

Phase change materials (PCMs) can alleviate concerns over energy to some extent by reversibly storing a tremendous amount of renewable and sustainable thermal energy. However, the low thermal conductivity, low electrical ...

Thermal energy storage based on phase change materials (PCMs) can improve the efficiency of energy utilization by eliminating the mismatch between energy supply and demand. It has become a hot research ...

Thermal energy storage technologies utilizing phase change materials (PCMs) that melt in the intermediate temperature range, between 100 and 220 °C, have the potential to mitigate the intermittency issues of wind and ...

Phase change energy storage materials, capable of releasing or absorbing a significant amount of heat during phase transition [2, 3], are commonly employed in various fields such as energy storage engineering, ...

Intelligent phase change materials for long-duration thermal energy storage Peng Wang,¹ Xuemei Diao,² and Xiao Chen^{2,*} Conventional phase change materials struggle with long-duration ...

Energy Storage is a new journal for innovative energy storage research, covering ranging storage methods and their integration with conventional & renewable systems. Abstract This paper ...

Phase-change materials (PCMs) offer tremendous potential to store thermal energy during reversible phase transitions for state-of-the-art applications. The practicality of these materials is adversely restricted by ...

Global energy demand is rising steadily, increasing by about 1.6 % annually due to developing economies [1] is expected to reach 820 trillion kJ by 2040 [2]. Fossil fuels, including natural ...

Here, we review the broad and critical role of latent heat TES in recent, state-of-the-art sustainable energy developments. The energy storage systems are categorized into the following categories: solar-thermal storage; ...

Conventional phase change materials struggle with long-duration thermal energy storage and controllable latent heat release. In a recent issue of *Angewandte Chemie*, Chen et ...

Phase change material (PCM)-based thermal energy storage significantly affects emerging applications, with recent advancements in enhancing heat capacity and cooling power. This perspective by Yang et al. ...

Phase change materials (PCMs) are ideal carriers for clean energy conversion and storage due to their high thermal energy storage capacity and low cost. During the phase ...

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