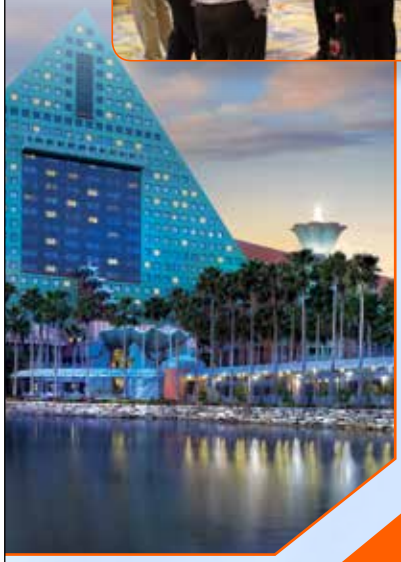
TMS2015

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:

Fundamental Methods for Integrating Microstructure-Property-Design Relationships into the ICME Paradigm

This symposium invites presentations and discussion on experimental and computational methods that can be used to link structure, properties, and design for more than one material class. Independent of material classification, all structural materials (metals, composites, ceramics, and hybrids) face similar challenges in optimization, transition to real-world applications and missing computational materials sciences. Introduction to service stems from a well-developed set of material data (e.g. the Designer Knowledge Base) that delineates the appropriate component design and industrialization limits. Developing this underlying data is a barrier to entry for all structural material applications. The experimental and computational tools used to generate this data can be quite general. For example, characterization provides information on properties dependent on average as well as "outlier" feature statistics that often represent the "weakest link" of a material independent of material class. In order to realize the benefits of ICME, significant advances in the development of generic, quantitative, and statistical-based tools for rapid quantification of multi-scaled structure and properties are required. This symposium will be focused of the recent advances and challenges in this development.

Topics of interest include: material characterization methods, microstructure representation, image processing, data fusion, microstructure sensitive property models, multi-scale models of structure-material interaction, advances in property measurements, parallel sample preparation and testing methods, reduction to representative (structure, property, volume) elements, microstructure sensitive "performance" methods (CPEM), multiscale temporal evolution methods.

Presentations are anticipated in:

- Characterization methods: Advancing tri-beam serial sectioning, On the fly data acquisition and autonomous data collection, 3-d Tomography
- Material properties: Parallel sample preparation and testing, Advances in DIC and 4-D methods, Multi-scale modeling
- Microstructural and multi-scale modeling: Creep, failure, and fatigue modeling; Methods of multi-time scaling; RVE estimation methods

Sponsored by:

- TMS Materials Processing & Manufacturing Division
- Computational Materials Science and Engineering Committee

Organized by:
Christopher Woodward, Air Force Research Laboratory (USA)
Somnath Ghosh, Johns Hopkins University (USA)

For more information on how to participate, visit:

www.tms.org/TMS2015

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