Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Supporting Information

Facile preparation of Nitrogen-doped carbon nanosheets from CO_2 for potassium ion storage

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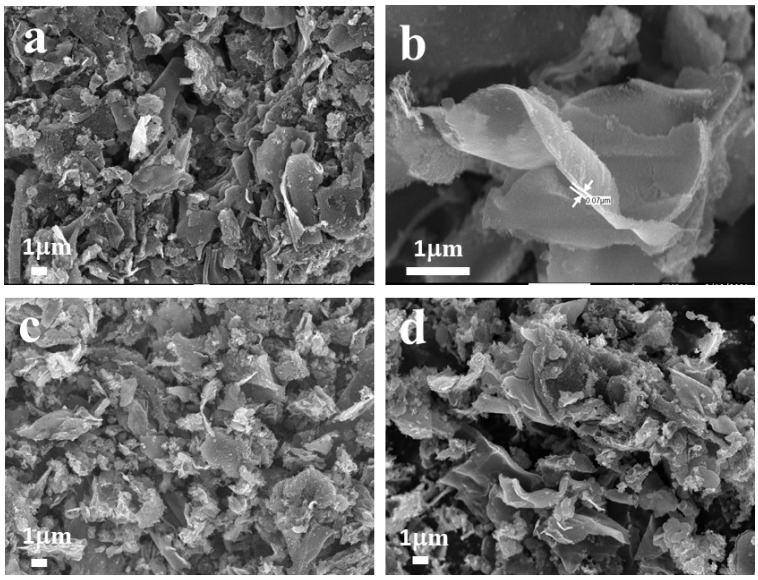

Fig. S1 SEM images of (a, b) NCNS-12, (c) NCNS-11 and (d) NCNS-14.

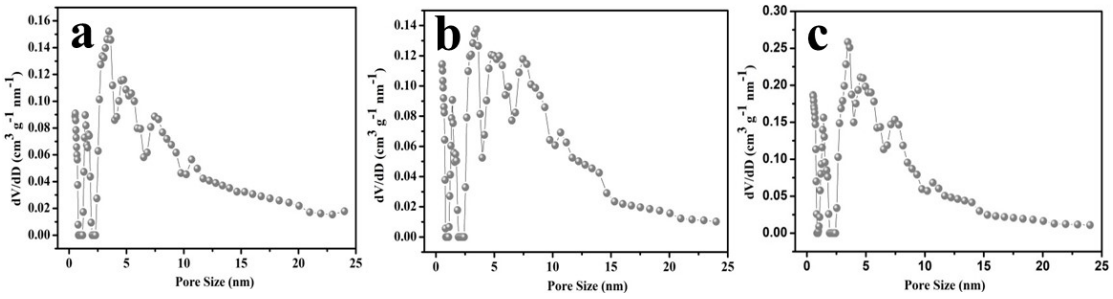

Fig. S2 Pore size distribution curves of: (a) NCNS-11, (b) NCNS-12 and (c) NCNS-14.

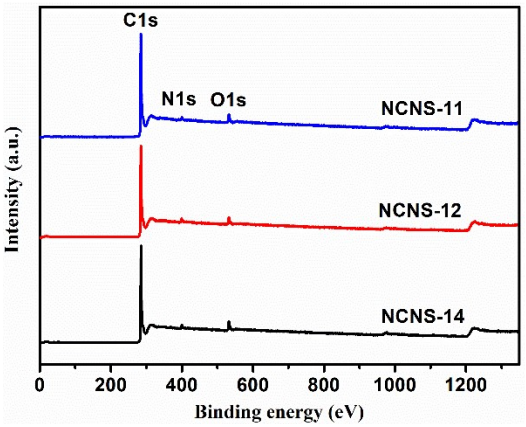

Fig. S3 XPS survey spectra of NCNS-11, NCNS-12 and NCNS-14.

