Electronic Supplementary Material (ESI) for Nanoscale.

Double Polymer Sheathed Carbon Nanotube Supercapacitors Show Enhanced Cycling Stability

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Supporting Information:

Figure S1. Lower and higher magnification SEM images of (a, d) CNT sponges, (b, e) CNT/PANI sponges and (c, f) CNT/PPy/PANI sponges, respectively.

Figure S2. Cross-sectional SEM images of a double-sheath sponge (CNT/PANI/PPy) with reversed polymer coating sequence. Inset in (a): photos of a CNT/PANI/PPy sponge which can be bent or rolled up.

Figure S3. TEM images of the nanotubes or core-shell structures dispersed from the original CNT sponge, the CNT/PANI sponge, and the final CNT/PANI/PPy sponge.

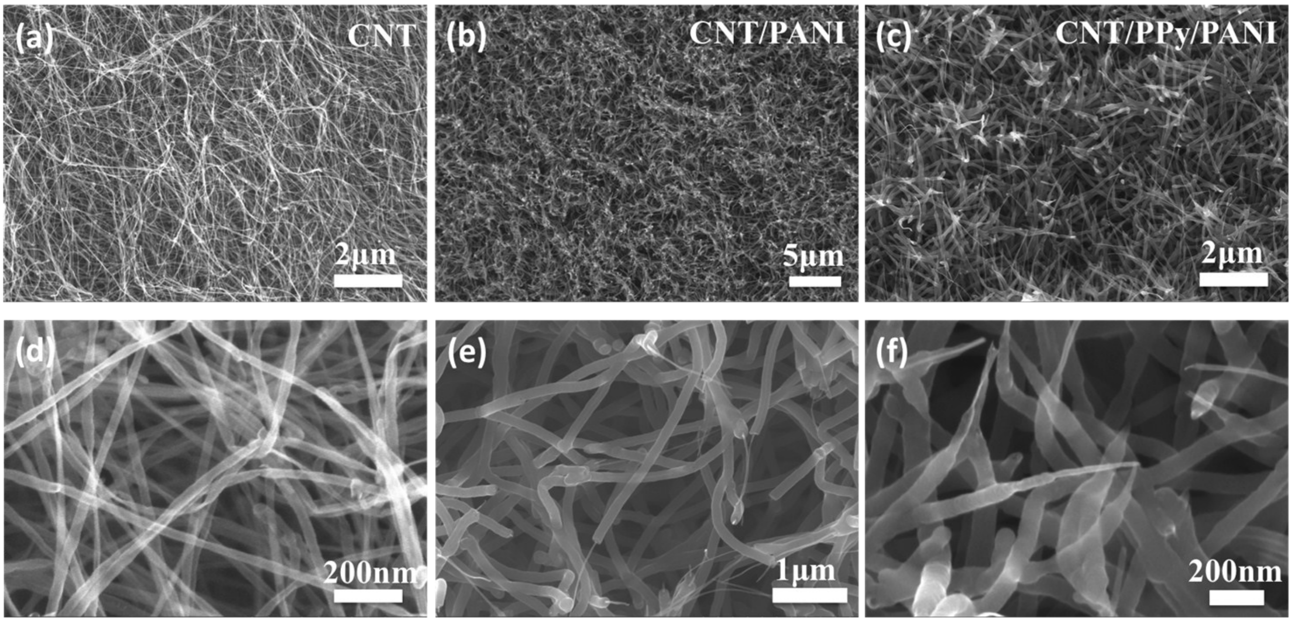
Figure S4. XRD patterns of the CNT, CNT/PANI and CNT/PPy/PANI sponges, respectively.

Figure S5. Raman spectra of the original CNT sponge and the single-sheathed CNT/PANI sponge, and the CNT sponge and the double-sheathed CNT/PPy/PANI sponge.

Figure S6. Relationship between the deposition time of PANI on a CNT/PPy sponge and the electrochemical behavior of the resulting CNT/PPy/PANI sponge, showing a continuous increase of specific capacitance and then saturation for longer deposition period.

Figure S7. Capacitance retention recorded during cycling tests on a CNT/PANI/PPy sponge over 20000 CV cycles at a scan rate of 200 mV/s.

Figure S8. SEM images of CNT/PANI sponges and CNT/PPy/PANI sponges after 1000 CV cycles.



