



FEBRUARY 27-MARCH 3, 2022
ANAHEIM CONVENTION CENTER & ANAHEIM MARRIOTT
ANAHEIM, CALIFORNIA, USA

Current as of February 17, 2022 - Updated from Print Version

CONFERENCE GUIDE

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

#TMSAnnualMeeting • www.tms.org/TMS2022

FIND MORE MEETING DETAILS:

Download the TMS2022 Mobile App for the most up-to-date schedule.



Scan this QR code or visit www.tms.org/TMS2022 for a PDF of the full **Technical Program**, current as of February 11, and **Calendar of Events**, current as of February 21.



Images may not represent TMS2022 health and safety measures, such as masks and social distancing.

The new EVY Compact Vacuum Cleaner

FRESH THINKING, SMART CLEANING

The cleanest

- Filters even the finest dust:
2 - 0,2 micron
- Cleans without dust clouds
- Sustainable: better for men & machine

The leanest

- Compact, highly manoeuvrable model
- Reduces your Total Cost of Ownership
- Single out of stock model

The meanest

- Fully continuity-adjusted
- Collects all dust, ready to re-use & re-market
- It's all about Serving Progress!

For more information about EVY: www.hencon.com/evy

A MESSAGE FROM THE 2021 TMS PRESIDENT: ELLEN CERRETA

I am so pleased to welcome you back **in person** to the TMS 2022 Annual Meeting & Exhibition (TMS2022)! After meeting virtually last year, it is wonderful to see our community coming together again.

It will be a great week, filled with all the elements that make the TMS Annual Meeting & Exhibition such a can't-miss event: the chance to meet face-to-face, to talk about topics both important and casual, and to experience a community of people who share your interests.

Here are some things you should know about this year's meeting:

It's Our Anniversary:

Celebrate with us! You should have received a commemorative pin when you picked up your badge at registration. Wear it throughout the week to help us celebrate 150 years of convening minerals, metals, and materials professionals as the shared history of TMS and The American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME). Learn more about our history at www.tms.org/OurHistory and see how much you know about TMS's past through the quiz on the TMS2022 App.

There's a Lot Going On:

Many special events that were planned for TMS2021 have been shifted to this year's meeting so that they could take place in person. As a result, there's a *lot* going on at TMS2022! In addition to attending talks in our extensive technical program, you can browse entries to the TMS Bladesmithing Competition in the Exhibit Hall and take part in *three* co-located meetings being held at TMS2022. The Fourth Summit on Diversity in the Minerals, Metals, and Materials Professions (DMMM4); Furnace Tapping 2022; and REWAS 2022 will all take place this week, and you have full access to the technical programming of these events.

Recorded Presentations Will Be Available March 14:

Sometimes there's too much to take in during a single week, but you'll have a second chance to catch presentations that you've missed or to see new presentations from speakers who were unable to travel to Anaheim. On-demand access to presentations begins Monday, March 14, and will be available through April 30, 2022.

We also recognize that some things will be a bit different this year. Here are a few key items you should know about TMS2022:

We Have New Safety Measures:

You've no doubt received our messages about the health and safety measures we've put in place to ensure that all attendees feel safe and comfortable while attending this week's meeting. I encourage you all to do your part to make this year's meeting a success by following these protocols while you're with us this week. You can learn more specifics on page 13.

This Year, You Need the App:

This conference guide is designed to provide you with preliminary information on how to navigate the meeting, but you'll need to download the TMS2022 app, access the browser version, or consult the technical program, calendar of events, and meeting details on the TMS website to find the most updated information on event locations, speakers, and presentation times.

Some Sessions Will Be Live-Streamed:

Being back in-person is great, but if you find you need a break during the week, you can watch select sessions through the internet connection in your hotel room. Check the TMS2022 App for a full listing of our live-streamed programming.

Thank you all for joining us for this exciting return to the TMS Annual Meeting & Exhibition. Enjoy your week and welcome back!

Sincerely,



Ellen Cerreta
2021 TMS President



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Health & Safety Information
(see page 13)



**Preview of the
All-Conference Plenary**
(see page 20)



Technical Program at a Glance
(see page 29)



**TMS-AIME Awards
Ceremony Program**
(see page 34)



TMS2022 Exhibit Directory
(see page 45)



TMS Guide for New Members
(see page 53)

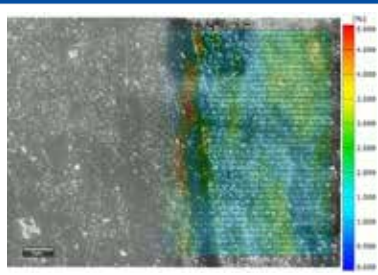
Building the Future Microscopy Solutions for Engineering Materials

LabDCT Pro Imaging



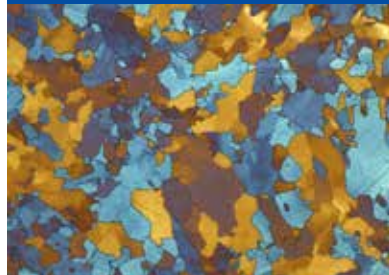
3D grain map of a β -Ti sample, 1 x 1 x 3 mm, scanned by diffraction contrast tomography

SEM integrated *in situ*



Integrated *in situ* tensile and heating experiments on steel. Secondary electron image (left) and digital image correlation strain map overlaid (right).

Optical Metallography



Pure iron in reflected brightfield observed with inverted metallograph



Seeing beyond

Find Up-to-Date Event Schedules

TMS2022 organizers have made every effort to develop a strong technical program for this year's meeting, but last-minute schedule changes in travel plans are to be expected. While organizers will work to minimize schedule disruptions as much as possible, we urge all attendees to stay up-to-date on schedule changes using the following tools.

Please note that a printed version of the TMS2022 technical program will not be available to attendees. Instead, you can access updated technical information through the TMS2022 app or by downloading the technical program PDF from www.tms.org/TMS2022.

Download Technical Program

Download a print- or mobile-friendly version of the TMS2022 Technical Program in searchable PDF format. For real-time programming updates, you can view the online session sheets. www.tms.org/TMS2022/TechnicalProgram.

Stay Updated All Week Long

Make sure you stay up-to-date on major schedule changes and key events at the TMS 2022 Annual Meeting & Exhibition by taking these simple steps:

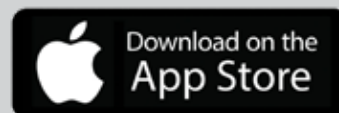
1. **Enable Notifications from the TMS2022 App:** You'll be updated a few times each day of key events happening at the conference and of any major scheduling changes. Keep an eye on your phone and the app.
2. **Check *TMS2022 News* Each Morning:** Each issue of the at-meeting newsletter contains a listing of the day's major events and any late-breaking schedule news. It will also offer photos and recaps from previous days' events. Check your e-mail daily or read the most recent issue through the TMS2022 app.
3. **Connect with Other Attendees on Twitter:** Use #TMSAnnualMeeting to post information and updates through Twitter for other TMS2022 attendees to view.

NEW FOR 2022: Welcome Back Reception

All attendees are encouraged to join their colleagues for the Welcome Back Reception on Sunday evening, from 7:00 p.m. to 8:00 p.m. on the third floor of the Anaheim Convention Center. (Ballroom ABCD) Network with other attendees in your technical division before the start of technical programming.

HIGHLY RECOMMENDED:

Download the "TMS Annual Meeting" App



Build a personalized schedule, view the most up-to-date technical program information, and more with the TMS 2022 Annual Meeting App. To download, search "TMS Annual Meeting" in the App Store or the Google Play™ Store. You can also use a web-based version of the app by visiting www.tms.org/TMS2022app.

The app also allows users to:

- View the most up-to-date program
- Access full abstracts and speaker information
- Create a personalized conference agenda
- Learn about meeting exhibitors and sponsoring companies
- Communicate with other attendees
- View local area and hospitality information
- Access *TMS2022 News*

PLEASE NOTE: LOG IN REQUIRED

To use the app or web platform you will need to log in using the same e-mail address you used when registering for TMS2022. Your password is your registration ID (generally formatted 22-XXXX).

Can't remember which e-mail you registered with? Check the printed ticket with your registration badge titled "Use the TMS 2022 Annual Meeting App" for a reminder.

Find Featured Session Information at the TMS2022 Website



DMMM4:

View programming plans, including keynote and invited speakers, for the Fourth Summit on Diversity in the Minerals, Metals, and

Materials Professions. Programming will be held Wednesday and Thursday.

www.tms.org/TMS2022/DMMM4



Furnace Tapping 2022:

Learn more about the programming plans, keynote speakers, and panel discussions for this co-located meeting, sponsored

by TMS and the Southern African Institute of Mining and Metallurgy.

www.tms.org/TMS2022/FurnaceTapping



REWAS 2022:

The 7th installment of the REWAS conference series will focus on Developing Tomorrow's Technical Cycles. Six symposia are

planned as part of REWAS 2022, along with a plenary session of invited speakers.

www.tms.org/TMS2022/REWAS



Honorary Symposia:

Five symposia are planned throughout the week honoring distinguished TMS members:

- REWAS 2022: Coupling Metallurgy and Sustainability: An EPD Symposium in Honor of **Diran Apelian**
- Failure, and a Career That is Anything But: An LMD Symposium Honoring **J. Wayne Jones**
- Magnetics and the Critical Materials Challenge: An FMD Symposium Honoring **Matthew J. Kramer**
- Primary Aluminum Industry - Energy and Emission Reductions: An LMD Symposium in Honor of **Halvor Kvande**
- Seeing is Believing—Understanding Environmental Degradation and Mechanical Response Using Advanced Characterization Techniques: An SMD Symposium in Honor of **Ian M. Robertson**

Learn more at

www.tms.org/TMS2022/HonorarySymposia

Featured Sessions:

Throughout the week, TMS2022 will hold featured sessions of invited presentations. Learn more about planned presenters and their topics.

www.tms.org/TMS2022/FeaturedSessions

Featured sessions include:

- Light Metals Keynote Session
- Magnesium Keynote Session
- Additive Manufacturing Session
- Acta Materialia Awards Session
- Frontiers of Materials Symposia

Special Lectures:

Preview talks by award recipients, luncheon lecturers, and more. www.tms.org/TMS2022/SpecialLectures

Find Networking and Special Event Details at the TMS2022 Website

View descriptions of social and networking events, student activities, and more through the events section of the TMS2022 website at

www.tms.org/TMS2022/Events.

There you'll find the following:

Calendar of Events:

View a complete Calendar of Events through the Attendee Toolbox section of the TMS2022 website.

www.tms.org/TMS2022/Toolbox

Networking and Social Events:

View a listing of networking and social events, with brief descriptions for each, and make a place in your schedule for these activities.

www.tms.org/TMS2022/Events

Student and Young Professional Events:

Special events and activities are planned throughout the week for undergraduate students, graduate students, and early career professionals. Learn more about programming plans.

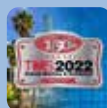
www.tms.org/TMS2022/Events



Restaurants

- 1 Agio Ristorante
- 2 Anaheim Packing District/MAKE-/Anaheim Brewery
Umami Burger/Cultivation Kitchen/Pali Wine Co.
Unsung Brewery/Jav's BBQ
- 3 Anaheim White House
- 4 Mix Restaurant /Baja Fresh
Sbarro/Submarina/Just Grillin'
- 5 Benihana Anaheim
- 6 Buca di Beppo
- 7 Center Street Promenade-Cervantes Mexican
Kitchen/Chimney Cakes/Colony Wine Merchant/
Good Food/Hummus Bean/PokiNometry/Pour
Vida/Promenade Pub/Decades/Okayama Kobo
Bakery & Café
- 8 Coco's (2 locations)
- 9 Coffee Bean & Tea Leaf
- 10 Denny's (2 locations)
- 11 Disney's* PCH Grill/Surfside Lounge/The Sand Bar
- 12 Garden Court Bistro/Hanagi Japanese Restaurant
- 13 Goofy's Kitchen, Steakhouse 55
- 14 IHOP Restaurant
- 15 IHOP Restaurant
- 16 In-N-Out
- 17 Jägerhaus German Restaurant
- 18 Jimboys Tacos
- 19 Joe's Italian Ice & Ice Cream
- 20 JT Schmid's Brewhouse & Eatery
- 21 JW Rooftop Bar & Lounge/JW Signature Restaurant
- 22 La Casa Garcia
- 23 Mama Cozza's Italian Restaurant
- 24 Marri's Pizza & Pasta
- 25 MasalaCRAFT
- 26 McDonald's (three locations)
- 27 Mimi's Cafe
- 28 Morton's The Steakhouse
- 29 Napa Rose/Storyteller's Café/
GCH Craftsman Bar & Grill
- 30 Nova Kitchen & Bar
- 31 nFuse/The Market
- 32 Oasis Kitchen & Bar
- 33 Palm Tree Café
- 34 Panera Bread
- 35 Pho Ha Plus Vietnamese Cuisine and Bar
- 36 Savor 1855
- 37 The Fifth Rooftop Bar
- 38 The Pizza Press
- 39 THE RANCH Restaurant & Saloon
- 40 Red Lion Hotel Restaurant
- 41 Red Robin/Outback Steakhouse/Joe's Crab Shack/
Oggi's Pizza & Brewing Co.
- 42 Roscoe's Chicken & Waffles
- 43 Ruby's Diner, Anaheim
- 44 Ruth's Chris Steak House
- 45 Stadium Promenade-
Prime Cut Café/Old Crow Smokehouse/King's Fish
House/Lazy Dog Café/Chili's/The Tilted Kilt
Which Wich/Starbucks's
- 46 Subway Sandwiches
- 47 The Catch Anaheim
- 48 TOGO's/Baskin-Robbins/Fresca's/Starbucks/
Denny's/Panda Express/Carl's Jr.
- 49 Tony Roma's
- 50 Tru Grits
- 51 Zov's

**Show What You Know
about TMS History**
Take the quiz on the
TMS2022 App



Browse Meeting Highlights
Scan this QR Code to browse the
TMS2022 website for additional
meeting information.



