

Special Issue

Numerical Modelling of Mechanical Properties for Metallic Materials

Message from the Guest Editors

Determining the mechanical properties of metals is one of the main challenges in finite element simulations. Correct material parameters and constitutive models capable of capturing the physical behavior of materials are two essential components for predictive finite element simulations. Furthermore, the predictive modeling of a range of metals undergoing inelastic deformation typically requires a number of advanced hardening and damage functions that lead to validated simulation results. In addition, computational mechanics may include new techniques and approaches, such as phase-field modeling, which can predict the degradation of material parameters due to damage occurrence. The development of such techniques will provide a new feature in the investigation of metallic structures. An assessment of the balance of (reversible) strain energy and dissipated energy in the material can improve the simulation quality of the material undergoing cyclic loading.

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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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