Supplementary Information

Free-standing N-doped porous carbon fiber membrane derived from Zn-MOF-74: Synthesis and application as anode for sodium-ion battery with an excellent performance

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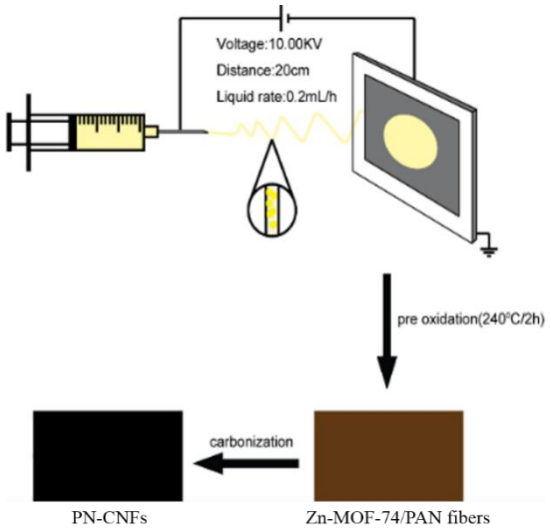
Key words: carbon fiber, metal-organic framework, sodium ion battery, heteroatom doping, porous structure, electrochemistry.



Scheme S1. Schematic diagram of free-standing MOF-74/PAN fibers films by electrospinning technology.

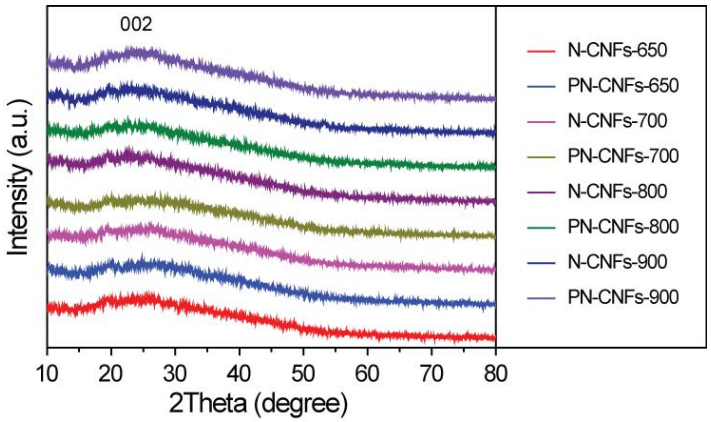


Figure S1. XRD patterns of N-CNFs-T and PN-CNFs-T at different pyrolysis temperature.

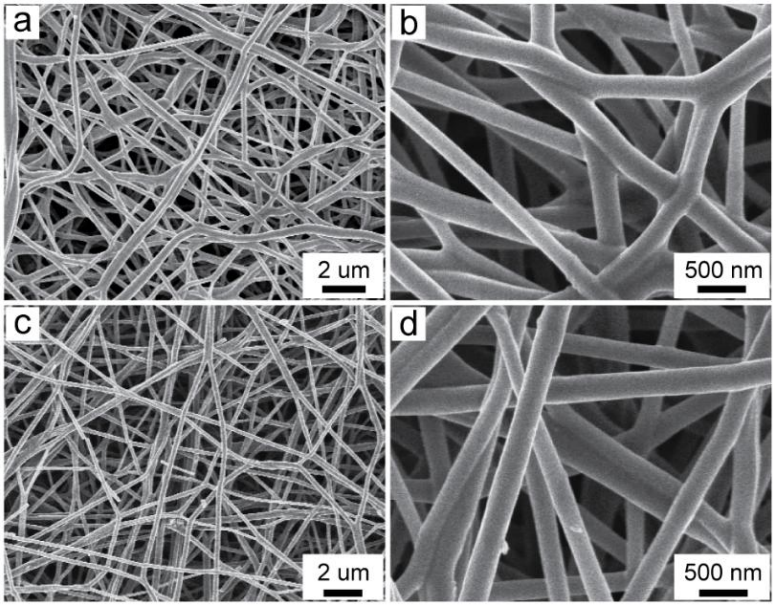


Figure S2. The SEM images of N-CNFs –650 (a, b) and PN-CNFs–650 (c, d)

