

Photothermal catalysis has been proposed as a promising alternative to conventional photocatalysis and thermocatalysis for energy transformation and environmental remediation due to ...

In summary, we have designed a novel, highly efficient photothermal conversion material for solar steam generation using carbonized cotton, one of the low-cost agricultural products.

Maximizing the utilization of solar energy is crucial for achieving high photothermal conversion efficiency. To this end, many studies have opted to design 3D structured evaporators that ...

The pursuit of rapid evaporation with high energy efficiency requires optimizing fast water transportation, elevated solar absorptivity, and reduced thermal conductivity. Therefore, various ...

The key to the solar photothermal-powered interfacial evaporators lies in the design and development of photothermal materials with good wettability, efficient water transport, and high ...

Solar interfacial evaporation, as an efficient sustainable technology for clean water production, is conducive to mitigate the problem of global water shortage. The development of highly ...

Although nanostructured materials with enhanced photothermal energy conversion and/or thermal management have been introduced to boost evaporation efficiencies, it remains a ...

Our method involves a hole-making process that firmly adheres nanoparticles to porous material surfaces, creating a photothermal cavity structure. This design integrates photothermal material with ...

This work provides a novel strategy for developing high-performance photothermal films for solar steam generation, not only facilitating the sustainable recycling of waste cigarette butts, but also achieving ...

Many reported solar evaporators experience a gradual decline in evaporation rate during desalination, especially at high speeds, mainly because salt crystallizes on the evaporator ...

While solar evaporation efficiency fundamentally depends on photothermal conversion dynamics, conventional materials face an irreconcilable compromise between broadband absorption ...

When fully absorbed with water, the photothermal reservoir was sufficient for one day solar-steam generation without additional water supply, leading to a significantly simplified design of the device ...

For effective solar-driven evaporation, materials must exhibit strong hydrophilicity and efficient water

transport. As seawater rapidly evaporates at the interface, salt accumulates on the ...

Photothermal catalysis is a synergetic process where photocatalysis and thermal catalysis work together to promote catalytic reactions, which compensates for the critical ...

Therefore, the solar photothermal conversion efficiency cannot be high enough except if some broadening of the resonance occurs, which is possible but still difficult to cover the whole solar ...

Abstract Solar water desalination through steam generation is a promising technique with several advantages over conventional methods of water purification. In this work, a low-cost, ...

Developing high-efficiency solar photothermal conversion and storage (SPCS) technology is significant in solving the imbalance between the supply and demand of solar energy utilization in time and space.



Photothermal solar container efficiency

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