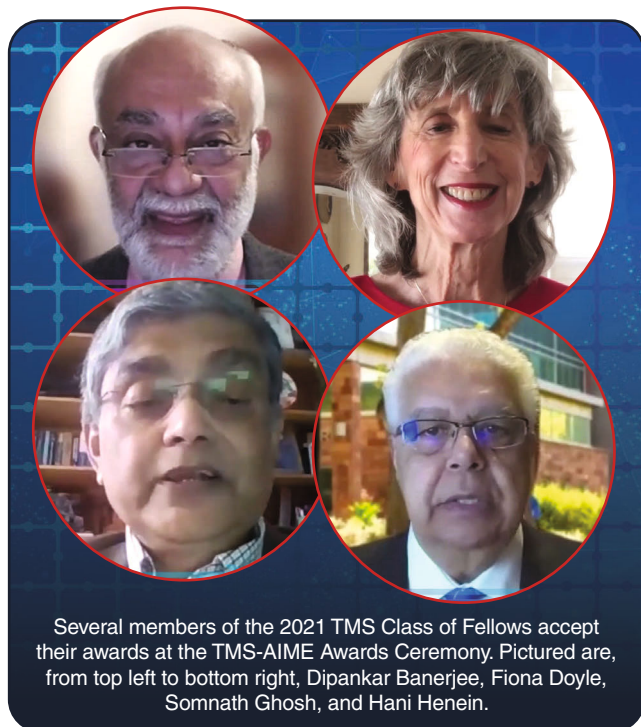




Though they looked different this year, networking events, student activities, and awards ceremonies were still a key part of the TMS 2021 Virtual Annual Meeting & Exhibition (TMS2021 Virtual). The following pages offer a look at some these key events held throughout the week of March 15–18 at TMS2021 Virtual.

TMS-AIME Awards Ceremony



Several members of the 2021 TMS Class of Fellows accept their awards at the TMS-AIME Awards Ceremony. Pictured are, from top left to bottom right, Dipankar Banerjee, Fiona Doyle, Somnath Ghosh, and Hani Henein.

At the TMS-AIME Awards Ceremony, TMS and the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) recognized distinguished achievements by leaders in their field, early career professionals, and students.

Among the awards presented was the highest honor the Society can bestow: the TMS Fellow Award. Eight new members were inducted into the 2021 Class of TMS Fellows and several of these inductees delivered acceptance speeches by video.

“Being honored by TMS is particularly meaningful to me because this Society has been singularly influential in my career success,” said Fiona Doyle, University of California, in her speech. “Almost 40 years ago, I found a community of hydrometallurgists and others who mentored me, befriended

me, and didn’t squash my wild and crazy ideas.... At a time when other women in engineering were struggling with gaining acceptance by their male colleagues, I felt that TMS was fully supportive of me and other women.”

In addition to Doyle, new Fellows included Dipankar Banerjee, Raymond Decker, David DeYoung, Somnath Ghosh, Hani Henein, Donald Sadoway, and Julie Schoenung.

The full ceremony, which also included speeches by 2020 TMS President Tom Battle and 2021 TMS President Ellen Cerreta, is now available as a series of videos through Channel TMS on YouTube at www.youtube.com/user/ChannelTMS.

Student Career Forum



Pictured from top left to bottom right: The Student Career Forum was moderated by Emily Moore, Lawrence Livermore National Laboratory. Panelists included Jonah Klemm-Toole, Colorado School of Mines; Benjamin Adam, Portland State University; Taylor Mason, Pacific Northwest National Laboratory; Miriam Silton, W.L. Gore & Associates; and Ben Rutherford, Army Corps of Engineers.

Six early career professionals shared insights on potential career paths, gave a preview of what to expect during the job search process, and offered useful career advice and encouragement at the Student Career Forum, held on Tuesday, March 16.

Panelist Miriam Silton, W.L. Gore & Associates, encouraged students to try out different opportunities within their field now, while they have more flexibility and freedom. “It’s a lot easier to try out smaller-scale, temporary commitments as a student, than it is as a working professional,” she said.

