Power Solutions

Phase change solar container viscose non-woven fabric

Overview

Herein, we report for the first time a versatile strategy for designed assembly of high-enthalpy flexible phase change nonwovens (GB-PCN) by wet-spinning hybrid graphene-boron nitride (GB) fiber and subsequent impregnating paraffins (e.g., eicosane, octadecane). Such phase change nonwoven is highly applicable for mask and cloth intelligent temperature control. Phase change materials have a key role for wearable thermal management, but suffer from poor water vapor permeability, low enthalpy value and weak shape stability caused by liquid phase leakage and. to keep astronauts comfortable and cool. In order to protect an astronaut from the extreme temperatures in space, engineers at Johnson Space Center created liquid-cooled garments that run water in small channels throughout the suit in what is called an active control system. However, in the 1980s. Phase change materials (PCMs) can have a certain temperature range during their phase transition meantime the thermal energy is adsorbed or released. PCMs are characterized to adsorb/release thermal energy during the phase transition process over a certain temperature range. PCMs have been applied.

Phase change solar container viscose non-woven fabric

Composite polyester yarn with photothermal conversion and phase change

Abstract Photothermal conversion and phase-change materials show great potential application in the field of heat storage and management. Herein, a novel form-stable phase change ...

A Thermoregulatory Flexible Phase Change Nonwoven ...

The first assembled flexible phase change nonwoven is reported by wet-spinning. The unprecedented thermal properties of such flexible phase change nonwoven ...

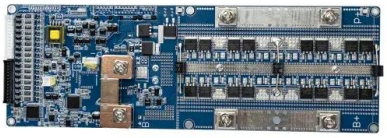
A Thermoregulatory Flexible Phase Change Nonwoven for All

Herein, we report for the first time a versatile strategy for designed assembly of high-enthalpy flexible phase change nonwovens (GB-PCN) by wet-spinning hybrid graphene-boron nitride ...

Overview of Phase Change Materials in Modern Textiles: An Advance ...

This work presents the importance of Phase change material and its application in textile. These smart textile materials are significantly engineered to adapt to the environmental

provocations.



A Solar-Heated Phase Change Composite Fiber with a Core-Shell ...

To address this issue, this study created a new composite fiber that not only possesses solar energy conversion and storage capabilities but also facilitates crude oil removal.

Fabric-coordinated phase-change energy storage solar evaporator for ...

Building upon this foundation, this study develops a solar-driven evaporation system (PPy/fabric-PCP) integrated with a phase-change heat storage mechanism, aiming to achieve highly efficient and ...

A Thermoregulatory Flexible Phase Change Nonwoven for All-Season ...

Abstract Phase change materials have a key role for wearable thermal management, but suffer from poor water vapor permeability, low enthalpy value and weak shape stability caused by ...

Phase change material-integrated Janus fabric with ...

This work successfully developed a dual-mode composite Janus fabric that integrates passive radiative cooling, efficient solar heating, and phase-change thermal buffering for adaptive thermal management.

Fabric-coordinated phase-change energy storage solar evaporator for ...

Fabric-coordinated phase-change energy storage solar evaporator for all-day evaporation Desalination (IF 9.8) Pub Date : 2025-10-31, DOI: 10.1016/j sal.2025.119582 Xuan Wang, Wenyu Jia, Zihao ...

A review on unleashing the potential solution of thermal comfort

Phase Change Materials (PCMs) utilised in producing thermo-regulated textiles (either incorporated on the fabric's surface or encapsulated and integrated within it), can effectively enhance ...

Preparation and characterization of phase-change energy storage

Abstract In this work, a phase-change energy storage nonwoven fabric was made of polyurethane phase-change material (PUPCM) by a non-woven melt-blown machine.

Phase change materials in textiles: synthesis, properties, types and

Abstract Phase change properties of clothing gain attention of the researcher now for their significant unique ability to absorb, release, store, and deposit temperature during phase transition.

An overview on Phase Change Material incorporated in convective solar

However, conventional dryers are often hindered by inconsistent thermal performance caused by fluctuating solar radiation, leading to non-uniform heat distribution and variable drying ...

Smart Nanocomposite Nonwoven Wearable Fabrics Embedding ...

The smart textiles showed tunable temperature and phase change enthalpy that responded to external stimuli such as electrical voltage, infrared light, and sunlight. At the same time, ...

Preparation and characterization of phase-change energy storage

In this work, a phase-change energy storage nonwoven fabric was made of polyurethane phase-change material (PUPCM) by a non-woven melt-blown machine. Polyethylene glycol 2000 ...

3D-Printed Flexible Phase-Change Nonwoven Fabrics toward

Functional phase-change fabrics hold great promise as wearable clothing. However, how to enable a phase-change fabric with the combined features of excellent structural flexibility and ...

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