

### Supporting Information

All-Solid-State Supercapacitors Using A Highly-Conductive Neutral Gum Electrolyte  
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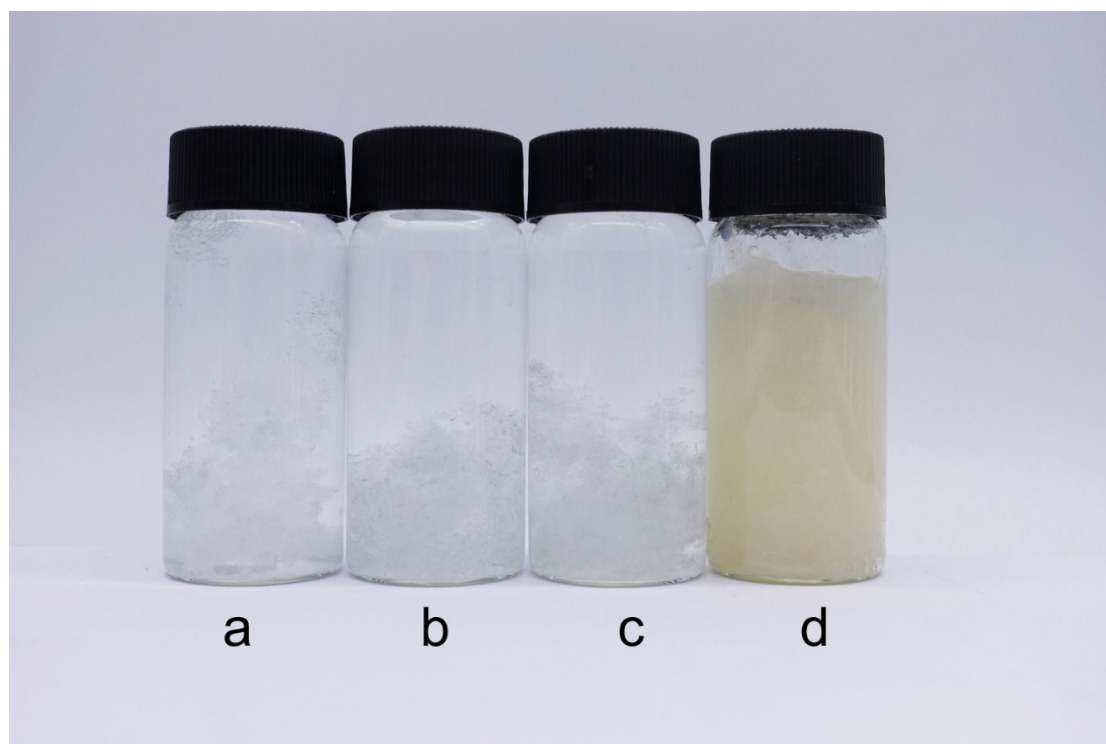
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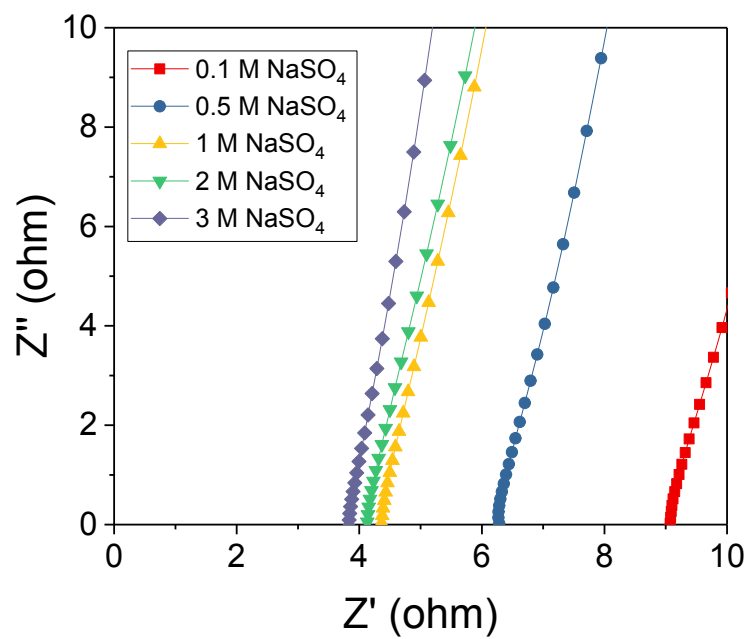
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Deposition potential	0-0.6V	0-0.8V	0.3-0.6V	0.3-0.8V	0.3-1V
Mass density(mg/cm <sup>2</sup> )	0.53	0.51	0.52	0.75	0.71

