

JOM THE MAGAZINE

JANUARY 2024
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ABOUT THE COVER



A pair of feature articles related to oil and gas technologies inspired this month's cover. First, on page 10, is a preview of the Offshore Technology Conference 2024, which TMS sponsors along with 11 other societies. Next, on page 14, *JOM* talks with Andrew Sherman of Terves about his company's innovative magnesium products for oil and gas applications. Cover designed by Bob Demmler, TMS Visual Communications Coordinator.



Access Technical Journal Articles

TMS members receive free electronic access to the full library of TMS journals, including *JOM*. Technical articles published in *JOM: The Journal* are available on the Springer website. TMS members should log in at www.tms.org/Journals to ensure free access.

About *JOM: The Magazine*:

This print publication is excerpted from the publication of record, *JOM*, which includes both The Magazine and The Journal sections. *JOM: The Magazine* includes news and insights about TMS, its members, and the professions it serves. To access the publication of record, visit www.tms.org/JOM.

About TMS:

The Minerals, Metals & Materials Society (TMS) is a professional organization that encompasses the entire range of materials science and engineering, from minerals processing and primary metals production to basic research and the advanced applications of materials. Learn more at www.tms.org.

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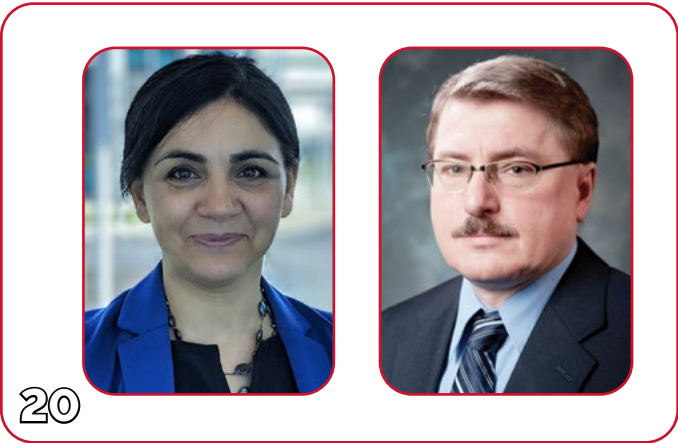
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// SPECIAL INSERT

TMS2024 Pre-Show Report



IN THE FINAL ANALYSIS

*"I work all night, I work all day to pay the bills I have to pay. Ain't it sad?
And still there never seems to be a single penny left for me. That's too bad."*

—“Money, Money, Money,” ABBA

More than 400 editorials in, it would be reasonable for you to assume that I must have referenced an ABBA song or two by now. Mamma mia, but I haven't! Well, better late than never to summon my favorite Swedish pop quartet (sorry, Ace of Base and Little Dragon fans). Admittedly, I'm leaning into the ever-cheerful ABBA as I have money, money, money on my mind. Why? We just completed our annual budgeting process, and it has been a heavy-duty grind to make revenues and expenses meet since 2020.

The challenges have been varied, frequent, and existential, with the pandemic and its side effects taxing our usually reliable business models in dramatic and unexpected ways. Were it not for two government Paycheck Protection Program loans, 2020 and 2021 would have been deficit operating years for the Society. Without any federal largess in 2022 and 2023, the Society dipped deeply into our reserves to bridge sizeable short falls from operations. Spending reserves is not a sustainable solution. So, at TMS2023, the TMS Board of Directors presented me with the following goal: "Deliver a 2024 Operating Budget that shows either breakeven operation or a surplus."

I'm pleased to report that staff met this goal as we recently presented to the Board a 2024 Operating Budget and Plan that not only breaks even but delivers a small surplus. The size of the surplus is sufficient that the budget complies with the expectations set forth in the Society's Financial Management Policy. It is a big deal after so many uncertainties left in the wake of the pandemic. I'm proud of our volunteer leaders and staff for their many individual and collective efforts to help us reach this point. Planning a surplus for 2024 after four unprecedented years was difficult and consequential. It is built on five broad actions:

1. Reducing the number of staff by 22% over the two-year period October 2022-September 2024. Concomitantly, we pulled back staff effort in several areas. We must be rigorously careful as to where we put our efforts.
2. Halving the space leased for headquarters. Many TMS staff members favor remote work, so we simply don't need as much space as we once did.
3. Restructuring the approach to executing the strategic plan and developing new initiatives, thereby prioritizing meaningful returns and preserving resources. Volunteers and staff have refined our review and approval processes so that we choose wisely.
4. Reviewing Society programs and headquarters practices for potential recalibration and optimization. The Board of Directors conducted a program review over several retreat sessions in 2023, and some of those outcomes reflect savings in the 2024 budget.
5. Pricing products and services to adjust for and keep pace with changing market conditions and inflation. After a decade of no dues changes, we had to increase them for 2024. Meeting attendance is getting more expensive as well.

This suite of actions helped reduce deficit spending in 2023 and set the groundwork for what we see as a return to customary positive financial performance in 2024. These deliberative actions notwithstanding, there is no guarantee that reality will comply with our carefully calculated vision. In that sense, the money that we must really attend to is the proverbial dime—the one on which the world can turn with dizzying speed and unexpected impact.



James J. Robinson
Executive Director



James Robinson

"This suite of actions helped reduce deficit spending in 2023 and set the groundwork for what we see as a return to customary positive financial performance in 2024."

Find peer-reviewed technical articles covering the full range of minerals, metals, and materials science and engineering in the January issue of *JOM: The Journal*. Each issue features several technical topics presenting a series of related articles compiled by guest editors. A preview of January technical topics and articles are listed below. TMS members can log in to www.tms.org/Journals for full access to technical articles from *JOM: The Journal* and additional TMS journals.

Below is a sample of articles that will appear in the January issue, based on information available at press time. For the most up-to-date article listing, visit www.tms.org/JOM.

JANUARY 2024

Additive Manufacturing Using Composite Powders

Editors: Hani Henein, University of Alberta; Tonya Wolfe, Red Deer Polytechnique; Ahmed Qureshi, University of Alberta; and Xiaoming Wang, Purdue University

Sponsor: Powder Materials Committee

"Research Progress on the Effect of Third Components on the Microstructure and Properties of W-Cu Composites," **Chenlong Wei**, et al.

"The Effect of Heat Treatment on Local Mechanical Properties of Laser Powder Bed Fused and Hot Isostatically Pressed Al-Cu-Mg-Ag-TiB₂ (A20X) Aluminum Alloy," **Shawkat I. Shakil**, et al.

"Microstructural Characterization and Wear Resistance of 60 wt.%, 70 wt.%, and 80 wt.% WC-NiCrBSi Thin Walls Deposited Using Plasma Transferred Arc Additive Manufacturing," **Dylan Rose**, et al.

"Study on the Influence Mechanistic of Hydrogen Fuel in High-Velocity Oxygen-Fuel (HVOF) Thermal Spraying Process," **Xiaoyu Zhao**, et al.

"Additive Manufacturing Using Al-Cu-Mg-Sc-TiB₂ Composite Powders to Overcome the Strength-Ductility Trade-Off" **Xiaoming Wang**

Applications of Machine Learning in Materials Development and Manufacturing

Editors: Michael Groeber, The Ohio State University, and Victoria Miller, University of Florida

"Prediction of Hot Deformation Behavior for Inconel 740H Alloy Based on Ensemble Learning," **Siwei Wu**, et al.

"Optimization of Local Processing Conditions in Complex Part Geometries through Novel Scan Strategy in Laser Powder Bed Fusion Process," **Sandeep Srinivasan**, et al.

"Monitoring Steel Heating Processes Using Infrared Thermography and Deep Learning-Based Semantic Segmentation," **Antony Morales-Cervantes**, et al.

"Intelligent Recommendation Framework for Iron Ore Matching Based on SA2PSO and Machine Learning to Reduce CO₂ Emissions," **Yunfei Ma**, et al.

