

Supporting Information for

Cocoon Silk Derived, Hierarchically Porous Carbon as Anode for Highly Robust Potassium-Ion Hybrid Capacitors

Haiyan Luo^{1,2}, Maoxin Chen^{1,2}, Jinhui Cao^{1,2}, Meng Zhang^{1,2}, Shan Tan^{1,2}, Lei Wang^{1,2}, Jiang Zhong^{1,2}, Hongli Deng^{1,2}, Jian Zhu^{1,2,*}, Bingan Lu^{1,2}

¹State Key Laboratory for Chemo/Biosensing and Chemometrics, Hunan University, Changsha 410082, People's Republic of China

²College of Chemistry and Chemical Engineering, Hunan Key Laboratory of Two-Dimensional Materials, Hunan University, Changsha 410082, People's Republic of China

*Corresponding author. E-mail: jzhu@hnu.edu.cn (Jian Zhu)

Supplementary Figures

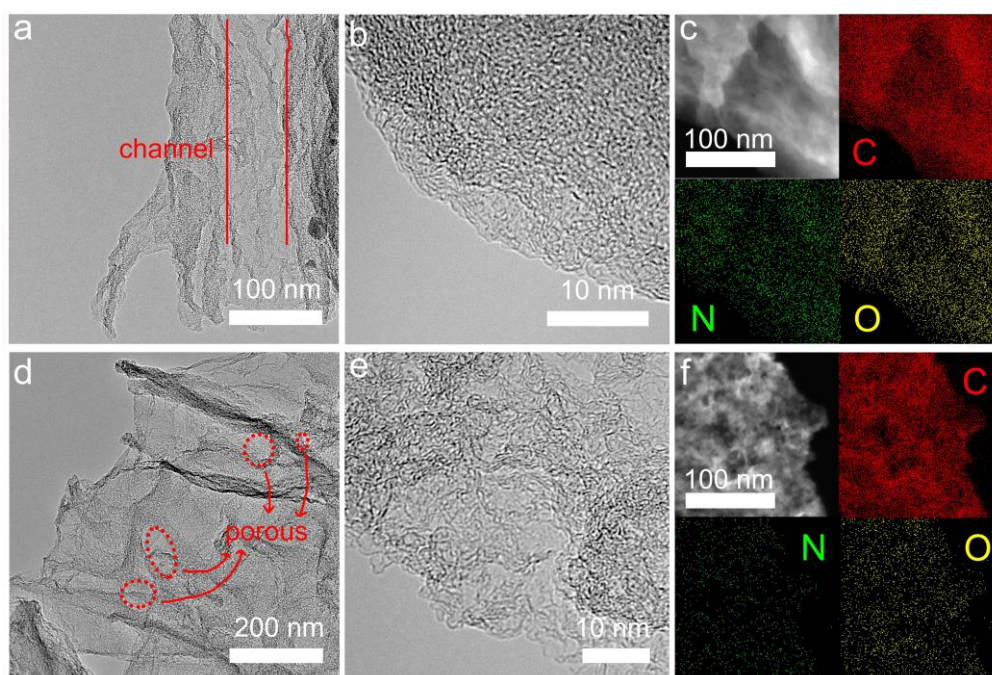


Fig. S1 **a** TEM images of SHPNC-750. **b** HRTEM images of SHPNC-750. **c** Corresponding elemental mapping images of C, N, and O elements of the SHPNC-750. **d** TEM images of SHPNC-1050. **e** HRTEM images of SHPNC-1050. **f** Corresponding elemental mapping images of C, N, and O elements of the SHPNC-1050

