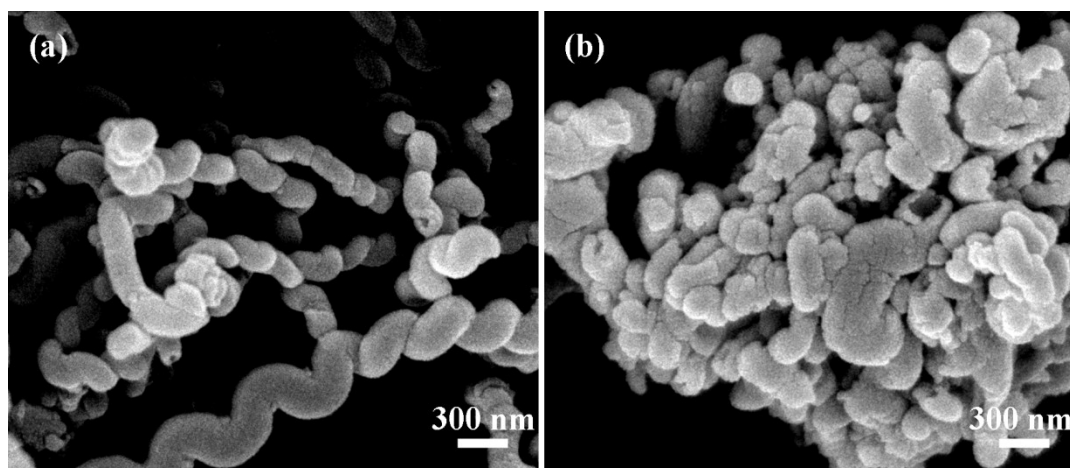
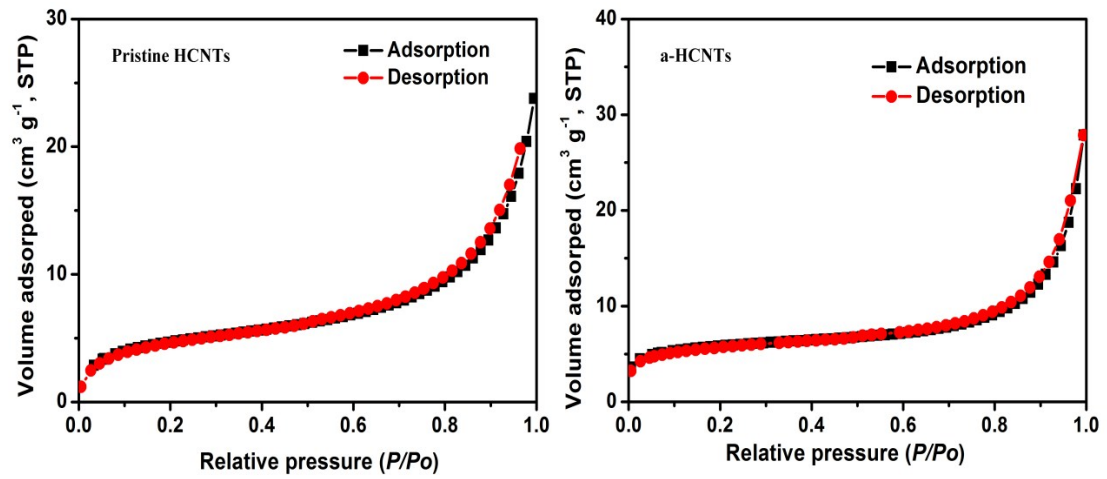


