Supplementary material

Template-assisted in-situ confinement synthesis of nitrogen and oxygen co-doped 3D porous carbon network for high-performance sodium-ion batteries anode

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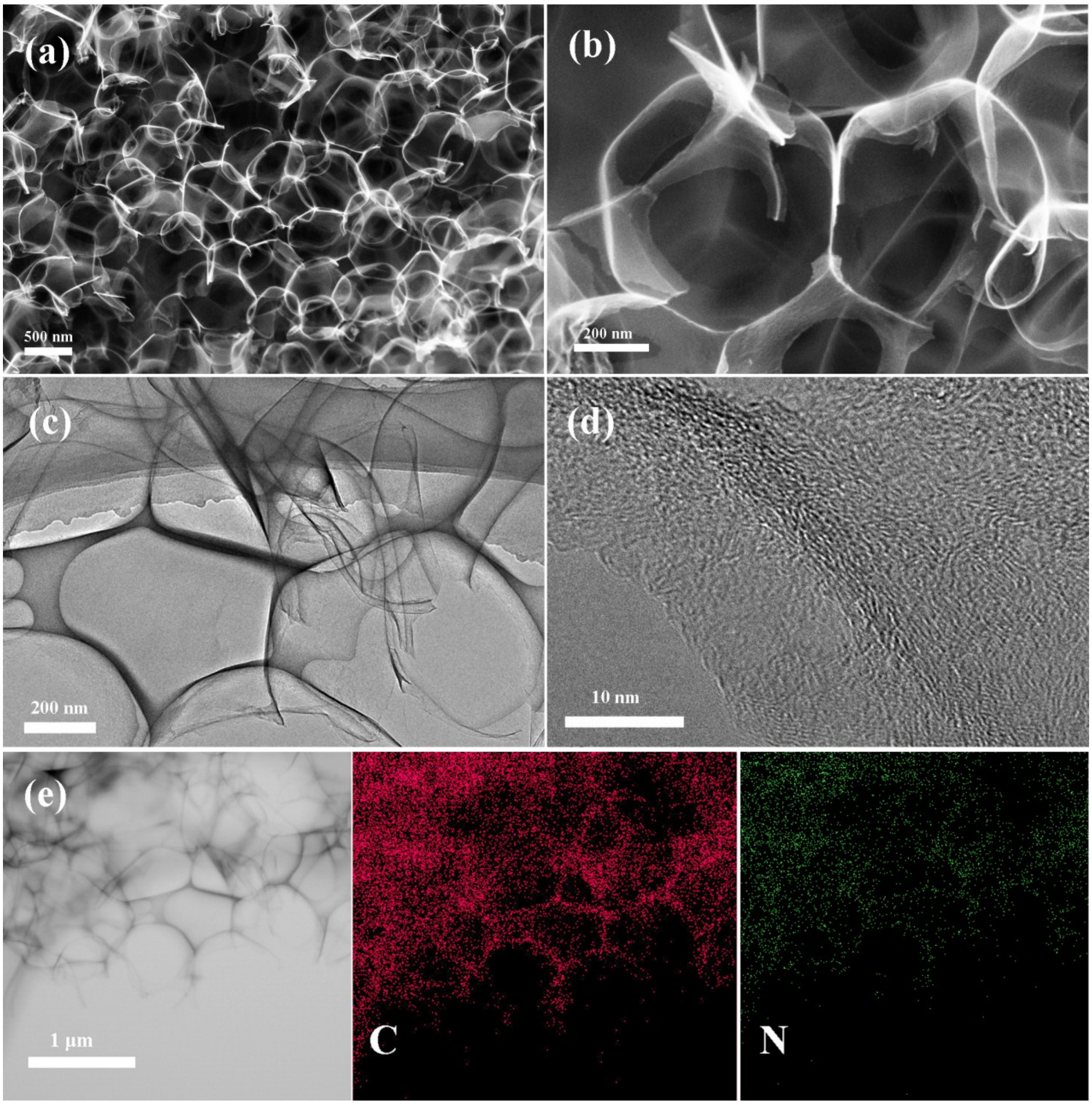

