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FEBRUARY 27-MARCH 3, 2022
ANAHEIM CONVENTION CENTER & ANAHEIM MARRIOTT
ANAHEIM, CALIFORNIA, USA
#TMSAnnualMeeting

SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2022 SYMPOSIUM:

ADVANCED MATERIALS

Advances in Multi-Principal Elements Alloys X

This symposium will offer the opportunities for discussions and presentations on the current research regarding the experimental and theoretical studies on the mechanical behavior, microstructures, and fabrication of multi-principal elements alloys (MPEAs) or high-entropy alloys (HEAs).

Background and Rationale: MPEAs, which often consist of five or more elements, typically consist of solid-solution phases in the form of face-centered-cubic (FCC), body-center-cubic (BCC), and hexagonal close-packed (HCP) structures. MPEAs possess desirable properties, including excellent ductility, exceptional corrosion and oxidation resistance, irradiation stability, high strength, fatigue, and wear resistance. These aspects make MPEAs potential candidates for use in structural, energy, mechanical, and biomedical fields. Furthermore, recent research has suggested that there is potential for the development of novel MPEAs with functional properties that far exceed those of conventional materials.

Topics of interest include but are not limited to:

- Mechanical behavior, such as plastic deformation, creep, fatigue, and fracture
- Metastable MPEAs
- Microstructural control of material behavior (i.e., physical, mechanical, corrosion, magnetic electric, irradiation, thermal, and biomedical behavior, etc.)
- Material fabrication and processing, such as homogenization, nanomaterials, additive manufacturing, and grain-boundary engineering
- Theoretical modeling and simulation using advanced computational techniques, such as CALPHAD modeling, molecular dynamics, density functional theory, Monte Carlo, as well as phase-field and finite-elements methods
- Advanced characterization methods, including in situ transmission electron microscopy, neutron scattering, electron backscatter diffraction, and three-dimensional (3D) atom probe
- Thermodynamics and diffusivity: measurements and modeling
- Industrial applications

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