Moreover, Ag-GNS/PEG composites exhibit enhanced thermal conductivities (49.5-95.3%), high energy storage densities (>166.1 J/g), high thermal energy storage/release rates and outstanding form ...

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Abstract Except for the improvement enthalpy value and thermal conductivity of conventional solid-solid phase change materials (SSPCMs), expansion of additional functions other than thermal energy storage function of that has been particularly attractive. In this work, a novel self-luminous SSPCMs based polyethylene glycol have been successfully synthesized via ...

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Overall, strontium aluminate doped with Eu ²? co-doped with Dy ³? (SrAl 2 O 4 :Eu ²?, Dy ³?) phosphors and self-luminous pavement for energy storage had great prospects in improving ...

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The hardness of energy storage self-luminous plastics was between 10-100HA, which was meeting the requirements of medium hardness plastics, and could be further applied to luminous labels. ... Preparation of the self cleaning and luminous PVC membrane structure material and its properties study. Adv Mater Res, 332-334 (2011), pp. 1931-1936 ...

Transportable PCMs in thermal energy storage systems [37] Ibrahim et al. 2017: Heat transfer enhancement of PCMs for thermal energy storage applications [38] Shchukina et al. 2018: Nanoencapsulation of phase change materials for advanced thermal energy storage systems [18] Zhang et al. 2018: Thermodynamics behavior of PCMs in micro ...

DOI: 10.1016/j.solener.2023.04.049 Corpus ID: 258800180; Study on the mechanics and functionalities of self-luminous cement-based materials with energy storage and slow release properties

The achievement of simultaneous high energy-storage density and efficiency is a long-standing challenge for dielectric ceramics. Herein, a wide band-gap lead-free ceramic of NaNbO 3 -BaZrO 3 featuring polar nanoregions with a rhombohedral local symmetry, as evidenced by piezoresponse force microscopy and transmission electron microscopy, were ...

High efficient energy storage devices for both thermal energy and light energy are scarce in the development of modern society to reduce energy consumption. In this work, a novel self-luminous wood composite based on phase change materials (PCMs) with superior thermal energy storage and long afterglow luminescence (LAL) materials with excellent light energy ...

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U.S. Pat 5665793, US5472737 have introduced the composition of the luminous road paint of acrylic acid modified polyurethane respectively.The open CN1084535A of Chinese invention patent has introduced a kind of luminescent coating, and its luminescent material is europkium-activated alkaline-earth metal aluminic acid strontium, and base-material is selected from ...

Novel self-luminous wood composite based on PCMs with superior thermal energy storage and long afterglow luminescence (LAL) materials with excellent light energy storage is reported [37]. To our best knowledge, integration of LAL particle into PCMs to synthesize PEG based self-luminous SSPCMs for both thermal and light energy storage, have ...

The research on phase change materials (PCMs) for thermal energy storage systems has been gaining momentum in a quest to identify better materials with low-cost, ease of availability, improved thermal and chemical stabilities and eco-friendly nature. The present article comprehensively reviews the novel PCMs and their synthesis and characterization techniques ...

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Thermal properties of biomass-based form-stable phase change material for latent heat thermal energy storage. Yafen Sun, Yafen Sun. School of Mechanical Engineering, Southwest Jiaotong University, Chengdu, China ... Therefore, the prepared DW/FA FSPCMs show a potential application prospect in the thermal energy storage system. REFERENCES

Using the self-luminous thin layer specimen as an example, the specific testing process is described below, as shown in Fig. 3: First, place two parallel specimens in the chamber of the three-function ultraviolet analyzer for 24 h to eliminate the influence of energy absorption by the self-luminous material in natural environments. The ...

Rabat"s recent announcement that it would soon sign an agreement for the construction of a "gigafactory" to make electric vehicle (EV) batteries has placed Morocco in ...

A luminous material layer is sandwiched between two dielectric layers. In addition, ... Besides, in 2020, Zhang and Liang [91] prepared self-luminous asphalt concrete by replacing part of aggregates with energy-storage luminous particles. Results showed that the afterglow brightness of specimens at 1h was 2cd after 10 min of standard light ...

2 · It is still a great challenge for dielectric materials to meet the requirements of storing more energy in high-temperature environments. In this work, lead-free ...

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2.1 Materials. Ethyl cellulose (EC, M n =19000 g/mol; the degree of ethyl substitution is 2.3) was received from Aladdin Reagent Co., Ltd. China. Polyethylene glycol (PEG) with a number-average molecular weight of 6000 g/mol was bought from Shanghai Titan Scientific Co., Ltd. China, which was employed as the phase

change material for thermal energy storage.

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