Special Issue

Inclusion Precipitation during Solidification of Steels

Message from the Guest Editors

The precipitation of non-metallic inclusions during solidification of steel has strong effects on cleanliness and also the mechanic properties of steels. The control of inclusion size and composition will lead to “clean steel” with superior properties. Meanwhile, originating in welding science and technology, microstructure control by inclusions, i.e. “oxide metallurgy”, was proposed 30 years ago and now have found some new applications in advance processing techniques, e.g. additive manufacturing. The current special issue is focused on the recent progress of inclusion engineering on control of steel cleanliness and microstructure by modelling and experimental work. The studies carried out in laboratories and steel plants on behaviors of inclusions during refining and solidification are of interest. The modeling contributions on inclusion formation during refining and solidification are also welcomed. The roles of inclusion sizes and compositions in steel microstructure are of particular interests. The studies on inclusion behavior during special steel processing are especially welcomed.

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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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