Special Issue

Computational Mechanics of Advanced Metallic Materials

Message from the Guest Editor

Micromechanical analysis of metallic materials has played a major role in understanding the behaviour of metallic materials. Nowadays, it has become more challenging because of the emergence of new advanced metallic materials to meet growing industrial demands. However, the analysis of the mechanical behaviour of these materials poses difficulties due to the complex deformation modes originated from their microstructure. Computational methods have advanced to address these issues. More accurate crystal plasticity models are being developed with new efficient and robust numerical schemes. The phase-field method and cellular automata enable one to capture the evolution of microstructures. Interactions of dislocations with microscale features are accounted for with the introduction of large-scale molecular dynamics and dislocation dynamics. These methods are often coupled to describe complex phenomena occurring in metallic materials. This Special Issue focuses on the modelling and simulation of deformation processes of advanced metallic materials. Research papers and review articles on computational analysis of metals on a small, meso, or large scale are welcome.

Guest Editor

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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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