

## Supporting Information

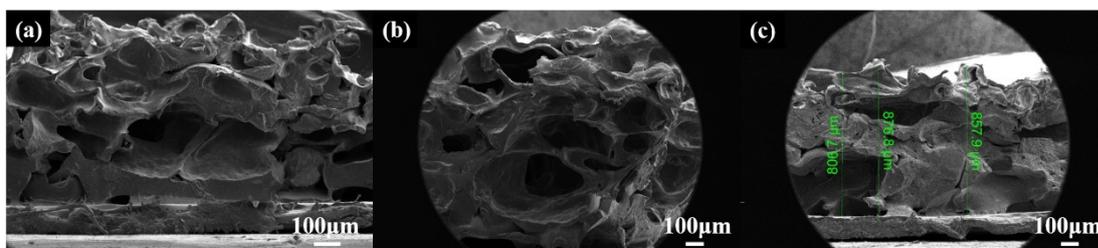
# MnO<sub>x</sub> embedded in 3D foam-like polymers composite for high-performance flexible supercapacitor

*Xiaojuan Shen\**, Shouyan Sun, Pengwei Liu, Manlin Wei

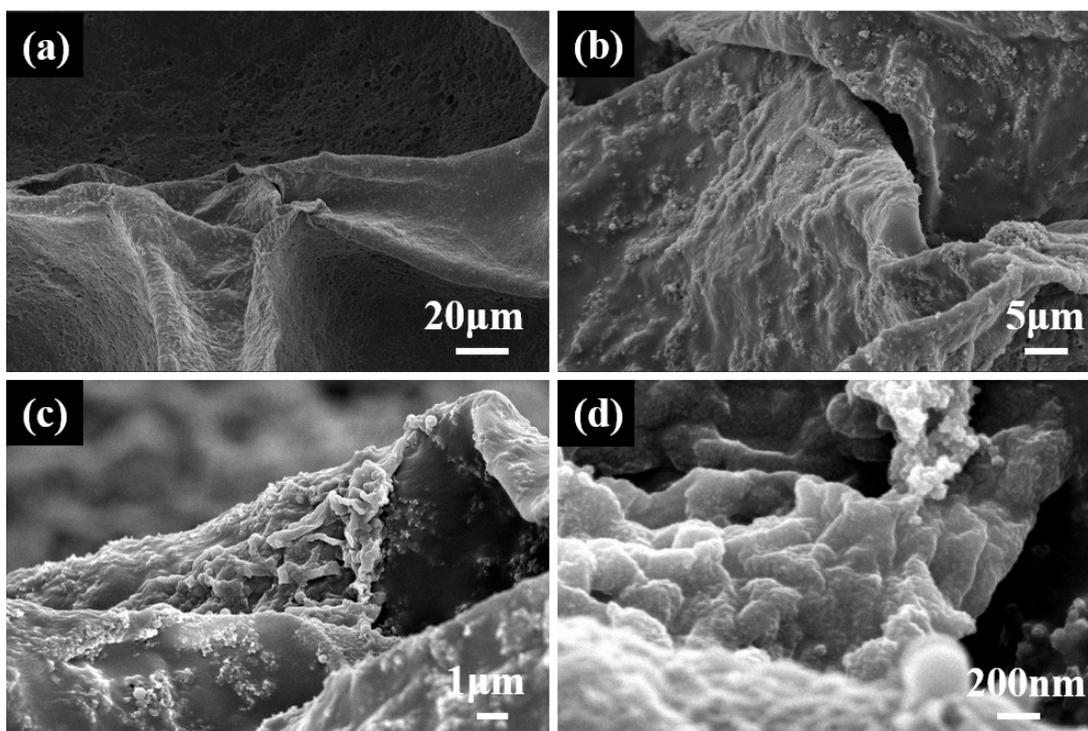
Research School of Polymeric Materials, School of Materials Science &  
Engineering, Jiangsu University, Zhenjiang, Jiangsu Province, 212013, China.

