Electronic Supplementary Material (ESI) for Nanoscale

Supporting Information

Nitrogen Doped Porous Carbon Fibres as Anode Materials for Sodium Ion Batteries with Excellent Rate Performance

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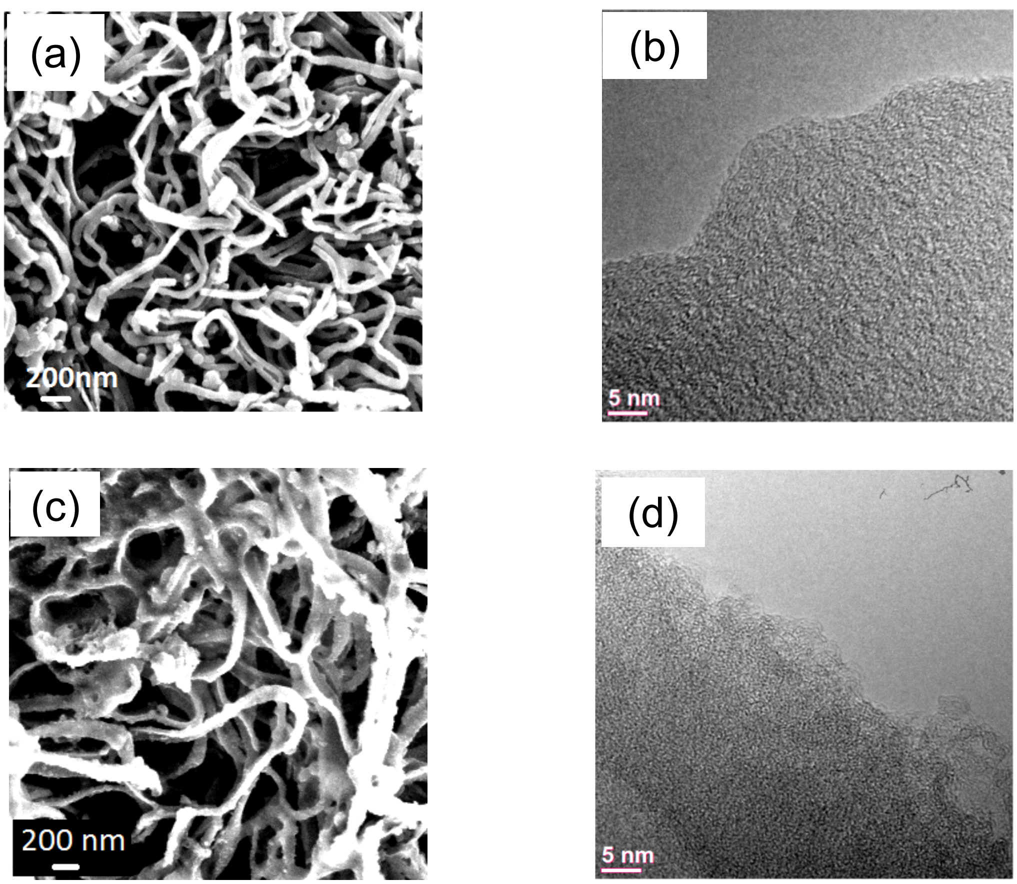


Fig. S1 (a) SEM and (b) HR-TEM images of ACFs-3; (c) SEM and (d) HR-TEM images of ACFs-5.