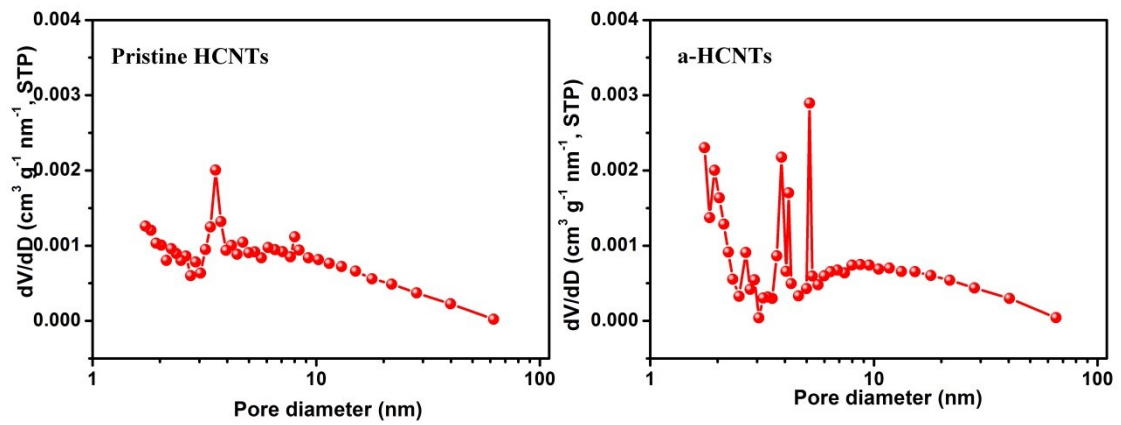
Supplementary Figure 1 XRD patterns of CNT products obtained at 450 °C, 550 °C and 600 °C.



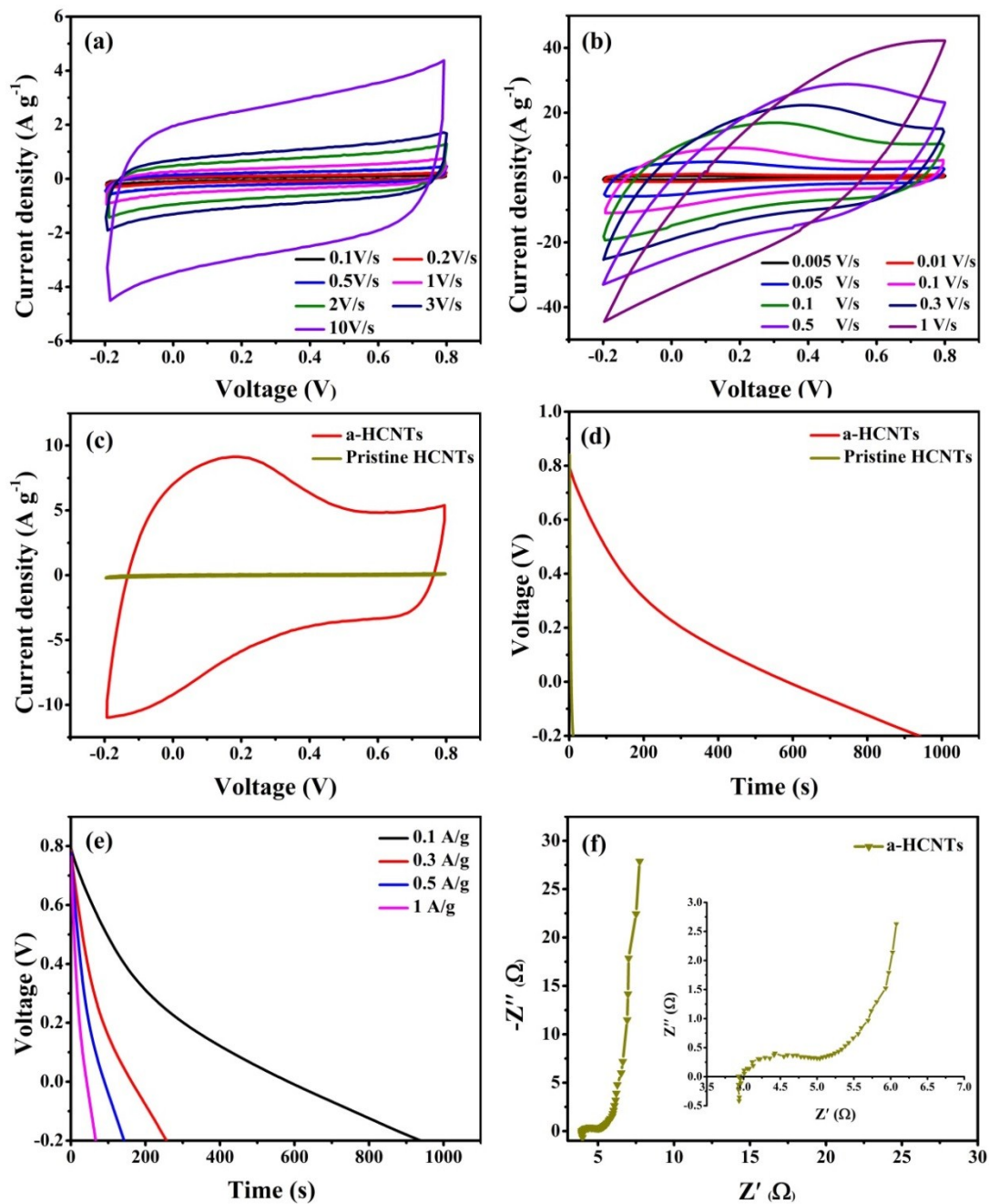
Supplementary Figure 2 SEM patterns of (a) Pristine HCNTs and (b) a-HCNTs.