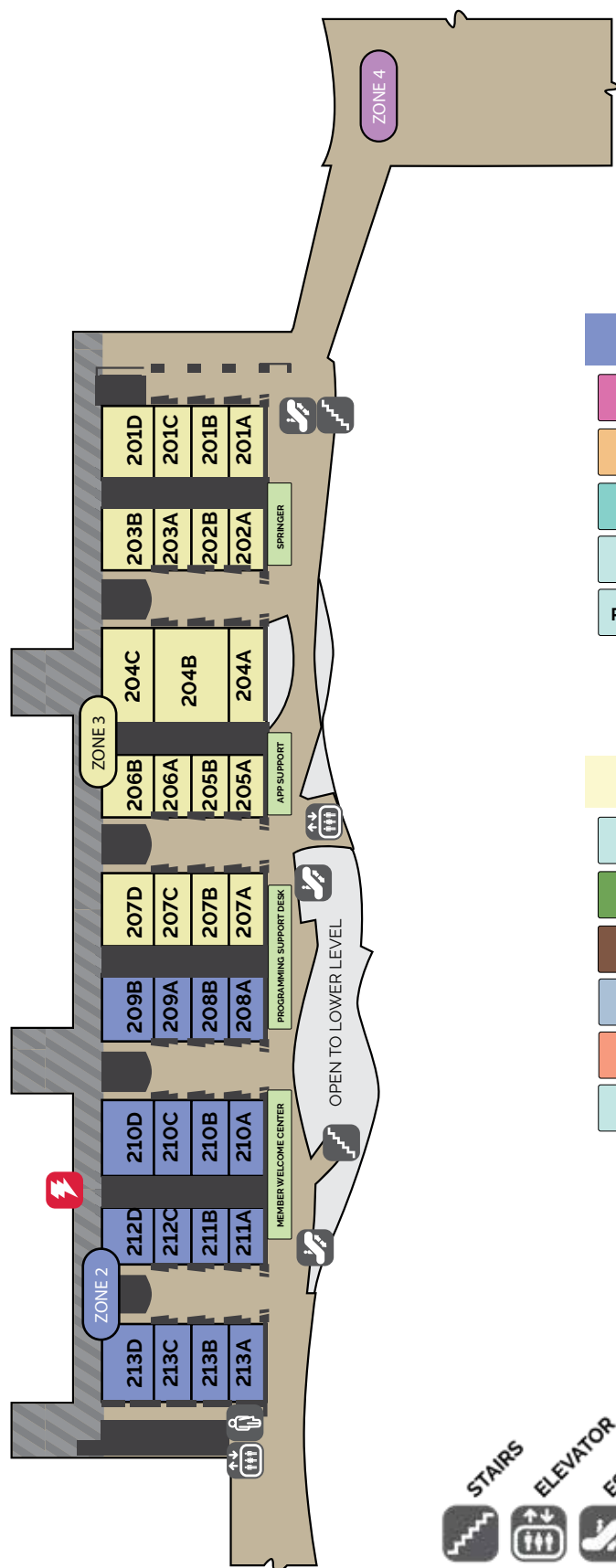
ANAHEIM CONVENTION CENTER (ACC) CAMPUS



ANAHEIM CONVENTION CENTER: PLAZA LEVEL



ANAHEIM CONVENTION CENTER: LEVEL TWO



ZONE 2

MATERIALS PROCESSING

ENERGY & ENVIRONMENT

LIGHT METALS

MEMBER WELCOME CENTER

PROGRAMMING SUPPORT DESK

ZONE 3

LIVESTREAM STUDIO

BIOMATERIALS

CORROSION

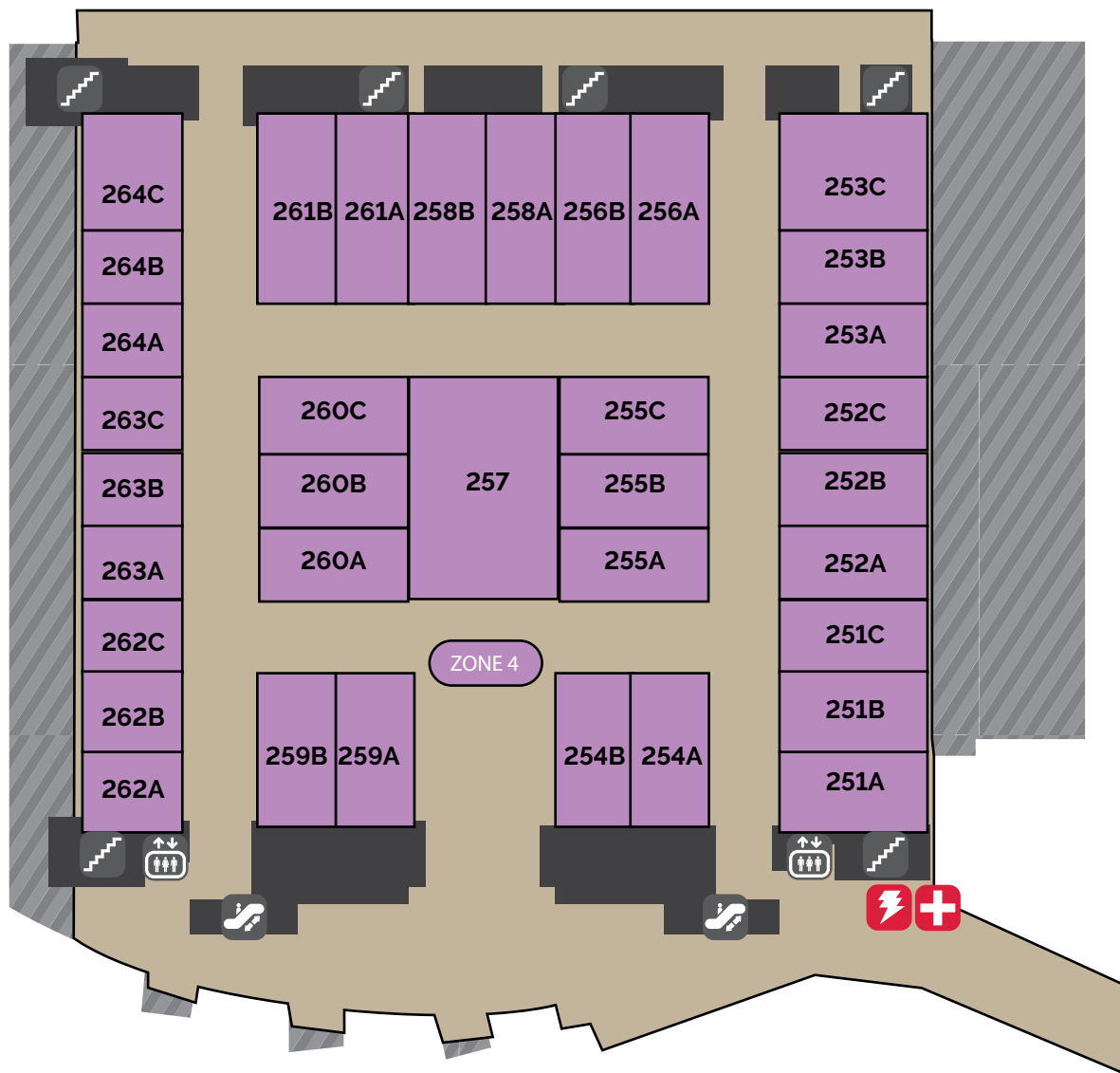
NUCLEAR MATERIALS

CHARACTERIZATION

APP SUPPORT DESK



ANAHEIM CONVENTION CENTER: NORTH LEVEL 200



ZONE 4

ADDITIVE TECHNOLOGIES

MATERIALS DESIGN

PHYSICAL METALLURGY

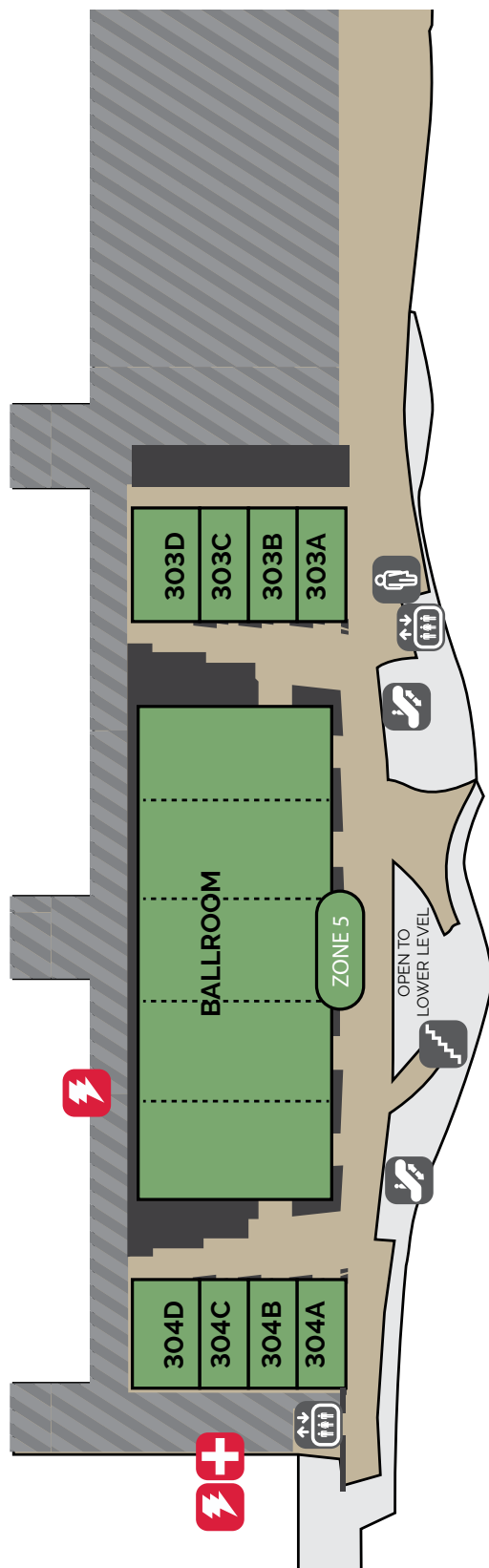
ADVANCED MATERIALS

NANOSTRUCTURE MATERIALS & HETEROSTRUCTURED MATERIALS

SPECIAL TOPICS



ANAHEIM CONVENTION CENTER: LEVEL THREE



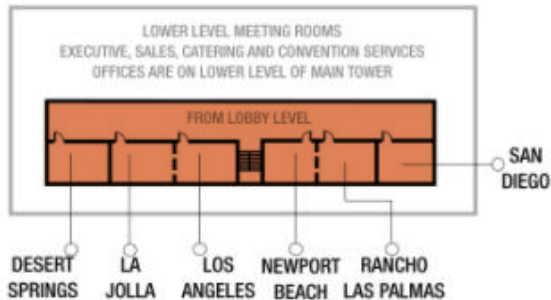
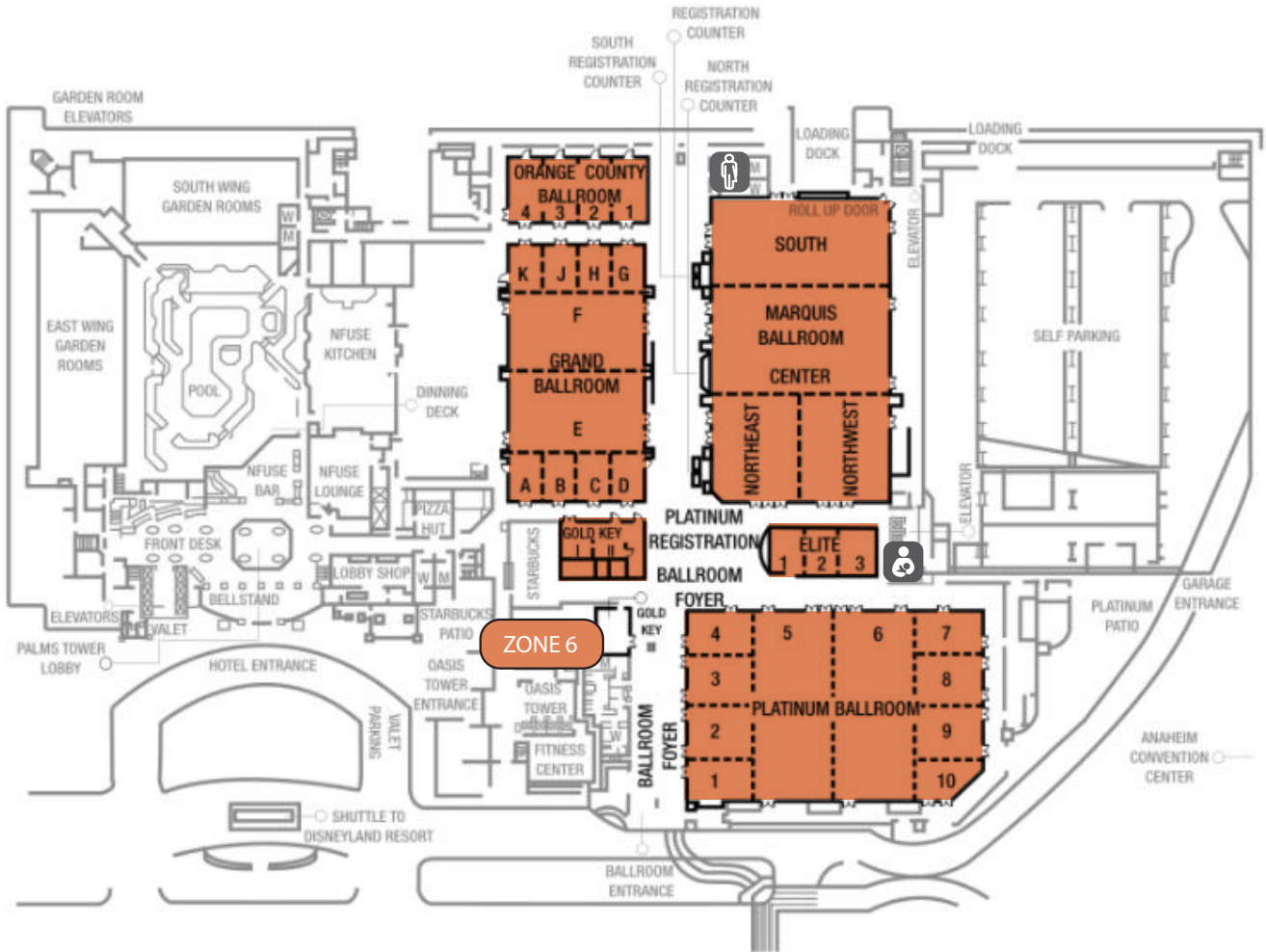
ZONE 5

ELECTRONIC MATERIALS

MECHANICS & STRUCTURAL
RELIABILITY



ANAHEIM MARRIOTT: MEETING ROOMS



ZONE 6

AIME-TMS AWARDS CEREMONY

BLADESMITHING AWARDS

COMMITTEE MEETINGS

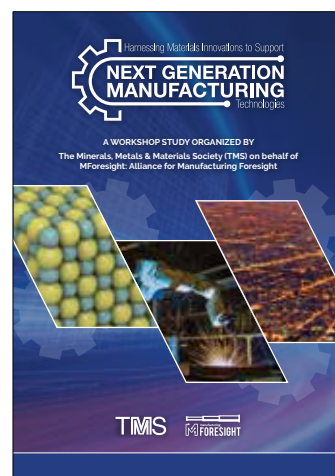
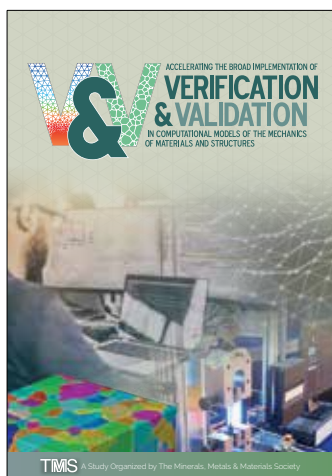
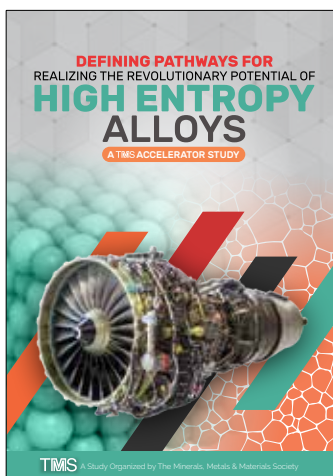
DMMM4 EVENTS



TMS STUDIES

TMS convenes respected leaders from the minerals, metals, and materials communities to develop influential science and technology accelerator studies.