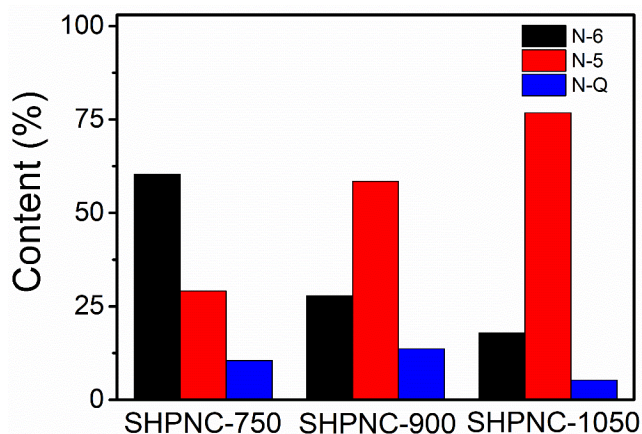


Fig. S2 Specific content of N-6, N-5, and N-Q in SHPNCs

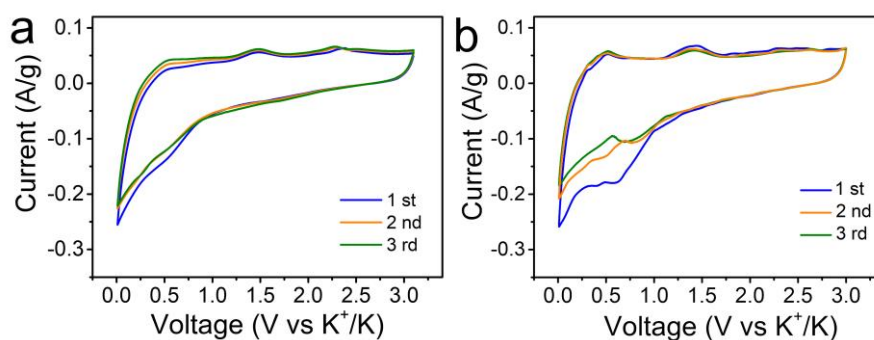


Fig. S3 Cyclic voltammograms (CV) for the first three cycles of **a)** SHPNC-750 and **b)** SHPNC-1050

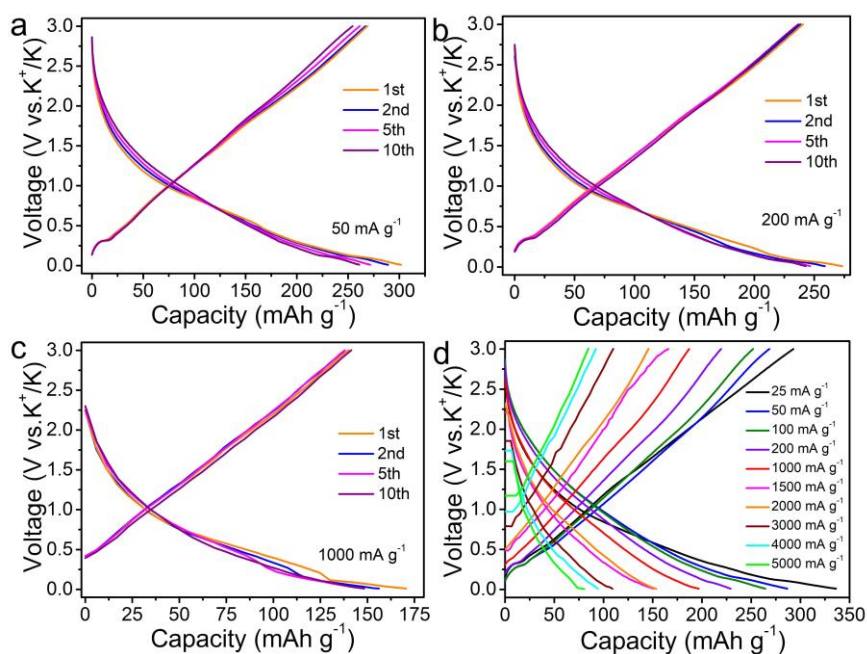


Fig. S4 Charge–discharge voltage profiles for selected cycles of SHPNC-900 at current densities of **(a)** 50, **(b)** 200 and **(c)** 1000, **(d)** Discharge rate capability of SHPNC-900 at current densities from 25 to 5000 mA g^{-1}

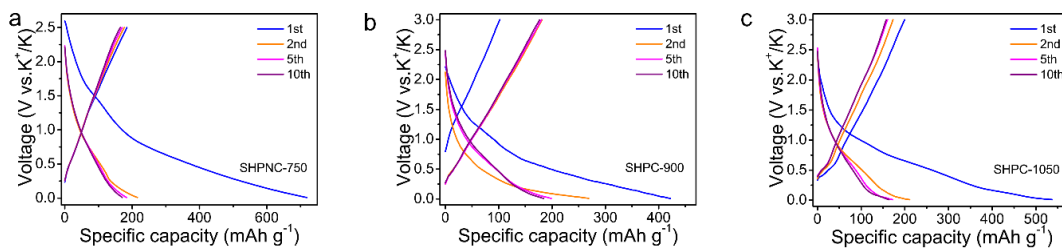


Fig. S5 Charge–discharge voltage profiles for selected cycles of SHPNCs at a current density 500 mA g^{-1}

