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Supporting Information

A railway-like network electrode design for room temperature Na-S battery

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Supplementary Figures

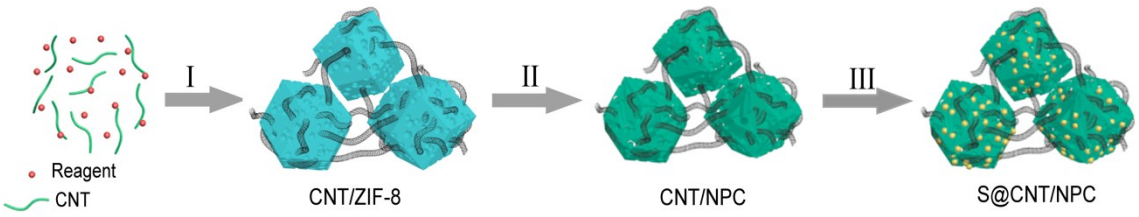

Fig. S1. Formation mechanism of S@CNT/NPC composite.

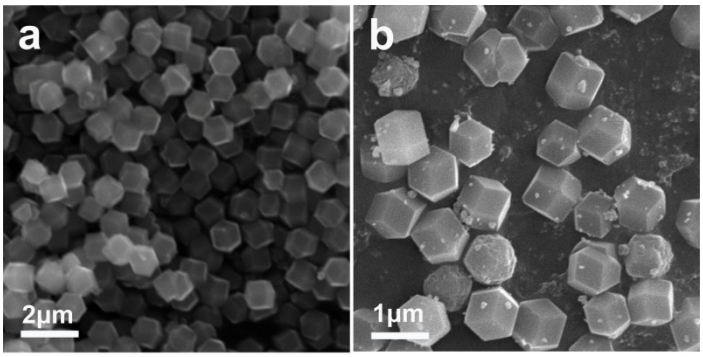

Fig. S2. FESEM images of ZIF-8 (a) and NPC (b).

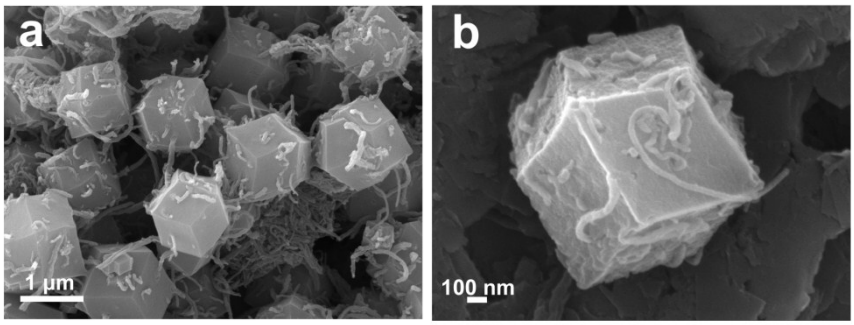

Fig. S3. FESEM images (a-b) of CNT/ZIF-8.

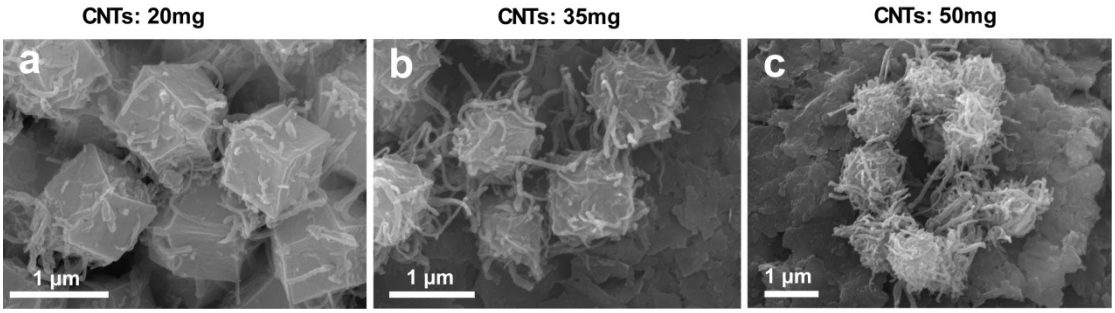

Fig. S4. FESEM images (a-c) of CNT/ZIF-8 with different content of CNTs.

