Special Issue

Aluminum Alloys and Aluminum-Based Matrix Composites

Message from the Guest Editors

Because of their high specific strength, excellent corrosion resistance and workability, aluminum alloys have become one of the most crucial materials in achieving structural weight reduction, being widely used in aerospace, high-speed rail transit and automotive lightweight fields. Generally speaking, the preparation process of aluminum alloy products includes casting, homogenization, forming based on extrusion, stamping, stretching, forging or rolling, solid solution, quenching and aging. The study of the strain hardening behavior and thermal dynamic softening behavior is of great significance for the optimization of deformation parameters. The prediction and elimination of quenching residual stress have an important impact on the final performance, with aging being the key method for strengthening aluminum alloys, which can also be strengthened with heat treatments. This Special Issue aims to report on innovative research in the fields of composition design; forming, heat treatment and welding processes; microstructure and the property evolution of aluminum alloys.

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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