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Supplementary Information for

Inkjet Printing of Conductive Patterns and Supercapacitors Using Multi-Walled Carbon Nanotubes/Ag Nanoparticles Based Ink

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1. The volumetric capacitance of the device can be calculated from CV results by the following equations:

$$C = A / (2 \times s \times \Delta U) \tag{1}$$

$$C_V = C / V = A / (2 \times s \times V \times \Delta U) \tag{2}$$

where C is the capacitance of the ASC, A is the area of CV curve, s is the scan rate, ΔU is the potential window, C_V is the volumetric capacitance, and V is the total volume of the electrodes.

2. The volumetric capacitance of the device can be calculated from galvanostatic charge-discharge results by the following equations:

$$C = I \times \Delta t / \Delta U \tag{3}$$

$$C_V = C / V = I \times \Delta t / (V \times \Delta U) \tag{4}$$

where C is the capacitance of the ASC, I is the discharge current, Δt is the discharge time, ΔU is the potential window during the discharge process, C_V is the volumetric capacitance, and V is the total volume of the electrodes.

3. The energy density and average power density derived from the GCD of the device can be calculated from the following equations:

$$D_E = 0.5 C_V (\Delta U)^2 \tag{5}$$

$$D_P = 3600 D_E / \Delta t \tag{6}$$

where D_E is the energy density, C_V is the volumetric capacitance which can be obtained through Eq. 4, ΔU is the potential window, D_P is the volumetric power density and Δt is the discharge time.

4. The capacity retention (CR) and Coulombic efficiency (CE) can be calculated from galvanostatic charge-discharge results by the following equations:

$$CR = \Delta t / \Delta t_0 \tag{7}$$

$$CE = \Delta t_d / \Delta t_c \tag{8}$$

Where Δt is the discharge time of different cycles, Δt_0 is initial discharge time, Δt_d is the discharge time and Δt_c is the charge time in same cycle.

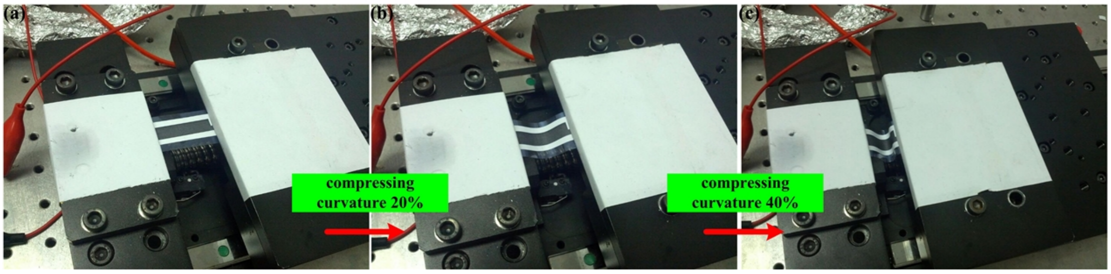

Figure S1 Compressing process of Ag-MWCNT electrode. (a) initial state. (b) compressing for curvature of 20%. (c) compressing for curvature of 40%.

