Special Issue

Advanced Welding Process Development for Metals and Steels: Numerical Analysis, Process Optimization, and Joint Performance

Message from the Guest Editors

This Special Issue aims to advance the understanding and application of innovative welding technologies in materials engineering. It seeks to explore cutting-edge processes—such as laser welding, friction stir welding, and hybrid methods—focusing on their development for metals and steels. By integrating numerical analysis, this Issue aims to provide insights into heat transfer, material behavior, and stress distribution, facilitating process optimization. Emphasis will be placed on enhancing joint performance, including strength, durability, and resistance to environmental degradation, critical for industries like aerospace, automotive, and energy. This Special Issue invites original research and reviews to bridge theoretical advancements and practical solutions, fostering sustainable manufacturing and supporting the evolution of high-performance materials in modern applications. In this Special Issue, original research articles and reviews are welcome. Research areas may include (but not limited to) the following: welding processes, numerical analysis, process optimization, and joint performance. We look forward to receiving your contributions.

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Message from the Editor-in-Chief

Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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