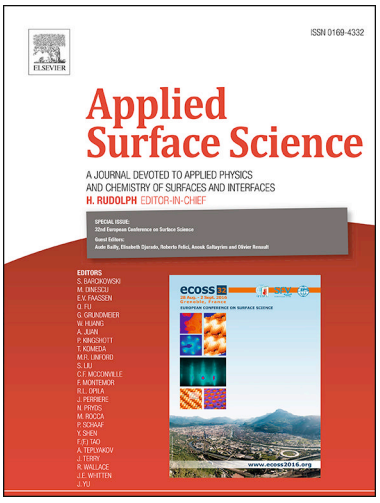
Accepted Manuscript



Full Length Article

Nitrogen-doped holey carbon nanotubes: dual polysulfides trapping effect towards enhanced lithium-sulfur battery performance

Liang Chen, Chenxi Xu, Liming Yang, Minjie Zhou, Binhong He, Zhengu Chen, Zhi Li, Mengting Shi, Zhaohui Hou, Yafei Kuang

PII: S0169-4332(18)31484-3
DOI: https://doi.org/10.1016/j.apsusc.2018.05.166
Reference: APSUSC 39442

To appear in: *Applied Surface Science*

Received Date: 19 March 2018
Revised Date: 6 May 2018
Accepted Date: 21 May 2018

Please cite this article as: L. Chen, C. Xu, L. Yang, M. Zhou, B. He, Z. Chen, Z. Li, M. Shi, Z. Hou, Y. Kuang, Nitrogen-doped holey carbon nanotubes: dual polysulfides trapping effect towards enhanced lithium-sulfur battery performance, *Applied Surface Science* (2018), doi: https://doi.org/10.1016/j.apsusc.2018.05.166

Nitrogen-doped holey carbon nanotubes: dual polysulfides trapping effect towards enhanced lithium-sulfur battery performance

Liang Chen[† a,c], Chenxi Xu[† c], Liming Yang [b], Minjie Zhou [a], Binhong He [a], Zhengu Chen [a], Zhi Li [a], Mengting Shi [a], Zhaohui Hou[*a], Yafei Kuang[*c]

[a]*School of Chemistry and Chemical Engineering, Hunan Institute of Science and Technology, Yueyang 414006, P. R. China*

[b]*Key Laboratory of Jiangxi Province for Persistent Pollutants Control and Resources Recycle, Nanchang Hangkong University, Nanchang 330063, P. R. China*

[c]*College of Chemistry and Chemical Engineering, Hunan University, Changsha, 410082, P. R. China*

Abstract: Advanced sulfur hosts decorated with unique structure, optimized composition and excellent conductivity play a vital role in improving lithium-sulfur battery performance. Herein, we first prepare oxidized holey carbon nanotubes (O-H-CNTs) through a controlled air etching strategy, then exploit them as the carbon precursor to produce nitrogen-doped holey carbon nanotubes (N-H-CNTs). The influence of air etching degree on the morphology, structure, composition, conductivity and post-doping effect of O-H-CNTs is discussed in detail. The optimized O-H-CNTs-2 (2 refers to etching time) display unique holey structure and

*Corresponding author, Tel: +86 730 8648502; Fax: +86 730 8640122

E-mail addresses: zhaohuihou@126.com (Z. H. Hou), yafeik@163.com (Y. F. Kuang)

L. Chen and C. X. Xu contributed equally to this work