

Energy storage polymers are critical to modern microelectronics, electric vehicles, and wearable devices. Capacitor energy storage devices are ...

Materials exhibiting high energy/power density are currently needed to meet the growing demand of portable electronics, electric vehicles ...

With the continuous consumption of energy, more and more energy storage devices have attracted the attention of researchers. Among them, dielectric capacitors h

The energy storage performance of dielectric ceramic materials is closely related to the crystal structure of the material itself. According to the existence of dipoles, ...

Dielectric capacitors with decent energy storage and fast charge-discharge performances are essential in advanced pulsed power systems. In this study,...

Multilayer ceramic capacitors with ultra-high-power densities are widely used in electronic power systems. However, achieving a balance between high energy density and ...

Dielectric capacitors are critical energy storage devices in modern electronics and electrical power systems 1, 2, 3, 4, 5, 6. Compared with ceramics, polymer ...

We departed from the traditional high-temperature dielectric capacitors design strategy by focusing on metadielectrics (MDs) for superior energy storage properties and ...

As a crucial method of energy storage, dielectric capacitors have garnered significant attention due to their exceptional power density and rapid charging and discharging ...

Dielectric capacitors are useful energy storage components because of their fast charging and discharging speeds. However, their energy storage capability -- their energy ...

Dielectric capacitors storage energy through a physical charge displacement mechanism and have ultrahigh discharge power density, which ...

Developing dielectric capacitors with robust energy storage capabilities across a broad temperature range, especially in high-temperature environments, remains a formidable ...

However, polymer dielectrics typically possess low dielectric constant ( $\epsilon_r$ ) and polarization capacity, resulting

in the low energy density ( $U_e$ ) and limited energy storage ...

Dielectric capacitors, characterized by ultra-high power densities, have been widely used in Internet of Everything terminals and vigorously developed to improve their ...

Dielectric energy storage capacitors with ultrafast charging-discharging rates are indispensable for the development of the electronics industry and electric power systems 1, 2, ...

Polymers are the preferred materials for dielectrics in high-energy-density capacitors. The electrification of transport and growing demand ...

Materials offering high energy density are currently desired to meet the increasing demand for energy storage applications, such as pulsed ...

Dielectric materials with high energy storage performance are desirable for power electronic devices. Here, the authors achieve high energy density and efficiency ...

With the development of advanced electronic devices and electric power systems, polymer-based dielectric film capacitors with high ...

Energy storage dielectric capacitors play a vital role in advanced electronic and electrical power systems 1, 2, 3. However, a long-standing bottleneck is their relatively small ...

Dielectric film capacitors for high-temperature energy storage applications have shown great potential in modern electronic and electrical ...

Polymer-based film capacitors have attracted increasing attention due to the rapid development of new energy vehicles, high-voltage transmission, elec...

This excellent capacitive and energy storage performance of the PMMA/2D Mica heterostructure nanocomposite may inform the fabrication of ...

We propose a microstructural strategy with dendritic nanopolar (DNP) regions self-assembled into an insulator, which simultaneously ...

Graphical abstract This review provides a comprehensive understanding of polymeric dielectric capacitors, from the fundamental theories at the dielectric material level to ...

Abstract Dielectric capacitors are promising candidates for high-performance energy storage systems due to their high power density and increasing energy density. ...

# High energy storage dielectric capacitors

Energy storage materials such as capacitors are made from materials with attractive dielectric properties, mainly the ability to store, charge, ...

Abstract Dielectric capacitors are promising candidates for high-performance energy storage systems due to their high power density and ...

Polymer dielectric capacitors are highly valued for their high-power density, rapid charge-discharge rates, and exceptional cycling characteristics, offering extensive potential for ...

High-entropy ceramic dielectrics show promise for capacitive energy storage but struggle due to vast composition possibilities. Here, the authors propose a generative learning ...

Sun, L. et al. Asymmetric trilayer all-polymer dielectric composites with simultaneous high efficiency and high energy density: a novel design targeting for advanced ...

Due to high power density, fast charge/discharge speed, and high reliability, dielectric capacitors are widely used in pulsed power systems and power electronic systems. However, compared ...

Film capacitors have outstanding advantages for their broad range of capacitance, high voltage operation, and graceful failure reliability. Organic film dielectric is ...

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