

What are all-solid-state-batteries (SSBs)?

All-Solid-State-Batteries (ASSBs) are promising new technologies that have the potential to revolutionize the way we store and use energy. Unlike traditional Li-ion batteries, which use a liquid electrolyte to transfer ions between the electrodes, SSBs use a solid electrolyte, which offers several advantages over their liquid counterparts [1,2].

Are solid-state batteries better than Li-ion batteries?

Solid-state batteries (SSBs) have important potential advantages over traditional Li-ion batteries used in everyday phones and electric vehicles. Among these potential advantages is higher energy density and faster charging.

What is a solid-state Li metal battery?

Solid-state Li metal batteries that utilize a Li metal anode and a layered oxide or conversion cathode have the potential to almost double the specific energy of today's state-of-the-art Li-ion batteries, which use a liquid electrolyte.

What is a solid state battery?

Solid-state batteries consist of multiple solid-solid interfaces within the cathode, solid electrolyte, and anode, which can degrade or lose contact during cycling. These contact issues become more pronounced when the battery components experience significant volume changes throughout the charge-discharge process.

Why are mechanical contacts important in a solid-state battery?

In batteries with solid-solid interfaces, mechanical contacts, and the development of stresses during operation of the solid-state batteries, become as critical as the electrochemical stability to keep steady charge transfer at these interfaces.

What is a solid-state lithium-sulfur battery (asslsb)?

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This modeling study probes the evolution of stresses at the solid electrolyte (SE) solid-solid interfaces, by linking the chemical and mechanical material properties to their electrochemical response, which can be used as a ...



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