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Thickness of protective layer of new energy battery cabinet

Overview

Rational design of artificial protective layers with low resistance, high mechanical strength and good compliance is desirable to suppress dendritic lithium growth, thus realizing the superiority of Li metal anode fo.

Can artificial protective layers suppress dendritic lithium growth?

Rational design of artificial protective layers with low resistance, high mechanical strength and good compliance is desirable to suppress dendritic lithium growth, thus realizing the superiority of Li metal anode for high-energy devices such as large electric grids and electrical vehicles.

How can a high voltage forced electrolysis stabilize a lithium metal battery?

The uncontrolled dendrite growth and electrolyte consumption in lithium metal batteries result from a heterogeneous and unstable solid electrolyte interphase (SEI). Here, a high-voltage forced electrolysis strategy is proposed to stabilize the lithium metal via electrodepositing a spherical protective layer.

Does lithiated Nafion film improve battery performance?

When using lithiated Nafion film as the protective layer, its moderate mechanical strength cannot completely withstand the mechanical stress caused by uneven lithium deposition, resulting in a little promotion on battery performance, which will be demonstrated in later Li/Cu cell cycling measurement.

How a lithium anode is used in high energy-density batteries?

Conclusion In summary, lithium anode with robust-flexible artificial solid electrolyte interface made of soft Nafion matrix and rigid LiCl salt provides smooth deposition behavior, dendrite-free morphology and longer lifetime when used in high-energy-density batteries.

Is bare lithium covered with dendritic lithium?

It can be clear seen that bare lithium metal is covered with thick and needle-

like dendritic lithium.

What is a 3 dimensional nanosphere-assembled protective layer?

Such a three-dimensional nanosphere-assembled protective layer has homogeneous components, mechanical strength, and rapid Li-ion conductivity, enabling it to alleviate the volume expansion and prevent dendrite growth during Li deposition.

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