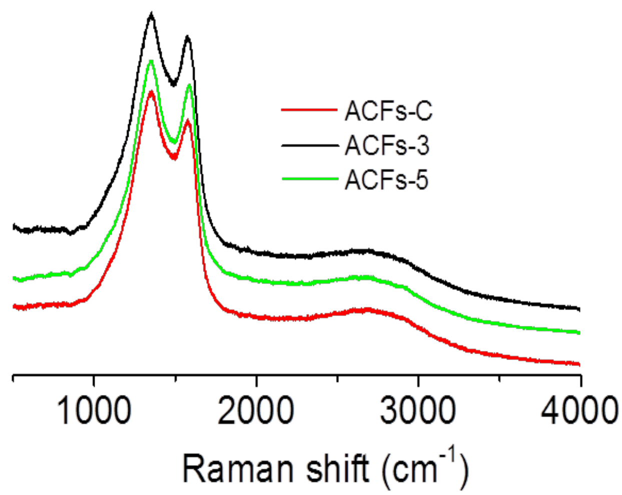


Fig. S2 Raman spectra of ACFs-C, ACFs-3 and ACFs-5.

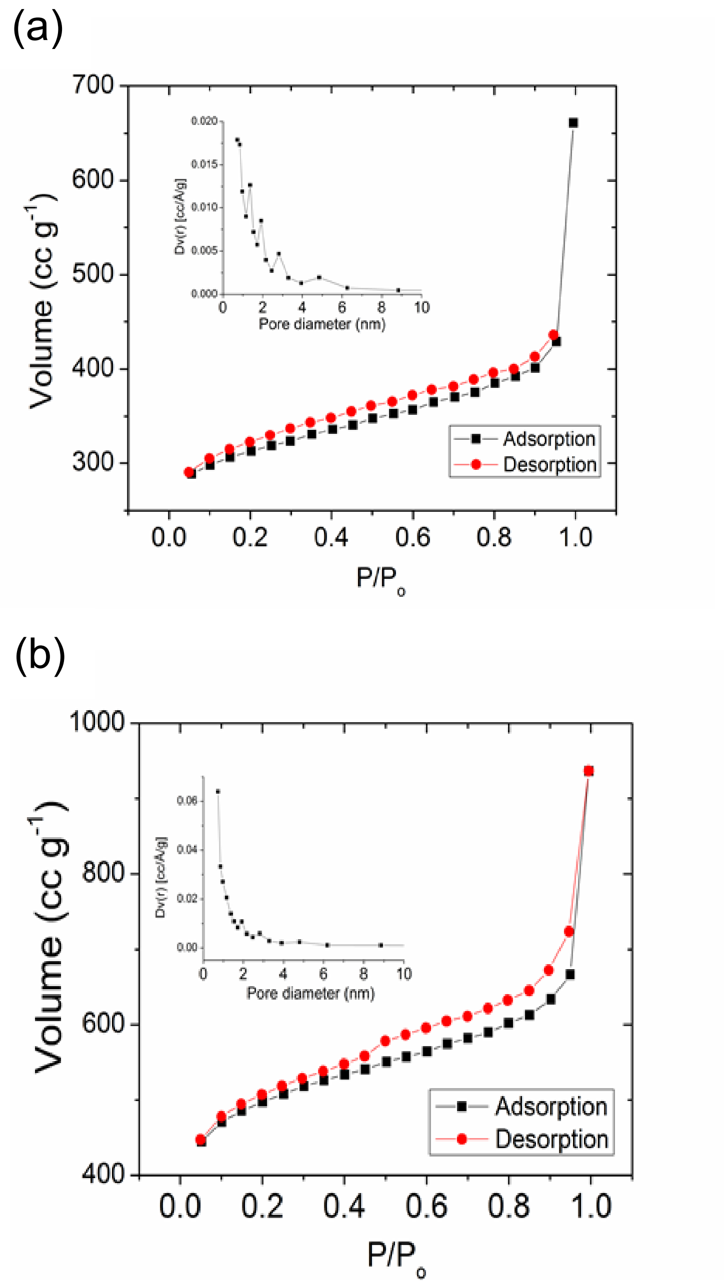


Fig. S3 N_2 adsorption and desorption isotherms and pore size distribution (inset) of (a) ACFs-3 and (b) ACFs-5.

