

Author's Accepted Manuscript

Superior Reversible Tin Phosphide-Carbon Spheres
for Sodium Ion Battery Anode

Xiulin Fan, Tao Gao, Chao Luo, Fei Wang, Junkai
Hu, Chunsheng Wang



PII: S2211-2855(17)30368-3
DOI: <http://dx.doi.org/10.1016/j.nanoen.2017.06.014>
Reference: NANOEN2020

To appear in: *Nano Energy*

Received date: 13 March 2017
Revised date: 6 June 2017
Accepted date: 6 June 2017

Cite this article as: Xiulin Fan, Tao Gao, Chao Luo, Fei Wang, Junkai Hu and Chunsheng Wang, Superior Reversible Tin Phosphide-Carbon Spheres for Sodium Ion Battery Anode, *Nano Energy*, <http://dx.doi.org/10.1016/j.nanoen.2017.06.014>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Superior Reversible Tin Phosphide-Carbon Spheres for Sodium Ion Battery Anode

Xiulin Fan^a, Tao Gao^a, Chao Luo^a, Fei Wang^a, Junkai Hu^b, Chunsheng Wang^{a*}

^aDepartment of Chemical and Biomolecular Engineering, University of Maryland, College Park, MD 20742, USA. E-mail:

^bDepartment of Chemistry & Biochemistry, University of Maryland, College Park, MD 20742, USA.

cswang@umd.edu

Abstract

Sodium ion batteries (SIB) have potential for large scale renewable energy storage due to geopolitical abundance of Na. However, the high capacity Na-ion anodes still suffer from poor cycling stability and low Coulombic efficiency (CE). Herein, uniform Sn₄P₃@C spheres were synthesized by a facile aerosol spray-pyrolysis-phosphidation method. By tuning the electrolyte, a reversible capacity of ~800 mAh/g with an extremely low capacity decay rate of 0.09 % per cycle was achieved with a record-high initial CE (>90%) and high cyclic CE (~99.9%). The Sn₄P₃@C in the stable ether-based electrolyte shows the highest accumulated cycling capacities in the reported SIB anodes.

Graphical abstract

Download English Version:

<https://daneshyari.com/en/article/5451999>

Download Persian Version:

<https://daneshyari.com/article/5451999>

[Daneshyari.com](https://daneshyari.com)