

Can bfbt thin film be used as a lead-free ferroelectric thin film capacitor?

It can be observed that the BFBT thin film exhibits a high energy density and efficiency simultaneously, which means that BFBT thin film can be considered as a promising candidate for lead-free ferroelectric thin film capacitors in energy storage applications.

Why is bismuth ferrite important in multiferroic system?

Bismuth ferrite (BiFeO_3 , BFO) exhibits both (anti)ferromagnetic and ferroelectric properties at room temperature. Thus, it has played an increasingly important role in multiferroic system.

Is bfbt a good energy storage film?

It is found that the BFBT thin film shows outstanding energy storage properties with a recoverable energy density of 19 J/cm^3 and an energy efficiency of 51% under an applied electric field of 900 kV/cm at room temperature. In addition, the film exhibits outstanding fatigue endurance after 1×10^7 cycles.

Is lead-free bfbt ferroelectric thin film a promising energy storage material?

All results suggest that lead-free BFBT ferroelectric thin film is very promising energy storage materials.

Is bismuth ferrite a multiferroic nanomaterial?

The development of bismuth ferrite as a multiferroic nanomaterial is summarized. The morphology, structures, and properties of bismuth ferrite and its potential applications in multiferroic devices with novel functions are presented and discussed. Some perspectives and issues needed to be solved are described.

Does carrier transportation enhance visible light driven photocatalytic process in bismuth ferrite?

S. Bharathkumar, M. Sakar, S. Balakumar, Experimental evidence for the carrier transportation enhanced visible light driven photocatalytic process in bismuth ferrite (BiFeO_3) one-dimensional fiber nanostructures. J. Phys. Chem.

Bismuth ferrite (BiFeO_3 , BFO) exhibits both (anti)ferromagnetic and ferroelectric properties at room temperature. Thus, it has played an increasingly important role in multiferroic system. In this review, we ...

Designing lead-free bismuth ferrite-based ceramics learning from relaxor ferroelectric behavior for simultaneous high energy density and efficiency under low electric ...

The findings overcome the shortcomings of organic thin films in energy storage, including low energy storage density and low application temperature, unveiling an effective way towards high performance lead-free ...

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temperature. Thus, it has played an increasingly important role in ...

Here, the authors realised superior energy storage performance in lead-free bismuth ferrite-based relaxor ferroelectric films through domain engineering. It is demonstrated ...

Lead-free ferroelectric thin film materials, such as sodium bismuth titanate-based ($\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$, NBT) ferroelectric thin films, have garnered attention due to their unique ...

The findings overcome the shortcomings of organic thin films in energy storage, including low energy storage density and low application temperature, unveiling an effective ...

In this study, an innovative approach is proposed, utilizing an ultra-thin multilayer structure in the simple sol-gel made ferroelectric/paraelectric $\text{BiFeO}_3/\text{SrTiO}_3$ (BF/ST) ...

It is found that the BFBT thin film shows outstanding energy storage properties with a recoverable energy density of 19 J/cm^3 and an energy efficiency of 51% under an ...

Bismuth ferrite (BiFeO_3 , abbreviated as BF) is a perovskite ferroelectric (FE) system with a large spontaneous polarization ($P_s \sim 90\text{-}100 \text{ mC cm}^{-2}$) as proposed by first ...

The exploration of multiferroic materials and their interaction with light at the nanoscale presents a captivating frontier in materials science. Bismuth Ferrite (BiFeO_3 , BFO), ...

The current study aims at the growth of multiferroic thin films using the pulsed laser deposition technique for energy storage capacitor applications. Under various OPPs, ...

Bismuth ferrite (BFO) nanostructures and thin films have gained attraction as suitable candidates for energy storage and energy conversion due to their high energy storage efficiency, ...

The collective impact of two strategies on energy storage performance. a-d) Recoverable energy storage density W_{rec} and energy efficiency η for 5 nm thin films of BTO, BFO, KNN, and PZT under various ...

DOI: 10.1111/JACE.16288 Corpus ID: 139510589; A novel lead-free bismuth magnesium titanate thin films for energy storage applications @article{Xie2019ANL, title={A ...

@article{Balmuchu2023TheIO, title={The impact of oxygen partial pressure in modifying energy storage property of lanthanum doped multiferroic bismuth ferrite thin films deposited via pulsed ...

Here we demonstrate that giant energy densities of $\sim 70 \text{ J cm}^{-3}$, together with high efficiency as well as excellent cycling and thermal stability, can be achieved in lead-free bismuth ferrite ...

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The ferroelectric and pyroelectric properties of bismuth ferrite (BFO) epitaxial thin film have been investigated. The ferroelectric epitaxial thin layer has been deposited on ...

1 ??· Laboratory of Thin Film Techniques and Optical Test, Xi'an Technological University, Xi'an, Shaanxi, 710032 China ... The research presents nanocomposites with high energy ...

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