Solid-state energy storage devices

The recent development of wearable and flexible electronic products requires a solid-state, high-performance energy storage solution. As traditional energy storage devices, batteries have been used extensively in solid-state energy storage applications.

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

The use of all-solid-state lithium metal batteries (ASSLMBs) has garnered significant attention as a promising solution for advanced energy storage systems. By employing non-flammable solid electrolytes in ASSLMBs, their safety profile is enhanced, and the use of lithium metal as the anode allows for higher energy density compared to traditional lithium-ion ...

To develop electrolytes suitable for flexible energy storage devices, it is imperative to modify the physical state of the electrolyte to a solid or quasi-solid form, thereby preventing any leakage during mechanical deformation.

Solid-state energy storage devices, such as solid-state batteries and solid-state supercapacitors, have drawn extensive attention to address the safety issues of power sources related to liquid-based electrolytes.

This work elucidates the four critical factors that govern the electrochemical performance of anode-free solid-state cell designs to guide future developments of high-energy...

High-ionic-conductivity solid-state electrolytes (SSEs) have been extensively explored for electrochemical energy storage technologies because these materials can enhance the safety of solid-state energy storage devices (SSESDs) and increase the energy density of these devices. In this review, an overview of SSEs based on their classification, ...

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 compatibi 2020 Nanoscale HOT Article ...

Solid-state energy storage devices (SSESDs) are believed to significantly improve safety, long-term electrochemical/thermal stability, and energy/power density as well as reduce packaging demands, showing the huge application potential in large-scale energy