

Figure S1. (a) XPS spectra of N-C and S/N-C samples; (b, c) high-resolution XPS spectra of C 1s and N 1s for the N-C sample.

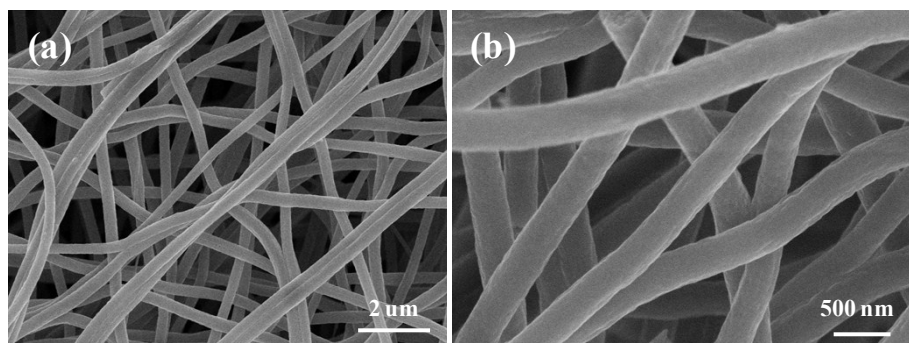


Figure S2. SEM images of N-C nanofibers: (a) low magnification and (b) high magnification.

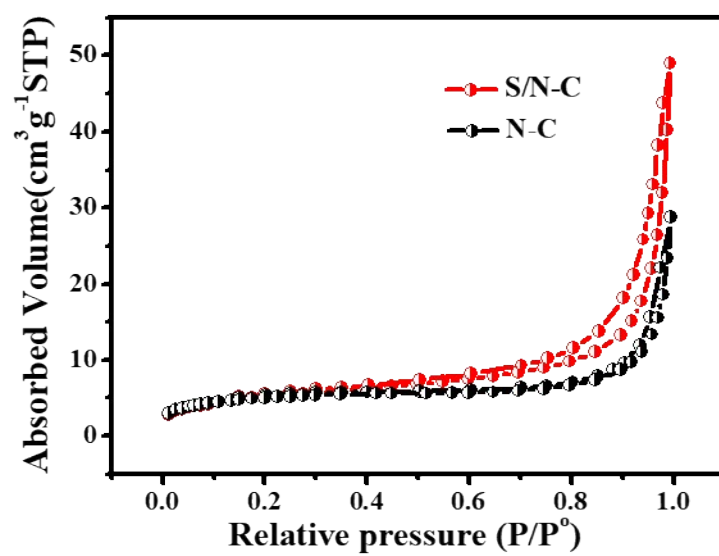


Figure S3. Nitrogen adsorption/desorption isotherms of N-C and S/N-C nanofibers.

Table S1 Element contents (%) in the N-C and S/N-C nanofibers.

	<i>S/N-C</i>	<i>N-C</i>
<i>C</i>	49.45	70.7
<i>N</i>	12.59	17.36
<i>O</i>	10.01	11.94
<i>S</i>	27.95	0

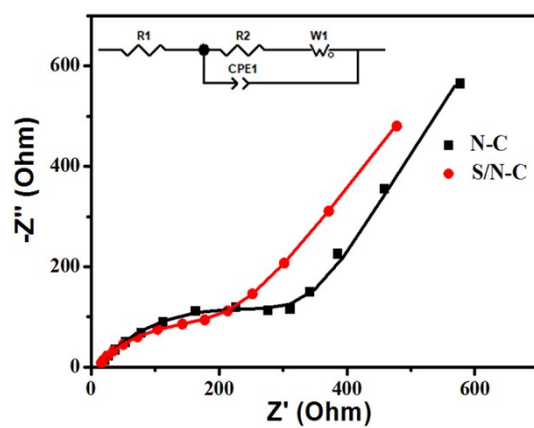


Figure S4. Nyquist plots of EIS data for N-C and S/N-C nanofiber electrodes. The inset is the equivalent circuit diagram.

