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Advances in Molten Metal Refining Process

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Deadline for manuscript submissions:
closed (31 August 2023)

Message from the Guest Editor

Dear Colleagues,

Molten metal is the intermediate product in metallurgical processes. As our civilization grows and technological development is connected with more demanding processes, it is necessary to continuously improve the refining processes to meet customer requirements and lower production costs to stay competitive. Molten metal refining technology is governed by certain laws, the optimization of which is a basic prerequisite for increasing refining efficiency. Traditional models describing refining metallurgical processes range from turbulent flow to multiphase flow models, including heat transfer. And, numerous works have also been developed on both experimental and analytical/computer modeling aimed at disclosing the fundamental aspects of refining metallurgical processes within molten metal. The aim of this Special Issue is to present current knowledge and trends in the field of molten metal refining processes, especially iron, steel, and aluminum, magnesium, titanium, the possibility of secondary processing of these metals in a liquid state by blowing inert gases, vacuuming, synthetic slag, etc., including physical and numerical modeling of these processes.

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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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Journal Rank: JCR - Q2 (Metallurgy and Metallurgical Engineering) / CiteScore - Q1 (Metals and Alloys)

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