

Special Issue

Advances in Welding of Metallic Materials

Message from the Guest Editor

Welding is a crucial joining technology for metallic systems in sectors like transportation, energy, and aerospace. The introduction of advanced alloys and the need for higher performance require continuous advancements in welding processes, metallurgy, and quality assurance. This Special Issue presents recent developments that enhance weldability, improve joint performance, and enable reliable integration of metallic materials in complex engineering applications. Topics include:

- Advanced welding processes (e.g., arc, laser, electron beam, friction stir, hybrid welding).
- Dissimilar and multi-material welding, interfacial reactions, and mitigation of incompatibilities.
- Welding of advanced materials like high-entropy alloys, ultra-high-strength steels, and superalloys.
- Metallurgical mechanisms, microstructure–property relationships, and post-weld treatments.
- Thermal cycles, residual stresses, modeling, and in-process control.
- Quality evaluation, non-destructive testing, and in-situ monitoring.

We welcome original research, reviews, and contributions on experimental investigations, characterization, and performance assessment to provide an updated overview of welding advancements.

Guest Editor

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About the Journal

Message from the Editor-in-Chief

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.

Editor-in-Chief

Prof. Dr. Yong Zhang

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manuscripts are peer-reviewed and a first decision is provided to authors approximately 18.7 days after submission; acceptance to publication is undertaken in 2.7 days (median values for papers published in this journal in the second half of 2025).