Supporting Information

Polyaniline Nanoflowers Grown on Vibration-Isolator-Mimetic Polyurethane Nanofibers for Flexible Supercapacitors with Prolonged Cycle Life

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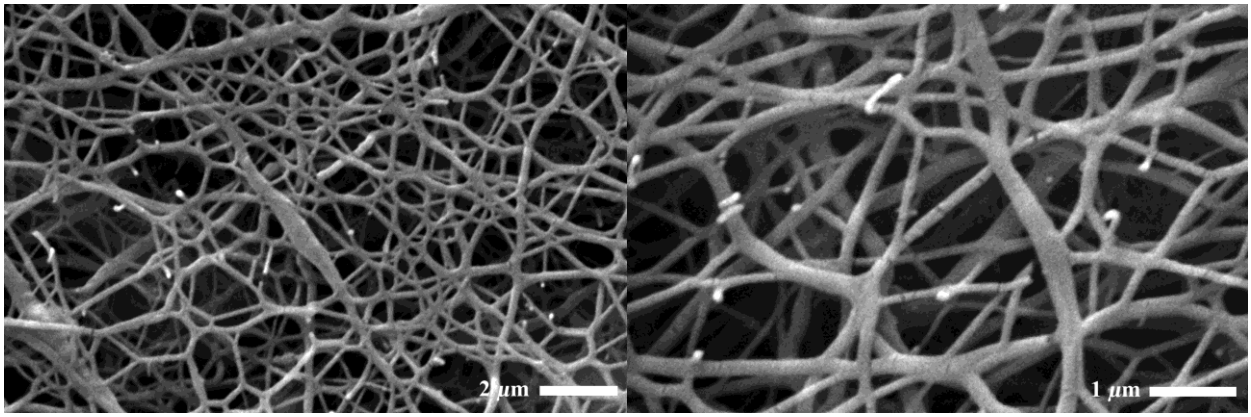

Figure S1. SEM images of gold coated PU/CNT film.

Figure S2. Diameter distribution of PU/CNT nanofibers obtained from analysing SEM images.

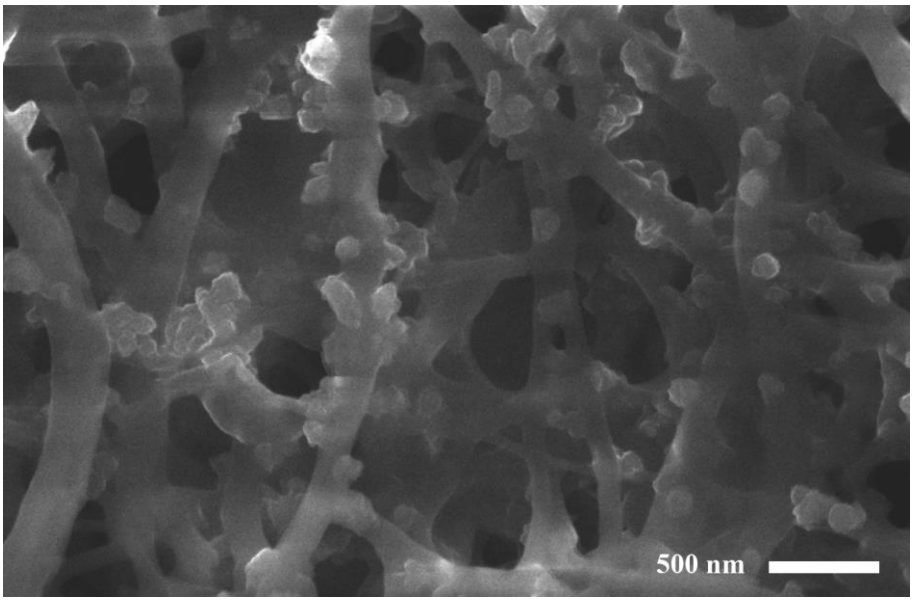

Figure S3. SEM image of PU/CNT film coated with PAni after a limited reaction time (20 min), which shows PAni nucleated from various spots of each nanofiber.