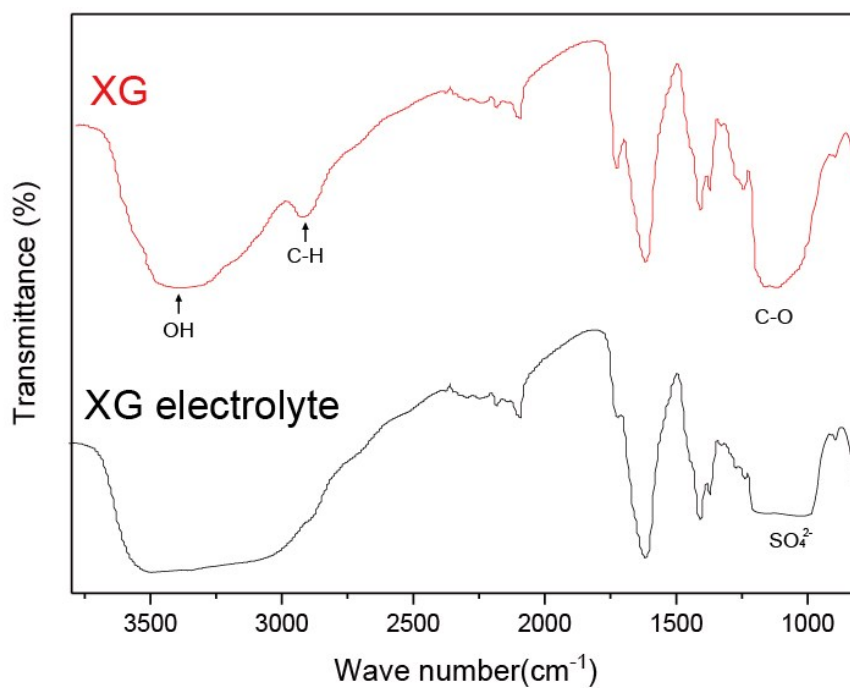
**Tab. S1** Mass density of MnO<sub>2</sub>/CNT films at different deposition potential.



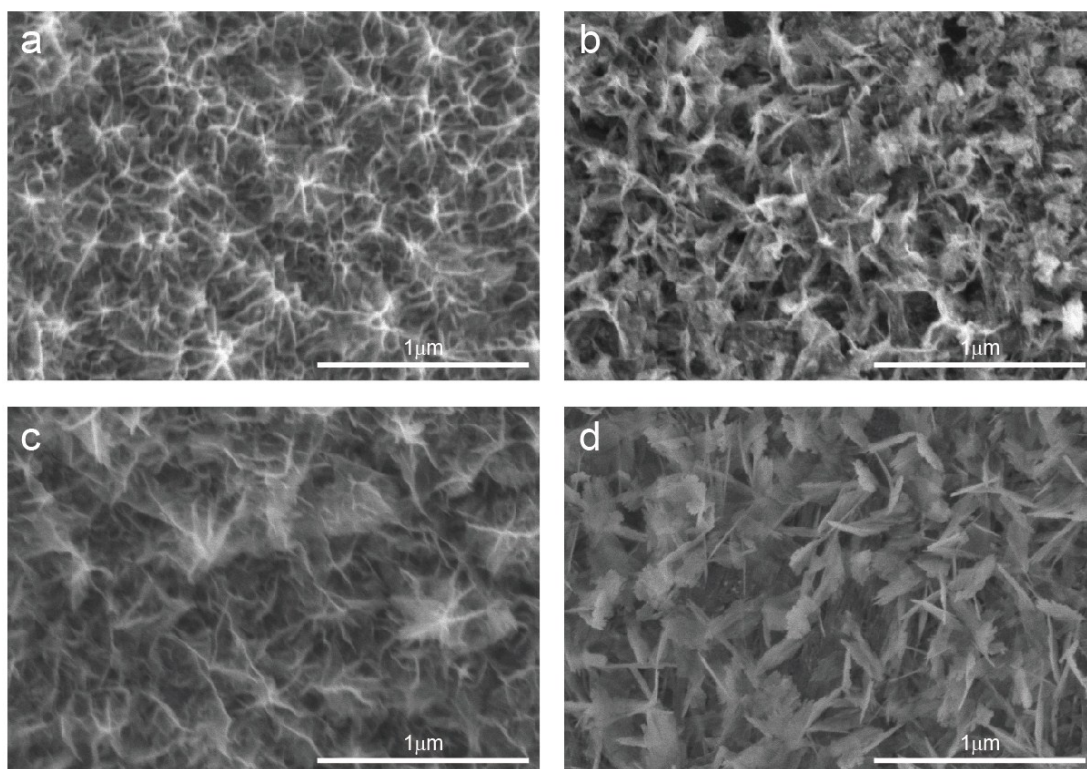
**Fig. S1** Optical images of 20 wt% of PVA with (a) 0.1 M, (b) 0.5 M, (c) 3 M of Na<sub>2</sub>SO<sub>4</sub>; (d) Optical image of 20 wt% xanthan gum with 3 M of Na<sub>2</sub>SO<sub>4</sub>.



