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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:

DATA-DRIVEN AND COMPUTATIONAL MATERIALS DESIGN

Chemistry and Physics of Interfaces

Understanding the chemistry and physics of interfaces is central to controlling and predicting materials behavior. There is an increasing recognition that just like in 3D materials, complex defect microstructures can exist inside interfaces and greatly influence the properties of polycrystalline materials. Phase boundaries and grain boundaries (GBs) may contain multiple phases, networks of disconnections, and GB phase junctions. These defect interfacial microstructures could form during non-equilibrium processes such as plastic deformation, grain growth, exposure to fluxes of point defects during radiation damage, and other processes that involve changes in temperature and chemical composition. This symposium aims to bring together experimentalists and materials theorists researching the fundamental science of interfaces in materials to understand the dynamic evolution and stability of complex interfacial defect microstructures.

Topical areas of interest include but are not limited to:

- GB structure and phase transitions
- Role of interfacial defects and phase transformations in interface migration
- GB solute segregation and diffusion
- Advanced computational methods for interface structure prediction and algorithms for automatic identification of disconnections
- Mechanical deformation of interfaces, including interactions with point defects and line defects such as dislocations, disconnections, and boundary junctions
- Mechanisms of interfacial response and stability in extreme environments (including irradiation exposure, temperature extremes, corrosive conditions, and effects of pressure and stress in microstructure and properties)
- AI and data science methods for advanced simulations and analysis of interface structure and simulations of interface migration at longer time scales

ORGANIZERS

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