Special Issue

Phase Change Material and Magnetic Research

Message from the Guest Editor

Magnetic phase transitions cover a broad range of research in magnetism and magnetic materials, such as alloys and compounds. Based on the magnetic-field-induced transition, an abundance of physical effects are obtained in the vicinity of magnetic phase transitions, such as magnetocaloric, magnetostriction and magnetoresistance, which have the most potential for practical applications. The solid-state refrigeration technology based on the caloric effects, including magneto-, elasto- and baro-caloric effects, is honored as the most probable alternative to today's gas compression refrigeration technology. In addition, based on the spin reorientation and premartensitic transitions, the exchange bias effect, magnetic topological properties and skyrmions are produced in the materials undergoing magnetic phase transitions. In the world, magnetic phase transition and magnetic transition materials are active and pioneering fields. As for the types of magnetic transition materials, one-dimensional, two-dimensional, and three-dimensional materials, e.g., powder, ribbons, films, alloys and so on, can be fabricated, which would produce unprecedented magnetic properties.

Guest Editor

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