Special Issue

Interfacial Relationships and Behavior in Metal–Ceramic and Metal–Metal Joining Systems

Message from the Guest Editor

Material joining is commonly used in varied engineering applications including the automotive, aerospace, energy, construction, tooling, electrical, electronics and biomedical sectors. The single-most notable factor that affects joint behavior is the nature of the joint interface where components of the same or different materials combine to form a joint. During joining, interfacial regions can experience complex physical and chemical interactions involving melting, diffusion, phase/microstructural changes and the development of residual stresses. In this Special Issue, we welcome articles from any engineering sector with a particular focus on joining processes involving metal–ceramic and metal–metal interfaces. Processes may include conventional welding, laser welding, solid-state welding (diffusion, friction stir, ultrasonic, etc.), brazing, soldering, adhesive bonding, mechanical joining (bolting / screwing, riveting, clinching, etc.) and hybrid joining methods (weld-bonding, rivet-bonding, etc.). The joined structures may be metal-to-metal and metal-to-ceramic. Contributions involving ceramic-to-ceramic joining using metallic brazes or solders are also welcome.

Guest Editor

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Deadline for manuscript submissions

31 December 2025

Metals

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.3

mdpi.com/si/242858

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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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