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Welding Metallurgy

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Message from the Guest Editor

A large number of research activities concerning the welding of metal alloys are ongoing in many industrial fields. The ability to effectively weld traditional and innovative metals is mainly driven by the metallurgical phenomena that are involved in the joining process. These are not fixed factors for a given metal but also depend on joint shape and welding techniques.

Therefore, an understanding of welding metallurgy and of the influence of the welding processes on weld microstructure, mechanical properties, and appearance (e.g., defects, distortions due to residual stresses) is crucial to guarantee the performance of assembled parts and structures during the service, in any field.

This Special Issue aims to collect the most recent research on innovative and pioneering works in welding metallurgy that cover several aspects such as microstructure–property relationships of welds, welding techniques (fusion welding and solid-state welding), residual stress and distortion, post-weld heat treatment, numerical simulation of weld solidification and cooling, as well as corrosion phenomena.

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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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