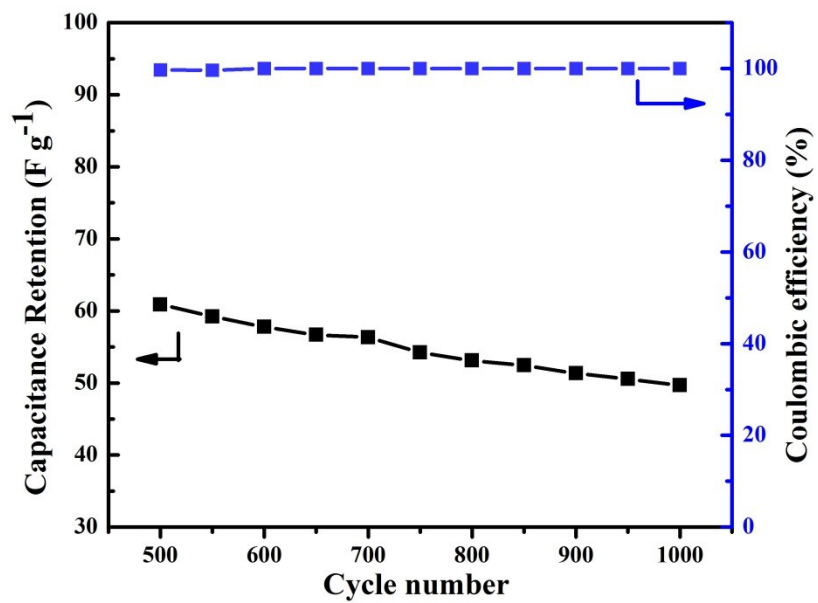
Supplementary Figure 3 N<sub>2</sub> adsorption/desorption isotherms of Pristine HCNTs and a-HCNTs



Supplementary Figure 4 Pore size distribution of Pristine HCNTs and a-HCNTs



**Supplementary Figure 5** CV Curves of (a) pristine HCNTs electrode and (b) the a-HCNTs at different scanning rates in 1M Na<sub>2</sub>SO<sub>4</sub> aqueous solution at range of -0.2~0.8 V (vs SCE electrode). (c) CV curves of the pristine HCNTs and a-HCNTs at scanning rate of 0.1 V/s. (d) GCD curves of the pristine HCNTs and a-HCNTs at current density of 0.1 A g<sup>-1</sup>. (e) GCD curves of a-HCNTs at current densities of 0.1, 0.3, 0.5 and 1 A g<sup>-1</sup>. (f) Nyquist spectra of a-HCNTs electrode at a sinusoidal signal of 10 mV in the frequency range of 100 kHz to 0.01 Hz.



**Supplementary Figure 6** The cycling performance of the a-HCNTs electrode collected at a scan rate of  $.1 A g^{-1}$  for 1000 cycles.