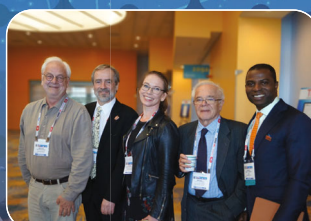




INSIDE THE TMS2022 SESSION ROOMS: SPECIAL LECTURES AND AWARD SYMPOSIA

Kelly Zappas



In total, more than 100 symposia were held at the TMS 2022 Annual Meeting & Exhibition (TMS2022), spanning 14 technical topics over four days, February 28–March 3, in Anaheim, California. Among these were three co-located meetings, five honorary symposia, special invited sessions on various technical topics, and award lectures delivered by leaders in the field.

While many presentations were delivered in person, select symposia were held in a special livestreaming room, which allowed remote presenters to deliver talks to an in-person audience and allowed in-person presenters to stream talks to remote participants. Additional presentations were made available as on-demand recordings after the in-person conference had ended. The following pages offer a look at just some of these featured sessions from TMS2022.

Technical Keynote Sessions

In keeping with the theme of the TMS2022 150th anniversary year, the 2022 Light Metals Keynote Session focused on 50 Years of Continuous Light Metals Proceedings—Highlights and Vision for the Century. Organized by Linus Perander, Yara International and editor of *Light Metals 2021*, this session featured talks by eight speakers (delivering both in-person and virtual presentations) who offered a sense of the history of technology development and highlighted key changes that have taken place in the industry since the publication of the first *Light Metals* proceedings volume in 1971.

Among the speakers were current and past editors of the *Light Metals* conference proceedings, as well as editors of the *Essential Readings in Light Metals* books published in 2013. Each speaker looked back at a different aspect of Light Metals history over the past 50 years.

“There are always problems to solve and new solutions just around the corner.”

—John Grandfield, Grandfield Technology, in his talk, “50 Years of Aluminum Cast House Technology Development: Lessons from Five Case Studies”



Light Metals proceedings volumes from the past decade and *Essential Readings* books can be purchased through the TMS Bookstore at www.tms.org/Bookstore, while papers from *Light Metals* proceedings volumes published between 1971 and 2010 can be accessed through a subscription to the Light Metals Digital Library. Learn more at members.tms.org.

The Magnesium Technology 2022 symposium also opened four days of in-person programming with a keynote session of invited talks by speakers from academia and industry, while the ten additive manufacturing-themed symposia held at TMS2022 came together for a well-attended keynote session of invited speakers. Both events were held on Monday, February 28.



Amy Clarke, Colorado School of Mines, delivers the presentation "Metallic Alloy Microstructure Control under Additive Manufacturing Conditions" to a standing-room-only audience at the Additive Manufacturing Keynote Session.



Arne Ratvik (above, left), SINTEF, discussed "50 Years of Research and Developments on Cathode Designs in Aluminium Reduction" at the 2022 Light Metals Keynote session; Alan Luo (right), The Ohio State University, opened the Magnesium Technology 2022 keynote session with the invited talk, "Magnesium Alloy Development for Structural and Biomedical Applications."



Award Lectures

Several distinguished award recipients were honored with featured talks at technical sessions throughout the week at TMS2022, including those pictured here. Not pictured is Ke Lu, Chinese Academy of Sciences, who delivered the Institute of Metals/Robert Franklin Mehl Award lecture as part of the on-demand portion of the Ultrafine-Grained and Heterostructured Materials (UFGH XII) symposium.



Anton Van der Ven, University of California, Santa Barbara, delivers the William Hume-Rothery Award Lecture, "Study of Ferroelectricity and Phase Transitions in Hafnia."



The 2021 and 2022 recipients of the William D. Nix Award were present in Anaheim to deliver lectures as part of the Nix Award and Lecture Symposium. George Pharr (top), Texas A&M University, discussed "Nanoindentation—The Next Generation" at the Wednesday morning session, while Huajian Gao (bottom), Nanyang Technological University, gave the presentation "Mechano-Materials: Engineering Mechanical Properties of Materials with Internal Interfaces and Lightweight Structures" on Wednesday afternoon.



"What will it take to build the future? New materials. And a big part of that new material supply is going to be rare earth metals."

—David Dreisinger, University of British Columbia, Extraction & Processing Division Distinguished Lecturer, in his talk, "Rare Earth and Critical Material Recovery from Peralkaline Volcanic Ores: Minerals Processing, Hydrometallurgy, and Solvent Extraction Separation"



Acta Materialia Symposium

Four TMS members were honored at the Acta Materialia Symposium at TMS2022 on March 1, delivering presentations on topics that ranged from engaging underrepresented groups in education to jet engines and green steel. Also at this session, Christopher Schuh, coordinating editor/governor for Acta Materialia Inc., presented the Acta Materialia student awards. He congratulated the recipients on having their work selected for recognition from the thousands of papers that are submitted each year.