Clean Energy Materials: Production and Characterization

Editors: Erol Kurt, Gazi University, and Shadia Ikhmayies

"Computational Modeling of a 2D Vanadium Redox Flow Battery Cell," **Joseba Martinez Lopez**, et al.

"Comparative Analysis of Additives for Enhanced Biohydrogen Production via Dark Fermentation," **Dolores Hidalgo**, et al.

"Development of Skutterudite-Type Thermoelectric Materials La_xCo₄Sb₁₂ Using High-Pressure Synthesis Method," **Yuttana Mona**, et al.

"Characterization of Biocrude Oils from Hydrothermal Liquefaction of De-ashed Energy Grass," **Tossapon Katongtung**, et al.

Surface Engineering for Improved Corrosion or Wear Resistance

Editors: Tushar Borkar, Cleveland State University; Arif Mubarak, PPG; and Bharat Jasthi, South Dakota School of Mines & Technology

Sponsor: Surface Engineering Committee

"Spark Plasma Sintering of Mechanically Alloyed High Entropy Nitrides to Investigate the Mechanical, Tribological, and Oxidation Properties," **Ganesh Walunj**, et al.

"Investigations on Tribological and Microstructure Characteristics of WC-12Co/FeNiCrMo Composite Coating by HVOF Process," **C. Durga Prasad**, et al.

"The Influence of Sealing Processes and Machining Operations on the Scratch and Wear Resistance of Anodized AlSi9Cu3(Fe) Diecasting Alloy," **Giulia Scampone**, et al.

"Simulation and Experimental Validation of Bimetallic Corrosion Between Galvanized Bolt and Mild Steel Plate: Effect of the Bolt Configuration," **Prafull Arun Kamble**, et al.

"Characterization and Corrosion Behavior of Nano-ceramic Coatings Produced by MAO Method: The Role of Process Time," **Z. Shahri**, et al.

"Intergranular Corrosion of CNT-Reinforced and Laser Powder Bed Fusion-Printed 316L Stainless Steel," **Venkata Bhuvaneshwari Vukkum**, et al.

"Magnetic Field-Assisted Laser Cladding of Cobalt-Based Alloy on 300 M Steel," **Kang Qi**, et al.

"An Experimental Investigation into the Dry Reciprocating Wear Behavior of Additively Manufactured AlSi10Mg Alloys," **Vineesh Vishnu**, et al.

"Cascade e-Ion Plasma™: A Novel Technique for Enhancing Corrosion Resistance of Medium Carbon Low Alloy Steel," **Swapnil S. Deshpande**, et al.

"Enhancing of Tribological, Mechanical and Microstructural Properties of HVOF Coated AISI 316 Steel by Boriding," **Azmi Erdogan**, et al.

"Corrosion Inhibition of 3003 Al Alloy by Aqueous Vanadate," **Qifei Huang**, et al.

"Investigate the Effect of Blasting Materials on the Adhesion and Corrosion Protection Performance of Fusion Bonded Epoxy Coated Steel in NaCl Medium," **A. Madhan Kumar**, et al.

"Correlating the Characterization and Machining Performance of Advanced PVD Coatings for Dry Turning," **Gaurav D. Sonawane**, et al.

"Development of Multi-Functional Coating for Ferritic Steels Using Cathodic Plasma Electrolytic Nitriding," **Ramachandran Chellappandian**, et al.

View More Technical Articles

JOM regularly publishes additional articles that fit within the scope of the journal, but not within the scope of a particular technical topic. Read these in the "Technical Articles" section of *JOM* on Springer.

TMS MEMBER NEWS

Share the Good News!

Contact Kelly Zappas, *JOM: The Magazine* editor, at kzappas@tms.org to share your professional accomplishments. Please note that only news submitted by current TMS members will be considered.

David L. McDowell Receives Two Awards



David L. McDowell, the Carter N. Paden Jr. Distinguished Chair in Metals Processing and Regent's Professor at the Georgia Institute of Technology, has been named the recipient of two distinguished awards that recognize outstanding achievements and contributions to the

engineering field. McDowell was honored with the 2023 International Congress on Fracture (ICF) Paul C. Paris Gold Medal and the 2023 American Society of Mechanical Engineers (ASME) Worcester Reed Warner Medal.

The ICF Paul C. Paris Gold Medal is presented every four years, and McDowell was selected for his lifelong

contributions to fracture and fatigue of materials. In addition to receiving this award, he was invited to give the opening lecture at the International Conference on Fracture in Atlanta, Georgia, in June 2023.

The ASME Worcester Reed Warner Medal honors an individual for seminal contributions to the permanent literature of engineering and considers single papers, treatises, books or series of papers, and digital media that are influential to a generation of engineers, and that highlight progressive ideas, models, and methods relative to engineering. McDowell's publications on fatigue, multiscale modeling, and plasticity of metals were recognized.

McDowell has been a TMS member since 2001. He is currently serving as Member-at-Large for the Materials Innovation Committee. McDowell is the recipient of the 2021 AIME Honorary Membership Award and is a member of the 2020 class of TMS Fellows

Ashley Paz y Puente Utilizes NSF CAREER Award



TMS member, **Ashley Paz y Puente**, was awarded a National Science Foundation (NSF) CAREER grant in 2022 to research how to create stronger and lighter weight materials. With support from this award, Paz y Puente is aiming to better understand the Kirkendall effect in the process of diffusion. In

her lab, Paz y Puente is studying how composition, geometry, and temperature influence pore formation.

In addition to her research with this grant, she is dedicated to student outreach and encouraging people of all ages to pursue a STEM career or graduate degree. Paz y Puente is also an assistant professor of materials engineering at the University of Cincinnati where she is able to conduct outreach and mentor students in materials science and engineering.

Paz y Puente joined TMS in 2007. She is currently serving as a member of both the Diversity, Equity, and Inclusion Committee and the Phase Transformation Committee. She has also served as a symposium organizer for the TMS Annual Meeting & Exhibition in 2020, 2022, and 2023.

Stan Howard Honored by MMEF



In December 2023, the Mining and Minerals Education Foundation (MMEF) held the 41st American Mining Hall of Fame Awards Banquet & Fundraiser, at which past TMS President Stanley Howard was inducted into the hall of fame. To learn more about Howard's contributions to the Society throughout his life, read the August 2021 *JOM: The Magazine* article, "Honoring Stanley Howard, A True Friend to TMS."

Save the Date: Extraction 2025



The Extraction Meeting & Exhibition is back. Extraction is the home of important recurring symposia that examine new developments in foundational extractive

metallurgy topics and techniques. It also offers new programming designed to share the latest research and insights on emerging technologies and issues that are shaping the global extractive metallurgy industry. The Extraction 2025 Meeting & Exhibition (Extraction 2025) is scheduled for November 16–20, 2025, at the Sheraton Grand at Wild Horse Pass in Phoenix, Arizona, USA.

The Extraction Meeting & Exhibition is jointly organized by TMS, The Metallurgy and Materials Society (MetSoc) of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), and the Society for Mining, Metallurgy & Exploration (SME). The Extraction 2025 conference co-chairs are:

- MetSoc: **Nathan Stubina**, Sherritt International, Canada
- SME: **Kimberly Mills**, Samuel Engineering, USA
- TMS: **Christina Meskers**, SINTEF Manufacturing, Norway

Extraction 2025 will feature the following co-located meetings.