Jonah Klemm-Toole, Colorado School of Mines, advised students to start participating in professional societies while they're still in school. "I wish I had participated earlier," he said. "I'd have 15-year relationships established by now." He also noted that professional societies are one of the best places to network for job opportunities.

Taylor Mason, Pacific Northwest National Laboratory, suggested seeking out researchers whose work you find interesting, particularly when attending conferences, as a way of networking. "People love talking about their research, so if you come with questions ready, they'll often be willing to sit and talk with you. Don't be afraid to approach them."

Preparing a Winning Resume Package Workshop



Panelists, clockwise from top left, were Chukwunwike Iloeje, Damien Tourret, Mohsen Asle Zaeem, and Yue Fan.

Determining what type of job is the right fit for you, writing a cover letter, preparing for interviews, and more topics were covered in the Preparing a Winning Resume Package Workshop for students.

The workshop was led by Mohsen Asle Zaeem, Colorado School of Mines, with contributions from panelists working in industrial, academic, and government sectors: Yue Fan, University of Michigan; Chukwunwike Iloeje, Argonne National Laboratory; and Damien Tourret, IMDEA Materials Institute.

Panelists fielded audience members' questions on a variety of topics related to job searches and preparing application materials and encouraged students to pursue the positions that best matched their interests.

For academic jobs in particular, Zaeem urged applicants to choose an institution that offered the right balance of research and teaching for them.

"Forget about status," Zaeem advised. "Status is something you need to throw out the window. You need to do what makes you happy."

It's Not All Zoom & Gloom

In place of the traditional Materials Bowl event typically held at the TMS annual meeting each year, a virtual trivia competition tested student participants' knowledge of materials and TMS with a series of 35 timed questions.

It's Not All Zoom & Gloom, the student trivia competition held at TMS2021 Virtual, resulted in two ties that ended with a final tie-breaking question. Purdue University students took the three top spots in the final standings:

- **First Place:** Thomas Mann (331 points), Purdue University – \$250 prize
- **Second Place:** Hannah DeBoer (331 points), Purdue University – \$150 prize
- **Third Place:** Ethan Mann (291 points), Purdue University – \$100 prize
- **Honorable Mention:** Kevin Schmalbach (291 points), University of Minnesota – Bragging rights

Congratulations to all of the winners and thank you to everyone who participated in the trivia competition.

Diversity & Inclusion Table Talks



Pictured from right to left: Chelsey Hargather and Ashley Paz y Puente organized Diversity & Inclusion Table Talks at TMS2021 Virtual.

Attendees gathered for informal discussions at the TMS Diversity, Equity & Inclusion (DEI) Networking Table Talks event on Thursday, March 18, organized by Ashley Paz y Puente and Chelsey Hargather, members of the TMS DEI Committee.

Participants joined in small-group discussions on the following topics: Cultivating Inclusion in TMS; DEI Best Practices for Outreach; Managing Expectations in Workplace Interactions; Managing Mental Health During Physical, Social, and Emotional Isolation; Moving Beyond Imposter Syndrome; Overcoming Anxiety in the Workplace; Strategies for Ensuring Virtual Accessibility; and Working in a Virtual Reality.

The conversation will continue at the Fourth Summit on Diversity in the Minerals, Metals, and Materials Profession (DMMM4), which will be held March 2–3, 2022, as a co-located event at the TMS 2022 Annual Meeting & Exhibition in Anaheim, California.

DIVISION AWARD CEREMONIES AND SPECIAL LECTURES

The five TMS technical divisions celebrated award recipients and heard from invited speakers at three events during TMS2021 Virtual. Each event opened with the conferring of awards by the technical division chairs. **All of these award ceremonies can now be viewed through the Channel TMS on YouTube at www.youtube.com/user/ChannelTMS.**

SMD/FMD Lecture



Rajiv S. Mishra

At the Structural Materials Division (SMD)/Functional Materials Division (FMD) Awards Ceremony & Lecture, Rajiv S. Mishra, University of North Texas, gave the invited talk, “Pushing Structural Performance of Materials by Combining Alloy Design with Disruptive Manufacturing Technologies.” The central question that his talk posed was:

“How can we change what we get out of a material when we design the alloy for a specific manufacturing process?”

