Special Issue

Current Developments in Welding and Joining Technologies

Message from the Guest Editors

Since their inception in the early 1900s, welding and joining technologies have been a major contributor to industrial development. In the last two decades, these techniques have shown prolific growth due to several contributing factors, vis-à-vis effective control systems, powerful simulation tools, wide-ranging material databases, sophisticated monitoring and testing equipment, and advanced characterization facilities. As a result, welding and joining technologies have developed as complex but indispensable multipurpose, multidomain, and multiscale operations. Various recent variants of welding and joining techniques have efficaciously widened the applicability ranging from joining to fabrication of multimaterial components. Furthermore, the knowledge acquired over the decades along with the aforementioned factors has also played an important role in the development of metal-based additive manufacturing processes and systems. This Special Issue is intended to document recent research and development activities in welding and joining. Topics of interest include the latest advances in the welding and joining frontier areas.

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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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