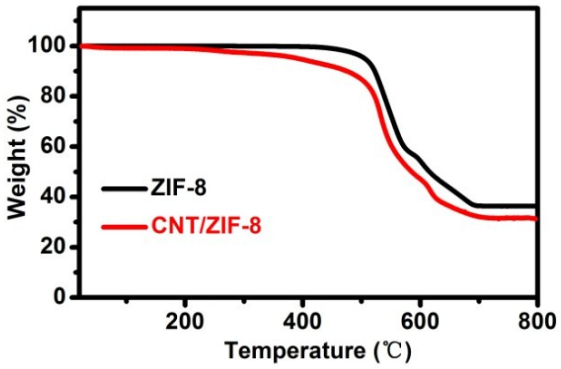

Fig. S5. Thermogravimetric analysis (TGA) under oxygen atmosphere.

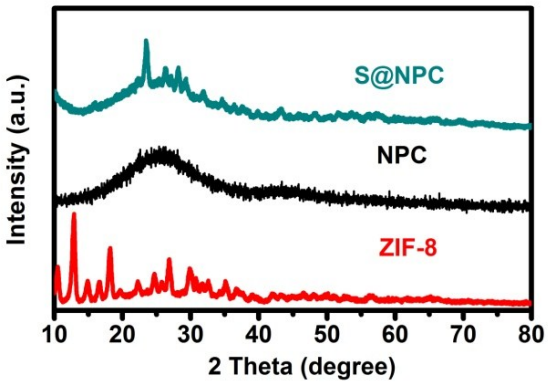

Fig. S6. XRD patterns of the ZIF-8, NPC and S@NPC composite.

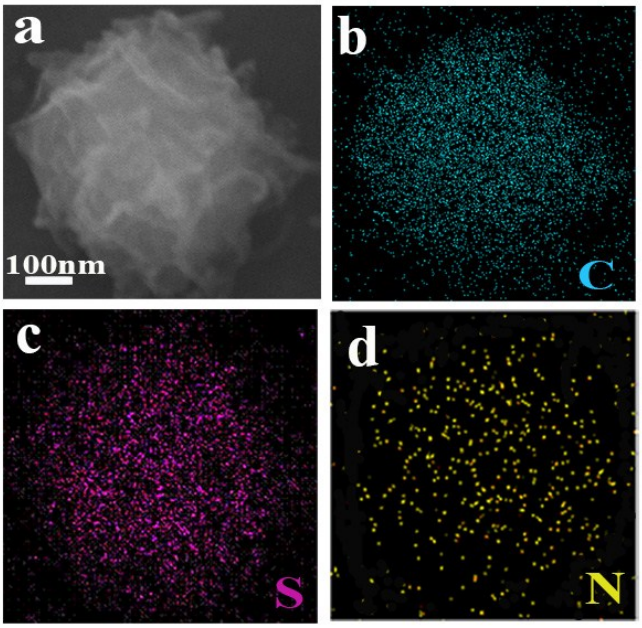

Fig. S7. FESEM elemental mapping images of C (b), S (c), and N (d) of S@CNT/NPC composite.

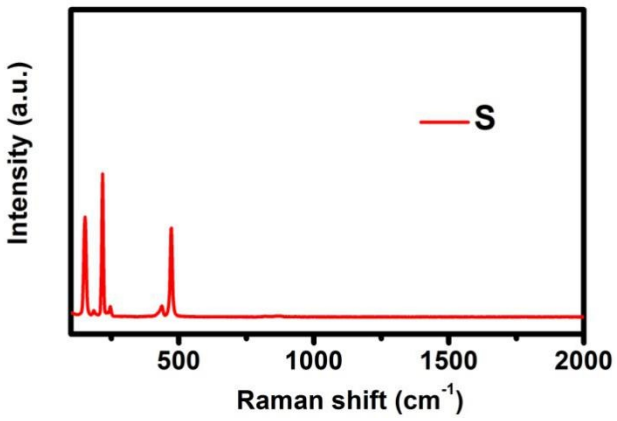

Fig. S8. Raman spectrum patterns of pure S.