### Corresponding Author:

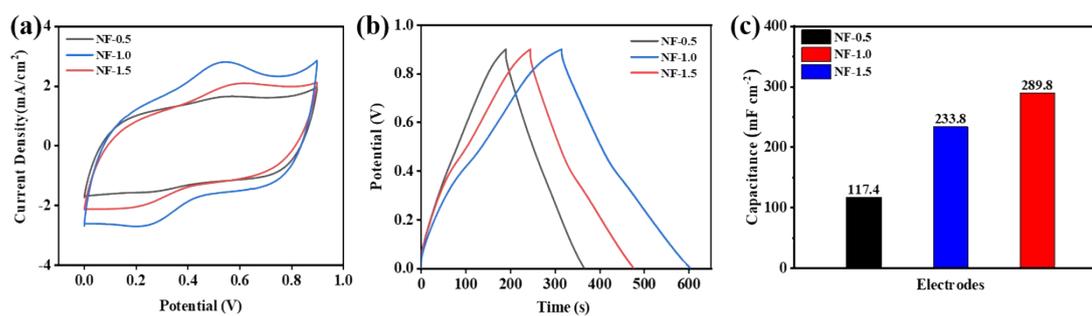
xiaojuanshen@ujs.edu.cn



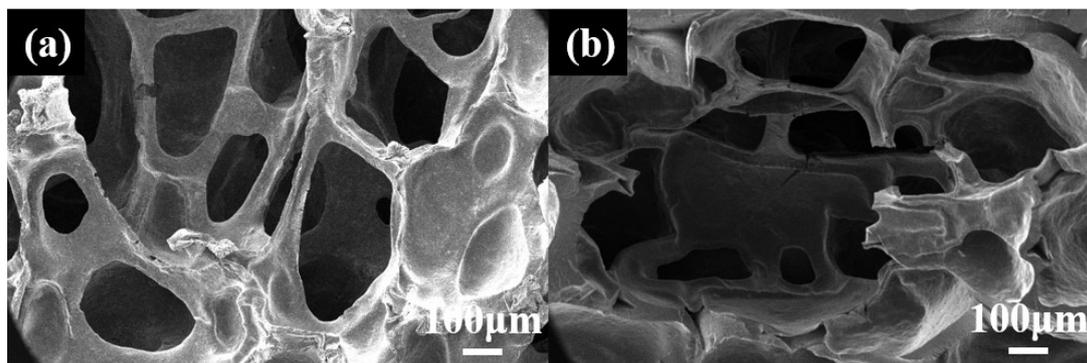
**Fig. S1.** Cross-section of SEM images of PU matrix prepared from NF with different thicknesses (a) 0.5 mm, (b) 1 mm, and (c) 1.5 mm.



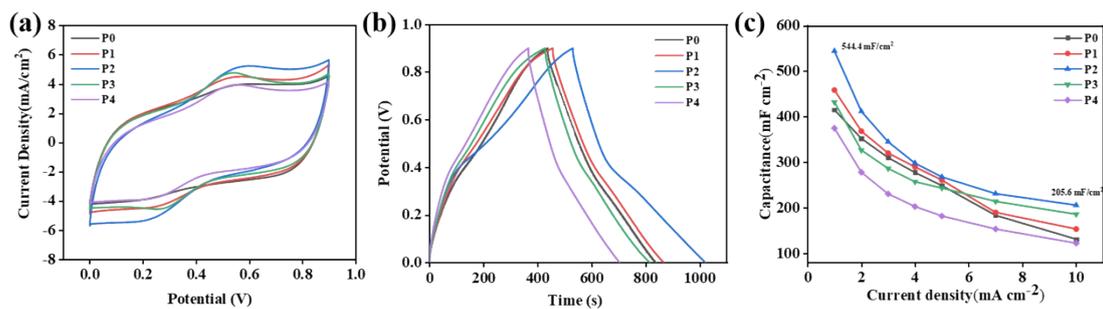
**Fig. S2.** SEM images of PEU at different magnifications