The Latest Open-Access Research from TMS



Take advantage of these resources by downloading your free copies today at: www.tms.org/studies

Health and Safety

Protecting the health and safety of all TMS2022 participants is our top priority. To that end, TMS will follow the health and safety guidance of local, state, and federal health authorities; comply with California's strict conference requirements; consult best practices in the association community; and contract with qualified experts to manage our health and safety profile.

Proof of Vaccination/ Negative COVID-19 Tests

You will only need to provide proof of vaccination or a negative test on your first day of the conference. You will need to wear the wristband provided for the remainder of the week.

Mask Requirements

Masks must be worn properly in all TMS2022 event spaces (except when giving a presentation at the podium or actively eating or drinking). If you don't have a mask, we will have some available on request.

On-site COVID Testing

For travelers who must provide a negative COVID test before returning home, on-site testing will be available for a fee at the Anaheim Convention Center from Tuesday, March 1, through Thursday, March 3. You can book on-site testing appointments and find a list of additional local testing facilities on the TMS2022 Health and Safety website at www.tms.org/TMS2022/Health

What To Do If You're Sick

Anyone who is advised to isolate or quarantine based on current Centers for Disease Control guidelines cannot attend TMS2022 events. When a registrant is clear of restrictions, that registrant is welcome. If you are experiencing COVID-19 symptoms and wish to get tested, you can find a list of local testing facilities on the TMS2022 Health and Safety website at www.tms.org/TMS2022/Health

For More Information

Find more details at the TMS2022 Health and Safety website: www.tms.org/TMS2022/Health



On-site COVID testing will be available for a fee at the Anaheim Convention Center Tuesday, March 1, through Thursday, March 3.



Masks must be worn properly in all TMS2022 event spaces (except when giving a presentation at the podium or actively eating or drinking).

Emergency Procedures

In the event of an emergency, being prepared to react effectively is the most critical step in ensuring the health and safety of yourself and those around you.

Know Your Surroundings

Please take a few moments to review the maps of the TMS2022 facilities available on pages 5-11 of this conference guide and on the TMS2022 App. When you enter these buildings, familiarize yourself with the exits and the stairs leading to those exits. When you arrive at your session or event location, look for the emergency exits that are in proximity to you

At the Anaheim Convention Center

Medical Emergencies

If emergency medical assistance is needed, please contact the Convention Center's Security Control Center at 714-765-8975 or dial 8975 from any house phone.

During event hours, one or more First Aid Stations will be open and staffed to treat walk-in first aid needs. These locations can be found on the maps in this guide.

Alarms and Evacuations

When triggered, horns and flashing strobe devices, accompanied by a pre-recorded announcement, will activate in the affected zone. The alarm system is connected to the City of Anaheim Fire Department, which will dispatch fire units to the facility.

If you are in an area that has an active alarm, please move immediately to an emergency exit. Remember that elevators and escalators will not be available for use during an evacuation. If you are above the lobby level in the meeting rooms, move toward the emergency staircases, located at either end of the floor and in the middle of the floor. Convention Center personnel will respond quickly to assist with the evacuation and with re-entry once the emergency has passed.

REGISTRATION AND HELP DESKS

Registration Desk Information

The Registration Desk will be located in the Hall C Lobby, Sunday through Wednesday, from 7:00 a.m. to 6:00 p.m. On Thursday, the registration desk will be located on the second floor near the Programming Desk, from 7:00 a.m. to 6:00 p.m.

*Please note that tickets to receptions, luncheons, and other social and networking events **will not** be sold on-site at the TMS2022 registration desk this year.*

Registration Badges

The TMS2022 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:

- More than 90 symposia in 14 technical tracks
- Technical programming for three co-located events:
 - Fourth Summit on Diversity in the Minerals, Metals, and Materials Profession (DMMM4)
 - Furnace Tapping 2022
 - REWAS 2022
- All-conference plenary session, featuring Jim Yurko, Apple Materials Engineering
- A three-day pass to the TMS2022 Exhibition, which includes:
 - Exhibit Hall Opening Reception and Poster Session
 - Exhibit Hall Happy Hour and Poster Session
- Access to the Welcome Back Reception on Sunday night and Welcome Breakfast on Monday morning
- 2022 TMS-AIME Awards Ceremony
- Online access to the complete published TMS2022 conference proceedings
- Access to recorded presentations from all participating presenters available March 14.

Attached to your name badge, you will find tickets to attend the events and receptions listed above. Any additional luncheon or social function tickets that you purchased in advance will also be attached to your badge.

Tickets for events, luncheons, and social functions are attached to your registration name badge.

On Thursday, the registration desk will move to the second floor of the Anaheim Convention Center.

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, replacement badges and tickets can be printed at the TMS2022 registration desk for a fee of \$25.

Help Desks

For additional assistance during TMS2022, visit the following information booths on the second floor of the Anaheim Convention Center.

TMS Member Welcome Center

Visit the TMS Member Welcome Center to learn more about your TMS membership or your Material Advantage student membership, as well as to answer general questions about TMS2022. Not a member? If you registered for TMS2022 at the non-member in-person registration rate, one year of TMS membership is included with your registration. Find out how you can use your new membership by visiting the booth and viewing the membership information found starting on page 53 of this guide.

The TMS Member Welcome Center is open Sunday through Thursday from 7:00 a.m. to 6:00 p.m. and is located near room 210 on the second floor of the Anaheim Convention Center.

TMS2022 App Help Desk

The TMS2022 mobile application will be a valuable tool in navigating the meeting. Get help with downloading and using the app at the help desk, located near room 205 on the second floor of the convention center. The App Help Desk is open Sunday through Wednesday, from 7:00 a.m. to 6:00 p.m. On Thursday, it converts to the second floor Registration Desk.

Programming Desk

Speakers, organizers, and session chairs can find answers to their questions about technical programming at the Programming Desk, located near room 207 on the second floor of the Anaheim Convention Center. The Programming Desk will be open on Sunday from 2:00 p.m. to 6:00 p.m. and Monday through Thursday from 7:00 a.m. to 6:00 p.m.

Connect to Wi-Fi

Anaheim Convention Center



For your convenience, free wireless internet access will be available in all areas of the Anaheim Convention Center.

To access free Wi-Fi in the Convention Center:

Choose Network: Anaheim Free WiFi

No password needed

Anaheim Marriott

You can access free Wi-Fi in the public spaces of the Anaheim Marriott; no password is required. All TMS2022 attendees staying at the Anaheim Marriott will receive free Wi-Fi in their sleeping rooms.

Water Fill Stations

The Anaheim Convention Center has installed a total of 30 water bottle fill stations throughout the facility for your reusable water bottles.

Concession Locations

The following concession areas are located in the Anaheim Convention Center for coffee and quick meal and snack options:

Java City

Location: ACC, Outside Hall C (Lobby)

Concession Stand C

Location: ACC, Inside Hall C

Eco Grounds

Locations: ACC North, Second Floor Walkway and Main Lobby

Cashless Transactions Only

The Anaheim Convention Center has gone cashless. Only credit or debit cards, Apple Pay, and Google Pay will be accepted at locations that require payment, such as parking and food stand locations. Additionally, all ATMs in the lobbies have been removed.

Wear Your Pin Proudly!

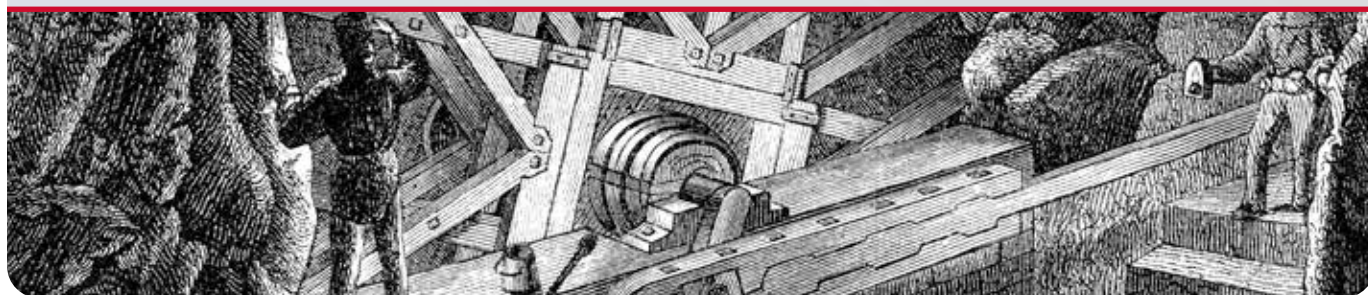
Help Us Celebrate 150 Years of Convening the Minerals, Metals, and Materials Community

TMS's origins as a professional society date back to 1871 with the founding of its parent society, The American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME). That same year, the institute held its first annual meeting, where members presented technical papers, elected officers, and went on site visits. This marked the first installment of the organization's annual meeting—and the inaugural version of the TMS Annual Meeting.

Throughout 2021 and 2022, TMS is celebrating its shared history with AIME and 150 years of bringing our community together.

Learn more at:

www.tms.org/OurHistory



Free Proceedings Access

TMS2022 attendees in most registration classes receive free online access to the complete collection of proceedings publications. For details on how to download the proceedings publications, see the instructions attached to your name badge. Please note that complimentary proceedings content must be downloaded by April 30, 2022, at which time standard pricing will take effect.

Individual Volumes for Purchase

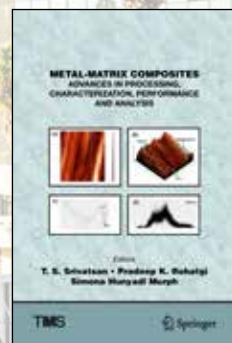
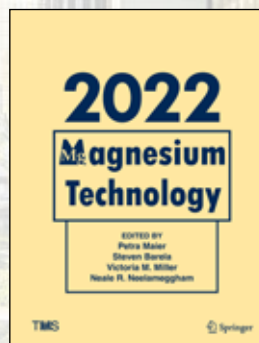
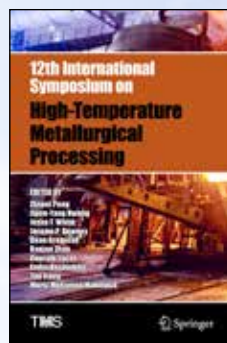
TMS members receive a 40% discount off hard copies of the TMS2022 proceedings volumes presented on this page. These books will be available for purchase at the Springer booth, located on the second floor of the Anaheim Convention Center, near room 202. Visit the online TMS Bookstore to search the complete inventory of available TMS publications, including past proceedings volumes.

www.tms.org/Bookstore

TMS2022 Proceedings Volumes

The following volumes will be included in the online proceedings access for most registrants, and hard copies will be available for purchase at TMS2022:

- *12th International Symposium on High-Temperature Metallurgical Processing*
- *Characterization of Minerals, Metals, and Materials 2022*
- *Furnace Tapping 2022*
- *Light Metals 2022*
- *Magnesium Technology 2022*
- *Metal-Matrix Composites: Advances in Processing, Characterization, Performance and Analysis*
- *Rare Metal Technology 2022*
- *REWAS 2022: Developing Tomorrow's Technical Cycles (Volume I)*
- *REWAS 2022: Energy Technologies and CO₂ Management (Volume II)*
- *TMS 2022 151st Annual Meeting & Exhibition Supplemental Proceedings*



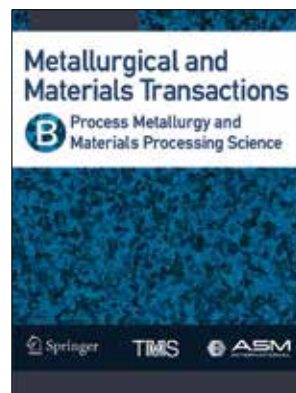
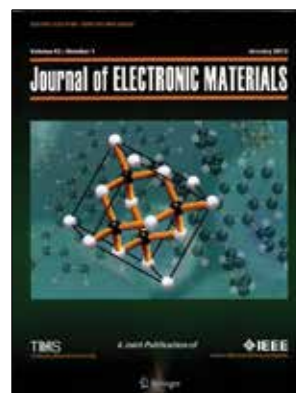
Complimentary proceedings content must be downloaded by April 30, 2022.

TMS

The Minerals, Metals & Materials Society

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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.

Badge Ticket and Replacement Fee

There is a \$25 fee to reprint lost badges and tickets. Visit the registration area to request a replacement badge.

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 and must provide proof of vaccination or a negative COVID-19 test prior to entering the conference.

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. View the full policy at www.tms.org/CodeofConductPolicies.

Refund Policy

The deadline for all refunds was January 18, 2022. 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.

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 or see a TMS staff member.

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.

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 2021-2022 TMS Board of Directors

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Daniel Miracle
Senior Scientist, Air Force Research Laboratory

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Suveen Mathaudhu
Professor, Colorado School of Mines

TMS2022 All-Conference Plenary

The TMS2022 All-Conference Plenary session offers an opportunity for all annual meeting attendees to come together for a shared presentation of common interest.

"Alloy Design at Apple"

Date: Tuesday, March 1, 2022

Time: Noon to 1:00 p.m.

Location: Ballroom ABCD, Anaheim Convention Center, Third Floor

About the Presentation

Apple products are recognized for their iconic industrial design and innovative performance, as well as the significant manufacturing scale to produce them for their customers globally. Materials innovation plays a central role in this success. In the last ten years, Apple has built an impressive materials engineering team focused on the design and application of new materials and engineered surfaces. Remarkably, this new materials development occurs within the rapid timescale of Apple product design and with an emphasis on reduced environmental impact.

On the Apple Alloy Engineering team, materials design is accelerated by the use of integrated computational materials engineering (ICME) approaches, improved characterization techniques, and rapid experimental feedback to inform design. This talk highlights Apple materials innovations that utilize these materials design methods.

About the Presenter

As part of Apple's Product Design Materials Engineering group, Jim Yurko leads the Alloy Engineering Team, which is responsible for alloy design and engineered surface development of all Apple products. From the most recent materials and surface finishes of iPhone to the launch of highly recycled aluminum alloys on Macbook, iPad, and Watch, the Alloy Team's contributions emphasize performance, cosmetics, and environmental impact of these iconic products using industry-leading accelerated materials design methodologies.

Prior to joining Apple in 2015, he served as Vice President of Technology at Materion Corporation and co-founded Boston Electrometallurgical Corporation (now Boston Metal) in 2012.

Yurko's career has focused on materials design and application, as well as process development and sustainability in a number of materials systems including aluminum, stainless steel, titanium, magnesium, zirconium-bulk metallic glasses, and beryllium.

An active TMS member, Yurko served previously as chair of the Process Technology and Modeling Committee and received the Vittorio de Nora Prize for Environmental Improvements in Metallurgical Industries in 2012, the Brimacombe Medal in 2016, and the TMS Young Leader Award in 2010. In addition, Yurko is a recognized supporter of the TMS Foundation. He earned his B.S.E. from the University of Michigan and Ph.D. from Massachusetts Institute of Technology, both in Materials Science and Engineering.



Featured Speaker

Jim Yurko

Senior Distinguished Engineer
Apple Materials Engineering

The Future Depends on You



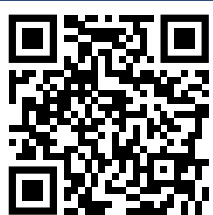
Join us as the TMS Foundation works to expand scholarships, Family Care Grants, and early career support in the minerals, metals, and materials science and engineering community.