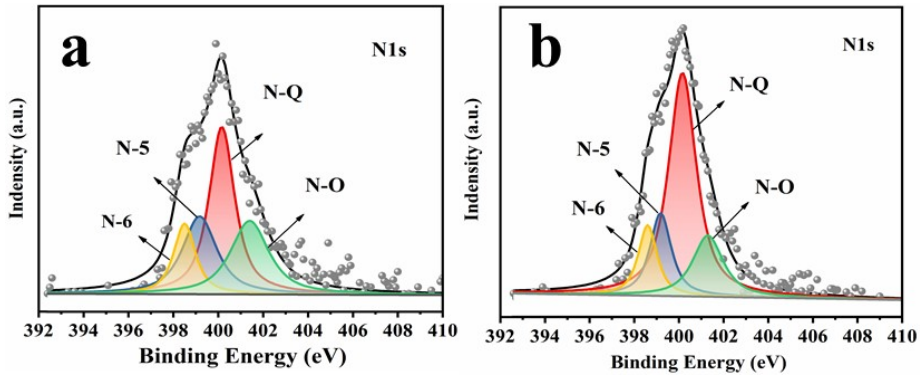

Fig. S4 Atomic contents of pyridinic nitrogen (N-6), pyridinic nitrogen (N-5), quaternary nitrogen (N-Q) and oxidized N (N-O): (a) NCNS-11, (b) NCNS-14.

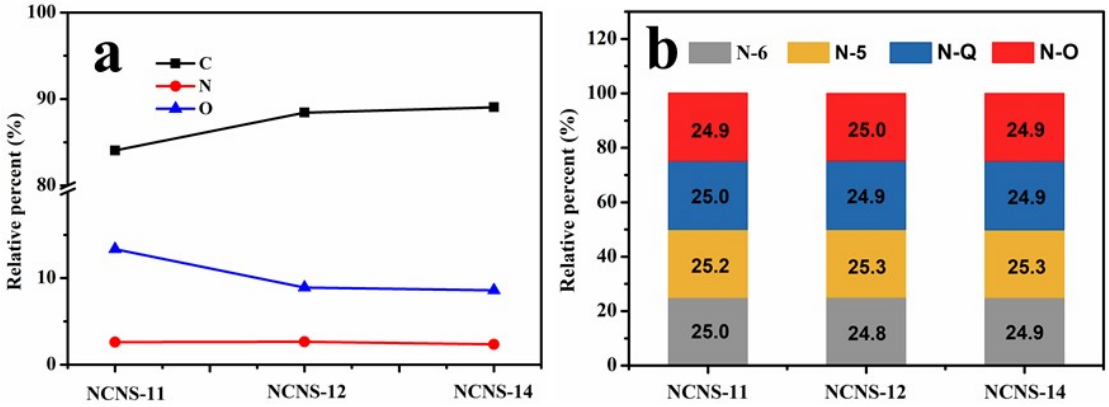

Fig. S5 Surface elemental characterization (a) elements contents of C, O, N from the combustion method, (b) atomic contents of pyridinic nitrogen (N-6), pyridinic nitrogen (N-5), quaternary nitrogen (N-Q) and oxidized N (N-O) based on the analysis of XPS.

