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MS&T'13® Finishes Strong in a Year of "Firsts"

Lynne Robinson

The late fall Montréal air was brisk, but the chill quickly wore off inside the Palais des congrès de Montréal as a more than 3,400 minerals, metals, and materials professionals convened for Materials Science & Technology 2013 (MS&T'13), from October 27 to 31.

In addition to setting a near-record attendance, MS&T'13 marked the first time the meeting had traveled outside the United States, in recognition of the first-time participation of the Metallurgy and Materials Society (MetSoc) of the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM). MetSoc joined the MS&T partner societies—The American Ceramic Society (ACerS), the Association for Iron and Steel Technology (AIST), ASM International, and TMS—and their programming partner NACE, in organizing MS&T's most robust program to date. More than 1,900 presentations—an all-time high for the meeting—were given within 315 sessions over the course of the event.

Hani Henein, Professor, University of Alberta, and TMS Vice President, was pleased with the outcomes of MS&T'13 on a number of levels. "As the vice president of TMS, a past president of MetSoc of CIM, and a Canadian resident, the great success of this year's MS&T in Montréal was extremely gratifying," he said. "Naturally, our traditional MS&T partners of TMS, ASM, ACerS, and AIST all worked wonderfully effectively together as always. But, with 2013 having a new host country in Canada and a new partner in MetSoc, it was remarkable to see these elements added seamlessly and collaboratively in all of the best ways . . . in much the same way that Montréal so charmingly blends English- and French-speaking cultures. It was certainly a grand experiment—and a grand outcome—for all of us who participated."

MS&T'13 drew more than 3,400 attendees who benefitted from one of the richest technical programs in the meeting's history, as well as a full slate of networking opportunities.

More than 120 companies participated in the MS&T'13 Exhibition.

MS&T will return to Pittsburgh, Pennsylvania, for 2014, taking place October 12 to 16 at the David L. Lawrence Convention Center. Planned technical topics include a focus on materials processing and manufacturing, as well as materials-environment interactions and surface modification. Abstracts for MS&T'14 are being accepted until March 15. For additional information on the MS&T'14 technical program, as well as abstract submission instructions, visit the website at *www.matscitech.org*.

Opening Plenary Goes to Extremes

Previewing many of the topics that would be discussed throughout MS&T'13 was the opening plenary session, "Advanced Materials and Manufacturing for Extreme Environments." The session took off with a presentation from Kevin G. Bowcutt, Senior Technical Fellow and Chief Scientist of Hypersonics, The Boeing Company, on what he described as the "final frontier of aeronautics"—flight at mach 5 and beyond.

After an overview of the unique requirements of hypersonic vehicles, Bowcutt traced the development of the X-51 unmanned scramjet demonstration aircraft through its final successful test flight in May 2013. While a great deal has been learned from the X-51, as well as other experiments conducted by the Hypersonic International Flight Research and Experimentation (HIFiRE) program, Bowcutt noted a key factor in the long-term feasibility of hypersonic travel is the development of materials that can withstand the extraordinary technical challenges inherent in designing and flying the aircraft. "Hypersonic vehicles have the potential to provide new military and commercial aerospace capabilities that could change the world," he said. "We could do everything from manufacturing in space to pursuing exploration at a level that was never before possible."

Kevin G. Bowcutt (inset) launched the MS&T'13 plenary session with his overview of recent developments in hypersonic flight.

John Sarrao, Associate Director for Theory, Simulation, and Computation (AD-TSC), Los Alamos National Laboratory, then explored another frontier of science that could yield the materials required for the extreme conditions of hypersonic flight, as well as other key next-generation applications. His talk, "The Co-Design of Experiment and Theory at the Mesoscale: A MaRIE Perspective," offered a detailed overview of the vision for the Matter-Radiation Interactions in Extremes (MaRIE) international user facility. Offering high-energy, high-repetition-rate, coherent x-ray capabilities,

More than 1,300 MS&T'13 attendees listened as John Sarrao (inset) discusssed the vision for the potential impact of the MaRIE international user facility.

along with charged-particle imaging, MaRIE will enable unprecedented in-situ, transient measurements of "real" mesoscale materials in relevant extremes, especially dynamic loading and irradiation extremes. These tools could enable scientists to develop materials that can perform predictably for currently unattainable lifetimes in the most punishing of environments. Beyond utilizing MaRIE's technological resources, Sarrao stressed that "it is important how we do our work—how we get the science done." Within that theme, he discussed the concept of co-design as a guiding philosophy, saying, "We need to become more sophisticated as a community in bridging synthesis, characterization, and theory."

