Photothermal lithium battery

The resistance of solar photothermal ASS lithium-air battery (after 10 min solar irradiation) is ~10-2 of common ASS lithium-air battery (without light irradiation) operating at -73 ?. According to the discharge behavior of the battery under solar irradiation (Fig. 1b), the rise of light-induced temperature is direct related to the reactivation of our battery. As shown in Fig. ...

A facile route that combines co-assembly and photothermal reduction was developed to synthesize free-standing, flexible FeF(3)-graphene papers, which demonstrate promising applications as cathodes in high-energy density Li-ion batteries. A facile route that combines co-assembly and photothermal reduction was developed to synthesize free-standing, flexible ...

Lithium-ion batteries (LIBs) suffer from charging difficulties, capacity decay, and severe ageing in a low-temperature environment. In this work, we suggest a theoretical study and strategy for improving the low-temperature resistance of LiMn2O4(LMO) pouch cells, by introducing a photothermal conversion layer composed of copper and single ...

Poly(ethylene oxide)-based polymer all-solid-state Li S battery is a promising candidate due to its high specific energy, good processability, and low cost. However, the poor room temperature ionic conductivity limits its ...

Lithium, one of the most valuable resources, has found its way into various industries, ranging from ceramics, glass, pharmaceuticals, and nuclear to the booming lithium battery technology 1,2,3,4 ...

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Solid-state LiFePO4|Li batteries with electrolytes of "ceramic-in-polymer" and "polymer-in-ceramic" deliver excellent cycling stability with high discharge capacities (139.1 mAh g-1 with ...

a) Schematic diagram of solar photothermal All-solid-state lithium-air battery where black air cathode is strongly anchored on the Li 1.5 Al 0.5 Ge 1.5 (PO 4) 3 (LAGP) electrolyte. b) Temperature change curves of lithium-air battery at -73 °C under Xe-lamp irradiation.

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A three-dimensional electrochemical-thermal coupling model for a lithium manganate battery is established,

in which the photothermal conversion layer is attached on the surface of the cathode...

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Lithium (Li) and its compounds are key materials to lithium-ion batteries (LIBs). The demand for LIBs and Li resources are booming recently due to the rapid growth of electric vehicles, personal electronic devices, and grid-scale energy storage systems [1].

Here, we devise and implement a new technology exploiting excitons-based light-to-heat conversion promoted by WS 2 nanofillers in nanocomposite polymeric membranes for sunlight-driven photothermal membrane crystallization, applied for the efficient extraction of lithium from Li-rich brines.

In this review, first, the mechanism of lithium extraction with photothermal evaporation is fully summarized, involving membrane separation, lithium-ion sieves, and ...

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