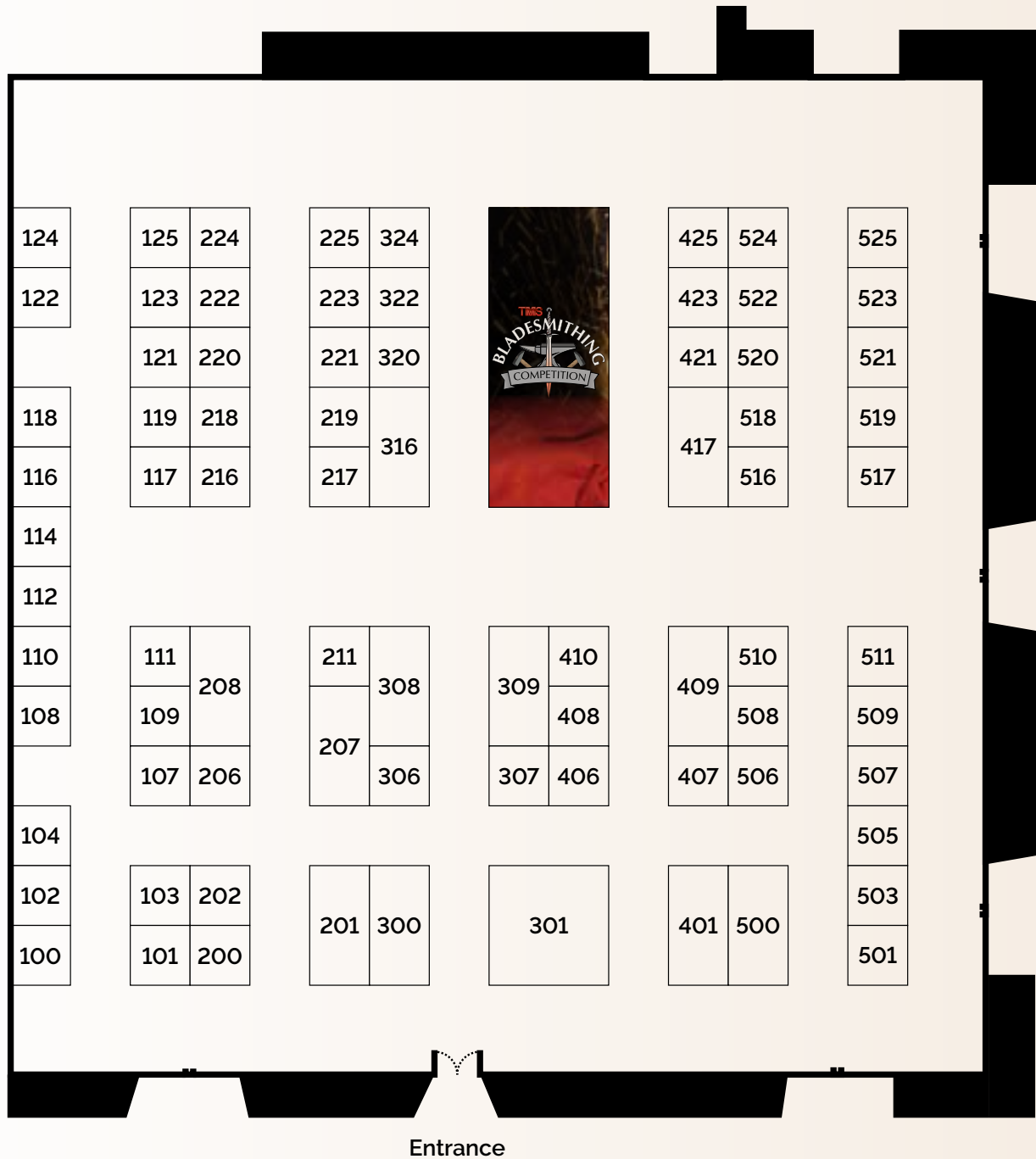
# 2024 EXHIBITING COMPANIES DIRECTORY

Exhibitor list current as of January 26. See the mobile app for exhibitors added after January 26.

Company	Booth #
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Alemnis AG / Angstrom Scientific Inc	217
Allied High Tech Products	500
ALMEX USA, Inc.	308
AMAZEMET Sp. z o. o.	425
AnalytiChem	421
Anton Paar	207
B-jetting	503
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Company	Booth #
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# FLOOR PLAN OF 2024 EXHIBITING COMPANIES



# 2024 EXHIBITING COMPANY DESCRIPTIONS

Exhibitor list current as of January 26.  
See the mobile app for exhibitors  
added after January 26.

