Membrane-based solar power generation

Are PIL/MXene composite porous membranes suitable for solar-driven clean water production?
In this contribution,we synthesized PIL/MXene composite porous membranes via ionic complexation and successfully applied them in solar-driven clean water production. The as-prepared composite porous membranes maintained structural stability and integrity as compared to a pristine PIL porous membrane.

Could water be a source of energy for membrane-based systems?
Water has always been crucial to combustion and hydroelectric processes,but it could become the source of powerin membrane-based systems that capture energy from natural and waste waters. Two processes are emerging as sustainable methods for capturing energy from sea water: pressure-retarded osmosis and reverse electrodialysis.

What are the advantages of PiL/MXene porous membrane?
Owning to advantages of ionically crosslinked structureof PIL/MXene porous membranes,the porous composite membrane is tuneable with controllable thickness in the range of 15-180 µ m,being an ideal solar absorber required for the design of a solar-driven vapor generator with high evaporation rate and efficient energy conversion. 2.

What is solar-driven interfacial water-electricity cogeneration?
Since Xue et al. first proposed electricity generation induced by a water evaporation process based on a hydrovoltaic effect,solar-driven interfacial water-electricity cogeneration has emerged as a promising solar energy utilization technology for clean water and energy collection[4,5,6].

This work presents a synergistic strategy for salt resistance, water purification and energy generation, advancing the design of solar-thermal-electric integrated systems.

Harvesting solar energy in an effective manner for steam and electricity generation is a promising technique to simultaneously cope with the energy and water crises. However, the ...

Water has always been crucial to combustion and hydroelectric processes, but it could become the source of power in membrane-based systems that capture energy from natural and ...

We developed a novel hydrovoltaic power generator (HPG) using a Janus bilayer membrane with an

asymmetric wettability. The Janus bilayer membrane was fabricated by stacking a ...

The global pursuit of sustainable development is increasingly constrained by freshwater scarcity and the growing energy crisis. Integrating solar-powered hybrid systems that couple ...

This paper presents the performance and behavior of a novel system of integration of an anion exchange membrane (AEM) based water electrolyzer (AEMWE) and fuel cell (AEMFC) with ...

Overall biochar photothermal membrane represents a significant advancement as low-cost sustainable technology, addressing both water and energy challenges by providing efficient, ...

Owning to advantages of ionically crosslinked structure of PIL/MXene porous membranes, the porous composite membrane is tuneable with controllable thickness in the range of ...

Abstract The integration of ionic power generation with solar-driven water evaporation presents a promising solution to the critical global problems of freshwater scarcity and clean energy ...

Web: https://religio.es