



Modeling and Simulation of Solidification and Casting

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Message from the Guest Editor

With the advent of advanced and powerful computer hardware and software, mathematical modeling and numerical simulation have progressed into the modern era and become increasingly popular in the past twenty years. Computer modeling has become an important tool for not only the improvement of conventional processes but also the development of advanced technologies.

The topics to be covered by this issue include solidification processing of metallic alloys and their composites; shape casting ; continuous casting; processing/structure/property relations, numerical methods for cavity filling, and solidification modeling; nucleation, grain refinement, and inoculation techniques; microstructure evolution and modification; in situ observations of solidification phenomena and comparison with predictions; micro- and macrosegregation; thermodynamics of solidification; stress and deformation; defect formation ; novel process techniques ; treatment after casting ; and mold and core materials.





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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.

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