Company	Booth
<b>ABB, Inc.</b>	<b>206</b>

Our company offers a complete range of analytical solutions to the aluminum industry with ALSCAN™ hydrogen analyzer, LiMCA inclusion analyzer, Prefil®-Footprinter melt cleanliness analyzer, PoDFA inclusion identification and quantification analysis. ABB also offers metallographic analysis services.

<b>Across International LLC</b>	<b>112</b>
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<b>Alemnis AG / Angstrom Scientific Inc</b>	<b>217</b>
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Angstrom Scientific Inc. represents a number of leading manufacturers supporting materials characterization and analysis.

<b>Allied High Tech Products</b>	<b>500</b>
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For over 41 years, Allied High Tech Products has provided quality products for metallographic sample preparation & analysis. Items on display include state-of-the-art Grinding/Polishing Systems, Sectioning Saws and Mounting Systems, as well as a full range of consumable products. Carl Zeiss Microscopes will also be featured.

<b>ALMEX USA, Inc.</b>	<b>308</b>
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Almex USA is the leading supplier of aerospace & commercial aluminum billet & slab casting technology & equipment. The company specializes in complete turnkey "Furnace to Finish™" aluminum casthouse solutions. The well-rounded product line includes melting furnaces, degassing systems, DC casting machines, billet/slab casting systems, automation & homogenization systems.

<b>AMAZEMET Sp. z o. o.</b>	<b>425</b>
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<b>AnalytiChem</b>	<b>421</b>
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<b>Anton Paar</b>	<b>207</b>
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<b>B-jetting</b>	<b>503</b>
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Company	Booth
<b>Bruker</b>	<b>201</b>

Bruker's industry-leading technologies include Micro-XRF, UMT mechanical testers and Hysitron nanomechanical test instruments. From investigating friction and wear to nanoscale materials characterization and elemental analysis, Bruker offers advanced solutions to help you appreciate and develop innovative materials at the macro- and nano-scale.

<b>Cameca</b>	<b>101</b>
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CAMECA is a world leading supplier of microanalytical and metrology instrumentation for research and process control. Our instruments measure elemental and isotopic composition in materials down to atomic resolution and equip government and university labs as well as high-tech industrial companies around the world.

<b>Carl Zeiss Microscopy, LLC</b>	<b>401</b>
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ZEISS microscopy is the world's only manufacturer of light, electron, ion, and X-ray microscope systems to address challenges in materials characterization and inspection. From 2D to 3D and even 4D (through time) analysis, ZEISS microscopes offer the modalities and dimensions needed to fully investigate your material microstructures.

<b>CompuTherm, LLC</b>	<b>211</b>
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CompuTherm is a leading developer of CALPHAD-based simulation tools. In addition to thermodynamics & phase equilibrium, Pandat software can be used to simulate materials processing from solidification to homogenization and heat treatment. Thermodynamic, mobility, molar volume and other property databases are available. We also aid customers to develop specialized tools.

<b>Dr. Fritsch Sondermaschinen GmbH</b>	<b>116</b>
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<b>DTE</b>	<b>417</b>
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DTE's product range includes a fully automatic Elemental Analyzer which delivers real-time information on trace elements in liquid aluminum. With proprietary improvements over standard LIBS technology, we can deliver frequent real-time process information, rivaling laboratory accuracy, without any operator involvement—towards process automation and Industry 4.0.

# 2024 EXHIBITING COMPANY DESCRIPTIONS

Company	Booth
<b>EBSA Analytical</b>	<b>408</b>

EBSA Analytical provides microstructural analysis services through EBSD and EDS coupled with the SEM. The owner, Ron Witt, has been involved with EBSD since 1996, having worked for both TSL and EDAX/Ametek before founding EBSA Analytical in 2003. With over 23 years experience, let us show you how materials characterization with EBSD can help improve your processes.

<b>Elsevier</b>	<b>322</b>
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Elsevier is a global leader in information and analytics that helps researchers and healthcare professionals advance science and improve health outcomes for the benefit of society. Elsevier's Materials Science journals are dedicated to the creation and sharing of materials science research with high-quality and comprehensive coverage throughout the various disciplines.

<b>Exum Instruments</b>	<b>109</b>
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Exum Instruments enables materials scientists and engineers to spend less time acquiring data and more time learning from it. Exum's innovative Massbox can take any solid material and measure the full periodic table of its constituents in minutes. Its intuitive operations and compact package bring high performance outside the traditional laboratory environment.