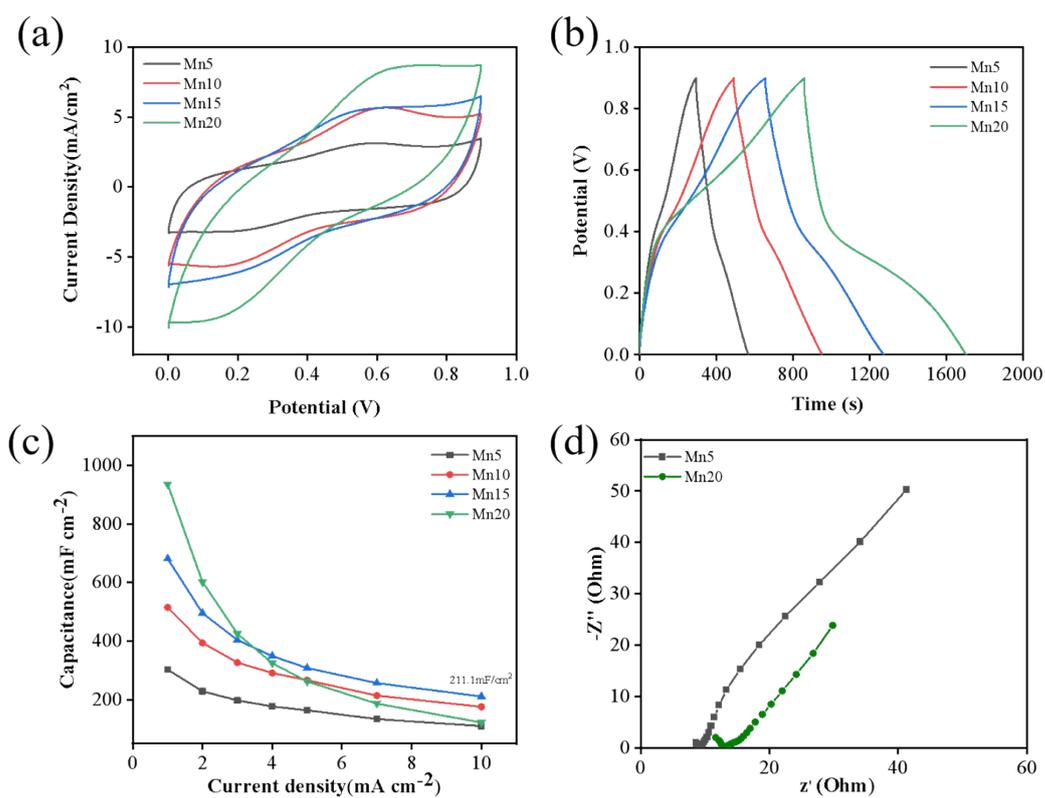
**Fig. S3.** Electrochemical performance of the PUS-Mn-PS electrode fabricated from NF with different thickness. (a) CV curve at 10 mV/s, (b) GCD curve at 1 mA/cm<sup>2</sup>, and (c) area capacitance calculated from the GCD curves. The electrodeposition time for MnO<sub>x</sub> was 10 min.



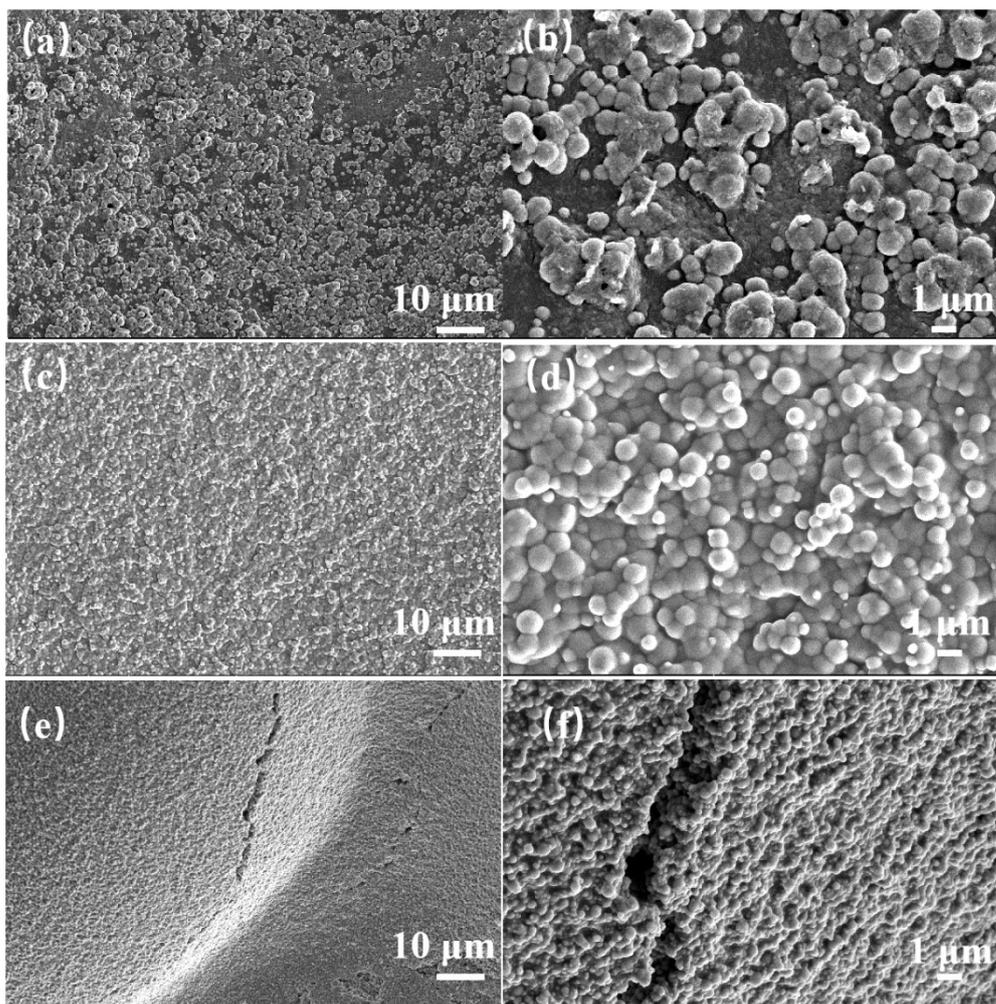
**Fig. S4.** SEM images of PEU matrix obtained with the surface decoration layer of PEDOT synthesized with the deposition time of 4 min. (a) plan and (b) cross-section view.