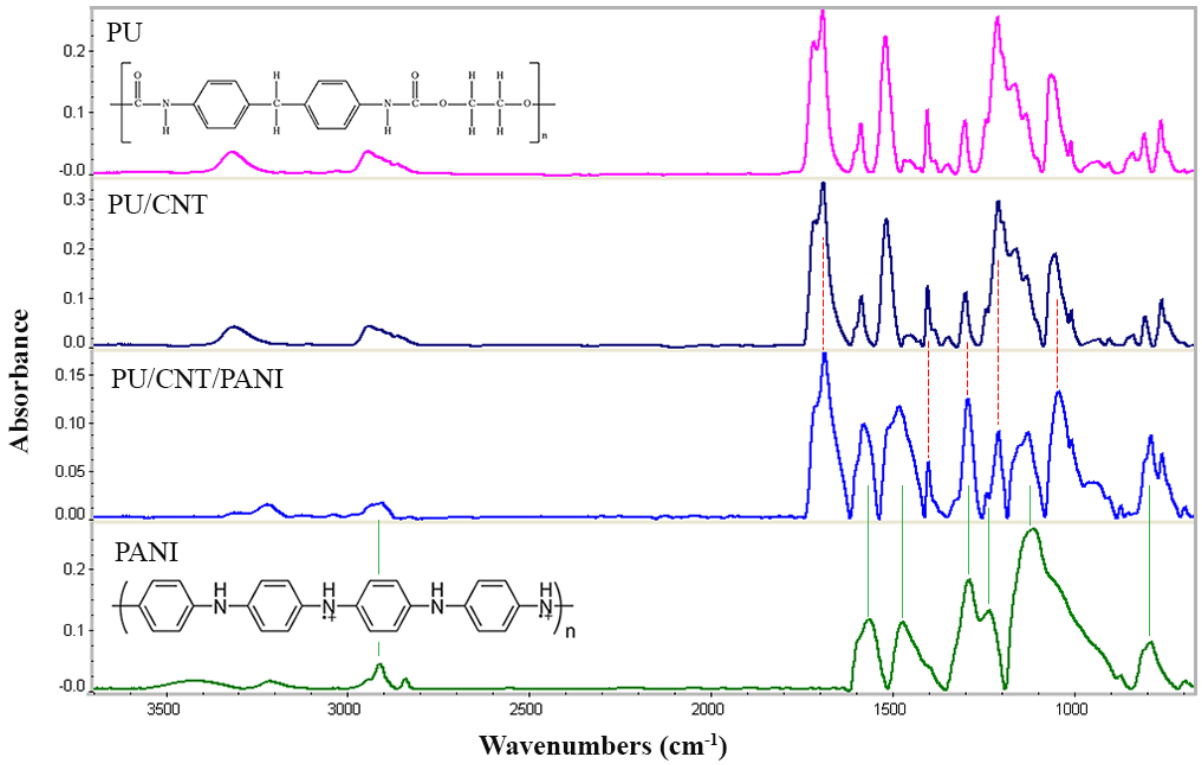

Figure S4. FTIR spectra of PU, PU/CNT, PU/CNT/PAni and PAni.

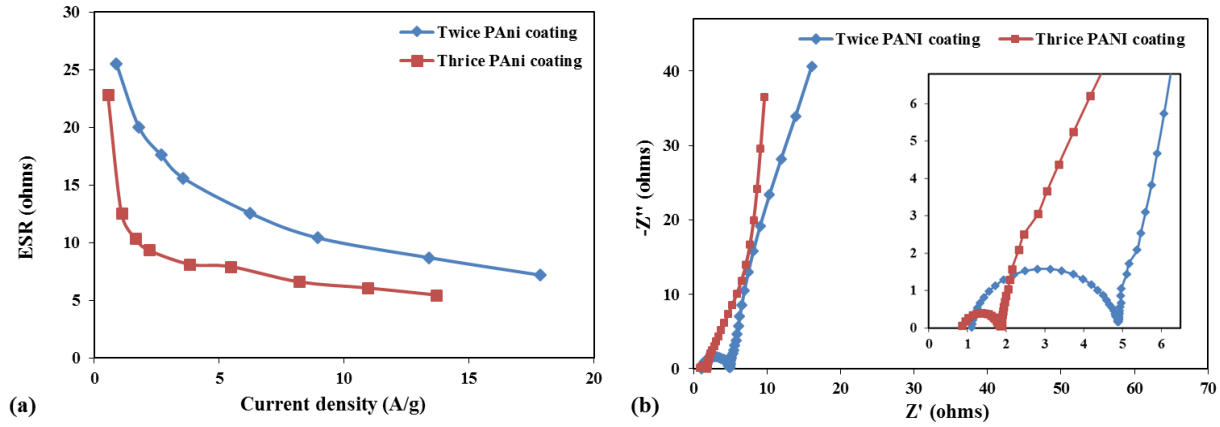

Figure S5. (a) ESR versus areal current density obtained from GCD curves of SCs based on twice or thrice PAni coating, (b) Nyquist plots of SCs based on PU/CNT/PAni for twice or thrice coating of PAni.