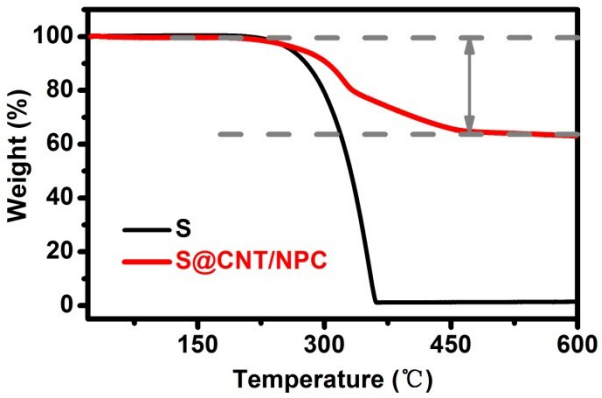

Fig. S9. Thermogravimetric analysis (TGA) of S@CNT/NPC composite and S under nitrogen atmosphere.

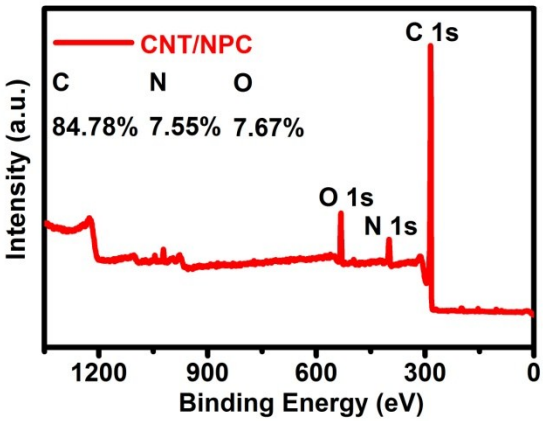

Fig. S10. XPS survey spectrum of CNT/NPC composite.

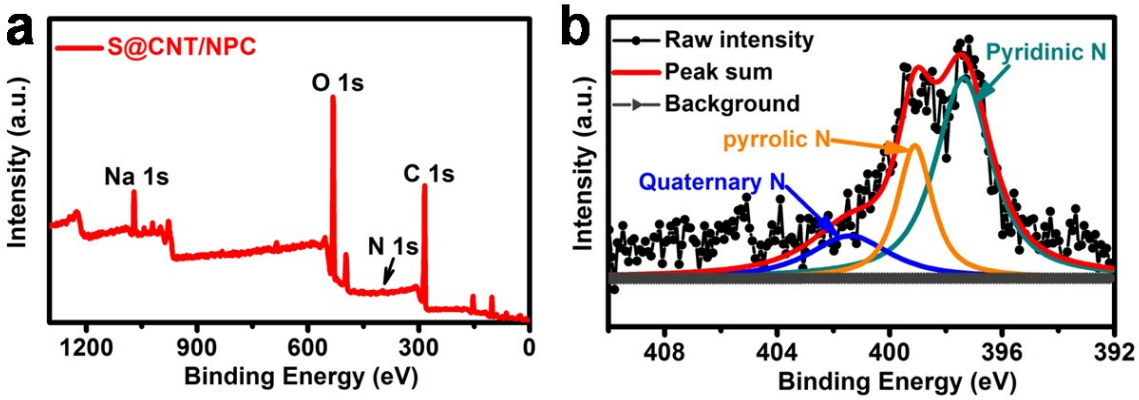

Fig. S11. XPS results of survey (a) and N 1s spectrum (b) of S@CNT/NPC composite after cycling.

