Special Issue

Design, Properties and Applications of Metallic Materials in Electronic Packaging

Message from the Guest Editor

In the development of advanced electronic packaging, ensuring the robustness and long-term reliability of metal materials is a significant challenge requiring innovative approaches in material selection, processing techniques, and design strategies. Since the early 2000s, researchers have focused on improving the mechanical and thermal properties of metal-based materials to enhance the performance of interconnects, which are essential for the functionality of modern electronic devices. Key efforts have centered around optimizing metal alloys and exploring advanced surface treatments to reduce failure risks due to thermal cycling, mechanical stress, and corrosion. In parallel, the need for environmentally responsible design practices has led to an increasing emphasis on sustainability, which includes the development of recyclable materials and efficient methods for recovering valuable metals from electronic waste, thus ensuring a more sustainable lifecycle for electronic products. The challenges and opportunities in these areas are therefore critical for the future of electronic packaging.

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Message from the Editorial Board

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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