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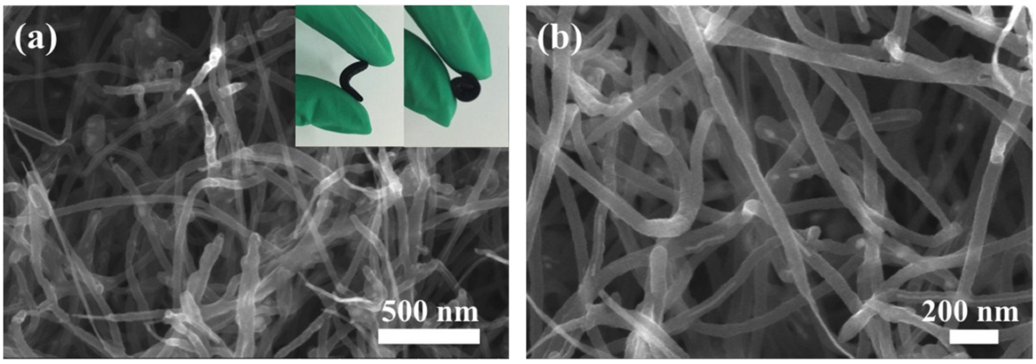

Figure S2. Cross-sectional SEM images of a double-sheath sponge (CNT/PANI/PPy) with reversed polymer coating sequence. Inset in (a): photos of a CNT/PANI/PPy sponge which can be bent or rolled up.

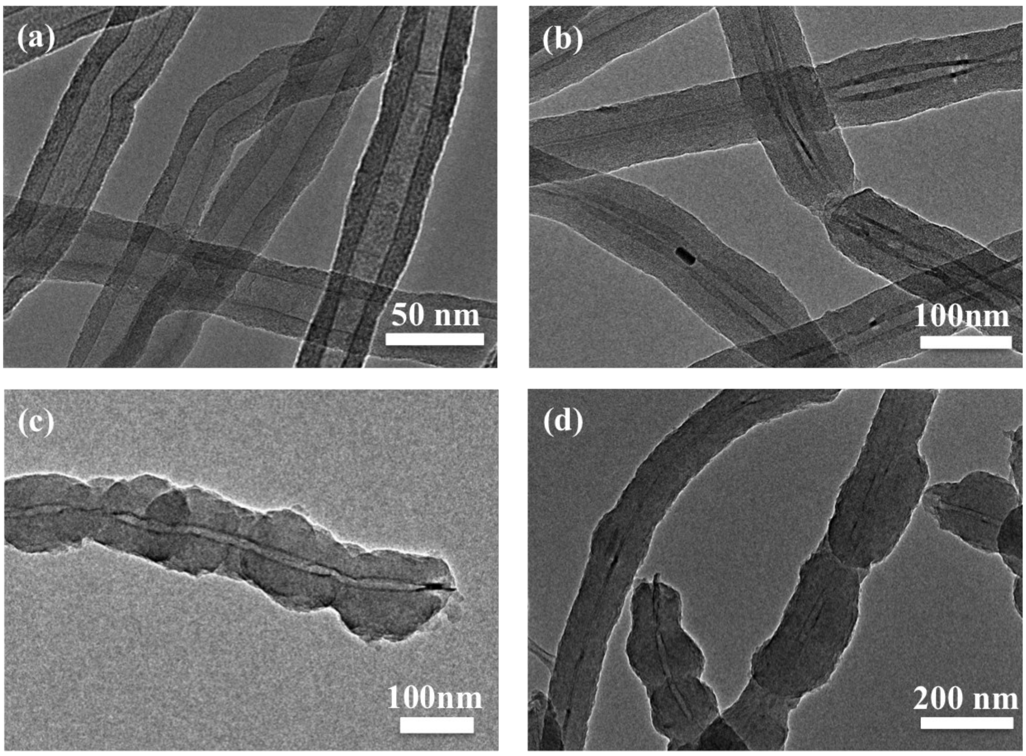

Figure S3. TEM images of the nanotubes or core-shell structures dispersed from (a) the original CNT sponge, (b) the CNT/PANI sponge, and (c, d) the final CNT/PANI/PPy sponge.

