Short Communication

Spine-shaped elementary Sn: Its Preparation and Application as Anode Material for Lithium Ion Batteries (LIBs)

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doi: 10.20964/2018.08.76

Received: 14 February 2018 / Accepted: 4 April 2018 / Published: 5 July 2018

A novel finding, that spine-shaped elementary Sn can be prepared by using a constant voltage electrolysis method, was reported for the first time in this communication. The well-defined spine morphology of the prepared sample was evidenced by the SEM image, and the formation of elementary Sn particles with relatively higher crystallinity was documented by the obtained XRD pattern. More importantly, the galvanostatic charge-discharge measurement results indicated that the initial discharge capacity of the prepared sample was as high as 439 mAh g⁻¹ at 100 mA g⁻¹, and after 20 cycles, the discharge capacity could be maintained at about 101 mAh g⁻¹ under the current density of 100 mA g⁻¹. Showing the preparation of spine-shaped elementary Sn was the main contribution of this work, which was not only beneficial to the development of anode material of LIBs but also very favorable to the improvement of microelectronic devices.

Keywords: Electrodeposition, Spine-shaped Sn, X-ray techniques, nanoparticles, Lithium ion battery

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