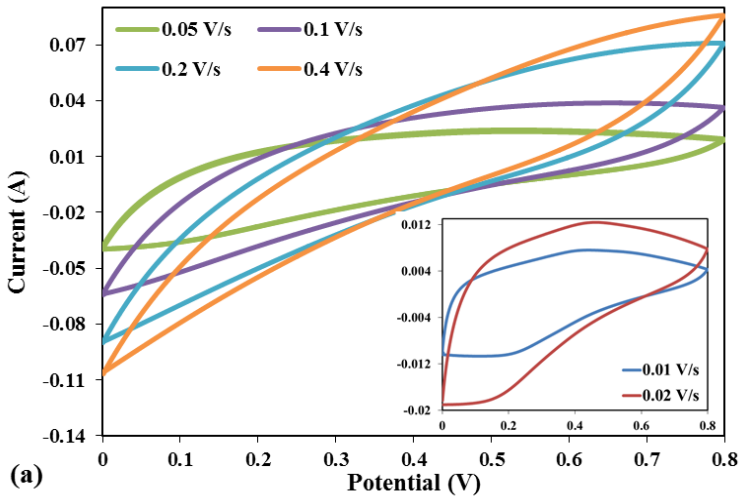

Figure S6. CV curves of the SC based on PU/CNT/PAni for thrice PAni coating.

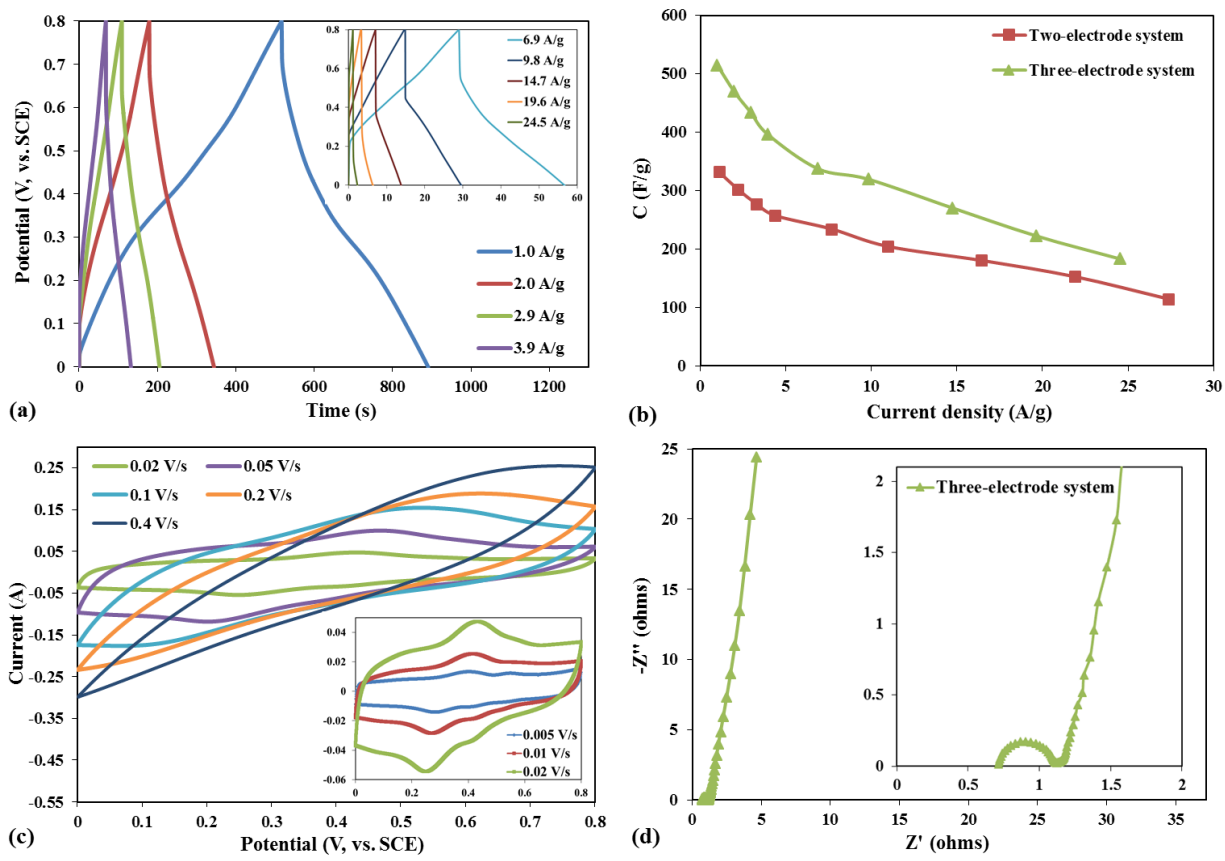

Figure S7. The electrochemical capacitance performance of PU/CNT/PAni (thrice PAni coating) in a three-electrode system. (a) The GCD curves within the potential window 0 to 0.8 V vs. SCE for different current densities. (b) Mass-specific capacitance of a single electrode obtained from GCD curves; the specific capacitance obtained from the two-electrode system is added for comparison (specific capacitance is multiplied by 4 and current density is multiplied by 2 in Figure 3c). (c) CV curves within the potential window 0 to 0.8 V vs. SCE at different scan rates; (d) Nyquist plot obtained from the EIS test.

