

Why do we need flexible energy storage devices?

To achieve complete and independent wearable devices, it is vital to develop flexible energy storage devices. New-generation flexible electronic devices require flexible and reliable power sources with high energy density, long cycle life, excellent rate capability, and compatible electrolytes and separators.

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.

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.

Which materials are used in flexible energy storage devices?

Firstly, a concise overview is provided on the structural characteristics and properties of carbon-based materials and conductive polymer materials utilized in flexible energy storage devices. Secondly, the fabrication process and strategies for optimizing their structures are summarized.

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.

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.



Flexible energy storage device requirements



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