Special Issue

Microstructure and Mechanical Properties of Nanoscale Metallic Materials

Message from the Guest Editors

Nanoscale metallic materials exhibit a range of excellent mechanical properties, including ultrahigh strength, large elastic strain limit, and high deformation reversibility. These unique mechanical properties make nanoscale metallic materials potential candidates in the applications of novel micro/nano electromechanical systems (MEMS/NEMS). A fundamental understanding of the microstructure–mechanical property relationship of nanoscale/nanostructured metallic materials, especially at the atomic scale, is of both scientific and technological significance for the development of damage-tolerant metallic nanomaterials and devices. Recent developments of atomistic simulations and in situ nanomechanical testing/manipulation provide great opportunities to investigate the mechanical behavior of nanoscale metallic materials. This Special Issue focuses on recent advances in the microstructure and mechanical properties of nanoscale metallic materials/devices, involving experimental, theoretical, and computational investigations. Reviews and articles on various aspects of microstructures, mechanical property, deformation mechanism, and nanomechanical testing methodology are welcomed.

Guest Editors

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Deadline for manuscript submissions

closed (31 March 2022)

Metals

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Impact Factor 2.5
CiteScore 5.3

mdpi.com/si/88027

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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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