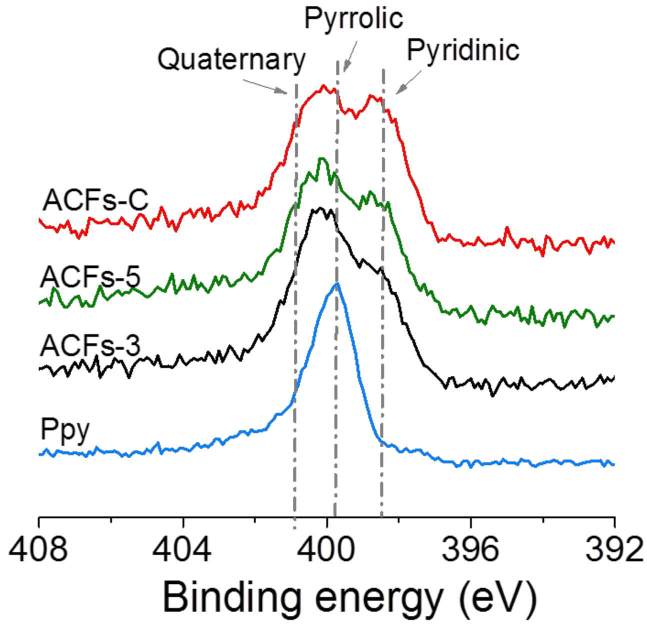


Fig. S4 N1S XPS spectra of the as-prepared ACFs and ACFs-C after Ar ion sputtering for 10 min, the Ppy precursor is listed for comparison.

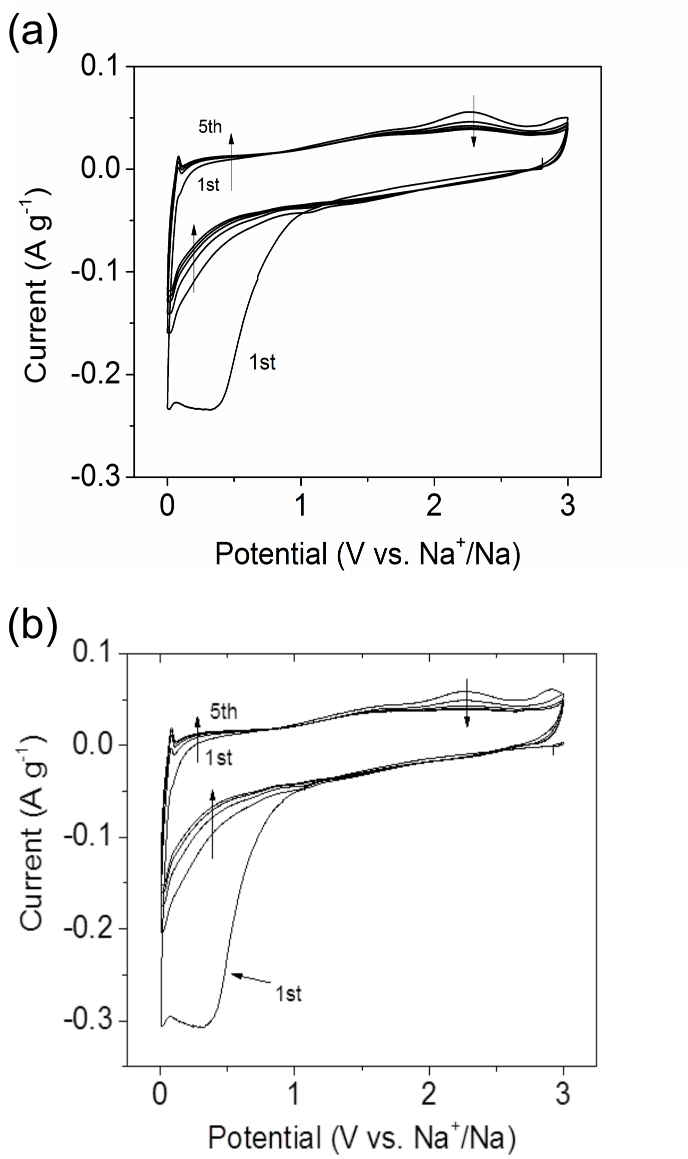
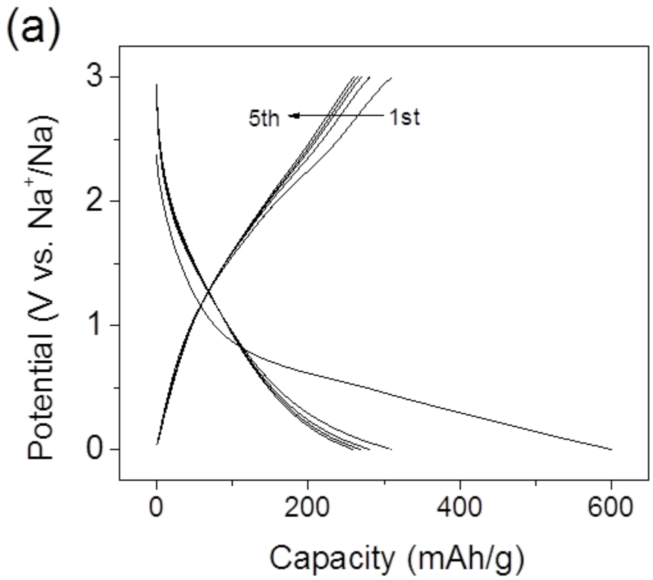


