

Phase change materials (PCMs) with excellent photothermal conversion performance display great potential for increasing the utilization of solar energy. In this study, we synthesized ...

To address these challenges, a novel approach was proposed by synthesizing a photothermal phase change hydrogel using sodium acetate trihydrate as the phase change material, ...

In this paper, the classification and basic principle of photothermal conversion materials are systematically reviewed, then the preparation methods of photothermal conversion ...

Copper sulfide (CuS) has been considered as an excellent photothermal conversion material in solar energy applications. The integration of CuS into phase change material (PCM) ...

The urgent demand for renewable energy solutions, propelled by the global energy crisis and environmental concerns, has spurred the creation of innovative materials for solar thermal storage. ...

Building on their dual functionality for solar photothermal absorption and storage, slurries/dispersions of micro/nano-encapsulated phase-change materials (ePCMs) are capable of revolutionizing the solar ...

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Phase change materials (PCMs) are promising for thermal energy storage due to their high latent enthalpy and constant phase change temperature. However, organic PCMs suffer from leaking, low ...

Moreover, photothermal PCM microcapsules are particularly desirable for solar energy storage. Herein, we fabricated photothermal PCM microcapsules with melamine-formaldehyde resin ...

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Polymeric photothermal phase change material composite (PPCMC) networks with excellent reprocessability, high latent heat, and intrinsic network stability have the great advantages of solar ...

The application of phase change materials (PCMs) to energy storage composites has become the research and development trend of all-weather interface solar evaporators [31], [32], [33]. ...

Abstract Phase change materials (PCMs) have attracted significant attention in thermal management due to their ability to store and release large amounts of heat during phase transitions. ...

Latent heat storage systems based on organic phase change materials (PCMs) are considered to be an efficient solar energy utilization strategy, but leakage vulnerability and ...

The development of high-efficiency solar photothermal conversion and storage materials is critical to address the intermittency and randomness of solar energy. In this paper, we ...

Moreover, photothermal PCM microcapsules are particularly desirable for solar energy storage. Herein, we fabricated photothermal PCM microcapsules with melamine-formaldehyde resin (MF) as shell ...

Photothermal phase change energy storage materials show immense potential in the fields of solar energy and thermal management, particularly in addressing the intermittency issues of solar power.

Latent heat storage technology based on phase change material (PCM) is an energy storage method with controllable temperature, large heat storage capacity and good stability [8, 9]. ...

Phase change materials (PCMs) have attracted significant attention in thermal management due to their ability to store and release large amounts of heat during phase transitions. However, their widespread ...

Organic phase-change materials can absorb or release a large amount of latent heat during the solid-liquid phase transition, whereas a functional carrier material can enhance the ...

To make use of solar energy, a new phase-change composite material (CNTs-MSA) based on carbon nanotubes (CNTs)-loaded silica aerogel (SA) and microcapsule phase-change materials (MPECMs) ...

Thermal energy storage (TES) is essential for solar thermal energy systems [7]. Photothermal materials can effectively absorb solar energy and convert it into heat energy [8], which ...



Photothermal phase change solar container microgel

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