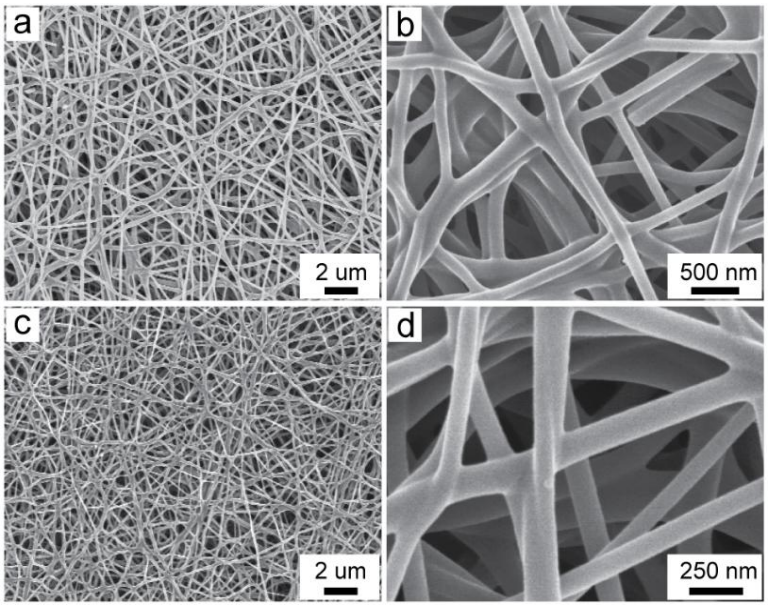


Figure S3. The SEM images of N-CNFs –700 (a, b) and PN-CNFs–700 (c, d)

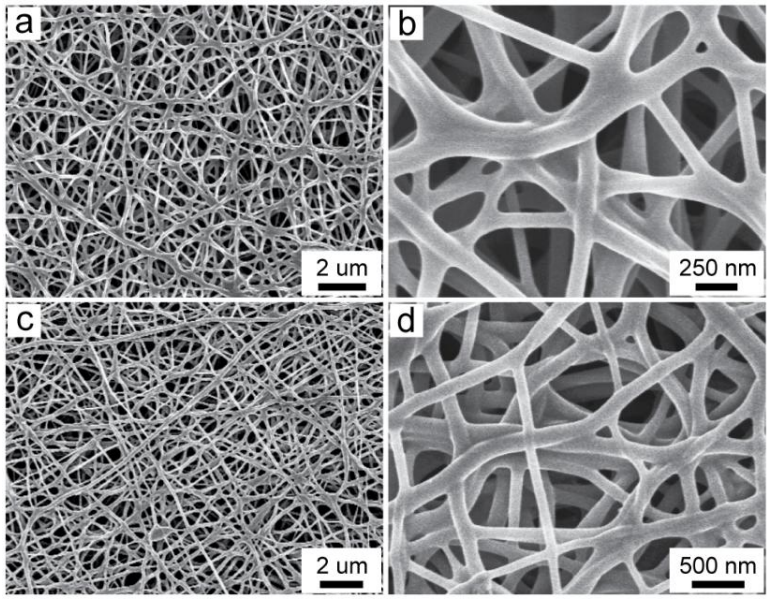


Figure S4. The SEM images of N-CNFs –800 (a, b) and PN-CNFs–800 (c, d)

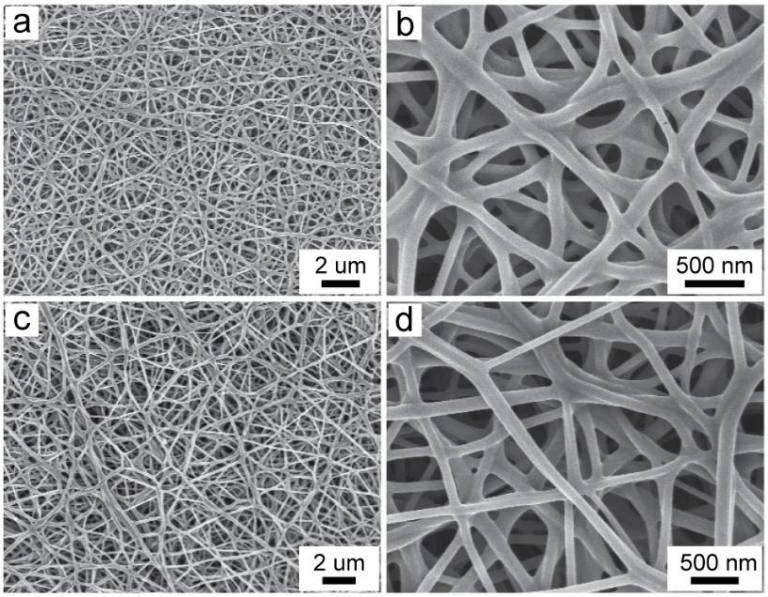


Figure S5. The SEM images of N-CNFs –900 (a, b) and PN-CNFs–900 (c, d)