Fig. S5 Cyclic Voltammograms of (a) ACFs-3 and (b) ACFs-5 for the first 5 cycles in the potential range of 0-3 V vs. Na^+/Na at a scan rate of 0.1 mV s^{-1}.



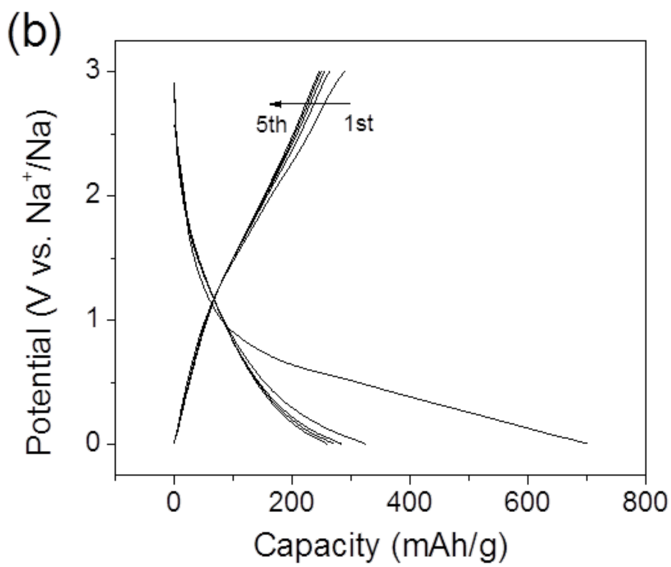


Fig. S6 Galvanostatic discharge-charge profiles of (a) ACFs-3 and (b) ACFs-5 at a current density of 50 mA g^{-1}.

