

Does a low dielectric constant affect the energy storage property?

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In recent years, all-organic polymers, polymer nanocomposites, and multilayer films have proposed to address the inverse relationship between dielectric constant and electric ...

An examination of the films' dielectric properties showed a rise in the dielectric strength of more than 55%, with a minimal dielectric loss. As a result, the ANF/CNF nanocomposite films produced by ...

To bridge the gap between fundamental research in the lab and the requirements of capacitor industry, the manufacturing, performance evaluation index, monitoring conditions of film ...

In this review, the main effects of high temperature on the dielectric properties are analyzed and core modification strategies are ...

This study analyzes how polypropylene's dielectric properties can be enhanced. It reviews the impacts of processing on the dielectric properties of biaxially oriented polypropylene and ...

A one-step preparation of carbon and dielectric composites with a skeleton-skin structure by sol-gel strategy was proposed in this study. General strategies and comprehensive view ...

Polyimide films with low dielectric permittivity (D_k) and low dielectric loss (D_f) at high frequency are in demand imminently as interlayer materials. In this work, a novel kind of intrinsic ...

Six-layer $Ba_{0.6}Sr_{0.4}TiO_3$ (BST) films are prepared by an improved sol-gel method. The effects of various preheating methods on morphology and dielectric properties are studied. XRD results reveal ...

Dielectric film is defined as a thin layer of dielectric material that serves as an insulating layer and is utilized in various applications, including microelectronics, sensors, and optical coatings, due to its ...

Other common examples include magnetic thin films for electronic data storage; transparent conductive oxide and absorber layers in solar cells; thin film resistors and dielectrics; catalytic layers for gas ...

In this article, we reported a new kind of dielectric composite with core-shell structured Ag nanoparticles (NPs)@PDA particles as fillers and PVDF as polymer matrix. The AgNPs@PDA ...

The results showed that the post-annealing treatment could facilitate film crystallization. The influences of

pore diameter and electric field frequency on the dielectric properties ...

The thin film has a small leakage current and a dielectric constant of 16 or more. High dielectric HfO₂ material is suitable to replace traditional SiO₂ as gate dielectric material. Key words: HfO₂, thin film, ...

In winter (solar irradiance of 588.8 W/m²), the film maintained a significant cooling effect, though with reduced efficiency due to lower solar ...

Abstract Film capacitors based on polymer dielectrics face substantial challenges in meeting the requirements of developing harsh environment (≥ 150 °C) applications. Polyimides have ...

The prepared composite films consisted of carbon-covered SiO₂ skeleton with intimate interfaces. The film was found to possess excellent adjustable electrical and optical properties, ...

This article proposes the all-organic sandwich-structured films with ferroelectric polymer poly(vinylidene fluoride-hexafluoropropylene) and linear polymer poly(ethylene ...

On this basis, we propose the use of green solvents instead of toxic solvents for the preparation of perovskite thin films by multi-solvent systems, which provides some feasible ideas for ...

To improve the photoelectric properties of Ag-based transparent conductive films, TCO/Ag/TCO multilayer films were prepared on K9 glass substrates with the magnetron sputtering. ...

The arrangement of anisotropic dielectric fillers in polymer matrix can lead to a significant enhancement of dielectric properties along a specific direction, enabling the rapid ...

Dielectric materials with superb thermal and electrical properties are highly desired for high-voltage electrical equipment and advanced electronics.

CaZrO₃ thin film is a promising candidate for gate applications due to its high dielectric constant. Thin films of perovskite CaZrO₃ were prepared on ...

This study comprehensively analyzes the intricacies of numerous commonly used thin conducting films, covering from the fundamentals to their ...

This review primarily discusses: (1) the influence of polymer film thickness on the dielectric properties, (2) film quality issues in thinner polymer films with different filler contents, (3) ...

Using low dielectric constant films as the inter-level dielectrics to replace traditional silicon dioxide to further reduce the dielectric constants of packaging materials and printed circuit ...

Preparation and dielectric properties of high solar container films

According to the scattering hypothesis based on the comparison PET, PI and other dielectric films are expected to become selectable materials because they have the advantages of high dielectric ...

The observed enhancements in both conductivity and dielectric properties make the PVA/PVP-MWCNTs/AuNPs PNC films promising candidates for dielectric capacitor applications, ...

Abstract Dense and crack-free aluminum oxide films were fabricated by sol-gel spin-coating technology. Aluminum nitrate ($\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$) was used as the precursor material. X-ray diffraction shows ...

Finding an ideal dielectric material with giant relative dielectric constant and super-high electric field endurance is the only way for the fabrication of high energy-storage capacitors.

Table 2 provides a brief summary of the commercial available optical polymer films with relatively high optical transmittance and high-temperature resistance properties. CPI accounts for ...

By using AFM to characterise the root mean square roughness, peak-to-valley roughness and other parameters of Al metallised dielectric film, ...

High energy storage density is currently one of the critical issues facing the development of low-carbon and green energy technology. For energy storage purposes, high dielectric breakdown ...

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