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TMS2024
153rd Annual Meeting & Exhibition

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HYATT REGENCY ORLANDO
ORLANDO, FLORIDA, USA
#TMSAnnualMeeting



SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2024 SYMPOSIUM:

MECHANICS OF MATERIALS

Advances in Multi-Principal Element Alloys III: Mechanical Behavior

This symposium gives an avenue for scientists, researchers, and engineering to present their recent applied and theoretical research results on a number of topics regarding the mechanical behavior of high-entropy alloys (HEAs) or multi-principal element alloys (MPEAs).

BACKGROUND AND RATIONALE: HEAs and MPEAs contain five or more primary elements and can consist of a combination of body-center-cubic (BCC), face-centered-cubic (FCC), and hexagonal-close-packed (HCP) solid-solution phases. These alloys have also been found to possess many desirable properties, such as exceptional corrosion and irradiation resistance, high strength and ductility, and high fatigue/wear resistance. These desirable characteristics, therefore, make HEAs/MPEAs potentially viable candidates for several industries including those in the energy, biomedical, automotive, and aerospace sectors.

Topics of interest include, but are not limited to:

- Innovative methods to study plastic serrated flow, hardness, creep, fatigue, and wear
- Multiscale approaches to investigate fatigue and fracture in structural materials
- Advanced in situ and high throughput characterization methods, including neutron scattering, transmission electron microscopy, X-ray diffraction, electron backscatter diffraction, and three-dimensional (3D) atom probe tomography
- Innovative computational modeling and simulation techniques, such as phase-field modeling, molecular dynamics, Monte Carlo, Calculation of Phase Diagrams modeling, finite-element methods, density functional theory machine learning methods, and integrated computational materials engineering (ICME)
- Microstructural control, such as hierarchical structure, which modifies the physical and mechanical behavior
- Applications of mechanical properties in the nuclear, aerospace, biomedical, and other industries

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