Special Issue

Solidification and Phase Transformation of Light Alloys

Message from the Guest Editor

The trend of increasing market share of advanced materials, particularly magnesium, titanium, titanium alloys, and aluminum alloys, which reduce reliance on traditional manufacturing technologies, is a significant driver for the development of new materials and technologies. This Special Issue focuses on the microstructural evolution and phase transformations of magnesium, titanium, and aluminum alloys during casting, forming, and heat treatment processes, which are critical for determining the final mechanical properties and functional performances of these materials. The control and characterization of material properties at each stage of processing are essential for the advancement of these alloys in various applications. In this Special Issue, we invite articles that focus on the preparation methods of these alloys and their influence on the final products' performance, considering both the alloy stage and/or the compaction stadium. Of particular interest are fully controllable, fast, and low-cost processes with high implementation potential in advanced processing techniques, enabling the production of high-performance products.

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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