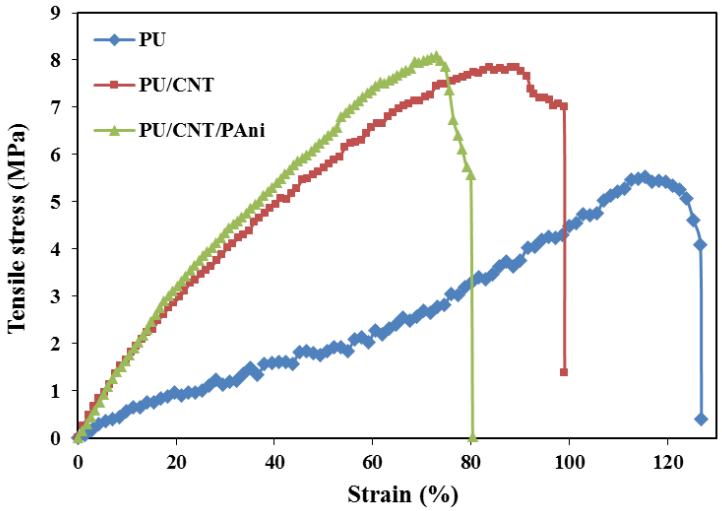

Figure S8. Stress-strain curves of PU, PU/CNT, and PU/CNT/PAni nanofibrous sheets.

Table S1. Mechanical properties of PU, PU/CNT, and PU/CNT/PAni (thrice PAni coating) nanofibrous sheets obtained from stress-strain curves in Figure S8.

Sample	Tensile modulus (MPa)	Tensile strength (MPa)	Elongation at break (%)
PU	5.0	5.5	126.9
PU/CNT	15.3	7.9	99.1
PU/CNT/PAni	16.4	8.3	80.3

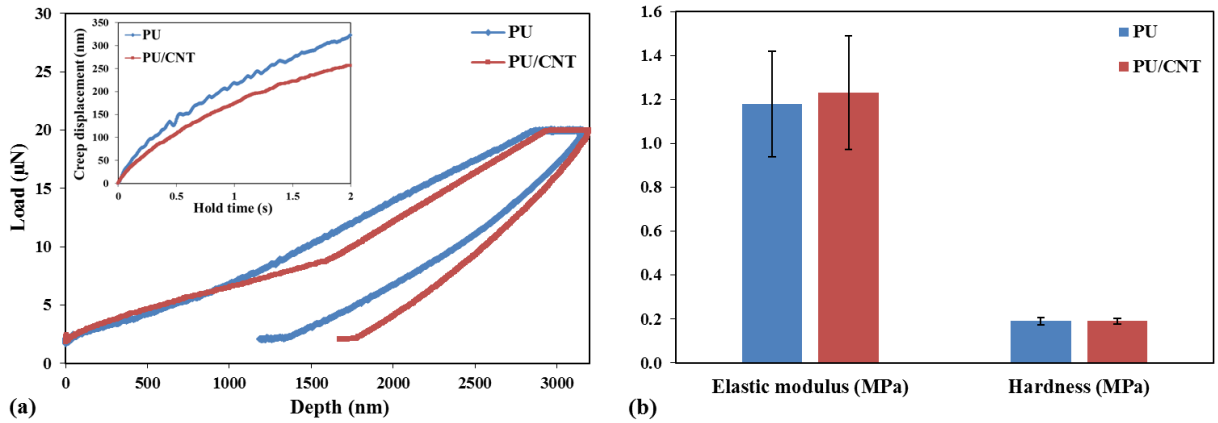

Figure S9. Load-displacement curves of nanoindentation tests for PU and PU/CNT nanofibrous membranes (one curve out eight curves is shown for each membrane as an example). The inset is the creep curve at a constant load 20 μN for 2 s. (b) A comparison of the average elastic modulus and hardness for PU and PU/CNT membranes calculated from the load-displacement curves of eight points for each membrane; the standard deviation is shown as error bars. It is noteworthy that the calculated mean compressive modulus of PU membrane (1.2 MPa) is smaller than the bulk PU modulus possibly due to the buffer spaces between the layers of nanofibers.