



Solidification Processing in Metals

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Message from the Guest Editor

During recent years, solidification has gained novel attraction due to the rapid development of additive manufacturing techniques, where a close control of solidification microstructures is essential for the performance of the product. As a broad science discipline that overlaps areas of material research and condensed matter physics and chemistry, understanding of solidification process is essential for the control of microstructure formation, as well as the final optimization of physical and mechanical properties of metals and their composites.

This Special Issue is focused on the recent developments of solidification field. It also intends to outline the advances in in situ X-ray observations of solidification of metallic alloys, the thermodynamic and kinetics description of solidification process, the atomistic investigation of solid-liquid interfaces, and the multi-scale study from nano- up to macroscopic solidification phenomena. These topics will be covered in additive manufacturing, single crystal casting, welding, supercooling and the other advanced solidification techniques.





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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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