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Modeling and Microstructure Evolution of Solid State Materials

Guest Editor:

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Message from the Guest Editor

The metallic alloy microstructure is based on physical metallurgy and is known to play a key role in controlling and improving material properties.

Experimental analysis of the microstructure of metal requires equipment for various micrograph analyses, which takes a lot of effort and has a high cost.

In addition, in the novel alloy design, it is necessary to predict the microstructure according to the process conditions in advance, and the degradation of the metallic alloy may be reflected in the microstructure.

Microstructure modeling techniques have been actively used for decades to respond to these demands and have been improved towards enhancing their applicability.

Studies using the microstructural modeling of metallic systems in various fields, including Fe-based metals, Zr alloys which are widely used in the nuclear industry, lightweight materials, and super-heat-resistant alloys, are highly welcomed.

For this Special Issue in *Metals*, it would be great to be able to present experimental results such as TEM, EBSD, and atom probe tomography through microstructure-level modeling, and results combined with other scale modeling.

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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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