“

The TMS Family Care Grant supported the advancement of my career during the challenging years of having young children. I was able to attend the TMS annual meeting and bring my young daughter and afford to bring a caregiver along to the conference. Thank you for offering these travel grants.

”

—**Elaine West**,
Naval Nuclear Laboratory
TMS Family Care Grant Recipient



Stop by the TMS Member Welcome Center, located on the second floor of the Anaheim Convention Center, to learn more about the TMS Foundation.

You can also visit www.TMSFoundation.org/Contribute to make an online donation.

www.TMSFoundation.org

CALENDAR OF EVENTS

Event/Function Times are in Pacific Standard Time (UTC-8:00).
Event information is current as of February 17, 2022

Event/Function Name	Start Time	End Time	Venue	Location	Access
Sunday, February 27, 2022					
All-Conference Events					
COVID Checkpoint	7:00 a.m.	8:00 p.m.	ACC	Ticket Booth	O
Registration	7:00 a.m.	8:00 p.m.	ACC	Hall C Lobby	O
Member Welcome Center	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 210	O
App Support Desk	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 205	O
Springer Nature Publications Booth	8:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 202	O
First Aid	7:00 p.m.	8:00 p.m.	ACC	1st Floor - Front of Hall B	O
Programming Support Desk	2:00 p.m.	6:00 p.m.	ACC	2nd Floor - Near Room 207	O
Council and Functional Committee Meetings*					
TMS Board of Directors' Meeting	7:30 a.m.	1:00 p.m.	MAR	Grand Ballroom F	I
Accreditation Committee Meeting	12:30 p.m.	2:30 p.m.	MAR	Los Angeles - LL	O
TMS Nominating Committee Meeting	1:30 p.m.	3:30 p.m.	MAR	Grand Ballroom J	R
TMS Program Committee Meeting	4:00 p.m.	6:00 p.m.	MAR	OC Ballroom 1-2	I
Frontiers of Materials Subcommittee	6:00 p.m.	7:00 p.m.	MAR	OC Ballroom 1-2	I
Exhibition					
Exhibitor Move-in	8:00 a.m.	5:00 p.m.	ACC	Hall C	R
Student and Young Professional Functions					
Bladesmithing Competition: Blade Check In	12:00 p.m.	5:00 p.m.	ACC	Hall C	I
TMS Materials Bowl: Escape to Anaheim	5:00 p.m.	7:00 p.m.	MAR	Platinum Ballroom 6	O
Student Networking Mixer	7:00 p.m.	8:30 p.m.	MAR	Grand Ballroom E	O
Social Functions					
TMS Fellows and Invited Guests Reception	4:30 p.m.	6:30 p.m.	MAR	Grand Ballroom A	I
Welcome Back Reception/Division Networking	7:00 p.m.	8:00 p.m.	ACC	Ballroom ABCD - 3rd Floor	O
LGBTQ+ and Allies Mixer	8:00 p.m.	10:00 p.m.	MAR	Grand Ballroom G-H	O
Other					
ABET Preparation Training	3:00 p.m.	5:00 p.m.	MAR	Los Angeles - LL	O
Monday, February 28, 2022					
All-Conference Events					
COVID Checkpoint	7:00 a.m.	6:00 p.m.	ACC	Ticket Booth	O
Registration	7:00 a.m.	6:00 p.m.	ACC	Hall C Lobby	O
Member Welcome Center	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 210	O
Programming Support Desk	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 207	O
App Support Desk	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 205	O
First Aid	7:00 a.m.	7:00 p.m.	ACC	1st Floor - Front of Hall B	O
Monday Morning Breakfast	7:00 a.m.	8:30 a.m.	ACC	Hall C	O
Springer Nature Publications Booth	8:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 202	O
Technical Programming Sessions	8:30 a.m.	12:00 p.m.	ACC	Various	O
Morning Break	9:50 a.m.	10:30 a.m.	ACC	Various	O
Technical Programming Sessions	2:00 p.m.	5:30 p.m.	ACC	Various	O
Afternoon Break	3:20 p.m.	4:00 p.m.	ACC	Various	O

You Are Invited: Attend a Technical Committee Meeting at TMS2022

Attend one of our open technical committee meetings this week to meet colleagues with similar technical interests and to become an engaged member of the TMS community. View a complete listing of committee meetings on page 26 for times and locations.

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O = Open to All Attendees R = Restrictions Apply T = Ticketed Event, Pre-registration required I = Invitation Only W = On your Own

* A schedule of TMS Technical Committee Meetings can be found on page 26 of this conference guide.

Event/Function Name	Start Time	End Time	Venue	Location	Access
Council and Functional Committee Meetings*					
Membership and Student Development Committee	7:30 a.m.	9:30 a.m.	MAR	Grand Ballroom B	I
Executive Committee Meeting	9:15 a.m.	11:00 a.m.	MAR	Grand Ballroom A	I
Extraction & Processing Division Council Meeting #1	12:00 p.m.	2:00 p.m.	MAR	Marquis Ballroom NW	I
Ad Hoc Division Structures Committee Meeting	4:00 p.m.	6:00 p.m.	MAR	Grand Ballroom C	I
Financial Planning Committee Meeting	2:00 p.m.	4:00 p.m.	MAR	Grand Ballroom A	R
Superalloys 2024 Organizing Committee Meeting	5:30 p.m.	7:00 p.m.	MAR	Grand Ballroom B	I
Light Metals Division	6:00 p.m.	7:30 p.m.	MAR	Grand Ballroom G&H	I
Exhibition					
Exhibitor Move-in	8:00 a.m.	10:00 a.m.	ACC	Hall C	R
Poster Session I Installation	12:00 p.m.	2:00 p.m.	ACC	Hall C	O
TMS2022 Exhibition	11:00 a.m.	7:00 p.m.	ACC	Hall C	O
Concession Stands Open in Exhibit Hall	11:00 a.m.	3:00 p.m.	ACC	Hall C	W
Poster Session I Gallery Viewing	2:00 p.m.	5:30 p.m.	ACC	Hall C	O
Exhibit Opening Reception and Poster Presentations	5:30 p.m.	7:00 p.m.	ACC	Hall C	O
Poster Session I Dismantle	7:00 p.m.	7:30 p.m.	ACC	Hall C	O
Student and Young Professional Functions					
TMS President Breakfast with Young Leader Award Recipients	7:30 a.m.	8:30 a.m.	MAR	Grand Ballroom D	I
Bladesmithing Competition Display	11:00 a.m.	7:00 p.m.	ACC	Hall C	O
Technical Division Student Poster Contest	5:00 p.m.	7:00 p.m.	ACC	Hall C	O
Social Functions					
SMD/FMD Luncheon	12:00 p.m.	1:30 p.m.	ACC	Ballroom E - 3rd Floor	T
TMS Past Presidents Luncheon and Meeting	12:00 p.m.	1:30 p.m.	MAR	Grand Ballroom D	I
PubZone Networking Reception	6:00 p.m.	7:30 p.m.	MAR	Platinum Patio	T
Other					
Leadership Development Networking Event	5:00 p.m.	7:00 p.m.	MAR	OC Ballroom 1-2	I
Tuesday, March 1, 2022					
All-Conference Events					
COVID Checkpoint	7:00 a.m.	6:00 p.m.	ACC	Ticket Booth	O
Registration	7:00 a.m.	6:00 p.m.	ACC	Hall C Lobby	O
Member Welcome Center	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 210	O
Programming Support Desk	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 207	O
App Support Desk	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 205	O
First Aid	7:00 a.m.	7:00 p.m.	ACC	1st Floor - Front of Hall B	O
Technical Programming Sessions	8:00 a.m.	11:30 a.m.	ACC	Various	O
Springer Nature Publications Booth	8:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 202	O
Morning Break	9:20 a.m.	10:00 a.m.	ACC	Various	O
All-Conference Plenary	12:00 p.m.	1:00 p.m.	ACC	Ballroom ABCD - 3rd Floor	O
Technical Programming Sessions	2:30 p.m.	6:00 p.m.	ACC	Various	O
Afternoon Break	3:50 p.m.	4:30 p.m.	ACC	Various	O
Council and Functional Committee Meetings*					
DMMM4 Organizing Committee Meeting	7:00 a.m.	8:00 a.m.	MAR	Grand Ballroom B	I
Extraction & Processing Division Council Meeting #2	7:00 a.m.	8:30 a.m.	MAR	Marquis Ballroom NW	I
REWAS Organizing Committee Meeting	7:15 a.m.	8:15 a.m.	MAR	Grand Ballroom C	I
Education Committee Meeting	7:30 a.m.	9:00 a.m.	MAR	La Jolla / Los Angeles LL	O
TMS Foundation Board of Trustees' Meeting	7:30 a.m.	10:00 a.m.	MAR	Grand Ballroom G-H	I
Young Professionals Committee Meeting	8:00 a.m.	9:30 a.m.	MAR	Marquis Ballroom NorthEast	O
Honors and Professional Recognition Committee Meeting	8:30 a.m.	9:30 a.m.	MAR	Grand Ballroom A	R

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* A schedule of TMS Technical Committee Meetings can be found on page 26 of this conference guide.

CALENDAR OF EVENTS

Event/Function Times are in Pacific Standard Time (UTC-8:00).
Event information is current as of February 17, 2022

Event/Function Name	Start Time	End Time	Venue	Location	Access
TMS-KIM Leadership Meeting	10:00 a.m.	11:00 a.m.	MAR	Desert Springs LL	I
Structural Materials Division Council Meeting	1:00 p.m.	2:00 p.m.	MAR	Grand Ballroom J&K	I
Public and Governmental Affairs Committee	1:00 p.m.	3:00 p.m.	MAR	Grand Ballroom A	O
TMS PRIDE Meeting	3:00 p.m.	4:00 p.m.	MAR	Grand Ballroom B	O
Materials Processing & Manufacturing Division Council	6:00 p.m.	7:30 p.m.	MAR	Grand Ballroom J&K	I
Exhibition					
TMS2022 Exhibition	11:00 a.m.	7:00 p.m.	ACC	Hall C	O
Concession Stands Open in Exhibit Hall	11:00 a.m.	3:00 p.m.	ACC	Hall C	O
Poster Session II Installation	12:00 p.m.	2:00 p.m.	ACC	Hall C	O
Poster Session II Gallery Viewing	2:00 p.m.	5:30 p.m.	ACC	Hall C	O
Exhibit Hall Happy Hour and Poster Presentations	5:30 p.m.	7:00 p.m.	ACC	Hall C	O
Poster Session II Dismantle	7:00 p.m.	7:30 p.m.	ACC	Hall C	O
Student and Young Professional Functions					
Bladesmithing Competition Display	11:00 a.m.	7:00 p.m.	ACC	Hall C	O
Young Professionals Tutorial Luncheon	1:00 p.m.	2:15 p.m.	MAR	Marquis Ballroom NorthEast	O
Student Career Forum	2:15 p.m.	4:15 p.m.	MAR	Platinum Ballrom 9-10	O
Preparing A Winning Application Package Workshop	4:15 p.m.	6:15 p.m.	MAR	OC Ballroom 1-2	O
Bladesmithing Competition: Awards Presentation	5:00 p.m.	5:30 p.m.	MAR	Platinum Ballroom 6	O
Social Functions					
EPD/MPMD Luncheon	1:00 p.m.	2:30 p.m.	ACC	Ballroom E - 3rd Floor	T
Frontiers of Materials Reception	5:00 p.m.	6:00 p.m.	ACC	260C	I
Diran Apelian Honorary Symposium Reception	5:30 p.m.	7:00 p.m.	MAR	Marquis Ballroom NorthWest	T
DMMM4 Preview and Networking Mixer	6:30 p.m.	8:00 p.m.	MAR	OC Ballroom	O
Other					
Pre-Registered COVID Testing	By Appointment		ACC	205B	I
Wednesday, March 2, 2022					
All-Conference Events					
COVID Checkpoint	7:00 a.m.	6:00 p.m.	ACC	Ticket Booth	O
Registration	7:00 a.m.	6:00 p.m.	ACC	Hall C Lobby	O
Member Welcome Center	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 210	O
Programming Support Desk	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 207	O
App Support Desk	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 205	O
First Aid	7:00 a.m.	6:00 p.m.	ACC	1st Floor – Front of Hall B	O
Springer Nature Publications Booth	8:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 202	O
Technical Programming Sessions	8:30 a.m.	12:00 p.m.	ACC	Various	O
DMMM4 All-Summit Keynote Session	8:30 a.m.	12:00 p.m.	MAR	Grand Ballroom F	O
Morning Break	9:50 a.m.	10:30 a.m.	ACC	Various	O
Technical Programming Sessions	2:00 p.m.	5:30 p.m.	ACC	Various	O
Afternoon Break	3:20 p.m.	4:00 p.m.	ACC	Various	O
Council and Functional Committee Meetings*					
API Working Group	12:00 p.m.	1:00 p.m.	MAR	Grand Ballroom B	I
Functional Materials Division Council Meeting	12:00 p.m.	1:30 p.m.	MAR	Grand Ballroom G&H	I
International Affairs Committee Meeting	12:00 p.m.	2:00 p.m.	MAR	Grand Ballroom A	I
Exhibition					
TMS2022 Exhibition	10:00 a.m.	2:00 p.m.	ACC	Hall C	O
Concession Stands Open in Exhibit Hall	11:00 a.m.	3:00 p.m.	ACC	Hall C	W
Exhibitor Move-Out	2:00 p.m.	8:00 p.m.	ACC	Hall C	R
Student and Young Professional Functions					
Bladesmithing Competition Display	10:00 a.m.	2:00 p.m.	ACC	Hall C	O
Bladesmithing Competition: Mandatory Blade Check Out	2:00 p.m.	3:00 p.m.	ACC	Hall C	R

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* A schedule of TMS Technical Committee Meetings can be found on page 26 of this conference guide.

