Special Issue

Dissimilar Metal Welding

Message from the Guest Editors

The combination of distinct materials is a key issue in modern industry, whereas the driving concept is to design parts, with the right material in the right place. In this framework, a great deal of attention is directed towards dissimilar welding and joining technologies. The application of fusion welding techniques, namely tungsten inert gas or laser welding, is quite challenging due to the difference in physical properties, in particular the melting point, between adjoining materials. On the other hand, solid state welding methods, such as the friction stir welding as well as linear friction welding processes process, already proved to be capable of manufacturing sound Al-Cu, Al-Ti, Al-SS, Al-Mg joints, to cite but a few. Recently, promising results have also been obtained using hybrid methods.The aim of this Special Issue is to collect the latest studies on these topics: welding process development; metallurgical aspects; electrochemical studies; mechanical characterization and fracture analysis; numerical modelling of the process and of the joint behavior.

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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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