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Title: Silicon-based electrochemical energy storage

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There is an urgent need to explore novel anode materials for lithium-ion batteries. Silicon (Si), the second-largest element outside of Earth, has an exceptionally high specific capacity (3579 ...

In this work, we fabricated porous silicon nanowires (PSiNWs) on an n-type silicon wafer using a single low-cost metal-assisted chemical etching (MACE) step. Then, the formed ...

The versatility of this halogenation strategy underscores halide chemistry's broad potential in advancing high-performance, reversible silicon-based solid-state batteries.

Silicon-based energy storage systems are emerging as promising alternatives to the traditional energy storage technologies. This review provides a comprehensive overview of ...

Here, we incorporate silicon nanoparticles (NPs) with an average diameter of 5.5 nm synthesized from the gas phase through a nonthermal plasma method into composite ...

Researchers have explored several strategies to address the issue of silicon anode swelling and volumetric changes. One of the most effective methods is the use of ...

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integrating transition metal ...

This study investigates the structural, morphological, and electrochemical properties of graphite, graphene oxide (GO), reduced graphene oxide (rGO), and porous silicon ...

This review delves into the potential of silicon nanoparticles and microparticles for energy storage applications, focusing on their combustion in oxygen and steam.

In this study, we successfully constructed and optimized $\text{SiO}_x/\text{M}@\text{C}$ ($\text{M} = \text{Fe}, \text{Co}, \text{Ni}$) heterostructures, integrating transition metal nanoparticles to address the electrochemical ...

Distinct from prior studies, it highlights the application of Si anodes in commercial domains, including electric vehicles, consumer electronics, and renewable energy storage ...

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