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Crystal Plastic Deformation Mechanism of Metallic Materials

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Deadline for manuscript submissions:
closed (30 September 2022)

Message from the Guest Editors

Crystal plasticity is an inherently multiscale process starting at the atomic scale where dislocation cores, the regions in the immediate vicinity of dislocation lines, control a number of local properties, including the selection of glide planes and corresponding dislocation mobility, cross-slip, and nucleation processes. Crystal plasticity, in contrast to classical macroscopic plasticity, has a clear physical basis and always includes explicit microscopic information of the material. Crystal plasticity theory has long been adopted to study deformation behaviors of metallic materials subjected to both quasi-static and dynamic plastic deformation.

Our Special Issue aims to provide a timely review of research in the rapidly developing subject area of crystal plasticity. We would like to invite you to submit either research articles or review papers to the Special Issue. Specific topics of interests include (but are not limited to): microstructure and texture evolutions, design and processing of metallic materials, phase transformations and mechanical properties, deformation mechanism, dynamic mechanics, numerical modeling, dynamic recrystallizations, and 3D printing and corrosion.

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Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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