

Supporting Information

Hollow neuronal carbon skeleton with ultrahigh pyridinic N content as self-supporting potassium-ion battery anode

Ya Zhang,^{a,+} Yongwen Sun,^{a,+} Zheng Xing,^{a,*} Denghu Wei,^b Zhicheng Ju,^{a, c*} Quanchao Zhuang,^a

^aThe Jiangsu Province Engineering Laboratory of High Efficient Energy Storage Technology and Equipments, School of Materials and Physics, China University of Mining and Technology, Xuzhou 221116, P.R. China.

^bSchool of Materials Science and Engineering, Liaocheng University, Liaocheng, Shandong, 252059 P.R. China.

^cJiangsu Guohua Tube Tower Manufacture Co., Ltd. Xuzhou, 221131, P.R. China.

*Corresponding author

E-mail address: juzc@cumt.edu.cn (Z. Ju); xzh086@cumt.edu.cn (Z. Xing)

[+] These authors contributed equally to this work.

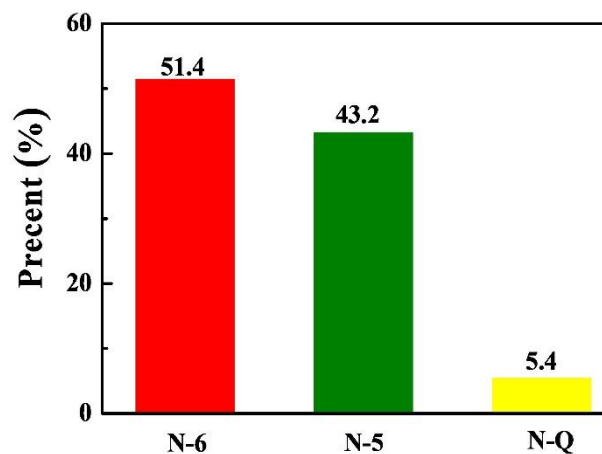


Fig.S1. Schematic illustration of different nitrogen contents

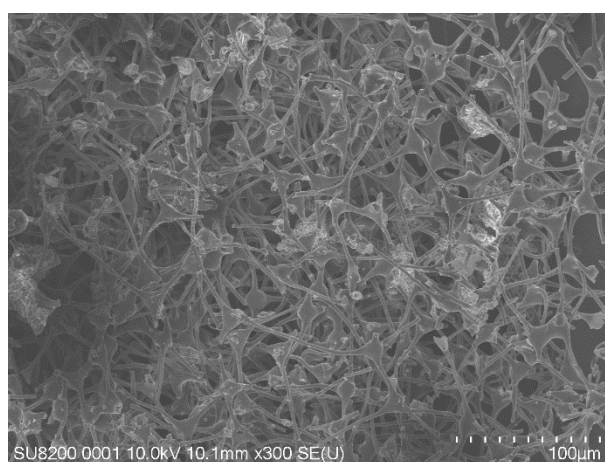


Fig.S2. The SEM of the HNCS after 100 cycles

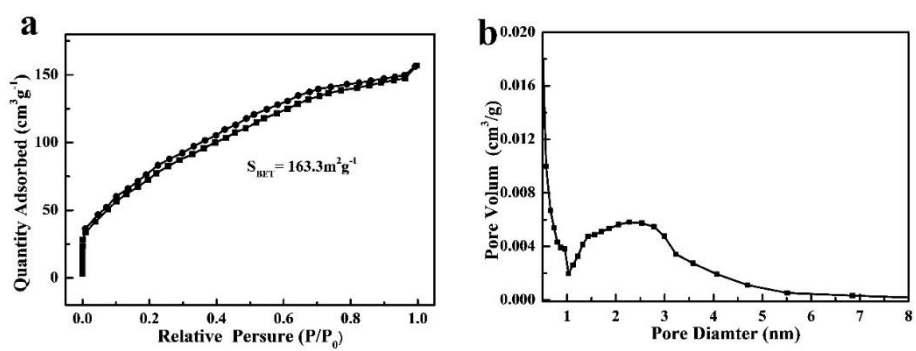


Fig.S3. (a) Nitrogen adsorption–desorption isotherm. (b) pore size distribution of HNCS

Table S1. Comparison of the electrochemical performance of carbon anodes for PIBs.

Samples	Current density (mA g ⁻¹)	Cycle numbers	Reversible capacity (mA h g ⁻¹)	Ref.
HNCS	100	200	198	this
	500	500	134	work
N doped Carbon	0.2C	100	215.2	1
	2C	500	103.4	
Graphite	C/2	50	100	2
Hard Carbon (Rubber)	139.5	200	155	3
Hard Carbon (Oak)	20	150	162	4
Soft carbon	55.8	100	212	5

References

1. R. Hao, H. Lan, C. Kuang, H. Wang and L. Guo, *Carbon*, 2018, **128**, 224–230.
2. J. Pan, Q. L. Zhang, X. C. Xiao, Y. T. Cheng and Y. Qi, *ACS Appl. Mater. Interfaces*, 2016, **8**, 5687–5693.
3. Y. Li, R. A. Adams, A. Arora, V. G. Pol, A. M. Levine, R. J. Lee, K. Akato, A. K. Naskar and M. P. Paranthaman, *Journal of The Electrochemical Society*, 2017, **164**, A1234–A1238.
4. S. J. R. Prabakar, S. C. Han, C. Park, I. A. Bhairuba, M. J. Reece, K.-S. Sohn and M. Pyo, *Journal of The Electrochemical Society*, 2017, **164**, A2012–A2016.
5. B. Cao, Q. Zhang, H. Liu, B. Xu, S. Zhang, T. Zhou, J. Mao, W. K. Pang, Z. Guo, A. Li, J. Zhou, X. Chen and H. Song, *Advanced Energy Materials*, 2018, **8**, 1801149.