Tailings Energy Storage Materials

What is thermal energy storage using phase change materials (PCMs)?
Thermal energy storage using phase change materials (PCMs) is a great example of engineering,which stores energy by changing the internal energy of a material[1,2]. Phase change energy storage technology has been used in many engineering fields and has benefited many different areas.

Which phase change materials can be used for thermal energy storage?
Preparation and performance improvement of chlorides/MgO ceramics shape-stabilized phase change materials with expanded graphite for thermal energy storage system Appl. Energy, 316 (2022), Article 119116, 10.1016/j.apenergy.2022.119116 Steel slag-KNO 3 phase change composites for thermal storage at medium-high temperature and solid waste recycling

Are mine tailings a good source of mineral storage?
Mine tailings are among cheap and abundant alkaline solid wastes with the potential for economic CO 2 mineral storagethrough carbonation reactions between CO 2 and magnesium/calcium oxides and magnesium/calcium silicates [15,,,,,].

What are gold tailings?
Gold tailings are similar to red mud,saw mud,scrap tailings,etc.,and their main components are SiO 2 and Al 2 O 3,and have a porous structure,which can be used as a carrier of phase change materials to prevent molten salt leakage.

Are vanadium tailings a sensible heat storage material?
In this paper,the phase composition,physical and thermal properties of heat storage materials with different graphite and clay content were investigated. The results revealed that material prepared from vanadium tailings as raw material is a potential sensible heat storage material. 2.

What properties should a mine tailing have?
To work as SCMs,mine tailings should have at least one of the following three properties: (a) pozzolanic properties,(b) hydraulic properties,and (c) activating properties.

Double-layered and shape-stabilized phase change materials with enhanced thermal conduction and reversible thermochromism for solar thermoelectric power generation

In this study, a novel composite phase change material (CPCM) was prepared by a hybrid sintering method to combine gold tailings-fly ash mixture as the base material with ...

In this study, a novel form-stable phase change material (FSPCM) consisting of calcination iron tailings (CIT), capric acid (CA), and carbon nanotubes (CNT) was ...

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PCM has been investigated for solar energy storage in recent years. The magnesium nitrate hexahydrate was chosen as PCM due to the suitable melting temperature and high latent heat for solar thermal energy in this paper. In order to prevent the leakage during the phase transition, a novel form-stable composite PCM based on diatomite was prepared by the ...

Gold tailings (GT) are a form of industrial solid waste generated by gold production that occupy large areas of land and cause a significant environmental burden. This study accordingly prepared a novel composite phase change material (CPCM) for medium-high temperature thermal energy storage using a hybrid sintering method to combine GT as the base material with solar salt ...

In this work, activation and utilization of mine tailings as CO 2 mineralization feedstock and supplementary cementitious materials (SCMs) are reviewed systematically, with ...

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[6-8]. Generally speaking, the energy density of LIBs is mainly determined by the cathode material [9]. Among the commercial cathode materials, olivine-type LiFePO 4 has achieved great success due to its stable electrochemical per-formance, low cost, and environmental friendliness [10]. Nevertheless, olivine-type LiFePO 4 shows a low energy

Inorganic porous material is usually a good adsorption carrier serving for storage of solid-liquid phase change materials. As one of the largest types of industrial waste resource, reutilization of fly ash (FA) is an important way to protect environment, save energy and reduce emissions. In this study, a novel shape-stabilized phase change material (SSPCM) composed ...

The research and development of nanomaterials derived from tailings hold great promise in transforming the landscape of renewable energy generation and storage eventually ...

Iron tailings are fine, stable and complex materials, which are mainly composed of minerals and metal oxides.Residual silicon in iron tailings can be used to prepare mesoporous silica materials applied to energy storage, environmental protection and other fields. This paper reported a novel synthesis strategy from iron tailings to high-surface area hexagonally ordered ...

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