Event/Function Name	Start Time	End Time	Venue	Location	Access
Social Functions					
Fresh Coffee, Fresh Ideas: Diversity and Inclusion Breakfast	7:00 a.m.	8:15 a.m.	MAR	OC Ballroom	T
LMD Luncheon	12:00 p.m.	1:30 p.m.	ACC	Ballroom E - 3rd Floor	T
TMS-AIME Awards Ceremony Reception	5:30 p.m.	6:00 p.m.	MAR	Platinum Ballroom 7-9	O
TMS-AIME Awards Ceremony	6:00 p.m.	7:30 p.m.	MAR	Platinum Ballroom 6	O
TMS-AIME Awards Celebration Dinner and Dessert Party	7:30 p.m.	10:00 p.m.	MAR	Platinum Ballroom 5	T
Other					
DMMM4 Networking Zone	7:00 a.m.	5:00 p.m.	MAR	OC Ballroom	O
Pre-Registered COVID Testing	By Appointment		ACC	205B	I
Thursday, March 3, 2022					
All-Conference Events					
COVID Checkpoint	7:00 a.m.	6:00 p.m.	ACC	Ticket Booth	O
Registration	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 205	O
Member Welcome Center	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 210	O
Programming Support Desk	7:00 a.m.	6:00 p.m.	ACC	2nd Floor - Near Room 207	O
First Aid	7:00 a.m.	6:00 p.m.	ACC	1st Floor – Front of Hall B	O
Springer Nature Publications Booth	8:00 a.m.	1:00 p.m.	ACC	2nd Floor - Near Room 202	O
Technical Programming Sessions	8:30 a.m.	12:00 p.m.	ACC	Various	O
Morning Break	9:50 a.m.	10:30 a.m.	ACC	Various	O
DMMM4 All-Summit Closing Plenary	2:00 p.m.	4:30 p.m.	MAR	Grand Ballroom F	O
Technical Programming Sessions	2:00 p.m.	5:30 p.m.	ACC	Various	O
Afternoon Break	3:20 p.m.	4:00 p.m.	ACC	Various	O
Council and Functional Committee Meetings*					
TMS Annual Meeting of the Membership and Open Board of Directors' Meeting	8:00 a.m.	8:30 a.m.	MAR	Grand Ballroom A-B	O
Social Functions					
DMMM4 Celebrate Diversity Luncheon	12:00 p.m.	2:00 p.m.	MAR	OC Ballroom	T
Other					
DMMM4 Networking Zone	8:00 a.m.	5:00 p.m.	MAR	OC Ballroom	O
Pre-Registered COVID Testing	By Appointment		ACC	205B	I

Announcing the 2022 TMS Meeting of the Membership and Open Board of Directors Meeting

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 2022 Annual Meeting of the Membership with an open Board of Directors Meeting, on Thursday, March 3, 2022, from 8:00 a.m. to 8:30 a.m. (Pacific Standard Time) in Grand Ballroom A-B of the Anaheim Marriott during the TMS 2022 Annual Meeting & Exhibition. *All TMS members are welcome to attend this meeting.*

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O = Open to All Attendees R = Restrictions Apply T = Ticketed Event, Pre-registration required I = Invitation Only W = On your Own

* A schedule of TMS Technical Committee Meetings can be found on page 26 of this conference guide.

The following technical committee meetings are open to all TMS members to attend. Select the meeting that best matches your interest area and plan to join in. Please note that some TMS technical committees met virtually prior to TMS2022. You can learn more about all of our committees at www.tms.org/Committees.

Sunday, February 27, 2022

Committee Name	Meeting Time	Room
Magnesium Committee	1:30 p.m. to 3:00 p.m.	Marriott - Grand Ballroom B-C
Recycling & Environmental Technologies Committee	1:30 p.m. to 3:00 p.m.	Marriott - OC Ballroom 1-2
Pyrometallurgy Committee	3:00 p.m. to 4:30 p.m.	Marriott - OC Ballroom 3-4
Process Technology & Modeling Committee	5:00 p.m. to 6:00 p.m.	Marriott - OC Ballroom 3-4
Additive Manufacturing Committee	5:30 p.m. to 7:00 p.m.	Marriott - Platinum Ballroom 9-10
Nanomechanical Materials Behavior Committee	6:00 p.m. to 7:30 p.m.	Marriott - Platinum Ballroom 7-8
Alloy Phases Committee	7:30 p.m. to 9:00 p.m.	Marriott - Newport Beach / Rancho Las Palmas LL
Mechanical Behavior of Materials Committee	7:30 p.m. to 9:00 p.m.	Marriott - Platinum Ballroom 7-8
Phase Transformation Committee	7:30 p.m. to 9:00 p.m.	Marriott - Grand Ballroom B-C

Monday, February 28, 2022

Integrated Computational Materials Engineering (ICME) Committee Meeting	1:15 p.m. to 2:30 p.m.	Marriott, Marquis Ballroom NorthEast
Powder Materials Committee	1:15 p.m. to 2:30 p.m.	Marriott, OC Ballroom 3-4
Biomaterials Committee	6:00 p.m. to 7:00 p.m.	Marriott, Marquis Ballroom NorthWest
Chemistry & Physics of Materials Committee	6:00 p.m. to 7:00 p.m.	Marriott, Grand Ballroom J-K
Nuclear Materials Committee	6:00 p.m. to 7:30 p.m.	Marriott, Marquis Ballroom NorthEast
Shaping & Forming Committee	6:00 p.m. to 7:30 p.m.	Marriott, OC Ballroom 3-4
Composite Materials Committee	6:30 p.m. to 7:30 p.m.	Marriott, Platinum Ballroom 7-8
Computational Materials Science and Engineering Committee Meeting 2	7:30 p.m. to 8:30 p.m.	Anaheim Convention Center, Room 254B

Tuesday, March 1, 2022

Energy Conversion & Storage Committee	7:30 a.m. to 8:30 a.m.	Marriott, Newport Beach / Rancho Las Palmas LL
Electronic Packaging & Interconnection Materials Committee	Noon to 1:00 p.m.	Marriott, Grand Ballroom G-H
Solidification Committee	5:45 p.m. to 6:45 p.m.	Marriott, Platinum Ballroom 7-8
Corrosion and Environmental Effects Committee	6:00 p.m. to 7:00 p.m.	Marriott, Grand Ballroom G-H
Nanomaterials Committee	6:00 p.m. to 7:00 p.m.	Marriott, Newport Beach / Rancho Las Palmas LL
Titanium Committee	6:00 p.m. to 7:00 p.m.	Marriott, Grand Ballroom C-D
High Temperature Alloys Committee	6:00 p.m. to 7:30 p.m.	Marriott, Platinum Ballroom 9-10
Magnetic Materials Committee	7:00 p.m. to 8:00 p.m.	Marriott, Grand Ballroom C-D



PART OF:



VISIT THE

2022 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 Hall C of the Anaheim Convention Center.

EXPLORE THE COLLECTION DURING THE FOLLOWING HOURS:

Monday, February 28 • 11:00 a.m. to 7:00 p.m.

Tuesday, March 1 • 11:00 a.m. to 7:00 p.m.

Wednesday, March 2 • 10:00 a.m. to 2:00 p.m.

AND THE WINNER IS...

The winning entries will be revealed on
Tuesday, March 1, at 5:00 p.m. in the
Platinum Ballroom 6, Anaheim Marriott.

All TMS2022 registrants are welcome to attend.

Visit the Poster Sessions in the TMS2022 Exhibit Hall

View a changing display of posters in the TMS2022 Exhibit Hall (Hall C) during exhibit hours. Then join us for two separate 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 I

Monday, February 28
5:30 p.m. to 7:00 p.m.

FEATURING POSTERS ON:

Advanced Materials
Corrosion
Electronic Materials
Energy & Environment (including REWAS 2022 Symposia)
Light Metals
Materials Processing
Mechanics and Structural Reliability
Nanostructured & Heterostructured Materials

POSTER SESSION II

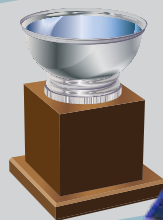
Tuesday, March 1
5:30 p.m. to 7:00 p.m.

FEATURING POSTERS ON:

Additive Technologies
Biomaterials
Characterization
Materials Design
Nuclear Materials
Physical Metallurgy

TMS 2022 MATERIALS BOWL

ESCAPE TO
ANAHEIM



COME AND CHEER ON YOUR FAVORITE SCHOOL
at the updated TMS Materials Bowl, a gamified version of our traditional materials-themed knowledge and trivia competition. It takes place Sunday from 5:00 p.m. to 7:00 p.m. at the Anaheim Marriott, Platinum Ballroom 6.



Current as of February 11, 2022

TECHNICAL PROGRAM AT A GLANCE

The following chart presents a general overview of symposium dates and locations at TMS2022. Symposia are presented by topic areas. Please check the TMS2022 App or the TMS2022 Technical Program web page for the most complete and up-to-date plans.

TOPIC COLOR KEY:

ADDITIVE TECHNOLOGIES	MATERIALS PROCESSING	MECHANICS AND STRUCTURAL RELIABILITY
CORROSION	NUCLEAR MATERIALS	PHYSICAL METALLURGY
LIGHT METALS	CHARACTERIZATION	NANOSTRUCTURED & HETEROSTRUCTURED MATERIALS
ADVANCED MATERIALS	ELECTRONIC MATERIALS	ENERGY & ENVIRONMENT
BIOMATERIALS	MATERIALS DESIGN	SPECIAL TOPICS

NOTICE REGARDING TECHNICAL PROGRAM CANCELLATIONS:

Changing the times of presentations is disruptive to the program and may cause delegates to miss valuable presentations. We have asked symposium organizers and session chairs not to adjust presentation times in the event that a speaker is unable to deliver his or her talk due to international travel and/or visa issues resulting in late cancellation or "no show."

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	ON DEMAND
Additive Manufacturing													
Additive Manufacturing and Innovative Powder Processing of Functional and Magnetic Materials	262C							•	•	•	•	•	•
Additive Manufacturing Fatigue and Fracture: Developing Predictive Capabilities	258B				•	•	•	•	•	•	•	•	•
Additive Manufacturing for Energy Applications IV	261B	•			•		•	•					•
Additive Manufacturing Keynote Session	257		•										
Additive Manufacturing of Large-scale Metallic Components	263A				•	•	•		•				•
Additive Manufacturing of Refractory Metallic Materials	262C	•			•	•							•
Additive Manufacturing: Advanced Characterization with Synchrotron, Neutron, and In Situ Laboratory-scale Techniques II	258A	•			•	•		•	•	•			•
Additive Manufacturing: Beyond the Beam III	263B				•	•	•	•	•				•
Additive Manufacturing: Beyond the Beam III	263C	•											
Additive Manufacturing: Materials Design and Alloy Development IV: Rapid Development	261A	•			•	•	•	•	•	•			•
Additive Manufacturing: Nano/Micro-mechanics and Length-scale Phenomena	260A					•	•	•	•	•			•
Additive Manufacturing: Nano/Micro-mechanics and Length-scale Phenomena	204B											•	
Powder Materials Processing and Fundamental Understanding	263C		•		•	•	•	•	•				•
Materials Processing													
12th International Symposium on High Temperature Metallurgical Processing	213A		•	•						•			•
Advances in Powder and Ceramic Materials Science	213C	•	•	•	•	•							•
Advances in Surface Engineering IV	210C	•	•	•		•							•
Defects and Properties of Cast Metals IV	210B	•	•	•	•	•							•
Furnace Tapping 2022	213D	•	•			•							•
Furnace Tapping 2022	204B				•								
Materials Processing Fundamentals	213D			•					•	•			•
Powder Metallurgy of Light, Reactive and Other Non-ferrous Metals	211B		•										•
Rare Metal Extraction and Processing	213B	•	•										•
Mechanics & Structural Reliability													
Deformation and Damage Mechanisms of High Temperature Alloys	263A										•		•
Deformation and Damage Mechanisms of High Temperature Alloys	304B	•	•	•	•	•			•	•			
Dynamic Behavior of Materials IX	263C										•	•	•
Dynamic Behavior of Materials IX	304D	•	•	•	•	•			•	•			
Grain Boundaries and Interfaces: Metastability, Disorder, and Non-Equilibrium Behavior	263B										•		•
Grain Boundaries and Interfaces: Metastability, Disorder, and Non-Equilibrium Behavior	304C	•	•	•	•	•			•	•			
Structural Metamaterials	304A	•	•	•	•	•							•
Nuclear Materials													
Advanced Characterization and Modeling of Nuclear Fuels: Microstructure, Thermo-physical Properties	202B	•	•		•	•	•	•	•				•
Materials and Chemistry for Molten Salt Systems	203B	•	•		•	•	•	•	•				•
Materials Systems for the Future of Fusion Energy	203A				•	•	•	•	•	•	•	•	•
Mechanical Behavior and Degradation of Advanced Nuclear Fuel and Structural Materials	204A	•	•		•	•	•	•	•			•	•
Synergistic Irradiation, Corrosion, and Microstructural Evolution in Nuclear Materials	202A				•	•	•	•	•	•			•

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	ON DEMAND
Physical Metallurgy													
Computational Thermodynamics and Kinetics	255C		•	•		•	•	•	•	•	•	•	•
Phase Transformations and Microstructural Evolution	255B		•	•		•	•	•	•	•	•	•	•
Light Metals													
2022 Light Metals Keynote Session	204B		•										
Alumina & Bauxite	On-Demand Only												•
Aluminum Alloys, Processing and Characterization	208B			•	•	•	•			•			•
Aluminum Reduction Technology	209B					•					•		•
Aluminum Reduction Technology	211A			•									
Aluminum Reduction Technology Joint Session with REWAS: Decarbonizing the Metals Industry	210C					•							•
Cast Shop Technology	209A			•		•			•	•			•
Electrode Technology for Aluminum Production	208A			•		•	•						•
Failure, and a Career That is Anything But: An LMD Symposium Honoring J. Wayne Jones	209B			•		•							•
Magnesium Technology	210A		•		•	•			•		•	•	•
Primary Aluminum Industry - Energy and Emission Reductions: An LMD Symposium in Honor of Halvor Kvande	208A								•	•			•
Recycling and Sustainability in Cast Shop Technology: Joint Session with REWAS 2022	209A						•						•
Characterization													
Advanced Characterization Techniques for Quantifying and Modeling Deformation	207A		•	•		•	•		•	•	•	•	•
Advanced Real Time Imaging	206A		•			•	•	•	•				•
Characterization of Minerals, Metals and Materials 2022	207B		•	•		•	•	•	•		•		•
Mechanical Response of Materials Investigated Through Novel In-Situ Experiments and Modeling	206B		•	•		•		•	•	•	•	•	•
Seeing is Believing -- Understanding Environmental Degradation and Mechanical Response Using Advanced Characterization Techniques: An SMD Symposium in Honor of Ian M. Robertson	207C		•	•		•	•		•	•	•		•
Nanostructured Materials													
30 Years of Nanoindentation with the Oliver-Pharr Method and Beyond	259A		•	•	•	•	•						•
30 Years of Nanoindentation with the Oliver-Pharr Method and Beyond	259B									•		•	
30 Years of Nanoindentation with the Oliver-Pharr Method and Beyond	204B										•		
Advances and Discoveries in Non-equilibrium Driven Nanomaterials and Thin Films	259B			•	•	•							•
Functional Nanomaterials: Functional Low-Dimensional (0D, 1D, 2D) Materials 2022	260B		•	•	•	•	•		•	•	•	•	•
Mechanical Behavior at the Nanoscale VI	262B		•	•	•	•	•		•		•		•
Mechanical Behavior at the Nanoscale VI	204B									•			
Self-organizing Nano-architected Materials	260C		•	•	•	•	•		•				•
Ultrafine-grained and Heterostructured Materials (UFGH XII)	262A		•	•	•	•	•		•	•	•		•
Advanced Materials													
2D Materials – Preparation, Properties & Applications	252C		•	•	•								•
Advanced Functional and Structural Thin Films and Coatings	204B						•						
Advanced Functional and Structural Thin Films and Coatings	252B				•				•	•	•		•
Advances in Multi-Principal Elements Alloys X: Alloy Development and Properties	251A		•	•			•		•	•	•	•	•