The 12th International Copper Conference (Copper 2025): Copper 2025 will bring together researchers



and practitioners from around the world to share scientific innovations and technical developments on copper mining,

production, and fabrication. TMS and SME will host Copper 2025 with the collaboration of Gesellschaft

der Metallurgen und Bergleute eV (GDMB); Instituto de Ingenieros de Minas de Chile (IIMCH); MetSoc of CIM; the Mining and Materials Processing Institute of Japan (MMIJ); the Non-ferrous Society of China (NFSoc); and the Southern African Institute of Mining and Metallurgy (SAIMM). The organizing committee for Copper 2025 includes:

- **Gerardo Alvear Flores**, CaEng Associates, TMS Copper 2025 Co-Chair
- **Kimberly Mills**, Samuel Engineering, SME Copper 2025 CO-Chair
- **Dean Gregurek**, RHI Magnesita Global R&D, TMS Technical Co-Chair
- **R. Nick Gow**, Paterson & Cooke, SME Technical Co-Chair
- **Adam House**, Paterson & Cooke, SME Technical Co-Chair

The 6th International Symposium on Nickel and Cobalt (Ni-Co 2025): Ni-Co 2025, organized by TMS

and MetSoc, will convene operators, engineers, and researchers to exchange information about all aspects of current and



future processing technologies for nickel and cobalt. The following individuals are leading the organizing committee for this conference:

- **Sina Mostaghel**, AtkinsRéalis, Chair
- **Stuart Nicol**, Glencore Technology, Co-Chair

In addition, Extraction 2025 will explore cross-cutting areas on topics of common interest, with talks and programming that will provide forward-looking, multi-disciplinary, and societal perspectives. Visit www.extractionmeeting.org/Extraction2025 for more details and to sign up to receive updates about this meeting.

TMS Co-Sponsors Energy Materials 2023

More than 200 participants from 11 countries attended the Energy Materials 2023 conference, which was jointly organized by TMS and The Chinese Society for Metals, October 10-13, 2023, in Huzhou, Zhejiang Province, China.

TMS member **Xingbo Liu** (pictured), West Virginia University, served as executive chair on the conference organizing committee. **Brad Boyce**, 2023 TMS President, served as conference chair on the organizing committee and delivered an invited talk at the conference.

This is the third installment of this meeting, following Energy Materials 2014 in Xi'an, China, and Energy Materials 2017, which was co-located with the TMS 2017 Annual Meeting & Exhibition in San Diego, California.



Xingbo Liu represented TMS at Energy Materials 2024 as executive chair on the conference organizing committee.

Nam Receives DOE Accelerate Award



Chang-Yong Nam, a materials scientist at the U.S. Department of Energy's (DOE) Brookhaven National Laboratory, has been selected to receive an \$8 million DOE Accelerate Award. These awards focus on the goal of accelerating the transition from discovery to commercialization of

new technologies that will form the basis of future industries. Nam will serve as lead principal investigator for a project focused on developing novel materials for next-generation semiconductor patterning via extreme ultraviolet (EUV) lithography to advance the development of future microelectronics. This work will build on Brookhaven Lab's expertise in vapor-

phase hybrid materials synthesis at the Center for Functional Nanomaterials (CFN) and make use of unique synchrotron x-ray characterization techniques at the National Synchrotron Light Source II (NSLS-II)—along with machine learning capabilities developed by Brookhaven's Computational Science Initiative that can expedite discoveries at these two DOE Office of Science user facilities.

This was one of eleven projects to receive funding as part of the \$73 million DOE program. Projects were selected by competitive peer review under the DOE National Laboratory Program Announcement for research to Accelerate Innovations in Emerging Technologies.

Nam has been a member of TMS since 2016 and is the current chair of the TMS Nanomaterials Committee, part of the TMS Functional Materials Division.

Henein Receives MetSoc Airey Award




Hani Henein, professor at the University of Alberta, has been selected to receive the 2023 MetSoc Airey Award from The Metallurgy and Materials Society (MetSoc) of the Canadian Institute of Mining, Metallurgy, and Petroleum. The Airey Award, considered the most prestigious award

for a MetSoc member in Canadian metallurgy and materials, was awarded to Henein in recognition of his leadership and innovation in the development and processing of materials.

According to MetSoc's citation, Henein's innovative contributions in teaching and mentoring include the


development of case studies for the Materials Process Engineering Design Course and the creation of an international work abroad program for undergraduates in several high-quality engineering programs in Europe and Japan, placing over 100 students since 2002. In 2011, he formulated and now oversees a dual degree M.Sc. and in 2022 a dual degree Ph.D. with the Université de Lorraine.

Henein has been a TMS member since 1981. He was elected a TMS Fellow in 2021 for pioneering developments in pipe-line steels, spray forming and determination of liquid metal properties and an outstanding record of publications, international awards, and participation in professional society affairs. He served as TMS President in 2014 and as president of the American Institute of Mining, Metallurgical and Petroleum Engineers in 2019.



Oral History Program Series

ROBERT D. SHULL



Robert D. Shull's story, "Cutting-Edge Research and Expanding Educational Outreach," has been added to the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) Oral Histories collection. A TMS member since 1976, Shull served as TMS president in 2007 and was elected a TMS Fellow in 2013 for extraordinary technical accomplishments in the fields of materials science and magnetism, and support of the community through professional and educational leadership. More than 20 TMS members have been featured as part of the AIME Oral Histories program; you can view videos of all of their interviews through the TMS History website at www.tms.org/History.

TMS Members Named AIAA Associate Fellows

The American Institute of Aeronautics and Astronautics (AIAA) has elected two TMS members to its class of 2024 associate fellows. **Jacob Hochhalter**, assistant professor at the University of Utah, and **Jacob Rome**, engineering specialist at Aerospace Corporation, will be inducted at a special ceremony during the 2024 AIAA SciTech Forum in January. The grade of Associate Fellow recognizes individuals who have accomplished or been in charge of important engineering or scientific work, or who have done

original work of outstanding merit, or who have otherwise made outstanding contributions to the arts, sciences, or technology of aeronautics or astronautics.

Hochhalter has been a TMS member since 2010 and is a current member of the Additive Manufacturing Committee, the Integrated Computational Materials Engineering Committee, and the Mechanical Behavior of Materials Committee at TMS.

Rome has been a TMS member since 2022.

In Memoriam

TMS offers condolences to the friends, family, and colleagues of the following TMS members:

Richard A. Daniele, a TMS senior member who joined the Society in 1962, passed away in October 2023 in Lakewood, Colorado. He was a metallurgical engineer with Daniele Metal Mineral Services.

Subhash Mahajan, a TMS life member who joined the Society in 1963, has passed away. Mahajan was Distinguished Professor Emeritus in the Department of Materials Science and Engineering at the University of California, Davis. He was elected a TMS Fellow in 1999, the highest honor the Society bestows, for his seminal work in deformation twinning and the origin of defects in semiconductors and their influence on device behavior. He also received the 2015 Institute of Metals/Robert Franklin Mehl Award, 2004 Educator Award, and 1998 Functional Materials Division John Bardeen Award from TMS, as well as the 2018 American Institute of Mining, Metallurgical, and Petroleum Engineers Honorary Membership Award and the 2018 Acta Materialia Gold Medal Award.

Maurits C. Van Camp, a TMS member since 1989, passed away in August 2023. Van Camp served as a member of the Lead, Zinc, and Tin Committee from 1995 to 1998. He was also a frequent attendee of the TMS Annual Meeting & Exhibition. At the TMS 2020 Annual Meeting & Exhibition (TMS2020),

he gave the plenary presentation, "Our Common Future in Metallurgy," as part of the 9th International Symposium on Lead and Zinc Processing (PbZn 2020), which was co-located with TMS2020. In 2021, he was awarded the TMS/SME/AIME James Douglas Gold Medal for being "a visionary leader and entrepreneur who has dedicated his professional life to develop innovative technological solutions and promote collaboration between industry, academia, and governmental organizations."

