

<div class="df_qntext">Do PNRs improve the performance of kNN-based ceramics?

The PNRs can enhance the relaxation behavior, decrease the Pr and improve BDS of the ceramics. Finally, a transition from ferroelectricity to relaxation ferroelectricity occurred and a high energy storage performance of KNN-based ceramic with good temperature and frequency stability is obtained.

<div class="df_qntext">What is the sintering performance of kNN ceramics?

In this work, we optimized the sintering performance of KNN ceramics, minimized leakage current and porosity, achieved a well-balanced combination of high Eb and ϵ_r , resulting in a substantial Wrec of 5.42 J/cm²; and an exceptional η of 91.09 %, surpassing the performance of most perovskite ceramics, as shown in Fig. 7 (d) and Table 1.

<div class="df_qntext">What is KNN based perovskite ceramic?

K_{0.5}Na_{0.5}NbO₃(KNN)-based perovskite ceramics have gained significant attention in capacitor research due to their excellent ferroelectric properties and temperature stability .

<div class="df_qntext">What are the characteristics of kNN-based ceramics?

KNN-based ceramics with high dielectric relaxation, good energy storage density and excellent temperature stability were obtained. Ba and Bi elements are conducive to the spontaneous polarization of ceramics, while Zn promotes favorable sintering behavior.

<div class="df_qntext">Are KNN-based ceramic dielectric capacitors a good choice for high temperature applications?

However, these KNN-based ceramics usually exhibit relatively low energy storage efficiency (η), which may be due to defects caused by poor sintering as well as large leakage currents. In addition, the thermal stability of KNN-based ceramic dielectric capacitors in high temperature applications remains to be studied.

<div class="df_qntext">Can knn-0.075bln-NN ceramic be used in pulsed power systems?

Besides, the KNN-0.075BLN-NN ceramic exists not only fine energy storage properties, but also high hardness and good temperature and frequency stability, confirming it's a feasible material to be applied in pulsed power systems. 1. Introduction

Due to reduced polarity and poor polarization rotation under external fields, optimizing the piezoelectric response remains challenging. Herein, rhombohedral-orthorhombic-tetragonal ...

The potassium sodium niobate (KNN)-based ceramics are among the most promising lead-free piezoelectric materials with a high Curie temperature ($T_c = 420 \pm 176^\circ\text{C}$), significant ferroelectric ...

Short-container-title:Journal of the European Ceramic Society Author: Cheng Yunting, Guan Shangyi, Wang Qian, ...

Substantial progress is made in the past two decades in improving the room-temperature piezoelectric coefficient of lead-free (K, Na)NbO₃ (KNN) based ferroelectric ceramics, allowing them to rival ...

3. Effect of MnO₂ addition on the structure and electrical properties of Pb (Zn_{1/3}Nb_{2/3})_{0.20} (Zr_{0.50}Ti_{0.5})_{0.80}O₃ ceramics; Hou; Journal of the American Ceramic Society, 2004 4. Materials ...

Therefore, Er³⁺-modified KNN-based ceramics usually perform high transparency, strong electro-optic response, and excellent UCPL properties. Strong green upconversion ...

This paper relates the microstructure, crystallographic structure, ferroelectric, and piezoelectric properties of (K_{0.5}Na_{0.5})NbO₃ (KNN) ceramics modified with 0.38 mol% K_{5.4}Cu_{1.3}Ta₁₀O₂₉ (KCT) ...

2.2. Sample characterization Experiment densities of KNN-xSZ ceramics were measured using Archimedes' method, and their theoretical densities were obtained with calculated ...

K_{0.5}Na_{0.5}NbO₃ (KNN)-based energy-storage ceramics have been widely concerned because of their excellent energy-storage performance. In this work, Ta₂O₅ (4 eV) and ZnO (3.37 eV) with wide band ...

Download scientific diagram | a UV-visible absorption spectrum of KNN-xLMN ceramics at room temperature, b the relation diagram of $(ah\nu) \cdot \nu$ vs. $h\nu$ and c the variation of band gap width E_g with ...

KNN-based ceramics with high dielectric relaxation, good energy storage density and excellent temperature stability were obtained. Ba and Bi elements are conducive to the spontaneous ...

Despite significant advancements in KNN-based piezoelectric ceramics, controlling their grain size remains a challenge, impacting reproducibility of piezoelectric properties.

The remarkable energy storage properties of (1-x)KNN-xBZS ceramics position them as highly promising materials for future pulse power capacitors and various energy storage applications.

Supported by first-principles calculations, the feasibility of simultaneously enhancing energy storage and transparent luminescence properties is investigated by doping various ...

By constructing polymorphic multiphase coexistence, excellent piezoelectric properties and fatigue resistance have been obtained in potassium sodium niobate (KNN)-based ceramics, ...

Improvement of the properties of KNN ceramics requires tools allowing one to reveal a relation between the structure and composition, on the one hand, and ferroelectric property, on the other.

Leveraging the higher shear piezoelectric coefficient of the ceramics, an annular shear-structured piezoelectric accelerometer based on KNN ceramics was successfully fabricated for the first time.

4. Perovskite-like structure ceramic materials and their design for electrical applications; Perovskite Ceramics; 2023
5. Ultrasonic transceiver circuit design; 2022 China Automation Congress (CAC); 2022 ...

This work provides a valuable strategy to fabricate KNN-based piezoceramics with superior electrical properties through pretreatment for the dopant. The high converse piezoelectric ...

It was found that the important factors affecting the transparency of ceramics included the compactness, grain size and so on, thus some unconventional sintering methods were used to ...

Based on the research of the last two decades, the bulk systems for energy storage have been summarized to be bismuth sodium titanate (BNT)-based, strontium titanate (STO)-based, barium ...

Considering the advantage of the feasibility of efficient multifunctional coupling, which meets the integration trend of electronic devices and relies on the excellent transmittance of KNN-based ...

To enhance the precision of forecasting solar power from solar farms, a hybrid machine learning model that includes blends of the K-Nearest Neighbor (KNN) machine learning technique ...

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