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Relaxor ferroelectrics are receiving an increasing amount of attention because of their superior energy-storage density. Due to environmental concerns, lead-free alternatives are highly desirable, with bismuth sodium titanate highlighted for its energy-storage applications. Here, we realized an enhancement in energy-storage performance with a recoverable energy a?|

Here, we show that in the bismuth sodium titanate (BNT)-based composition 0.2(Ba 0.4 Sr 0.6 TiO 3) to energy storage capacitors, nonvolatile memory devices, and tunable communication devices, owing to their distinctive reversible polarization behavior under external electric fields. The establishment of the ferroelectric state involves

Improved energy storage performance of bismuth sodium titanate-based lead-free relaxor ferroelectric ceramics via Bi-containing complex ions doping Wen-Jing Shi, Lei-Yang Zhang, Yu-Le Yang, D. O. Alikin, V. Ya. Shur, Improved energy storage performance of bismuth sodium titanate-based lead-free relaxor 1473 (3.5 J cm-3 +- 5% variation from

6 . This work provides guidance for the design of high-performance energy storage dielectric materials by enhancing the B-site disorder of relaxor ferroelectric ceramics via complex ion doping. H. Zhang, H. Yan, I. a?|

Here, a strategy is proposed to combine antiferroelectric and relaxor features to achieve flexible films with high dielectric permittivity and energy-storage density. Based on this motivation, a a?|

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Energy-storage capacitors based on relaxation ferroelectric ceramics have attracted a lot of interest in pulse power devices. How to improve the energy density by designing the structure of ceramics through simple approaches is still a challenge. Herein, enhanced energy-storage performances are achieved in relaxation ferroelectric 0.9 (0.94Na0.5Bi0.5TiO3 a?|

In the present work, lead-free 0.94Bi 0.5 Na 0.5 TiO 3-0.06BaTiO 3 (abbreviated as BNT-6BT) ceramics doped by 2.5 mol% of Sm was prepared by the conventional ceramic route and characterized for the piezoelectric and energy storage properties. The Sm substitution includes the replacement of Bi, Na and both the Bi and Na ions in the BNT lattice. Accordingly, a?|

Bismuth sodium titanate, BNT, is a perovskite-structured ferroelectric with rhombohedral symmetry (R3C) at room temperature (RT) and their phase transitions are complicated.The phase transition temperatures, T Ra??T, from rhombohedral to tetragonal (the temperature T m of the maximum dielectric constant), and T Ta??C, from tetragonal to cubic a?|

where W 1 is the energy storage density, Iu 0 is the dielectric constant of free space (8.854 x 10 a??12 F/m), Iua?2 is the dielectric constant of materials and E is applied electric field (kV/cm

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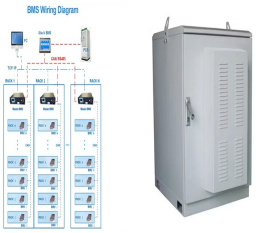
DOI: 10.1016/j.cej.2023.145363 Corpus ID: 260857374; Energy storage properties of samarium-doped bismuth sodium titanate-based lead-free ceramics @article{Tang2023EnergySP, title={Energy storage properties of samarium-doped bismuth sodium titanate-based lead-free ceramics}, author={Xuyao Tang and Zimeng Hu and Vladimir Koval and Bin Yang and a?|

In particular, extremely high stored energy storage density (6.92 and 5.37 J/cm 3), high recoverable energy storage density (4.77 and 4.37 J/cm 3), and moderate efficiency (69.0% and 81.4%) were achieved in both the samples of x = 0.12 and x = 0.15, respectively.

Lead-free dielectric ceramics can be used to make quick chargea??discharge capacitor devices due to their high power density. Their use in advanced electronic systems, however, has been hampered by their poor energy storage performance (ESP), which includes low energy storage efficiency and recoverable energy storage density (W _rec). In this work, a?|

In particular, extremely high stored energy storage density (6.92 and 5.37 J/cm 3), high recoverable energy storage density (4.77 and 4.37 J/cm 3), and moderate efficiency (69.0% and 81.4%) were achieved in both the samples of x = 0.12 and x = 0.15, respectively.



DOI: 10.1016/j.jmat.2022.02.003 Corpus ID: 246806486; Sodium Bismuth Titanate-Based Perovskite Ceramics With High Energy Storage Efficiency and Discharge Performance @article{Wang2022SodiumBT, title={Sodium Bismuth Titanate-Based Perovskite Ceramics With High Energy Storage Efficiency and Discharge Performance}, author={Jiahui Wang and a?|

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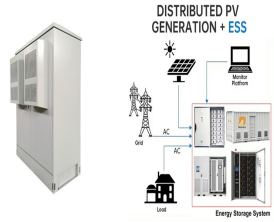
Request PDF | Significantly enhanced energy storage density in sodium bismuth titanate-based ferroelectrics under low electric fields | Bi0.5Na0.5TiO3 (BNT)-based ferroelectrics have received more

Significantly enhanced energy storage density in sodium bismuth titanate-based ferroelectrics under low electric fields. Author links open overlay panel Jintao Zhang a, Ying Lin a, Lei Wang b, Note that, the energy-storage properties with an excellent W d of 3.24 J cm a??3 and high energy-storage efficiency

In this work (0.85-x)Na0.5Bi0.5TiO3-0.15NaNbO3-xSr0.85Bi0.1TiO3 ceramic system abbreviated as (NBT-NN-xSBT) was prepared through the conventional solid-state method. The effect of doping level on crystal structures, microstructures, dielectric, and energy-storage properties were investigated in-detail. The coexistence of rhombohedral (R3C) and a?|

Here, we show that in the bismuth sodium titanate (BNT)-based composition 0.2(Ba 0.4 Sr 0.6 TiO 3)a??0.8(Bi 0.5 Na 0.5 TiO 3), this model does not accurately describe the structural situation. Such BNT-based systems are of from actuators,1a??4 to energy storage capacitors,5a??7 nonvolatile memory devices,8a??11 and tunable communication



Structure and dielectric properties of double A-site doped bismuth sodium titanate relaxor ferroelectrics for high power energy storage The composition (Ba 0.4 Sr 0.6) 0.5 (Bi 0.5 Na 0.5) 0.5 TiO 3 was found to exhibit the maximum recoverable energy storage density, with a value of 1.618 J cm a??3 and 76.9% storage efficiency at a field of

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Among the several lead-free materials, sodium bismuth titanate Bi 1/2 Na 1/2 TiO 3 (NBT), could be a good candidate for lead-free ceramics in view of its high Curie temperature High energy storage density and optical transparency of microwave sintered homogeneous (Na 0.5 Bi 0.5) (1a??x) Ba x Ti (1a??y) Sn y O 3 ceramics. ACS Sustain. Chem.

With the ever-increasing of electric and electronic industry, energy-storage materials play an important role in advanced electric energy-storage systems [[1], [2], [3]].The dielectric capacitors, as key components of advanced pulsed power systems, have been extensively used in fields of spacecrafts, pulsed power weapons and other electric power a?|

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