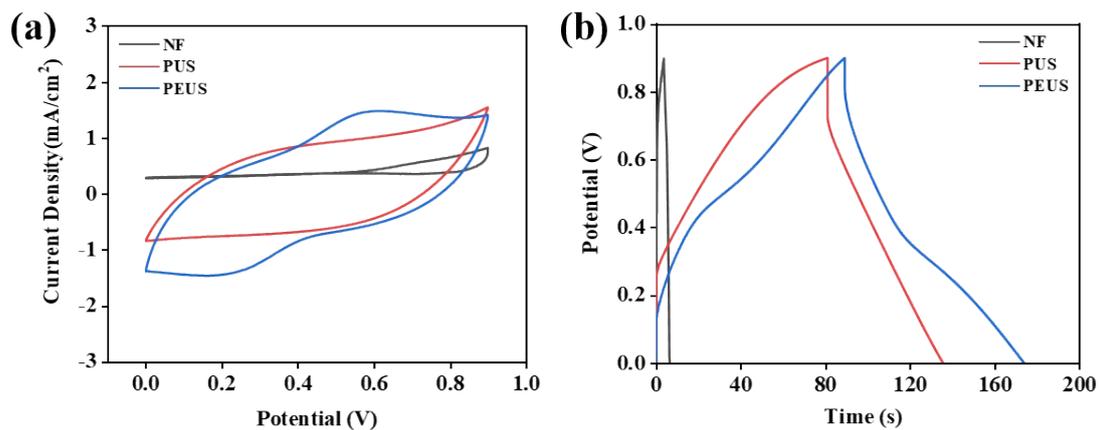
**Fig. S5.** Electrochemical performance of the PEUS-Mn-PS electrode fabricated with the surface decoration layer of PEDOT for different deposition time. (a) CV curve at 10 mV/s, (b) GCD curve at 1 mA/cm<sup>2</sup> and (c)  $C_a$  of PEUS-Mn-PS at different current densities. The electrodeposition time for MnO<sub>x</sub> was 10 min.



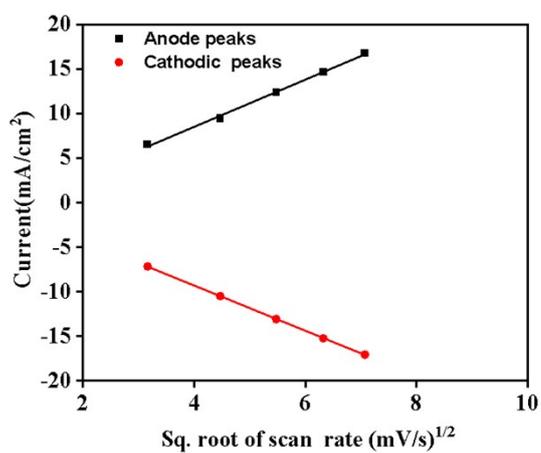
**Fig S6.** Electrochemical performance of the PEUS-Mn-PS electrode fabricated with the different deposition time of MnO<sub>x</sub>. (a) CV curve at 10 mV/s, (b) GCD curve at 1 mA/cm<sup>2</sup> and (c) C<sub>a</sub> of PEUS-Mn-PS at different current densities. (d) EIS of the PEUS-Mn-PS electrode prepared with MnO<sub>x</sub> for 5 and 20 minutes



