

## Electronic Supplementary Information

### **Excellent rate capability of nitrogen-rich sandwich-like carbon nanosheets as anode material for lithium-ion batteries**

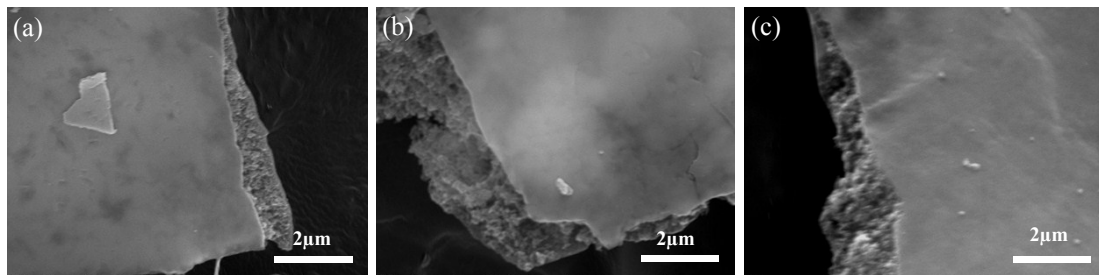
Hailiang Chu, Chunfeng Shao, Shujun Qiu,\* Yongjing Zou, Cuili Xiang, Fen Xu,  
Lixian Sun\*

Guangxi Key Laboratory of Information Materials, Guangxi Collaborative Innovation  
Center of Structure and Property for New Energy and Materials and School of  
Materials Science and Engineering, Guilin University of Electronic Technology,  
Guilin 541004, PR China

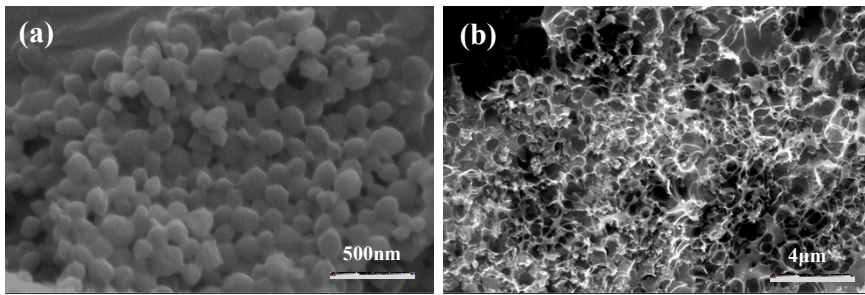
\*Authors to whom correspondence should be addressed

Tel.: +86-773-2216607, Fax: +86-773-2290129, Email: qiushujun@guet.edu.cn  
(Shujun Qiu)

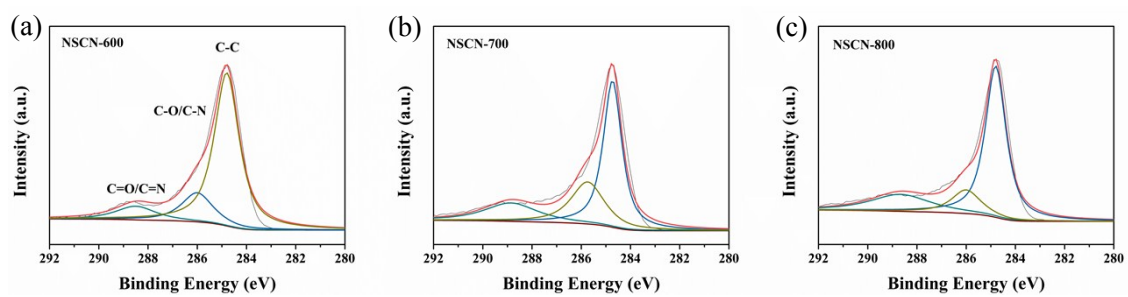
Tel.: +86-773-2303763, Email: sunlx@guet.edu.cn (Lixian Sun)



