Special Issue

Characterization, Microstructure and Mechanical Properties of Nickel-Based Superalloys

Message from the Guest Editor

Ni-based superalloys play a critical role in aeroengines, gas turbines, and petrochemical engineering, ensuring good high-temperature performance and stability. With the development of modern industry, the service temperature and component size of superalloys are increasing. In order to meet the increasing requirements of advanced aerospace engines, superalloys with higher-temperature capabilities are urgently needed. The complexity of manufacturing superalloys is also increasing, including the use of melting, hot deformation, and heat treatment processes. The coordination between the microstructure and properties of superalloys is also important. This Special Issue aims to address the latest research devoted to the manufacturing process and microstructure control of Ni-based superalloys, especially those used as sustainable materials for aerospace, energy (e.g., nuclear), gas turbines, and other applications.

- superalloy
- hot deformation
- heat treatment
- melta melting
- hard-to-deform superalloy
- quality control

Guest Editor

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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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