

Among rechargeable batteries, Lithium-ion (Li-ion) batteries have become the most commonly used energy supply for portable electronic devices such as mobile phones and laptop computers and portable handheld power tools like drills, grinders, and saws. 9, 10 Crucially, Li-ion batteries have high energy and power densities and long-life cycles ...

Lithium-ion batteries (LiB) are widely adopted in the current EVs or plug-in hybrid EVs market. In 2016, the global LiB market was reported to exceed USD 20 billion at the cell level, and the sales have increased by an average of 16% per year since 1996 [ 13 ].

The lithium-ion battery (LIB) is a promising energy storage system that has dominated the energy market due to its low cost, high specific capacity, and energy density, while still meeting the energy consumption requirements of current appliances.

Currently, lithium-ion batteries (LIBs) have emerged as exceptional rechargeable energy storage solutions that are witnessing a swift increase in their range of uses because of characteristics such as remarkable energy density, significant power density, extended lifespan, and the absence of memory effects.

The main discussion is categorized into three perspectives such as the evolution from the conventional to the advanced LIBs (e.g., Li-rich transition metal oxide and Ni-rich transition metal oxide batteries), to the state-of-the-art LIBs (e.g., Li-air, Li-sulfur batteries, org. electrode batteries, solid-state batteries, and Li-CO<sub>2</sub> batteries ...

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