<b>FemtoTools AG</b>	<b>301</b>
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FemtoTools is a manufacturer of high-resolution nanoindenters for applications in metallurgy and thin films.

<b>Fritsch Milling &amp; Sizing, Inc.</b>	<b>307</b>
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FRITSCH is an internationally respected German manufacturer of commercial quality, professional application-oriented laboratory instruments & production equipment. Serving a range of industries—from agriculture to pharma to nano-technology.

<b>Gatan/EDAX</b>	<b>410</b>
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Gatan/EDAX is the global leader in Energy Dispersive Spectroscopy (EDS), Electron Backscatter Diffraction (EBSD), Wavelength Dispersive Spectrometry (WDS) and X-ray Fluorescence (XRF) systems. EDAX manufactures, markets, and services high-quality products and systems for leading companies in semiconductors, metals, and geological, biological, material and ceramics markets.

Company	Booth
<b>GLAMA</b>	<b>300</b>

GLAMA, founded in 1961, is mainly building heavy-duty Equipment for Aluminium pot rooms, cast houses and anode rodding shops throughout the world. Extract of our range of products: - Anode Changing Vehicles - Anode Pallet Transporters - Butt Cleaning Manipulators - Furnace Charging Machines - Furnace Tending Machines - Ladle Charging Trucks - Molten Metal Carriers - Tapping Trucks

<b>Gleeble</b>	<b>516</b>
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<b>Glenn T. Seaborg Institute - Idaho National Laboratory</b>	<b>510</b>
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<b>Haarslev Industries Press Technology GmbH + Co.Kg</b>	<b>306</b>
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The world leader for most efficient wear protection materials. We supply optimized wear and spare parts for Anode Paste mixers at economical prices with longer life times than any other supplier to this industry. Furthermore, we provide services and process support for anode paste preparation. All of our parts for the Aluminium Industry are manufactured in Germany.

<b>Heraeus Electro-Nite</b>	<b>409</b>
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<b>innovatherm Prof. Dr. Leisenberg GmbH + Co. KG</b>	<b>511</b>
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<b>InssTek</b>	<b>103</b>
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InssTek develops and manufactures metal 3D printers with InssTek's original DMT (Direct Metal Tooling) technology. InssTek also provides printing, remodeling, and repair services for 3D printing applications.

<b>KLA Corporation</b>	<b>309</b>
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We provide advanced process control solutions for manufacturing wafers and reticles, integrated circuits and packaging. In close collaboration with leading customers across the globe, our expert teams of physicists, engineers, data scientists and problem-solvers design solutions that move the world forward.

# 2024 EXHIBITING COMPANY DESCRIPTIONS

Exhibitor list current as of January 26.  
See the mobile app for exhibitors added after January 26.

Company	Booth
Linseis Inc	508

<b>Micro Materials Ltd</b>	<b>320</b>
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Micro Materials has pioneered many advances in nanomechanical test instrumentation, most recently testing to 1100 degrees C. Our platforms are capable of depth sensing indentation and tribological measurements that can be done over a wide load range. Tribological techniques include scratch and wear, high strain rate nano-impact, micro impact, & nano-fretting.

<b>MTI Corporation</b>	<b>406</b>
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MTI provides laboratory R&D equipment including alloy melting, casting, annealing, sectioning, polishing, mixing machines, high temperature muffle and tube furnaces, pressing machines, film coaters, high vacuum systems, high pressure furnaces, RTP furnaces, hydrogen furnaces, as well as compact XRD/XRF for Metallographic analysis and equipment for High Throughput.

<b>Nuclear Science User Facilities</b>	<b>218</b>
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The Nuclear Science User Facilities (NSUF) offers unparalleled research opportunities for nuclear energy researchers via partner institutions. Users are granted access via a competitive peer-reviewed process to world-class nuclear research facilities, technical expertise, and assistance.

<b>Pacific Northwest National Laboratory (PNNL)</b>	<b>218</b>
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<b>Plastometrex Limited</b>	<b>208</b>
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Founded in 2018 by a team of Cambridge scientists, Plastometrex is a cutting-edge materials testing company specialising in advanced measurement solutions for mechanical properties. The company's innovative Profilometry-based Indentation Plastometry (PIP) method offers fast and accurate insights into material properties, with a particular focus on metals.

<b>Precimeter Inc.</b>	<b>506</b>
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Molten Metal level control.

