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TMS 2024

153rd Annual Meeting & Exhibition

MARCH 3–7, 2024
HYATT REGENCY ORLANDO
ORLANDO, FLORIDA, USA
#TMSAnnualMeeting

SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2024 SYMPOSIUM:

MATERIALS DEGRADATION AND DEGRADATION BY DESIGN

Simulations/Experiments Integration for Next Generation Hypersonic Materials

Supersonic and hypersonic regimes require materials resistant to high temperature and high-rate deformation to survive extreme aerodynamics and aerothermal conditions. Furthermore, candidate materials must retain high strength and sustain oxidation, creep, fatigue, and widely varying cyclic thermal gradients.

Although limited in the application space, several candidate materials such as composites, ceramics, and refractory multi-principal-elements alloys (MPEAs) hold the potential to satisfy these needs. Improving existing or developing new materials requires integrating both simulations and experiments to cover all length scales, temperatures, and strain-rates. Simulation can fill gaps where experiments are not possible or supports experimental results analysis when in-situ observations are unpractical.

This symposium intends to foster presentations and discussions around new approaches to design next generation materials beyond supersonic applications.

We invite abstracts submission on the following topics for high temperatures and high strain rates applications:
- Simulations for accelerated alloy design (CALPHAD, crystal plasticity, phase-field, atomistic)
- Microstructures and mechanical properties (uni- or multi-axial loading, damage, fatigue)
- Degradation (corrosion, oxidation, wear)
- Advanced in-situ characterization techniques (electron microscopy, high energy X-ray diffraction and tomography)
- 3D characterization (electron back scattered diffraction, high energy X-ray diffraction and microscopy)
- Advanced processing for metastable materials and near-net shape components
- Coatings and internal cooling systems

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