

Supporting Information

How Carboxylic Groups Improve the Performance of Single-Walled Carbon Nanotube Electrochemical Capacitors?

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UV-vis-NIR spectra of f6-SWCNT dispersions in sodium dodecyl sulfate (SDS) solution (f6-SWCNT@SDS) and pure water (f6-SWCNT@H₂O) are shown in Figure S1. They exhibit similar weakened and broadened adsorption peaks at around 720 and 1020 nm, suggesting both dispersions contain individual functionalized SWCNTs. However, the sheet resistance of thin film electrodes prepared from f6-SWCNT@SDS is about 13.5 % higher (5.9 Ω) than that of thin film electrodes from f6-SWCNT@H₂O dispersion (5.2 Ω). This indicates that the surfactant residuals on SWCNT surfaces can influence the performance of SWCNT thin film electrodes.

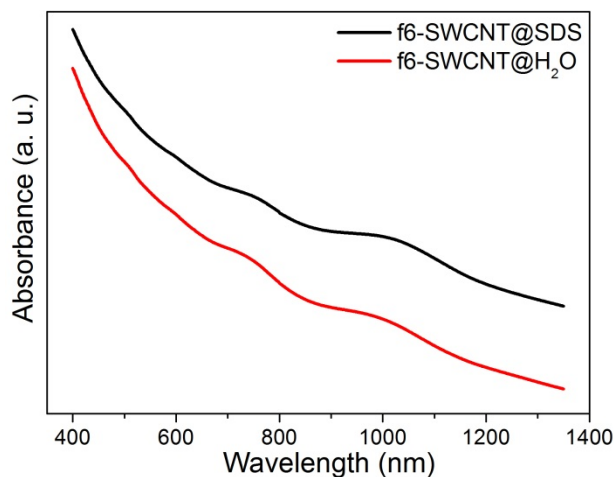


Figure S1. UV-vis-NIR spectra of f6-SWCNT@SDS and f6-SWCNT@H₂O dispersions.

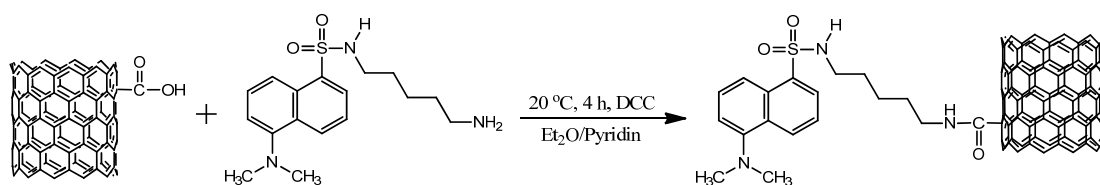


Figure S2. Reaction between functionalized single walled carbon nanotube and dansyl cadaverine.

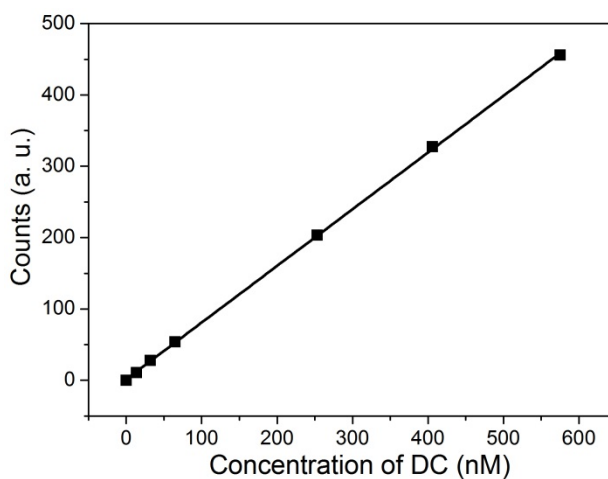


Figure S3. Calibration plot of fluorescence intensity of dansyl cadaverine at 495 nm versus concentration.

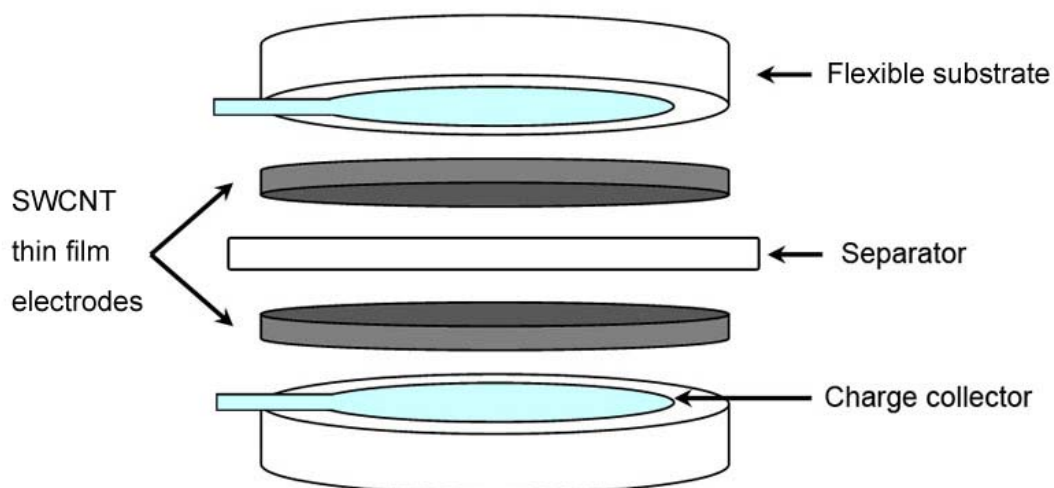


Figure S4. Schematic view of the two electrode single walled carbon nanotube electrochemical capacitor.

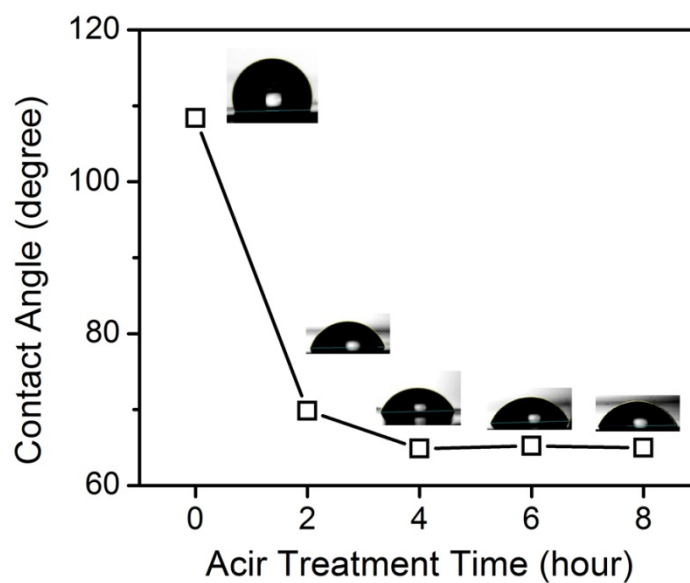


Figure S5. Contact angle of water drops on single walled carbon nanotube films composed of nanotubes gone through acid treatment over different period of time.