PROGRAM AT A GLANCE

MON AM	MON PM	POSTER	TUE AM	TUE PM	POSTER	WED AM	WED PM	THU AM	THU PM	ON DEMAND
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Symposium Name	ROOM	MON AM	MON PM	POSTER	TUE AM	TUE PM	POSTER	WED AM	WED PM	THU AM	THU PM	ON DEMAND
Advances in Multi-Principal Elements Alloys X: Structures and Modeling	251B	•	•	•	•	•		•	•	•	•	•
Bulk Metallic Glasses XIX	253C		•	•	•	•		•		•	•	•
High Performance Steels	252C					•		•	•	•	•	•
Materials in Sport	251C	•										
Refractory Metals	252B	•	•		•							•
Electronic Materials												
Alloys and Compounds for Thermoelectric and Solar Cell Applications X	303D	•		•	•			•				•
Electronic Packaging and Interconnections	303B	•			•							•
Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XXI	303A		•		•	•						•
Recent Advances in Printed Electronics and Additive Manufacturing: 2D/3D Functional Materials, Fabrication Processes, and Emerging Applications	303C	•	•	•	•	•						•
Energy & Environment (including REWAS 2022 Symposia)												
Advanced Magnetic Materials for Sensors, Power, and Multifunctional Applications	213B								•	•	•	•
Advanced Materials for Energy Conversion and Storage 2022	212B	•	•	•	•	•		•	•	•		•
Composite Materials for Sustainable Eco-Friendly Applications	211A			•					•	•		•
Composites for Energy Applications: Materials for Renewable Energy Applications 2022	210D			•		•			•			•
Magnetics and the Critical Materials Challenge: An FMD Symposium Honoring Matthew J. Kramer	210D	•	•		•							•
REWAS 2022: Coupling Metallurgy and Sustainability: An EPD Symposium in Honor of Diran Apelian	204B		•									
REWAS 2022: Coupling Metallurgy and Sustainability: An EPD Symposium in Honor of Diran Apelian	211A				•	•						•
REWAS 2022: Energy Technologies and CO2 Management	212A	•			•							•
REWAS 2022: Plenary	204B		•									
REWAS 2022: Poster Session	Exhibit Hall C			•								
REWAS 2022: Recovering the Unrecoverable	211B					•						•
REWAS 2022: Sustainable Production and Development Perspectives	211B				•							•
REWAS 2022: Automation and Digitalization for Advanced Manufacturing	212A							•				•
REWAS 2022: Automation and Digitalization for Advanced Manufacturing	211B								•			
REWAS 2022: Decarbonizing the Materials Industry	212A					•			•			•
Biomaterials												
Advances in Biomaterials for 3D Printing of Scaffolds and Tissues	201A	•	•				•					
Biological Materials Science	201B	•	•		•	•	•		•			•
Biological Materials Science	204B							•				
BioNano Interfaces and Engineering Applications	201A				•	•	•	•	•			•
Materials Design												
Advances in Titanium Technology	252A		•		•	•	•	•	•	•		•
AI/Data Informatics: Computational Model Development, Validation, and Uncertainty Quantification	256A	•	•		•	•	•	•	•	•	•	•
Algorithm Development in Materials Science and Engineering	253A	•	•		•	•	•	•	•	•		•
Fatigue in Materials: Fundamentals, Multiscale Characterizations and Computational Modeling	254B	•	•		•	•		•				•

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	ON DEMAND
Hume-Rothery Symposium on Connecting Macroscopic Materials Properties to Their Underlying Electronic Structure: The Role of Theory, Computation, and Experiment	255A	•	•		•	•						•
ICME Case Studies: Successes and Challenges for Generation, Distribution, and Use of Public/Pre-Existing Materials Datasets	254A	•	•									•
Materials Design and Processing Optimization for Advanced Manufacturing: from Fundamentals to Application	253B	•	•		•	•	•	•	•	•		•
Metal-Matrix Composites: Advances in Processing, Characterization, Performance and Analysis	256B	•	•		•	•		•				•
Microstructural Templates Consisting of Isostructural Ordered Precipitate / Disordered Matrix Combinations: Microstructural Evolution and Properties	254A				•	•			•			•
Recent Investigations and Developments of Titanium-containing High Entropy Alloys	251C							•				•
Corrosion												
Environmental Degradation of Additively Manufactured Alloys	201C	•	•		•							•
Environmental Degradation of Multiple Principal Component Materials	201C			•				•	•	•		•
Environmentally Assisted Cracking: Theory and Practice	201D	•	•	•	•	•		•	•	•		•
Special Topics												
2022 Technical Division Student Poster Contest	Exhibit Hall C			•								
Acta Materialia Symposium	Ballroom E					•						•
Diversity in the Minerals, Metals, and Materials Professions 4 (DMMM4)	Marriott Grand Ballroom F							•	•	•	•	•
Diversity in the Minerals, Metals, and Materials Professions 4 (DMMM4)	Marriott Grand Ballroom H, J, K								•	•		
Frontiers of Materials Award Symposium Session: Data-Driven, Machine-learning Augmented Design and Novel Characterization for Nano-architected Materials	260C								•			•
Frontiers of Materials Award Symposium: Microbiologically Influenced Corrosion - How Organisms Accelerate Materials Degradation	On-Demand Only											•
Frontiers of Materials Award Symposium: Nanocarbon-based Flexible Devices: Emerging Materials and Processes	260A	•	•		•							
Late News Poster Session	Exhibit Hall C			•			•					
Moving Forward from a Pandemic: How the Field of Materials Science Has Adapted (2022 Student-led Symposium)	202A	•	•									•
Nix Award and Lecture Symposium: Nanomechanics and Mechanomaterials	259A								•			
Nix Award and Lecture Symposium: Recent Advances in Nanoindentation and Small-Scale Mechanical Testing	259A							•				



TMS2022 All-Conference Plenary

Ballroom ABCD - 3rd Floor • Tuesday • 12:00 p.m. to 1:00 p.m.



TMS-AIME AWARDS CEREMONY

Wednesday, March 2 • 6:00 p.m. to 7:30 p.m.
Marriott Platinum Ballroom 6

Open to All TMS2022 Attendees



CEREMONY HOSTS:

Ellen Cerreta
Los Alamos National Laboratory
2021 TMS President

W. Jud Ready
Georgia Institute of Technology
2022 TMS President

Elizabeth Holm
Carnegie Mellon University
AIME President-Elect Designate

Michele Lawrie-Munro
AIME Executive Director

Carolyn Hansson
University of Waterloo
Acta Materialia Executive Secretary

George T. "Rusty" Gray, III
Los Alamos National Laboratory
Acta Materialia Chair and Treasurer

Suveen Mathaudhu
Colorado School of Mines
2021 Brinacombe Medalist

Anthony Rollett
Carnegie Mellon University
2014 Cyril Stanley Smith Award and 2011
TMS Fellow

Carol Handwerker
Purdue University
2018 TMS Fellow and 2010 Research to
Industrial Practice Award

TMS-AIME AWARDS CEREMONY PROGRAM

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.



Jennifer Bustillos
Cornell University



Ho Lun Chan
University of Virginia

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.



Ankit Srivastava
Texas A&M 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.

"Anisotropy of Mass Transfer During Sintering of Powder Materials with Pore-Particle Structure Orientation," *Metallurgical and Materials Transactions A*, February 2019



Rajendra Bordia
Clemson University



Diletta Giuntini
Hamburg University of Technology



Tyler Harrington
University of California, San Diego



Alberto Molinari
University of Trento



Eugene Olevsky
San Diego State University



Elsa Torresani
San Diego State University



Kenneth Vecchio
University of California, San Diego



Chaoyi Zhu
University of California, Berkeley

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.



Deepak Malhotra
Magellan Gold Corporation

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.



Elizabeth Holm
Carnegie Mellon University

TMS-AIME AWARDS CEREMONY PROGRAM

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.



Andrew Ruba
Iowa State University



Gladys Duran-Duran
Instituto Tecnológico de Morelia

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.



Amber Genau
University of Alabama at Birmingham

ACTA MATERIALIA HOLLOWAY AWARD FOR MATERIALS & SOCIETY

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



Alexander Michaelis
Fraunhofer Institute for Ceramic Technologies & Systems

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.



David Dye
Imperial College

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.



Dierk Raabe
Max-Planck Institute

TMS BEST STUDENT PAPER

Student members of Material Advantage are encouraged to submit essays on global or national issues, as well as technical research papers, relating to any field of metallurgy or materials science. This award is funded through the TMS Foundation.

Graduate First Place - "Plastic Anisotropy and Twin Distributions near the Fatigue Crack Tip of Textured Mg Alloys from In-situ Synchrotron X-ray Diffraction Measurements and Multiscale Mechanics Modeling"



Di Xie
The University of Tennessee, Knoxville

Graduate Second Place - "In-situ, Dynamic Synchrotron X-ray Radiography Studies on Melt Pool Evolution and Solidification Kinetics during Laser Fusion Processing of Ti-6Al-4V"



Rakesh Kamath
The University of Tennessee, Knoxville

TMS-AIME AWARDS CEREMONY PROGRAM

KAUFMAN CALPHAD SCHOLARSHIP

Supported by CALPHAD Inc. and the TMS Foundation, one \$1,000 scholarship is made to an undergraduate student majoring in metallurgical engineering, materials science and engineering, or minerals processing/extraction programs. The scholarship was established to recognize the memory of Larry Kaufman for his contributions to computational thermodynamics and its applications. This award is funded through the TMS Foundation.



Michael Bohnet
Louisiana State University

YOUNG LEADERS INTERNATIONAL SCHOLAR AWARD

The Japan Institute of Metals and Materials (JIM) 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/JIM Young Leaders International Scholar



Victoria Miller
University of Florida

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.



Andrea Koerdt
Federal Institute for Materials Research and Testing



Yu-chen Karen Chen-Wiegart
Stony Brook University/Brookhaven National Laboratory



Mostafa Bedewy
University of Pittsburgh

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.



Fadi Abdeljawad
Clemson University



Yu Zou
University of Toronto

ELLEN SWALLOW RICHARD 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.



Cammy Abernathy
University of Florida

TMS-AIME AWARDS CEREMONY PROGRAM

BRIMACOMBE MEDALIST – CLASS OF 2022

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.



Megan Cordill
Erich Schmid Institute of Materials Science



Michael Demkowicz
Texas A&M University



Khalid Hattar
Sandia National Laboratories



Edward Herderick
The Ohio State University



Peter Hosemann
University of California, Berkeley



Jun Lou
Rice University



Akane Suzuki
GE Research



Michael Tonks
University of Florida

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 Phase Committee in organizing this symposium held in conjunction with the TMS Annual Meeting.



Anton Van der Ven
University of California, Santa Barbara

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.



Ke Lu
Institute of Metal Research

BRUCE CHALMERS AWARD

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



Carl Thompson
Massachusetts Institute of Technology

MORRIS COHEN AWARD

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



Huseyin Sehitoglu
University of Illinois

TMS-AIME AWARDS CEREMONY PROGRAM

CYRIL STANLEY SMITH AWARD

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



Gregory Olson
Massachusetts Institute of Technology

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.



Carl Cady
Los Alamos National Laboratory

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.



Oden Warren
Bruker Nano Surfaces Division

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.



Steven Zinkle
University of Tennessee

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.



Gregory Olson
Massachusetts Institute of Technology

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.



Elsa Olivetti
Massachusetts Institute of Technology

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. This award is funded through the TMS Foundation.



Michael Kassner
University of Southern California

TMS-AIME AWARDS CEREMONY PROGRAM

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.



Huajian Gao
Nanyang Technological University



Jan Miller
University of Utah



Amit Misra
University of Michigan



Anil Sachdev
General Motors Global Research and Development



Patrice Turchi
Lawrence Livermore National Laboratory

TMS FELLOW – CLASS OF 2022

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.



Eduard Arzt
Leibniz Institute for New Materials



Jiann Yang Hwang
Michigan Technological University



John Lewandowski
Case Western Reserve University



Ju Li
Massachusetts Institute of Technology



ZiKui Liu
Pennsylvania State University



Kathy Lu
Virginia Polytechnic Institute and State University

ADDITIONAL 2022 AWARD RECIPIENTS

EXTRACTION & PROCESSING DIVISION (EPD)

EPD DISTINGUISHED LECTURER AWARD

David Dreisinger
University of British Columbia

EPD DISTINGUISHED SERVICE AWARD

Corby Anderson
Colorado School of Mines

EPD SCIENCE AWARD

"X-ray Radioscopic Visualization of Bubbly Flows Injected Through a Top Submerged Lance into a Liquid Metal," *Metallurgical and Materials Transactions B*, February 2020

Megumi Akashi, Olga Keplinger, Natalia Shevchenko, Sten Anders, and Sven Eckert
Helmholtz Zentrum Dresden-Rossendorf

Markus Reuter
SMS Group GmbH

EPD PYROMETALLURGY BEST PAPER AWARD

"Processing of Complex Materials in the Copper Industry: Challenges and Opportunities Ahead," *JOM*, July 2020

Gerardo Alvear-Flores
Rio Tinto

Carlos Risopatron
International Copper Study Group

Joe Pease
Mineralis Consultants

EPD/LMD JOURNAL OF SUSTAINABLE METALLURGY BEST PAPER AWARD

"Simulation-Based Exergy and LCA Analysis of Aluminum Recycling: Linking Predictive Physical Separation and Re-melting Process Models with Specific Alloy Production," *Journal of Sustainable Metallurgy*, March 2020

Juho Hannula
AFRY

Jose Ricardo da Assuncao Godinho and Alejandro Abadias Llamas
Helmholtz-Zentrum Dresden-Rossendorf

Saija Luukkanen
University of Oulu

Markus Reuter
SMS Group GmbH

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

"Simulation of Shrinkage Porosity Formation During Alloy Solidification," *Metallurgical and Materials Transactions B*, May 2020

Vahid Khalajzadeh
MEMC

Christoph Beckermann
University of Iowa

EPD MATERIALS CHARACTERIZATION BEST POSTER AWARD - FIRST PLACE

"S/TEM Characterization of Interdendritic Phases in Ni-30Cr Weld Metal 52XL"

Cheng-Han Li, Carolin Fink, and John Lippold
The Ohio State University

Joerg Jinschek
Technical University of Denmark

EPD MATERIALS CHARACTERIZATION BEST POSTER AWARD - SECOND PLACE

"Thermal Stability of Plain Arapaima Scales and Scales-reinforced Epoxy Matrix Composites"

Wendell Bruno Almeida Bezerra, Ulisses Oliveira Costa, Michelle Souza Oliveira, Fernanda Santos da Luz, Luana Crystine da Cruz Demosthenes, and Sergio Neves Monteiro
Military Institute of Engineering

EPD MATERIALS CHARACTERIZATION BEST POSTER AWARD - THIRD PLACE

"Effect of the Incorporation of Bauxite and Iron Ore Tailings on the Properties of Clay Bricks"

Gustavo Lima, Beatryz Mendes, Leonardo Pedroti, Bianca Bonomo, Anna Carolina Lucas, Livia Silva, and Marcia Lopez
Universidade Federale de Vicosa

FUNCTIONAL MATERIALS DIVISION (FMD)

FMD DISTINGUISHED SCIENTIST/ENGINEER AWARD

Roger Narayan
University of North Carolina

FMD JOHN BARDEEN AWARD

Long-Qing Chen
Pennsylvania State University

FMD JEM BEST PAPER AWARD

"Porous Fe@Fe₃O₄-C Nanocomposite Using Polyvinyl Alcohol Sponge as Template for Microwave Absorption," *Journal of Electronic Materials*, November 2020

Wenjin Zhang, Zidong Zhang, Yuliang Jiang, Xueyan Fu, Hongyan Du, Rui Tian, Guojing Zhao, Shengmei Wei, and Runhua Fan
Shandong University

Chuanxin Hou
Yantai University

LIGHT METALS DIVISION (LMD)

