Polypyrrole solar container mechanism

Is polypyrrole a promising solar thermal material?
Polypyrrole (PPy) is emerging as a promising solar thermal material. In this work,we propose an ultrasonic spray coating method to obtain a nanofiber light-trapping coating by copolymerization with dopamine (DA),which can be directly synthesized at room temperature rapidly (30 min).

Are MOF-based composite PCMS a stumbling block in solar energy utilization?
Learn more. Infiltrating phase change materials (PCMs) into nanoporous metal-organic frameworks (MOFs) is accepted as a cutting-edge thermal energy storage concept. However,weak photon capture capabilityof pristine MOF-based composite PCMs is a stumbling block in solar energy utilization.

What is PCM based photothermal conversion and storage system?
The PCM-based photothermal conversion and storage system is composed of photothermal conversion unit(PPy),latent heat storage unit (ODA),and supporting framework (MOF). High content (6%) of PPy is more conducive to the improvement of these thermophysical properties of ODA@MOF/PPy composite PCMs.

Do oda@mof/PPy composite PCMs have good photothermal conversion stability?
The photothermal conversion curves of ODA@MOF/PPy composite PCMs almost overlap before and after 50 photothermal conversion cycles,indicating the excellent photothermal conversion stability.

Why is PPy mainly polymerized on the surface of oda@mof?
While PPy is mainly polymerized on the surface of ODA@MOF rather than inside the nanopores of MOF. Because the specific surface area and pore size distribution of ODA@MOF is close to zero compared with pristine MOF, indicating that the pore of MOF is fully filled by ODA.

Production of fresh water based on a renewable energy source is one of the most important global challenges for mankind due to ever-accelerating climate changes. Solar thermal ...

A hybrid FO-solar evaporation (SE) hybrid process was systematically investigated to produce fresh water from desalination of brackish water. The melamine sponge loaded with ...

The proposed coating strategy and in-depth understanding mechanism are expected to facilitate the development of high-efficiency MOF ...

Conventional electropolymerization of pyrrole produces polypyrrole characterized voltammetrically by a single oxidation wave (ca. 0.01 V vs. Ag/AgCl) followed by a broad plateau. This ...

Wire-, ribbon-, and sphere-like nanostructures of polypyrrole have been synthesized by solution chemistry methods in the presence of various surfactants (anionic, cationic, or nonionic ...

In this study, nanostructured polypyrole@Pd was utilized with solar-thermal, catalytic, and Pickering emulsifier functionalities to successfully demonstrate eco ...

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 ...

Conjugated polymers (CPs) have been recently widely investigated for their properties and their applications in different fields including photocatalysis. Among the family of CPs, polypyrrole (PPy) ...

Under well-controlled conditions, different polypyrrole variants can be galvanostatically prepared in acetonitrile + 1% H2O by changing the current ...

Polypyrrole (PPy) film doped with p-toluenesulfonate has been grown on indium doped tin oxide (ITO) coated glass by electrochemical polymerization. The PPy film, aluminum (Al) sheet ...

A multifunctional paper-based composite of paper coated with a polypyrrole@lignocellulosic slurry (PPy@LS) and carboxymethyl cellulose ...

Insights into properties, synthesis and emerging applications of polypyrrole-based composites, and future prospective: A review

In this context, we propose a novel interfacial solar evaporator based on the micro-nano water film for high-efficiency solar desalination. Porous polypyrrole (PPy)- and ...

In this study, we developed a novel integrated process that combines flotation, hydroxylation, and amination pretreatment for HGMs with in ...

Many different materials have been used as alternative counter electrodes (CEs) for dye-sensitized solar cells (DSSCs) mainly due to the high cost of Pt CEs. So far the majority of reported work has focused ...

In this work, an inclined evaporator based on polypyrrole (PPy)/polydopamine (PDA) photothermal materials was developed for efficient solar steam desalination and salinity-driven ...

A simulation study to improve the performance of a solar humidification-dehumidification desalinatio... Solar Desalination for the 21st Century: A Review of Modern ...

This mechanism of charge transfer is shown in Fig. 1 (a). Among the different conjugated polymer photocatalysts, polypyrrole is a well-explored organic photocatalyst with ...

Polypyrrole (Ppy) hydrogels are a promising new avenue for developing cheap wearable electronics and

biotechnology. In particular, the use ...

Download scientific diagram | Mechanism of conductivity in polypyrrole: formation of polaron and bipolaron from publication: Conducting Polymers: Concepts and ...

High-performance spent coffee grounds-based 3D microporous biochar for the efficient capture of Cd2+ via a multi-pathway mechanism Zhiwei Jin, Zhenluan Xue, Bo Li, Liying Ou, ...

Polyethersulfone-silica aerogel/ polypyrrole solar evaporation membrane for wastewater treatment and desalination Solar interfacial evaporation utilizes a specific structure of the evaporator to confine the ...

In this study, we report the synthesis, structural, and photocatalytic analyses of a polypyrrole-integrated delafossite-structured silver-iron oxide (...

In the present work, uniform Polypyrrole (PPy) films were deposited on fluorine doped tin oxide substrates by chronoamperometry technique with various electropolymerization times. They ...

Polypyrrole nanotubes rank among important functional materials with high application potential. They are prepared by the oxidative polymerization of ...

Solar-driven Interfacial Vapor Generation (SIVG) has been recognized as a potentially effective method of converting seawater into potable freshwater resources. In this work, we employed ...

Polypyrrole (PPy) is emerging as a promising solar thermal material. In this work, we propose an ultrasonic spray coating method to obtain a ...

Eco-friendly and easy-to-prepare three-dimensional network constructed by tannic acid/polypyrrole/sodium alginate via triple action mechanism of Fe3+ for highly-efficient solar ...

Abstract A solar interfacial steam generator is a device that localizes the solar energy at the water-air interface for water evaporation. The solar interfacial steam generator can be applied in various ...

Solar-driven interfacial evaporation (SDIE) has attracted great attention by offering a zero-carbon-emission solution for clean water production. The manipulation of ...

Solar-driven desalination provides a new strategy to address the increasingly severe water shortage issue. Herein, a novel photothermal Janus polypyrrole melamine foam (JPMF) with ...

Besides, the development of efficient, durable and cost-effective materials for photocatalytic applications and solar energy conversion is crucial for environmental applications and ...

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