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Smelting and Solidification Process of Special Steels

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Message from the Guest Editor

Metal materials need to undergo one or more solidification processes to form the final product, during which microstructure and composition distribution are formed. The microstructure and composition distribution are formed in the solidification process, which to largely determine the choice of subsequent processing means and technology, and have a decisive influence on the performance of the metal. Therefore, the theory of metal solidification is of great significance for the optimization of material performance, and it is the subject of common concern of metallurgical materials discipline.

In this Special Issue, we seek to provide a wide set of articles on various aspects of solidification in metallurgical process. Articles on the solidification process of steelmaking are desired, such as grain nucleation and growth modeling, calculation of heat transfer between ingot and mold interface, modeling of multiphase flow model, motion behavior of inclusion particles by means of the deformable part model (DPM), preparation of new techniques of high-quality special steels based on compression solidification theory and development of new varieties, and so on.

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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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