2018 advanced solar container materials

Which energy storage materials are used in solar stills?
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What are advanced energy storage materials for direct solar desalination?
Advanced energy storage materials for direct solar desalination are discussed. Recent studies on nanomaterials, nanofluids, nanophase change materials, phase change materials with porous materials, and heat pipes are presented. A general cost analysis and environmental evaluation of different phase change materials have been made.

Do advanced energy storage materials improve solar still water productivity?
The review's outcomes identify that advanced energy storage materials substantiallyinfluence the enhancement of solar still productivity as compared to conventional solar stills. The results indicate that the application of thermosyphon heat pipes with PCM more than doubles the performance of solar still water productivity.

Which energy storage materials are used in solar stills?
The investigated energy storage materials are paraffin wax, salt hydrates, various fatty acids, shape-stabilized phase change materials, as well as steric acid used in different types of solar stills.

Can thermal energy storage materials be used in solar desalination?
The potential of thermal energy storage materials can lead to combination with different thermal energy devices and receive their waste heat energy, which then transfers the thermal energy into the saline water of the solar desalination.

Can nanomaterials improve solar desalination systems?
In this present study, a focus on energy materials including nanomaterials, nanofluids, nanoparticles-based phase change materials (PCMs), composite PCMs, PCMs with porous materials, and PCMs with heat pipes have been investigated with regard to their ability to improve solar desalination systems.

Are hybrid nanomaterials a good alternative to conventional solar stills?
Some future recommendations are. The combination of hybrid nanomaterials and fins with conventional solar still can be the subject of future studies as this is more efficient for water productivity. The same trend is applied to energy storage materials for improved solar still performance.

In general, solar energy can be harnessed and converted into various kinds of energy, including electricity, fuels and thermal energy, through photovoltaic, ...

A solution-processable n-doped molybdenum oxide (EG:Mo) with high electric conductivity is developed as the anode interfacial layer (AIL) for ...

Abstract The paucity of near-infrared (NIR) organic materials with high absorption at long wavelengths, combined with large diffusion lengths and charge mobilities, is ...

A pseudo-3D CH3CH2CH2NH3PbI3 perovskite film is deposited by a scalable dip-coating technique with high surface coverage, and then ...

A novel SnO2-in-polymer matrix is demonstrated to be an excellent electron-selective layer in perovskite solar cells. The polymer is ...

All-polymer solar cells (all-PSCs) that contain both p-type and n-type polymeric materials blended together as light-absorption layers have ...

Table 1 summarizes the literature reported data for a LiNaK carbonate mixture compared to the baseline solar salt. The evaluation criteria for new salt compositions focuses on their ...

The importance of heterointerfaces in photoelectrodes is also mentioned in conjunction with the illustration of some functional interlayer ...

Solar-Energy Capture: Visible-to-NIR Photon Harvesting: Progressive Engineering of Catalysts for Solar-Powered Environmental Purification and Fuel Production (Adv. Mater. 47/2018) Advanced ...

Abstract Fluorine-contained polymers, which have been widely used in highly efficient polymer solar cells (PSCs), are rather costly due to their complicated synthesis and low yields in the ...

Moreover, the strong push-pull effect also decreases the vibrational relaxation, which makes IT-4F more promising than IT-M in reducing the energetic loss of organic solar cells. Above ...

In this work, a SnO 2 /ZnO bilayered electron transporting layer (ETL) aimed to achieve low energy loss and large open-circuit voltage (Voc) for ...

An all-tin-based perovskite solar cell with a record power conversion efficiency of 9% is reported for the first time. The outstanding ...

Plasmonic metal nanoparticles are a category of plasmonic materials that can efficiently convert light into heat under illumination, which can be applied in the field of solar steam generation. Here, this study ...

Some of the PCM candidates were characterized for: chemical stability with some container materials; phase change transformation temperatures; and latent heats.

The importance of heterointerfaces in photoelectrodes is also mentioned in conjunction with the illustration of

some functional interlayer materials. Finally, ...

Herein, an all-solution-processed flexible organic solar cell (OSC) using poly (3,4-ethylenedioxythiophene):poly- (styrenesulfonate) electrodes is ...

Highly efficient polymer solar cells are attained through a finely tuned hole-transporting layer based on tungsten oxide:poly(3,4 ...

Perovskite solar cells (PSCs) have undergone rapid development, but the performance degradation accompanied by device upscaling urgently needs a solution. This review covers the research ...

A novel 1,3,4-oxadiazole-based wide-bandgap copolymer of PBDT-ODZ is developed for efficient nonfullerene organic solar cells. This ...

An efficiency of flexible perovskite solar cells (F-PSCs) is achieved of 18.40% with small area and 13.35% with large area using effective dimethyl ...

In this present study, a focus on energy materials including nanomaterials, nanofluids, nanoparticles-based phase change materials (PCMs), composite PCMs, PCMs with porous ...

Photoelectrodes driving nonspontaneous reversible redox reactions in solar-powered redox cells (SPRCs), which can deliver energy via the corresponding ...

The unprecedented emergence of perovskite-based solar cells (PSCs) has been accompanied by an intensive search of suitable materials for charge-selective contacts.

A high-efficiency perovskite solar cell is designed based on a novel conductive mesoporous Sb-doped SnO2 (antimony-doped tin oxide) ...

Powered by a single commercial III-V triple-junction photovoltaic cell, the integrated system achieves spontaneous and efficient generation of high ...

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