Title: Lithium-sulfur flow battery
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We are working to translate this lithium-sulfur technology to a mediated redox flow battery (RFB), where soluble redox-active molecules are circulated, reducing sulfur particles stored in a reservoir.

Verified in a laboratory flow cell, the strategy offers a new opportunity to develop high-energy flow batteries by amphiphilic functionalization in cold-climate region. PVP is utilized to ...

Lithium-sulfur (Li-S) redox flow batteries (RFBs) have high energy density because of the high capacity of sulfur. To fully utilize its capacity, one key issue has to be overcome, i.e., the shuttle effect of ...

OverviewChemistryHistoryPolysulfide "shuttle"ElectrolyteSafetyLifespanCommercializationChemical processes in the Li-S cell include lithium dissolution from the anode surface (and incorporation into alkali metal polysulfide salts) during discharge, and reverse lithium plating to the anode while charging. At the anodic surface, dissolution of the metallic lithium occurs, with the production of electrons and lithium ions during the discharge and electrodeposition during the charge. The half-reaction is expressed as:

GridFlow"s lithium-sulfur (Li-S) flow battery is a next-generation energy storage system that separates sulfur into a liquid reservoir capable of providing electricity for 20 or more hours for safer, longer ...

Here we demonstrate the marriage of the redox-targeting scheme to the engineered Li solid electrolyte interphase (SEI), enabling a scalable, high efficiency, membrane-less Li-S redox flow battery.

These insights outline key areas for optimization, guiding future development of practical lithium-sulfur battery technology.

Lithium-sulfur batteries could displace lithium-ion cells because of their higher energy density and lower cost. The use of metallic lithium instead of intercalating lithium ions allows for much higher energy ...

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