To take best advantage of materials, he said, we have to think about their attributes and how they synch with manufacturing technologies’ attributes. This co-design of disruptive technologies and analog design can enable things that otherwise are not possible.

“That’s how we can push the envelope more and more,” he said. “The SMD is home to some of these discussions that we’re engaged in.”

LMD Lecture



Mark Easton

At the TMS Light Metals Division (LMD) Awards Ceremony & Special Lecture, one of the award recipients, LMD Scholar Zachary Wolff of the University of Nevada, Reno, gave a brief presentation on Lattice Confinement Fusion, which, he said, NASA scientists hope to use in power systems for space travel, exploration, and propulsion systems.

Mark Easton, RMIT University, then delivered the talk, “Near Net Manufacturing of Light Metal Alloys,” discussing research that has been a theme throughout his career. He spoke about how some of the themes of the research can travel from one manufacturing technology to the next.

“Near net shape manufacturing is continuing to evolve from more traditional methods such as casting to more modern methods such as additive manufacturing,” he said. Many of the challenges, such as microstructure control and defect formation, remain the same, but approaches used in more traditional technologies to dealing with these issues can also be used in additive.

EPD/MPMD Lecture



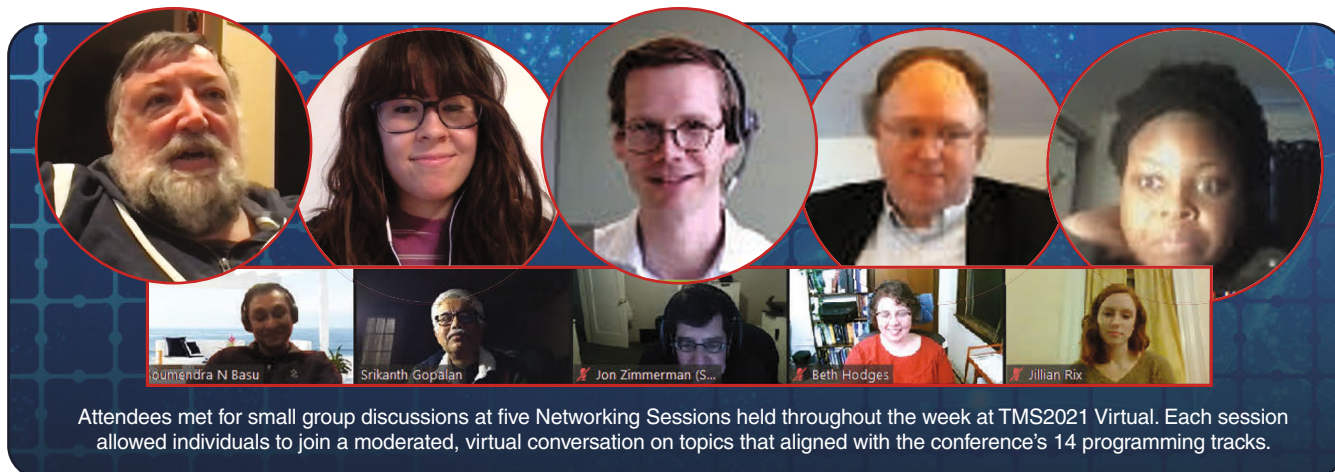
Richard Russell

At the Extraction & Processing Division (EPD)/Materials Processing & Manufacturing Division (MPMD) Awards Ceremony & Special Lecture, Richard Russell, NASA Kennedy Space Center, presented, “Qualification and Certification Strategies for Additive Manufactured Parts for Manned Spaceflight,” as the MPMD special lecturer.

