N-tetradecane energy storage

Does N -tetradecane emulsifier influence the performance of a microencapsulated phase change material?
A novel silica (SiO 2)/ n -tetradecane microencapsulated phase change material (MEPCM) was synthesized by in situ interfacial polycondensation. The influences of the amount of the composite emulsifier and the mass ratio of n -tetradecane and tetraethyl silicate on the MEPCM performance were systematically investigated.

Can N-tetradecane core material be encapsulated by silica shell material?
The results showed that the n -tetradecane core material was successfully encapsulated by silica shell material with encapsulation ratio of 62.04%. The MEPCM had a melting enthalpy of 140.5 kJkg -1 and thermal conductivity of 0.139 Wm -1 K -1.

Why is N -tetradecane encapsulated fast?
The excessively high reaction ratecaused the n -tetradecane droplets to be quickly encapsulated,where the encapsulation rate still reaches 80.9%. However,when the acidity of the experimental system is relatively high (PH = 4.0),the reaction speed is slow.

What is the phase change enthalpy of N -tetradecane microcapsules?
In this work,the optimal preparation conditions of n -tetradecane microcapsules are studied,and the encapsulation rate is increased to 85.6%. The phase change enthalpy of n -tetradecane microcapsules is about 178.1 J·g -1. Fig. 9. Overall picture and wall thickness of microcapsules. Fig. 10.

Can N -tetradecane microcapsule lhff be used as a secondary refrigerant?
If n -tetradecane microcapsule LHFF is used as a secondary refrigerant in a centralized cooling station for air conditioning system with a supply and return water temperature of 2/12 °C,the evaporation temperature of the refrigeration unit only needs to reach about -3 °C.

Is silica/n-tetradecane mepcm good for cold energy storage?
The MEPCM had a melting enthalpy of 140.5 kJkg -1 and thermal conductivity of 0.139 Wm -1 K -1. Because of its excellent thermal performance and thermal stability,silica/n -tetradecane MEPCM displays a good potential for cold energy storage. To access this article,please review the available access options below.

Design and synthesis of microencapsulated phase-change materials with a poly (divinylbenzene)/dioxide titanium hybrid shell for energy storage and formaldehyde ...

Abstract The dynamic discharging characteristics of cool thermal energy storage system with coil pipes are studied by a discharging process model according to the energy ...

N-Tetradecane is a saturated aliphatic hydrocarbon with the chemical formula C 14 H 30 that is one of the paraffins can be used as PCM. It is a preferable energy storage ...

Numerical simulation of N-tetradecane PCM for enhanced cold chain logistics in refrigerated trucks: Integrating experimental data for improved energy efficiency and power ...

Microencapsulation of n-tetradecane with poly (methyl methacrylate-co-methacrylic acid) shell by seeded emulsion polymerisation and its thermal energy storage characteristics

Preparation and characterization of nano-encapsulated n-tetradecane as phase change material for thermal energy storage Nanocapsules used as phase change material (PCM) were ...

This paper presents the mathematical model of the cool thermal energy storage system using packed bed containing spherical capsules filled with n-tetradecane to predict the ...

This paper focuses on improving such parameters to improve the enthalpy values of the n-tetradecane PCMs microcapsule, which will be used in the cold storage sector to assess ...

[8] FU Wanwan, LIANG Xianghui, XIE Hongzhou, et al. Thermophysical properties of n-tetradecane@polystyrene-silica composite nanoencapsulated phase change material slurry for ...

Peer Reviewed Papers Preparation and characterization of nano-encapsulated n-tetradecane as phase change material for thermal energy storage Fang G, et al. Chemical Engineering ...

Request PDF | Self-assembly Synthesis and Properties of Microencapsulated n-Tetradecane Phase Change Materials with a Calcium Carbonate Shell for Cold Energy Storage ...

Because of its excellent thermal performance and thermal stability, silica/n-tetradecane MEPCM displays a good potential for cold energy storage. :

A novel silica (SiO2)/n-tetradecane (Tet) microencapsulated phase change material (MEPCM) was synthesized by in-situ interfacial polycondensation. The influences of the amount of the ...

Preparation and characterization of nano-encapsulated n-tetradecane as phase change material for thermal energy storage Fang G, et al. Chemical Engineering Journal, 153 ...

Because of its excellent thermal performance and thermal stability, silica/n-tetradecane MEPCM displays a good potential for cold energy storage.

Our official English website,, welcomes your feedback! (Note: you will need to create a separate account there.) Preparation and characterization of nano-encapsulated n ...

A cold storage unit can store the cold energy off-peak and release it for building cooling on-peak, which can

reduce the electricity load of air conditioning systems. N ...

N-tetradecane has been chosen for its operational range of 0-17 °C and high latent heat capacity (approximately 216 kJ/kg), ensuring efficient heat storage and controlled ...

This study aims to enhance the latent heat storage properties of the microcapsules by altering the amount of crosslinking agent from 3 to 20% w/w, the core-to ...

Abstract: Composed of polystyrene (PS) modified by high thermal conductivity silica (SiO 2) as shell, and n -tetradecane (Tet) as core, a novel PS-SiO 2 @ Tet composite nano-encapsulated ...

The distribution of the terminal distance and the radial distribution function of the n -tetradecane molecular chain before and after the phase transition are also analyzed.

Development of Composite Phase Change Materials based on n-Tetradecane and ?-Myrcene Based Foams for Cold Thermal Energy Storage Applications

: In this paper, a novel polystyrene/n-tetradecane composite nanoencapsulated phase change material as latent functionally thermal fluid (LFTF) for cold thermal energy storage was ...

Preparation and characterization of nano-encapsulated n-tetradecane as phase change material for thermal energy storage Chemical Engineering Journal (IF 13.3) Pub Date : 2009-06-18, ...

Stearic acid/expanded graphite composites with different mass ratios were prepared by absorbing liquid stearic acid into the expanded graphite. In the composite ...

Development of composite phase change materials based on n-tetradecane and ?-myrcene based foams for cold thermal energy storage applications

Nanoencapsulated n-tetradecane phase change materials with melamine-urea-formaldehyde-TiO2 hybrid shell for cold energy storage Jinghang Wang, ...

Experimental and numerical study of combining encapsulated phase change material to sensible heat storage material in one-tank pilot scale thermal energy storage

This paper prepares a tetradecane/expanded graphite (EG) composite phase change material (CPCM), whose thermal conductivity can be increased up to 21.0 W/m·K, ...

N -Tetradecane (C 14 H 30), which melts at 5.77 °C with a latent heat storage capacity of 217.55 kJ/kg (experimental data of sample no. 0 in Table 1), is a favorable organic ...

N-tetradecane energy storage

Abstract In this paper, a novel polystyrene/n-tetradecane composite nanoencapsulated phase change material as latent functionally thermal fluid (LFTF) for cold thermal energy storage was ...

Synthesis and thermal properties of n-tetradecane phase change microcapsules for cold storage Journal of Energy Storage (IF 8.9) Pub Date : 2022-05-31, DOI: 10.1016/j.est.2022.104959 ...

Abstract Sodium dodecyl sulfate (SDS) and alkylphenol polyoxyethylene ether (OP-10) mixed templates, microencapsulated phase change materials ...