

Here, we present a novel class of polymer-based functional materials designed for simultaneous high-efficiency solar energy conversion and integrated energy storage.

In this chapter, the use of sustainable polymer materials for energy harvesting and storage systems was briefly reviewed, with an emphasis on current research developments.

This review comprehensively explores the role of conductive polymer thin films in three critical energy applications: supercapacitors, batteries, and solar cells.

This study not only contributes to the field by offering a viable material for CO₂ adsorption but also highlights the potential for multifunctional applications in energy storage.

Organic photovoltaics (OPVs) represent one of the most promising applications of polymers to enable renewable energy. Polymer-based OPVs have improved dramatically since their ...

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The study presents a recyclable polymer system that stores solar energy and releases it as hydrogen on demand, offering an efficient and sustainable route for renewable energy storage ...

To comprehend the impact of polymers within the renewable energy landscape, we must consider their applications in solar energy, wind energy, and energy storage solutions. Each area ...

Polymer materials, together with their composites, are emerging as an important role in the field of energy applications. They hold the potential to provide versatile solutions for the ...

Polymer-based electrodes are increasingly being recognized for their potential in thin-film solar cells and energy storage devices due to their unique properties and advantages.

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