“Additive manufacturing—it’s always been touted as a thing of the future. Well, the future is now,” Russell began. He first explained the motivation behind developing additive manufacturing (AM) standards, noting several examples of AM parts and applications already in use at NASA. Focusing on the particular challenges when manufacturing for deep space missions, Russell discussed the development, methodologies, and governing principles for NASA’s current and upcoming AM standards. In summary, he noted, “control what you do; evaluate what you get.”

Looking at future directions for AM in spaceflight, he talked briefly about the problem presented by non-destructive evaluation and the future in inspection: “You need to be able to understand the signals we can gather while making a part, be able to make adjustments, be able to know where your problems are, and then know how that relates back to properties.”

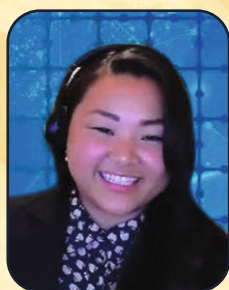
Networking Sessions



TECHNICAL DIVISION STUDENT POSTER COMPETITION WINNERS

Several of the TMS Technical Divisions honored excellence in graduate and undergraduate student work at the 2021 Technical Division Student Poster Competition at TMS2021 Virtual. Each participant contributed a poster and a two-to-three-minute video presentation describing their work. The following posters took top honors:

Functional Materials Division (FMD)



Graduate: "Utilizing Advanced Manufacturing for the Development of Advanced In-pile Sensors and Instrumentation"

Kiyo Fujimoto, Boise State University and Idaho National Laboratory

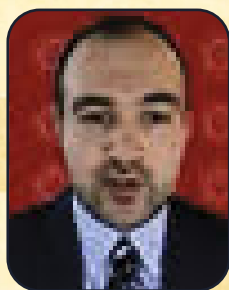
Structural Materials Division (SMD)



Graduate: "Prediction and Testing of Hot Cracking Susceptibility during Local Melting in Binary and Multi Component Aluminum Alloys"

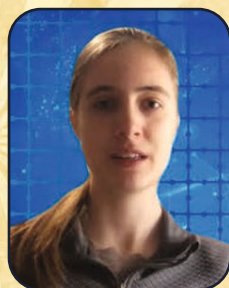
Shubhra Jain, Iowa State University

Materials Processing & Manufacturing Division (MPMD)



Graduate: "Comparison of Laser Diffraction and Image Analysis Techniques for Particle Size-Shape Characterization in Additive Manufacturing Applications"

Jack Grubbs, Worcester Polytechnic Institute



Undergraduate: "First Principles Study of Sigma Phase Destabilization in Compositionally-complex Stainless Steel Alloys"

Anna Soper, Harvey Mudd College

TMS2021 VIRTUAL SYMPOSIUM AWARDS

A number of symposia at TMS2021 Virtual recognized quality poster and oral presentations. Congratulations to the following award recipients:

Advanced Materials for Energy Conversion and Storage VII Symposium Awards

First-Place Poster: “Probing Structural Changes of 2D Supercapacitor Electrode by Kelvin Probe Force Microscopy,” *Kowsik Sambath Kumar*, Nitin Choudhary, Deepak Pandey, Yi Ding, Luis Hurtado, Laurene Tetard, Yeonwoong Jung, and Jayan Thomas, University of Central Florida; Hee-Suk Chung, Analytical Research Division, Korea Basic Science Institute

Second-Place Poster: “AgCl-decorated Ag Nanowire Catalysts to Maximize the Surface Effect in the Oxygen Reduction Reaction,” *Suyeon Choi*, Youngtae Park, and Hyuck Mo Lee, Korea Advanced Institute of Science and Technology; Changsoo Lee, Korea Institute of Energy Research

Third-Place Poster: “Temperature-induced Successive Martensitic and Inter-Martensitic Phase Transformations of $\text{Ni}_{2.15}\text{Mn}_{0.85}\text{Ga}$ Heusler Alloy,” Amila Madiligama, Penn State DuBois; *Pnina Ari-Gur* and James George, Western Michigan University; Yang Ren, Argonne National Laboratory; Vladimir Shavrov and Victor Koledov, Russian Academy of Sciences; Yanling Ge, Aalto University

