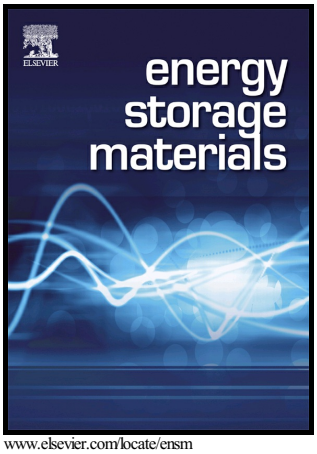

www.elsevier.com/locate/ensm

S-doped Carbon@TiO_2 to Store Li^+/Na^+ with High Capacity and Long Life-Time

Changmiao Chen, Yincai Yang, Shuangshuang Ding, Zengxi Wei, Xuan Tang, Pengchao Li, Taihong Wang, Guozhong Cao, Ming Zhang

PII: S2405-8297(17)30671-2
DOI: https://doi.org/10.1016/j.ensm.2018.01.015
Reference: ENSM299

To appear in: *Energy Storage Materials*

Received date: 7 December 2017
Revised date: 23 January 2018
Accepted date: 27 January 2018

Cite this article as: Changmiao Chen, Yincai Yang, Shuangshuang Ding, Zengxi Wei, Xuan Tang, Pengchao Li, Taihong Wang, Guozhong Cao and Ming Zhang, S-doped Carbon@TiO_2 to Store Li^+/Na^+ with High Capacity and Long Life-Time, *Energy Storage Materials,* https://doi.org/10.1016/j.ensm.2018.01.015

S-doped Carbon@TiO_2 to Store Li^+/Na^+ with High Capacity and Long Life-Time

Changmiao Chen[a], Yincai Yang[b], Shuangshuang Ding[a], Zengxi Wei[a], Xuan Tang[c], Pengchao Li[a], Taihong Wang[b], Guozhong Cao[d,*], and Ming Zhang[a,*]

[a] Key Laboratory for Micro/Nano Optoelectronic Devices of Ministry of Education, School of Physics and Electronics, Hunan University, Changsha 410082, China.

[b] State Key Laboratory for Chemo/Biosensing and Chemometrics, College of Chemistry and Chemical Engineering, Hunan University, Changsha 410082, China.

[c] Clean Energy Automotive Engineering Center, Tongji University, Shanghai 201804, China.

[d] Department of Materials Science & Engineering, University of Washington, Seattle, Washington, 98195, USA.

* Corresponding Author: gzcao@uw.edu (G.Z. Cao); zhangming@hnu.edu.cn (M. Zhang)

Abstract

Sodium-ion batteries as the possible replacements of lithium-ion batteries have drawn much attention recently. Although graphite have been the anodes of commercial lithium-ion batteries, it is difficult to reversibly intercalate Na^+ of large diameter in graphite with high capacity. In this study, S-doped carbon@TiO_2 core-shell composites are designed and prepared via a facile hydrothermal route. The composites as anodes showed high reversible capacities of 768 and 480 mAh g^{-1} (higher than the theoretical values of both graphite and