

INTERNATIONAL REPORT

The 2015 Materials Science & Technology (MS&T15) Conference & Exhibition

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Photo 1. ICDD booth at the 2015 MS&T (117th ACerS) annual meeting. From left to right: Visitors Brandon Rose, Derek Landwehr from Fisher Barton Technology Center with Michael Carr and Benjamin Hish of ICDD.

The Materials Science & Technology 2015 Conference & Exhibition took place in the Greater Columbus Convention Center in Columbus, Ohio, from October 4 to 8. The Conventional Center was designed by Peter Eisenman, constructed in 1993, and expanded in 1999. It is conveniently surrounded by restaurants, shops, hotels, and entertainment venues, and has a total of 1.7 million square feet (160 000 m²) of flexible, customizable space. The facility includes 410 000 square feet (38 000 m²) of exhibit space, three ball-rooms, and 65 meeting rooms. Examples of a few past events that took place in the Convention Center include the Arnold Schwarzenegger Sports Festival, the Columbus International Auto Show, and the Dr. Martin Luther King Jr. Birthday Breakfast Celebration.

The MS&T15 Conference & Exhibition was a great success. It was co-sponsored by five leading materials engineering societies: the American Ceramic Society (ACerS); the Association for Iron and Steel Technology (AIST); the American Society of Metals (ASM); The Minerals, Metals and Materials Society (TMS); and the National Association of Corrosion Engineers (NACE). More than 3000 people attended the conference, with over 2000 presentations and many special events. The meeting committee did a superb

job of assembling the program and bringing together the world's leading experts in materials science and technology. The committee included the chair Greg Hilmas from Missouri University of Science & Technology, and members Amy Clarke of Los Alamos National Laboratory, Judy Schneider of Mississippi State University, Raul Rebak of GE Global Research, and Amar De of ArcelorMittal.

The MS&T15 Conference is the leading forum addressing structure, properties, processing, and performance across the materials community. These organizing societies provided the conference with 70 symposia organized into 12 themes: Additive manufacturing (four symposia); Biomaterials (two symposia); Ceramic and Glass Materials (ten symposia); Electronic and Magnetic Materials (five symposia); Energy (seven symposia); Fundamentals and Characterization (13 symposia); Green Manufacturing and Sustainability (two symposia); Iron and Steel (Ferrous Alloys) (three symposia); Materials-Environment Interactions (eight symposia); Nanomaterials; (three symposia) Processing and Product Manufacturing (11 symposia), and special topics (two symposia). The seven short courses that were offered at the conference included "Understanding why Ceramic Fail and Designing for Safety", "Advanced High Strength Steels",

“Microstructure 101 and Beyond”, “Robotics for the Thermal Spray Industry”, “Additive Manufacturing Materials and Processes Workshop”, “Introduction to Materials Informatics with Open Source Tools”, and “Sintering of Ceramics”.

A number of memorable plenary talks took place at the meeting. The keynote and lectures included the Frontiers of Science and Society: Rustum Roy Lecture (“Science Technology for Better health” by Delbert E. Day of Missouri University of Science and Technology), Opening Session and Plenary address-ACerS Edward Orton Jr. Memorial Lecture (“Space: The Materials Frontier” by Sylvia M. Johnson, NASA Ames Research Center), AIST Adolf Martens Memorial Steel Lecture (“A Complete Theory for Martensitic Transformations” by Harry Bhadeshia, University of Cambridge, UK), ASM/TMS Joint Distinguished Lecture in Materials and Society (“What is a Splendid Leader?” by Vincent J. Russo of Wright-Patterson AFB, OH), ACerS/NICE Arthur L. Friedberg Ceramic Engineering Tutorial and Lecture (“Principles of Glass Chemical Strengthening Science and Technology” by Arun K. Varshneya of Alfred University and Saxon Glass Technologies), Cooper Scholar Lecture (“Dynamic Fatigue of Ion-Exchanged Glass” by Emily M. Aaldenberg of Rensselaer Polytechnic Institute), Cooper Distinguished Lecture (“Exploring the structure of high temperature liquids with high energy X-rays” by Martin Wilding of Aberystwyth University, Wales), Robert B. Sosman Lecture (“Grain Boundary Segregation, Vacancies and Properties in Oxide Ceramics” by Yuichi Ikuhara of University of Tokyo, Japan), and ASM Edward DeMille Campbell Memorial Lecture (“A Correlative Six-Dimensional Study of Phase Separation at the Subnano – to Nanoscale of Nickel–Aluminum Alloys” by David N. Seidman of Northwestern University).