Tresa M. Pollock, Alcoa Professor, University of California, Santa Barbara, concluded the plenary with a review of recent work in developing new materials for aircraft turbine engines. She also touched on analogous materials issues for rocket propulsion systems and next-generation power plants. "Materials are the primary enablers in a broad array of extreme environment systems," she noted in her closing remarks. "Integrating models, experiments, and advanced characterization tools can lead to new and sometimes unexpected materials solutions. However, if we can achieve much greater integration of computational and experimental tools, as well as digital data, across the spectrum, and link that with design and manufacturing, we will have a profound impact."

Tresa M. Pollock highlighted successes, as well as lessons learned, in the development of new materials for turbine engines.

Distinguished Lecture Symposium Flies High

A highlight of MS&T'13 was a special symposium honoring Tresa Pollock, 2005 TMS President and 2009 TMS Fellow, as the 2013 TMS/ASM Distinguished Lecturer in Materials and Society. Pollock keynoted the session with her lecture, "Flight in the 21st Century: The Role of Materials and ICME." Building on her remarks in the MS&T'13 opening plenary, Pollock reviewed how the integrated computational materials engineering (ICME) approach has been successfully applied to address the unique materials challenges of emerging flight systems.

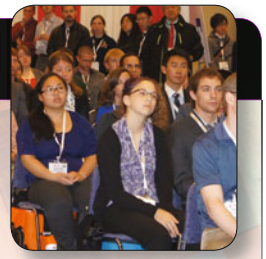
(Left to Right) Gernant E. Maurer, 2012–2013 ASM International President, formally recognizes Tresa Pollock as the 2013 TMS/ASM Distinguished Lecturer, along with Elizabeth Holm, 2013 TMS President.

Ron Kerans followed, taking a few steps back in time with a comprehensive analysis of how Wilbur and Orville Wright employed concepts of integrated engineering to pioneer powered human flight. Kevin Bowcutt, The Boeing Company, then fast-forwarded into the future with his presentation on the challenges posed by the highly integrated systems required for hypersonic flight. Providing perspectives on current innovations was James Cotton, The Boeing Company, who discussed how developing new aircraft materials has evolved from "waiting for suppliers to bring the materials that we need, to telling the suppliers our requirements and timing before they invent them." Katherine Stevens, GE Aviation, took a look at what some of those specific requirements are for gas turbine engines, while also presenting a systems engineering development approach to meet these challenges effectively.

MS&T'13 Proceedings Now Available

Another record broken at MS&T'13 was the number of total proceedings manuscripts published—470 in total. MS&T'13 attendees received a CD copy of this valuable resource as part of their registration, but it is also available for purchase at *www.wiley.com*. TMS members are eligible to receive a 35 percent discount on this proceedings publication, as well as other TMS products available through Wiley. Visit the Member Reading Room section of the TMS Members Only website to acquire the discount code.

Students Are Big Winners at MS&T'2013



More than 700 students participated in the career development workshops, networking activities, and awards programs developed just for them at MS&T'13.

TMS extends a special congratulations to the two International Symposium on Superalloys Scholarship winners who were officially presented with their awards at MS&T'13. Said Timothy Montalbano, University of California, "Being a Material Advantage member has made it possible for my research to be recognized by a prestigious audience that would have otherwise been difficult to reach. This recognition will only be enhanced by receiving this scholarship. It has validated the importance of my dissertation topic—hot corrosion studies of turbine, hot-section materials." David James Crudden, University of Oxford, added, "The financial support provided by this award allows me to remain focused on my research. This has also encouraged me to continue pursuing a career motivated to advance superalloy technology." The scholarships are funded annually by the Organizing Committee of the International Symposium on Superalloys.