LMD DISTINGUISHED SERVICE AWARD

Alan Tomsett
Rio Tinto Pacific Operations

LMD TECHNOLOGY AWARD

Dag Mortensen
Institute for Energy Technology

LMD JOM BEST PAPER AWARD

"Refining of Secondary Aluminum: Important Chemical Factors," *JOM*, September 2021

Geoffrey Sigworth
GKS Engineering Services

TMS-AIME AWARDS CEREMONY PROGRAM

LMD MAGNESIUM TECHNOLOGY BEST PAPER AWARD - APPLICATION

"Toward Development of Strong and Formable Magnesium Alloy Sheets with Bake-Hardenability," *JOM*, May 2021

Taisuke Sasaki, Zehao Li, and Kazuhiro Hono
National Institute for Materials Science

MingZhe Bian
National Institute of Advanced Industrial Science and Technology

LMD MAGNESIUM TECHNOLOGY BEST PAPER AWARD - FUNDAMENTAL RESEARCH

"Mechanisms and Machine Learning for Magnesium Alloys Design," *Magnesium Technology 2021*

Zongrui Pei
National Energy Technology Laboratory

LMD MAGNESIUM TECHNOLOGY AWARD - STUDENT PAPER

"Thermally Activated Nature of Basal and Prismatic Slip in Mg and Its Alloys," *Magnesium Technology 2021*

Mohammed Shabana, Jishnu Bhattacharyya, and Sean Agnew
University of Virginia

Marek Niewczas
McMaster University

LMD MAGNESIUM TECHNOLOGY AWARD - BEST POSTER

"Eutectic Modification of Mg₂Si in Mg-Si Alloys for Faster Hydrogen Absorption Kinetics"

Manjin Kim, Julio Piraquive, Yahia Ali, Stuart McDonald, and Kazuhiro Nogita
University of Queensland

Trevor Abbott
RMIT University

LIGHT METALS AWARD

"Contactless Ultrasonic Treatment in Direct Chill Casting," *JOM*, January 2020

Catherine E.H. Tonry, Valdis Bojarevics, Georgi Djambazov, and Koulis Pericleous
University of Greenwich

LIGHT METALS SUBJECT AWARD - ALUMINUM REDUCTION TECHNOLOGY

"Experience with Lengthy Pot Hibernation at Alcoa Baie-Comeau," *Light Metals 2021*

Patricia Gagnon and Marie-Eve Laframboise
Alcoa Baie-Comeau Smelter

Xiangwen Wang
Alcoa Aluminum Center of Excellence

LIGHT METALS SUBJECT AWARD - ELECTRODE TECHNOLOGY FOR ALUMINUM PRODUCTION

"Development and Applications of the Four Points Probe (4PP) Electrical Resistivity Measurements for Anode Process Optimization," *Light Metals 2021*

Julien Lauzon-Gauthier and John Secasan
Alcoa Continuous Improvement Smelting Technology

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

"Contactless Ultrasonic Treatment in Direct Chill Casting," *JOM*, January 2020

Valdis Bojarevics, Georgi Djambazov, Koulis Pericleous, and Catherine E.H. Tonry
University of Greenwich

LIGHT METALS SUBJECT AWARD - ALUMINUM ALLOYS

"Review of Retrogression Forming and Reaging for AA7075-T6 Sheet," *Light Metals 2021*

Jon T. Carter and Louis G. Hector
General Motors Warren Tech Center

Katherine E. Rader and Eric M. Taleff
University of Texas at Austin

"Simulations of Wear-Induced Microstructural Evolution in Nanocrystalline Aluminum," *Light Metals 2021*

Yeqi Shi and Izabela Szlufarska
University of Wisconsin-Madison

TMS-AIME AWARDS CEREMONY PROGRAM

LIGHT METALS SUBJECT AWARD - ALUMINA/BAUXITE

"Revisiting Alternative Smelter Grade Alumina Production Processes"

Andrey Panov, Alexander Senyuta, and Andrey Smirnov

RUSAL Engineering and Technological Center

LMD/EPD ENERGY BEST PAPER AWARD - PROFESSIONAL

"Fabrication of a Novel Highly Thermal Conductive Shape-Stabilized Phase-Change Material Using Cheap and Easily Available Cabbage Mustard Biochar," *JOM*, August 2021

Yan Chen, Junkai Gao, Qian Shi, Shibin Wu, Qinyao Xu, and Junwei Zhang

Zhejiang Ocean University

LMD/EPD ENERGY BEST PAPER AWARD- STUDENT

"Hydrodynamics of Gas-Liquid Two-phase Flow in Reverse Spray Washing Process," *Energy Technology* 2021

Fang Dong, Xiao-long Li, Gui-li Liu, Yan Liu, and Ting-an Zhang

Northeastern University

MATERIALS PROCESSING & MANUFACTURING DIVISION (MPMD)

MPMD DISTINGUISHED SERVICE AWARD

Corbett Battaile

Sandia National Laboratories

MPMD DISTINGUISHED SCIENTIST/ENGINEER AWARD

Jian Wang

University of Nebraska-Lincoln

STRUCTURAL MATERIALS DIVISION (SMD)

SMD DISTINGUISHED SCIENTIST/ENGINEER AWARD

Elizabeth Holm

Carnegie Mellon University

SMD DISTINGUISHED SERVICE AWARD

Carl Cady

Los Alamos National Laboratory

SMD JOM BEST PAPER AWARD

"Microscale Observation via High-Speed X-ray Diffraction of Alloy 718 During In Situ Laser Melting," *JOM*, January 2021

Andrew Chuang, Benjamin Gould, and Niranjana Parab
Argonne National Laboratory

Joseph Aroh, Rachel Lim, Seunghye Oh, Anthony Rollett, and Robert Suter
Carnegie Mellon University

Joel Bernier
Lawrence Livermore National Laboratory

Tao Sun
University of Virginia

YOUNG LEADERS AWARDS

EPD YOUNG LEADERS PROFESSIONAL DEVELOPMENT

Mohamed Elzohiery
Kenecott Utah Copper

Stuart Nicol
Glencore Technology

FMD YOUNG LEADERS PROFESSIONAL DEVELOPMENT

Huanyu (Larry) Cheng
Pennsylvania State University

Wenzhuo Wu
Purdue University

LMD YOUNG LEADERS PROFESSIONAL DEVELOPMENT

Matt Pharr
Texas A&M University

Derek Santangelo
Hatch

MPMD YOUNG LEADERS PROFESSIONAL DEVELOPMENT

Yue Fan
University of Michigan

Arun Devaraj
Pacific Northwest National Laboratory

TMS-AIME AWARDS CEREMONY PROGRAM

SMD YOUNG LEADERS PROFESSIONAL DEVELOPMENT

Assel Aitkaliyeva
University of Florida

Clinique Brundidge
Lead Materials Scientist & Engineer

YOUNG INNOVATOR IN THE MATERIALS SCIENCE OF ADDITIVE MANUFACTURING AWARD

Tao Sun
University of Virginia

STUDENT SCHOLARSHIP AWARDS

FMD GILBERT CHIN SCHOLARSHIP

Tylee Oldham
University of Kentucky

EPD SCHOLARSHIP

Madison Pixler
University of Notre Dame

Madison Rutherford
Worcester Polytechnic Institute

Jennifer Johnson
South Dakota School of Mines and Technology

LMD SCHOLARSHIP

Jarrett Loseke
Iowa State University

MPMD SCHOLARSHIP

Megan Burrill
Illinois Institute of Technology

SMD SCHOLARSHIP

Sheron Tavares
University of California San Diego

TMS INTERNATIONAL SYMPOSIUM ON SUPERALLOYS SCHOLARSHIP

Rafael Rodriguez De Vecchis
University of Pittsburgh

Preston Nguyen
University of Pittsburgh

ACTA MATERIALIA INC. POSTER AWARDS

"Thermal localization improves the interlayer adhesion and structural integrity of 3D printed PEEK lumbar spinal cages"

Cemile Basgu

"Crack initiation mechanisms of Ni-based single-crystal superalloys in the very high cycle fatigue regime at high temperature"

Alice Cervellon

"Data-Driven Design Guidelines for Ceramic Superlattices with Enhanced Fracture Resistance"

Nikola Koutná

"Metastability in High Entropy Alloys"

Sebastian Kube

"Engineering highly-aligned cardiac patches by electrohydrodynamically-printed microlattices"

Mao Mao

"A Detailed Mechanical and Microstructural Analysis of the Ovine Tricuspid Valve Leaflets"

William Meador

"The influence of alloying in stabilizing a faceted grain boundary structure"

Jonathan Friedeman

"Evaluation of Low-Stress High-Temperature Creep: The Harper-Dorn Creep"

Shobhit Singh

"Direct observation of the Ni stabilising effect in interfacial (Cu,Ni)₆Sn₅ intermetallic compounds"

Flora Somidin

"Deformation faulting in a metastable CoCrNiW complex concentrated alloy: A case of negative intrinsic stacking fault energy?"

Shaolou Wei

"A comparative study on intrinsic mobility of incoherent and semicoherent interfaces during the austenite to ferrite transformation"

Haokai Dong

"Machine Learned Feature Identification for Predicting Phase and Young's Modulus of Low-, Medium- and High-entropy Alloys"

Ankit Roy



36th EXHIBITION

Located in Hall C of the Anaheim Convention Center

EXHIBIT HOURS AND EVENTS

MONDAY, FEBRUARY 28

Exhibit Hours: 11:00 a.m. to 7:00 p.m.

Exhibit Opening Reception and Poster Session I: 5:30 p.m. to 7:00 p.m.

TUESDAY, MARCH 1

Exhibit Hours: 11:00 a.m. to 7:00 p.m.

Exhibit Hall Happy Hour and Poster Session II: 5:30 p.m. to 7:00 p.m.

WEDNESDAY, MARCH 2

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

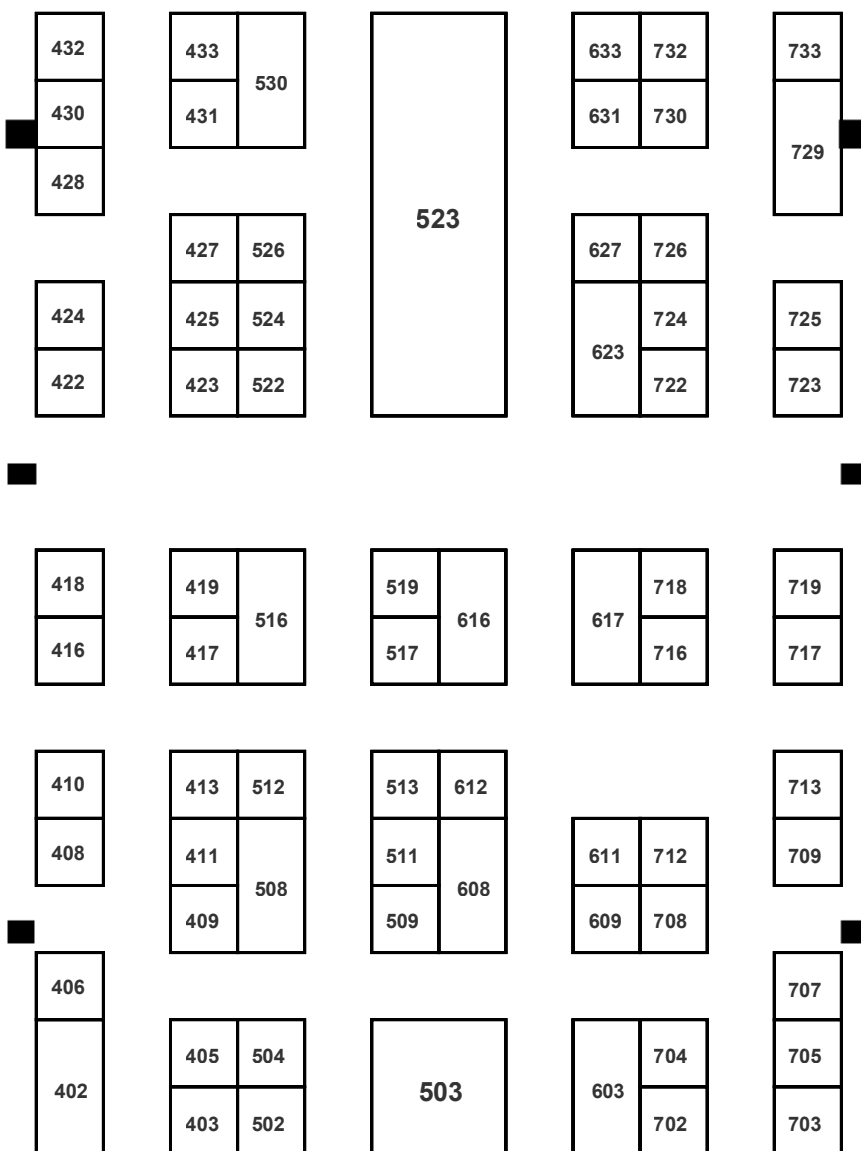
View the Bladesmithing Competition Display Daily in the Exhibit Hall

**View the most up-to-date list
on the TMS2022 Mobile App**

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FLOORPLAN OF EXHIBITING COMPANIES

Poster Boards



ABB, Inc.

Booth #409

ABB offers a complete range of analytical solutions to the aluminum industry: ALSCAN™ hydrogen analyzer, LiMCA inclusion analyzer, Prefil®-Footprinter melt cleanliness analyzer, PoDFA inclusion identification and quantification analysis, as well as electromagnetic stirring solutions.

AdValue Technology, LLC

Booth #708

AdValue Technology specializes in areas of Alumina, Fused Quartz, Sapphire and Zirconia. Products vary from Crucibles, Tubes & Rods, Plates & Discs, DTA & DSC Sample Pans, Ceramic Membranes to custom components. Laser machining and metallization are available. We also sell high purity powders including Alumina Powders, Quartz Sands, TeO2 Powders, and CeO2 Polishing Powders.

Advanced Optical Technologies

Booth #719

Advanced Optical Technologies (AOT) offers multi-dimensional material characterization for a more complete understanding of complex materials and devices and develops custom sensors for defense and commercial customers. With CrystalView CPCI, Advanced Optical Technologies (AOT) introduces a new type of microscope for non-destructive crystallographic orientation measurements.

Alemnis AG

Booth #722

Alemnis develops and manufactures state-of-the-art instruments for in-situ and ex-situ testing of materials mechanical properties at small scales, e.g., nanoindentation, micropillar compression, cantilever bending, tensile testing, ultra high strain rate, high and low temperature, fatigue, fracture, impact, etc.

ALMEX USA, Inc.

Booth #617

Almex USA is the leading supplier of aerospace and commercial aluminum billet and slab casting technology and 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 and homogenization systems.

ASTM International

Booth #504

The ASTM International Additive Manufacturing Center of Excellence (AM CoE) is a collaborative partnership among ASTM and representatives from government, academia, and industry that conducts strategic R&D to advance AM standards, and is a leading provider of education, training, proficiency testing, certification, and advisory services globally.

Boise State University

Booth #631

The Microscopy and Characterization Suite (MaCS) is a state-of-the-art materials characterization laboratory that provides cross-cutting capabilities that support the Center for Advanced Energy Studies' (CAES) mission in multiple initiative areas. MaCS is managed by Boise State University and is largely made possible through its partnership with the Nuclear Science User Facilities (NSUF). MaCS is specially designed to handle both radiological and non-radiological materials and provides state-of-the-art characterization facilities.

