TMS2015

144th Annual Meeting & Exhibition

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

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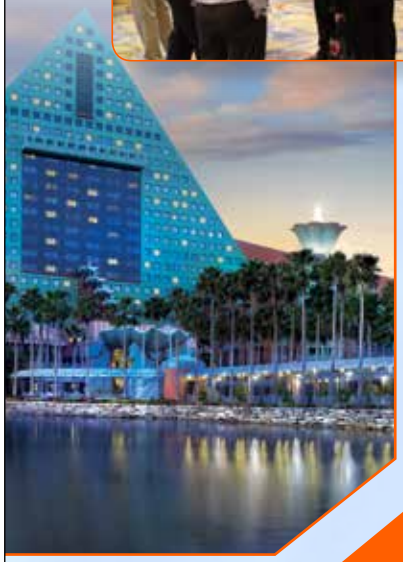

Plan Now to Attend:

Multiscale Microstructure, Mechanics and Prognosis of High-Temperature Alloys

A number of critical applications in industry demand the use of high-temperature alloys that can withstand various extreme environments under elevated temperature conditions. Reliably predicting the life of these components, which may be subjected to damage associated with creep deformation, cyclic loading, environmental degradation, and combinations thereof, is a challenging endeavor. Under these conditions, the state of the microstructure after processing and its evolution during service lead to damage mechanisms that manifest over multiple length scales, ranging from quantum and atomistic scales to the mesoscale to the macroscale.

This symposium will provide a venue for presenting recent achievements in understanding the microstructure evolution and mechanical behavior in high-temperature alloys over multiple scales in order to ultimately predict the prognosis and life of components. A goal of this symposium is to accelerate the development and acceptance of new methodologies for improving prognosis through understanding the fundamental relationships between material microstructure and mechanical behavior in these alloys. This symposium will include talks ranging from atomistic, discrete dislocation, and continuum mechanics approaches for various length scales as well as experimental mechanics results that elucidate the behavior of these alloys.

The subject areas of this symposium include, but are not limited to:

- Multi-scale modeling of high-temperature deformation and damage
- Single crystal and polycrystal plasticity models
- Deformation- and damage-based life prediction techniques
- Modeling and experimental approaches to creep-fatigue-environment interactions
- Discrete dislocation dynamics and mesoscale (phase field) modeling of creep deformation
- Experimental methods for materials prognosis and structural health monitoring
- Understanding and quantifying microstructure-property relationships at high temperature
- Computational and experimental approaches for accelerated materials design of high-temperature alloys
- Effect of chemistry and processing on high-temperature structure and properties

Sponsored by:

- TMS Materials Processing & Manufacturing Division
- Computational Materials Science and Engineering Committee; High Temperature Alloys Committee

Organized by:

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Jeff Evans, University of Alabama in Huntsville (USA)
Jonathan Cormier, Ecole Nationale Supérieure de Mécanique et d'Aérotechnique (ENSMA) (France)
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For more information on how to participate, visit:

www.tms.org/TMS2015

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