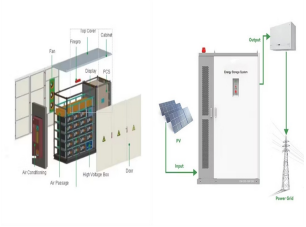
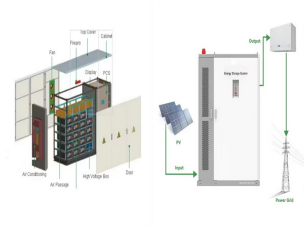
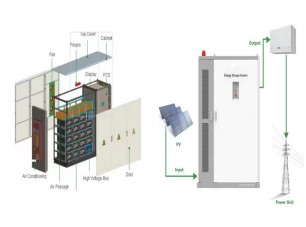
FLEXIBLE WEARABLE ENERGY STORAGE



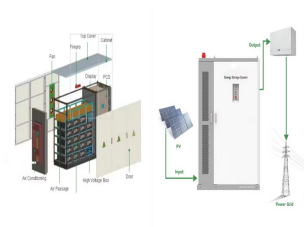
Why do we need flexible energy storage devices? To achieve complete and independent wearable devices,it is vital to develop flexible energy storage devices. New-generation flexible electronic devices require flexible and reliable power sources with high energy density,long cycle life,excellent rate capability,and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



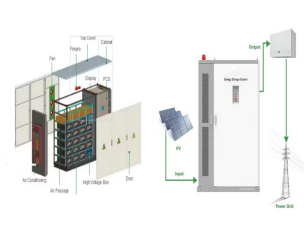
Can flexible energy storage devices be used as self-powered systems? A series of materials and applications for flexible energy storage devices have been studied in recent years. In this review, the commonly adopted fabrication methods of flexible energy storage devices are introduced. Besides, recent advances in integrating these energy devices into flexible self-powered systems are presented.



Can ultraflexible energy harvesters and energy storage devices form flexible power systems? The integration of ultraflexible energy harvesters and energy storage devices to form flexible power systems remains a significant challenge. Here,the authors report a system consisting of organic solar cells and zinc-ion batteries,exhibiting high power output for wearable sensors and gadgets.



Are energy storage devices a viable solution for smart sensing & personalized healthcare? Abstract: With the growing market of wearable devices for smart sensing and personalized healthcare applications, energy storage devices that ensure stable power supply and can be constructed in flexible platforms have attracted tremendous research interests.



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.

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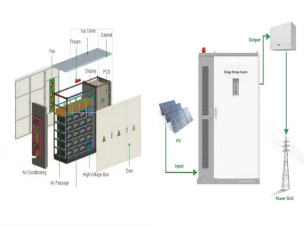
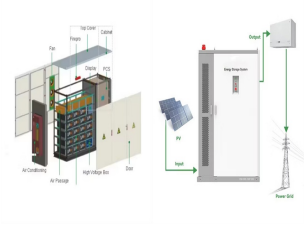


Can flexible energy storage devices be used for biosensing? Besides, recent advances in integrating these energy devices into flexible self-powered systems are presented. Furthermore, the applications of flexible energy storage devices for biosensing are summarized. Finally, the prospects and challenges of the self-powered sensing system for wearable electronics are discussed.



Fiber-shaped supercapacitors (FSCs) are promising energy storage devices that meet the growing demands for the miniaturization, flexibility, and compatibility of wearable electronics. However, when compared with ???

With the rapid advancements in flexible wearable electronics, there is increasing interest in integrated electronic fabric innovations in both academia and industry. However, currently developed plastic board-based ???

Supercapacitors are important energy storage devices capable of delivering energy at a very fast rate. With the increasing interest in portable and wearable electronic equipment, various flexible supercapacitors (FSCs) and flexible ???

With the growing market of wearable devices for smart sensing and personalized healthcare applications, energy storage devices that ensure stable power supply and can be constructed in flexible platforms have ???

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This smart fabric combines energy storage, self-heating, and triboelectric power generation at low temperatures, providing a feasible solution for creating flexible wearable devices for complex environments.


In this review, we will summarize the introduction of biopolymers for portable power sources as components to provide sustainable as well as flexible substrates, a scaffold of current collectors, electrode binders, gel electrolyte ???


For example, the energy density of the state-of-the-art flexible supercapacitors is still too low, which limits their applications in wearable energy storage devices [2, 24]. In ???

In recent years, the growing demand for increasingly advanced wearable electronic gadgets has been commonly observed. Modern society is constantly expecting a noticeable development in terms of smart functions, ???


To fulfill flexible energy-storage devices, much effort has been devoted to the design of structures and materials with mechanical characteristics. This review attempts to critically review the ???


Herein, the state-of-art advances in hydrogel materials for flexible energy storage devices including supercapacitors and rechargeable batteries, solar cells, and artificial skins ???

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The wide applications of wearable sensors and therapeutic devices await reliable power sources for continuous operation. 1-4 Electrochemical rechargeable energy storage devices, including supercapacitors (SCs) and ???

With the increasing demand for wearable electronics (such as smartwatch equipment, wearable health monitoring systems, and human???robot interface units), flexible energy storage systems with eco-friendly, low-cost, ???

Considerable attention has been drawn to flexible and wearable energy-storage devices due to the blooming of portable and wearable electronics in recent years. However, huge challenges are yet to be addressed before the ???

1 Introduction. Supercapacitors, also known as electrochemical capacitors, form a promising class of high-power electrochemical energy storage devices, and their energy density (ED) lies between that of secondary ???

Herein, recent developments and progress in the use of polymer hydrogels to design flexible and wearable energy storage devices are presented and discussed. The 3D structure of polymer hydrogels and porous nanostructures ???

The development of these electronics critically demands flexible and wearable energy storage devices (ESDs) that possess both high energy and power density and superior flexibility and durability to power various wearable ???

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Similar to polymer based current collectors and substrates for a flexible wearable application, fibre based substrates have attracted significant attention for energy storage ???