**Fig. S1** SEM images of (a) NSCN-600, (b) NSCN-700, and (c) NSCN-800.



**Fig. S2** SEM images of (a) the as-prepared CS and (b) PC-600.



**Fig. S3** High-resolution spectra of the C 1s XPS peaks of (a) NSCN-600, (b) NSCN-700, (c) NSCN-800.

**Table S2** Comparison of the electrochemical performance for NSCN-600 and previous reported carbon materials.

Samples		Current density	Cycles	Specific capacity	Ref.
boron-doped carbon nanosheets		100 mA g <sup>-1</sup>	80	460 mA h g <sup>-1</sup>	S1
HPC		100 mA g <sup>-1</sup>	100	410 mA h g <sup>-1</sup>	
		500 mA g <sup>-1</sup>		280 mA h g <sup>-1</sup>	S3
N-PCS		500 mA g <sup>-1</sup>	100	540 mA h g <sup>-1</sup>	S4
N-DHCSs		558 mA g <sup>-1</sup>	300	512 mA h g <sup>-1</sup>	S5
N-OMC-4		300 mA g <sup>-1</sup>	300	506 mA h g <sup>-1</sup>	S6
MSC		50 mA g <sup>-1</sup>	200	200 mA h g <sup>-1</sup>	S7
Carbon nanofibers		100 mA g <sup>-1</sup>	50	308 mA h g <sup>-1</sup>	S8
N-3D GFs		200 mA g <sup>-1</sup>	100	1094 mA h g <sup>-1</sup>	
		500 mA g <sup>-1</sup>		750 mA h g <sup>-1</sup>	
CMK-8		100 mA g <sup>-1</sup>	100	569 mA h g <sup>-1</sup>	S9
		500 mA g <sup>-1</sup>		300 mA h g <sup>-1</sup>	
Sandwich-like PNCs@Gr		500 mA g <sup>-1</sup>	100	1070 mA h g <sup>-1</sup>	S10
C-600		186 mA g <sup>-1</sup>	600	466 mA h g <sup>-1</sup>	S11
LHPC		200 mA g <sup>-1</sup>	400	470 mA h g <sup>-1</sup>	S12
N-doped graphene		50 mA g <sup>-1</sup>	50	1136 mA h g <sup>-1</sup>	S13
NCNFs		100 mA g <sup>-1</sup>	160	412 mA h g <sup>-1</sup>	S14
NMC-2		100 mA g <sup>-1</sup>	50	610 mA h g <sup>-1</sup>	S15
<b>NSCN-600</b>		<b>100 mA g<sup>-1</sup></b>	<b>50</b>	<b>910 mA h g<sup>-1</sup></b>	<b>This</b>
		<b>500 mA g<sup>-1</sup></b>	<b>200</b>	<b>716 mA h g<sup>-1</sup></b>	<b>work</b>

## References

- S1 Y. Yang, J. Zhang, X. Wu, Y. Fu, H. Wu, S. Guo, *J. Mater. Chem. A*, 2014, **2**, 9111.
- S2 X. Yang, C. Li, G. Zhang, C. Yang, *J. Mater. Sci*, 2015, 50, 6649.
- S3 D. Li, L.X. Ding, H. Chen, S. Wang, Z. Li, M. Zhu, H. Wang, *J. Mater. Chem. A*, 2014, **2**, 16617.
- S4 K. Zhang, X. Li, J. Liang, Y. Zhu, L. Hu, Q. Cheng, C. Guo, N. Lin, Y. Qian, *Electrochim. Acta*, 2015, **155**, 174.
- S5 J. Zhu, J. Yang, R. Miao, Z. Yao, X. Zhuang, X. Feng, *J. Mater. Chem. A*, 2016, **4**, 2286.
- S6 B. Cao, H. Liu, B. Xu, Y. Lei, X. Chen, H. Song, *J. Mater. Chem. A*, 2016, **4**, 6472.
- S7 Q. Sun, X.Q. Zhang, F. Han, W.C. Li, A.H. Lu, *J. Mater. Chem*, 2012, **22**, 17049.
- S8 X. Liu, Y. Wu, Z. Yang, F. Pan, X. Zhong, J. Wang, L. Gu, Y. Yu, *J. Power Sources*, 2015, **293**, 799.
- S9 D. Saikia, T. Wang, C. Chou, J. Fang, L. Tsai, H. Kao. *RSC Adv.* 2015, **5**, 42922.
- S10 Z. Xie, Z. He, X. Feng, W. Xu, X. Cui, J. Zhang, *ACS Appl. Mater. Interfaces*, 2016, **8**, 10324.
- S11 W. Guo, X. Li, J. Xu, H.K. Liu, J. Ma, S.X. Dou. *Electrochim. Acta.* 2016, **188**, 414.
- S12 W. Zhang, J. Yin, Z. Lin, H. Lin, H. Lu, Y. Wang, W. Huang, *Electrochim. Acta*, 2015, **176**, 1136.
- S13 D. Cai, S. Wang, P. Lian, X. Zhu, D. Li, W. Yang, H. Wang, *Electrochim. Acta*, 2013, **90**, 492.
- S14 J. Guo, J. Liu, H. Dai, R. Zhou, T. Wang, C. Zhang, S. Ding, H. G. Wang, *J. Colloid Interface Sci*, 2017, **507**, 154.
- S15 C. Shao, Z. Wang, E. Wang, S. Qiu, H. Chu, Y. Zou, C. Xiang, F. Xu L. Sun, *New J. Chem.*, 2017, **41**, 12901-12909.