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Composition Design and Damage Mechanism of Crystal Superalloys

Guest Editor:

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Deadline for manuscript submissions:
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Message from the Guest Editor

Due to their excellent resistance to mechanical and chemical degradation, poly- and single-crystal superalloys are high temperature materials used in gas-turbine engines. The number of alloying elements in these alloys is usually greater than ten, and each element has a specific function for improving properties. Therefore, the composition design, on one hand, is always one critical aspect in developing the promising superalloys, which can perform excellently when serving at elevated temperatures. On the other hand, a long time service under harsh conditions, such as high temperature, high pressure, corrosive environment, and applied stress, could lead to damage in superalloys, which will result in the failure of component. Thus, the damage mechanisms of crystal superalloys is another key aspect.

In this Special Issue, we welcome articles that focus on the composition design and damage mechanism of crystal superalloys. Papers on material preparation methods, alloy and component behaviour, and final products' performance are also encouraged.

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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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