

The solar-heat storage efficiency of devices based on phase change materials (PCMs) is limited due to the light absorption and internal heat transfer within the PCMs, unclear ...

The predominant concern in contemporary daily life revolves around energy production and optimizing its utilization. Energy storage systems have emerged as the ...

Strong absorption of near-infrared (NIR) light is essential for efficient solar-energy application. NIR absorption mainly depends on surface plasmon resonance and the high ...

Abstract Solar-thermal energy conversion and storage are one promising solution to directly and efficiently harvest energy from solar radiation. We reported ...

Thus, the PCF composites with excellent thermo/light-responsive properties and high energy storage efficiency are beneficial for promising sustainable thermal storage and ...

In summary, we introduced optical waveguide into solar-thermal energy storage system to enhance the charging rate and solar-thermal energy conversion efficiency.

The energy efficiency, economic aspect, environmental and safety issues of various hydrogen storage technologies were compared. Presently, high-pressure gas compression is favorable ...

Each renewable energy source operates under specific efficiency parameters and geographical constraints, underscoring the importance of strategically integrating energy ...

The processes of light harvesting, catalysis and energy storage in natural photosynthesis have inspired photovoltaics, photoelectrocatalysis and photo-rechargeable ...

Furthermore, the light-to-thermal conversion efficiency was found to be promising candidates for light-to-thermal energy storage applications on basis of their 75.6% for HDA/r ...

Executive Summary This guide provides an overview of best practices for energy-efficient data center design which spans the categories of information technology (IT) systems and their ...

When you switch to energy-efficient lighting, you can light your home using the same amount of light for less money. Lighting accounts for around 15% of an ...

In this study, flexible WPU@MXene/PEG PCM composites with good encapsulation ability, excellent

solar-thermal energy storage performance, light-actuated shape ...

Scientists develop a revolutionary thermal emitter with 60% efficiency, paving the way for scalable and sustainable energy storage solutions.

In order to improve energy efficiency and reduce energy waste, efficient energy conversion and storage are current research hotspots. Light-thermal-electricity energy systems ...

The energy storage capacity, E , is calculated using the efficiency calculated above to represent energy losses in the BESS itself. This is an approximation since actual battery efficiency will ...

The paper presented the SPDT relay based operation of the DAB converter to enhance the light load efficiency by extending the ZVS operation for energy storage applications.

Energy storage materials and applications in terms of electricity and heat storage processes to counteract peak demand-supply inconsistency are hot topics, on which many ...

Light-assisted devices have the potential to achieve higher energy densities or more efficient energy storage. This is because they can provide greater energy capacity in smaller and lighter ...

Capturing Light From Heat at 40% Efficiency, NREL Makes Big Strides in Thermophotovoltaics NREL's New Cell Exceeds Previous Efficiency Record by More Than 8 ...

A promising approach to overcome this limitation is the integration of energy conversion and storage devices, thereby enabling semi-permanent usage of portable ...

The ultimate goals for research and development are developing light harvesting, energy storage and fuel production on demand, with high reliability and in a single device.

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Introduction The energy efficiency of LED products is typically characterized using efficacy, which in basic terms is the ratio of power input to light output--or more technically, emitted flux ...

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Light energy storage efficiency

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