

## SnSbCu<sub>x</sub> Alloy Composite Anode Materials for High Performance Lithium-Ion Batteries

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doi: 10.20964/2016.11.26

Received: 13 July 2016 / Accepted: 31 August 2016 / Published: 10 October 2016

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SnSbCu<sub>x</sub> ( $x=0, 0.1, 0.2, 0.3, 0.4$ ) composite alloys were synthesized using reductive coprecipitation method and employed as anode materials for lithium ion battery. Their microstructures and electrochemical properties were investigated by X-ray diffraction (XRD), scanning electron microscopy (SEM), constant current charge/discharge tests, cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS). The results indicated that introduction of Cu increased electrical conductivity, alleviated volume expansion and inhibited cracking powder formation of SnSb alloy, therefore improved the electrochemical performance. It was demonstrated that the SnSbCu<sub>0.3</sub> exhibited the best performance that the initial discharge capacity is 1169.2 mAh/g with a coulombic efficiency of 91.0% and the reversible capacity maintains at 821.5 mAh/g after 100 cycles while the capacity retention is about 77.2%.

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**Keywords:** SnSbCu alloy; composite anode material; coprecipitation method; lithium-ion batteries

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