Fundamental Investigation of Silicon Anode in Lithium-Ion Cells

By James J Wu, William R Bennett

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.Silicon is a promising and attractive anode material to replace graphite for high capacity lithium ion cells since its theoretical capacity is 10 times of graphite and it is an abundant element on Earth. However, there are challenges associated with using silicon as Li-ion anode due to the significant first cycle irreversible capacity loss and subsequent rapid capacity fade during cycling. Understanding solid electrolyte interphase (SEI) formation along with the lithium ion insertion/de-insertion kinetics in silicon anodes will provide greater insight into overcoming these issues, thereby lead to better cycle performance. In this paper, cyclic voltammetry and electrochemical impedance spectroscopy are used to build a fundamental understanding of silicon anodes. The results show that it is difficult to form the SEI film on the surface of a Si anode during the first cycle; the lithium ion insertion and de-insertion kinetics for Si are sluggish, and the cell internal resistance changes with the state of lithiation after electrochemical cycling. These results are compared with those for extensively studied graphite anodes. The understanding gained from this study will help to...

READ ONLINE
[4.98 MB]

Reviews

A top quality ebook and the typeface used was interesting to learn. This can be for all who statte that there had not been a well worth reading through. I am just pleased to tell you that this is basically the very best ebook i actually have go through in my individual life and can be he finest book for at any time.
-- Mr. Carol Bergnaum IV

This publication will not be straightforward to begin on studying but quite fun to see. It really is basic but shocks in the fifty percent of the ebook. I realized this ebook from my dad and i advised this pdf to learn.
-- Bernadine Powlowski