Special Issue

Investigations into Functional Ferroic Materials and Devices

Message from the Guest Editors

The study of ferroic (including ferroelectric, ferromagnetic, ferroelastic, etc.) materials represents a core research direction in condensed matter physics and materials science. Its significance stems from the unique functional properties of these materials, which are responsive to external stimuli and therefore enable widespread applications in information storage, sensors, energy conversion, and smart devices. Current research trends reveal three prominent developmental directions:

- Multiferroic composites and coupling effects: designing heterostructures combining ferroelectrics–ferromagnetics or ferroelastics–ferroelectrics to achieve synergistic control of electrical, magnetic, and mechanical properties.
- Downsizing and functional integration: exploring nanoscale thin films, 2D materials, and superlattice structures to uncover novel physical phenomena induced by size effects, such as interface-enhanced polarization and tunable magnetic anisotropy.
- Flexibility and device compatibility: developing wearable and integrable flexible ferroic materials to meet emerging demands in flexible electronics and biomedical applications.

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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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