Special Issue

Low-Carbon Special Steels: Design, Processing and Performance

Message from the Guest Editor

As the most widely used structural and functional material, steel plays a vital role in the modern world. Particularly, special steels are developed for application in the fields of renewable energy, which partially replaces fossil fuels, contributing to the reduction in carbon emissions. On the other hand, the steel industry is highly energy-intensive, accounting for a large fraction of carbon emissions worldwide. In order to reduce carbon emissions, novel endeavors are in urgent need to be developed over the entire life-cycle of steels.

This Special Issue aims to provide a worldwide platform for long research articles, short communications, and reviews in the fields of the development of special steels for renewable energy, such as wind energy, hydrogen energy, nuclear energy, etc.; renewable steels design; continuous casting and other green and efficient processing technologies; and long lifetime, i.e., fatigue, creep, and damage-tolerance steels. Data-driven methods such as machine learning for the prediction of the performance and design of steels will also be welcomed.

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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