Company	Booth
Proto	202

Proto makes x-ray diffractometers for powder diffraction, single-crystal XRD, residual stress, and Laue orientation. We also offer x-ray systems with extremely bright MetaJet x-ray sources for high-end experimental x-ray techniques such as CT, phase-contrast imaging, and HEDM. Our experienced team can bring the power of a synchrotron into your home laboratory.

<b>Psylotech Inc</b>	<b>505</b>
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For over 15 years, Psylotech has designed and built precision multi-scale micromechanical testing systems for the global stage. We provide the research community with tools to help better test new materials in static and fatigue that ultimately provide backbone for modeling data that supports product development. Psylotech is based in Evanston, Illinois, USA.

<b>PyroGenesis Canada</b>	<b>219</b>
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PyroGenesis Canada Inc. pioneers advanced plasma processes, offering sustainable alternatives to conventional dirty practices in iron ore pelletization, aluminum, waste management, and additive manufacturing. With patented technologies, our Montreal-based team drives innovation for cleaner, economically attractive solutions.

<b>Quantum Design</b>	<b>114</b>
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Quantum Design, a leading manufacturer of automated material characterization systems, offers the FusionScope™, an innovative correlative microscope that combines the power of AFM with the benefits of SEM imaging to provide completely new insights into the nano-world. QD also distributes additive micro-manufacturing (µAM) of metals systems and maskless lithography systems.

<b>Reed Exhibitions (China) Ltd</b>	<b>114</b>
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<b>Rtec Instruments</b>	<b>221</b>
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<b>SELEE</b>	<b>108</b>
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# 2024 EXHIBITING COMPANY DESCRIPTIONS

Company	Booth
<b>Sente Software Ltd.</b>	<b>519</b>

Developers of JMatPro®, a powerful simulation software package for calculating a wide range of materials properties and behavior for multi-component alloys used in industrial practice. Data exports are available to casting, forming, forging and heat treatment packages. Sente Software has a proven track record for innovation and excellence with customers worldwide.

<b>Sistem Teknik Industrial Furnaces Ltd.</b>	<b>117</b>
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Designing and producing industrial furnaces since 1979, Sistem Teknik uses state-of-the-art technology that is fully integrated to industry 4.0 thermal processing applications. Being one of Europe's largest turn-key solution providers for heat treatment, Sistem Teknik responds to a wide range of demands related to aluminum, brass, and composite metals.

<b>Software for Chemistry &amp; Materials</b>	<b>507</b>
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<b>Synton Mdp AG</b>	<b>517</b>
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Synton-MDP is a manufacturer of diamond stylus for microtechnical instruments. Most of the tips are used in metrological equipment (surface finish, profile, form, nano-indentation, hardness, scratch and other characteristics). We specialise in small spherical tips, with a high level of dimensional accuracy in ultra-compact configurations, and points with razor sharp edges.

<b>Tekna Plasma System Inc</b>	<b>423</b>
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Tekna has been designing and manufacturing RF-ICP plasma technology for over 30 years. This technology can be used for powder metallurgy and additive manufacturing, nano particle synthesis for energy storage and micro electronics, or even material testing in high enthalpy environments such as space re-entry simulations or hypersonic flight applications.

<b>Tenova Inc.</b>	<b>316</b>
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Tenova Inc., is a worldwide leader in the design and supply of loose carbonaceous material calciners based on rotary hearth technology. These furnaces are used for the processing of petroleum coke, coal, formed coke briquettes and various other carbon based products. We also provide aluminum processing furnaces for a variety of applications as well as technical services.

Company	Booth
<b>TESCAN</b>	<b>216</b>

<b>Thermo Calc Software Inc.</b>	<b>200</b>
----------------------------------	------------

Leading developer of software for computational thermodynamics and diffusion controlled simulations. Thermo-Calc: thermodynamic and phase equilibria calculations for multicomponent systems. DICTRA: predicting diffusion in multicomponent alloys. TC-PRISMA: simulations of precipitation kinetics. Databases for steels, Ti, Al-, Mg-, HEAs, Ni-superalloys and other materials.

<b>UES inc.   An Eqlipse Company</b>	<b>407</b>
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Redefining the limits of technology, from macro to micro. We're pushing the boundaries of what's possible, from concept to reality. Our high-performance and innovative scientific research and technology services and products solve challenges for customers seeking innovation and cutting-edge solutions.

<b>UK Atomic Energy Authority</b>	<b>107</b>
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United Kingdom Atomic Energy Authority (UKAEA) is the UK's national organisation responsible for the research and delivery of sustainable fusion energy. It is an executive non-departmental public body, sponsored by the Department for Energy Security and Net Zero.

