Application of energy storage flame retardant

Semantic Scholar extracted view of "Flame-retardant and form-stable phase change composites based on MXene with high thermostability and thermal conductivity for thermal energy storage" by Yong Luo et al. ... Unveiling the unique potential of MXene with and without graphene nanoplatelet for thermal energy storage applications.

With the prosperity of electric vehicles (EVs), the thermal management of lithium-ion battery (LIB) is crucial for ensuring the safety of drivers on EVs. Composite phase change material (CPCM) with high latent heat has a great promising prospect in battery thermal management systems (BTMS). However, the thermal management efficiency of CPCM is limited due to the leakage, ...

In order to meet different application scenarios, attempts to manufacture sustainable and efficient flame-retardant polymers and additives with multiple functions have been made. This Special Issue aims to gather scientific papers focusing on recent advances in the synthesis and application of flame-retardant polymeric materials.

Lithium-ion batteries (LIBs) are considered as one of the most successful energy storage technologies due to the high energy density, long cyclability and no memory effect. ... but the complex preparation process and high cost impede their applications. The flame-retardant additive can effectively improve the flame retardance of polymer ...

The fire resistance test showed that the PCM was flame-retardant. Although the SAT lost water crystals during the solid-liquid phase transition, the soft polyurethane seal eliminated the problem. After 50 thermal cycles, the latent heat of the encapsulated PCM was 142.0 J/g, which still maintained a good thermal storage performance.

The form-stable composite energy storage developed in this study was produced by integrating a novel flame retardant phase change material formed of 90 wt% lauric acid (LA) as a phase change ...

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MXene/polyimide hybrid aerogel supported phase change composites show excellent solar thermal energy harvesting and flame-retardant property. ... As a result, the obtained MPPCCs have great potential in safe flame retardancy and efficient solar energy storage applications. 2 Experimental section.

A great deal of effort has gone into addressing the above issues concerning electrolytes, including adding

flame-retardant electrolyte additives [10], introducing (localized) high-concentration electrolytes (LHCEs, HCEs) [11, 12], adopting gel polymer electrolytes [13] or all-solid electrolytes [14].Among these strategies, flame-retardant additives are often highly ...

3.2 Thermal Properties of Flame Retardant Phase Change Microcapsules. Differential Scanning Calorimetry (DSC) is a thermal analysis method that measures the power difference input to a sample and a reference as a function of temperature under programmed temperature conditions [] om the DSC curves in Fig. 2, it can be seen that the flame ...

Although the energy densities of LIBs enhanced gradually, safety issues, such as fires and explosions, are still an intractable challenge with spreading applications of LIBs in cell phones, laptops, electric vehicles, airplanes and grid scale energy storage systems, especially when the higher energy density and ultrafast charge technology are ...

Lithium-ion batteries (LIBs) have become the dominating energy supply devices for electric vehicles, portable electronics, and storage stations due to their high energy density, high energy consumption efficiency, and long battery lifespan [1], [2].However, commercial LIBs, which typically employ layered LiCoO 2 or olivine LiFePO 4 (LFP) as cathode materials, only ...

Rechargeable lithium metal batteries (LMBs) are considered as promising candidates for high-energy storage systems, but their practical applications are plagued by the severe safety ...

With the proposal of sustainable development strategy, bio-based energy storage transparent wood (TW) has shown broad application value in green buildings, cold chain transportation, and optoelectronic device fields. However, its application in most fields is limited due to its own flammability. In this study, epoxy resin, triethyl phosphate (TEP) and polyethylene glycol ...

Also, the introduction of flame retardants (TEP) reduces the flammability risk of the TW/PEG system and has a negligible effect on the transparency of the material. In this paper, renewable balsa wood was used as the substrate to prepare a bio-based composite that integrates flame retardancy, phase change energy storage and transparency.

Hence, the obtained MXene-based flame-retardant PCMs can be potentially utilized for safe and efficient applications of solar energy storage. Graphical abstract. Download: Download high-res image (142KB) Download: Download full-size image; Previous article in issue; Next ... Subsequently, a flame-retardant and form-stable PCM composite was ...

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