# Lithium battery etching

Up to now, designing special Si with high coulombic efficiency and cycling stability in a bulk electrode remains a significant challenge. In this work, nano/micro-structured Si was successfully synthesized via a simple and scalable process with combination of the modified Metal-assisted chemical etching (MACE) method and ball-milling. The modified MACE method ...

A high-performance nanoporous Si/Al 2 O 3 foam lithium-ion battery anode fabricated by selective chemical etching of the Al-Si alloy and subsequent thermal oxidation+ Gaeun Hwang, a Hyungmin Park, a Taesoo Bok, a Sinho Choi, a Sungjun Lee, a Inchan Hwang, a Nam-Soon Choi, a Kwanyong Seo a and Soojin Park * a

Fig. 1(b) illustrates the structure of Cu-coated SiNWs. 32 This nanowire electrode was synthesized by CVD on a stainless-steel substrate maintained at 540 °C. After CVD, a copper coating ...

Lithium-ion batteries (LIBs) are widely regarded as a new generation of "green batteries" due to their high specific energy density, long cycle life, lack of memory effect, and high charge/discharge rate [[1], [2], [3], [4]].As such, they have found extensive applications in portable electronic devices and the electric vehicle industry.

2 ???· Lithium-ion battery (LIB) demand and capacity are estimated to grow to more than 2,500 GWh by the end of 2030 (ref. 1).Most of this capacity will be applied to electric vehicles (>142 million ...

The results show that the prepared V2CTx had a higher purity and showed excellent electrochemical properties as an anode of lithium-ion batteries. And V2CTx prepared with different etching system can he obtained with high yield and excellent purity by changing the reactive ...

Recently, silicon-based lithium-ion battery anodes have shown encouraging results, as they can offer high capacities and long cyclic lifetimes. The applications of this technology are largely impeded by the complicated and expensive approaches in producing Si with desired nanostructures. We report a cost-efficient method to produce nanoporous Si ...

reactive ion etching as a lithium-ion battery anode Andam Deatama Reno 1,2,3*, ... nanowire anodes for lithium-ion batteries by combining cryogenic ICP-RIE and photolithography. During the

The progress of energy storage technology crucially depends on the availability of high-performance lithium-ion batteries (LIBs). As a silicon-based composite material, silicon oxide (SiO) exhibits significant theoretical specific capacity and mitigates the volume expansion of pure silicon. However, poor electronic conductivity remains a significant issue, limiting the ...

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We demonstrated high-performance Ge nanowire (NWs) anodes for rechargeable lithium-ion batteries with high-capacity and high coulombic efficiency. The NWs were prepared using a simple chemical vapor deposition (CVD) method, which is favorable for the mass production of electrodes. The unstable oxides of Ge deteriorate the electrochemical ...

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