A symposium concerning materials property understanding through characterization using X-ray and Neutron methods was also highlighted at the conference. The talks in this symposium included “Revealing 3D Grain Structure through Nondestructive Diffraction Contrast Tomography”, “A Potential Short-Cut to Quantitative Mineralogy”, “High Harmonic Generation Soft X-Ray Spectroscopy for Probing Interfacial Charge Carrier Dynamics in Catalytic Systems”, “Mechanical Properties of Nanoporous Glasses Characterized by Combined Small/Wide Angle X-ray Scattering”, “Mechanical Properties and X-Ray Diffraction Characterization of Nanolayered Thin Films at Shallow Depths”, and “Subnanometer Ligand Asymmetry in Nanoparticle Membrane Probed by Grazing Incidence Small-angle X-ray Scattering”.

Since students are critical to the future of the organization, MS&T15 scheduled a series of student activities to ensure that these young people have opportunities to mingle with each other, and with other well-established scientists, to learn leadership skills, to be recognized among their peers, and to learn about career development. These activities included Chapter

Leadership Workshop, Emerging Professional Symposium, Undergraduate Student Speaking Contest, Undergraduate and Graduate Students Poster Contest, Student Networking Mixer, Welcome reception, AIST Student Plant Tour, Emergent Professionals Symposium, Ceramic Mug Drop Contest, Ceramic Disc Golf Contest, AIST Student Plant Tour, ASM Geodesic Dome Design Competition “DomesDay”, and a Career forum.

The large-scale exhibit is always an important part of the MS&T Conference that compliments the scientific program. This year, there were more than 90 exhibitors displaying their latest services and products. International exhibitors included analytical equipment manufacturers, book and journal publishers, database and software producers, scientific societies, scientific consultants, sponsor companies, and materials producers. The exhibit hall was a popular place to meet up with old colleagues, old friends, and meet new people. Members often strolled along different aisles to chat with manufactures, learn about new products, pick up souvenirs, obtain information, browse through new publications, and participate in new product demonstrations. This year, ICDD also had an exhibit booth showcasing their latest database products.

Other memorable events included the ASM Leadership Awards Luncheon, the ACerS annual membership Meeting, the ACerS 117th Honors and Awards Banquet and Afterglow, ASM 102th Annual Business Meeting and Leadership Awards Luncheon, Awards Dinner, and ASM Women in Materials Engineering Breakfast, MS&T Young Professional/Diversity Reception, and MS&T Exhibit Happy Hour Reception. There were refreshment breaks during morning and afternoon technical session breaks throughout the week. Member lounges were also available for ACerS, AIST, ASM, and TMS societies in the Convention Center. Various universities also held alumni receptions, including Alfred University, Case Western University, Pittsburgh University, Purdue University, and Rensselaer Polytechnic Institute.

The weather during the meeting was mostly sunny and relatively warm for an October week. Many attendees had an opportunity for an enjoyable stroll outside the conference center. In the future, the attendees can look forward to meetings co-sponsored by ACerS, including International Commission on Glass XXIV International Congress 2016 (April 7–11, 2016) in Shanghai, China; Materials Challenges in Alternative & Renewable Energy (MCARE 2016, April 17–21) in Clearwater, FL; 9th International Conference on High Temperature Ceramic Matrix Composites (HTCMC 9, June 26–July 1) in Toronto, Canada; 7th Advances in Cement-Based Materials (Cements 2016, July 11–13) in Evanston, IL; International Congress on Ceramics (ICC6, August 21–26) in Dresden, Germany; and the next MS&T Conference and Exhibit which will take place at the Salt Lake Palace Convention Center, Salt Lake City, UT, from October 23 to 27, 2016.