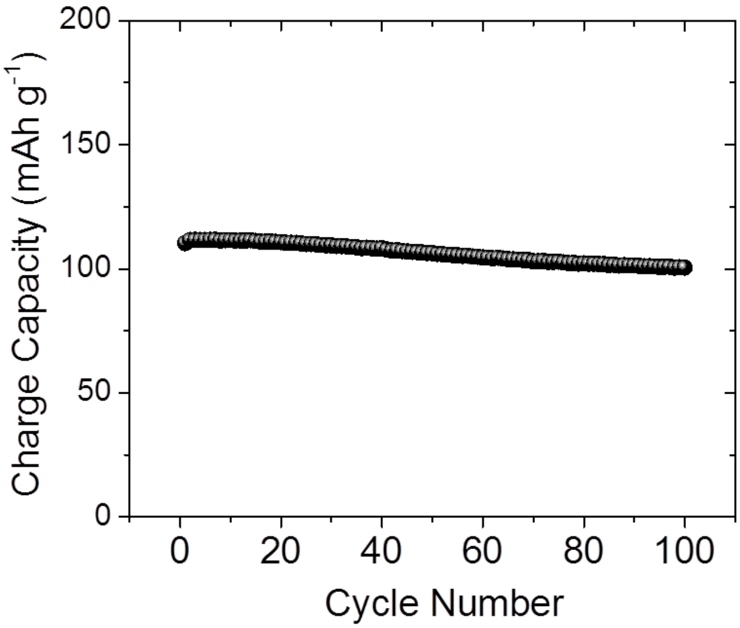


Fig. S7 Cycle performance of ACFs-C at current density of 5 A g^{-1} in the potential range of 0.005-3 V vs. Na^+/Na.

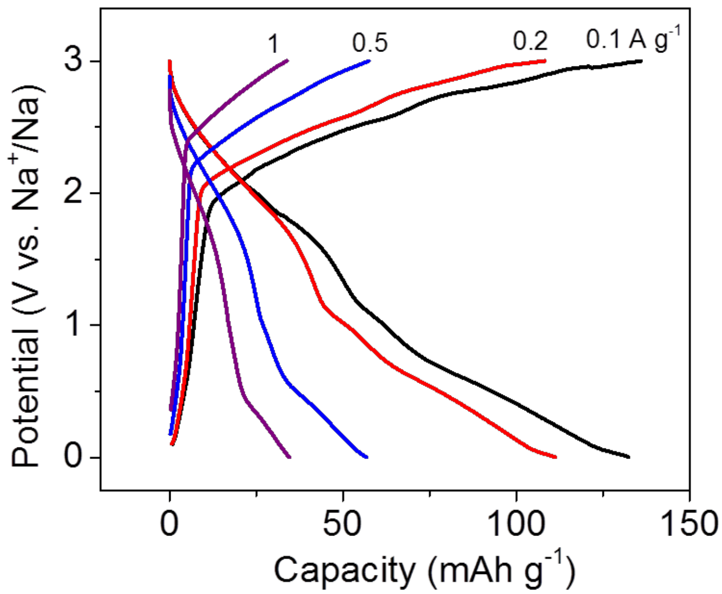


Fig. S8 Galvanostatic discharge-charge profiles of Ppy precursor at different current densities.

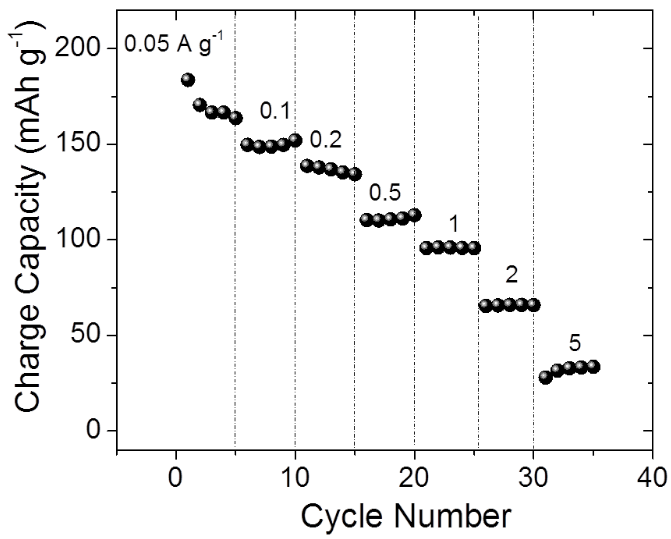


Fig. S9 Rate performance of ACFs-C in the potential range of 0.005-2 V vs. Na^+/Na.

