

Significantly enhanced recoverable energy storage density in potassium-sodium niobate-based lead free ceramics. J. Mater. Chem. A, 4 (2016), pp. 13778-13785. View in Scopus Google Scholar ... Silver niobate lead-free antiferroelectric ceramics: enhancing energy storage density by B-site doping. ACS Appl. Mater. Interfaces, 10 (2018), pp. 819-826.

Fig. 1 shows XRD profiles of $\text{Bi}_x \text{Na}_{1-3x} \text{NbO}_3$ and $\text{NaNb}_{1-2/5y} \text{Mg}_y \text{O}_3$ ceramics. All samples show a clear perovskite structure. There is an orthorhombic phase at room temperature, and the space group is Pbcm for $x = 0$. For $x = 0.02$, $x = 0.06$, $y = 0.02$, and $y = 0.06$, they are all orthorhombic at room temperature, but the space group is P21ma, indicating that ...

Potassium sodium niobate (KNN) ... LiNbO_3 has also been reported as an interesting host for achieving optically active lanthanides via suitable doping processes [191,192]. ... [307,308] or antiferroelectric materials in energy storage, high-strain actuators and electrocaloric applications ...

The electrical energy storage properties of AgNbO_3 ceramics have been improved greatly by A-site aliovalent doping [4, 5]. ... Since the electrical energy storage properties are closely related to the applied ... He, W., Liu, H. Tuning polarization of sodium niobate-based ceramics by introducing $\text{Sr}(\text{Fe}_{0.5} \text{Nb}_{0.5})\text{O}_3$. J Mater Sci: Mater ...

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Traditionally, there has been a considerable interest in lead- containing AFE, such as PbZrO_3 -based ceramics, due to their superior performance with high energy storage density [8], [9], [10], [11]. However, the focus has shifted to lead-free AFE materials due to growing environmental concerns related to the toxicity of lead [12], [13]. Sodium niobate (NaNbO_3) has ...

Sodium niobate (NaNbO_3 , NN)-based lead-free antiferroelectric (AFE) ceramics are currently the focus of most attention on account of their outstanding energy storage density. Nevertheless, the high loss energy density (Wloss) by unique field-induced AFE-ferroelectric (FE) phase transition in pure NN ceramic and low breakdown electric field (E_b) largely restrict their ...

Lead-free dielectric ceramics with high recoverable energy density are highly desired to sustainably meet the future energy demand. AgNbO_3 -based lead-free antiferroelectric ceramics with double ferroelectric hysteresis loops have been proved to be potential candidates for energy storage applications. Enhanced energy storage performance with recoverable ...

DOI: 10.1021/acssuschemeng.0c05265 Corpus ID: 225183723; Ultrahigh Energy Storage Characteristics of Sodium Niobate-Based Ceramics by Introducing a Local Random Field @article{Pang2020UltrahighES, title={Ultrahigh Energy Storage Characteristics of Sodium Niobate-Based Ceramics by Introducing a Local Random Field}, author={Feihong Pang and ...

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6 ???· Wang et al. achieved outstanding temperature and frequency stability as well as excellent energy storage performance by doping Sm into $0.88\text{NaNbO}_3\text{-}0.12\text{Sr}0.7\text{Bi}0.2\text{TiO}_3$ [20]. ... Novel sodium niobate-based lead-free ceramics as new environment-friendly energy storage materials with high energy density, high power density, and excellent ...

First, we establish the correlation between the doping concentration and the behavior of distortion modes, thereby explaining the suppression of the FE state with increasing Zr doping concentration. ... Unlocking the key mechanism behind field-induced ferroelectric phase transition in sodium niobate for energy storage systems. J. Mater. Chem. C ...

Sodium niobate (NaNbO_3) is a potential material for lead-free dielectric ceramic capacitors for energy storage applications because of its antipolar ordering. In principle, a reversible phase ...

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Pb, Bi, and rare earth free X6R barium titanate-sodium niobate ceramics for high voltage capacitor applications ... The increase in grain size is commensurate with the onset of acceptor Mg^{2+} doping onto the B-site which has been shown in BT based ... The enhanced energy storage performance may associate with a more resistive core region with ...

As a result, the optimal recoverable energy density and energy efficiency are 6.5 J/cm^3 and 94% at 450 kV/cm, respectively. In addition, the energy storage properties exhibit satisfactory temperature stability and cycling reliability. All these merits demonstrate that the Ta modified sodium niobate-based relaxor ceramic a potential candidate ...

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