

Antiferroelectric Thin-Film Capacitors with High Energy-Storage Densities, Low Energy Losses, and Fast Discharge Times November 2015 ...

Antiferroelectric nano-heterostructures filler for improving energy storage performance of PVDF-based composite films Huayang Zhu a, Xiaohui Liu a, Hairui Bai a, ...

The potential applications of the  $\text{PbHfO}_3$ -based antiferroelectric material in the fields of energy storage, electrocaloric effects, and synaptic device...

Abstract Antiferroelectric (AFE)  $\text{HfO}_2/\text{ZrO}_2$ -based thin films have recently emerged as a potential candidate for high-performance energy storage capacitors in miniaturized power ...

Antiferroelectric Thin-Film Capacitors with High Energy-Storage Densities, Low Energy Losses, and Fast Discharge Times Chang Won Ahn, Gantsooj Amarsanaa, Sung Sik Won, Song A ...

This strategy presents new opportunities to manipulate polarization profiles and enhance energy storage performances in antiferroelectrics.

Reversible field-induced phase transitions define antiferroelectric perovskite oxides and lay the foundation for high-energy storage density materials, required for future ...

Using the radio frequency magnetron sputtering process,  $\text{NaNbO}_3$ -based antiferroelectric thin films were obtained on Pt(111)/Ti/SiO<sub>2</sub>/Si substrates. The effects of ...

These findings highlight the potential of NN-based thin films as lead-free candidates for energy storage, emphasizing the importance of stabilizing the AFE phase under ...

Abstract We report the energy-storage performance and electric breakdown field of antiferroelectric  $\text{PbZrO}_3$  (PZ) and relaxor ferroelectric  $\text{Pb}_{0.9}\text{La}_{0.1}(\text{Zr}_{0.52}\text{Ti}_{0.48})\text{O}_3$  ...

PYZST thin-films exhibited a high recoverable energy density of  $U_{\text{reco}} = 21.0 \text{ J/cm}^3$  with a high energy-storage efficiency of  $\eta = 91.9\%$  ...

Antiferroelectric (AFE) films have received a lot of attention for their high energy storage density and temperature stability, giving them ...

To estimate the energy conversion density of the thin films of ferroelectrics, we recorded the P-E hysteresis

curves of these thin films at different temperatures, Fig. 6 a.

Antiferroelectrics have received blooming interests because of a wide range of potential applications in energy storage, solid-state cooling, thermal switch, transducer, actuation, and ...

Dielectric capacitors with ultrahigh power density and ultra-fast charge/discharge rate are highly desired in pulse power fields. Environmental-friendly AgNbO<sub>3</sub> family have been ...

Nguyen, M. D. & Rijnders, G. Comparative study of piezoelectric response and energy-storage performance in normal ferroelectric, antiferroelectric and relaxor-ferroelectric ...

A highly textured (111)-oriented Pb<sub>0.8</sub>Ba<sub>0.2</sub>ZrO<sub>3</sub> (PBZ) relaxor thin film with the coexistence of antiferroelectric (AFE) and ferroelectric (FE) phases was prepared on a Pt/TiO<sub>x</sub>/SiO<sub>2</sub>/Si(100) ...

Abstracts The lead zirconate (PZO) anti-ferroelectric thin film capacitors, known for their high power density and rapid discharge speed, have garnered significant attention for ...

For application of antiferroelectric materials in dielectric energy storage capacitors, how to improve their electrical breakdown strength is currently a key issue that ...

Request PDF | On Feb 1, 2024, Ampattu Ravikumar Jayakrishnan and others published Recent Development of Lead-free Relaxor Ferroelectric and Antiferroelectric Thin Films as Energy ...

We demonstrate a capacitor with high energy densities, low energy losses, fast discharge times, and high temperature stabilities, based on Pb (0.97)Y (0.02) [ (Zr (0.6)Sn (0.4)) (0.925)Ti ...

Antiferroelectric capacitors hold great promise for high-power energy storage. Here, through a first-principles-based computational approach, authors find high theoretical ...

In this work, (1-x)PbZrO<sub>3</sub> -xPbSnO<sub>3</sub> (PZO-PSO) antiferroelectric thin films were prepared on Pt (111)/Ti/SiO<sub>2</sub>/Si substrates by a sol-gel method in order to improve ...

In this work, antiferroelectric Pb<sub>1-x</sub>Ca<sub>x</sub>ZrO<sub>3</sub> (PCZ) thin films with different concentrations of Ca<sup>2+</sup> were prepared by chemical solution deposition, and the effects of Ca ...

Abstract Antiferroelectric film capacitors have attracted increasing attention due to their excellent energy storage properties. In this work, PbZrO<sub>3</sub> (PZO) antiferroelectric films ...

In this study, we propose an artificial antiferroelectric-insulator multilayer thin films to regulate the polarization behaviors and optimize energy storage performances of ...

Antiferroelectric (Pb 0.87 Sr 0.05 Ba 0.05 La 0.02) (Zr 0.52 Sn 0.40 Ti 0.08)O<sub>3</sub> thin film capacitors were fabricated for dielectric energy ...

Peng, B. et al. Large energy storage density and high thermal stability in a highly textured (111)-oriented Pb 0.8 Ba 0.2 ZrO<sub>3</sub> relaxor thin film with the coexistence of ...

Several works have found or predicted antiferroelectricity in electrostatically frustrated perovskite oxides. Antiferroelectric phases were ...

Significantly improved energy storage properties and cycling stability in La-doped PbZrO<sub>3</sub> antiferroelectric thin films by chemical pressure tailoring

This study reports that incorporating non-polar nanodomains into antiferroelectrics greatly enhanced the energy density and efficiency.

Effect of Sn<sup>4+</sup> doping on antiferroelectric and energy storage properties of PbHfO<sub>3</sub> thin films prepared by a sol-gel process

First, to increase intrinsic energy storage, atomic-layer-deposited antiferroelectric HfO<sub>2</sub>-ZrO<sub>2</sub> films are engineered near a field-driven ferroelectric phase transition to exhibit ...

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