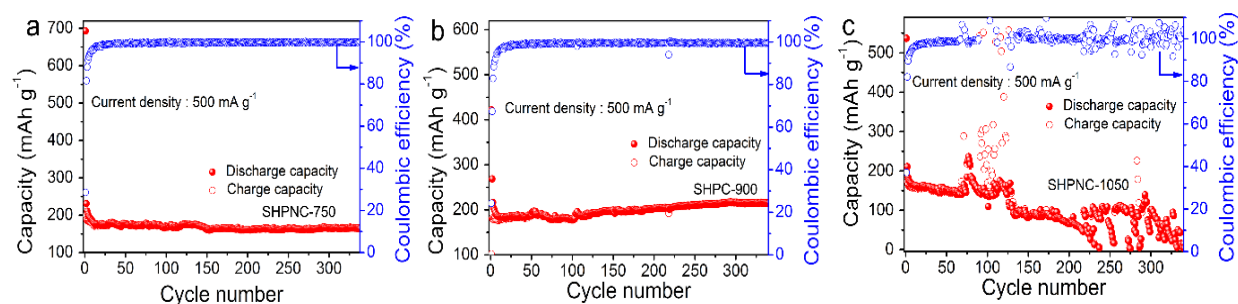


Fig. S6 Comparison of the cycling performance of the (a) SHPNC-750, (b) SHPNC-900 and (c) SHPNC-1050 electrodes at a current density 500 mA g^{-1} for 370 cycles

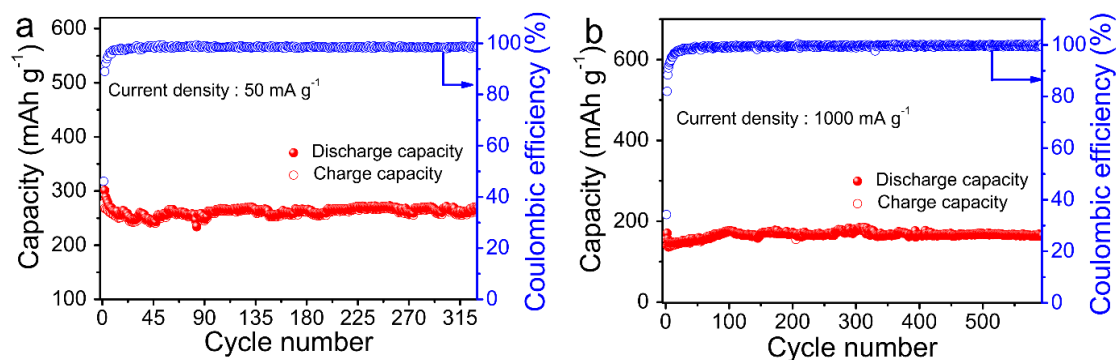


Fig. S7 Cycling performance of SHPNC-900 at a current density of (a) 50 and (b) 1000 mA g^{-1}

