



## Overview

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Are solid solid phase change materials suitable for thermal energy storage & management?

Any queries (other than missing content) should be directed to the corresponding author for the article. Abstract Solid-solid phase change materials (SSPCMs) are among the most promising candidates for thermal energy storage and management. Excellent shape stability, high heat storage capacity, and sa.

Can phase change materials store thermal energy during reversible phase transitions?

Phase change materials (PCMs) offer tremendous potential to store thermal energy during reversible phase transitions for state-of-the-art applications. The practicality of these materials is adversely restricted by volume expansion, phase segregation, and leakage problems associated with conventional solid-liquid PCMs.

What are solid-solid phase change materials (sspcms)?

Learn more. Solid-solid phase change materials (SSPCMs) are among the most promising candidates for thermal energy storage and management.

How does solid phase transition affect energy storage?

It highlights the significance of solid-solid phase transition in increasing the overall energy storage of the MOST compounds. Upon Z → E reversion, compound 2 immediately crystallizes, releasing the crystallization energy, in addition to  $\Delta H_{iso}$  of the molecule.

Are solid-solid phase change fibers good for thermal management and latent heat storage?

Solid-solid phase change fibers are advantageous for thermal management and latent heat storage, because they don't have the issue of liquid leakage

facing those common ones that have a solid-liquid phase-transition. However, the relatively low heat density hinders such fibers from real applications.

Why are solid-solid phase change materials reversible after crosslinking?

However, they have faced persistent challenges in applications due to liquid leakage and solid rigidity. Novel tough and sustainable solid-solid phase change materials (SSPCMs) have been achieved using the designed carboxyl-epoxy group reactive system, which forms a reversible vitrimeric structure after crosslinking.

## Solid-solid phase change energy storage

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### Emerging Solid-to-Solid Phase-Change Materials ...

Herein, we aim to provide a holistic analysis of solid-solid PCMs suitable for thermal energy harvesting, storage, and utilization.

### Synthesis of solid-solid phase change material for thermal energy

PEG/PGMA crosslinking copolymer as a novel solid-solid phase change material was successfully prepared for thermal energy storage. The PCM still kept solid state even if the ...



### Emerging Solid-to-Solid Phase-Change Materials for Thermal-Energy

An holistic analysis on the recent developments of solid-state phase-change materials (PCMs) for innovative thermal-energy storage (TES) applications. The phase ...



### An intrinsic antistatic polyethylene glycol-based ...

Polyethylene glycol (PEG) is an important and popular phase change material (PCM), but is not

a good antistatic material, which would cause the accumulation of static electricity and electrostatic discharge ...



Application scenarios of energy storage battery products

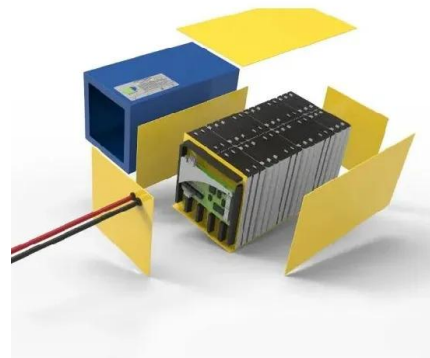
## Flexible solid-solid phase change materials with high stability for

In conclusion, the composite solid-solid phase change material prepared in this paper has good thermodynamic and mechanical properties, and is expected to become a ...

## Highly flexible GO-polyurethane solid-solid phase

...

Abstract Solid-solid phase change materials (SSPCMs) are considered one of the most promising candidates for thermal energy storage due to their efficient heat storage and discharge capabilities. ...



## Solid-solid phase-change materials with excellent mechanical property

Solid-solid phase change materials (SSPCMs) with small volume change and leak-proof characteristic during the whole process of phase change play a vital role in ...

## Thermal and Mechanical Robust Solid-Solid Phase ...

These PCMs exhibit excellent shape stability and remarkable energy storage capabilities with latent heat up to  $128.3 \text{ J g}^{-1}$ . The materials exhibit exceptional thermal stability and retain their energy ...



## Novel solid-solid phase-change cascade systems for high ...

In this work, we investigate novel solid-solid phase-change cascade systems based on mixtures of lithium and sodium sulfates. Solid-solid phase-change materials (PCMs) ...

## Linear polyurethane ionomers as solid-solid phase change ...

Linear polyurethane (PU) ionomers were synthesized as solid-solid phase changing materials (PCMs) for thermal energy storage. Poly (ethylene glycol)s (PEGs) with ...



## Solid-solid phase change fibers with enhanced energy storage

...

S-S phase change fibers with enhanced heat energy storage density have been successfully fabricated from coaxial wet spinning and subsequent polymerization-crosslinking.

