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Aluminum and Magnesium Alloys and Composites: Forming, Preparation, and Processing

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Message from the Guest Editors

In the modern world, the use of light structural materials has become inescapable and avant-garde design strategies directed toward weight reduction are growing in popularity. Aluminum and magnesium having the lightest density in all common structural materials (ρ_{Al} = 2.7 g.cm^{-3}, ρ_{Mg} = 1.7 g.cm^{-3}) are regarded as the most popular lightweight metals, specifically in aviation, the automobile industry, architecture, marine vehicles, and daily life, as their utilization leads to the reduction of vehicle weight and fuel savings. These two metals have very similar properties, including atomic weight, strength, melting point, and elasticity. However, they exhibit different crystallographic structures, which explains the fundamental differences in their forming behavior, crystal plastic anisotropy, deformation, and microstructural evolution mechanisms.

It is hoped that the results of this upcoming issue will lead to major changes in the deeper understanding and expansion of the use of these alloys and composites in industry and pave the way toward the production of high-efficiency components for many researchers and professionals.

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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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