High-performance energy storage fiber

Fiber supercapacitors (FSs) based on transition metal oxides (TMOs) have garnered considerable attention as energy storage solutions for wearable electronics owing to their exceptional characteristics, including superior comfortability and low weights. These materials are known to exhibit high energy densities, high specific capacitances, and fast ...

Structural energy storage composites present advantages in simultaneously achieving structural strength and electrochemical properties. Adoption of carbon fiber electrodes and resin structural electrolytes in energy storage composite poses challenges in maintaining good mechanical and electrochemical properties at reasonable cost and effort. Here, we report ...

Wearable energy storage devices are of practical interest, but few have been commercially exploited. Production of electrodes with extended cycle life, as well as high energy and power densities, coupled with flexibility, remains a challenge. Herein, we have demonstrated the development of a high-performance

A novel multifunctional material has been designed to provide excellent mechanical properties while possessing a high electrochemical surface area suitable for electrochemical energy storage: structural carbon fiber fabrics are embedded in a continuous network of carbon aerogel (CAG) to form a coherent but porous monolith. The CAG ...

Solid-state hydrogen storage is a significant branch in the field of hydrogen storage [[28], [29], [30]].Solid-state hydrogen storage materials demonstrate excellent hydrogen storage capacity, high energy conversion efficiency, outstanding safety, and good reversibility, presenting a promising prospect and a bright future for the commercial operation of hydrogen energy [[31], ...

However, how to rationally design and build the FFSSs with high energy density in a tiny body to meet the strict requirement regarding high energy storage and wearable ability is still a challenge. A limiting factor in achieving a high ...

In recent years, numerous discoveries and investigations have been remarked for the development of carbon-based polymer nanocomposites. Carbon-based materials and their composites hold encouraging employment in a broad array of fields, for example, energy storage devices, fuel cells, membranes sensors, actuators, and electromagnetic shielding. Carbon and ...

WhatsApp: 8613816583346