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Magnetic Properties Analysis of Amorphous and Partially Crystallized Alloys

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Message from the Guest Editor

Dear Colleagues,

Amorphous magnetic materials have long-range, disordered atomic structures, being described as either ferromagnetic, loose ferromagnetic, ferromagnetic or loose ferromagnetic. As an energy-efficient and environment friendly technique, the magnetic refrigeration technique, based on the magneto-caloric effect (MCE) of the materials, is regarded as a promising alternative to conventional vapor-circle refrigeration technology. Materials which undergo a first-order magnetic transition, including most of the crystalline variety, exhibit a sharp but narrow magnetic entropy change peak (-ΔSmpeak). In contrast, materials which undergo a second-order magnetic transition, including amorphous alloys and a small amount of crystalline alloys, show a broadened but low magnetic entropy change peak and this results in high RC. Amongst the the key challenges in the field of magnetic refrigerants is in obtaining a combination of the high table-like magnetic entropy change and movements across the ice point of water within different temperature ranges.

Research areas may include, but should not be limited to, the issue of magnetic refrigeration materials.

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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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