



Mechanical and Mechanochemical Synthesis of Alloys

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Message from the Guest Editor

For modern-day industrial applications, metals and alloys should have mechanical properties such as high strength, high ductility, high fracture toughness, and high stiffness, preferably together with high temperature capability, high corrosion resistance, as well as low weight and low cost. Since such a metal currently does not exist, C. Suryanarayana called this metal *utopium*.

Mechanical/mechanochemical synthesis consists of non-equilibrium processing routes involving severe plastic deformation (SPD) that often leads to unexpected alloy properties, frequently nearer to *utopium*. Mechanical alloying, high-pressure torsion, cold wire drawing, and accumulative roll bonding are examples.

This Special Issue will present the latest developments and findings in the area of mechanical and mechanochemical synthesis of alloys. The scope includes (but is not limited to) new alloys processed by these methods, their microstructural evolution, mechanical properties, failure/degradation analysis, fracture, fatigue, wear, and corrosion characteristics. Theoretical and/or computational treatment of these phenomena, as well as application-related aspects, are also welcome.





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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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