Special Issue

Mechanical Behavior of Metallic Materials

Message from the Guest Editors

The mechanical properties of metallic materials determine their suitability for a variety of load-bearing or structural applications, such as rebars in the construction industry, turbine blades in the aerospace industry, hip implants in the biomedical industry, and fuel cladding materials in the nuclear industry. The strength, ductility, toughness, and stiffness at room temperature of these materials, as well as their formation conditions—whether under high temperatures or cryogenic temperatures, and under monotonic or cyclic loading conditions—are important properties that must be evaluated before a material is selected for a particular application. Testing techniques for the evaluation of material properties at various scales, including creep, nanoindentation, fatigue, and strain rate, are well developed. However, the field of materials engineering is very dynamic, and the community is continuously striving to develop materials with better peformance, greater durability, and lower costs.

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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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