

THE WORLD COMES HERE.  
**TMS 2025**  
154<sup>th</sup> 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**

**Mechanical Response of Materials Investigated Through Novel In-Situ Experiments and Modeling**

The focus of this symposium is to discuss current research and key developments in theory, computational and experimental methods to study and predict the mechanical properties of materials in application-orientated environments. These environments may include, but are not limited to high mechanical loads, cryogenic (or high) temperatures, electrical and magnetic field, radiation, corrosion and oxidation. In-situ mechanical testing using SEM, TEM, AFM, Raman, synchrotron, X-ray, IR, and FTIR observation techniques are becoming increasingly popular for studying the material response during processing or under external loads across time and length scales. At the same time, significant progress has been made in the development of high fidelity models to analyze (or validate hypotheses of) the behavior of materials at different spatial and temporal scales. The intent of the symposium is to provide a forum for researchers from national laboratories, academia, and industry to discuss research progresses in the area of in operando and/or in-situ mechanical testing across time and length scales, advances in computational approaches and most importantly, integration of experiments and modeling to accelerate the development and acceptance of innovative materials and testing techniques.

Topics include:

- Development of instruments and experimental methodology for in-situ studies of material responses in advanced manufacturing and deformation processes.
- Imaging, analytical and modeling techniques to correlate microstructure (including dislocations, crystallographic orientations, precipitates, phases), processing defects, and strain field with mechanical properties.
- Microstructural observations using in-situ techniques across length scales.
- Experimental characterization and multiscale modeling of deformation of high-temperature materials, high-strength materials, thin films, low-dimension nanostructures, and interfaces.
- Uncertainty quantification and quantitative validation of computational models.

We are planning to have a joint session with the symposium entitled, Advanced Real Time Imaging. Respective abstracts will be selected to include in the joint session.

**ORGANIZERS**

**Minh-Son Pham**, Imperial College London; **Saurabh Puri**, VulcanForms Inc; **Amit Pandey**, Lockheed Martin Space; **Dongchan Jang**, Korea Advanced Institute of Science and Technology; **Josh Kacher**, Georgia Institute of Technology; **Jagannathan Rajagopalan**, Arizona State University; **Robert Wheeler**, Microtesting Solutions LLC; **Dhriti Bhattacharyya**, Australian Nuclear Science and Technology Organization

**SYMPOSIUM SPONSORS**

TMS Functional Materials Division, TMS Structural Materials Division, TMS Advanced Characterization, Testing, and Simulation Committee, TMS Integrated Computational Materials Engineering Committee, TMS Mechanical Behavior of Materials Committee

[www.tms.org/TMS2025](http://www.tms.org/TMS2025)

**QUESTIONS?**

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