Lithium battery solid-state electrolytes

This review explores a variety of solid electrolytes, including oxide, sulfide, perovskite, anti-perovskite, NASICON, and LISICON-based materials, each with unique ...

The mushroom growth of portable intelligent devices and electric vehicles put forward higher requirements for the energy density and safety of rechargeable secondary ...

This review summarizes recent, past five years, advancements in solid-state electrolyte designs, and the performance of all-solid-state batteries, and provides an outlook for ...

Solid-state lithium batteries are promising candidates for improving battery safety and boosting energy density. However, the application of both typical solid-state electrolytes, ...

Solid-state electrolytes have been positioned as materials for the next-generation batteries. Especially, all-solid-state lithium metal batteries are promising as they ...

For each kind of solid-state electrolytes, details on the preparation, properties, composition, ionic conductivity, ionic migration mechanism, and structure-activity relationship, ...

Developing solid electrolytes is one of the most important challenges for the practical applications of all-solid-state lithium batteries (ASSLBs). This review summarizes the classifications of current solid ...

This Review details recent advances in battery chemistries and systems enabled by solid electrolytes, including all-solid-state lithium-ion, lithium-air, lithium-sulfur and...

Abstract Composite solid-state electrolytes (CSEs) with multiple phases offer greater flexibility to customize and combine the advantages of single-phase electrolytes, ...

In this review, we discuss five types of solid electrolytes, sulfides, halides, nitrides, antiperovskite-type, and complex hydrides, and the challenges and superiorities for these electrolytes are also addressed. The ...

Critically, conventional batteries pose safety risks due to liquid electrolyte leakage and flammability, thereby necessitating the exploration of solid-state electrolytes ...

Especially, all-solid-state lithium metal batteries are promising as they can realize high-energy-density, while being safe. This review summarizes recent, past five years, advancements in solid-state electrolyte ...

The lithium-ion battery (LIB) technology available in the market relies on the use of liquid electrolytes which

consist of a lithium salt dissolved in one or a combination of several ...

Solid-state lithium batteries are flourishing due to their excellent potential energy density. Substantial efforts have been made to improve their electrochemical performance by ...

Lithium solid-state batteries (SSBs) are considered as a promising solution to the safety issues and energy density limitations of state-of-the-art lithium-ion batteries. Recently, ...

Abstract Nitride solid-state electrolytes (SSEs) hold significant potential for addressing critical interfacial issues between SSEs and lithium metal in all-solid-state lithium metal batteries. These batteries are at the forefront of ...

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