TMS 2016 145th Annual Meeting & Exhibition

Lan Li
Micron School of Materials Science and Engineering, Boise State University, Boise, Idaho 83725
lanli@boisestate.edu

The TMS 2016 145th Annual Meeting & Exhibition took place in Music City Center, Downtown Nashville, Tennessee on February 14–18, 2016. Nashville – "Music City" – is located on the Cumberland River in the north central part of Tennessee. It is the capital of Tennessee and the second largest city in the state, after Memphis. Nashville is famous for legendary country music. The Country Music Hall of Fame and Museum and historic Ryman Auditorium are in downtown, packed with a diverse assortment of dining, culture and architectural attractions, music bars, and dance halls. The music city has a population of 1 757 912 – the largest metropolitan area in Tennessee.

The Minerals, Metals & Materials Society (TMS), established after the American Institute of Mining Engineering (AIME) in 1871, focuses on minerals, metals and materials science and engineering, ranging from processing to basic research and from production to application. The society has nearly 13 000 members around the world. They include students, educators, scientists, researchers, engineers, and administrators. In total 43% of the members are from industry, while 39% are from academia and 13% from government. TMS holds an annual meeting in spring and co-organizes the MS&T (Materials Science & Technology) meeting in fall with ACerS (American Ceramic Society), AIST (Association for Iron & Steel Technology), and ASM International the Materials Information Society. These two meetings are designed to bring together material scientists, technologists, researchers, and engineers from academia, government laboratories and industry in the world to discuss the recent advances in all fields of materials science and technology. The attendees could share their up-to-date scientific and professional information through keynote sessions, symposia, poster sessions, exhibitions, and networking events.

This year, TMS2016 brought more than 4000 business leaders, engineers, scientists, and other professionals and students around the world in order to promote networking, technical ideal exchange, collaborations, innovation, and solutions in the fields. Sixty-seven symposia covered a wide range of topics, including materials design, processing and characterization techniques, materials properties, engineering, energy and biological applications, computational materials science and engineering, data repositories and analysis, informatics, and other fields where materials play a trigger role. TMS 2016 also hosted the student and young professional poster competitions, organized by different TMS technical divisions, including Extraction and Processing Division, Functional Materials Division, Light Metals Division, Materials Processing and Manufacturing Division, and Structural Materials Division. The details on the symposia and competitions can be viewed at: http://www.programmaster.org/PM/PM.nsf/SessionSheetView?OpenForm&ParentUNID=C20F2F70D611C8F985257AF4004DFE69

