

In recent years, solar clean water technology based on aerogel has become a current research hotspot result from its advantages, for example high evaporation efficiency and simple ...

Here, a load-bearing-inspired design for fabricating cellulose-nanofiber-based composite aerogel with a beam-column structure that integrates interlocking fibrous porous structure and ...

In this paper, we prepared ZnO@Ag/GO aerogel (ZAGA) with synergistic effects using a simple one-step hydrothermal and vacuum freeze-drying method. The resulting aerogel achieved ...

Abstract Solar-driven evaporation is a promising approach for seawater desalination, but challenges such as salt accumulation and limited evaporation efficiency persist. This study presents a ...

Herein, an efficient solar-driven interfacial evaporator with high solar energy utilization efficiency, fast water transport and robust salt tolerance was developed, via constructing vertically ...

Abstract Silica aerogels are nanoporous materials with exceptional optical and physical properties, making them promising candidates to enhance solar cell efficiency as antireflective ...

After evaluating different types of solar-powered water utilization technologies, the paper ends with the challenges for the commercialization and widespread use of aerogel-based water ...

Traditional solar-powered evaporators often struggle to perform effectively on a larger scale due to structural limitations. The innovative photothermal aerogel created by the team allows for ...

Thus, the scalable production of 3D-printed aerogels with homogenous filler dispersion remains a key challenge. In this work, we present a novel approach to address these challenges by ...

Herein, the mechanisms of adsorption and desorption are first elucidated, and the research progress of polymer-based aerogels, biomass-based aerogels, inorganic-based aerogels, ...

This rapid water transport capability allows the aerogel to absorb a large amount of water during the evaporation process, and then transport the water to its top through capillary action ...

To overcome these limitations, we developed a dual-biomimetic synergistic structured nanofiber aerogel (PPMPAN) for efficient seawater purification and solar-driven power generation.

Aerogels are predominantly mesoporous, extremely lightweight, low density ( $\sim 0.003 \text{ g/cm}^3$ ) and thermally

insulating materials. Over the years, aerogels have gained increasing attention ...

Enhanced hydrophilicity and stability of carbon-based aerogel with assembling of halloysite nanotubes and silica fibers for efficient solar seawater evaporation and desalination

Drawing inspiration from these natural designs, vertical-channel aerogel evaporators have been engineered to improve water transport and reduce salt buildup, thereby enhancing solar ...

Here, pure organic aerogels comprising a cellulose scaffold decorated with an organic conducting polymer absorbing in the infrared are employed to establish a high performance solar ...

Freshwater scarcity is an escalating global challenge, necessitating sustainable and efficient water purification technologies. Solar steam generation (SSG) has emerged as a promising ...

The aerogel-based evaporator was placed in a cylindrical container filled with deionized water (100 mL) to evaluate evaporation performance. Mass loss was recorded using an electronic balance positioned ...

In this work, an Alocasia-Inspired biomass solar evaporator based on Janus aerogel is fabricated via a simple sequential blending - one step molding - freeze drying method, which integrates multiple ...

This Janus aerogel had satisfactory availability for solar desalination and sewage treatment. The strategy to integrate different microscopic layers and chemical compositions in a ...

In this work, we developed a flexible Janus-like reduced graphene oxide aerogel with superelasticity and salt resistance using a straightforward lyotropic plasticization foaming process.

Here, this study offers a technique for creating a solar-powered polymer hygroscopic aerogel for atmospheric water harvesting (AWH) with an MXene solar absorber. This preparation ...



# Aerogel and solar container

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