Special Issue

Solidification and Microstructure of Metallic Alloys

Message from the Guest Editor

Solidification is a fundamental process governing the microstructure evolution and final properties of metallic alloys. This Special Issue aims to publish cutting-edge research on the interplay between solidification mechanisms, microstructure formation, and performance optimization in both traditional and advanced alloy systems. Topics of interest include, but are not limited to, the following: experimental and computational studies of nucleation/growth kinetics, phase selection, dendritic/cellular solidification, eutectic and peritectic reactions, and defect formation. Contributions exploring novel characterization techniques, multi-scale modeling approaches, and emerging applications (additive manufacturing, high-entropy alloys) are particularly encouraged. By bridging theoretical insights with industrial relevance, this Special Issue seeks to advance the understanding of solidification science and its role in tailoring microstructures for enhanced mechanical, thermal, and functional properties.

Guest Editor

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About the Journal

Message from the Editor-in-Chief

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.

Editor-in-Chief

Prof. Dr. Yong Zhang
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