

Kang IS, Lee YS, Kim DW (2013) Improved cycling stability of lithium electrodes in ...

Lithium (Li) metal is a promising negative electrode material for high-energy-density rechargeable batteries, owing to its exceptional specific capacity, low electrochemical potential, and low density. However, challenges such as dendritic Li deposits, leading to internal short-circuits, and low Coulombic efficiency hinder the widespread ...

Kang IS, Lee YS, Kim DW (2013) Improved cycling stability of lithium electrodes in rechargeable lithium batteries. *J Electrochem Soc* 161:A53-A57. Article Google Scholar Miao LX, Wang WK, Wang AB, Yuan KG, Yang YS (2013) A high sulfur content composite with core-shell structure as cathode material for Li-S batteries. *J Mater Chem A* 1:11659 ...

This review considers electron and ion transport processes for active materials as well as positive and negative composite electrodes. Length and time scales over many orders of magnitude are relevant ranging from atomic arrangements of materials and short times for electron conduction to large format batteries and many years of operation ...

Current research appears to focus on negative electrodes for high-energy systems that will be discussed in this review with a particular focus on C, Si, and P. This new generation of batteries requires the optimization of Si, and black and red phosphorus in the case of Li-ion technology, and hard carbons, black and red phosphorus for Na-ion ...

Silicon (Si) is recognized as a promising candidate for next-generation lithium-ion batteries (LIBs) owing to its high theoretical specific capacity ($\sim 4200 \text{ mAh g}^{-1}$), low working potential ($\approx 0.4 \text{ V vs. Li/Li}^+$), and abundant reserves.

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This paper illustrates the performance assessment and design of Li-ion ...

The mainstream LIBs with graphite negative electrode (NE) are particularly ...

Negative electrodes were composed of battery-grade lithium metal foil (Honjo Chemical Corporation, 130 μm thickness) and a copper foil current collector (Schlenk, 18 μm thickness). Lithium foil was roll-pressed between two siliconized polyester foils (50 μm , PPI Adhesive Products GmbH) to thicknesses of 23, 53, and 103 μm using a roll-press calender (GK300L, ...

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Solid-state lithium metal batteries show substantial promise for overcoming theoretical limitations of Li-ion batteries to enable gravimetric and volumetric energy densities upwards of 500 Wh kg ...

This paper illustrates the performance assessment and design of Li-ion batteries mostly used in portable devices. This work is mainly focused on the selection of negative electrode materials, type of electrolyte, and selection of positive electrode material. The main software used in COMSOL Multiphysics and the software contains a physics ...

Lithium metal has become one of the most important anode materials for high energy density secondary chemical power sources (Li||Nickel-Cobalt-Manganese ternary cathode (NCM), 10-12 Li||Lithium-Rich Manganese ...

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