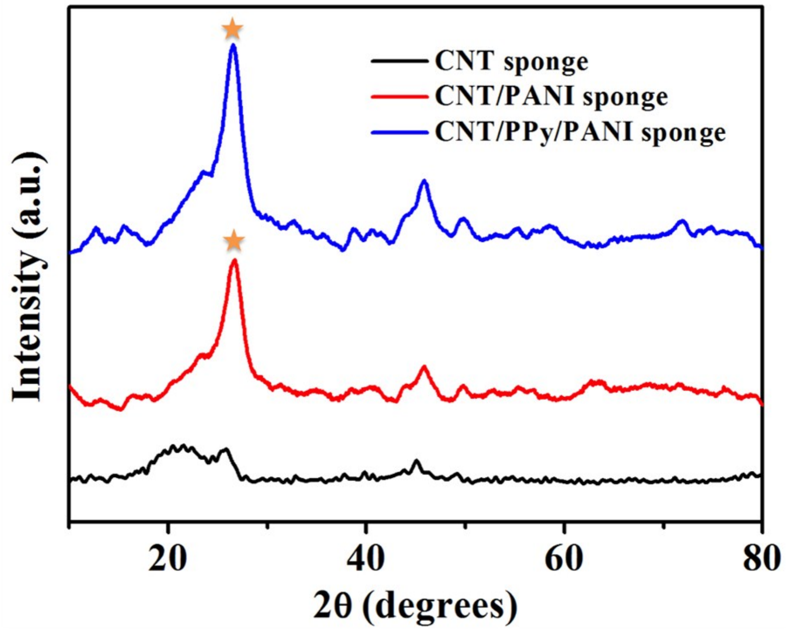

Figure S4. XRD patterns of the CNT, CNT/PANI and CNT/PPy/PANI sponges, respectively.

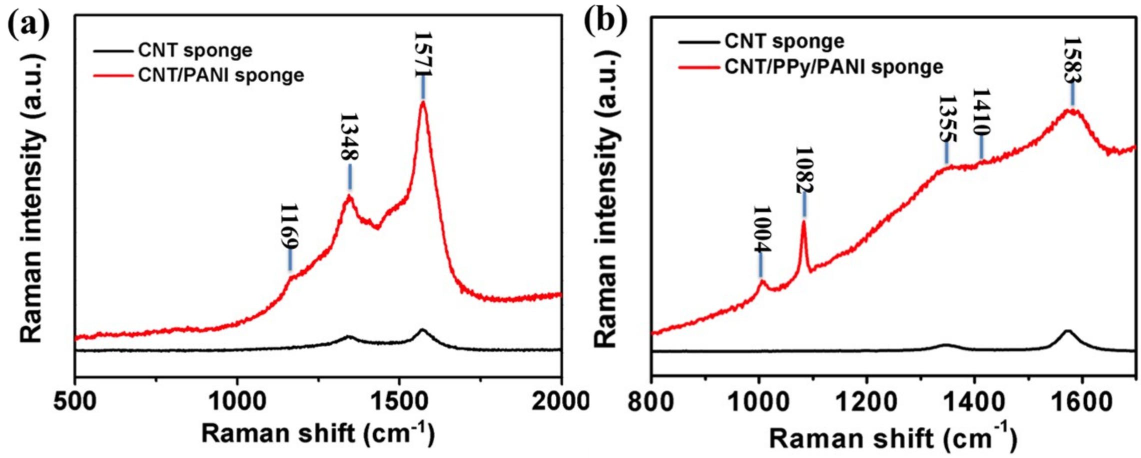

Figure S5. Raman spectra of (a) the original CNT sponge and the single-sheathed CNT/PANI sponge, and (b) the CNT sponge and the double-sheathed CNT/PPy/PANI sponge.

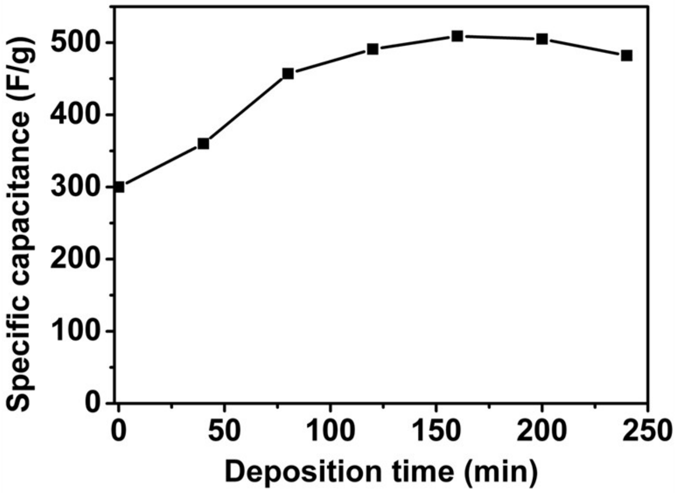

Figure S6. Relationship between the deposition time of PANI on a CNT/PPy sponge and the electrochemical behavior of the resulting CNT/PPy/PANI sponge, showing a continuous increase of specific capacitance and then saturation for longer deposition period.