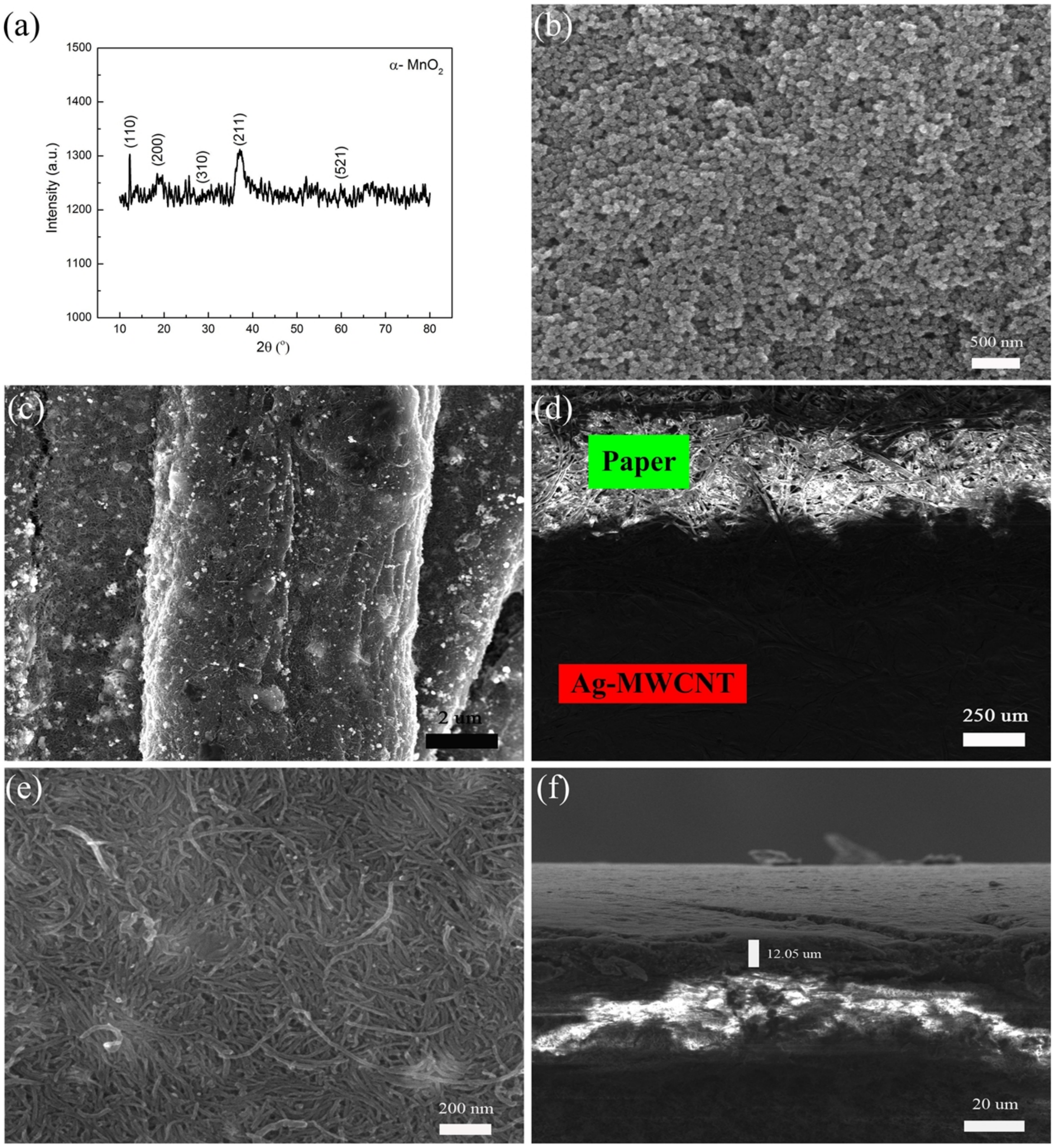

Figure S2 (a) The XRD pattern of MnO_2 prepared by simple solution method. (b) The SEM image of MnO_2 nanoparticles. (c) The SEM image of Ag and MWCNTs located on paper fiber. (d) The SEM of boarder of printed area. The SEM images of filtrated MWCNTs: (e) the surface morphologies (f) the cross-section showing thickness.

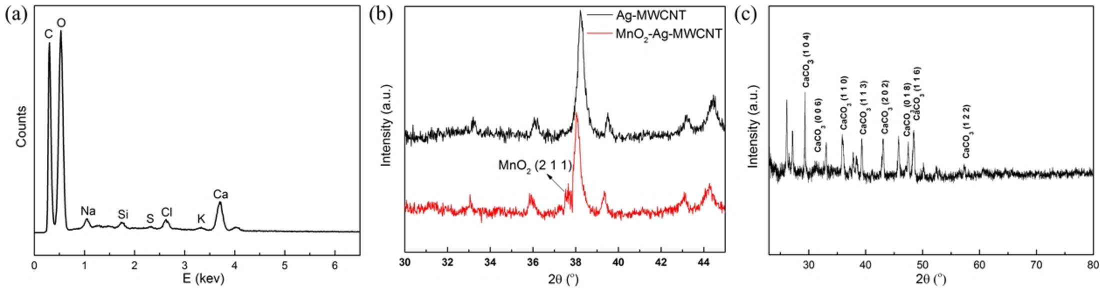

Figure S3 (a) EDS of pure paper. (b) The magnified portion of XRD patterns of Ag-MWCNT and MnO_2-Ag-MWCNT. (c) XRD pattern of pure paper.

