

Thermal energy storage can be categorized into different forms, including sensible heat energy storage, latent heat energy storage, thermochemical energy storage, and combinations thereof [[5], [6], [7]]. Among them, latent heat storage utilizing phase change materials (PCMs) offers advantages such as high energy storage density, a wide range of ...

1 ??&#0183; In a recent issue of Chem, Professor Han and coworkers advance the anthracene-based solar energy storage materials capable of self-activated heat release through a cascading cycloreversion process, mimicking fossil fuel combustion and presenting new possibilities for scalable, renewable heat storage applications. This preview highlights two significant ...

Solid-state electrolytes are attracting increasing interest for electrochemical energy storage technologies. In this Review, we provide a background overview and discuss the state of the art,...

We report a series of adamantane-functionalized azobenzenes that store photon and thermal energy via reversible photoisomerization in the solid state for molecular solar thermal (MOST) energy storage. The adamantane unit serves as a 3D molecular separator that enables the spatial separation of azobenzene groups and results in their facile switching even in the ...

Recently, the three-dimensional (3D) printing of solid-state electrochemical energy storage (EES) devices has attracted extensive interests. By enabling the fabrication of well-designed EES device architectures, enhanced electrochemical performances with fewer safety risks can be achieved. In this review article, we summarize the 3D-printed solid-state ...

Solid-state batteries are widely regarded as one of the next promising energy storage technologies. Here, Wolfgang Zeier and Juergen Janek review recent research directions and advances in the ...

Energy Storage Materials. Volume 20, July 2019, Pages 234-242. Enabling highly efficient, ... ZAB by integrating an active Co-NCNT reversible electrocatalyst and a highly conductive alkalined PANa hydrogel material as quasi-solid-state electrolyte. Adjusting the initial Co salt/DCDA ratios was found to greatly affect the morphology and ...

To draw a full picture of 2D materials used in solid-state energy storage devices, in this review, recent advances in SSBs and SSSCs based on 2D materials are thoroughly summarized. Firstly, the roles of which different 2D materials play are discussed according to different kinds of SSBs, for example, solid-state lithium batteries, solid-state ...

Energy Storage Materials. Volume 54, January 2023, Pages 440-449. ... Facilitating interfacial stability via

bilayer heterostructure solid electrolyte toward high-energy, safe and adaptable lithium batteries. Adv. Energy Mater., 10 (2020), Article 2000709. View in Scopus Google Scholar

New technologies for future electronics such as personal healthcare devices and foldable smartphones require emerging developments in flexible energy storage devices as power sources. Besides the energy and power densities of energy devices, more attention should be paid to safety, reliability, and compatibility 2020 Nanoscale HOT Article Collection Recent Review ...

2000s: Advancements in supercapacitors and solid-state batteries. Notable Figures. Several notable figures have made significant contributions to the field of materials for energy storage and conversion. John B. Goodenough, M. Stanley Whittingham, and Akira Yoshino were awarded the Nobel Prize in Chemistry in 2019 for their work on lithium-ion ...

The development of materials that reversibly store high densities of thermal energy is critical to the more efficient and sustainable utilization of energy. Herein, we investigate metal-organic compounds as a new class of solid-liquid phase-change materials (PCMs) for thermal energy storage. Specifically, we show that isostructural series of divalent metal amide ...

Efficient and clean energy storage is the key technology for helping renewable energy break the limitation of time and space. Lithium-ion batteries (LIBs), which have characteristics such as high energy density, ... However, recent reports show that lithium metal can penetrate solid materials [42]. Metal dendrite can grow along the lattice ...

Hydrogen energy, known for its high energy density, environmental friendliness, and renewability, stands out as a promising alternative to fossil fuels. However, its broader application is limited by the challenge of efficient and safe storage. In this context, solid-state hydrogen storage using nanomaterials has emerged as a viable solution to the drawbacks of ...

The growing demand for high-performance portable electronic devices and electric vehicles has underscored the importance of high-energy-density LIBs. Among the various electrolytes available, polymer-based SSEs ...

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