

Special Issue

Semi-Solid Processing of Alloys and Composites

Message from the Guest Editors

Semi-Solid Metal (SSM) processing takes advantage of both forming and shaping characteristics usually employed for liquid and solid materials. In the absence of shear forces, the semi-solid metal has similar characteristics to solids, i.e., easily transferred and shaped, while by applying a defined force, the viscosity is reduced and the material flows like a liquid. Such unique characteristics have made SSM routes attractive alternatives to conventional casting on an industrial scale. With the intention of taking full advantage of SSM characteristics, it is crucial to understand the SSM processing including topics such as solidification and structural evolution, flow behavior through modeling and rheology, new processes and process control, alloy development and properties in general. This Special Issue is focused on the recent research and findings in the field with the aim of filling the gap between industry and academia, and also to shed light on some of the fundamentals of science and technology of semi-solid processing.

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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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