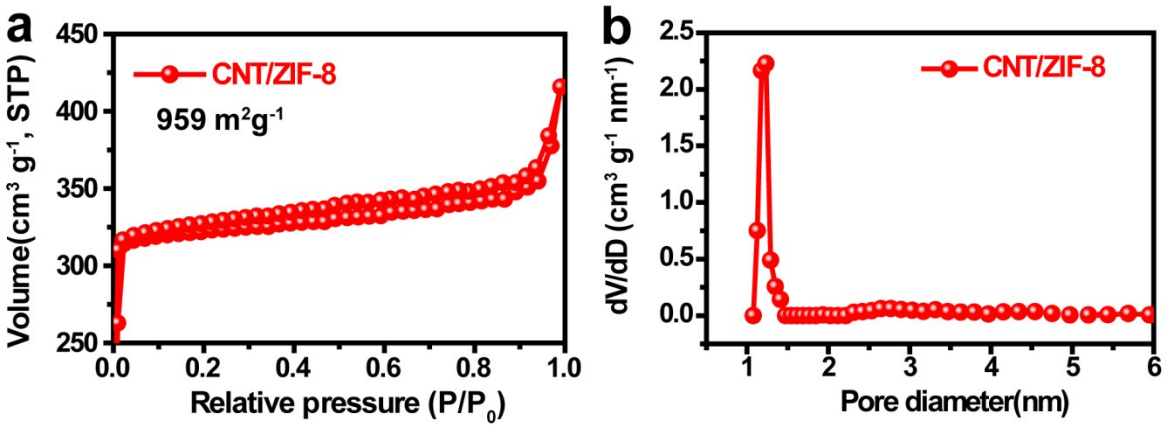

Fig. S12. N_2 adsorption-desorption isotherms and the pore size distributions (a,b) of CNT/ZIF-8.

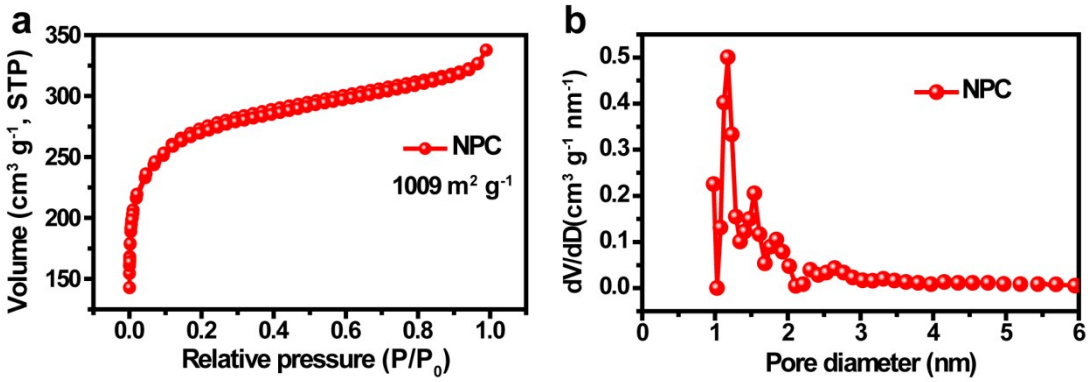

Fig. S13. N_2 adsorption-desorption isotherms and the pore size distributions (a,b) of NPC.

Sample name	BET area ($m^2 g^{-1}$)	Pore volume ($cm^3 g^{-1}$)
CNT/ZIF-8	959	0.487
CNT/NPC	2480	1.011
S@CNT/NPC	20	0.101

Fig. S14. Comparison of BET performance between CNT/ZIF-8, CNT/NPC and S@CNT/NPC composite.