Timothy Montalbano

David James Crudden

Making TMS Member Connections

Members had a chance to take a break, get their questions answered, and play a round or two of "Plinko: The Periodic Table of Elements Edition," at the MS&T'13 TMS Member Lounge. TMS is pleased to welcome the 243 new TMS members who opted in for membership via their MS&T'13 registrations.

TMS Members Honored at MS&T'13

Congratulations to the many TMS members who were recognized for their professional excellence and contributions by ACerS, ASM International, and MetSoc at the annual awards programs of these societies held during MS&T'13.

ACerS 2013 Honors and Awards Banquet Monday, October 28

2013 Class of Fellows
William Hammetter, Sandia National Laboratories
Yutai Katoh, Oak Ridge National Laboratory
Omer Van Der Biest, Leuven University

Ross Coffin Purdy Award
Lars Hultman, Swedish Foundation for Strategic Research
Michael Naguib, Drexel University

ACerS/NICE Arthur L. Friedberg Ceramic Engineering Tutorial and Lecture
Greg Hilmas, Missouri University of Science and Technology

Robert L. Coble Award for Young Scholars
Nina Balke, Oak Ridge National Laboratory

DU-CO Ceramics Scholarship Award
Kelsey Meyer, New Mexico Institute of Mining and Technology

MetSoc 2013 Awards Gala October 28

Airey Award
Roderick Guthrie, McGill University

MetSoc Award for Research Excellence
Comondore (Ravi) Ravindran, Ryerson University

Silver Medal Award
Nathan Stubina, Barrick Gold Corporation

Brimacombe Award
Edouard Asselin, University of British Columbia

CIM Fellowship
Vladimiros Papangelakis, University of Toronto
Comondore (Ravi) Ravindran, Ryerson University

Sherritt Hydrometallurgy Award
Yeonuk Choi, Barrick Gold Corporation

MetSoc Distinguished Materials Scientist Award
Alexander McLean, University of Toronto

CIM Distinguished Lecturer
Christopher Twigge-Molecey, Hatch

2013 ASM Awards Dinner Tuesday, October 29

Gold Medal
Enrique J. Lavernia, University of California, Davis

Silver Medal
Nikhil Gupta, Polytechnic Institute of New York University

Albert Sauveur Achievement Award
Reza Abbaschian, University of California, Riverside

William Hunt Eisenman Award
Mark L. Robinson, Hamilton Precision Metals (Retired)

J. Willard Gibbs Phase Equilibria Award
Peter W. Voorhees, Northwestern University

Allan Ray Putnam Service Award
Rodney R. Boyer, The Boeing Company (Retired)

Albert Easton White Distinguished Teacher Award
Subhash Mahajan, University of California, Davis

Bradley Stoughton Award for Young Teachers
Michele Manuel, University of Florida

Jacquet-Lucas Award
Nabeel Alharthi, Lehigh University

Henry Marion Howe Medal
Chiyoko Horike, Kanto Chemical Company
Kazuki Morita, Institute of Industrial Science, University of Tokyo
Toru H. Okabe, Institute of Industrial Science, University of Tokyo

Marcus A. Grossmann Young Author Award
Il Sohn, Yonsei University

2013 ASM/TMS Distinguished Lectureship in Materials and Society
Tresa M. Pollock, University of California, Santa Barbara

Edward DeMille Campbell Memorial Lecture
Enrique J. Lavernia, University of California, Davis

Alpha Sigma Mu Lecturer
David B. Williams, The Ohio State University

George A. Roberts Award
Donald R. Muzyka, Special Metals Corporation (Retired)

2013 Class of ASM Fellows
David J. Alexander, Los Alamos National Laboratory
Julie Christodoulou, U.S. Office of Naval Research
David P. Field, Washington State University
Richard W. Fonda, Naval Research Laboratory
Jude R. Foulds, Clarus Consulting
Alan A. Luo, The Ohio State University
Stephen J. Mashl, Michigan Technological University
Timothy McKechnie, Plasma Processes
Kamachi Mudali, Indira Gandhi Centre for Atomic Research
Burton R. Patterson, University of Florida
Anthony Petric, McMaster University
Shankar M. L. Sastry, Washington University, St. Louis
Huseyin Sehitoglu, University of Illinois
Preet M. Singh, Georgia Institute of Technology
Charles H. Ward, Air Force Research Laboratory