

The increasing broad applications require lithium-ion batteries to have a high energy density and high-rate capability, where the anode plays a critical role [13], [14], [15] and has attracted plenty of research efforts from both academic institutions and the industry. Among the many explorations, the most popular and most anticipated are silicon-based anodes and ...

6 ???· Silicon (Si)-based materials have emerged as promising alternatives to graphite anodes in lithium-ion (Li-ion) batteries due to their exceptionally high theoretical capacity. ...

[5, 9] After this triggering, the thermal runaway of lithium-ion battery can be divided into three stages and linked to three characteristic temperatures, ... Despite the notable advantages of $\text{Li}_4\text{Ti}_5\text{O}_{12}$ as a high-safety anode for ...

The results suggest that modification of the CNPs with the piranha soln. improved neither the charge storage capacity nor the stability against cycling in a sodium-ion ...

The lithium-ion battery used in computers and mobile devices is the most common illustration of a dry cell with electrolyte in the form of paste. ... It is a circular stainless steel disc with lithium foil as an anode. It has a diameter greater than its overall height. These batteries are used to provide power to portable devices like watches ...

To improve the lithium-ion battery performance, the conversion type of anodes is believed to be the right candidate. Among these candidates, Sb has one of the least ...

Interphase regulation of graphite anodes is indispensable for augmenting the performance of lithium-ion batteries (LIBs). The resulting solid electrolyte interphase (SEI) is crucial in ...

The most commonly used anodes in contemporary lithium-ion battery technologies are composite graphite anodes, which blend graphite with additional materials such as PVdF, NMP, and carbon black. These components are uniformly mixed to create a paste or slurry, which is subsequently coated onto the current collector (Olabi et al., 2023).

The quality of the battery produced is based on parameters; specific energy, E D, P D, specific power (S P), volts (per cell), operating temperature range and the materials used to make the batteries the past few years, the research work has increased on Li-ion batteries as they have drawn the attention due to its enhanced properties than other available batteries.

Silicon (Si) anode is widely viewed as a game changer for lithium-ion batteries (LIBs) due to its much higher

capacity than the prevalent graphite and availability in sufficient quantity and quality.

The NG-silicon composite anode shows considerable promise as lithium-ion battery materials. Incorporating silicon enhances the energy density of the composite anode and the high stability of graphite helps mitigate the volume expansion issues associated with silicon anodes, ensuring excellent cycling stability [97], [98] .

Web: <https://www.vielec-electricite.fr>