Fig.S1 (a) (b) SEM images of PU-N (c) (d) TEM of PU-N (e) TEM atomic distribution of PU-N

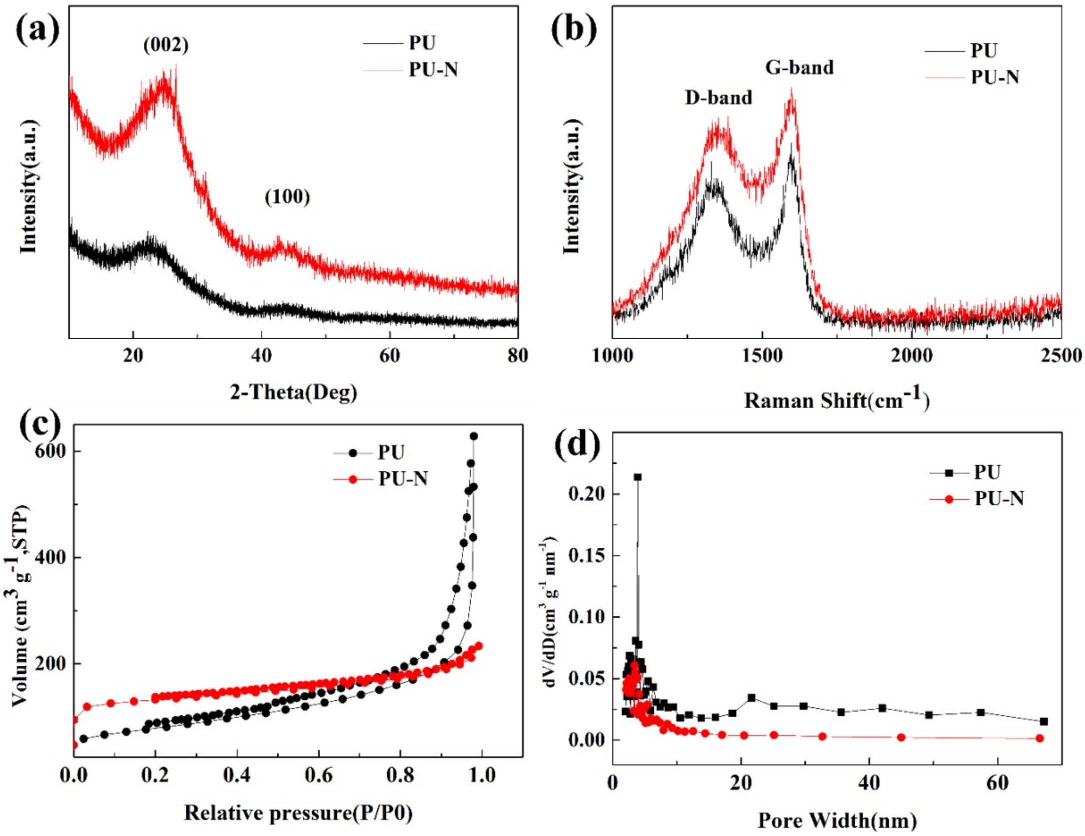

Fig.S2 (a)XRD of PU-N and PU (b) Raman spectra of PU-N and PU (c)Adsorption and desorption isothermal curve of PU-N and PU (d)Dehydration pore volume distribution of NING-N (e),(f) XPS core-level C1s and N1s spectra of PU-N

