

This work paves the way to realizing efficient energy storage ceramic capacitors for self-powered applications. ... Various polar materials, including paraelectrics 11,12,13, ...

However, the energy storage efficiency (?) at high temperature of PI is relatively low (~10% at high temperatures and high fields). [37-40] Therefore, to further improve the energy storage ...

Relaxor ferroelectric (RFE) films are promising energy-storage candidates for miniaturizing high-power electronic systems, which is credited to their high energy density (U_e) and efficiency. However, advancing their U_e ...

The temperature-driven SPE design of RFEs in the T_m < T < T_B range, characterized by the reduction of nanodomain size to polar clusters of several unit cells, has been demonstrated to considerably enhance the overall ...

The energy dissipation of NBT-SBT is mainly attributed to the switching of polar regions ... high energy efficiency, while the energy storage density may be slightly sacrificed, ...

Simultaneously, superior recoverable energy storage density and efficiency are gained, significantly surpassing the state-of-the-art dielectric energy storage materials under similar moderate electric fields. Vacancies, ...

The energy storage process of dielectric material is the process of dielectric polarization and depolarization when the external electric field is applied and withdrawn. ... is ...

a Inner Mongolia Key Laboratory of Ferroelectric-related New Energy Materials and ... Doping of BNZ into the BNT host promoted the formation of polar nanoregions (PNRs), whose domain ...

The large polarization and the delayed polarization saturation lead to greatly enhanced energy density of 80 J/cm³ and transfer efficiency of 85% over a wide temperature range. Such a data-driven design recipe for a ...

Energy storage and conversion are vital for addressing global energy challenges, particularly the demand for clean and sustainable energy. Functional organic materials are gaining interest as ...

In the past decade, efforts have been made to optimize these parameters to improve the energy-storage performances of MLCCs. Typically, to suppress the polarization hysteresis loss, constructing relaxor ferroelectrics ...

BaTiO₃ ceramics are considered as one of the energy storage materials due to their decent thermal stabilities and dielectric properties, but high residual polarization and low breakdown ...

"High-entropy" is a new material design concept that has emerged in recent years. It was first developed from the high-entropy alloy in 2004 [9], [10] 2018, Jian Luo"s ...

Realizing ultrahigh recoverable energy-storage density (W_{rec}) alongside giant efficiency (?) remains a significant challenge for the advancement of dielectrics in next-generation pulse power energy-storage (ES) devices. In ...

This is a thermal energy storage system, effectively built around a big, insulated steel tank - around 4 metres (13.1 ft) wide and 7 metres (23 ft) high - full of plain old sand.

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