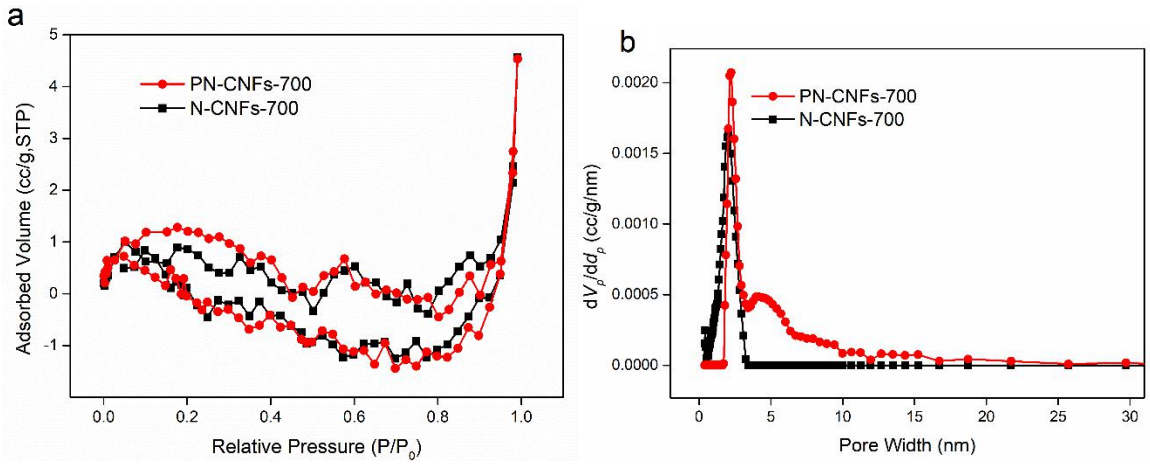


Figure S6. (a) Nitrogen adsorption-desorption isotherms and (b) the pore size distribution of PN-CFs and N-CFs.

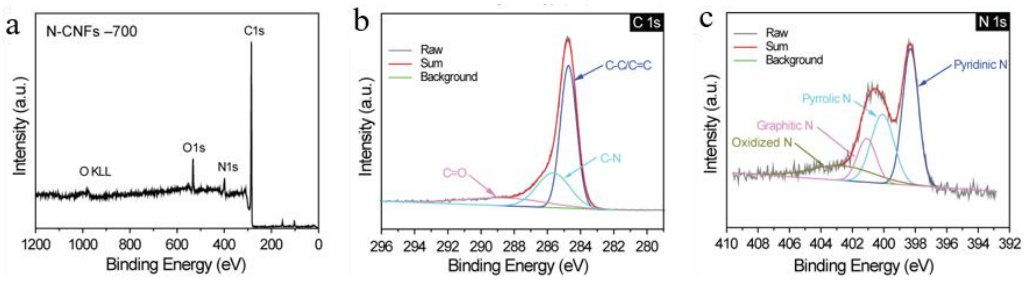


Figure S7. XPS survey (a) and high resolution C1s (b) and N1s (c) spectra of N-CFs-700.

