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TMS2025

154th Annual Meeting & Exhibition

March 23–27, 2025
MGM Grand Las Vegas
Hotel & Casino
Las Vegas, Nevada, USA
#TMSAnnualMeeting

SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2025 SYMPOSIUM:

MECHANICS OF MATERIALS

Accelerated Discovery and Insertion of Next Generation Structural Materials

Structural stability of aerospace and energy related materials, manufactured by conventional and additive routes, is of great importance to avoid catastrophic failures during operation. Understanding their thermo-mechanical response under extreme pressure, temperature, irradiation, or corrosive conditions would immensely aid in designing alloys, and thereby increasing their lifetimes. This symposium delves into investigations, focused on using high throughput tools for accelerated materials discovery and root cause analyses of fielded and new make parts.

The topics of interest to this symposium include, but are not limited to, the following:

- ICME tools coupled with multi-scale experimentation to correlate processing history to microstructural hierarchy and ensuing property response
- ML-based multi objective optimization models targeted towards more reliable predictive capabilities with realistic (usually small) experimental data
- High throughput experimental approaches for accelerated material-microstructure-property optimizations to facilitate ML.
- Qualification pathways and status of qualification for next generation materials and manufacturing processes.

The focus is on structural high temperature and light-weight materials such as refractory alloys, high entropy alloys, Ni- Co-based alloys, high strength titanium alloys, maraging steels, alumina-forming steels, and ODS alloys.

ORGANIZERS

Soumya Nag, Oak Ridge National Laboratory**; Andrew Bobel,** General Motors Corporation**; Bharat Gwalani,** North Carolina State Universtiy**; Jonah Klemm-Toole,** Colorado School of Mines**; Antonio Ramirez,** Ohio State University**; Matthew Steiner,** University of Cincinnati**; Janelle Wharry,** Purdue University

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