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Advanced Technologies in Ultrafine-Grained Metallic Materials

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Message from the Guest Editor

Many different methods for producing ultrafine-grained structures such as the top–down approaches known as severe plastic deformation (SPD) and mechanical alloying (MA) are available. In the first case, SPD involves changes to the shape of the investigated metallic materials and microstructure. To date, several SPD methods have been applied to refine grains in metallic materials to below micrometer range.

In the case of MA, they are mainly based on the production of nanometer-scale powders and subsequent powder metallurgy for consolidation. These bulk materials exhibit an interesting combination of engineering and/or functional properties. An alternative method for changing the properties of metal-based materials is the production of a composite.

This Special Issue will focus on new trends and progress in advanced technologies in the synthesis of ultrafine-grained metals and alloys and all new developments in the relationships between their microstructure and properties. All aspects related to new technologies and new applications in the broadly defined field of ultrafine-grained materials area are welcomed.

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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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