Albert R.C. Westwood, a TMS member since 1960, passed away in July 2023. Westwood began a long career as a research scientist in 1958 at the Research Institute for Advanced Studies (RIAS) in Baltimore, Maryland. RIAS later merged into Martin Marietta Laboratories (MML), for which he served as director and Corporate Vice President. MML is the antecessor of Lockheed Martin. He then went on to serve as the Vice President of Research and Exploratory Technology at Sandia National Laboratories, from which he retired in 1996. Westwood was the 1990 TMS President. He served on a variety of TMS committees and as a member of the TMS Foundation Board of Trustees. Westwood received the 1990 TMS Fellow Award, the 1992 Leadership Award, and the 1995 TMS/ASM Joint Distinguished Lectureship in Materials and Society Award.

Leading the OFFSHORE INDUSTRY into the Future with OTC



Kaitlin Calva

JOIN TMS AT OTC 2024

2024
 Offshore Technology Conference

Registration opens in mid-January for the Offshore Technology Conference (OTC) 2024, scheduled for May 6–9, 2024, at NRG Park in Houston, Texas. Take advantage of early bird pricing when you register before March 15, 2024. TMS members get even bigger savings with OTC member pricing. Visit go.otcnet.org/JOM for more information and to register today.

Since the Offshore Technology Conference (OTC) made its debut in Houston, Texas, more than 50 years ago, OTC has grown significantly, despite cyclical downturns, in both its physical footprint and in its stature within the industry. The exhibition is one aspect of OTC's prominence, with more than 1,300 companies participating in the 2023 show. While the OTC exhibit hall is known as the destination for showcasing innovative products, services, and solutions, the technical program is *the* place for global conversations on the future of the industry.

As a stakeholder in this annual event, TMS is not only invested in its financial sustainability but also in the potential for technological and societal change gained when attendees translate the best practices and new ideas shared at the meeting into real-world applications and innovations. As one of 12 sponsoring organizations, TMS helps ensure a diverse and relevant technical program dedicated to accelerating the transfer of interdisciplinary global technology. Through technical sessions, panel discussions, and special presentations, TMS is delivering on its strategic goal to be a society that empowers industry to be at the leading edge of science and engineering.

None of these advancements would be possible without the TMS volunteers who make up the Society's subcommittee to the OTC Programming



Committee. It is their commitment to creating an open and engaging forum for discussing new ideas and achieving solutions for sustainable development that brings this global community together year after year. Co-chairs of the TMS Programming Committee **Indranil Roy** (pictured, top), chief technology officer at

DAMORPHE, and **Joseph Gomes** (pictured, bottom), associate director of Deepstar Program at Offshore Operations Committee, came together for a discussion of the 2024 OTC program highlights. Read on to learn more about the benefits of attending OTC and how you can connect with colleagues who share your technical interests.





What is the role of the TMS Programming Committee at OTC?

Roy and Gomes: The TMS Programming Committee is one of twelve subcommittees alongside “Offshore Wind Thread” forming the OTC Programming Committee. Members typically consist of experts, professionals, and thought leaders in the field of offshore technology. They work together to ensure that the technical content provided at OTC is relevant, up-to-date, and addresses the current challenges, innovations, and trends in the offshore industry. This involves reviewing abstracts, selecting speakers, and structuring the program to offer attendees valuable insights and knowledge.

Overall, the TMS programming subcommittee's goal is to create a well-rounded and informative program that serves the interests of OTC attendees, providing them with a platform to learn, network, and engage with the latest advancements in offshore technology. As such, we work to select and coordinate presentations, panels, and sessions that cover a wide range of topics related to offshore technology and energy industry trends.

Within OTC, TMS plays a crucial role in curating and organizing technical content for the event, highlighting materials advancements, case studies of successful applications, and lessons learned from challenges present while transitioning into sustainable growth for our industry.



What types of programming will TMS be organizing for this year's meeting?

Roy and Gomes: The TMS Programming Committee at OTC has organized a diverse range of technical sessions, panel discussions, workshops, and special events for this year's meeting. These programs will cover various aspects of offshore technology and the energy industry. These sessions are designed to provide attendees with valuable insights, knowledge, and networking opportunities.

The following TMS-sponsored technical topics will be highlighted at OTC 2024:

- Unlocking Enhanced Value Across the Offshore Energy Development Landscape Through Collaboration
- Advanced Materials for Sustainable Offshore Energy
- Decarbonization in Offshore Oil and Gas

See the sidebar “Programming Highlights at OTC 2024” on page 10 for a closer look at three of the many presentations scheduled for the conference.

SPONSORING ORGANIZATIONS

- American Association of Petroleum Geologists
- American Institute of Chemical Engineers
- American Institute of Mining, Metallurgical, and Petroleum Engineers
- Marine Technology Society
- Society of Exploration Geophysicists
- Society for Mining, Metallurgy & Exploration
- American Society of Civil Engineers
- American Society of Mechanical Engineers
- IEEE Oceanic Engineering Society
- Society of Naval Architects and Marine Engineers
- Society of Petroleum Engineers
- The Minerals, Metals & Materials Society



OTC ASIA 2024
27 Feb – 1 Mar 2024
Kuala Lumpur, Malaysia

REGISTER TODAY

Don't miss your chance to attend the Offshore Technology Conference (OTC) Asia 2024—early bird pricing is available through January 26, 2024. Visit 2024.otcasia.org/register and make your plans to attend today.

PROGRAMMING HIGHLIGHTS AT OTC 2024

Editor's Note: the technical program details included in this article are accurate as of press time, November 2023. For the most up-to-date information, visit 2024.otcnet.org.

OTC offers a wealth of technical presentations, panel discussions, and workshops covering a wide range of topics in offshore technology. TMS members can gain insights into the latest innovations, research findings, and industry trends. Here is a preview of select presentations featured at OTC 2024:

Panel Discussion: "Role of Collaboration and Technology Development to Reduce Current Carbon Footprint and Harness Sustainable Low-Carbon Energies, Our Path to NET ZERO: CCS, Geothermal, Wind, and Others"

This session explores the crucial role of collaboration and technology development for conscious efforts to reduce our carbon footprint and energy transition augmented by digitalization. The focus will be on effectively implementing carbon capture utilization and storage (CCUS) projects. Discussions will delve into the significance of collaboration among these stakeholders to address the complex challenges associated with CCUS projects and the need for cross-sector partnerships, knowledge sharing, and coordinated efforts to overcome barriers.

Keynote Presentation: "Chevron's Anchor Project—Industry's First Deepwater High-Pressure Development"

In 2019, Chevron's Anchor Project was the industry's first high-pressure (>15,000 psi) deepwater development to achieve final investment decision. This keynote will give an overview of the Anchor development in the Deepwater Gulf of Mexico and its delivery of enabling 20K (20,000 psi) technology. This presentation will provide insights into the project's execution strategy and an overview of planning and execution for subsurface, wells, subsea systems, a floating production unit, and export pipelines.

Keynote Presentation: "Oil and Gas Sector Collaborative Efforts to Build and Advance an Offshore Carbon Sequestration Industry in the U.S."

Recent legislation to authorize carbon sequestration on the U.S. outer continental shelf and to expand tax credits for carbon sequestration has created an opportunity for the U.S. to emerge as a leader in this area. Given the geologic capacity and the presence of a strong oil and gas sector in the Gulf Coast region of the U.S., the industry has been proactive in working together and with regulators to build and advance an offshore carbon sequestration industry in the U.S. This presentation will share the unique experience of collaborating on this issue to enhance industry efforts throughout the global supply chain to enable subsea injection projects.



How can TMS members get more involved with OTC as volunteers?

Roy and Gomes: Volunteering at OTC can be a rewarding experience, providing TMS members with opportunities to contribute to the success of the conference while also benefiting from valuable networking and learning experiences. TMS members interested in sharing their ideas and expertise should send a message stating their interest in volunteering and availability for the conference to Ashley-Anne Bohnert, TMS Department Head, Marketing and Communications, at abohnert@tms.org. Bohnert is staff liaison to the TMS OTC Programming Subcommittee.



