Special Issue

Inclusion/Precipitate Engineering in Steels

Message from the Guest Editors

Inclusion/precipitate particle behaviors in liquid steel and in solid steel strongly control both the cleanliness and the material properties of steel materials, such as their toughness. These fundamental techniques have traditionally been denoted “Clean Steel” and “Oxide Metallurgy”, respectively, and they have been utilized in practice. Today, these two research directions have been partially overlapped and combined. Thus, we suggest that they collectively be denoted “Inclusion/Precipitate Engineering”. The current issue focuses on presenting the latest research on the inclusion/precipitate engineering of steels, including the metallurgical processing of steels, the resulting microstructure, and the final material properties. Both experimental research carried out in laboratories and steel plants as well as modeling research will be considered. In addition, because inclusions/precipitates are complexes composed of oxides, sulfides, nitrides, and carbides, their composition control and consequent size control are also of interest.

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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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