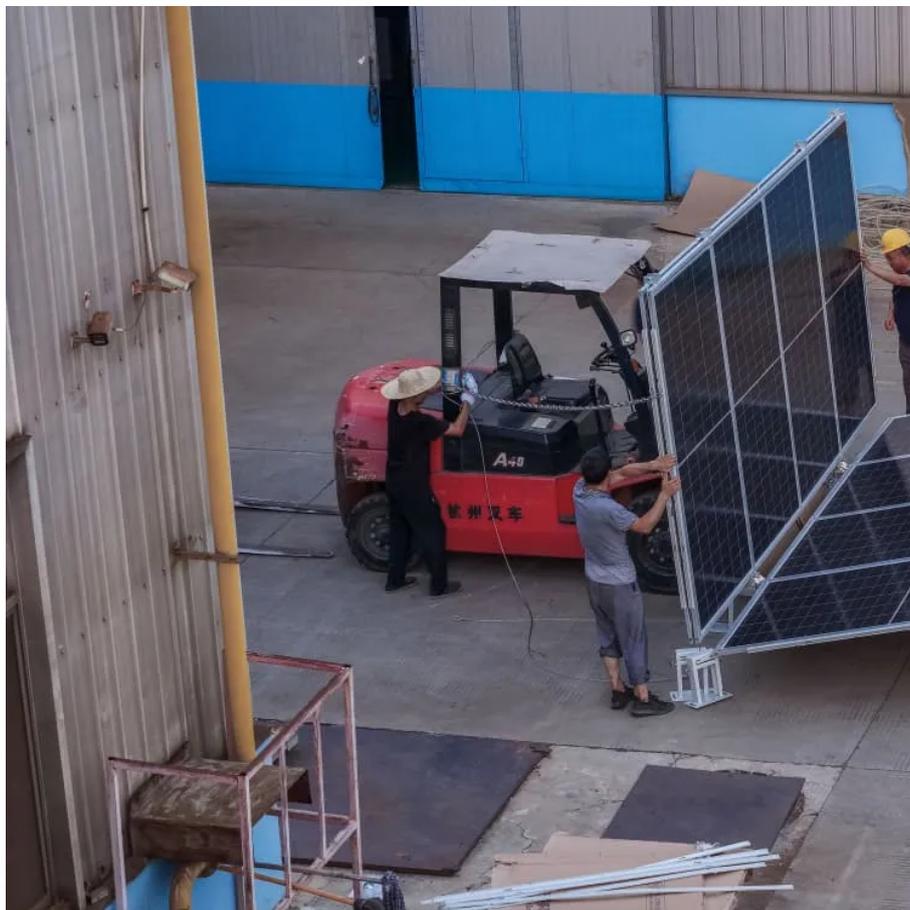


Super stretchable capacitor





Overview

Are stretchable and flexible supercapacitors the future of energy storage?

Given the rise in the popularity of wearable electronics that are able to deform into desirable configurations while maintaining electrochemical functionality, stretchable and flexible (hybrid) supercapacitors (SCs) have become increasingly of interest as innovative energy storage devices.

What is a stretchable supercapacitor?

In conventional intrinsically stretchable supercapacitors, the typical architecture consists of high-modulus functional layers deposited onto elastic substrates. Under small strains, these devices often maintain functionality despite localized stress concentrations and microcrack formation in the functional layers.

Are intrinsically stretchable supercapacitors effective?

Second, reduced conductivity under high tensile strain, compromising overall device performance. These challenges make intrinsically stretchable supercapacitors difficult to realize, and the reported performance of such intrinsically stretchable SCs remains suboptimal.

What is the capacitance retention of flexible supercapacitor?

The real specific capacitance of flexible supercapacitor using SILGMs as electrolytes and separator up to 153 F/g at 0.1 A/g keeps the capacitance retention of 97% after 1000 charge-discharge cycles . Flexible and safe hydrogel electrolytes typically consist of the hydrophilic cross-linked polymer networks and water-soluble electrolytes.



Super stretchable capacitor

Facile assembly of flexible, stretchable and attachable ...

Aug 2, 2024 · Kim et al. prepared a stretchable microsupercapacitor array (3 × 3 array) with planar SWCNT electrodes and an ionic liquid-based triblock copolymer electrolyte and ...

Stretchable supercapacitor at -30 °C

Besides, an impressive capacitance retention of 73.1% at -30 °C is achieved when the current density increases by 20 times, which is much higher ...

Stretchable/Compressible Supercapacitors Based on High ...

Feb 27, 2025 · The resultant supercapacitor exhibits a remarkable specific capacitance retention of 64.5% after 1000 stretch-release cycles under 200% tensile deformation and 68.7% after ...

Stretchable high-capacitance supercapacitors enabled by ...

Nov 1, 2025 · The pursuit of next-generation wearable electronics demands energy storage systems that reconcile extreme deformability with high electrochemical performance, a ...

Configuration-dependent stretchable all-solid-state ...

Given the rise in the popularity of wearable electronics that are able to deform into desirable configurations while maintaining electrochemical functionality, stretchable and flexible (hybrid) ...

Stretchable supercapacitor at -30 °C

Besides, an impressive capacitance retention of 73.1% at -30 °C is achieved when the current density increases by 20 times, which is much higher than those of stretchable supercapacitors ...

Highly stretchable, electrochemical capacitance, and ...

Dec 24, 2024 · It is beneficial to achieve larger areal capacitance and better electrochemical cycling stability. At this point, the synthesis of transparent, flexible, and stretchable ...

Stretchable Supercapacitors

Sep 21, 2025 · Summary This chapter focuses on the recent progress in stretchable supercapacitors (SCs) and their potential application in wearable electronics. Viewed from ...

Highly stretchable, electrochemical ...

Dec 24, 2024 · It is beneficial to achieve larger areal capacitance and better electrochemical cycling stability. At this point, the synthesis of ...

3D-printed flexible supercapacitors with multi-level bonded

The multi-level bridged strategy can be extended to the simultaneous improvement of the mechanical and electrochemical properties of other materials, which paves a good way for ...



3D-printed flexible supercapacitors with multi ...

The multi-level bridged strategy can be extended to the simultaneous improvement of the mechanical and electrochemical properties of other ...

Flexible supercapacitor: Overview and outlooks

Oct 1, 2021 · Flexible supercapacitor base on tough, stretchable and self-healable P (AM-SBMA-AMPS)-SiO₂ zwitterion-containing polyelectrolyte hydrogel exhibits high supercapacitance of ...

A Highly Stretchable, FiberShaped Supercapacitor

May 9, 2020 · In summary, a highly stretchable, fiber-shaped super-capacitor has been developed with high performance by winding aligned CNT sheets on elastic fibers. The high stretchability ...

Configuration-dependent stretchable all-solid ...

Given the rise in the popularity of wearable electronics that are able to deform into desirable configurations while maintaining electrochemical ...

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