Bruker

Booth #508

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.

California Nanotechnologies

Booth #702

California Nanotechnologies offers an array of facilities including advanced consolidation techniques (Spark Plasma Sintering), cryogenic milling, and machining tools. R&D and pilot-scale production services are performed by Cal Nano for both in-house programs and customer-funded projects. Programs range from Space, Aerospace, Nuclear, and Sports & Recreation industries.

Cameca

Booth #502

Since 1929, CAMECA has been renowned for its precision mechanics, optics, and electronic. CAMECA provides scientific instrumentation to the international research community and in-fab/near-fab metrology solutions for the semiconductor manufacturing industry. CAMECA is a business unit of AMETEK, Inc., a leading global provider of electronic instruments and electromechanical devices.

COMPANY DESCRIPTIONS

Carl Zeiss Microscopy, LLC

Booth #603

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.

Claudius Peters Projects GmbH

Booth #408

Claudius Peters Projects GmbH is headquartered in Buxtehude, Hamburg with regional offices in the Americas, Europe, China and the Far East. Claudius Peters stockyards, pneumatic conveyors, silos, clinker coolers, grinding mills, and packing systems can be found in Cement, Coal, Alumina, and Gypsum plants across the globe.

DT Equipment

Booth #616

DT Equipment's product range includes a fully automatic Element 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.

EBSD Analytical

Booth #611

EBSD 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 EBSD Analytical in 2003. With over 23 years' experience, let us show you how materials characterization with EBSD can help improve your processes.

EDAX

Booth #612

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.

FemtoTools AG

Booth #503

FemtoTools is a manufacturer of high-resolution nanoindenters for applications in metallurgy and thin films.

FormAlloy

Booth #522

Headquartered in San Diego, CA, FormAlloy is an additive manufacturing technology company that is principally engaged in the design, R&D, manufacture, and integration of metal deposition systems. FormAlloy's award-winning metal AM technology provides an innovative, cost-effective solution to form, enhance, and repair 3D metal parts in a diverse set of industries.

GLAMA

Booth #402

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.

Haarslev Industries Press Technology GmbH + Co.Kg

Booth #406

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.

Hycast AS

Booth #712

Hycast AS has expertise within aluminium casthouse technology and core competencies within project management, engineering and process know-how. Hycast AS has extensive experience and know-how gained from numerous projects world-wide. The main products are Billet and Slab Casting technology, Melt refining, Rod Feeders and Launderers integrated into a fully automated process.

Keyence Corporation of America Booth #403

KEYENCE's advanced microscope and measurement systems offer high-resolution imaging, ISO-certified roughness, and 2D/3D measurement coupled with easy-to-use interfaces for an elevated inspection experience. KEYENCE offers a full range of services: free demos and sample testing, training, after sale support, and short lead times.

KLA Corporation Booth #516

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.

Leica Microsystems Booth #623

Leica Microsystems develops and manufactures microscopes and scientific instruments for the analysis of microstructures and nanostructures. Widely recognized for optical precision and innovative technology, the company is one of the market leaders in compound and stereo microscopy, digital microscopy, confocal laser scanning, and super-resolution microscopy.

Light Metal Age Booth #519

Light Metal Age magazine has a long legacy in the aluminum industry with 75 years of experience covering primary and secondary production, extrusion, and rolling. We provide vital technical, industrial, and market information to aluminum producers and processors around the world. Aluminum in automotive, aerospace, and building and construction, are also major topics.

Materials Square, Inc. Booth #433

Materials Square is a material simulation web platform. Through the material simulation R&D environment provided as SaaS, you can perform the whole process of simulation from material modeling to result analysis on the web without additional server construction, maintenance and software installation. Also, you get the fastest simulation data with cloud servers.

Metglas, Inc. Booth #419**MTI Corporation** Booth #509

MTI Corporation has been providing a total solution for materials research labs since 1995. MTI supplies ceramic, crystal, metallic substrates from A-Z and Nano-powder. MTI also 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 the Amorphous Metallic Material Research Equipment.

Netzsch Instruments NA LLC Booth #512

NETZSCH Instruments offers highly sensitive, versatile, and reliable thermal analysis instrumentation for R&D, quality control, process safety, and failure analysis. Our instruments and methods allow for material characterization and the study of properties including Cp, enthalpy, weight change, Young's modulus, conductivity, diffusivity, and evolved gas analysis.

Psylotech Inc Booth #718

Psylotech designs and builds 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.

REL, Inc. Booth #707**Sente Software Ltd.** Booth #709

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.

COMPANY DESCRIPTIONS

Sistem Teknik Industrial Furnaces Ltd.

Booth #422

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.

TA Instruments

Booth #719

Visit TA Instruments for premier technology in thermal analysis and thermophysical testing. Innovative instrumentation for materials characterization of polymers, metals, ceramics, and more. Unmatched performance from our Discovery Series DSC, TGA, and SDT and industry leading instruments for Thermal Conductivity, Dilatometry, and Thermal Diffusivity by Flash up to 2800°C.

Tekna

Booth #627

Tenova Inc.

Booth #517

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.

TESCAN

Booth #526

TESCAN develops state-of-the-art SEMs, FIB-SEMs, and micro-CTs that are capable of providing valuable insights into a broad range of scientific disciplines. TESCOAN systems can image with both high resolution and high contrast and are extremely versatile. From materials to geology, our instruments help unlock the secrets of "How" and "Why."

Tethon 3D

Booth #413

Tethon 3D manufactures ceramic powders and UV curable resins for additive manufacturing and sells the Bison 1000 ceramic 3d printer, the world's only desktop DLP printer designed for ceramics and metals.

Thermo-Calc Software Inc.

Booth #609

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.

Thermo Fisher Scientific

Booth #431

Innovative materials hold the key to improving safety, fuel efficiency, and productivity. Thermo Fisher Scientific supplies innovative solutions for materials science research, combining SEMs, TEMs, DualBeam™ FIB-SEMs and micro CT with advanced software suites to take customers from data to understanding.

Trefimet S.A.

Booth #530

Trefimet is a Chilean company manufacturing advanced thermal lances. Thanks to new and revolutionary designs, our thermal lances can be used on steel and smelting plants on countless operations. With improved power and accuracy, Trefimet lances will extend equipment life span, making them the right choice to perform tapping and cleaning operations.

UES, Inc.

Booth #524

Robo-Met.3D is a fully automated serial sectioning system for three-dimensional microstructural investigations. The system enables metallographic etching and imaging of the microstructure of materials. Post-processing reassembles these 2D images, gathered over an optical scale, into 3D models.

Wagstaff, Inc.

Booth #608

Custom Aluminum DC Casting Systems from Wagstaff. Wagstaff, Inc. is a 73-year-old industrial manufacturing and engineering company that provides customized, advanced aluminum direct-chill (DC) solidification technology to rolling ingot and extrusion billet producers worldwide. Wagstaff's headquarters are located in Spokane, Washington, USA.

View the most up-to-date list on the TMS2022 Mobile App

CONFERENCE
LANYARDS:



REGISTRATION
CONFIRMATION:



Seeing beyond

REFRESHMENT
BREAK:



CONFERENCE GUIDE
INSERT:



MONDAY
NEWSLETTER:



TUESDAY NEWSLETTER
& COFFEE BREAK:



TMS UPCOMING MEETINGS

TMS offers programming that spans the technical interests of the global minerals, metals, and materials community.




First World Congress on
ARTIFICIAL INTELLIGENCE IN MATERIALS & MANUFACTURING 2022

April 3–6, 2022
Pittsburgh, Pennsylvania, USA
www.tms.org/AIM2022



MANUFACTURING
ICME
DESIGN MATERIALS

April 24–28, 2022
Incline Village, Nevada, USA
www.tms.org/ICME2022



The 6th International Congress on
3DMS
3D Materials Science 2022

June 26–29, 2022
Washington, D.C., USA
www.tms.org/3DMS2022



AM | ADDITIVE
BENCH 2022 | MANUFACTURING
BENCHMARKS

August 15–18, 2022
Bethesda, Maryland, USA
www.tms.org/AMBench2022



LMPC 2022 Liquid Metal Processing
& Casting Conference

September 18–21, 2022
Philadelphia, Pennsylvania, USA
www.tms.org/LMPC2022



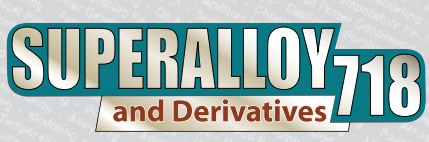
Technical Meeting and Exhibition
MS&T22
MATERIALS SCIENCE & TECHNOLOGY

October 9–13, 2022
Pittsburgh, Pennsylvania
www.matscitech.org



TMS2023
152nd Annual Meeting & Exhibition

March 19–23, 2023
San Diego, California
www.tms.org/TMS2023



SUPERALLOY 718
and Derivatives

May 14–17, 2023
Pittsburgh, Pennsylvania, USA
www.tms.org/Superalloy718-2023



For a complete listing of upcoming events, scan this QR code or visit www.tms.org/UpcomingMeetings

WHERE MATERIALS PEOPLE

MEET.

COLLABORATE.

LEARN

DEVELOP

GROW

ADVANCE



THANK YOU FOR JOINING TMS

and welcome to our global community of minerals, metals, and materials scientists and engineers. Through TMS, you'll meet collaborators from around the world, learn from leaders in the field, develop your skills, and grow your career. Let our members show you how to make the most of your membership.

“ When I started my career in academia, the first professional conference I attended was the TMS Annual Meeting. There, I was able to network and make connections with colleagues from industry, academia, and national labs who were instrumental in my early career development. Those networking and professional development experiences have been the most valuable to me. ”

— Viola Acoff, TMS Membership & Student Development Director,
2022-2025 TMS Board of Directors



WHERE MATERIALS PEOPLE **COLLABORATE.**

TMS makes a global community of materials professionals accessible to you. Connect in-person at TMS events or reach out virtually to begin building or growing your network of international colleagues and experts.



Connect at In-Person Meetings



Join a Technical Committee



Find Colleagues and Mentors

GET STARTED: Make it easy for other members to learn more about you! Update your profile with division preferences and technical keywords at members.tms.org.

WHERE MATERIALS PEOPLE **LEARN**

Consult TMS resources when you need solutions to technical problems and to make more informed decisions in your work. In addition to offering valuable guidance, our journals and publications offer excellent venues for publishing your research.



**Read and Publish in Six
TMS Technical Journals**

**Access 20 Additional
Materials Journals
from Springer**

**Browse Members-Only
Online Libraries**

GET STARTED: Log in to
www.tms.org/Journals to begin reading.

WHERE MATERIALS PEOPLE **DEVELOP**

As a TMS member, you can build your profile in the community, help others build theirs, and access new career opportunities.

Apply for TMS Awards or Nominate a Colleague

Explore the TMS Career Center

Apply for Young Professional Programs

“ Our members care about each other at every level and having that support structure and the ability to give back has kept me engaged. ”

— Suveen Mathaudhu, Chair of TMS Structural Materials Division, 2022-2025 TMS Board of Directors

GET STARTED:

Visit www.tms.org/Awards to view a complete listing of available awards for members in all stages of their careers.



WHERE MATERIALS PEOPLE **GROW**

Broaden your skillset and gain valuable professional skills through both in-person and on-line professional development courses, workshops, and webinars.

Participate in Professional Development Courses

Access Live and Recorded Webinars through the TMS Webinar Library



“Being a member of TMS played a major role in developing my leadership skills, growing my professional experience, and keeping me updated with the new research and developments in my field.”

— Mohamed Elzohiery, 2022 TMS
Extraction & Processing Division Young
Leaders Professional Development
Award Recipient

WHERE MATERIALS PEOPLE **ADVANCE**

By joining TMS, you took a first major step toward building a productive and meaningful career. Now take these next steps to increase your involvement and make the most of your membership.

Log in to the members only website to explore your member benefits. Go to **members.tms.org**.

Download your membership card or the TMS member icon to proudly display your new affiliation. Go to **members.tms.org**.

View a complete listing of TMS technical committees and join the one that best matches your interests. Go to **www.tms.org/Committees**.



GET STARTED: Visit **www.tms.org/PD** to learn about current professional development offerings.



CONTACT US

If you have any questions or need assistance with your membership, please contact our Member Services Team.

E-MAIL: members@tms.org

PHONE: 1-724-776-9000 (U.S. and Canada only)
or 1-724-776-9000 (all other countries)
Press '1' to speak with customer service.

Member Services Team

Top to Bottom: Donna Edenhart, Courtney Hammer, Diana Grady



TMS (MEMBERSHIP)

THE WORLD COMES HERE

TMS 2023

152nd Annual Meeting & Exhibition

SAVE THE DATE

MARCH 19–23, 2023
SAN DIEGO, CALIFORNIA, USA
#TMSANNUALMEETING

**NEXT YEAR, TMS RETURNS TO ONE OF ITS MOST POPULAR MEETING DESTINATIONS:
SAN DIEGO, CALIFORNIA!**

A FAVORITE MEETING LOCATION

- San Diego traditionally hosts some of our best-attended meetings, including our record-breaking TMS2020 with more than **4,600 attendees**.
- San Diego is a **convenient travel spot for international attendees**, with direct flights arriving from Canada, Mexico, Europe, and Asia.
- In 2023, we will return to the San Diego Convention Center but use a new headquarters hotel, so prepare to join us at the **Hilton San Diego Bayfront** for TMS2023!



The New Headquarters Hotel:
HILTON SAN DIEGO BAYFRONT



STAY UPDATED AT:
www.tms.org/TMS2023

Images may not represent current TMS Meetings health and safety measures, such as masks and social distancing.

QUICK REFERENCE GUIDE FOR TMS2022

STAY INFORMED

Last-minute schedule changes in speakers' travel plans are to be expected this year. Use these tools to stay up to date on the latest conference plans.

Download the App

We *strongly encourage* all attendees to download the **TMS2022 Mobile App** for access to current program plans. A support desk is available on the second floor of the Anaheim Convention Center to assist you.

View Meeting Highlights

Visit www.tms.org/TMS2022 to download a PDF of the technical program and view details on keynote sessions, networking events, and more.

Read TMS2022 News

Check your e-mail or the App each morning for the *TMS2022 News* newsletter, which will provide daily news and announcements.

Access WiFi

Free WiFi is available at the Anaheim Convention Center. Connect to the **Anaheim Free WiFi** network. No password is needed.

NEW FOR 2022

Welcome Back Reception

Introduce yourself to fellow conference attendees and network with individuals from your technical division at the **Welcome Back Reception**, Sunday evening, from 7:00 p.m. to 8:00 p.m. on the third floor of the Anaheim Convention Center.

Welcome Breakfast

Start off the first day of programming at a breakfast with colleagues on **Monday morning**. Breakfast will be from 7:00 a.m. to 8:30 a.m. in Hall C of the Anaheim Convention Center.

USE YOUR CONFERENCE GUIDE

Find Your Way

Turn to **page 5** for maps of the Anaheim Convention Center, the Anaheim Marriott, and surrounding areas.

Meet Award Recipients

View the honorees who will be recognized at the TMS-AIME Awards Ceremony beginning on **page 34**.

Preview the Exhibit

Learn about exhibiting companies with the TMS2022 Exhibit Directory, starting on **page 45**.

View Member Guide

New to TMS? View the membership guide starting on **page 53** to start exploring your benefits.