



# MS & T15<sup>®</sup>

MATERIALS SCIENCE & TECHNOLOGY

Lynne Robinson

The intersection of technical and professional interests across multiple disciplines and industries is the territory traditionally mined by Materials Science & Technology (MS&T). For 2015, that exploration has expanded programming related to advanced manufacturing, with contributions from all four MS&T15 organizing societies—TMS, The American Ceramic Society (ACerS), the Association for Iron and Steel Technology (AIST), and ASM International—and NACE International as a programming partner. A dedicated Additive Manufacturing technical theme has been added this year, with materials process and design topics maintaining a significant presence throughout the program. Other specific technical themes for MS&T15—built from more than 2,300 accepted abstracts—include Biomaterials; Ceramic and Glass Materials; Electronic and Magnetic Materials; Energy; Fundamentals, Characterization, and Computational Modeling; Green Manufacturing Technology; Iron and Steel (Ferrous Alloys); Materials–Environment Interactions; Nanomaterials; and Processing and Manufacturing.

“I expect the additive manufacturing sessions to be especially informative and well attended this year, especially with the increased interest in advanced manufacturing,” said Amy Clarke, scientist, Los Alamos National Laboratory (LANL)

and the TMS representative to the MS&T15 Program Coordinating Committee. “This year’s programming also reflects the growing emphasis on computational materials science. Linking length and time scales will continue to be a challenge, as well as experimental validation of multiscale models.”

Clarke noted that the cross-disciplinary approach to programming extends to traditional topics as well, citing the Shaping, Forming, and Modeling of Advanced High Strength Steels symposium—a collaborative effort between TMS and AIST committee members—as an example. She is also pleased that the Actinide and Lanthanide Materials Symposium, organized by her LANL colleague and fellow TMS member Adam Farrow, is making its debut at MS&T15. “MS&T is always a unique meeting, as it brings together a diverse set of people from a range of different professional materials societies,” she said. “It’s a great opportunity to meet new colleagues and learn about the latest technological advancements from professionals with different backgrounds and viewpoints.”

MS&T15 runs from October 4 through October 8 at the Greater Columbus Convention Center, Columbus, Ohio. The advance registration deadline is September 4 at [www.matscitech.org](http://www.matscitech.org). Be sure to check the website regularly for updates on the full technical program.



Amy Clarke

## Scheduling Changes Enhance the MS&T Experience

MS&T15 is introducing a series of scheduling modifications to better accommodate attendee needs and interests, while offering greater flexibility in visiting the exhibition and participating in networking experiences.

**Welcome Reception moves to Monday.** This popular event starts at 4:30 p.m. on Monday, October 5, in the exhibition hall.

**Women in Materials Science and Engineering Reception has a Sunday night spot.** The shift to a less busy night is intended to support even greater engagement in this MS&T tradition.

**All-Conference Plenary takes place on Tuesday morning.** See below for details.

**Tuesday morning offers an extended break and poster session.** The break will begin at 10:30 a.m. in the exhibition hall, immediately after the All-Conference Plenary. The Poster Session will then open at 11 a.m. in the same location and run until noon.

Check the MS&T15 website, [www.matscitech.org](http://www.matscitech.org), for additional information on these and other meeting events and enhancements.



## All-Conference Plenary Features a Sampling of Headline Lectures

A showcase of special lectures that highlight the convergence of interests among the organizing societies is the programming approach being taken for the MS&T15 All-Conference Plenary. For MS&T15 attendees, this offers an opportunity to learn from leading experts on important topics in a cross-disciplinary setting. Speakers and topics include:



### **ACeRS Edward Orton Jr. Memorial Lecture**

*Sylvia M. Johnson*

Chief Materials Technologist, Entry Systems and Technology Division  
NASA Ames Research Center

#### **“Space: The Materials Frontier”**

Space environments place tremendous demands on materials that must perform with exceptional reliability to realize the goals of robotic or human space exploration missions. This talk will review the unique challenges for materials in space and some of the specific material capabilities that will be needed for future exploration missions.



### **AIST Adolf Martens Memorial Steel Lecture**

*Harry Bhadeshia*

Tata Steel Professor of Physical Metallurgy and Director, SKF Steel Technology Centre  
University of Cambridge

#### **“A Complete Theory for Martensitic Transformations”**

The crystallographic theory of martensitic transformations is well tested. However, the response of the transformation to such variables as stress, elastic and plastic strain, mechanical stabilization, austenite grain size effects, and austenite grain shape effects, has only recently been expressed quantitatively. This talk will present the complete theory that permits quantitative prediction of the effect of these variables on martensitic transformations in steels.



### **ASM/TMS Distinguished Lecture in Materials and Society**

*Vincent J. Russo*

Executive Director (retired), Aeronautical Systems Center  
Wright-Patterson Air Force Base

#### **“What Is a Splendid Leader?”**

The vast majority of engineers are seldom trained to be effective leaders. Russo will present a leadership framework that is structured within four pillars—Behavior Realities; Leadership Tenets; Essence of Leaders; and Life Balance. His talk will cover each of these concepts, as well as tools for use by potential and current leaders.



## TMS Short Courses Offered at MS&T15

Topics of particular interest to TMS members will be examined in depth at two TMS-sponsored short courses scheduled for MS&T15. The deadline for advance registration for these and other MS&T15 short courses is September 4 at [www.matscitech.org](http://www.matscitech.org). The TMS-sponsored short courses are:

### Additive Manufacturing Materials and Processes Workshop

**Sunday, October 4, 2015; 1:00 p.m. to 5:30 p.m.**

**Instructors:** David L. Bourell, Temple Foundation Professor of Mechanical Engineering, University of Texas at Austin; Sudarsanam Suresh Babu, University of Tennessee/Oak Ridge National Laboratory Governor's Chair in Advanced Manufacturing, University of Tennessee-Knoxville; Jack Beuth, Professor, Mechanical Engineering, Carnegie Mellon University; James W. Sears, Senior Mechanical Engineer, GE Global Research Center

Designed for professionals already familiar with additive manufacturing (AM) processes, this workshop will review current AM processes; current AM practices for metals, polymers, and ceramics; modeling of AM processes, microstructural evolution, and service properties; and current challenges and research opportunities.

### Introduction to Materials Informatics with Open Source Tools

**Sunday, October 4, 2015; 1:00 p.m. to 4:30 p.m.**

**Instructors:** Surya R. Kalidindi, Professor, Mechanics of Materials, Georgia Institute of Technology; David Brough, Yuksel Yabansu, Ahmet Cecen, Ph.D. students, Georgia Institute of Technology

This workshop provides practical knowledge in using an emerging suite of advanced techniques to improve the efficiency and efficacy of multiscale simulations and experimental characterization involving materials microstructure. Specifically, participants will be introduced to a set of open-source computational tools in Python that address foundational components of materials informatics.



## Just for TMS Members

### TMS Member Lounge

Take a moment to rest, grab a light snack, and regroup between sessions at the TMS Member Lounge, open Sunday through Thursday during MS&T15. Staff will be available to answer any questions you might have about your TMS membership or getting the most out of your MS&T15 experience.

### Volunteer Leadership Lounge

TMS members involved in society leadership activities, including organizing MS&T15 programming, are invited to stop by and take a break from hectic schedules, while also checking e-mails, recharging devices, or networking with other TMS volunteer leaders.

### Young Professionals Programming

Mark the date for Tuesday, October 6 at noon to attend the TMS Young Professional Tutorial Luncheon. Check the MS&T15 website at [www.matscitech.org](http://www.matscitech.org) for topic and speaker details.

