Attapulgite energy storage material

Can spongy attapulgite be used as a composite phase change material?
Liang WD, Chen PS, Sun HX, Zhu ZQ, Li A. Innovative spongy attapulgite loaded with n-carboxylic acids as composite phase change materials for thermal energy storage. RSC Adv. 2014;4:38535-41.

Can attapulgite be recycled?
Future research on attapulgite should not only focus on harnessing the unique properties of attapulgite and the synergistic effect of surface modification,but also focus on fully utilizing attapulgite composite materials both surface and inside,and at the same time they are easy to recycle.

What is attapulgite adsorption and catalytic efficiency?
The morphology and structure properties of attapulgite-based composite materials play a crucial role in their adsorption and catalytic efficiency, making them directly relevant to their performance. Characterization techniques such as BET, SEM, TEM, FT-IR, XRD, and XPS are commonly used to analyze attapulgite and attapulgite-based catalysts.

How to improve the adsorption capacity of attapulgite?
Various pretreatment methods have been tried to improve the adsorption capacity of attapulgite, such as thermal activation , acid activation and optimizing the process parameters . However, the comparative research about the pretreated attapulgite to absorb the fatty acids remains a gap to be filled.

Can attapulgite remove refractory organics from water?
A systematic review of the latest achievements in attapulgite-based material development and mechanism exploration is crucial for guiding future research efforts and promoting the large-scale application of these materials for the removal of refractory organics from water.

What are the main elements of attapulgite?
The main elements of attapulgite are O,Si,C,Al. After loading with active substances,some metal elements such as Fe,Cu,Ti,etc. (based on the loading substances) may be present. The valence states of these elements can be analyzed based on the binding energy (Fig. 5d).

DOI: 10.1016/J.APENERGY.2011.02.030 Corpus ID: 111073043; Study on preparation, structure and thermal energy storage property of capric-palmitic acid/attapulgite composite phase change materials

Phase change materials (PCMs) are advanced energy storage materials through the absorption and release of latent heat, ... (PCTSMs) with different particle sizes named ATP@P were prepared by using natural minerals attapulgite (ATP) as supporting materials and paraffin (P) as phase change materials (PCMs) through vacuum impregnation method under ...

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Highlights o KH792 functionalized attapulgite (N-ATP) was synthesized. o A new form-stable phase change material (PEG/N-ATP) was developed. o The thermal storage ...

Compared with sensible heat storage and thermo-chemical energy storage [8], latent heat thermal energy storage (LHTES) using phase change material (PCM) as medium is the most ...

The utilization of phase change material (PCM) of lauric acid (LA) in thermal energy storage system is limited by liquid phase leakage and relatively low thermal ...

The utilization of phase change material (PCM) of lauric acid (LA) in thermal energy storage system is limited by liquid phase leakage and relatively low thermal conductivity.

Study on preparation, structure and thermal energy storage property of capric-palmitic acid/attapulgite composite phase change materials Appl. Energy, 88 (9) (2011), pp. 3125 - 3132 View PDF View article View in Scopus Google Scholar

Thermal Energy Storage using phase change materials (PCM) has become an interesting area of energy research because of its high energy storage density, isothermal nature of storage process and ...

The utilization of phase change material (PCM) of lauric acid (LA) in thermal energy storage system is limited by liquid phase leakage and relatively low thermal conductivity.Therefore, a novel composite PCM of LA@Cu/Attapulgite was prepared in order to overcome the aforementioned issues. Herein, the nano-Cu were firstly to disperse into LA with ...

Similarly, attapulgite has not been used much in geopolymer-based composites. ... As the core material of thermal energy storage technology, phase change materials (PCM) suffer serious leakage ...

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This paper briefly introduced the composition, structure, properties and resource distribution of attapulgite, then focused on the progresses in the research and ...

Attapulgite with a nanoporous structure is an excellent supporting material to solve leakage of polyethylene glycol (PEG). However, when raw attapulgite is used as a supporting material, the latent heat storage capacity of PEG/ raw attapulgite form stable composite phase change material (FSCPCM) cannot be fully utilized this work, N-(2 ...

The invention relates to preparation of a phase-change material, in particular to a preparation method of a modified attapulgite phase-change energy storage material. Mixing toluene, toluene diisocyanate and an acetone solution of polyethylene glycol monomethyl ether in the presence of nitrogen, stirring at 40-50 ? for 1-2h, adding modified attapulgite, adding a catalyst, heating to ...

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Research on mineral-based CPCMs demonstrates that these materials have excellent thermal energy-storage and release properties and have strong potential for improving thermal management efficiency and energy savings [19], [20], [21].Current research focuses on optimizing material formulations, improving interfacial compatibility between PCMs and mineral ...

Thermal energy storage technology is a promising option for implementing thermal management in advanced chemical processes, and phase change materials (PCMs) are recognized as the ideal thermal ...

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