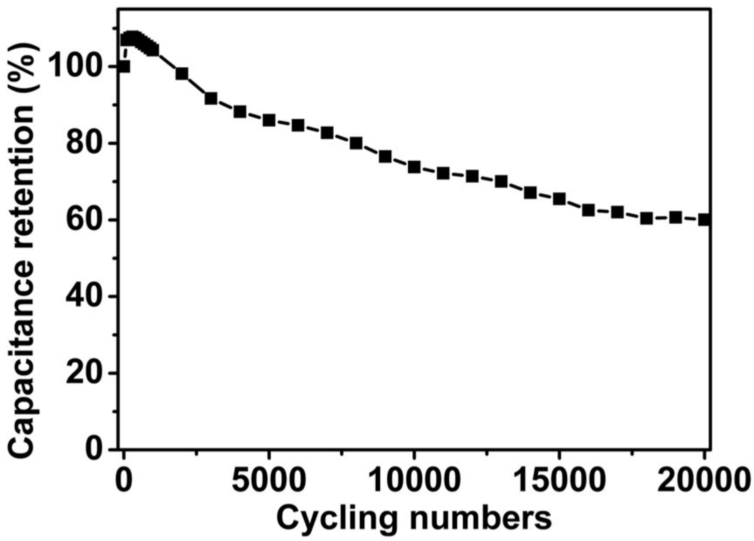

Figure S7. Capacitance retention recorded during cycling tests on a CNT/PANI/PPy sponge over 20000 CV cycles at a scan rate of 200 mV/s.

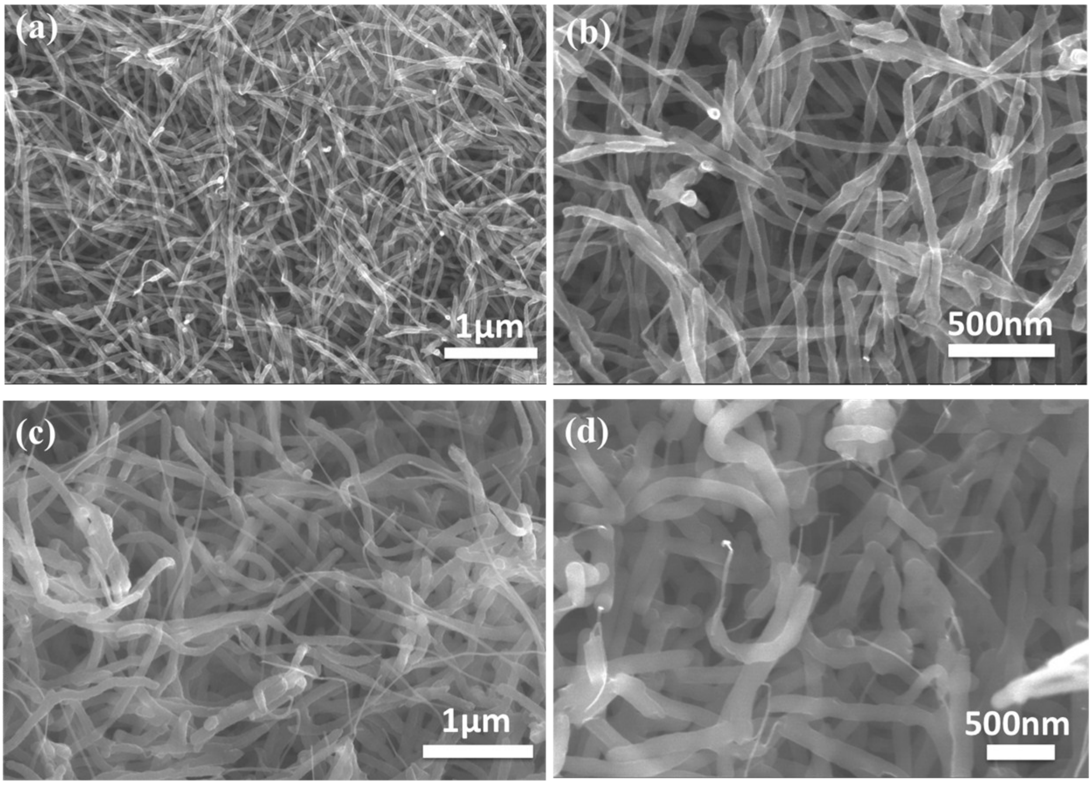

Figure S8. SEM images of (a), (b) CNT/PANI sponges and (c), (d) CNT/PPy/PANI sponges after 1000 CV cycles.