Special Issue

Development of Novel Hydrogen Storage and Release Metal-Based Alloys and Composites

Message from the Guest Editors

Hydrogen storage materials based on metal and alloys have been the subject of research for many years. There is extensive literature on Mg-based alloys, different types of transition metal and rare-earth intermetallic compounds, and high-entropy alloys, which have shown exciting hydrogen storage properties. By now, however, it should be clear that it is unlikely that a unique material will be found to satisfy all the different requirements imposed by the multiple applications envisioned for hydrogen in the coming years. Consequently, continuing efforts to develop novel metal-based hydrogen-storage materials and bring them closer to practical applications are of interest to the scientific and engineering communities.

This Special Issue aims to highlight current research works which provide new insights into the synthesis, characterization, and properties of metallic alloys and metal-matrix composites under study and development for hydrogen storage applications. Contributions exploring the relationships between microstructure and storage capacity, hydrogenation and dehydrogenation kinetics, and cyclic and environmental stability are particularly welcome.

Guest Editors

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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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