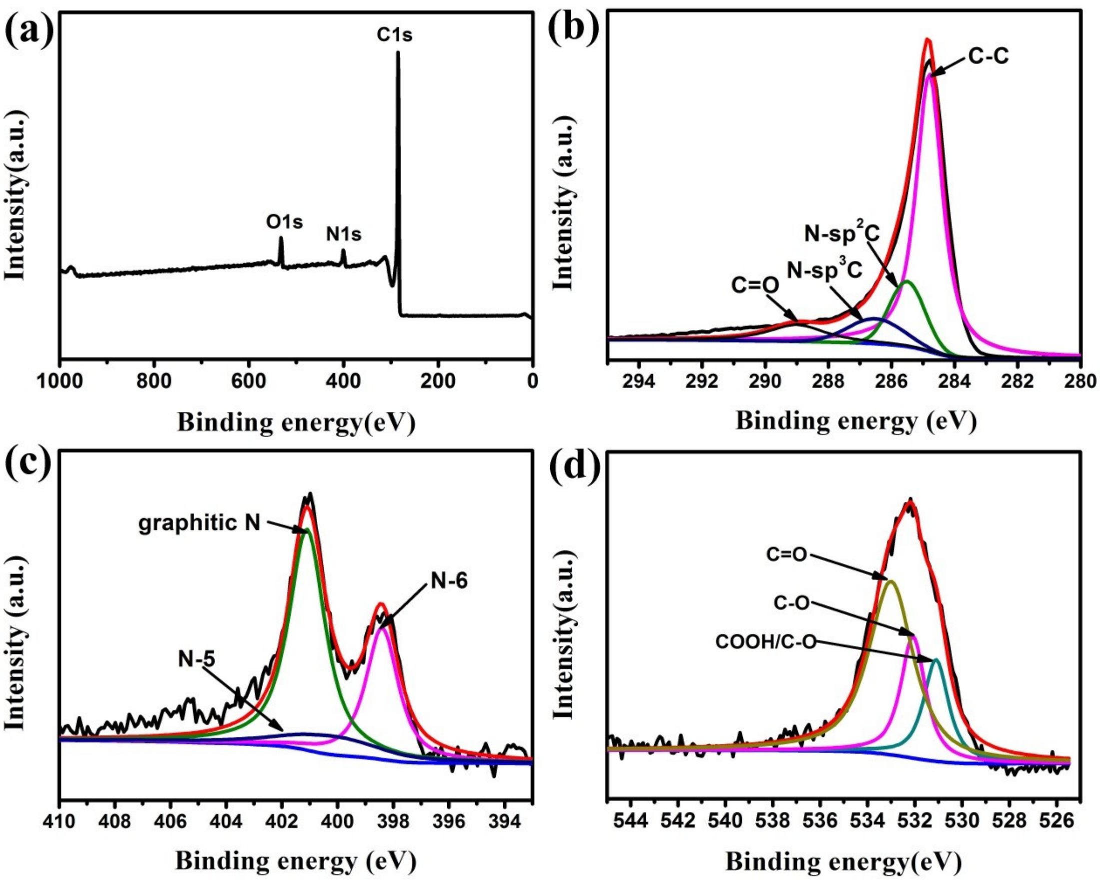

Fig.S3 (a) XPS survey spectra, (b-d) high resolution C1s, N1s, and O1s spectra of PU-N.