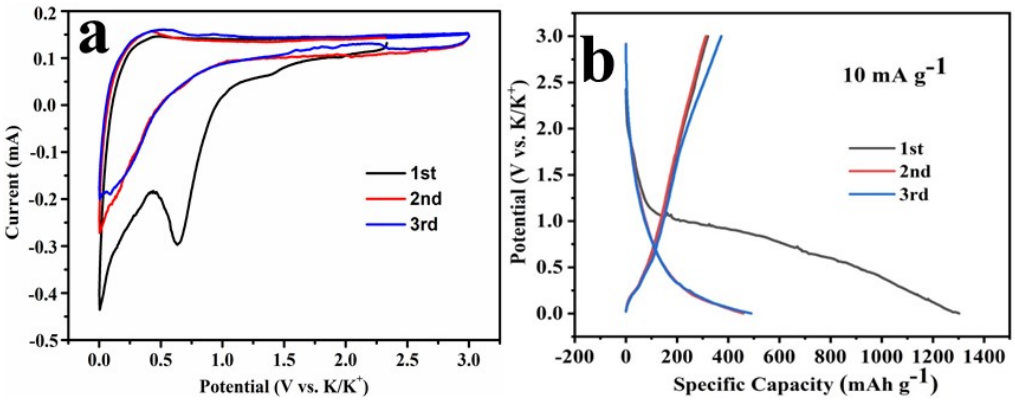

Fig. S6 Electrochemical property of NCNS-12: (a) CV curves at 0.1 mV s^{-1}, (b) charge–discharge profiles at 10 mA g^{-1}.

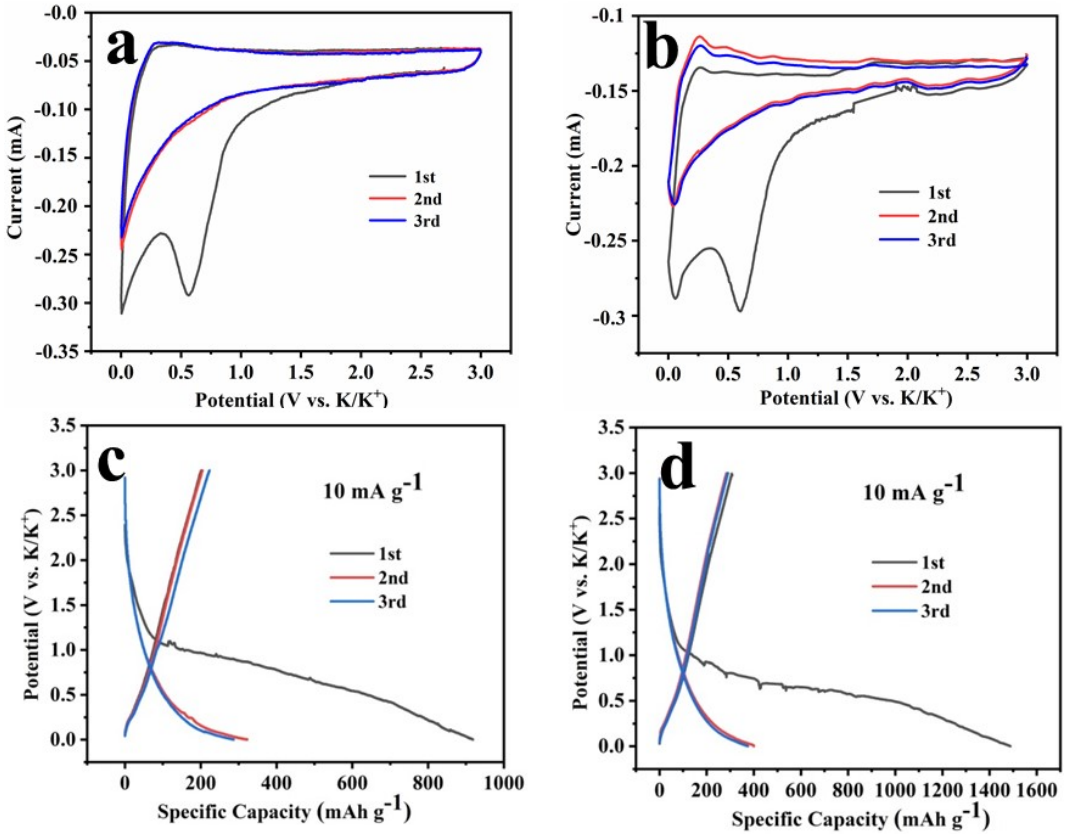

Fig. S7 Electrochemical property of NCNS-11, NCNS-14: CV at 0.1 mV s^{-1} (a) NCNS-11, (b) NCNS-14, charge–discharge profiles at 10 mA g^{-1} (c) NCNS-11, (d) NCNS-14.

