

Are battery interfaces a leap forward?

In conclusion, we foresee a leap forward in our understanding and control over battery interfaces through the use of approaches and techniques such as those described in this perspective, which together represents a necessary departure from our traditional way to approach such complex issues.

How do interfaces affect morphological changes in a battery system?

The dynamic evolution of interfaces induces significant morphological changes which may be observed by in situ SEM and TEM on battery systems with low vapor pressure-based electrolytes--for instance, ionic liquid, polymer, and ceramic-based electrolytes.

Why is SEI important in zinc-based batteries?

SEI plays an important role in zinc-based batteries. The presence of SEI improves the utilization of zinc during cycling and increases the depth of discharge of the battery when the battery is charged and discharged for a long period of time.

Do electronic conductor layers enhance interfacial stability in solid-state Li batteries?

Luo, L. et al. Insights into the enhanced interfacial stability enabled by electronic conductor layers in solid-state Li batteries. *Adv. Energy Mater.* 13, 2203517 (2023). The authors acknowledge the support from the Initial Energy Science & Technology (Xiamen).

Why is CEI important in lithium ion batteries?

Electrolyte composition and additives enhance CEI on cathodes and SEI on anodes. Future LIB advancements will optimize electrode interfaces for improved performance. The passivation layer in lithium-ion batteries (LIBs), commonly known as the Solid Electrolyte Interphase (SEI) layer, is crucial for their functionality and longevity.

Why do EV batteries need a lithium ion battery?

The EV industry demands batteries with high energy density and exceptional longevity. Electrolytes, comprising lithium salts and solvents, play a crucial role in determining the capacity, efficiency, and overall lifespan of LIBs. During the initial charging of a LIB, the electrolyte solution is reduced on the negatively charged anode surface.

Interface diagnostics platform for thin-film solid-state batteries V. C. Ferrari, S. B. Lee, G. W. Rubloff and D. M. Stewart, *Energy Environ. Sci.*, 2025, Advance Article, DOI: ...

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This new battery differed from any previous batteries because its energy storage mechanism relies on the reversible intercalation/de-intercalation of Li^+ in a pair of intercalation ...

A serial interface is included for configuration and control by a system microcontroller: I²C in NMB7100A and NBM5100A and serial peripheral interface (SPI) in ...

In Zn battery system, the battery performance is significantly affected by the solid electrolyte interface (SEI), which is controlled by electrode and electrolyte, and attracts dendrite growth ...

We demonstrate this methodology using thin film fabrication of solid state battery devices patterned by shadow masked sputter deposition, so that diagnostic devices ...

In order to fill the gap in the latest Chinese review, the faults of power battery system are classified into internal faults and external faults based on the difference of fault ...

In addition, given the surface, interface, and interphase as the major failure mechanisms in degraded materials, rapid heating technology (RHT) emerges as a promising ...

An increase in external pressure can promote the formation of a thin and dense SEI, enhancing the diffusivity and Young's modulus of the SEI. ²³ However, this can also lead ...

Mastering battery interfaces is at the heart of the development of the next generation of Li-ion batteries. However, novel tools and approaches are urgently needed to uncover their ...

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