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TMS 2023
152nd Annual Meeting & Exhibition

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SAN DIEGO CONVENTION CENTER &
HILTON SAN DIEGO BAYFRONT
SAN DIEGO, CALIFORNIA, USA
#TMSANNUALMEETING



SUBMIT AN ABSTRACT BY JULY 1 FOR THE FOLLOWING TMS2023 SYMPOSIUM:

MECHANICS & STRUCTURAL RELIABILITY

Deformation-induced Manipulation of Defect Structures and Hierarchical Microstructures

Engineering the microstructure and microstructural hierarchy form the basis of the application of metallic materials. A spatial hierarchy ranging from atomic/dislocation to precipitate to grain level can be effective at different scales and help to design high-performing alloys. Deformation processing is widely applied to engineer defect-mediated microstructures. High-stress deformation processes such as high-pressure torsion or high strain processes such as friction stir processing both have been used to modify defect structures often resulting in the microstructural hierarchy. However, in these processes, the mechanical-thermal coupling obscures a deep mechanistic understanding of the microstructural evolution, and the knowledge of how these microstructures influence properties is an active research area.

This symposium brings together the various communities working on deformation-induced microstructural modification. Areas of interest include severe plastic deformation, friction stir processing, cold spray, shear processing, grain boundary engineering, persistent metastable structures by solid-phase processing, the influence of deformation on precipitation, microstructural and phase evolution under deformation, distribution of the alloying elements, supersaturation, forced mixing, and the influence of these on the overall microstructural evolution and mechanical properties of these alloys. Both experimental and computational topics are welcome.

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