

Multiferroic  $\text{CoFe}_2\text{O}_4\text{-Ba}_{0.95}\text{Ca}_{0.05}\text{Ti}_{0.89}\text{Sn}_{0.11}\text{O}_3$  composite nanofibers (CFO-BCTSn NFs) were synthesized using a sol-gel electrospinning method. Scanning electron microscopy revealed the morphology of the composites, with fiber diameters ranging from 120 to 150 nm. Transmission electron microscopy confirmed the structure of the nanofibers, while X ...

The application of multiferroic magnetoelectric (ME) materials, which realize the mutual coupling (ME coupling effect) of ferroelectric ordering and magnetic ordering (Figure 1A), in the fields of magnetic sensors, 17-20 spintronics, 21-24 data storage, 25-29 and energy harvesting 29-32 can be further broadened.

Magnetoelectric multiferroics, where magnetic properties are manipulated by electric field and vice versa, could lead to improved electronic devices. Here, advances in materials, characterisation ...

Semantic Scholar extracted view of "Enhanced magnetoelectric and energy storage performance of strain-modified PVDF- $\text{Ba}_{0.7}\text{Ca}_{0.3}\text{TiO}_3\text{-Co}_{0.6}\text{Zn}_{0.4}\text{Fe}_2\text{O}_4$  nanocomposites" by E. Ramana et al. ... for high-temperature capacitive energy storage applications and focuses on the structural dependence of the high-field dielectrics and electrical properties ...

The integration of magnetic fields with magnetoelectric (ME) coupling materials has been recently reported for electrocatalysis applications. Highly efficient energy conversion and storage can be potentially provided by this emerging approach.

This article is written on behalf of a large number of colleagues, collaborators, and researchers in the field of complex oxides as well as current and former students and postdocs who continue to enable and undertake cutting-edge research in the field of multiferroics, magnetoelectrics, and the pursuit of electric-field control of magnetism. What we present is ...

The maximum energy storage density and efficiency achieved for BT-5CFO (5%  $\text{CoFe}_2\text{O}_4$ ) composite was 8.33 mJ/cm<sup>3</sup> and an efficiency of 59.7% respectively. The coupling between the ferroelectric and ferromagnetic phases was observed in the variation of P-E loop with magnetic field.

Beijing Key Laboratory for Magnetoelectric Materials and Devices, School of Materials Science and Engineering, Peking University, Beijing, 100871 China. ... Owing to the capability of characterizing spin properties and high compatibility with the energy storage field, magnetic measurements are proven to be powerful tools for contributing to the ...

The P-E loops shows that the energy storage density of the BFO-PTO solid solution rises with increasing Nd concentration up to 0.15 and then decreases. The maximum recoverable energy storage density ( $W_{\text{rec}}$ ) and

efficiency (i) for the 0.15 composition are 4.54 mJ/cm<sup>3</sup> and 79 %, respectively. Conversely, as the concentration of Nd rises, the ...

The presence of a coupling effect in the magnetoelectric materials, formed from the interaction between the magnetization and electric-polarization, is useful for multifunctional device applications such as magnetoelectric random-access memories, magnetic-field sensors, logic memories, and energy harvesters [4], [5], [6].

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Here we develop YFeO<sub>3</sub>-poly(vinylidene fluoride) (YFO-PVDF) based composite systems (with varied concentration of YFO in PVDF) and explore their multifunctional applicability including dielectric, piezoelectric, capacitive energy storage, mechanical energy harvesting, and magnetoelectric performances. The 5 wt% YFO loaded PVDF (5 YF) film has ...

Thus, this work reports an innovative approach to tuning the energy storage capacity of ME polymer composite films through a magnetic field and also describes use of these films for a wide range of applications, such as energy storage and memory devices and magnetic sensors.

DOI: 10.1016/j.jallcom.2023.169333 Corpus ID: 257066304; Energy Storage and Magnetoelectric Coupling in Neodymium (Nd) Doped BiFeO<sub>3</sub>-PbTiO<sub>3</sub> Solid Solution @article{Baloni2023EnergySA, title={Energy Storage and Magnetoelectric Coupling in Neodymium (Nd) Doped BiFeO<sub>3</sub>-PbTiO<sub>3</sub> Solid Solution}, author={Manoj Baloni and Ramneek ...

The GMR responses of spin-valve devices were measured in current-in-plane configuration at constant current with varying magnetic field. The magnetoelectric coupling measurements were conducted ...

These hybrid energy harvesters could be developed to individually or simultaneously harvest electric power from diverse energy sources, including magnetic fields, sun-light and temperature gradients.

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