

Features of flexible energy storage devices







Overview

The heart of flexible energy storage technology lies in its materials. Advanced polymers and composites dominate this realm, enabling devices to bend, stretch, and twist without compromising performance. Are flexible energy storage devices effective?

The advent of the smart electronics era necessitates the development of environmentally friendly, electrochemically superior, and lightweight flexible energy storage devices. However, the current performance of the developed flexible energy storage devices still falls short in meeting practical application demands.

Do flexible energy storage devices integrate mechanical and electrochemical performance?

However, the existing types of flexible energy storage devices encounter challenges in effectively integrating mechanical and electrochemical performances.

What is the mechanical reliability of flexible energy storage devices?

As usual, the mechanical reliability of flexible energy storage devices includes electrical performance retention and deformation endurance. As a flexible electrode, it should possess favorable mechanical strength and large specific capacity. And the electrodes need to preserve efficient ionic and electronic conductivity during cycling.

Which energy storage systems are applied to wearable electronic devices?

The energy storage systems applied to wearable electronic devices in this review are categorized into two groups: water-based systems and organic-based systems. Water-based systems include SCs, ZIBs, and metal-air batteries, while organic-based systems consist of LIBs, LSBs, SIBs, and PIBs.

Can energy storage materials shift to sustainable and flexible components?



However, most of these power sources use plastic substrates for their manufacture. Hence, this review is focused on research attempts to shift energy storage materials toward sustainable and flexible components.

What should be considered in the practical application of energy storage systems?

Besides, safety and cost should also be considered in the practical application.

1 - 4 A flexible and lightweight energy storage system is robust under geometry deformation without compromising its performance.



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