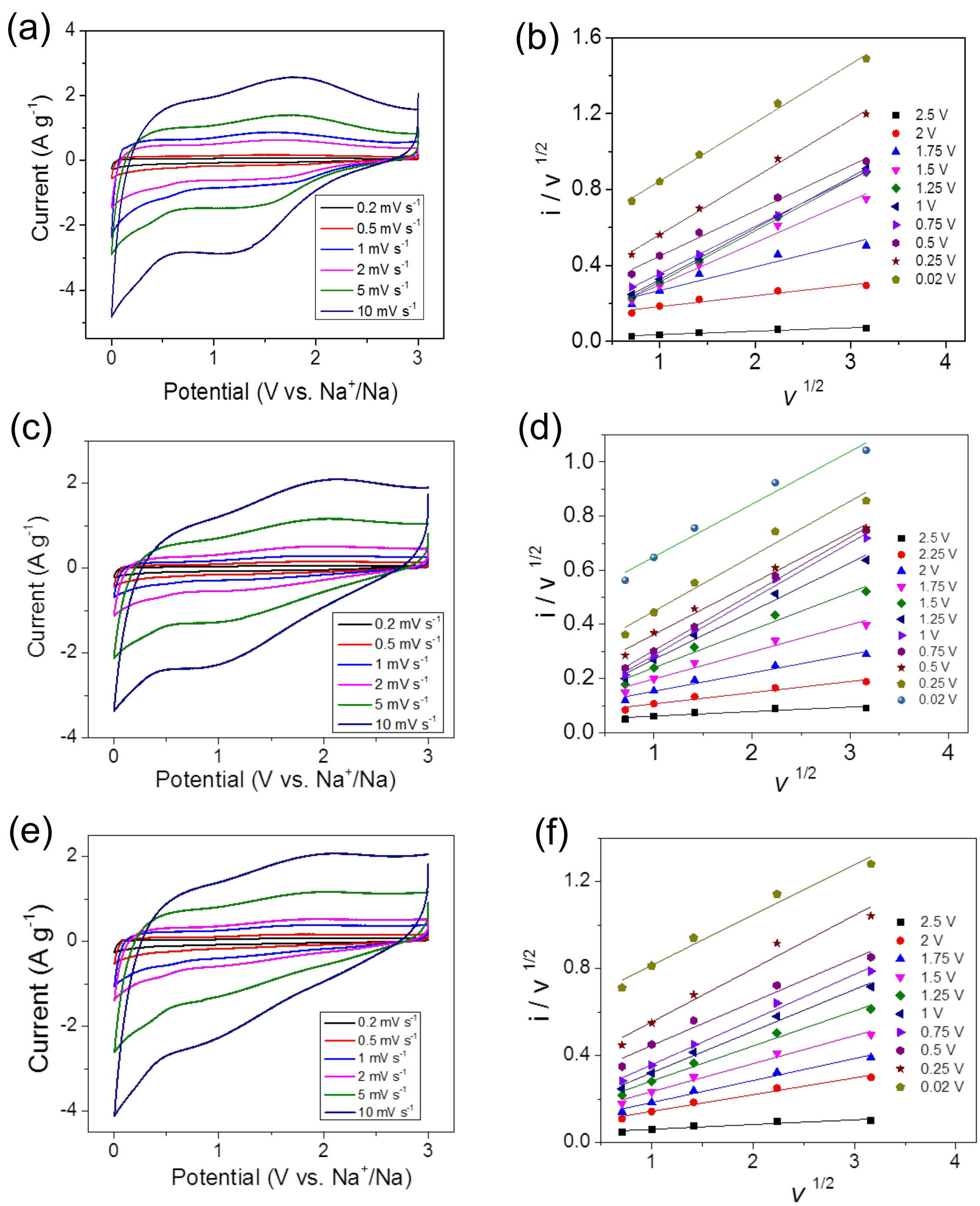


Fig. S10 Cyclic voltammograms of (a) ACFs-C; (c)ACFs-3; (e)ACFs-5 at different scan rates; and the plots of $i/v^{1/2}$ vs. $v^{1/2}$ used for calculating a_1 (slope) and a_2 (intercept) at different potentials for (b) ACFs-C; (d)ACFs-3; (f) ACFs-5.