<b>University of Central Florida, Materials Science and Engineering</b>	<b>104</b>
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<b>University of North Texas: Center for Agile and Adaptive Additive Manufacturing</b>	<b>324</b>
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Advanced Manufacturing  
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EXHIBIT DIRECTORY





# How to recover critical metals from end-of-life consumer materials using ISACYCLE™ technology

As e-scrap and copper recycling become a global focus, operations are turning to ISASMELT™ and ISACYCLE™ as proven technologies for e-scrap projects of any size. The cleanest, most efficient method of copper recycling on the market today – delivering products and by-products with minimal waste.



Scan the QR code to register for this workshop with Dr Stuart Nicol as he outlines how to launch an e-scrap or secondary copper recycling project from the ground up.

- Learn the chemistry and the overall flowsheet behind an e-scrap and secondary copper recycling facility.
- Explore the pros and cons of different techniques, equipment, and furnaces.
- Connect with the ISACYCLE™ team to discuss your own projects and get advice from the experts on how to develop your own e-scrap project.

**ALL TMS ATTENDEES WELCOME**

**Date:** Monday, 4 March • **Time:** 12:15–13:30hrs • Hyatt Regency Orlando, Celebration 5 Room • **Refreshments provided**



# How to reduce your emissions and cut your operating costs with ISACONVERT™ technology

Convert more matte into metal with less capital, less fugitive emission, and less energy with ISACONVERT™. ISACONVERT™ takes proven ISASMELT™ technology and delivers a lower-cost, higher-performance, and environmentally responsible continuous converter. Fulfil your ESG goals and exceed your operating expectations.



Scan the QR code to register for this workshop with Dr Stuart Nicol and learn how ISACONVERT™ converts copper matte to a low sulphur blister copper.

- Learn about the environmental performance and benefits of the ISACONVERT™ and how it can be integrated into an existing OR new copper smelting flowsheet.
- Hear about the successful implementation at Kansanshi Mining PLC in Zambia.
- Book a one-on-one discussion with Glencore Technology's experts to discuss the ISACONVERT™ in your operation.

**ALL TMS ATTENDEES WELCOME**

**Date:** Wednesday, 6 March • **Time:** 12:15–13:30hrs • Hyatt Regency Orlando, Celebration 5 Room • **Refreshments provided**

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154<sup>th</sup> Annual Meeting & Exhibition

**March 23–27, 2025**

MGM Grand Las Vegas Hotel & Casino  
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TMS2025!**

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For the first time in 30 years, the TMS Annual Meeting & Exhibition is headed to Las Vegas, Nevada. The event has already attracted 120 symposium proposals, promising a strong technical program and demonstrating high interest in our new location.

### HOUSING IS NOW OPEN

Reserve your room today at the MGM Grand Las Vegas Hotel & Casino, the headquarters hotel for TMS2025.