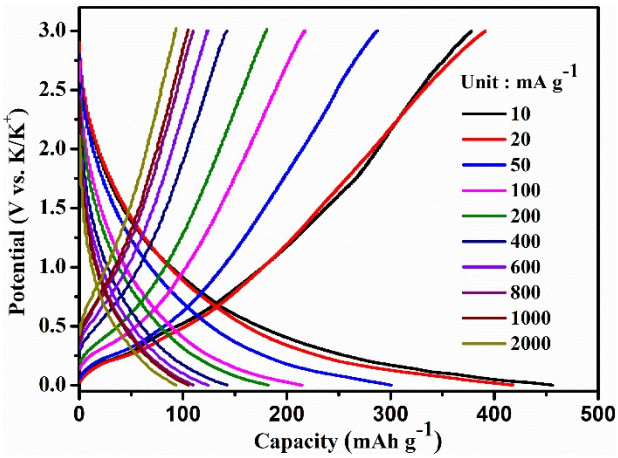

Fig. S8 Charge and discharge profiles of NCNS-12 at various current densities.

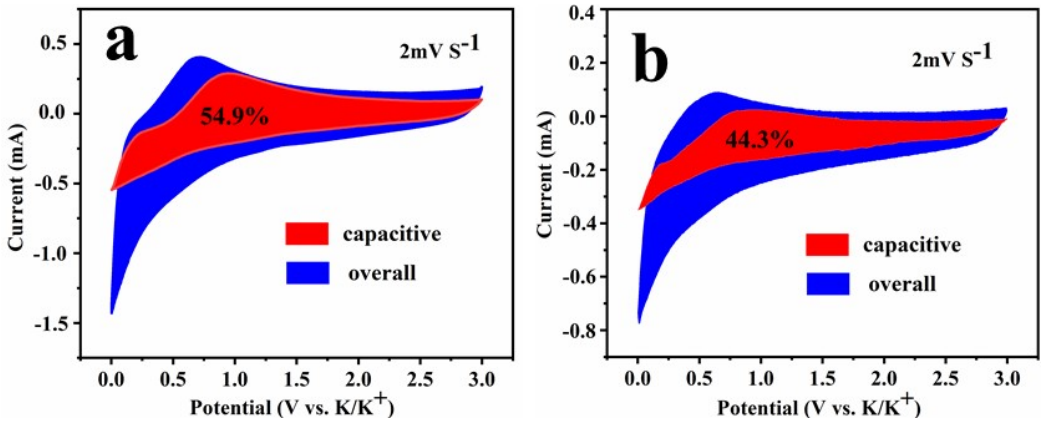

Fig. S9 Capacitive contribution at 2 mV s^{-1} (a) NCNS-11, (2) NCNS-14.

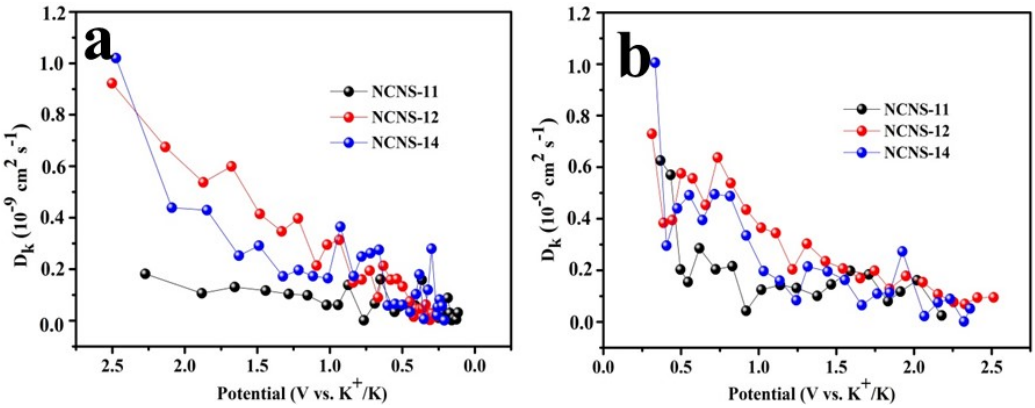

Fig. S10 The K-ion diffusion coefficient during the GITT measurement: (a) discharge and (b) charge processes.

