Special Issue

Advances in Technology and Applications of Diffusion Bonding

Message from the Guest Editor

Welding techniques are generally classified into two categories: fusion welding processes (e.g., arc/laser welding) and solid-state welding processes (e.g., forge welding). Diffusion bonding, as a subdivision of both solid-state welding and liquid-phase welding, is a joining process wherein the principal mechanism is interdiffusion of atoms across the interface. Diffusion bonding enables joining materials and fabricating complex components for which conventional welding processes have proved unsuccessful.

Original submissions in the following five categories will be considered for publication in the Special Issue:
1—Joining un-weldable dissimilar alloys, e.g., Ti to Al and W to Cu;
2—Joining materials sensitive to melting or high temperatures, e.g., metal matrix composites and oxide dispersion strengthened alloys;
3—Joining metals to ceramics, e.g., aluminium to sapphire and steel to structural glass;
4—Joining similar or dissimilar non-metallic materials, e.g., cemented carbides and polymers;
5—Joining high-precision components which require maintaining the original shape and dimensions of the parts, e.g., electronic devices and microwave guides.

Guest Editor

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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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