

What is a lithium ion battery (LIB)?

The lithium ion battery (LIB) is undoubtedly one of the landmark energy storage technologies that have significantly altered our lives, owing to its much higher energy density and reversibility than any other secondary batteries (1).

Do all-solid-state lithium batteries improve battery safety?

All-solid-state lithium batteries can essentially improve battery safety. However, the performance of all-solid-state batteries is limited by the large interfacial resistance between electrode and electrolyte. As a compromise, flammable liquid or polymer electrolyte was usually added at the electrode/electrolyte interface at a sacrifice of safety.

Can solid-state lithium batteries be used in layered transition-metal oxide cathodes?

In addition, this approach is not limited to  $\text{LiCoO}_2$  cathode but can also be applied to other layered transition-metal oxide cathodes, promoting the practical application of all-solid-state lithium batteries. Solid-state batteries (SSBs) can essentially improve battery safety.

How to achieve high reversibility of solid-state Li metal batteries?

Therefore, constructing an electronic insulating SEI layer between Li and SSE should be the most effective method to realize the high reversibility of solid-state Li metal batteries.

Are inorganic solid-state batteries a good alternative to liquid electrolyte batteries?

Inorganic solid-state batteries have emerged as very attractive alternatives to these commercial liquid electrolyte batteries (4) because of their enhanced safety, wide operating temperature range, and potentially high energy densities, especially when coupled with the Li metal as the anode (4).

Are LPs SSEs in Li metal batteries intrinsically unstable?

In summary, LPs SSEs in Li metal batteries are intrinsically unstable to the Li metal anode and are reduced to a nonpassivated layer during the Li plating/stripping process, promoting Li dendrite growth.

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Xinpeng Han; Jie Sun; Red phosphorus (RP) has recently gained great attention for high-energy-density fast-charging lithium-ion batteries (LIBs) due to its high theoretical specific capacity ...

Shusen Zhou, Zhangkuo Han, Xiaofei Wang, Xin Liu, Huiying Hao, Jie Xing, Jingjing Dong, Hao Liu, Libing Liao. Research output: Contribution to journal > Article > peer-review. ... Low-cost ...

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