SPHERICAL PHASE CHANGE ENERGY STORAGE MATERIAL

How can a spherical latent thermal energy storage system be improved? Farhan Hekmat; Improving the thermal performance of a spherical latent thermal energy storage using innovative fins and porous media. 1 January 2025; 37 (1): 017160. The performance of latent heat thermal energy storage (LHTES) systems can be significantly enhanced by improving the thermal properties of phase change materials (PCMs).

What are phase change materials (PCMs)? Phase change materials (PCMs) are gaining increasing attention and becoming popular in the thermal energy storage field. Microcapsules enhance thermal and mechanical performance of PCMs used in thermal energy storage by increasing the heat transfer area and preventing the leakage of melting materials.

Can spatiotemporal phase change materials be used for solar thermal fuels? In a recent issue of Angewandte Chemie,Chen et al. proposed a new concept of spatiotemporal phase change materials with high super-cooling to realize long-duration storage and intelligent release of latent heat,inspiring the design of advanced solar thermal fuels.

Are spherical microcapsules good thermal energy storage and photoluminescence? These 1.5???2 ? 1/4 m spherical microcapsules showed the characteristics of thermal energy storage and photoluminescence. Additionally, the synthesized microcapsules possessed good thermal reliability, with the thermal property remaining almost unchanged after 100 thermal cycles.

Are flexible polymeric solid???solid phase change materials suitable for flexible/wearable devices? Flexible polymeric solid???solid phase change materials (PCMs) have garnered continuous attention owing to their potential for thermal managementin flexible/wearable devices and their non-leakage characteristics. However,it is still a big challenge to obtain polymeric solid???solid PCMs with both flexibility and high latent heat.

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Are PCM microcapsules suitable for thermal energy storage? In this paper, a comprehensive review has been carried out on PCM microcapsules for thermal energy storage. Five aspects have been discussed in this review: classification of PCMs, encapsulation shell materials, microencapsulation techniques, PCM microcapsules??? characterizations, and thermal applications.

The intra-particle heat transfer is modelled by assuming a concentric temperature profile within the spherical particles. The energy conservation equation for PCM Due to the ???

A spherical phase change material (PCM) capsule with embedded composite fins for latent thermal energy storage is proposed and studied in this paper. The latent heat TES ???

A spherical phase change material of radius R0 is encapsulated by a thickness ?? of a material that does not undergo phase change. The specific interest here is in a micro ???

In order to improve energy storage efficiency and promote the early achievement of global carbon neutrality goals, this paper proposes a spherical thermal storage unit filled with a composite phase change material (CPCM) ???

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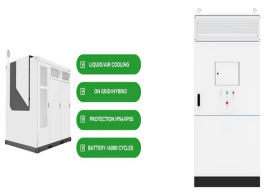
In this paper, a spherical phase change material capsule with a hollow channel with a simple, low-cost heat transfer enhanced structure has been proposed and studied. A ???



Spherical capsules filled with Phase-Change Material (PCM) have received significant attention in many latent-thermal-energy-storage (LTES) systems. The poor thermal conductivity limits the ???

Enhanced heat transfer characteristics of water based copper oxide nanofluid PCM (phase change material) in a spherical capsule during solidification for energy efficient cool ???

Phase change materials (PCMs) are gaining increasing attention and becoming popular in the thermal energy storage field. Microcapsules enhance thermal and mechanical performance of PCMs used in thermal ???

Driven by the rapid growth of the new energy industry, there is a growing demand for effective temperature control and energy consumption management of lithium-ion batteries. ???

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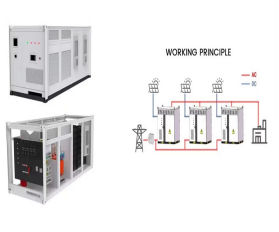

Phase change materials (PCMs) are commonly used for energy storage in a variety of engineering systems, including in storing energy from intermittent sources such as solar ???