Special Issue

Remelting and Casting Processes in the Production of Metals and Alloys

Message from the Guest Editor

Remelting plays a crucial role in the recycling and refining of metals and scrap materials to obtain homogeneous materials with desired properties. Various remelting techniques, such as using an electric arc furnace (EAF), electro-slag remelting (ESR), induction melting, and vacuum refining, are evaluated to understand their advantages and limitations. Casting, on the other hand, involves pouring molten metal into molds to obtain specific shapes and forms. Furthermore, solidification is the crucial phase in the casting process where the molten metal transitions into a solid state, determining the final shape, microstructure, and properties of the casting. This Special Issue aims to present the characterization and mitigation of defects that may occur during remelting and casting processes. Factors such as porosity, shrinkage, and inclusions are analyzed, and strategies for defect prevention and reduction are investigated. Advanced techniques such as computer simulations and process optimization are employed to improve casting quality and minimize defects.

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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