# Photothermal energy storage new energy

With the rapid development of global industrialization, the world energy shortage and environmental crisis are becoming more and more serious [[1], [2], [3]].Solar energy is the most green and clean energy [4].However, solar energy is affected by day and night, climate, and has the characteristics of intermittency [5, 6], instability [7] and unequal geographical distribution ...

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 has become a research hotspot.Phase change materials (PCM) with high energy density and heat absorption and release efficiency [9], have been widely used in many fields as ...

Herein, a photothermal energy-storage capsule (PESC) by leveraging both the solar-to-thermal conversion and energy-storage capability is proposed for efficient anti-/deicing. Under illumination, the surface temperature can rise to 55 °C, ...

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A new type of PCMs was synthesized by adding Fe3O4 and styrene-ethylene-butylene-styrene to paraffin wax. ... 1.5 sun, 2 sun, 2.5 sun, and 3 sun, where 1 sun equals 1000 W/m 2) on the photothermal energy storage characteristics of S5 was explored. As depicted in Fig. 5 a, with increased light intensity, S5 exhibited a faster heating rate and ...

Phase change materials (PCMs) are able to harvest excess heat from the ambient environment by means of latent heat, which is considered to be an effective strategy for convenient energy storage and sustainable utilisation [4].Among many PCMs, polyethylene glycol (PEG) has become a research hot spot owing to the advantages of high energy density, easy accessibility and ...

It is anticipated that multifunctional textile-based electronics incorporating energy storage, electromagnetic interference (EMI) shielding, and photothermal conversion are expected to alleviate ...

[18, 109] During the photothermal catalysis process, solar energy can be used to destroy the chemical bonds to degrade organic pollutants. At the same time, it also can ...

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 insensitivity to sunlight of PCMs limit their further application in energy storage. In this work, a new hierarchical porous aerogel was constructed with the carbon ...

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Photothermal phase change energy storage materials (PTCPCESMs), as a special type of PCM, can store energy and respond to changes in illumination, enhancing the efficiency of energy systems and demonstrating marked ...

To meet the demands of the global energy transition, photothermal phase change energy storage materials have emerged as an innovative solution. These materials, utilizing various photothermal conversion carriers, can passively store energy and respond to changes in light exposure, thereby enhancing ...

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