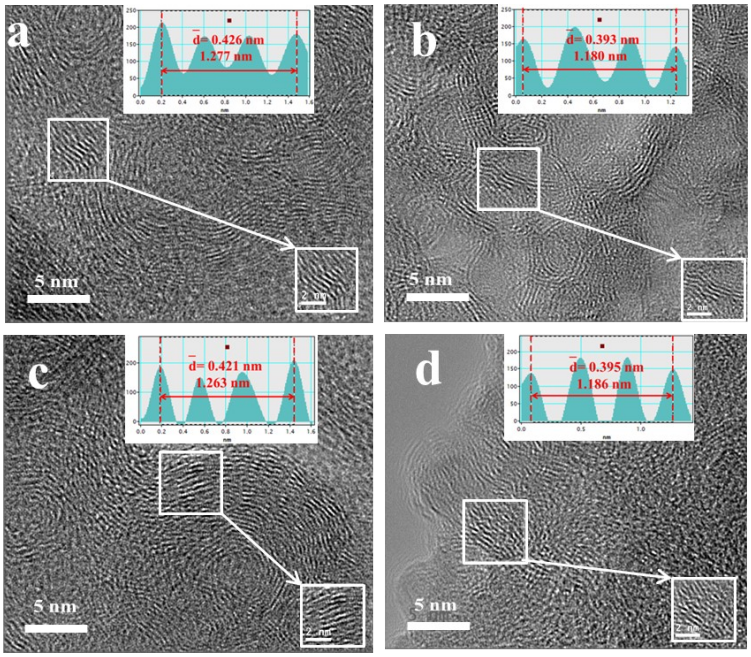

Fig. S11 Ex situ HRTEM images of NCNS-12 at different states: (a) full potassiation and (b) full depotassiation state after 1 cycle (50 mA g^{-1}); (c) full potassiation and (d) full depotassiation state after 800 cycles (50 mA g^{-1}).

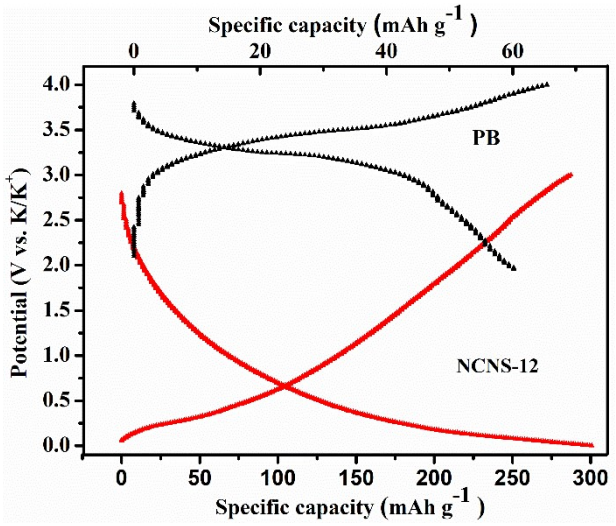

Fig. S12 The charge/discharge curves of the NCNS-12 electrode and PB electrode at 50 mA g^{-1}.

Tab. S1 Elemental content analysis by XPS measure of NCNS-11, NCNS-12, and NCNS-14.

Sample	C (at %)	O (at %)	N (at %)
NCNS-11	92.12	5.13	2.75
NCNS-12	92.5	4.17	3.24
NCNS-14	93.2	4.16	2.64

Tab. S2 Elemental content measured by combustion method of NCNS-11, NCNS-12, and NCNS-14.

Sample	C (Wt %)	O (Wt %)	N (Wt %)
NCNS-11	84.05	13.35	2.6
NCNS-12	88.43	8.92	2.65
NCNS-14	89.05	8.6	2.35