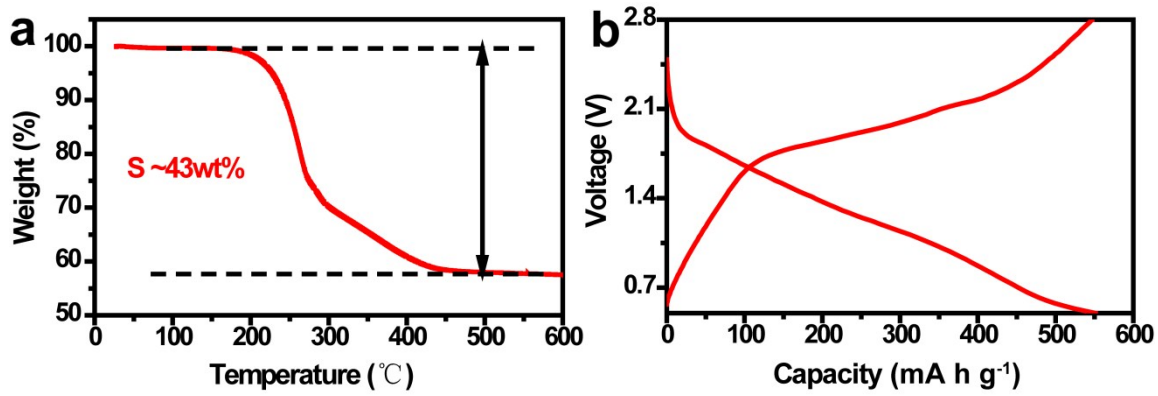

Fig. S15. (a) Thermogravimetric analysis (TGA) and (b) Discharge−charge curves at 0.5C of S@CNT/NPC composite electrode with 43% sulfur.

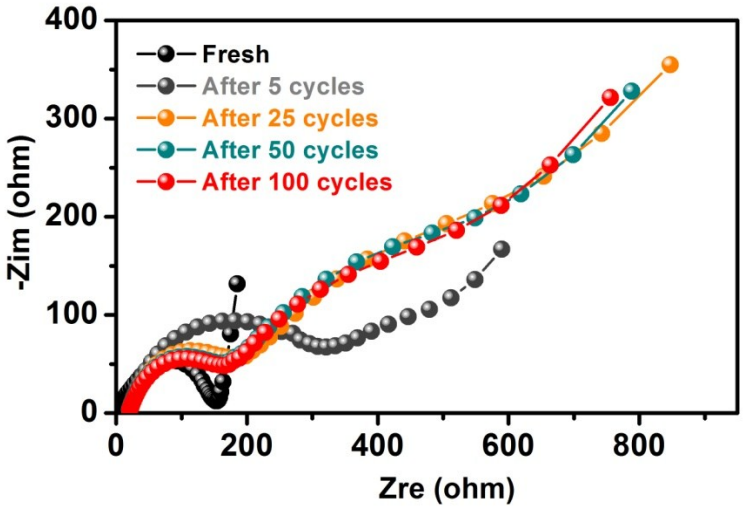

Fig. S16. Nyquist plots of the S@CNT/NPC composite electrodes before and after cycling.

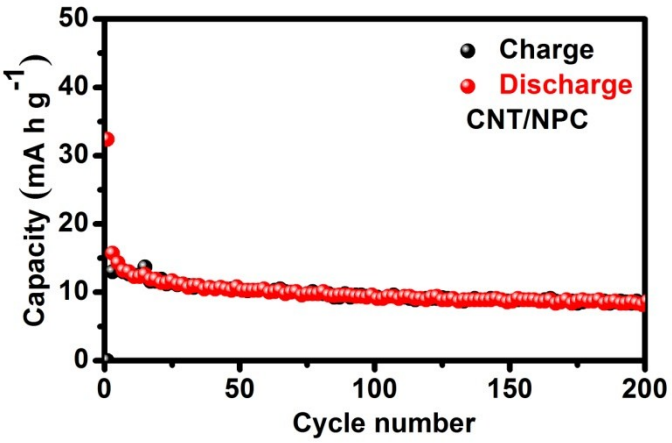

Fig. S17. Discharge-charge cycling performance of CNT/NPC composite electrode at 0.5C.

