

Supercapacitor energy storage self-discharge





Overview

Do supercapacitors self-discharge?

Supercapacitors are promising electrochemical energy storage systems but restricted by severe self-discharge issues. This work discusses the self-discharge mechanisms, including Ohmic leakage, Faradiac reaction, and charge redistribution. Besides, the corresponding suppression strategies for various supercapacitors are analyzed in detail.

Are supercapacitors a good energy storage device?

As one type of promising electrochemical energy storage devices, since supercapacitors were firstly reported in 1957, it gradually attracted increasing attention owing to the high energy efficiency (90%–95%), superior power density (up to 10 kW kg⁻¹) and long cycle life (~10⁵ cycles) , , , , .

Are MXene-based supercapacitors a good energy storage device?

Find more information on the Altmetric Attention Score and how the score is calculated. MXene-based supercapacitors (SCs) are widely regarded as promising energy storage devices. However, the inevitable and ignored self-discharge behavior of MXene-based SCs causes an unavoidable voltage decay and energy loss.

How much voltage can a supercapacitor maintain after self-discharge?

After 60 h self-discharge, the final voltage for supercapacitors with BIES could still maintain 28.9% (0.87 V). Even when the temperature was higher than 75 °C, the output voltage was still higher than 1.5 V after 12 h of self-discharge, showing the remarkably suppressed self-discharge.



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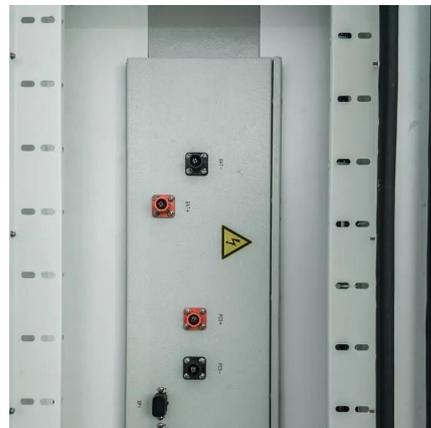


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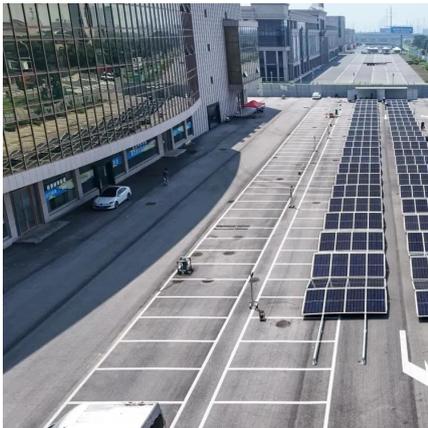
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