Special Issue

Solidification of Alloys: Solidification Microsegregation Prediction

Message from the Guest Editor

Solidification is an essential manufacturing process in the production of various metal products, including those manufactured through casting, welding, and fusion-based additive manufacturing (AM). Microsegregation during solidification involves composition variation within the grain and results in non-equilibrium phases, cracks, and other problems, thus lowering the mechanical properties of the final product. The prediction of microsegregation aids in understanding the condition of the material and enables the improvement of its castability, weldability, and printability. For this reason, determining methods of microsegregation prediction has been a central task in solidification science. We welcome research articles on the development of microsegregation models, and on their application for controlling the quantity of casting, welding, 3D printing, etc.

Guest Editor

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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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