Organized by OTC and the Brazilian Petroleum and Gas Institute (IBP)

The OTC Brasil Conference gathers offshore professionals from many countries around the world to share ideas and innovations, discuss, debate, and build consensus around the most pressing topics facing the energy sector. Visit otcbrasil.org for more information.

SEE YOU IN 2025

Roy and Gomes: Through the various industrial revolutions, economic development has historically coincided with increasing demand for materials, resulting in growing energy consumption and related harmful emissions. A net-zero energy future will require both fossil-based energy and low/zero carbon sources. The increase in electrification in all sectors of energy use and significantly higher penetration of intermittent energy sources, such as solar and wind, will require abundant storage solutions as well as critical minerals for electricity. Sustainable mining of materials such as lithium, cobalt, copper, nickel, and rare earth elements will play an essential role in the energy transition.

This leads us to “creative substitution” when innovation is both destroying and creating new avenues of doing work, with industries rising and falling in response. Take, for example, the confluence of two game-changing innovations: petroleum refinement for usage as a fuel source and the discovery of materials and related engineering to design engine blocks for the modern automotive industry. Both made stagecoaches and pony traps obsolete.

Clean energy transitions must decouple these trends and offer a balance between harnessing high energy-density hydrocarbons whilst developing efficiency strategies to reduce harmful emissions throughout value chains, with a reduced carbon footprint, while allowing opportunities to harness sustainable low-carbon energies, our path to net-zero.

Academia and our erudite faculty lead this step change innovation process. Industry focuses on adoption of such inventions and directed research leading to new product developments for commercial enterprises. TMS serves to bring the academic world together, promoting cutting-edge research in materials domains. TMS also has a strong presence at OTC and other strategic forums, highlighting novel breakthroughs and presenting case studies and applications in various industries.

TMS programming plays a crucial role in ensuring that OTC provides a platform for learning, networking, and staying at the forefront of advancements in offshore technology for TMS members and all conference attendees. This encompasses:

- **Access to Cutting-Edge Technical Content:** TMS members can gain insight into the latest innovations, research findings, and industry trends.
- **Expertly Curated Technical Content:** The TMS programming subcommittee ensures that the technical content is of high quality, relevant, and addresses current challenges and trends in offshore technology.
- **Diversity of Topics and Perspectives:** The wide range of topics within offshore technology covered at OTC provides attendees with a well-rounded and comprehensive view of the industry.
- **Exposure to Industry Innovations:** At one of the largest exhibitions in the United States, TMS members can explore cutting-edge solutions and advancements in the field.
- **Professional Development:** OTC provides opportunities for learning, skill-building, and exposure to best practices in offshore technology.
- **Networking Opportunities:** TMS members can connect with peers and establish valuable connections, potentially leading to future collaborations on projects or initiatives.
- **Professional Engagement and Interaction:** TMS programming presented at OTC encourages interaction and engagement among attendees to foster knowledge exchange, idea-sharing, and collaboration.
- **Staying Informed and Updated:** OTC serves as a platform to stay informed about the latest developments, regulatory changes, and emerging technologies in the offshore industry. TMS members can gain a competitive edge by staying up to date with industry advancements.
- **Enhanced Attendee Experience:** The carefully curated program contributes to a dynamic and informative conference experience which, in turn, elevates the overall value and impact of the conference for all attendees.

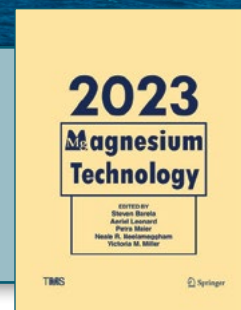
Kaitlin Calva is an independent contractor providing writing support for TMS and *JOM: The Magazine*.

JOM: The Magazine Talks with ANDREW SHERMAN of Terves about Magnesium in Oil and Gas Applications

Kelly Zappas



Andrew Sherman is chief executive officer and chief technology officer at Terves LLC in Euclid, Ohio, and has been a principal or lead in eight prior technology start-ups. He was a keynote speaker at the Magnesium Technology 2023 symposium at the TMS 2023 Annual Meeting & Exhibition in San Diego, California. You can read the full manuscript from his talk, "Sustainable Domestic Manufacturing and Protecting IP in a Post AIA World," in the *Magnesium Technology 2023* proceedings volume, available for purchase at www.tms.org/Bookstore.



This month, *JOM: The Magazine* talks with Andrew Sherman, chief executive officer and chief technology officer at Terves LLC, about his role as an entrepreneur and his work on magnesium technologies for the oil and gas industry.



Could you describe your background and share the career path that led to your current position?

Sherman: I've been interested in materials since junior high school, where I was doing ceramics and starting to formulate my own glazes. I went to Ohio State for ceramic engineering, for both undergraduate and graduate school, with a double major in chemical engineering. So materials and processes is my background.

I didn't stay in academia because I didn't want to teach and write papers. I decided that my role was entrepreneurial. Materials don't mean anything if they're not manufactured. I wanted to go out and make stuff (from new materials), so I turned down a corporate offer and went to work for a startup in California. I rapidly became their business development manager and got them started into new products by launching materials platforms in cellular materials, ceramic and metal-matrix composites, and nanostructured materials. My decision to be a materials scientist was validated, as I got to work on cool stuff like rocket motors, missile and defense systems, biomedical implants, and composite racing pistons.

I started to lead my first business in 1996, and I've since been involved with 12 startups.



You have described yourself as a serial entrepreneur. How would you define the role of an entrepreneur?

Sherman: It's quite different from corporate America, where you figure out all the profits/return on investment first and reduce risk as much as possible before you commit yourself. For the entrepreneur, passion and gut are relied upon more than hard data. It's a very different risk profile. It's okay to fail many times, as long as you succeed once. An established corporation cannot afford the potential reputational damage of a failure, so succeeding is choosing carefully and not failing. It's hard to be disruptive if you're not allowed to fail.

The model is to find something that fills a need or that has the application to disrupt. As an entrepreneur, it's all about disruption, which is basically a 50% change, like a 50% reduction in cost at the same performance, or a doubling of performance at the same cost. If you can make a 50% change, you can disrupt a business.

This article is part of an occasional feature series in which *JOM: The Magazine* talks with industry leaders about technology developments and current issues. To suggest a candidate for a future issue, contact Kelly Zappas, *JOM: The Magazine* editor, at kzappas@tms.org.

JOM

Could you provide an example of a disruptive technology that you have worked on?

Sherman: What allowed Terves to build a magnesium plant was reactive magnesium, which are materials that are designed to corrode at about 1/8 of an inch an hour. It's interesting—my entire career, I was fighting high-temperature oxidation: water vapor at 3,000 degrees and rocket motors and chrome alternatives to prevent corrosion on landing gears. Then one day, a guy from the energy company Hess asked me, "Can you make something corrode?" No one had asked me that before, but yeah, it turns out we could.

The frac plugs that we developed for the oil and gas industry, made of dissolvable magnesium, are a perfect example of a disruptive technology. Before these were developed, there were some dissolvable polymers that were really expensive but only worked in limited circumstances.

In the oil and gas industry, they would use something called a drillable plug where, when you fracture a well, you run a steel pipe and cement it in and then you have to go through and get connection with the formation. You do that by opening holes and then using pressure and sand to open up the formation to allow the oil or gas to flow, and you have to repeat that process between 30 and 100 times over a one-mile tube that goes along the formation.

When you were done with that whole process, then you had to get all of those plugs back out. So you would have to go back down with a drill on coiled tubing (a two-inch wide steel tube) and you're doing this two miles out. It's not a fun process, particularly when you have a tube down there that may have kinks in it. They had to drill the plugs out using 1,000 horsepower diesel pumps and flush the chips out. That uses a lot of fuel, water, and time.

