

THE WORLD COMES HERE.
TMS2024
153rd Annual Meeting & Exhibition

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



SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2024 SYMPOSIUM:

ADVANCED CHARACTERIZATION METHODS

Advanced Real Time Imaging

Real time observations can provide important information needed to understand materials behavior, as these techniques can provide temporal and spatial insights free from artifacts otherwise induced from conventional experimental techniques. Traditional and emerging advanced imaging techniques, which may be optical or non-optical, would allow such observations. Methods may be enhanced with capabilities that enable heating and cooling, controlled atmospheres, and application of stresses; and can be used to generate real time thermodynamic and kinetic data needed to study a variety of materials and processes.

This symposium encompasses a broad range of materials science topics enabling cross-cutting opportunities for multiple disciplines (biomaterials, energy materials, functional materials, structural materials, etc.) while topics will be separately categorized in the technical program. Presentations are solicited on the application of these methods to materials science and industrial processes, as well as on the development of such techniques.

Topics include, but not limited to:

- Studies using real time optical (e.g., visible light, white light, laser, IR, and UV) and non-optical (e.g., scanning probe, electron, and ultrasound) imaging techniques.
- Research using in-situ, in-operando, in-vitro, and in-vivo observation imaging techniques, such as thermal imaging furnace and other real time imaging methods.
- Confocal techniques, including fluorescence and reflection types, may be equipped with capabilities such as heating/cooling chambers, gas chambers, mechanical testing, Raman spectroscope, mass spectrometry, and FTIR.
- Microscopic or telescopic imaging methods include hot thermocouple, resistance heating, and sessile drop techniques used for high temperature phenomena.
- Thermodynamic and kinetic data from these techniques, useful for phase diagram constructions, oxidation/corrosion modeling, phase formation kinetics studies, etc.
- Work using high speed and slow speed cameras.
- Materials used in manufacturing real time imaging devices.
- Novel technologies and methodologies for emerging imaging devices

The symposium plans the following joint sessions with: The Mechanical Response of Materials Investigated through Novel In-situ Experiments and Modeling symposium. Respective papers may participate in part of the dedicated joint session.

ORGANIZERS

Jinichiro Nakano, U.S. Department of Energy - National Energy Technology Laboratory, USA
David Alman, National Energy Technology Laboratory, USA
Il Sohn, Yonsei University, Korea, South
Hiroyuki Shibata, Tohoku University, Japan
Antoine Allanore, Massachusetts Institute of Technology, USA
Noritaka Saito, Kyushu University, Japan
Zuotai Zhang, Southern University of Science and Technology, China
Bryan Webler, Carnegie Mellon University, USA
Wangzhong Mu, Kth Royal Institute of Technology, Sweden
Pranjal Nautiyal, University of Pennsylvania, USA
Jiawei Mi, University of Hull, United Kingdom

SYMPOSIUM SPONSORS

TMS Functional Materials Division
TMS Structural Materials Division
TMS Advanced Characterization, Testing, and Simulation Committee
TMS Alloy Phases Committee
TMS Biomaterials Committee