Advanced Real Time Imaging Symposium Awards

First-Place Oral Presentation: “Atomic Scale Processes of Initial Oxidation of Cu and Cu-Ni Alloy Revealed by In Situ Environmental TEM,” *Meng Li*, Matthew Curnan, Richard Garza, Stephen House, Wissam Saidi, and Judith Yang, University of Pittsburgh

Second-Place Oral Presentation: “An In Situ and Operando Additive Manufacturing Process Replicator for High Speed Optical, Infra-red and Synchrotron X-ray Imaging,” *Sebastian Marussi*, Chu Lun Alex Leung, Samuel Clark, and Peter Lee, University College London; Leigh Stranger and Jon Willmott, The University of Sheffield; Robert Atwood, Diamond Light Source Ltd.; Veijo Honkimäki and Alexander Rack, European Synchrotron Radiation Facility; Mike Besston, Oxford Lasers Ltd.

Third-Place Oral Presentation: “Characterizing Laser-driven Metal Ejecta Interactions,” *Alison Saunders*, Camelia Stan, Kyle Mackay, Suzanne Ali, Hye-Sook Park, Jon Eggert, Fady Najjar, Tomorr Haxhimali, Brandon Morgan, Jeremy Horwitz, and Yuan Ping, Lawrence Livermore National Laboratory; Hans Rinderknecht, Laboratory for Laser Energetics; Marcho Echeverria, University of Connecticut

First Place Oral Presentation, Student: “Local Shock Viscosity Measurement in Composites Using In-situ Time-gated Raman Spectroscopy,” *Abhijeet Dhiman*, Ayotomi Olokun, Nolan Lewis, and Vikas Tomar, Purdue University

Second Place Oral Presentation, Student: “Dynamics of Abnormal Grain Growth in a Particle-containing System Uncovered by Multimodal Three-dimensional X-ray Imaging,” *Jiwoong Kang*, Ning Lu, Nancy Senabulya, and Ashwin Shahani, University of Michigan; Nicolas Gueninchault, Carl Zeiss X-ray Microscopy Inc.

Third Place Oral Presentation, Student: “Quantifying Spatter in Powder Bed Fusion Processes with High-speed Video Observations and Machine Learning,” *Christian Gobert*, Evan Diewald, and Jack Beuth, Carnegie Mellon University

Alloys and Compounds for Thermoelectric and Solar Cell Applications IX Symposium Awards

First Place Poster: “Ultra-low Thermal Conductivity for High-performance GeTe-based Thermoelectric Materials,” *Yi-Fen Tsai* and Hsin-Jay Wu, National Chiao Tung University

Second Place Poster: “Using Neutrons to Probe the Influence of Processing on Temperature-dependent Strain in PbTe,” *James Male*, Riley Hanus, and G. Jeffrey Snyder, Northwestern University; Raphael Hermann, Oak Ridge National Laboratory

Third Place Poster: “Ni/Pb-Te and Ni/Se-Sn Interfacial Reactions and Their Related Phase Diagrams,” *Yohanes Hutabalian*, Zhi-kai Hu, Xu-hui Chen, and Sinn-wen Chen, National Tsing Hua University

Biological Materials Science Symposium Awards

First Place Poster: “A Novel Cardiac Patch for Treating Myocardial Infarction,” *Juan Sebastian Rincon Tabares*, Juan Camilo Velasquez, Hayden Bilbo, Hai-Chao Han, and David Restrepo, The University of Texas at San Antonio

Second Place Poster: “Bone-Mimetic β -TNTZ Alloy for Osteointegration and Antibacterial Property: A Rat Animal Model,” *Ya-Ching Yu* and Ta-Jen Yen, National Tsing Hua University; Shih-Jie Lin, New Taipei Municipal TuCheng Hospital, Chang Gung Memorial Hospital

Third Place Poster: “Strain Field Mining of Steady-state Tearing Fields in Thin Film, Heterogeneous Fiber Networks,” *Sarah Paluskiewicz* and Christopher Muhlstein, Georgia Institute of Technology