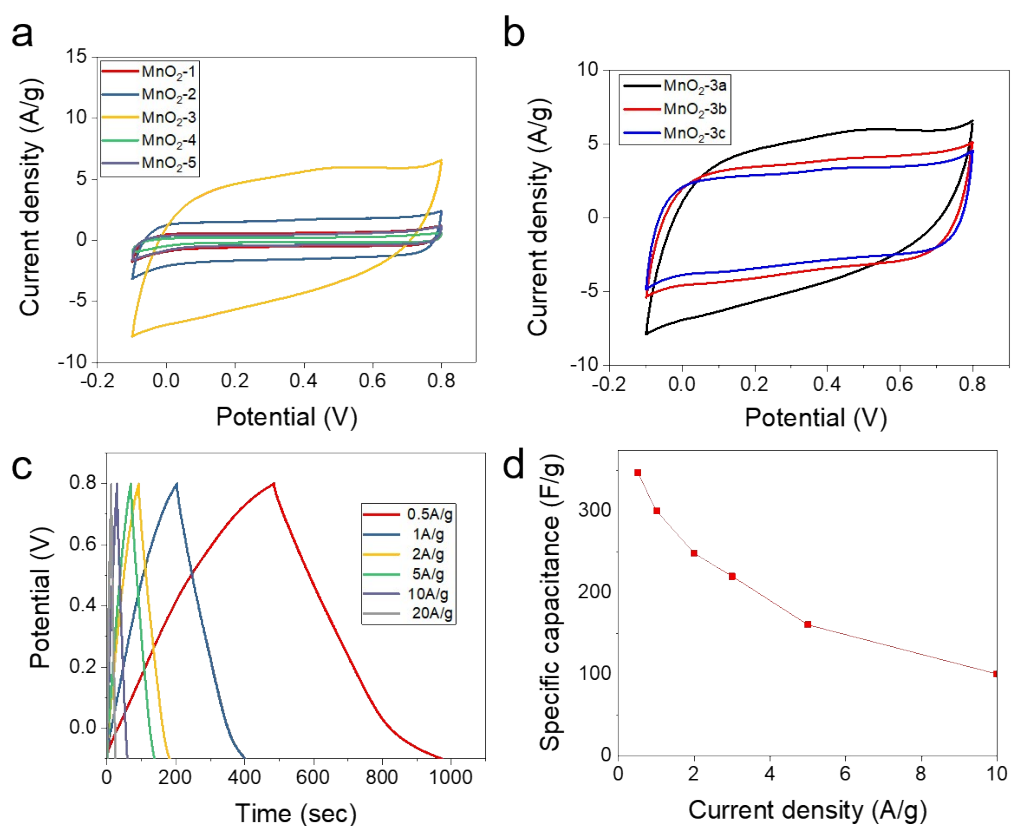
**Fig. S2** AC impedance spectra of the xanthan gum electrolytes containing 20 wt% xanthan gum with different concentrations of sodium sulfate.



**Fig. S3** IR spectra of xanthan gum and the Na<sub>2</sub>SO<sub>4</sub>/xanthan gum electrolyte.



**Fig. S4** SEM image of MnO<sub>2</sub> at different deposition potential. a) MnO<sub>2</sub>-1; b) MnO<sub>2</sub>-2; c) MnO<sub>2</sub>-4; d) MnO<sub>2</sub>-5.