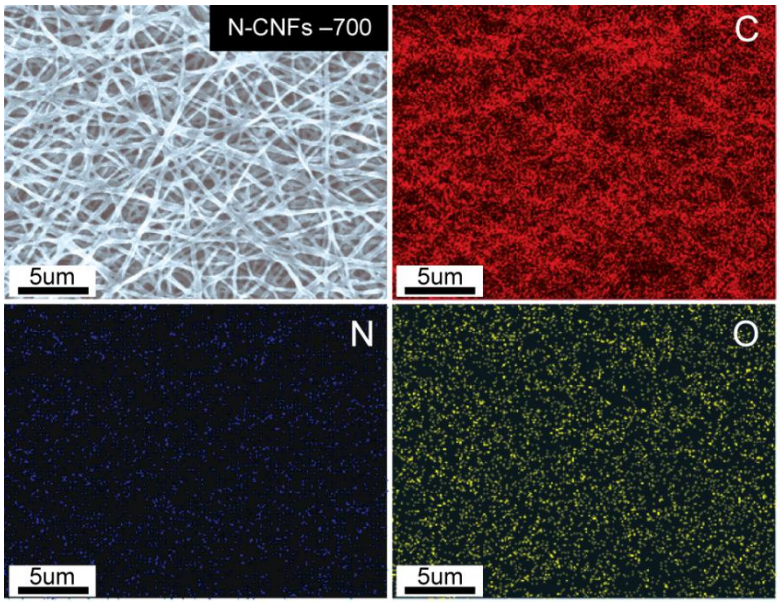


Figure S8. The SEM image and EDS mapping of N-CFs-700

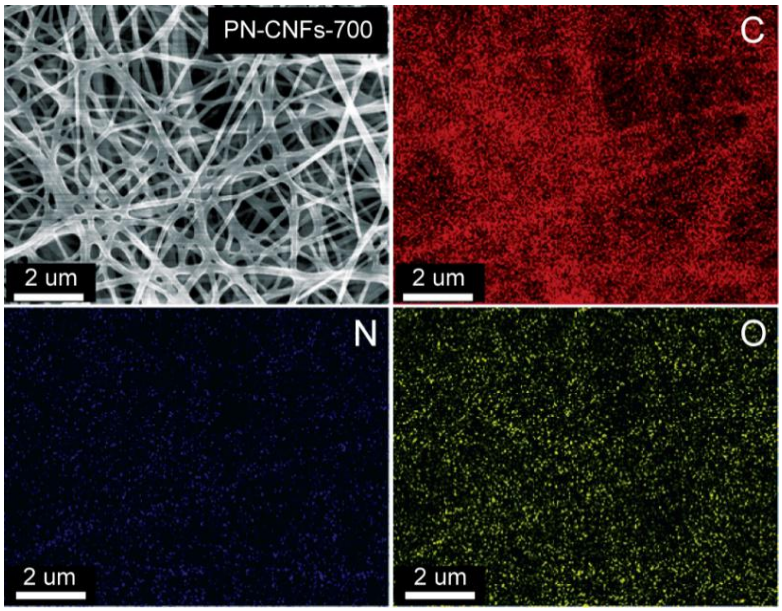


Figure S9. The SEM image and EDS mapping of PN-CFs-700.

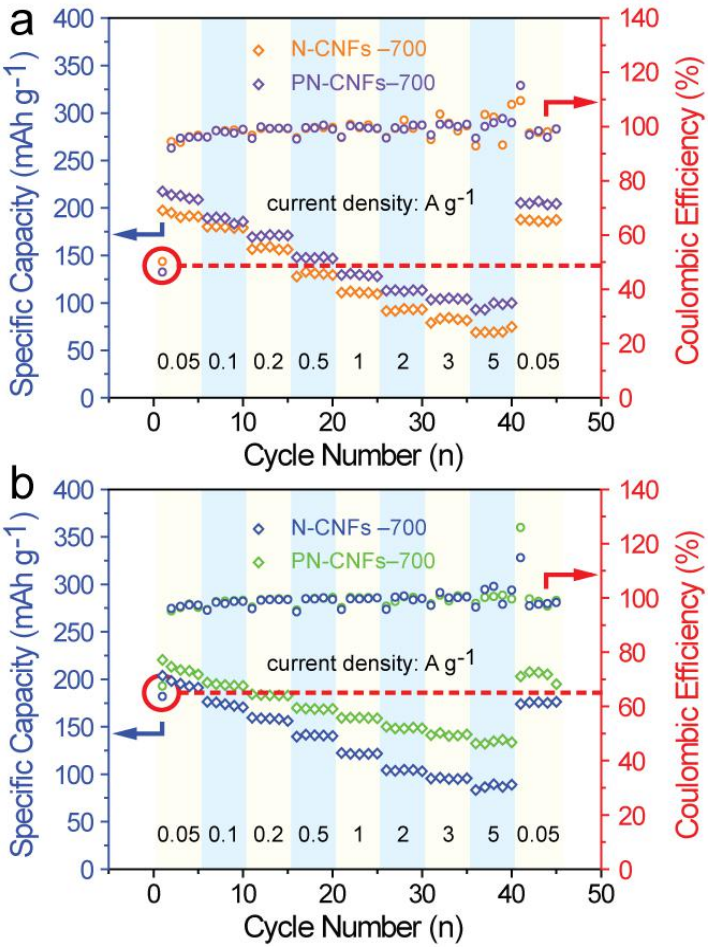


Figure S10. The rate performance of N-CNFs –700 and PN-CNFs–700 with of carbonates (a, EC/PC/FEC, 1 M sodium perchlorate) and ethers (b, diethylene glycol dimethyl ether, 1M trifluoromethyl sulfonate) electrolytes.