With this dissolved magnesium that we developed, you don't do any of that. You just run the frac plugs down there, you let them sit for three days, and they go away automatically. Then all you have to do is run a cleaning plug just to make sure that there's no byproduct. What this does is reduce diesel use, reduce carbon dioxide emissions, and reduce water use by over 90%. It was a huge cost savings and a lot more reliable. At least one person at Hess actually credited dissolvables with saving their Canadian unconventional business because they were having extreme problems drilling out plugs and frac balls.

We originally developed dissolvable material starting with powder metallurgy, which was kind of our background. Then when we needed to scale up to hundreds and hundreds of tons, we didn't want to be handling magnesium powders, which are expensive and flammable, so we developed a casting process, and we were able to surprisingly replicate a

lot of the very specific microstructures. We found a local casting firm and outsourced the entire process to start with. Then we developed that market, and it turned out to be the largest wrought magnesium market developed almost in the last century.

JOM

What is Terves's role in the U.S. magnesium market?

Sherman: Oil and gas is still the lead application for our magnesium. In 2016, we built our own magnesium foundry where we smelt the magnesium, we alloy it, and we fabricate extrusion billets. Then in 2018 we put in our full extrusion plant and also built a magnesium machining complex. Then we added assembly. We do raw material all the way to fully assembled products.

We are the only people to build a magnesium plant in the U.S. in the last 50 years, primarily due to low cost foreign suppliers. In the U.S., there is one primary magnesium producer, and we're the only secondary producer of extruded wrought product. There are a few die casters that do primarily automotive parts, and less than ten magnesium casting houses that produce things like gearboxes and aircraft parts.

I think the problem [of not having a strong domestic magnesium infrastructure] is now recognized. Unfortunately, it took a global pandemic where we found out, when China shut down, that our entire supply chains don't work. Now, we are starting to see more investment in domestic materials and manufacturing in the U.S. than we have seen since the 1950s. I have been advocating with the nonprofit group US inventor (usinventor.org) to strengthen the U.S. patent system to help and support sustainable domestic manufacturing.



A look inside the full extrusion operation Terves built at its Euclid, Ohio, facility. Operations came on-stream live in October 2019 (pictured top). An example of a dissolvable frac plug developed by Terves for use in the oil and gas industry (pictured left). Photos provided by Terves LLC.

A SPOTLIGHT ON TMS FALL MEETING EVENTS AT MS&T23

Megan Enright

Over 2,700 scientists, engineers, and students met in Columbus, Ohio, from October 1–4, 2023, for the Materials Science & Technology 2023 (MS&T23) technical meeting and exhibition. MS&T23 featured the TMS Fall Meeting 2023, which offered TMS members a chance to connect, explore robust programming, attend networking and social activities, and take part in professional development events.

Read on for details about the highlights from MS&T23, and view more photos from the event at www.flickr.com/photos/tmsevents.

Technical Program Features

MS&T23 featured technical programming by all three of the conference's organizing societies: TMS, the American Ceramic Society (ACerS), and the Association for Iron & Steel Technology (AIST). The Society for Biomaterials returned to MS&T23 as a co-sponsor and presented several additional symposia.

Over the course of three days, presentations were given at more than 67 symposia in 15 technical tracks. TMS technical committees organized 27 of those symposia in areas of interest to TMS members.

John Carpenter, Los Alamos National Laboratory, and **Eric Lass**, University of Tennessee, Knoxville, served as the TMS representatives on the MS&T23 Program Coordinating Committee.

Plenary Session

Alan A. Luo delivered the TMS Plenary Talk, entitled, "Lightweight Materials and Sustainable Manufacturing: The Role of Integrated Computational Materials Engineering (ICME)," during the MS&T23

Plenary Session on Tuesday, October 3. Luo's presentation began with a discussion of how lightweight materials, such as aluminum, magnesium, titanium, and metal-matrix composites, are being increasingly used in the transportation and manufacturing industries in order to aid in reducing carbon footprints and energy consumption. Luo also examined how emerging materials—including high entropy alloys, bioresorbable magnesium alloys, and densified superwood materials—have new engineering and biomedical applications. He continued by providing examples of lightweight material designs which used a CALPHAD-based ICME approach and some of the latest innovations in sustainable casting, extrusion, sheet forming, and multi-metal manufacturing processes.

Luo represented TMS as one of the three plenary speakers at MS&T23. He was joined at the plenary session by **Sergei V. Kalinin**, University of Tennessee, Knoxville, who represented ACerS with the presentation, "Microscopy is All You Need: The



Rise of Autonomous Science," and **Keith Taylor**, SSAB Americas, who represented AIST with his presentation, "Practical Applications of Physical Metallurgy to Industrial Steel Product Development." Taylor is also a TMS member.

Examining Educational Methods

On Monday, October 2, the TMS Accreditation Committee and the TMS Education Committee sponsored the Curricular Innovations and Continuous Improvement of Academic Programs (and Satisfying ABET along the Way): The Elizabeth Judson Memorial Symposium. This one-day symposium featured talks from nine speakers, as well as two panel discussions.

The first half of the day focused on curricular advances and accreditation, with the afternoon session examining student support and inclusion. Topics ranged from how motivation for learning is linked to success in learning to updates and changes in the ABET criteria. The panel discussions covered how to prepare for an ABET visit

Left: Alan A. Luo represents TMS at the MS&T23 Plenary Session. **Middle: Panelists Janet Callahan (left) and Gregg Janowski (right)** discuss how to prepare for an ABET visit at the Elizabeth Judson Memorial Symposium. **Right: TMS staff member, George Spanos,** presents, "Hub Aaronson and His Impact on the Field of Solid State Phase Transformations," at the History of Science and Engineering Symposium.

and how to support diversity through mentoring and allyship.

Exploring the History of Materials Science

Over the course of three days, the TMS Phase Transformations Committee, the TMS Shaping & Forming Committee, the TMS Steels Committee, and the AIST Metallurgy—Processing, Products & Applications Technology Committee sponsored the History of Materials Science and Engineering symposium. This symposium featured a variety of talks from TMS and AIST members on topics important to the history of materials science and engineering.

On Monday, October 2, speakers discussed the important material classes and choices that left their mark on the history of materials science and engineering, as well as important people and institutions in the history of the field. On Tuesday, October 3, and Wednesday, October 4, presentations covered phenomena and techniques that shaped the field.

Professional Development Events

Navigating the Patent Process

"Anyone can be an inventor. . . . Inventing is creative problem solving," said **Emily Kinser**, chair of the TMS Professional Development Committee, at the Navigating the Patent Process: Transforming Innovation to Invention workshop on October 2. Kinser provided attendees with an overview of what the different types of intellectual property (IP) are and why they are necessary to inventors. She also discussed the types of things that are patentable and the requirements for patentability. In addition, Kinser described some of the methods for getting intellectual property patented, mentioning that teamwork is very important. She noted that today,

patents are rarely submitted by one person. The teamwork aspect is essential in trying to solve complex problems.

Kinser then introduced the panel of experts who would answer attendees' questions on the patent process. The panelists included: **Iver Anderson**, Ames National Laboratory and Iowa State University; **Tina Dorr**, Barnes & Thornburg LLP; and **Tom Fleishman**, Allied Security Trust.

"Be a salesman; convince them of the problem and your solution," said Fleishman in response to a question about how to get started on the patent process. "Don't close your mind . . . just do it."

"Look for the surprises. Look for the serendipitous moments," Anderson responded to the same question. "If it surprises you, it probably is surprising to others with your training."

"If no formal IP generation opportunity exists in your organization, take the lead and coordinate," Kinser encouraged attendees. She continued to motivate participants by saying, "It's cool to be an inventor. It is a big personal accomplishment."

In parting words of wisdom, Anderson said, "The way to find ideas that are marketable is to go to meetings like this and hear what problems are out there."

