Phosphogypsum as energy storage material

Maximum latent heat is 75 J/g (60% paraffin content), while the optimal average specific heat capacity is 1.54 J/gK for the same paraffin content. The thermal conductivity is ...

Phosphogypsum (PG), a byproduct during the phosphoric acid production process, also known as the wet process, contains complex and diverse impurities, resulting in low utilization and considerable accumulation. ...

In this work, we propose a novel use-case for PG. The latter is combined with a commercial-grade paraffin to fabricate composite phase change materials (CPCMs), for ...

Novel integration of recycled-hemihydrate phosphogypsum and ethyl palmitate in composite phase change material for building thermal regulation. Kocyigit S., GÜLER O., HEKIMOGLU ...

Nano-CaSO4, a good cubic structure with dimensions of no more than 100 nm, was first prepared from phosphogypsum (PG). The effects of different reaction conditions on PG morphology, achieved by optimizing the ...

Phosphogypsum is usually a yellowish-white, light greyish-white or dark grey fine powdery solid. The main component of PG is CaSO 4 ·2H 2 O, which accounts for more than ...

Valorization of phosphogypsum as a thermal energy storage material for low temperature applications ...

Agathokleous, Waste Heat Recovery in the EU industry and proposed new technologies, Energy Proc., No 161, ?. 489 https://doi /10.1016/j.egypro.2019.02.064

Keywords: Microencapsulation; Phase change material; Thermal energy storage; Poly (methyl methacrylate-co-methacrylic acid) * Corresponding author. Tel.: +86 182-6541 ...

Produced in significant quantities, the material is considered a waste in the US due to radioactivity, where the primary means of management is storage in "stacks." But around the world, phosphogypsum is increasingly ...

Phosphogypsum (PG) is a byproduct of the wet manufacturing process for phosphoric acid and is considered an industrial waste material. Around 5 tonnes of PG are ...

In this article, a novel PG-MPCM composite with good thermal storage capacity was developed with the PCM double-layer encapsulated by graphite and SiO 2 rstly, a series ...

Phosphogypsum as energy storage material

Valorization of phosphogypsum as a thermal energy storage material for low temperature applications ... The maximum energy storage density is 237 MJ/m 3; only 14% lower than the ...

Phosphogypsum is usually a yellowish-white, light greyish-white or dark grey fine powdery solid. The main component of PG is CaSO 4 ·2H 2 O, which accounts for more than 90% of its total composition. In addition, PG ...

Asphalt pavements are the most common type of road pavements worldwide, and offers superior driving comfort, convenient construction, and adaptability in comparison with concrete ...

Lithium iron phosphate (LiFePO4) is widely acknowledged for its superior thermal stability and cycle endurance, positioning it as a promising cathode material for lithium-ion ...

Valorization of phosphogypsum as a thermal energy storage material for low temperature Journal of Cleaner Production (IF 11.1) Pub Date : 2022-02-15, DOI: ...

Depending on the nature of the original ore, the type of dihydrate process, the storage method, the age and depth of the stock from which it is collected, phosphogypsum ...

Thermal energy storage systems, particularly those employing phase change materials (PCMs), are increasingly recognized as pivotal elements in addressing the ...

Phosphogypsum (PG) from fertilizer industry represents an environmental problem, and it is usually discharged near the fertilizer plants. ... The presence of silica can be attributed ...

Geomechanics for Energy and the Environment. Volume 25, March 2021, 100195. ... These changes were attributable to the formation of ettringite related to the chemical ...

The invention relates to the use of phosphogypsum for storing thermochemical energy, wherein the actual absorption of thermal energy is achieved by dehydration of the phosphogypsum...

Phosphogypsum circular economy considerations: A critical review from more than 65 storage sites worldwide ... was identified as the main challenge to using PG as a raw ...

The PG is combined with a commercial-grade paraffin to fabricate composite phase change materials (CPCMs). No variation in latent heat and melting point are observed after 96 cycles ...

Novel integration of recycled-hemihydrate phosphogypsum and ethyl palmitate in composite phase change material ... 1. Introduction Thermal energy storage systems, particularly those ...

Phosphogypsum as energy storage material

The phosphogypsum-based composite phase-change energy storage material utilizes a heat-conducting porous phosphogypsum material as a support and expanded graphite as a heat ...

Maximum latent heat is 75 J/g (60% paraffin content), while the optimal average specific heat capacity is 1.54 J/gK for the same paraffin content. The thermal conductivity is found to be up ...

Phoshpogypsum (PG) is an environmentally hazardous industrial by-product of the fertilizer industry with an annual production of 300 Mt, with a utilization rate of only 15%. In this work, we propose a novel use-case for PG. The latter is ...

To this end, in this work, we propose a novel valorization pathway for PG as an energy storage material and in this context, present a study on its use as a matrix material for ...

PCMs are materials that have a larger energy storage density, unlike traditional mortar, mortar with PCM can regulate indoor temperature through phase change in response ...

The natural radioactivity level in the waste-phosphogypsum could be a restriction for its use as building material, but this drawback could be avoided controlling its percentage in the cement ...

Study on the mechanism and reaction characteristics of metal-supported phosphogypsum as oxygen carrier in a chemical looping gasification application. Author links ...

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