Special Issue

Microstructure and Defect Simulation during Solidification of Alloys

Message from the Guest Editor

The solidification theory has advanced extensively in the past few centuries, offering an extraordinary guide for the optimization of material properties. Numerical simulation, which provides a better establishment of microstructure–processing–properties relationships, is attracting increasing attention in academia and industry. Computational approaches allow more accurate and detailed models (such as phase-field method, cellular automaton, and level set) to be constructed, shedding light on many solidification phenomena. The successful identification of solidification behavior and thermodynamic principles further promotes the development of simulation techniques in predicting microstructure and defects, which enriches the design and optimization of alloys and provides guidance for the improvement of material properties. This Special Issue aims to review recent progress and new developments in microstructure and defect simulation during solidification. Review articles which describe the current state of the art are also welcome.

Guest Editor

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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