Table S1. Atoic% of PU-N

samples Name	PU-N
N1s	4.75
C1s	90.34
O1s	4.91

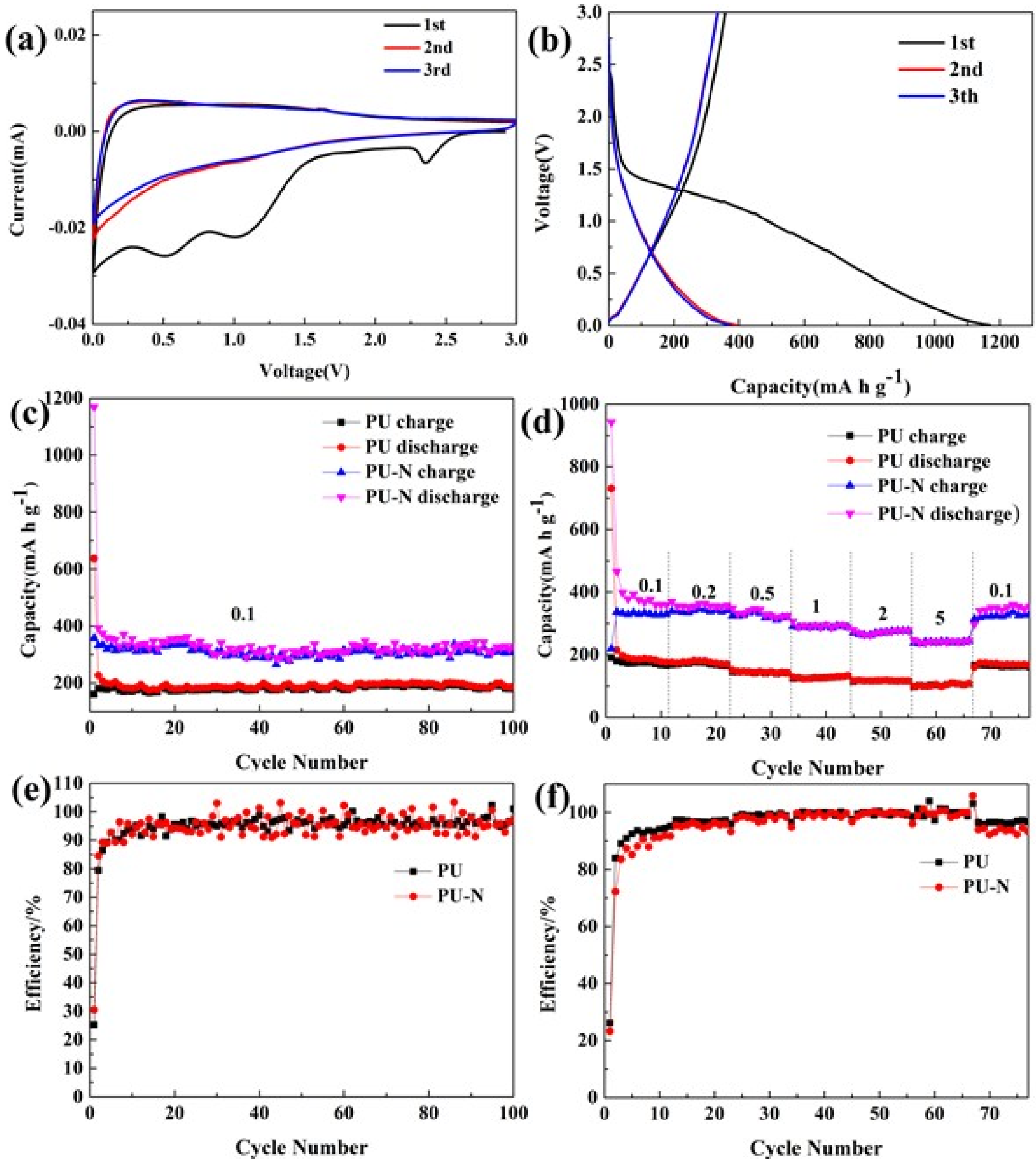

Fig.S4 (a) The cyclic voltammetry test of PU-N for first 3 cycles (b) Discharge/charge curves of PU-N for first 3 cycles. (c),(e) Cycling performance of PU-N and PU at 0.1 A g^{-1} for first 100 cycles (d),(f) Rate capability of the PU-N and PU at various rate(A g^{-1})

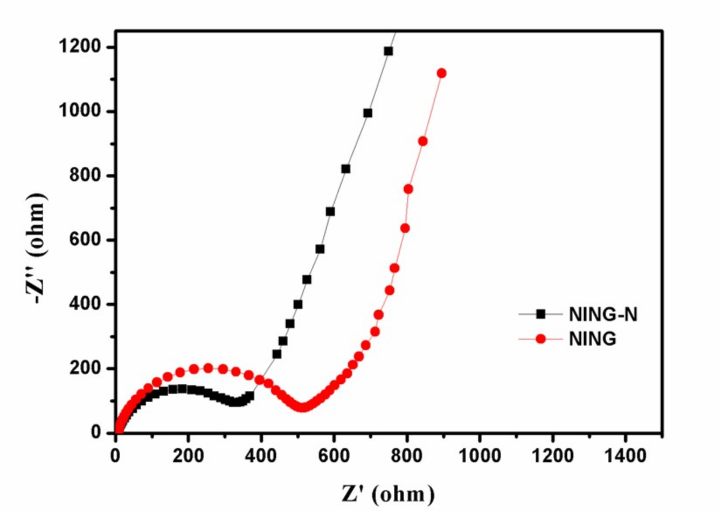

Fig.S5 Nyquist plots of NING-N and NING measured with 5 mV over the frequency range of 100 kHz and 0.01 Hz before cycling.

