Editorial **Advanced Magnetic Materials**

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Received 11 March 2012; Accepted 11 March 2012

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This special issue is inspired by a rapidly growing interest in the research of magnetism and magnetic materials, discoveries of novel magnetic materials, and recent progress in the development of functional materials with improved magnetic and magnetotransport properties. The research is demanded by the last advances in technology and engineering and greatly associated with the development of advanced magnetic materials with improved magnetic and magnetotransport properties. Certain industrial sectors, such as magnetic sensors, microelectronics, security, and energy-efficient magnetic refrigerators, demand costeffective materials with reduced dimensionality and desirable magnetic properties (i.e., enhanced magnetic softness, giant magnetic field sensitivity, large magnetocaloric effect, large shape memory effect, etc.). In particular, the miniaturization of modern magnetoelectronic devices tends to stimulate a rapid development of nanoscale magnetic materials. However, the development of soft magnetic materials in different forms of ribbons, wires, microwires, and multilayered thin films still continues to attract significant attention from the scientific community, as the discovery of the so-called giant magnetoimpedance effect in these materials makes them very attractive for a wide range of high-performance sensor applications ranging from engineering, industry, to biomedicine. In another research area, the development of advanced magnetocaloric materials for advanced magnetic refrigeration technology has also generated growing interest among scientists. The majority of magnetic refrigeration is to develop new materials that are cost effective and possess high cooling efficiencies (i.e., large magnetocaloric

effect over a wide temperature range). In all cases, a comprehensive understanding of the processing-structureproperty relationship in the fabricated materials is of critical importance. Consequently, great efforts have been (and are being) focused on systematic theoretical and experimental studies with the overall aim of advancing our current knowledge of the origins of the material properties related to the existence of some special arrangements at the nanometric scale and/or to the prevision of novel unusual macroscopic properties.

This special issue aims to provide most up-to-date information about recent developments in magnetic materials for advanced technologies. It covers a wide range of experimental and theoretical works highlighting the following main topics:

- (i) soft magnetic materials and sensor applications,
- (ii) magnetocaloric materials and magnetic refrigeration,
- (iii) magnetic shape alloys and related applications,
- (iv) amorphous and nanocrystalline magnetic materials and applications,
- (v) metamagnetism,
- (vi) ferrites,
- (vii) electrodynamics of heterogeneous media.

We hope this issue will stimulate further interest in magnetic materials research.

Acknowledgment

Last but not least, we would like to acknowledge all the editorial members, contributed authors and dedicated referees for their invaluable time, great contributions and assistance to this volume. Without such efforts we would not be able to accomplish and bring this special issue to the interested readers.

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