# All solid-state lithium batteries assembled with hybrid solid electrolyte

Is a solid hybrid electrolyte suitable for all-solid-state lithium battery applications?
In this study, a solid hybrid electrolyte composed of a Li + ion-conductive three-dimensional (3D) oxide framework and a solid polymer electrolyte was prepared as a free-standing thin film for all-solid-state lithium battery applications.

What is a solid hybrid electrolyte (she)?
The solid hybrid electrolyte (SHE) was a flexible thin film with high ionic conductivity, superior electrochemical stability, high Li + transference number, enhanced thermal stability, and improved Li metal electrode-solid electrolyte interfacial stability.

What are all-solid-state batteries (SSBs)?
All-solid-state batteries (SSBs) offer an alternative to current state of the art lithium-ion batteries,promising improved safety and higher energy densities due to the incorporation of non-flammable solid electrolytes and Li metal as an anode material.

What is a solvent-free hybrid solid electrolyte?
Soc.162 A704DOI 10.1149/2.0731504jes The solvent-free hybrid solid electrolytes composed of lithium aluminum germanium phosphate (LAGP) and poly (ethylene oxide) (PEO) were prepared in the form of flexible film, and their electrochemical characteristics were investigated.

Are all-solid-state lithium batteries safe?
In this respect,all-solid-state lithium batteries (ASSLBs) with solid electrolytes are a promising alternative to circumvent these safety issues. Furthermore,the use of solid electrolytes effectively suppresses dendrite growth on the lithium electrode during repeated cycling.

Why do solid-state lithium batteries need flexible electrolytes?
In addition,a lack of flexibility results in poor interfacial contactbetween inorganic solid electrolyte and electrodes in the cell during charge and discharge cycling. Therefore,the development of flexible solid-state electrolytes with improved interfacial contact has been one of the key issues for all solid-state lithium batteries.

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4 · Abstract To facilitate the practical application of solid-state lithium metal batteries (SSLMBs), using composite solid electrolytes (CSEs) with both inorganic and polymer ...

4 · Abstract Electrolyte solidification holds great promise in addressing safety concerns. Nevertheless, integrating high electrochemical stability and intrinsic interfacial compatibility ...

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6 · Battery recyclability presents a sustainability challenge in materials design. Now it has been shown that aramid amphiphile self-assembly yields solid-state electrolytes with fast ion ...

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