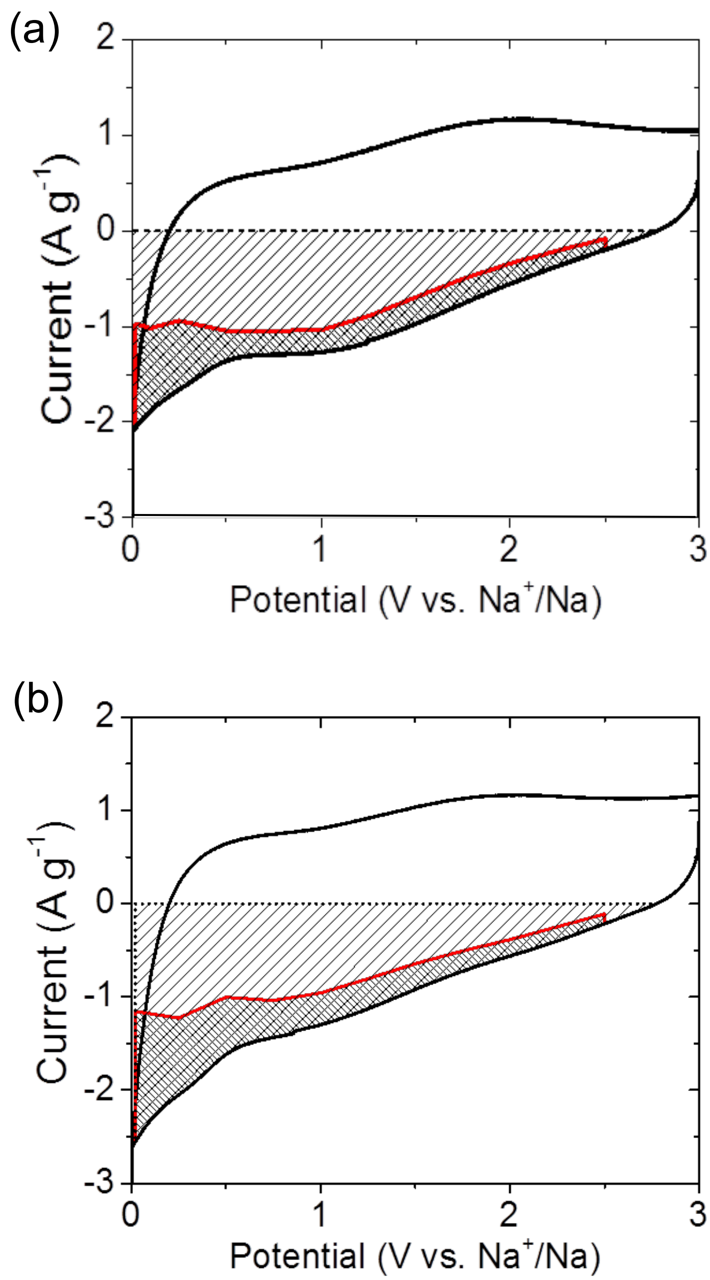


Fig. S11 Separation of charge storage contributions of (a) ACFs-3 and (b) ACFs-5 from (pseudo) capacitance and diffusion-controlled process at a scan rate of 5 mV s^{-1}, marked with sparse and concentrated stripes, respectively.

Table S1. Compositional analysis of nitrogen doped carbon fibers after sputtering with Ar ion for 10 min.

Sample	element concentration (Atomic %)		
	C	N	O
ACFs-3	85.7	6.2	8.2
ACFs-5	90.1	5.2	4.7
ACFs-C	89.5	6.8	3.7