### MARK YOUR CALENDAR

**May 2024:** Call for Abstracts Opens  
**October 2024:** Registration Opens  
**March 23–27:** Conference Dates





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1 H 1.00794 Hydrogen																	2 He 4.002602 Helium																												
3 Li 6.941 Lithium	4 Be 9.012182 Beryllium											5 B 10.811 Boron	6 C 12.0107 Carbon	7 N 14.0067 Nitrogen	8 O 15.9994 Oxygen	9 F 18.9984032 Fluorine	10 Ne 20.1797 Neon																												
11 Na 22.98976928 Sodium	12 Mg 24.305 Magnesium											13 Al 26.9815386 Aluminum	14 Si 28.0855 Silicon	15 P 30.973762 Phosphorus	16 S 32.065 Sulfur	17 Cl 35.453 Chlorine	18 Ar 39.948 Argon																												
19 K 39.0983 Potassium	20 Ca 40.078 Calcium	21 Sc 44.955912 Scandium	22 Ti 47.867 Titanium	23 V 50.9415 Vanadium	24 Cr 51.9961 Chromium	25 Mn 54.938045 Manganese	26 Fe 55.845 Iron	27 Co 58.933195 Cobalt	28 Ni 58.6934 Nickel	29 Cu 63.546 Copper	30 Zn 65.38 Zinc	31 Ga 69.723 Gallium	32 Ge 72.64 Germanium	33 As 74.9216 Arsenic	34 Se 78.96 Selenium	35 Br 79.904 Bromine	36 Kr 83.798 Krypton																												
37 Rb 85.4678 Rubidium	38 Sr 87.62 Strontium	39 Y 88.90585 Yttrium	40 Zr 91.224 Zirconium	41 Nb 92.90638 Niobium	42 Mo 95.96 Molybdenum	43 Tc (98.0) Technetium	44 Ru 101.07 Ruthenium	45 Rh 102.9055 Rhodium	46 Pd 106.42 Palladium	47 Ag 107.8682 Silver	48 Cd 112.411 Cadmium	49 In 114.818 Indium	50 Sn 118.71 Tin	51 Sb 121.76 Antimony	52 Te 127.6 Tellurium	53 I 126.90447 Iodine	54 Xe 131.293 Xenon																												
55 Cs 132.9054 Cesium	56 Ba 137.327 Barium	57 La 138.90547 Lanthanum	72 Hf 178.48 Hafnium	73 Ta 180.948 Tantalum	74 W 183.84 Tungsten	75 Re 186.207 Rhenium	76 Os 190.23 Osmium	77 Ir 192.217 Iridium	78 Pt 195.084 Platinum	79 Au 196.966569 Gold	80 Hg 200.59 Mercury	81 Tl 204.3833 Thallium	82 Pb 207.2 Lead	83 Bi 208.9804 Bismuth	84 Po (209) Polonium	85 At (210) Astatine	86 Rn (222) Radon																												
87 Fr (223) Francium	88 Ra (226) Radium	89 Ac (227) Actinium	104 Rf (261) Rutherfordium	105 Db (268) Dubnium	106 Sg (271) Seaborgium	107 Bh (272) Bohrium	108 Hs (270) Hassium	109 Mt (276) Meitnerium	110 Ds (281) Darmstadtium	111 Rg (280) Roentgenium	112 Cn (285) Copernicium	113 Nh (284) Nihonium	114 Fl (289) Flerovium	115 Mc (288) Moscovium	116 Lv (293) Livermorium	117 Ts (294) Tennessine	118 Og (294) Oganesson																												
<table border="1"> <tr> <td>58 Ce 140.116 Cerium</td> <td>59 Pr 140.90766 Praseodymium</td> <td>60 Nd 144.242 Neodymium</td> <td>61 Pm (145) Promethium</td> <td>62 Sm 150.36 Samarium</td> <td>63 Eu 151.964 Europium</td> <td>64 Gd 157.25 Gadolinium</td> <td>65 Tb 158.92535 Terbium</td> <td>66 Dy 162.5 Dysprosium</td> <td>67 Ho 164.93032 Holmium</td> <td>68 Er 167.259 Erbium</td> <td>69 Tm 168.93421 Thulium</td> <td>70 Yb 173.054 Ytterbium</td> <td>71 Lu 174.968 Lutetium</td> </tr> <tr> <td>90 Th 232.03806 Thorium</td> <td>91 Pa 231.03688 Protactinium</td> <td>92 U 238.02891 Uranium</td> <td>93 Np (237) Neptunium</td> <td>94 Pu (244) Plutonium</td> <td>95 Am (243) Americium</td> <td>96 Cm (247) Curium</td> <td>97 Bk (247) Berkelium</td> <td>98 Cf (251) Californium</td> <td>99 Es (252) Einsteinium</td> <td>100 Fm (257) Fermium</td> <td>101 Md (288) Mendelevium</td> <td>102 No (289) Nobelium</td> <td>103 Lr (262) Lawrencium</td> </tr> </table>																		58 Ce 140.116 Cerium	59 Pr 140.90766 Praseodymium	60 Nd 144.242 Neodymium	61 Pm (145) Promethium	62 Sm 150.36 Samarium	63 Eu 151.964 Europium	64 Gd 157.25 Gadolinium	65 Tb 158.92535 Terbium	66 Dy 162.5 Dysprosium	67 Ho 164.93032 Holmium	68 Er 167.259 Erbium	69 Tm 168.93421 Thulium	70 Yb 173.054 Ytterbium	71 Lu 174.968 Lutetium	90 Th 232.03806 Thorium	91 Pa 231.03688 Protactinium	92 U 238.02891 Uranium	93 Np (237) Neptunium	94 Pu (244) Plutonium	95 Am (243) Americium	96 Cm (247) Curium	97 Bk (247) Berkelium	98 Cf (251) Californium	99 Es (252) Einsteinium	100 Fm (257) Fermium	101 Md (288) Mendelevium	102 No (289) Nobelium	103 Lr (262) Lawrencium
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