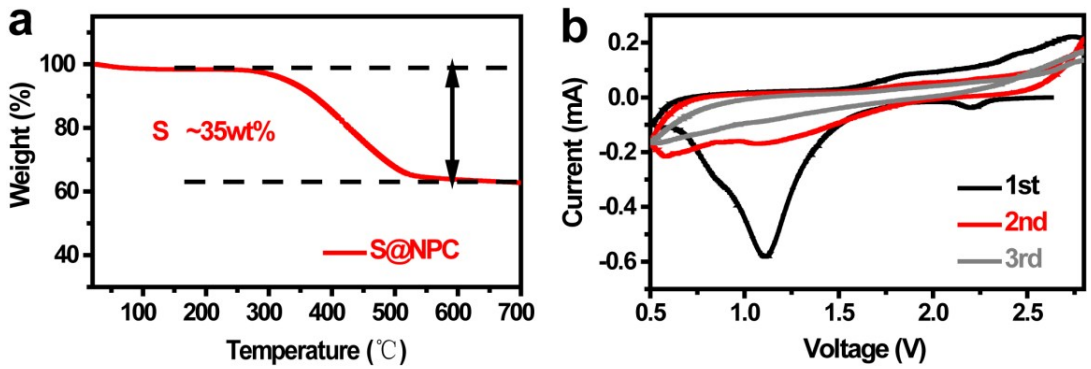

Fig. S18. TGA curve of the S@NPC composite under N_2 atmosphere (a), CV curves of the S@NPC composite (b).

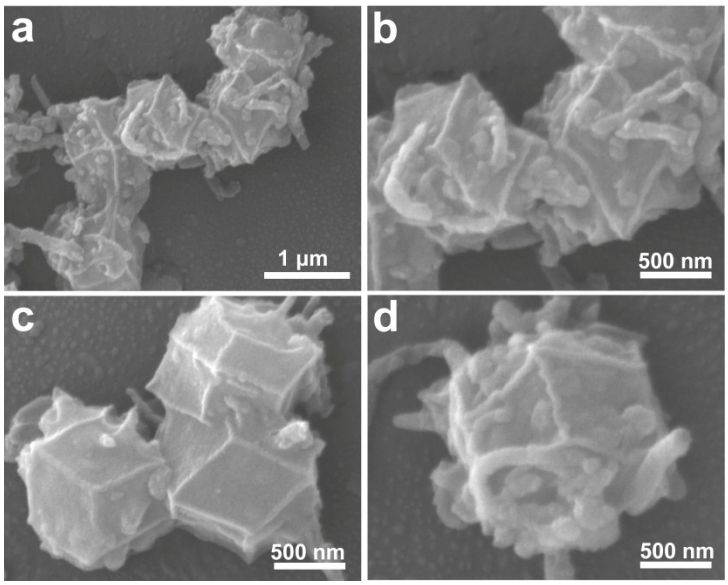

Fig. S19. FESEM images of S@CNT/NPC after cycles.

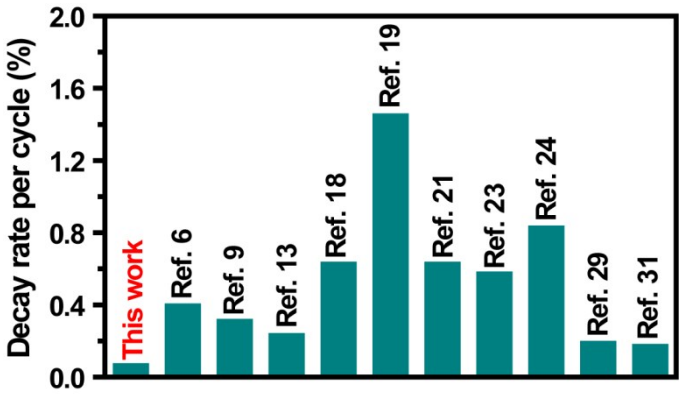

Fig. S20. Comparison of decay rate per cycle for S@CNT/NPC composite with references.