

*Connecting the global minerals, metals, and materials community.*



## **Plan Now to Attend:**

### **New Horizons for Mechanical Spectroscopy in Materials Science**

Mechanical spectroscopy investigates materials behavior using acoustic techniques. It saw its heyday in the 60s and 70s, but recent advances in measurement, modeling, and characterization open up new possibilities in this field. Novel techniques such as Resonant Ultrasound Spectroscopy (RUS) and AFM-based local acoustic measurements enable high-precision investigations of previously inaccessible phenomena. Atomistic and mesoscale modeling, high-resolution microscopy, and modern microstructure characterization methods offer new approaches for interpreting acoustic data. Judicious integration of measurement, modeling, and characterization may transform classical mechanical spectroscopy into a powerful tool for investigating the micromechanisms of material behavior.

This symposium will address emerging opportunities for applications of mechanical spectroscopy in materials science. Special emphasis will be given to new mechanical spectroscopy techniques, integration of mechanical spectroscopy with materials modeling, and applications to complex solids. Topics to be covered include, but are not limited to:

- New or improved mechanical spectroscopy techniques, including RUS, Raman and Brillouin scattering, AFM, and nano-indentation characterization
- Interpretation of mechanical spectroscopy data using atomistic and mesoscale models
- Validation of atomistic and mesoscale models using mechanical spectroscopy
- Characterization of defect densities, microstructures, and internal damage using mechanical spectroscopy
- In situ techniques to characterize deformation and micro-structural evolution
- Applications to complex materials, such as amorphous solids, nanocomposites, metamaterials, and soft matter

#### **Sponsored by:**

- TMS Functional Materials Division (formerly EMPMD); TMS Structural Materials Division
- Chemistry and Physics of Materials Committee; Computational Materials Science and Engineering Committee

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