Table S2 Various Carbon-based anodes for sodium ion batteries

Materials	Doped amount (S, N, %)	Capacity (mAh g ⁻¹)	Cycles	Tested current (mA g ⁻¹)	References
S/N-doped mesoporous carbon nanofibers	27.95 w% for S 12.59 w% for N	335.8 (426.3)	800 (400)	5000 (100)	This work
S-doped N-rich carbon nanosheets	9.19 w% for S 20.01 w% for N	211	1 000	1 000	Ref. 1
N, S-doped carbon nanofibers	2.8 w% for S 10.9 w% for N	164.3	6 000	10 000	Ref. 2
Nitrogen and sulfur co-doped carbon nanosheets	4.96 w% for N 3.01 w% for S	248	500	100	Ref. 3
N/S codoped ordered mesoporous carbon	20.32 at% for N 0.82 at% for S	220	3 000	5 000	Ref. 4
pTTPN@600	7.52 w% for N 1.63 w% for S	74	2 000	10 000	Ref. 5
Sulfurized polyacrylonitrile derived carbon	~8 w% for N 3.39 w% for S	126.5	10 000	10 000	Ref. 6
Sulfur-doped disordered carbon	26.91 w% for S	271	1 000	1 000	Ref. 7
Covalent sulfur-carbon complex	40.1 w% for S	590	200	100	Ref. 8
Sulfur-doped carbon spheres	25.5 w% for S	238.2	600	1 000	Ref. 9
N-doped porous carbon	2.14 at% for N	198.6	500	200	Ref. 10
Nitrogen-doped 3D porous carbon monolith	15.02 w% for N	175	3 000	500	Ref. 11
Ultrathin carbon nanocups		212	1 000	1500	Ref. 12
FeS@Fe ₃ C@GC		575.7	100	100	Ref. 13
TiO ₂ -Sn@carbon nanofibers		413	400	100	Ref. 14
Mo ₂ C embedded in S-doped carbon		102.7	500	5 000	Ref. 15

References

- [1] J. Q. Yang, X. L. Zhou, D. H. Wu, X. D. Zhao, Z. Zhou, Adv. Mater., 2017, 29, 1604108.
- [2] Y. Bao, Y. P. Yang, X. Song, J. Long, S. Q. Wang, L.-X. Ding, H. H. Wang, Electrochim. Acta, 2018, 276, 304–310.
- [3] X. Miao, D. F. Sun, X. Z. Zhou, Z. Q. Lei, Chem. Eng. J., 2019, 364, 208–216.
- [4] J. Q. Ye, H. Q. Zhao, W. Song, N. Wang, M. M. Kang, Z. Li, J. Power Sources, 2019, 412,

606–614.

- [5] W. L. Shao, F. Y. Hu, C. Song, J. Y. Wang, C. Liu, Z. H. Weng, X. G. Jian, *J. Mater. Chem. A*, 2019, DOI: 10.1039/C8TA11921J.
- [6] J. Qian, F. Wu, Y. S. Ye, M. L. Zhang, Y. X. Huang, Y. Xing, W. Qu, L. Li, R. J. Chen, *Adv. Energy Mater.*, 2018, 1703159.
- [7] W. Li, M. Zhou, H. M. Li, K. L. Wang, S. J. Cheng, K. Jiang, *Energy Environ. Sci.*, 2015, 8, 2916–2921.
- [8] T. J. Wu, M. J. Jing, L. Yang, G. Q. Zou, H. S. Hou, Y. Zhang, Y. Zhang, X. Y. Cao, X. B. Ji, *Adv. Energy Mater.*, 2019, 9, 1803478.
- [9] H. M. Tang, D. Yan, T. Lu, L. K. Pan, *Electrochim. Acta*, 2017, 241, 63–72.
- [10] C. J. Li, J. Y. Li, Y. C. Zhang, X. Cui, H. B. Lei, G. F. Li, *J. Mater. Sci.*, 2019, 54, 5641–5657.
- [11] J. Gong, G. Q. Zhao, J. K. Feng, G. L. Wang, Y. L. An, L. Zhang, B. Li, *ACS Appl. Mater. Interfaces*, 2019, 11, 9125–9135.
- [12] X. Jian, H. Wang, G. F. Rao, L. Y. Jiang, H. N. Wang, C. Subramaniam, A. Mahmood, W. L. Zhang, Y. Xiang, S. X. Dou, Z. W. Zhou, D. Hui, K. Kalantar-Zadeh, N. Mahmood, *Chem. Eng. J.*, 2019, 364, 578–588.
- [13] Q. H. Wang, W. C. Zhang, C. Guo, Y. J. Liu, C. Wang, Z. P. Guo, *Adv. Funct. Mater.*, 2017, 27, 1703390.
- [14] M. L. Mao, F. L. Yan, C. Y. Cui, J. M. Ma, M. Zhang, T. H. Wang, C. S. Wang, *Nano Lett.*, 2017, 17, 3830–3836.
- [15] L. Li, Z. Chen, M. Zhang, *Solid State Ionics*, 2018, 323, 151–156.