## Recyclable Solid-Solid Phase Change Materials ...

Solid-solid phase change materials with superior thermal energy storage capacity and dual recyclability are developed here by reacting anhydride copolymers with polyethylene glycol.



## Ultrahigh-enthalpy solid-solid phase change materials

In the reaction system, anhydride copolymers provide abundant reactive anhydride sites and PEG serves as both the phase change component and the crosslinker. The resulting SSPCMs ...

## Polyurethanes as solid-solid phase change materials for thermal energy

The effects of molecular weight of PEG and type of diisocyanate on the thermal energy storage properties have been discussed. Only two of the produced polymers show ...



## Oriented High Thermal Conductivity Solid-Solid Phase Change ...

As the global energy crisis intensifies, the development of solar energy has become a vital area of focus for many nations. The utilization of phase change materials (PCMs) for photothermal ...

## High-Stretchable Solid-Solid Phase Change Aerogel Surface

...

Therefore, a high molecular weight polyethylene glycol (HPEG)-based solid-solid phase change aerogel (SSPCA) is fabricated, exhibiting high stretchability and outstanding ...



## Emerging Solid-to-Solid Phase-Change Materials for ...

Phase-change materials (PCMs) offer tremendous potential to store thermal energy during reversible phase transitions for state-of-the-art applications.

## Advanced solid-solid phase change thermal storage material

The practicality of conventional solid-liquid phase change materials (PCMs) is adversely restricted by liquid phase leakage, large volume expansion, shape instability, and severe ...



## Polyurethane-based solid-solid phase change materials with in

...

Polyurethane-based solid-solid phase change materials with in situ reduced graphene oxide for light-thermal energy conversion and storage

## Mechanically strong, healable, and recyclable supramolecular solid

Organic phase change materials (PCMs), with inherent capability to charge and discharge latent heat via solid-liquid phase transformation, have obtained significant progress ...



## Preparation of flexible solid-solid phase change materials with

Abstract Significant progress is mainly focused on the high latent heats and stability of traditional solid-solid phase change materials (SSPCMs) capable of thermal energy ...

## Recent developments in solid-solid phase change materials for ...

Phase change materials (PCM) have been widely used in thermal energy storage fields. As a kind of important PCMs, solid-solid PCMs possess unique advantages of low ...



## One-Step and Solvent-Free Synthesis of ...

Abstract Polyethylene glycol (PEG)-based solid-solid phase change materials (SSPCMs) were first synthesized using PEG and hexamethylene diisocyanate trimer (HDIT) via one-step and solvent-free ...

## Tough and sustainable solid-solid phase change ...

Phase change materials (PCMs) exhibit significant potential for overcoming the issues related to thermal energy storage and management. However, they have faced persistent challenges in ...



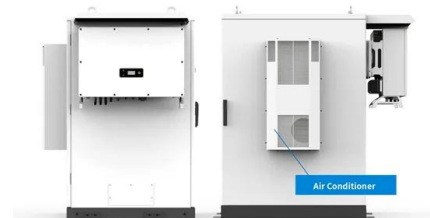
## Review on solid-solid phase change materials for thermal ...

...

Latent heat storage is based on the heat absorption or release when a storage material undergoes a phase change from solid to liquid, liquid to gas, solid to gas, or solid to gas, and ...

## Emerging Solid-to-Solid Phase-Change Materials ...

Abstract and Figures Phase change materials (PCMs) offer tremendous potential to store thermal energy during reversible phase transitions for state-of-the-art applications.



## High-performance and stress-controllable solid-solid phase change

Abstract Phase change materials (PCMs) show substantial promise in regulating the supply and demand of renewable energy and in recovering and utilizing waste heat. ...

## Emerging Solid-to-Solid Phase-Change Materials ...

An holistic analysis on the recent developments of solid-state phase-change materials (PCMs) for innovative thermal-energy storage (TES) applications. The phase-transition fundamentals of solid-to-so



## Recyclable, Self-Healing, and Flame-Retardant ...

Conventional polymeric phase change materials (PCMs) exhibit good shape stability, large energy storage density, and satisfactory chemical stability, but they cannot be recycled and self-healed due to their ...

## Experimental study on solid-solid phase change energy storage ...

Compared to solid-liquid phase change energy storage, solid-solid phase change energy storage offers better volumetric stability, thermal stability, and chemical ...



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???: ????, ????, ????, ???, ??? Abstract: Solid-solid phase change materials (SSPCMs) are a new class of materials capable of efficiently absorbing and releasing thermal energy through a reversible ...

## Constructing intrinsic solid phase change materials with

However, the structural design of most flexible phase change materials only focuses on a single functional requirements and fails to meet the demands for phase change thermal energy ...



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