"We have a lot of work going on with the relationship between climate change and carbon dioxide emissions, but we have very little research on direct carbon dioxide avoidance, particularly green steelmaking. That leaves a lot of room for further research."

—Dierk Raabe, Max-Planck Institut für Eisenforschung GmbH, in his Acta Materialia Gold Medal Lecture, delivered remotely



Alexander Michaelis of Fraunhofer Institute of Ceramic Technologies and Systems, IKTS, received the Acta Materialia Hollomon Award for Materials and Society.



Amber Genau, University of Alabama at Birmingham, delivers the Acta Materialia Mary Fortune Global Diversity Lecture.



David Dye, Imperial College, was named the Acta Materialia Silver Medal Lecturer.

Frontiers of Materials Symposia

TMS2022 featured three special symposia as part of the Frontiers of Materials Award program, a competitive award given to top-performing early career professionals. As part of the award, the honoree organizes a symposium on an emergent technical topic and delivers a keynote lecture during the symposium. This award is designed to bring novel, exciting programming to TMS meetings in topics that are not traditionally captured by existing programming.

This year's symposia were presented in three different formats: a one-day symposium, a two-day symposium, and a fully on-demand session. Learn more about the Frontiers of Materials Award at www.tms.org/Awards.



Mostafa Bedewy, University of Pittsburgh, delivers the keynote presentation at his two-day symposium, Nanocarbon-based Flexible Devices: Emerging Materials and Processes, at TMS2022.



Yu-chen Karen Chen-Wiegart, Stony Brook University/Brookhaven National Laboratory, gives her keynote lecture at the one-day symposium, Data-driven, Machine-learning Augmented Design and Novel Characterization for Nano-architected Materials, at TMS2022.

"In addition to physical and chemical reasons, there are biological reasons that can explain metal corrosion."

—Andrea Koerdt, Bundesanstalt für Materialforschung und Prüfung, in her on-demand presentation for the symposium Microbiologically Influenced Corrosion—How Organisms Accelerate Materials Degradation

Student-Led Symposium

A group of graduate students from the University of California, Davis, presented their first symposium, *Moving Forward from a Pandemic: How the Field of Materials Science Has Adapted*, at TMS2022 in Anaheim. The symposium is part of the TMS Student-Led Symposium series, presented each year at the TMS Annual Meeting & Exhibition.

"A renaissance in research related to copper-based coatings in materials and surfaces has been brought about by the COVID-19 pandemic."

—Bryer Sousa, Worcester Polytechnic Institute, in his talk, "Lessons Learned during the COVID-19 Pandemic Regarding Antimicrobial Copper-based or Copper-containing Materials/Surfaces"

"As materials scientists, we were interested in learning how those in our field, both academic and industry, have been impacted by the pandemic. Furthermore, we wanted to know how materials scientists have learned from their experiences and continued to progress," said Christine Smudde, on behalf of co-organizers Gianmarco Sahragard-Monfared, Jared Stimac, and Mingwei Zhang.

The first-time organizers said that their biggest challenge was remaining flexible with virtual/in-person attendance of the invited speakers. "A struggle in line with the topic of our symposium," said Smudde.

"Of course, everyone in the research community was affected, but there was a disproportionate adverse effect seen by members of underrepresented groups, by early career researchers in particular, and in underserved and under-resourced institutions."

— Alexis C. Lewis, National Science Foundation, in her virtual presentation, "COVID-19 Impacts on Policy & Funding in Materials Engineering—A Perspective from the National Science Foundation"

The symposium opened on the morning of February 28 with the presentation, "Materials Science during a Pandemic: A National Lab Perspective," by 2021 TMS President Ellen Cerreta of Los Alamos National Laboratory and featured two in-person sessions: Materials Research and Leadership in Uncertain Times and Education and User Facilities—Supporting Students and Users During the Pandemic. A third on-demand session became available on March 14.

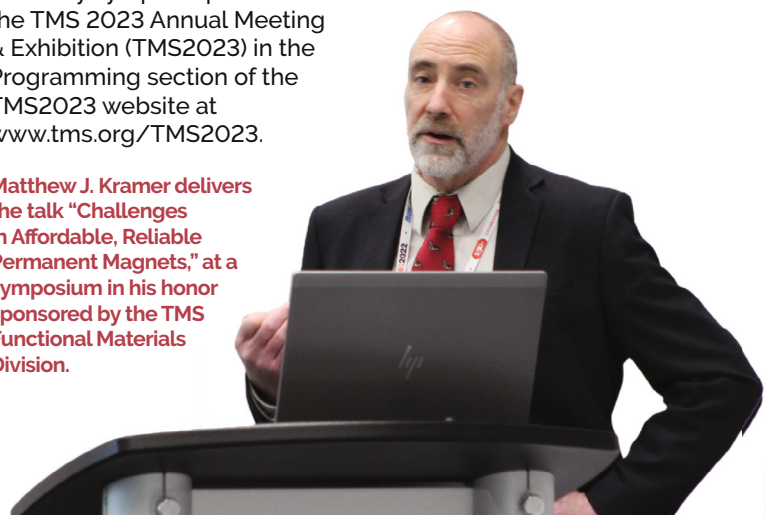
Honorary Symposia

Five long-time TMS members were recognized by their colleagues with special symposia held in their honor at TMS2022. These symposia included:

- Failure, and a Career That is Anything But: A Light Metals Division Symposium Honoring J. Wayne Jones
- Magnetics and the Critical Materials Challenge: A Functional Materials Division Symposium Honoring Matthew J. Kramer
- Primary Aluminum Industry—Energy and Emission Reductions: A Light Metals Division Symposium in Honor of Halvor Kvande
- Seeing is Believing—Understanding Environmental Degradation and Mechanical Response Using Advanced Characterization Techniques: A Structural Materials Division Symposium in Honor of Ian M. Robertson
- REWAS 2022: Coupling Metallurgy and Sustainability, an Extraction & Processing Division Symposium in Honor of Diran Apelian.

Each year, the TMS technical divisions sponsor a select number of honorary symposia at the TMS Annual Meeting. You can view honorary symposia plans for the TMS 2023 Annual Meeting & Exhibition (TMS2023) in the Programming section of the TMS2023 website at www.tms.org/TMS2023.

Matthew J. Kramer delivers the talk "Challenges in Affordable, Reliable Permanent Magnets," at a symposium in his honor sponsored by the TMS Functional Materials Division.



"The main challenge for the aluminum industry now is decarbonization, energy, and the environment. Special emphasis in all future aluminum courses, in my opinion, must be given to decarbonization."

—Halvor Kvande, Norwegian University of Science and Technology, in his on-demand presentation, "The TMS Industrial Aluminum Electrolysis Course—History, Development of Contents, and Future"

Co-Located Meeting Keynotes

Three co-located meetings—each with a very different focus—ran concurrently with TMS2022 technical programming: the Fourth Summit on Diversity in the Minerals, Metals, and Materials Professions (DMMM4); Furnace Tapping 2022; and REWAS 2022. Each event featured a keynote or plenary session of invited participants as a central part of their programming, which are briefly highlighted here. More detailed coverage of these events will be published in the October/November 2022 issue of *JOM: The Magazine*.

The REWAS 2022 plenary, held on Monday, February 28, opened with a talk by Diran Apelian, University of California, Irvine. "I want to share my personal journey of appreciating the life cycle of materials," said Apelian, who traced his interest in the topic of sustainable development back to when he was named the TMS/ASM Distinguished Lecture in Materials and Society Award recipient in 2003. In 2008, Apelian served as TMS president, where he focused on sustainability and materials science and engineering's pivotal role in sustainable development for the 21st century. "It was a movement that really took off," he said. "It was the right message at the right time."

Apelian was one of five speakers at the REWAS plenary to address the theme of the symposium: Developing Tomorrow's Technical Cycles.



Diran Apelian, University of California, Irvine, gives the talk, "Life Cycle of Materials – A Personal Journey," at the REWAS 2022 Plenary.

Then on Tuesday, March 1, the Furnace Tapping 2022 symposium held a special session, in which keynote speaker Isabelle Nolet of Hatch presented updated industry survey information for platinum group metal/nickel tapping practices. Goals of the updated survey (based on a survey initially developed in 2014) include better understanding of emerging trends and sharing of best practices. The survey explored information provided by 14 participating companies from 13 countries.

Following Nolet's presentation, a panel discussion explored the "The Good, the Bad, and the Ugly of Furnace Tapping." Discussions ranged from what an ideal furnace tapping environment might look like to where improvements can be made in current environments, with much discussion centered on safety for operators.

Programming for DMMM4 began on Wednesday, March 2, with an opening keynote where Viola Acoff, University of Alabama, shared the powerful story of her career as the first woman hired in the school's Department of Metallurgical and Materials Engineering and the first Black tenure-track female faculty member at her institution at that time. Her talk set the stage for the panel discussion and group conversations that followed in the two full days of programming and networking events for DMMM4.



Viola Acoff, University of Alabama, delivers the DMMM4 Opening Plenary presentation, "The Road to Equity and Inclusions: Lessons Learned on the Journey."

Panelists discuss "The Good, the Bad, and the Ugly of Furnace Tapping." From left to right: session chair Quinn Reynolds, Mintek; Isabelle Nolet, Hatch; Ryan Walton, Rio Tinto Kennecott; Stanko Nikolic, Glencore Technology; Harmen Oterdoom, Independent Consultant; Stefan Schmidt, Aurubis AG; and moderator Gerardo Alvear Flores, Rio Tinto. Not pictured is Christine Wenzl, RHI Magnesita GmbH, who participated in the panel virtually.

