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TMS2019

148th Annual Meeting & Exhibition

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March 10–14, 2019
San Antonio, Texas, USA

JOIN US FOR THIS TMS2019 SYMPOSIUM:

CHARACTERIZATION

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 on mechanisms free from artifacts induced from conventional experimental techniques. Traditional and emerging 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, such as phase transformation, oxidation, corrosion, etc. This symposium will encompass a broad range of materials science topics to enable and promote cross-cutting opportunities for multiple disciplines (biomaterials, energy materials, functional materials, structural materials, etc.). Presentations are solicited on the application of these methods to materials science and engineering, as well as on technique development.

Topics include, but are not limited to:

- Studies using real-time optical (e.g., visible light, laser, IR, and UV) and non-optical (e.g., atomic force, 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, 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 cameras
- Materials used in imaging devices
- Novel technologies and methodologies for emerging imaging devices

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Nearly 4,000 presentations are planned at more than 80 symposia at TMS2019.

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