Network Like a Pro

On Tuesday, October 3, attendees gathered for the Network Like a Pro panel discussion. The panelists included 2023 TMS President **Brad Boyce**, Sandia National Laboratories; **Elizabeth Dickey**, Carnegie Mellon University; and **Paul Prichard**, Kennametal. This event was presented by the TMS Emerging Professionals Committee and the TMS Professional Development Committee. **Nadia Kouraytem**, Utah State University, moderated the event as a member of the Emerging Professionals Committee.

"Every opportunity to interact with someone is an

educational experience," said Prichard.

The panel encouraged attendees to build their own ecosystem of people who will help them grow, using tools such as LinkedIn. "Don't overthink it, go with your gut, and find the community that supports you," said Dickey.

They emphasized the importance of having a network, a supportive community, in building a career. "There's so little you can do alone. Almost everything requires collaboration and networking," Boyce said.

The panel also provided participants with tips on how to approach a formal networking event, encouraging them to find something they have in common with other attendees. Panelists suggested engaging with a speaker after an interesting session, approaching people in a group, following up online after meeting in-person, and taking advantage of someone you already know with a deeper network. They also stressed the importance of knowing *why* you are trying

to connect. The panelists emboldened attendees to talk to the people they think are unapproachable, as they might not be as unapproachable as they seem.

"The more you do it at events like this . . . the better you get at it," said Prichard, encouraging the attendees to practice their networking skills.



Network Like a Pro panelists from left to right: **Brad Boyce**, Sandia National Laboratories; **Paul Prichard**, Kennametal; **Elizabeth Dickey**, Carnegie Mellon University.

Networking and Social Events

MS&T Diversity in Science Reception

"DEI is not just about trying to help underrepresented groups . . . it's about trying to help the profession by adding their voice and insight and energy to our efforts. Here, today, in this reception, we celebrate the successes we've had in improving DEI within the profession. And we redouble our efforts to make everyone feel like they belong," said 2023 TMS President **Brad Boyce** in his introductory remarks at the MS&T Diversity in Science Reception.

Attendees heard remarks from leaders representing each of the sponsoring societies at this reception.

Attendees network and enjoy refreshments at the MS&T Diversity in Science Reception.



They then enjoyed refreshments and networking with their fellow attendees. They celebrated the strides made in encouraging diversity in the materials science field and discussed the work that still needs to be done.

"TMS's number one strategic goal is 'to be a highly inclusive society where all materials students and professionals feel welcome, and diversity is celebrated.' That goal to be an inclusive society is easy to say in words, but following through with actions takes a deeper commitment. I'm proud to report that our DEI committee at TMS is as active as it has ever been," Boyce continued.

MS&T LGBTQ+ and Allies Networking Mixer

During the Diversity in Science Reception, Boyce also introduced the LGBTQ+ and Allies Networking Mixer, which has become a conference-wide event. "TMS started this reception a few years ago, and it has gained a lot of momentum and popularity, so we are excited to share that our partner societies are joining us this year in hosting the event," said Boyce, who invited all attendees to participate.

Those who participated in the event enjoyed an evening of informal networking in a safe space to celebrate shared experiences as LGBTQ+ individuals and allies.

Exhibitor Networking Reception and Poster Session

On Tuesday, October 3, attendees networked and enjoyed refreshments with exhibitors and poster presenters in the Exhibit Hall during the Networking Reception and Poster Session. Poster presenters answered questions and explored their research with attendees.

Superalloys Scholarships Awarded



During the Material Advantage Student Awards Ceremony, TMS presented the International Symposium on Superallloys Scholarships funded through the TMS Foundation and issued under the generosity of the TMS International Symposium on Superallloys Committee. These scholarships are available to undergraduate and graduate students majoring in metallurgical and/or materials science and engineering with an emphasis on all aspects of superalloys. Two scholarships are awarded annually, each valued at \$2,000. The 2023 recipients are **Semanti Mukhopadhyay** (not pictured), The Ohio State University, and **Cynthia Rodenkirchen**, Imperial College London.

TMS FALL 2024
@ MATERIALS SCIENCE & TECHNOLOGY

Be Part of TMS Fall 2024
at MS&T24

Materials Science & Technology 2024 (MS&T24) will be held in Pittsburgh, Pennsylvania, October 6–9, 2024. The TMS Fall Meeting is part of MS&T24 and will feature a collection of 37 symposia in the following subject areas:

- Additive Manufacturing
- Artificial Intelligence
- Biomaterials
- Fundamentals and Characterization
- Iron and Steel (Ferrous Alloys)
- Lightweight Alloys
- Materials-Environment Interactions
- Modeling
- Nanomaterials
- Nuclear Energy
- Sustainability, Energy, and the Environment

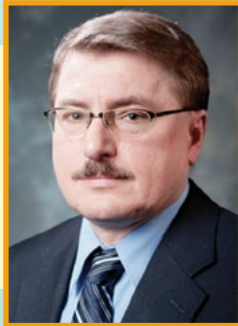
Visit www.tms.org/TMSFall2024 to view a complete listing of TMS-sponsored symposia. You can also view the complete MS&T24 technical program—which includes symposia organized by TMS, ACerS, and AIST—at www.matscitech.org/MST24. Abstracts for all TMS Fall 2024 symposia and all other MS&T24 symposia are due May 1, 2024.

Editor-in-Chief Transition for *Journal of Electronic Materials*

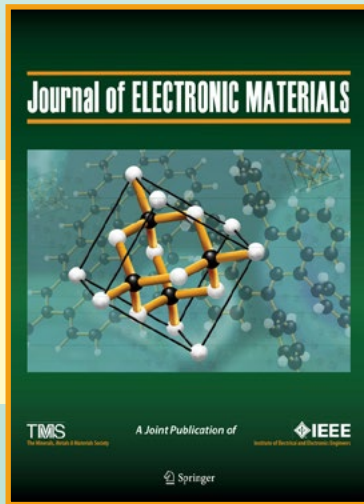
Kelly Zappas



Shadi
Shahedipour-Sandvik



Wojciech
Jadwisienczak



The *Journal of Electronic Materials* is a peer-reviewed scientific journal established more than 50 years ago. The journal reports on the science and technology of electronic materials, while examining new applications of various materials. TMS members can access current and past issues of this and other TMS journals by logging in to the TMS website at www.tms.org/Journals.

After nine years, **Shadi Shahedipour-Sandvik**, a professor at the University at Albany, State University of New York, has stepped down as editor-in-chief of the *Journal of Electronic Materials*. In January 2024, **Wojciech Jadwisienczak**, a professor at Ohio University, takes on the role of the journal's new editor-in-chief. Jadwisienczak served as a section editor for the journal from 2018 to 2023 and an associate editor from 2015 to 2018. At Ohio University, he currently serves as Graduate Chair in the School of Electrical Engineering and Computer Science. His primary research focuses on the fundamental properties of wide-bandgap semiconductors for optoelectronics, photonics, and spintronics.

As her tenure came to a close, Shahedipour-Sandvik talked with *JOM* about her work with the *Journal of Electronic Materials* over nearly a decade. During that time, she said, she and her editorial team have worked to keep the quality of the journal high and to emphasize service to the authors submitting manuscripts.

"We try to stay very, very focused on the mission," she said, "and the mission is to publish high-quality articles and to serve our authors and reviewers, but also our readers, to give them a quality article to read that hopefully they will find impactful."

As the editor-in-chief, Shahedipour-Sandvik worked with a team of a senior editor, section editors, and associate editors to manage the content of the journal. The number of associate editors at any given time can range from 30 to 50, so maintaining a consistent approach across the team is essential, she said.

"Each of these editors has their own perspectives and understanding," said Shahedipour-Sandvik. "We try to keep all of our editors engaged. We keep them updated and we take their input seriously. If you really want to impact quality, you have to take into account every level where it is being impacted and then pay attention to it holistically, making sure that everybody is on the same page about where they need to go."

