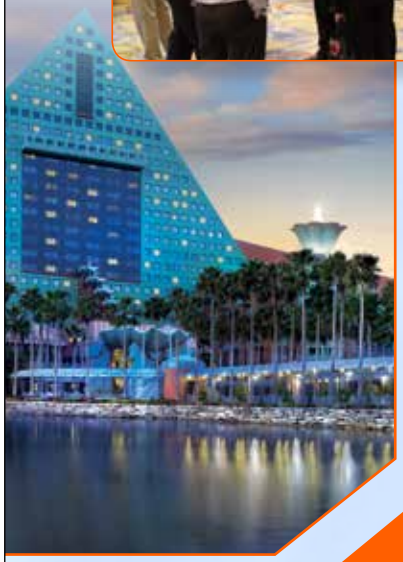
TMS2015

144th Annual Meeting & Exhibition

March 15-19, 2015 • Walt Disney World
Orlando, Florida, USA

Connecting the global minerals, metals, and materials community.



Plan Now to Attend:

Integrative Materials Design II: Performance and Sustainability

The challenges in modern materials design revolve around the successful integration of several important and sometimes competing concepts, including: Performance and Reliability, Societal Impact, and Economics. The first category, Performance and Reliability, involves familiar but complex design requirements: strength; fatigue, fatigue crack growth, impact, and creep resistance; and high-temperature properties. In addition to these traditional design concerns, an increasingly important consideration in an environmentally conscious world is the Societal Impact of the materials/processes and end products. These "Fit-Function-Green" attributes are finally tempered by Economics, as the best material for a given application may not be economically feasible in terms of either raw materials and processing costs or recyclability.

This symposium will address these aspects in the context of needs and developments, focusing on important factors that contribute to materials/process/component design, performance, and sustainability. Prospective topics include fundamental developments and design considerations related to:

- Effects of traditional and novel bulk and surface processes on micro-/nano-structure evolution of materials (i.e., cast and wrought alloy processing, metal matrix (nano)composites, gradient and functional materials fabrication, additive manufacturing, cold spray technology, friction stir welding/processing, shot/laser-shock/ultrasonic/cavitation peening, low plasticity burnishing, etc.)
- Multi-scale microstructural effects on the behavior of materials (i.e., static properties, fatigue, fatigue crack growth, thermo-mechanical fatigue, impact, high-temperature properties and creep) and integration in design
- Interfacial and residual stress effects (both surface and bulk – measurement, effects on properties and life, and design approaches)
- Sustainable approaches to materials-process design, life-cycle analyses, and recycling considerations
- Testing advances and non-destructive evaluation techniques for damage detection and monitoring
- Advances in Integrated Computational Materials Engineering (ICME) related to microstructure and properties prediction and simulation

Sponsored by:

- TMS Structural Materials Division; TMS Materials Processing & Manufacturing Division
- Mechanical Behavior of Materials Committee
- Integrated Computational Materials Engineering Committee

Organized by:

Diana A. Lados, Worcester Polytechnic Institute
Brad L. Boyce, Sandia National Laboratories
Michael D. Sangid, Purdue University
Weizhou Li, Caterpillar Inc.

For more information on how to participate, visit:

www.tms.org/TMS2015

Questions? Contact ***programming@tms.org***