Special Issue

Numerical Modeling of Metallurgical Processes: Continuous Casting and Electroslag Remelting

Message from the Guest Editor

The multiscale transport phenomena in the metallurgical processes of continuous casting (CC) and electroslag remelting (ESR) have a great influence on the casting quality. Study on the hydrodynamic behaviors of the multiscale and multiphysical fields in the mold can provide guidance in optimizing the operating process and designing a novel mold with high performance, which is very important for promoting the quality improvement of steel or superalloy products and the improvement of production. A considerable number of new methods have been developed and applied in CC and ESR processes, such as large eddy simulation, population balance model, and volume average solidification model. Moreover, some novel metallurgical technologies (feeding steel strip, vacuum ESR, rotating electrode, etc.) have also been mainly investigated by CFD. This Special Issue aims to present the latest research related to advanced numerical techniques for CC and ESR processes. Research reports associated with novel metallurgical technology are also welcome.

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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