

# Anode materials for solid-state batteries lithium metal charge

What is a lithium metal anode?

The lithium (Li) metal anode, due to its tenfold larger capacity than commercial graphite anode, is a desired component for solid-state batteries.

Why do we need lithium metal anodes?

Lithium metal anodes are not only required for the development of innovative cell concepts such as lithium-air or lithium-sulfur batteries, they can also increase the energy density of batteries with intercalation-type cathodes.

Can a lithium metal anode make solid state batteries?

The research not only describes a new way to make solid state batteries with a lithium metal anode but also offers new understanding into the materials used for these potentially revolutionary batteries. The research is published in Nature Materials.

Are lithium dendrites a good anode material?

The rapid development of electrification has led to an increasing demand for high-energy density batteries in electric devices. Lithium metal has been considered the ideal material for batteries due to its high specific energy, but the growth of lithium dendrites has been a major obstacle to its development as an anode material.

Are solid-state batteries compatible with cathode and anode materials?

This property ensures solid-state batteries' optimal performance and long-term stability. Before exploring compatible cathode and anode materials, it is essential to identify the electrochemical window ranges of the SSEs to ensure compatibility and optimal performance in battery devices.

Are lithium metal anode batteries the Holy Grail of batteries?

"Lithium metal anode batteries are considered the holy grail of batteries because they have ten times the capacity of commercial graphite anodes and could drastically increase the driving distance of electric vehicles," said Xin Li, Associate Professor of Materials Science at SEAS and senior author of the paper.

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