This connects with her idea of service to authors, as well. "I want authors to feel like they are fairly treated, and they are fairly treated when, at the end of the peer review process, we can create some sort of harmony across the editorial board in how we define quality," she said.

Shahedipour-Sandvik said that the journal has also kept a balance between traditional fields—like microelectronic packaging, which has been a focus area of the journal since its inception—and more emerging areas, like green processes, electronic materials for quantum communication, and other topics that the journal is seeing more frequently in submissions.

"When our economic policy shifts away from something, so does the funding for research," she said. "Even though U.S. economic policy shifted away from microelectronic packaging, we continued to have a very close relationship with authors and symposium organizers that stayed in packaging. When other people moved away from these topics, we saw the value in them. Now there's a huge focus on microelectronic packaging again. In addition to that, I would say we have continued to keep an eye toward fields that are cutting edge research."

TMS MEETING HEADLINES

Meeting dates and locations are current as of October 30, 2023. For the most recent updates on TMS-sponsored events, visit www.tms.org/Meetings.

TMS 2024 Annual Meeting & Exhibition (TMS2024)



March 3–7, 2024
Orlando, Florida,
USA

Discount Registration Deadline: January 31, 2024

TMS2024 will bring together more than 4,000 engineers, scientists, business leaders, and other professionals in the minerals, metals, and materials fields for a comprehensive, cross-disciplinary exchange of technical knowledge. Register today to join them!

www.tms.org/TMS2024

TMS Specialty Congress 2024



June 16–20, 2024
Cleveland, Ohio,
USA

Discount Registration Deadline: April 30, 2024

Accelerating Discovery for Mechanical Behavior of Materials 2024 will encompass cutting-edge research and development efforts surrounding mechanical behavior over a wide range of material types, with an emphasis on the underlying microstructural causes.

www.tms.org/SpecialtyCongress2024

15th International Symposium on Superalloys (Superalloys 2024)



September 8–12, 2024
Champion, Pennsylvania,
USA

Discount Registration Deadline: July 31, 2024

Superalloys 2024 will feature keynote speaker Steve Gregson, a senior engineering fellow in the Engineering for Services Department at Rolls-Royce. He supports services across the global business including civil aerospace, defense aerospace, and power systems businesses.

www.tms.org/Superalloys2024

OTHER MEETINGS OF NOTE



TMS Fall Meeting 2024 at Materials Science & Technology (MS&T24)

October 6–9, 2024
Pittsburgh, Pennsylvania,
USA

www.tms.org/TMSFall2024



TMS 2025 Annual Meeting & Exhibition (TMS2025)

March 23–27, 2025
Las Vegas, Nevada, USA

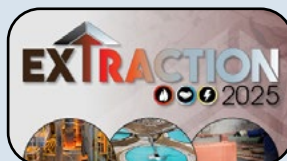
www.tms.org/TMS2025



TMS Specialty Congress 2025

June 15–19, 2025
Anaheim, California, USA

www.tms.org/SpecialtyCongress2025



Extraction 2025 Meeting & Exhibition (Extraction 2025)

November 16–20, 2025
Phoenix, Arizona, USA

www.extractionmeeting.org/Extraction2025

CO-SPONSORED MEETINGS

OTC Asia 2024

February 27–March 1, 2024
Kuala Lumpur, Malaysia

Co-sponsored by TMS

Offshore Technology Conference 2024

May 6–9, 2024
Houston, Texas, USA

Co-sponsored by TMS

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TMS 2024

153rd Annual Meeting & Exhibition

MARCH 3–7, 2024

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PRE-SHOW REPORT

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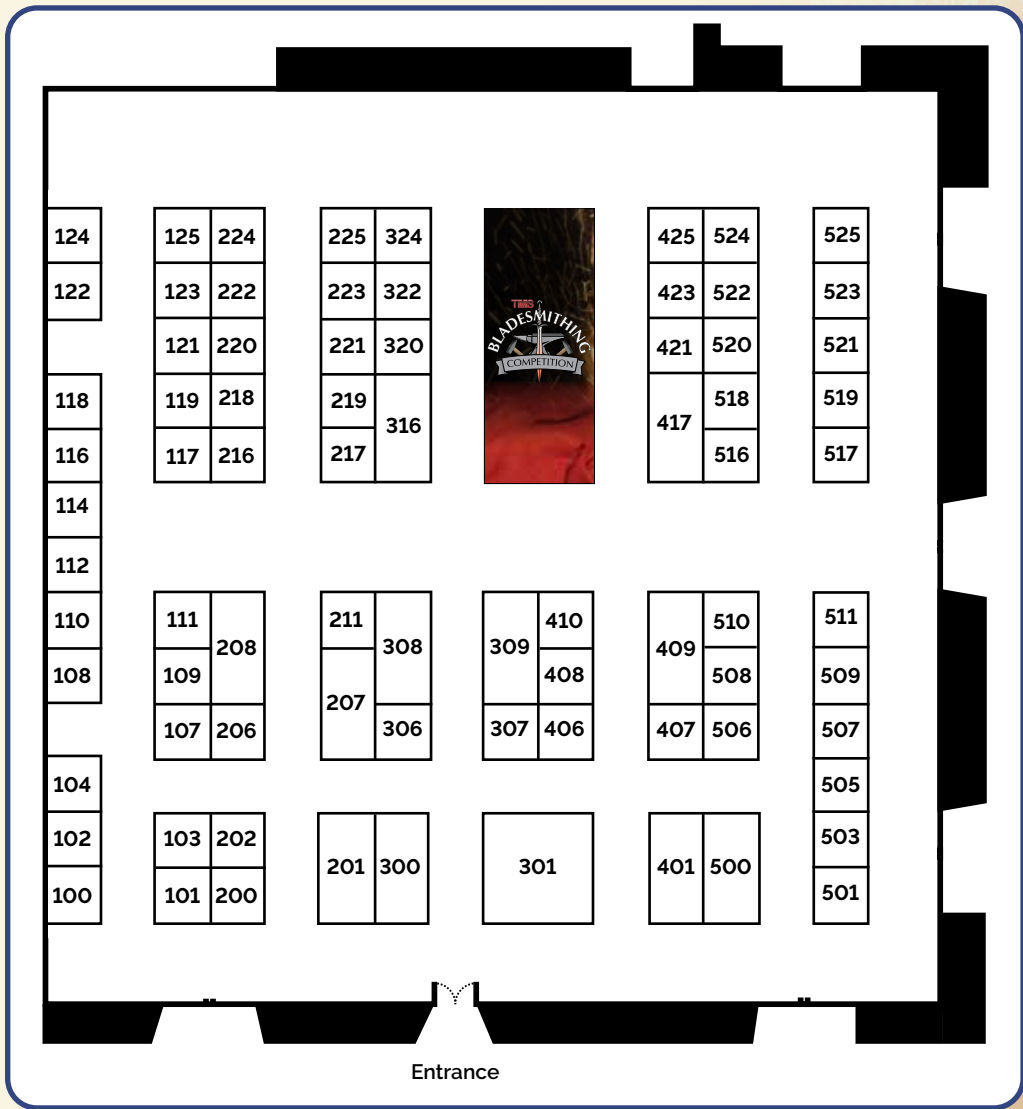
TMS2024 EXHIBITOR LIST

(AS OF NOVEMBER 29, 2023)

COMPANY NAME	BOOTH NUMBER
ABB, Inc.....	206
Allied High Tech Products	500
ALMEX USA, Inc.	308
AMAZEMET Sp. z o. o.	425
AnalytiChem	421
Angstrom Scientific Inc.	217
B-jetting.....	503
Bruker.....	201
Cameca	101
Carl Zeiss Microscopy, LLC.....	401
CompuTherm, LLC.....	211
EDAX	410
Elsevier	322
Fritsch Milling & Sizing, Inc.....	509
GLAMA.....	300
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