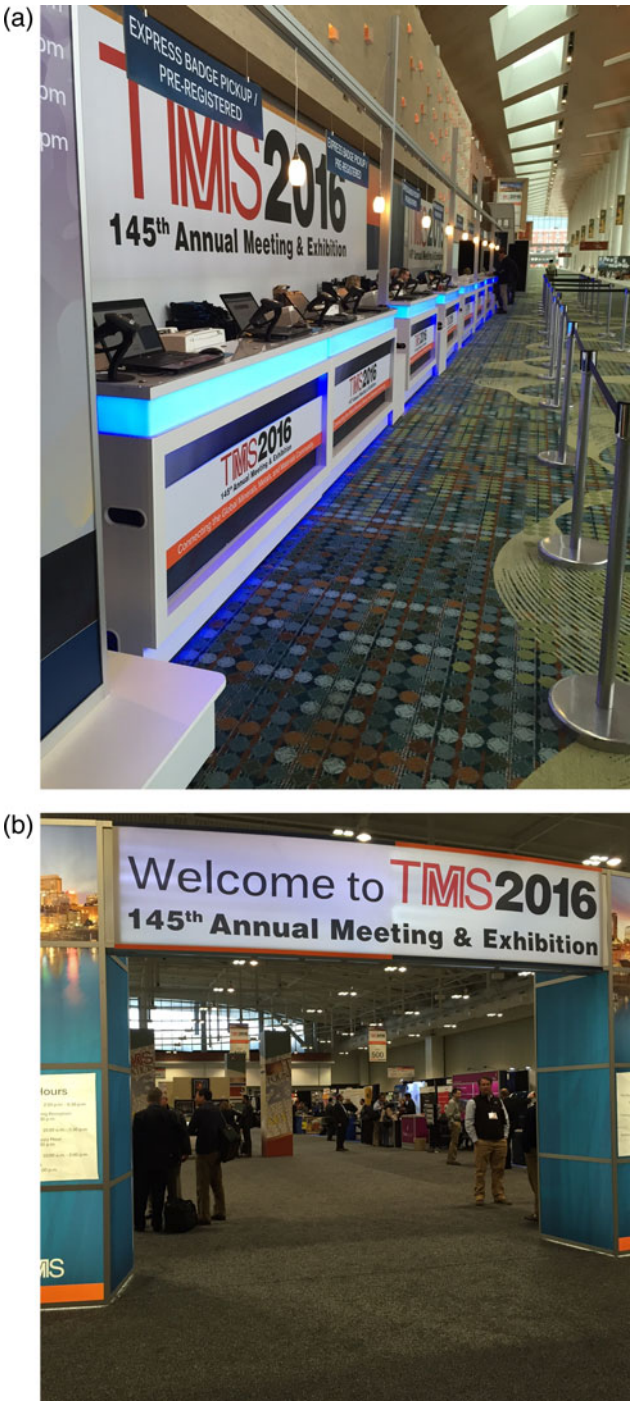

Figure 1. (Color online) (a) TMS conference registration and (b) Exhibition hall.

https://doi.org/10.1017/S0885715616000269 Published online by Cambridge University Press

The conference started on Sunday with different committee and business meetings, professional development & special lectures, social functions, and set up for poster session. Monday morning followed up with symposia and poster sessions. Keynote sessions were organized for every day, including TMS 101Fundamentals of TMS by Professor Jeffrey W. Fergus (Auburn University) and Dr. Clarissa Yablinsky (Los Alamos National Laboratory); TMS2016 Light Metals keynote session presented by Dr. Martin Iffert (CEO, Trimet Aluminium SE), Dr. Stephane Delalande (Deputy Scientific Director, PSA Peugeot Citroën); Magnesium Technology Keynote Session, 2016 Bladesmithing Symposium keynote presentation by Dr. Jeffrey Wadsworth, Battelle; Materials Innovation Keynote Session; and TMS2016 Acta Materialia Symposium. The TMS technical divisions also honored accomplished researchers in the fields of advanced magnetic materials, cast shop technology, solidification, phase transformations in multi-component systems, and thermodynamic applications, optimization, and simulations in high-temperature processes. Award lectures were also presented every day, such as "Finite Element Simulations of Short Fatigue Crack Propagation in Three-Dimensional Microstructures Obtained by X-ray Tomography" given by Henry Proudhon, Centre des Matériaux.

Besides the above featured events and presentations, 67 symposia covered a wide range of topics related to materials. The symposium on *Material Behavior Characterization via Multi-Directional Deformation of Sheet Metal* was sponsored by TMS Materials Processing and Manufacturing Division, Shaping and Forming Committee. This symposium explored numerous advances in experimental testing and computational methods for material characterization, constitutive modeling, and analyses pertaining to sheet metal deformation in multiple directions along multiple axes or with changing strain path conditions. Invited speaker Dr. Aaron Stebner, Colorado School of Mines, presented a custom planar biaxial load frame capable of *in situ* X-ray and neutron diffraction experimentation. The instrument was used to study any arbitrary plane-stress loading condition, and load path change events. Another speaker Dr. Adam Creuziger, National Institute of Standards and Technology, introduced a novel cruciform testing machine. The speaker demonstrated the Digital Image Correlation (DIC) to measure full field plastic strain and displacement fields, and thermal imaging to track adiabatic heating during deformation. X-ray diffraction was also used to map stress tensors *in situ* during deformation.

The symposium on *ICME Infrastructure Development for Accelerated Materials Design: Data Repositories, Informatics, and Computational Tools* was sponsored by TMS Materials Processing and Manufacturing Division, and Integrated Computational Materials Engineering Committee. It focused on data repositories, tools and mining approaches, uncertainty quantification and propagation in models and experiments, validation and verification tools and methods, and integration tools and methods for linking materials processing–structure–property relationships. For example, Tuesday afternoon session focused on data and informatics. The invited presentations included "Experiences with ICME Information Infrastructures for Applying Materials Models in Sequence to Give Accurate Macroscopic Property Prediction" by Will Marsden, Granta; "Materials Data Curation System" by Alden Dima, National Institute of Standards and Technology; and "Towards Better Efficiency and Accuracy: Data Mining for Prediction and Optimization in Materials System Design" by Ankit Agrawal, Northwestern University.

The TMS2016 attendees could learn the latest scientific and technologic news, technologies and services, and network with peers through the exposition, which hosted 91 companies. The exhibitors showcased services, instruments, books, computer hardware, scientific software, and equipment. The exhibition ran from Monday afternoon to Wednesday noon.

TMS 2017: The World Comes Here will take place in San Diego, California on February 26–March 2, 2017. The conference will combine with two co-located international conferences: the Third Pan American Materials Congress organized by nine professional societies spanning the Americas, and Energy Materials 2017, co-organized by TMS and the Chinese Society for Metals.

https://doi.org/10.1017/S0885715616000269 Published online by Cambridge University Press