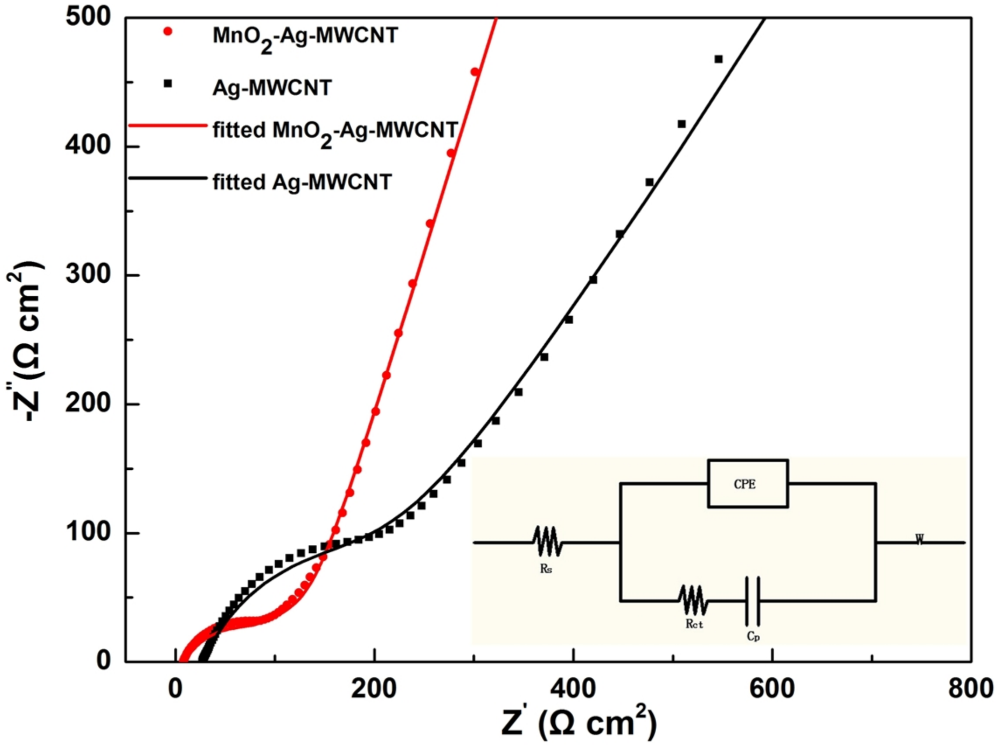

Figure S4 Nyquist plot of the electrodes. Dots are the experimental results and lines are the fitted Nyquist plots, inset is the equivalent circuit model.

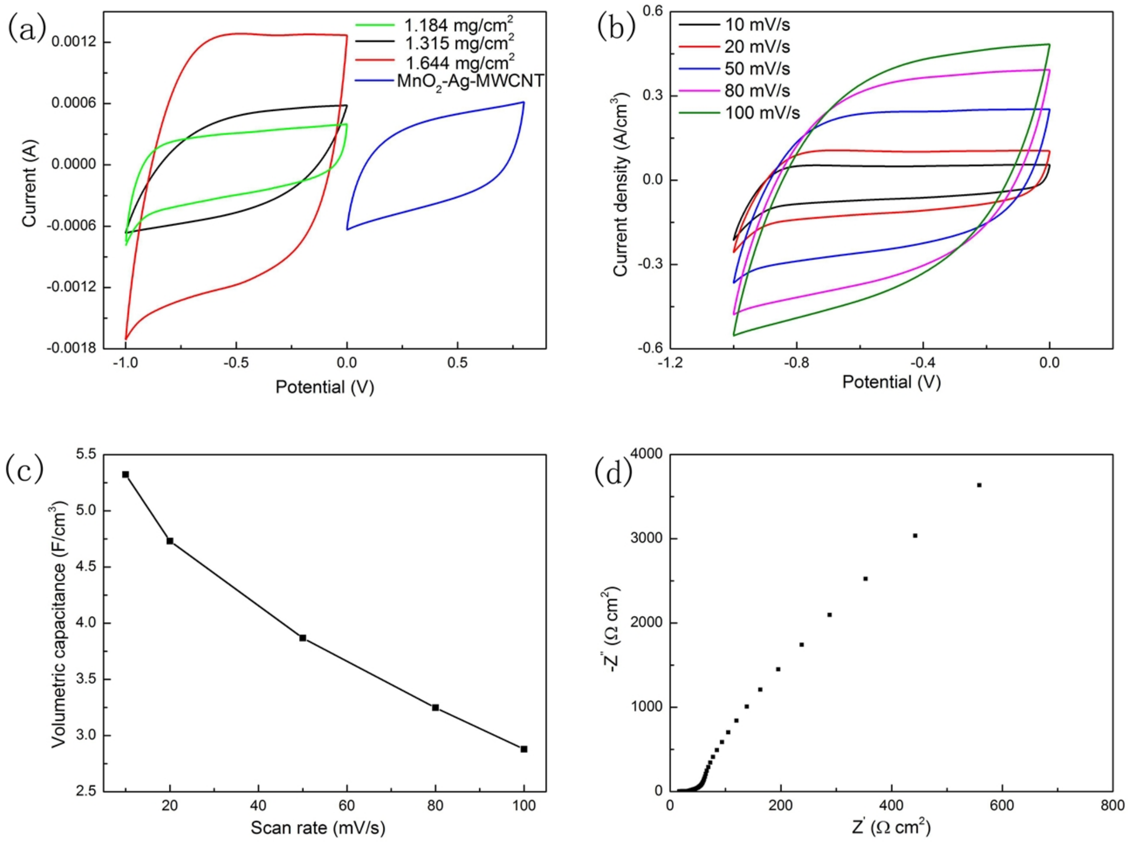

Figure S5 Electrochemical performance of the filtrated MWCNT negative electrode. (a) CV curves of the cathodes with different mass density and of the MnO_2-Ag-MWCNT anode (the scan rate of 0.1 V s^{-1}). (b) CV curves of the cathode with scan rate from 0.01 to 0.1 V s^{-1} (c) Volumetric capacitance VS scan rate. (d) Nyquist plot.