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TMS 2025

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:

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 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
- Researches 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, which 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

A joint session with the following symposium may take place: 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

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SYMPOSIUM SPONSORS

TMS Functional Materials Division; TMS Structural Materials Division; TMS Advanced Characterization, Testing, and Simulation Committee; TMS Alloy Phases Committee; TMS Biomaterials Committee, TMS Thin Films and Interfaces Committee

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QUESTIONS?
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