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Intermetallics: From Design to Structural and Properties

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Message from the Guest Editors

Intermetallics are a special group of metallic materials whose properties allow use under conditions in which conventional metallic materials fail; these conditions include high temperatures, aggressive corrosive environments, and extreme abrasive and adhesive stresses.

Many intermetallic compounds display excellent physical and mechanical properties, specifically very good thermal stability, high melting point, good corrosion resistance, and low density, making them suitable candidates for high-temperature applications. However, these materials show limited ductility and high brittleness, especially at low temperatures, which impedes their wider use.

The use of materials based on intermediate compounds is very diverse, but it is always necessary to consider the choice of a particular material in terms of its physical or mechanical properties. They are used, for example, as construction materials, shape memory materials (NiTi), heating elements of electric resistance furnaces (MoSi₂), magnetic alloys (Ni₃Fe), hydrogen storage materials (Mg₂Ni, LaNi₅) or high-temperature materials (TiAl, NiAl), or for strongly oxidizing environments (FeAl).





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Message from the Editor-in-Chief

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