



## Microstructure and Properties of Intermetallic Alloys

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### Message from the Guest Editor

Intermetallics are a special group of metallic materials whose properties allow their 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 show very good physical and mechanical properties, specifically very good thermal stability, high melting points, good corrosion resistance, and low density, which makes them suitable candidates for high-temperature applications. However, these materials show limited ductility and higher brittleness, especially at low temperatures, which is an obstacle to 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 (MoSi<sub>2</sub>), magnetic alloys (Ni<sub>3</sub>Fe), hydrogen storage materials (Mg<sub>2</sub>Ni, LaNi<sub>5</sub>) or high-temperature materials (TiAl, NiAl), or for strongly oxidizing environments (FeAl).





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