

Thermal phase change energy storage microcapsules

The self-assembly method improved the microencapsulation process and helped to prepare phase change microcapsules with good thermal conductivity, energy storage ...

Aiming at thermal energy storage, four composite phase change microcapsules (CPCM) were successfully prepared and subjected to material characterization, thermal ...

A sort of multifunctional microcapsules with a PCM core and PbWO_4 shell was developed. These microcapsules exhibited good performance in thermal ...

This study focuses on developing bio-based thermal energy storage microcapsules (MCs) by spray drying. New MCs were successfully prepared using ethyl ...

The prepared carbon black phase change microcapsules (CB-MPCMs) exhibited excellent thermal storage performance, with a phase change enthalpy value of ...

The review highlights key challenges for future advancement which will unlock the full potential of microfluidics-engineered phase-change ...

In practical application, the thermal properties of microcapsules, such as phase change temperature, latent heat of phase change, thermal conductivity and other parameters, mattered ...

Phase-change materials can store and release tremendous amounts of latent heat energy in a single storage unit, and they have become a promising candidate for building ...

ABSTRACT Prefabricated buildings in rural areas of China waste a large amount of energy due to poor thermal insulation. Phase change materials (PCMs) are able to stabilize ...

Novel phase change microcapsules (micro-PCMs) composed of a paraffin core and a Ce^{3+} -doped calcium carbonate ($\text{CaCO}_3:\text{Ce}^{3+}$) shell was designed by ...

Graphical Abstract Energy-storage capsules were synthesized by encapsulation of a phase-change material, n-docosane, in an elastic polyurethane shell. The thermal and ...

Thermal energy storage can solve the problem of intermittent supply of renewable energy and the mismatch between supply and demand [[1], [2], [3]]. At present, the research ...

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Abstract We reported a design of novel thermochromic phase-change microcapsules (TCMs) with a sandwich-structured shell for reversible and durable indication of ...

The above results showed that the prepared phase change microcapsules with SiO₂-modified graphene composite wall has high thermal conductivity and energy storage ...

Phase change materials (PCMs) are gaining increasing attention and becoming popular in the thermal energy storage field. Microcapsules enhance thermal and mechanical performance of ...

Thermal energy storage by solid-liquid phase change is one of the main energy storage methods, and metal-based phase change material (PCM) have attracted more and ...

Phase-change microcapsules with photothermal conversion capabilities have been the focus of research in the energy storage field. In this ...

Furthermore, up-to-date studies of multifunctional PCMs microcapsules development with enhanced performances and new application directions are also presented. ...

The findings suggested that the prepared MEPCMs are promising for applications in the fields of thermal energy storage and temperature regulation due to their ...

In order to improve the utilization rate of solar energy, a new type of photo-thermal phase-change microcapsules PCM@SA@PDA was successfully prepared with n ...

A sort of multifunctional microcapsules with a PCM core and PbWO₄ shell was developed. These microcapsules exhibited good performance in thermal energy storage and gamma radiation ...

The potential of phase change materials (PCM) as a thermal energy storage medium in buildings has been widely discussed. However, the possible leakage of melted PCM ...

The particle size of nanoscale microcapsules is advantageous for improving heat transfer efficiency, maintaining uniform distribution, ...

To investigate the thermal reliability of phase change microcapsules, such as phase change reversibility and energy storage/release repeatability, a DSC analysis was ...

With excellent solar photothermal conversion, latent heat storage, and photoluminescence performance, the phase-change microcapsules developed by this study ...

Fabrication and properties analysis of paraffin@TiO₂/Ag phase change microcapsules for thermal energy

Thermal phase change energy storage microcapsules

storage and photocatalysis Jieying Su a, Haitao Zhang a, ...

A novel phase-change composites based on silicone rubber (MVQ) containing n-octadecane/poly (styrene-methyl methacrylate) microcapsules were successfully obtained by ...

This review comprehensively summarizes recent advances in microfluidic strategies for phase-change microcapsules fabricating, including ...

Compared with the listed phase change energy storage materials, alkanes have the advantages of non-toxic, non-corrosive, good chemical stability, high latent heat, and ...

Phase change materials (PCMs) have been extensively utilized in latent thermal energy storage (TES) and thermal management systems to ...

Phase change materials (PCMs) are widely used for latent heat energy storage because of their high energy storage density, high latent heat and good thermal stability. However, problems ...

In conclusion, this modified phase change microcapsules show promising potential for applications in solar energy storage, battery thermal management, and building ...

Phase change materials (PCMs) are gaining increasing attention and becoming popular in the thermal energy storage field. Microcapsules ...

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