Porous solar container media

Can a porous rubber sheet be used in a solar still?
Along with the single slope solar still, a porous rubber sheet from recycled materials is used as a low-cost sustainable thermal energy storage medium in the solar still under different water masses are analyzed to study the impact to optimize the water mass in the solar still. Experimental photograph of traditional and modified solar still.

Can porous rubber sheet thermal energy storage be used in a single slope solar?
This study conducts experimental analysis on a single slope solar still employing porous rubber sheet thermal energy storage. Various experiments were performed with water masses ranging from 10 to 25 kg within the basin, comparing these to a similar setup lacking sensible heat energy storage.

What is a solar still?
Solar stills are basically thermal desalination processesthat involves heat energy to get fresh drinking water. However,compared to the other existing desalination systems,the thermal performance and freshwater generation are much lower.

Are microfluidic porous media a transformative platform for multiphase Reactive Flow?
Here,we argue that microfluidic porous media are emerging as transformative platformsfor the direct visualization of multiphase reactive flow in porous media and eventually optimizing these multiple physicochemical and biological processes.

Are solar stills a viable solution for freshwater generation?
Solar stills (SS) stand out as a promising solution for freshwater generation9,10,11. Yet,they confront two main challenges: limited production capacity and dependence on an intermittent power source,namely solar energy.

Do high porous sponges improve interfacial evaporation from hemispherical solar distillers?
Sathyamurthy, R. et al. Influence of high porous sponges for improving the interfacial evaporation from hemispherical solar distillers. Sci. Rep. 13, 17210-17210 (2023). Bilal, A. & Jamil, B. Investigating the effect of pumice stones sensible heat storage on the performance of a solar still.

Based on this, our research group laid porous media at the bottom of the solar pond and utilized the heat storage and adsorption capacity of porous media to improve the thermal storage performance of ...

Jouybari et al. [50] performed an experimental study to probe the influence of porous media and aqueous-based SiO 2 nanoparticle on the hydrothermal thermal efficiency of a flat plate ...

These measured thermal properties were then used in our numerical simulations on the effect of porous media on thermal performance of a solar pond. Our simulation results show that brine ...

As the cutoff wavelength is 1 um, the average temperature of porous material increases from 1510.77 °C to 1634.87 °C at 60 min, and the reactor"s thermal efficiency increases from 11.65% to 13.51%. This ...

Further, some of the natural media involved in building energy technologies are porous. However, currently, there is no review article specifically focused on the porous media pertinent to the ...

A lower porosity reduces axial thermal gradients but decreases radiative heat transfer efficiency. Structural optimization shows that increasing the porous medium radius raises the core ...

Khaled Al-Farhany et al. 28 started research to dig into the heat transmission of a ferrofluid within a slanted heated porous container with two fins connected to the heated wall while ...

Generally, in solar evaporation involving porous media, there are several variables that govern the efficiency via the throughput and conversion of the liquid water, to water vapor.

The double-pass solar collector with porous media in the lower channel provides a higher outlet temperature compared to the conventional single-pass collector. Therefore, the thermal ...

The main objective of this study is to conduct an experimental investigation of heat transfer in a solar collector with a porous material lining and using a working fluid containing ...

Porous medium can be oriental designed to achieve excellent physical properties and heat transfer enhancement performances. When porous medium was used in the solar conversion ...

Here we proposed a polydimethylsiloxane (PDMS) sponge with three-dimensional porous structure embedded with carbon nanoparticles (CNPs) as the solar absorber for solar driven ...

An improved way of optimal design of porous media to the solar vapor generators is desired so that microfiber bundles outcome can be achieved and adverse side effects can be ...

Consequently, the major aim of this study is to examine how a solar air collector reacts thermally and hydraulically to transient heat flow caused by variations in solar radiation over time ...

Shortage of available freshwater has been becoming a critical issue, recently. For this matter, different types of solar still have been used to supply freshwater in rural places; however, their ...

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Porous materials have been introduced as one of the most efficient and affordable techniques to improve the heat transfer and energy efficiency in solar energy systems. In this review, ...

This phenomenon can be attributed to homogeneous heat exchange and the time lag of heat transfer between the porous media and the flowing water, enhancing cooling efficiency, especially in the case ...

Several techniques have been developed to produce fresh water, and one of the promising techniques is using the solar thermal desalination process. This study conducts ...

special mirror assemblies (parabolic troughs, heliostats, or parabolic dishes) that track the sun and concentrate its radiation, converting solar energy to medium- to high-temperature heat and through ...

Abstract Wick-based solar desalination and solar-driven interfacial evaporation have attracted significant attention for their high efficiency in evaporation and salt removal. This study ...

Based on the local thermal equilibrium theory in porous media, a two-dimensional numerical model is developed to investigate the heat storage and heat release processes of a molten ...

Fuel cells and solar energy are promising candidates for electricity generation. It is forecast that fuel cells and solar power systems will play an important role in reducing the greenhouse gas footprint ...

Firstly, a set of parameters such as geometries, optical and thermophysical properties of the porous media as well as the incident solar radiation distribution simultaneously influence the fluid ...

Evaporation in porous media is an important process in food and paper industry among others. Many physical effects must be considered: fluid flow, heat transfer and transport of participating fluids and ...