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Mechanical Alloying: Processing and Materials

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Message from the Guest Editor

Mechanical alloying is a versatile process for the production of powders. The size and size distribution of the particles change as a result of continuous fracture – welding. It has been utilized in different areas of materials processing and applied to obtain different material systems: oxide dispersion strengthened materials, intermetallics, ceramics, composites, nanostructured materials, amorphous materials, mechanochemical reaction materials. The products obtained after MA process depends on several parameters as: geometric and dynamic parameters of mill design, the character of motion of milling bodies, the physical and mechanical characteristics of milling bodies, the characteristics of processed substances, a mass ratio of milling bodies to powder, temperature of the vial, milling atmosphere, selection of process control agents, the filling factor of the vial. Moreover, the experimental milling devices to perform the alloying process are very different: attritor, shaker mill, horizontal ball mill, planetary mill, ball mill controlled by magnetic force.

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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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