

Supercapacitor energy storage lighting



Overview

Can luminescent solar concentrators and electrochromic supercapacitors be combined?

To store the energy generated by them, a separate energy storage module and voltage regulator module are required, but it is clear that this pairing is unwieldy for application. To address this problem, we propose a “face-to-face” tandem integration of luminescent solar concentrators and electrochromic supercapacitors.

What are electrochromic supercapacitors used for?

The charged energy storage module can be used to supply low-power devices. Moreover, electrochromic supercapacitors exhibit adjustable average visible transmission under different energy storage state, making the integrated device interesting for self-powered electrochromic smart windows or display devices.

What is a solid-state electrochromic supercapacitor?

A novel solid-state electrochromic supercapacitor with high energy storage capacity and cycle stability based on poly (5-formylindole)/WO₃ honeycombed porous nanocomposites. Chem. Eng. J. 384, 123370 (2020). Sánchez-Romate, X. F. et al.

What is a luminescent solar concentrator (LSC)?

As one type of translucent photovoltaic glass, luminescent solar concentrators (LSCs) are composed of luminophore-embedded transparent matrix with edge-coupled PV cells 9, 10.

What are the advantages of LSC compared to solar cells?

Compared to solar cells, LSCs have an outstanding advantage, namely immune to the loss of power generation efficiency induced by the shadow effect, because of the nature of converting the luminescence of the

luminophores rather than sunlight into electric energy by the edge PV cells.

What are luminescent solar concentrators?

Luminescent solar concentrators are translucent photovoltaic modules potentially used for building window. To store the energy generated by them, a separate energy storage module and voltage regulator module are required, but it is clear that this pairing is unwieldy for application.

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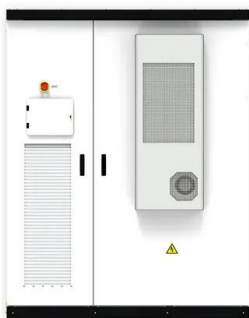


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