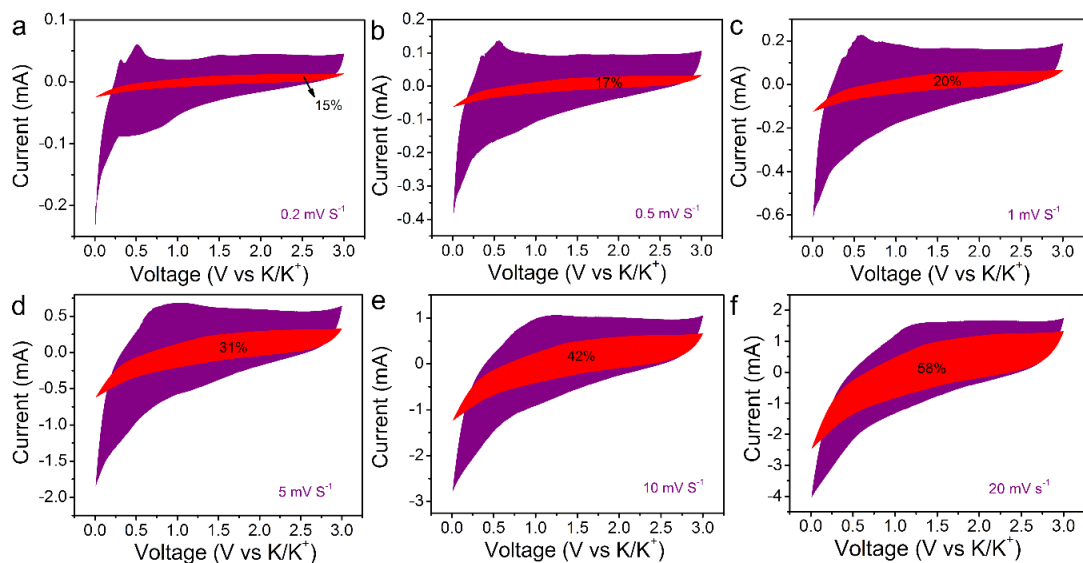


Fig. S8 Contribution of the surface process of SHPNC-900 at scan rate of (a) 0.2, (b) a 0.5, (c) 1, (d) 5, (e) 10 and (f) 20 mV s^{-1}

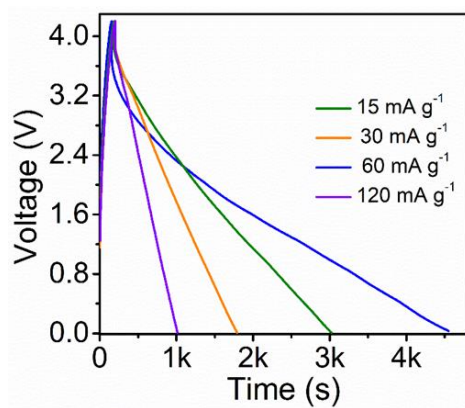


Fig. S9 The ultrafast charge/slow discharge profiles of KIHC with a constant charging at 500 mA g^{-1} while being discharged at various current densities

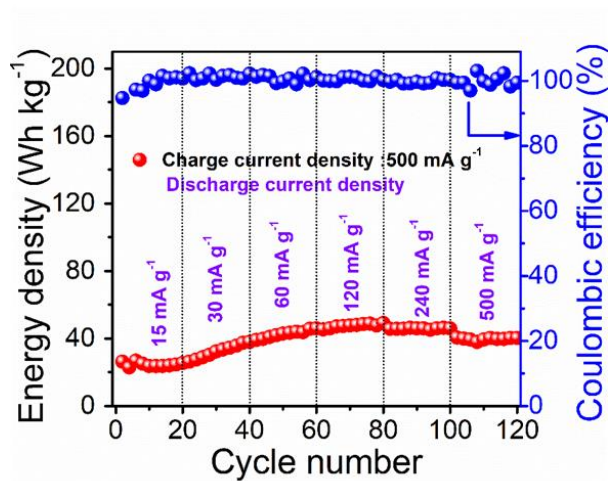


Fig. S10 KIHC being charged at 500 mA g^{-1} and discharged at various current densities

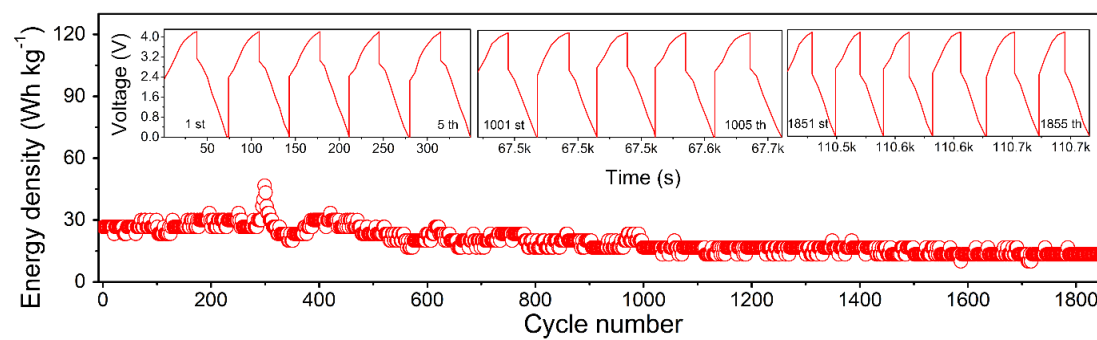


Fig. S11 Long-cycle performance at a current density of 2 A g^{-1} . Inset: charge–discharge curves