

Special Issue

Challenges and Prospects of Steelmaking Towards the Year 2050

Message from the Guest Editor

The IPCC report 2018 defined the jointly approved target of limiting global warming to 1.5°C by 2050, which means deep cutting of CO₂ emissions comprehensively. The challenge of the steel industry is dual: on one hand, it must strongly cut its own CO₂ emissions by improving and developing the process route, and on the other hand by developing new steel grades with improved properties in order to achieve a longer life cycle and better recyclability. In this issue, the potential methods to decrease CO₂ emissions in current processes via improved energy and materials efficiency, increasing recycling, and utilizing alternative energy sources are considered. Development programs for current and novel innovative processes as well as trends of alternative energy sources are surveyed. Additionally, the role of steel as an integral part of the global circular economy should be discussed. As a whole, the target of this Issue is to give a holistic overview of the current situation and challenges, and a comprehensive cross-section of the potential technologies and solutions for the global CO₂ emissions problem.

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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