Special Issue

Microstructure, Mechanical Properties and Solidification Behavior of Metals and Alloys (2nd Edition)

Message from the Guest Editor

Solidification is one of the oldest processes for producing complex shapes for applications ranging from art to industry. It is a multidisciplinary field of high importance for understanding industrial processing involving molten alloys such as welding, continuous casting, powder metallurgy and foundry. Process limits are still present and are to be overcome. Many research groups have carried out valuable research regarding particular subjects such as nucleation, macrostructure, microstructural transitions, as-cast microstructure, porosity et al. All these topics have been studied for decades following either experimental or modeling approaches, with remarkable complementary aspects between them. Nowadays, complementary research has been developed concerning the evaluation of experimental data from unsteady state solidification. Knowledge of the physical phenomena occurring at microscopic and macroscopic scales, between liquid and solid phases, is fundamental for the control of the microstructure in all the solidification processes, from casting to welding. The comprehension of solidification remains essential for the development of various recently proposed processes.

Guest Editor

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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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