Special Issue

Structure and Mechanical Properties of Titanium Alloys

Message from the Guest Editors

As a pivotal branch of the titanium industry, titanium alloys with high strength (UTS ≥ 1100 MPa) are indispensable structural materials for cutting-edge engineering applications such as in the aerospace and marine fields. With the expanding market for high-strength titanium alloys, achieving optimal synergies of exceptional strength, remarkable ductility (El ≥ 8%), and outstanding toughness (KIC ≥ 50 MPa□m1/2) has been identified as the foremost technical bottleneck in their research and development. To overcome this challenge, the titanium community has initiated the following two primary strategies: developing novel alloys and innovating processing technologies. Based on the aforementioned reasons, this Special Issue focuses on advanced processing technology, microstructure and performance of titanium alloys with high strength, which include the advanced casting, forging, and heat treatment technologies, microstructure evaluation, mechanical properties, as well as deformation mechanism of titanium alloys.

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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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