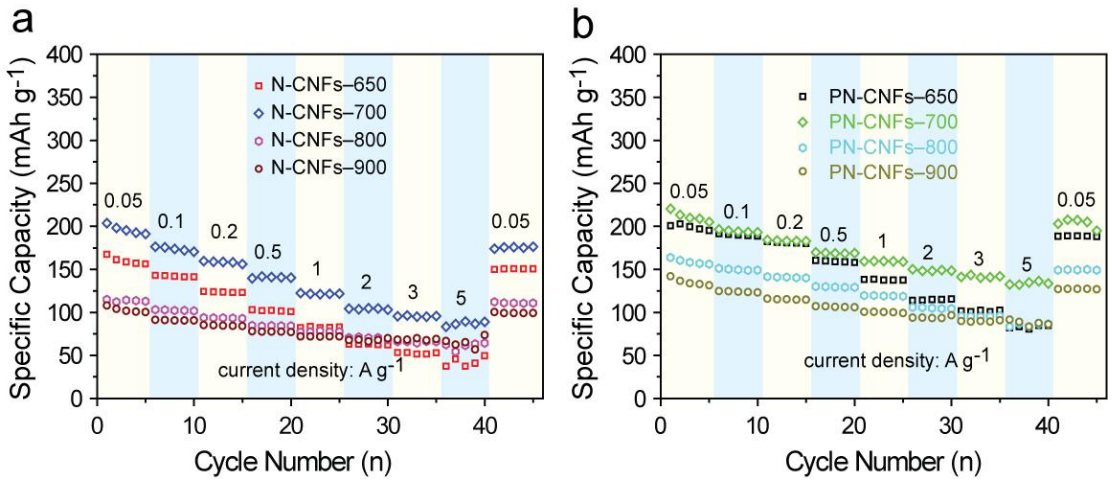


Figure S11. The rate performance of N-CNFs-T (a) and PN-CNFs-T (b) obtained at different carbonization temperatures from 650 ºC to 900 ºC.

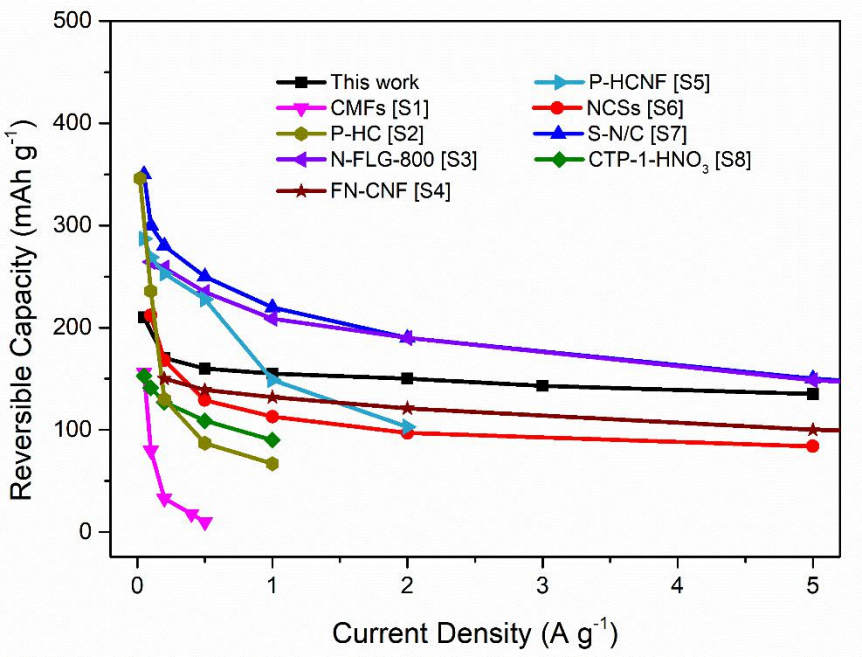


Figure S12. Comparison of the rate performances of PN-CFs fibers with reported carbon materials for SIBs.

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