**Fig. S5** Electrochemical measurement of MnO<sub>2</sub>/CNT films with 1 M Na<sub>2</sub>SO<sub>4</sub> aqueous solution as the electrolyte. a) CV curves of obtained at 5mV/s at different deposition scan

rates (MnO<sub>2</sub>-1: +0.3 V and +0.6 V; MnO<sub>2</sub>-2: +0.3 V and +0.8 V; MnO<sub>2</sub>-3: +0.3V and +1.0 V; MnO<sub>2</sub>-4: 0 V and +0.8 V; MnO<sub>2</sub>-5: 0 V and +0.6 V) ; b) CV curves obtained at 5mV/s at different deposition potential (MnO<sub>2</sub>-3a:250 mV/s, MnO<sub>2</sub>-3b: 50 mV/s, MnO<sub>2</sub>-3c:100 mV/s.); c) GCD curves of MnO<sub>2</sub>-3a /CNT films at different current density; d) Rate performance of MnO<sub>2</sub>-3a/CNT.

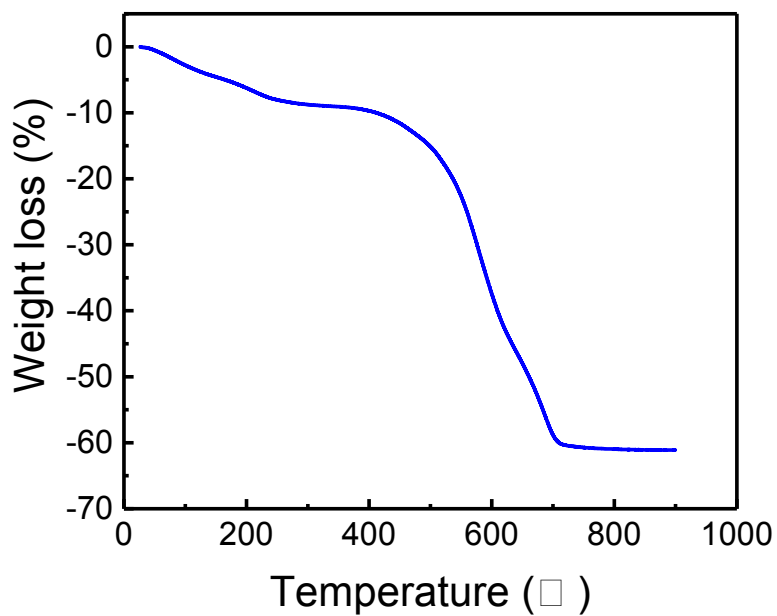


Fig. S6 TGA of MnO<sub>2</sub>/CNT films

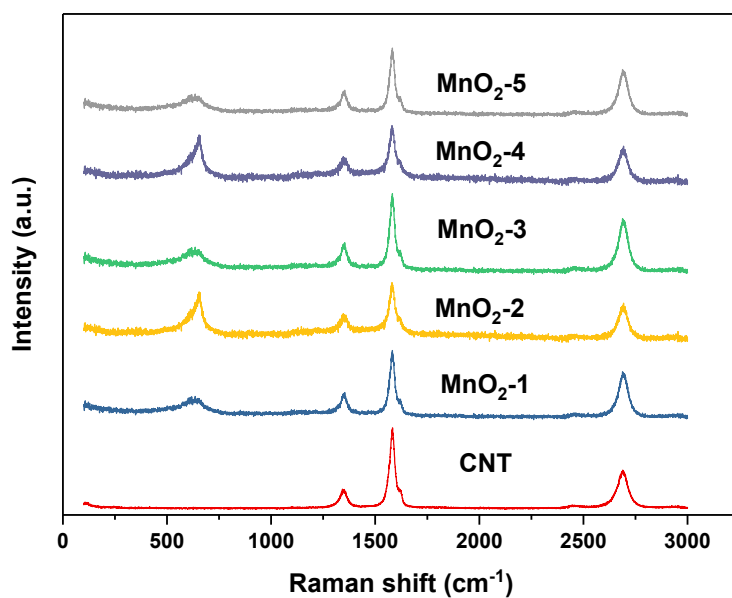
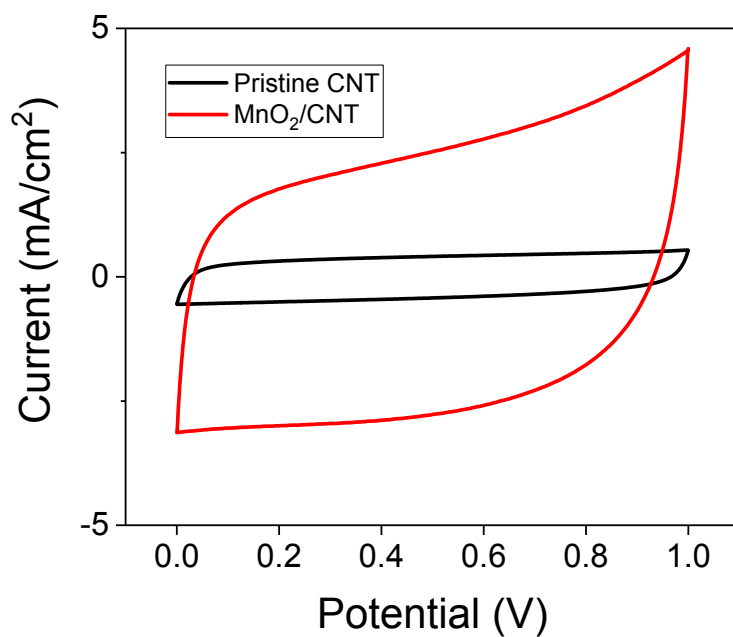
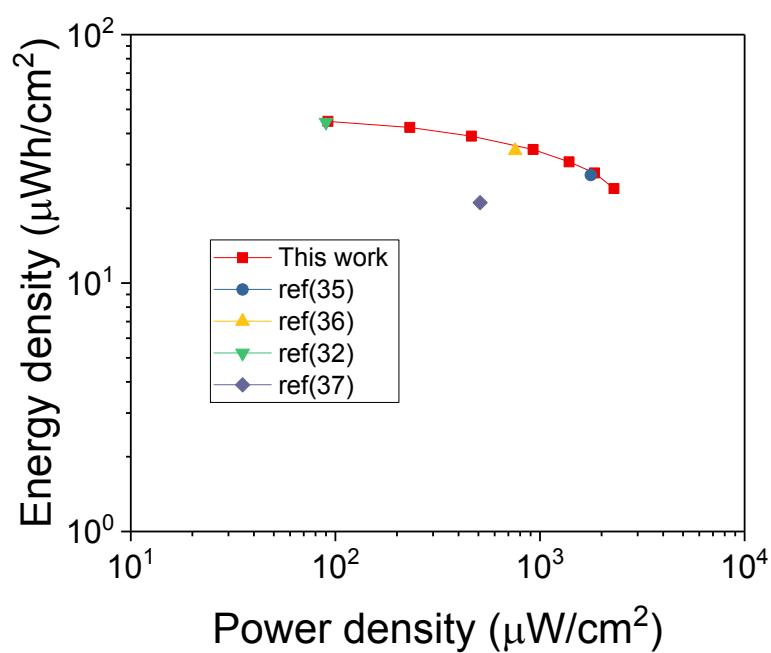


Fig. S7 Raman spectra of MnO<sub>2</sub>/CNT films at different deposition potential.



**Fig. S8** CV curves (scan rate: 2 mV/s) of the flexible supercapacitors based on pristine CNT and MnO<sub>2</sub>/CNT electrodes.



**Fig. S9** Ragone plots of all-solid-state supercapacitor based on MnO<sub>2</sub>/CNT electrodes.

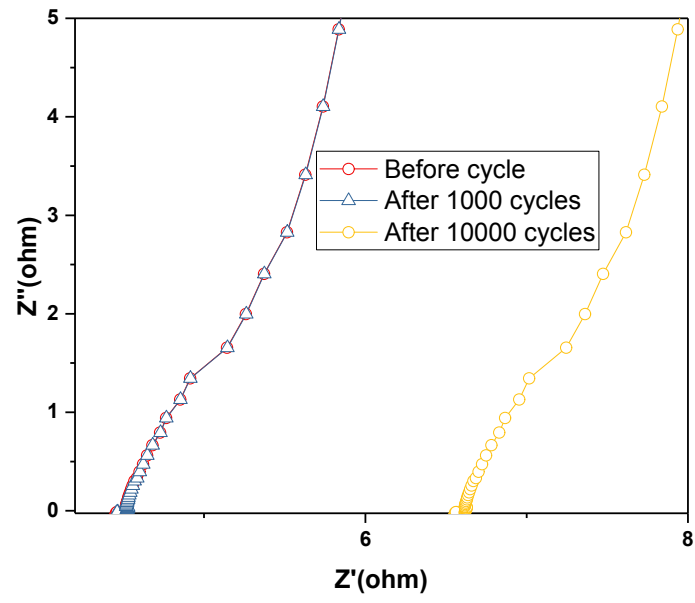


Fig. S10 Nyquist plot of all-solid-state supercapacitors at different cycle number.