

This study presents a high-performance lithium-ion battery with nano-porous Si anode etched from polycrystalline Si particles. Nano-pores formed in micro-sized particles help relieve volume expansion/shrinkage effectively. Meanwhile, the formation of nano-porous skeleton in micro-sized particles greatly reduces the agglomeration of Si particles ...

Chan, C. K. et al. High-performance lithium battery anodes using silicon nanowires. *Nature Nanotech.* 3, 31-35 (2008). Article CAS Google Scholar

But, commercial polyolefin separators have low porosity, poor wettability, and low thermal stability, which can easily lead to high battery impedance and low energy density, reducing the passed rate of lithium ions between the separators, which affects the cycling performance and rate performance of the battery, limiting its development in the field of high ...

Energy storage materials have advanced renewable energy technologies. Herein, we described the one-pot synthesis of covalent organic frameworks (COFs)/graphitic ...

Designed high-performance lithium-ion battery electrodes using a novel hybrid model-data driven approach. Author links open overlay panel Xinlei Gao a 1, Xinhua Liu a b 1, Rong He a, ... They also brought up the multiscale computation methods in lithium-ion battery research and development, ranging from electron to pack level, providing a ...

High-capacity lithium-containing alloy anodes (e.g., $\text{Li}_{4.4}\text{Si}$, $\text{Li}_{4.4}\text{Sn}$, and Li_3P) enable lithium-free cathodes (e.g., Sulfur, V_2O_5 , and FeF_3) to produce next-generation lithium-ion batteries (LIBs) with high energy density. Herein, we design a $\text{Li}_3\text{P}/\text{C}$ nanocomposite with Li_3P ultrafine nanodomains embedded in micrometer-scale porous carbon particles. Benefiting from ...

A high-performance battery meets modern tech demands. Learn its types, benefits, and how ratings like CCA and self-discharge affect performance. Tel: +8618665816616 ...

The lithium-ion battery (LIB), a key technological development for greenhouse gas mitigation and fossil fuel displacement, enables renewable energy in the future. LIBs possess superior energy density, high discharge power and a long service lifetime. These features have also made it possible to create portable electronic technology and ubiquitous use of ...

Graphite is the most extensively used commercial anode material in lithium-ion batteries that has found applications in many battery cells to date due to the advantages such as high conductivity, high energy density, low cost and a unique hierarchical structure that allows Li^+ ions to be released to the cathode [140].

A successive preparation of FeCo_2O_4 nanoflakes arrays on nickel foam substrates is achieved by a simple hydrothermal synthesis method. After 170 cycles, a high capacity of 905 mAh g^{-1} at 200 mA g^{-1} current ...

This work describes a new strategy to achieve both safe and energy-dense battery (SEB) cells, as schematically sketched in Fig. 1, where the cell resistance is plotted against ...

3D $\gamma\text{-MnO}_2$ nanostructure with ultralarge mesopores as high-performance lithium-ion battery anode fabricated via colloidal solution combustion synthesis. J. Power Sources., 421 (2019), pp. 162-168, 10.1016/j.jpowsour.2019.03.022. View PDF View article View in Scopus Google Scholar [52]

The prepared sample exhibited a high initial discharge capacity of 267.6 mA hg^{-1} at 0.25 C and maintained 191 mAhg^{-1} even after 40 cycles, showing strong ...

A high performance lithium-ion-sulfur battery with a free-standing carbon matrix supported Li-rich alloy anode T. Zhang, M. Hong, J. Yang, Z. Xu, J. Wang, Y. Guo and C. Liang, Chem. Sci., 2018, 9, 8829 DOI: ...

Asymmetric supercapacitor device using N-doped carbon/g- C_3N_4 exhibited good energy ($45.97 \text{ Wh}\cdot\text{kg}^{-1}$) with high power ($659.3 \text{ W}\cdot\text{kg}^{-1}$). The N-doped C/g- C_3N_4 ...

Here, we show that silicon nanowire battery electrodes circumvent these issues as they can accommodate large strain without pulverization, provide good electronic ...

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