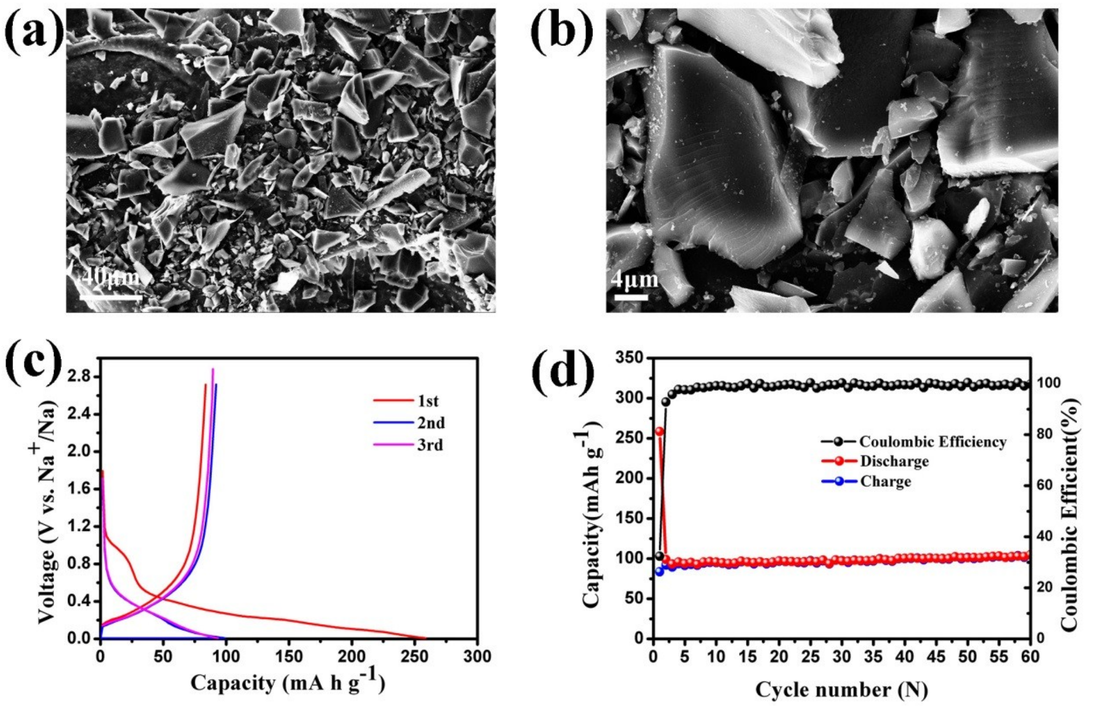

Fig.S6 The morphology and electrochemical performance of carbon materials prepared without adding NaCl. (a,b) SEM images, c) the initial three charge and discharge curves, d) the cycling performance at 100 mA g^{-1} for 60 cycles.

Table S2. Performance comparison of NING-N with other heteroatom-doped carbon for SIBs

Materials	1^{st} Capacity/rate (mAh g^{-1}/A g^{-1})	Capacity/rate/cycles (mAh g^{-1}/A g^{-1}/cycles)	Rate: Capacity (A g^{-1}: mAh g^{-1})	Reference
N,O-coped 3D porous carbon	402./0.1	416 /0.1/100	5：213	This work

N, P-doped carbon sheets	309/0.05	277/0.05/100	2：122	S1
N,P co-doped carbon foams	474/0.05	394/0.05/100	4：159	S2
N-doped amorphous carbon nanofibers	323/0.05	320/0.05/50	1：120	S3
N, O and S tridoped porous carbon	337/0.1	227/0.1/100	5：128	S4
N-doped carbon sheets	765/0.05	382/0.05/55	5：84	S5
Porous N-doped carbon sphere	307/0.2	206/0.2/600	1：155	S6
N,P co-doped carbon microspheres	355/0.05	275/0.1/90	5：136	S7
N-doped Porous Carbon	240/0.1	224/0.1/100	3.2：104	S8
N-doped porous carbon fibres	296/0.05	243/0.05/100	5：101	S9

Supplementary Reference

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