

Breakthroughs in battery technology are transforming the global energy landscape, fueling the transition to clean energy and reshaping industries from transportation ...

Atin Pramanik, a postdoctoral associate in Ajayan's lab, examines the battery prototype (Credit: Jeff Fitlow/Rice University). As global demand for electric vehicles and ...

A new set of cathode, anode and electrolyte technologies are set to deliver the next generation of batteries. Lithium-ion batteries became the standard across most sectors due to their good performance, high energy ...

This perspective article provides a detailed exploration of the latest developments and future directions in energy storage, particularly focusing on the promising alternatives to traditional lithium-ion batteries.

Lithium-ion batteries (LIBs) have become a cornerstone technology in the transition towards a sustainable energy future, driven by their critical roles in electric vehicles, portable electronics, ...

Dive into the future of energy storage with five revolutionary battery technologies set to surpass lithium-ion. From the safety advancements of solid-state batteries to the eco-friendly potential of aluminum-ion alternatives, ...

Against the backdrop of a shifting paradigm in energy storage, where the limitations of conventional lithium-ion batteries are being addressed by cutting-edge innovations, this exploration offers insights into the transformative ...

This comprehensive review provides an overview of current lithium-ion battery technology, identifying technical challenges and opportunities for advancement to promote efficient, sustainable, and environmentally ...

A research team led by Georgia Tech's Hailong Chen has developed a low-cost iron chloride cathode for lithium-ion batteries, which could significantly reduce costs and ...

A new AI tool has identified five promising metal oxide structures which could be used to replace lithium-ion batteries. The materials feature large, open channels in their ...

The intention behind this Special Issue was to assemble high-quality works focusing on the latest advances in the development of various materials for rechargeable ...

New battery energy storage material lithium

Key materials Lithium-ion batteries considering that Li-ion batteries are commonly favored as portable electrochemical energy storage devices enhancing affordability ...

A major focus of CEI energy storage research is the development of novel materials to improve battery performance. Some CEI researchers develop substitutes for the components of a conventional Li-ion battery, such as silicon ...

Currently, the main drivers for developing Li-ion batteries for efficient energy applications include energy density, cost, calendar life, and safety. The high energy/capacity anodes and cathodes needed for these ...

Lithium-sulfur batteries have great potential for application in next generation energy storage. However, the further development of lithium-sulfur batteries is hindered by ...

That can also reduce the time to market for next-generation energy storage materials and devices and bridge knowledge gaps between small-scale R& D and large-scale commercial manufacturing, leading to immediate impact, ...

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