Han Jie Lithium Battery

What is a lithium ion battery (LIB)?
The lithium ion battery (LIB) is undoubtedly one of the landmark energy storage technologiesthat 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 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 layerbetween 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 alternativesto 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 unstableto 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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Charging lithium polysulfides by cationic lithium nitrate species for low-temperature lithium-sulfur batteries Author links open overlay panel Jin-Hao Zhang a 1, Xiao ...

DOI: 10.1016/S1872-5805(23)60747-4 REVIEW Understanding the process of lithium deposition on a graphite anode for better lithium-ion batteries Yu-jie Xu1,âEUR, Bing Wang1,âEUR, Yi Wan1, Yi ...

Developing fast-charging high-energy lithium-ion battery, with a charging time of 8-10 min, is highly urgent in upcoming applications but still is a challenge.

Phosphorus is a promising anode material for fast-charging in lithium-ion batteries because of the combined advantages of high theoretical mass and volume specific capacity as ...

The all-solid-state Li/LLZO/LCO battery with such an all-ceramic cathode/electrolyte exhibits high cycling stability and high rate performance, constituting a significant step toward the practical ...

DOI: 10.1016/j.ensm.2022.12.045 Corpus ID: 255630212; High-density crack-resistant Si-C microparticles for lithium ion batteries @article{Li2023HighdensityCS, title={High-density crack ...

Hierarchical Porous Structured Si/C Anode Material for Lithium-Ion Batteries by Dual Encapsulating Layers for Enhanced Lithium-Ion and Electron Transports Rates. Small 2025-01 ...

Sulfide electrolytes (SEs)-based all-solid-state lithium batteries (ASSLBs) are advantageous over traditional lithium-ion batteries (LIBs) because of high energy density and safety. Unfortunately, the commercialization of SEs-based ...

engineered all-ceramic lithium battery with a LiCoO 2 loading of 1 mg/cm 2 cycled within 3 - 4.2 V at 1/20 C at 100 oC. (E and F) Charge/discharge profiles (E) and cycling performance (F) of the ...

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Conversion-type transition-metal compounds (C-TMCs) are widely used as lithium-ion battery (LIB) anodes due to their high theoretical capacity. However, a significant discrepancy in lithium storage capacity is ...

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 ...

Electrochemically stable and ultrathin polymer-based solid electrolytes for dendrite-free all-solid-state lithium-metal batteries. Fenghua Yu, Yongbiao Mu, Meisheng Han, Jie Liu, Kunxiong ...

Abstract: Polymer-based composite solid electrolytes (PCSEs) are increasingly studied in all-solid-state lithium-metal batteries (ASSLMBs) due to the combined advantages of better ...

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