Special Issue

Studies on Microstructure and Mechanical Properties of Superalloys

Message from the Guest Editor

Superalloys are high-temperature nickel-, iron–nickel-, and cobalt-based alloys, widely used as the main high-temperature structural materials for aircraft engines and gas turbines due to their excellent strength, toughness, fatigue resistance, creep, and microstructural stability. Superalloys are also widely used in metal processing, as hot work tools and dies, in the oil and gas industry. There is significant demand for improved high-temperature materials to drive further technological advances, and so interest in superalloys has grown. Understanding the evolution of microstructure during processing and operation is an important theoretical basis for optimizing manufacturing processes and ensuring the necessary mechanical properties of superalloy components.

This Special Issue aims to publish a wide range of articles on various aspects that cover the field of superalloy research, such as the development and fabrication of alloys, the processing effects of various technologies, heat treatment, microstructural research and mechanical behavior, as well as technologies that also improve technological and mechanical properties of superalloys.

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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