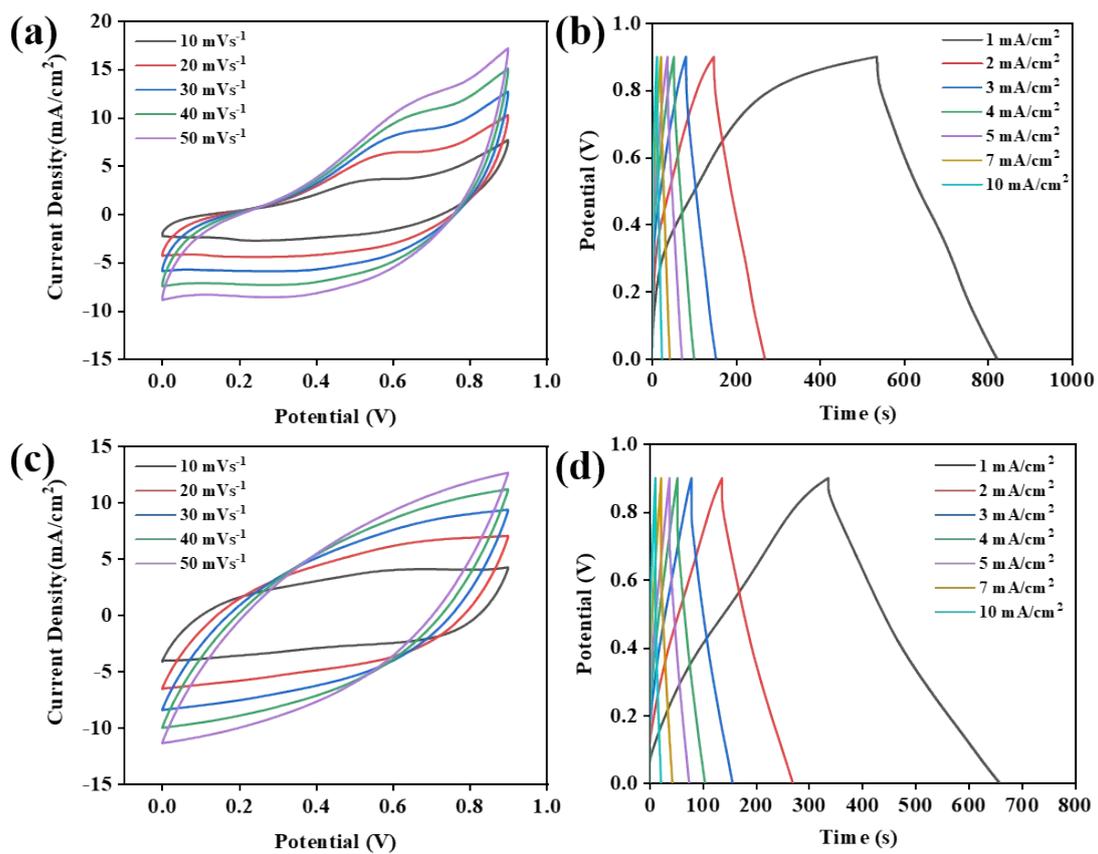
**Fig. S7.** SEM images of PEUS-Mn prepared with different deposition time. (a, b) 5 min; (c, d) 15 min; (e, f) 20 min.



**Fig. S8.** (a) CV curves at 10 mV/s and (b) GCD curves at 1 mA/cm<sup>2</sup> for different scaffolds.



**Fig. S9.** Relationship between peak current and  $t$  and square root of various scan rates.



**Fig. S10.** (a) CV curves at 10 ~ 50 mV/s and (b) GCD curves at 1 ~ 5 mA/cm<sup>2</sup> for NF-Mn; (c) CV curves at 10 ~ 50 mV/s and (d) GCD curves at 1 ~ 5 mA/cm<sup>2</sup> for PUS-Mn-PS.

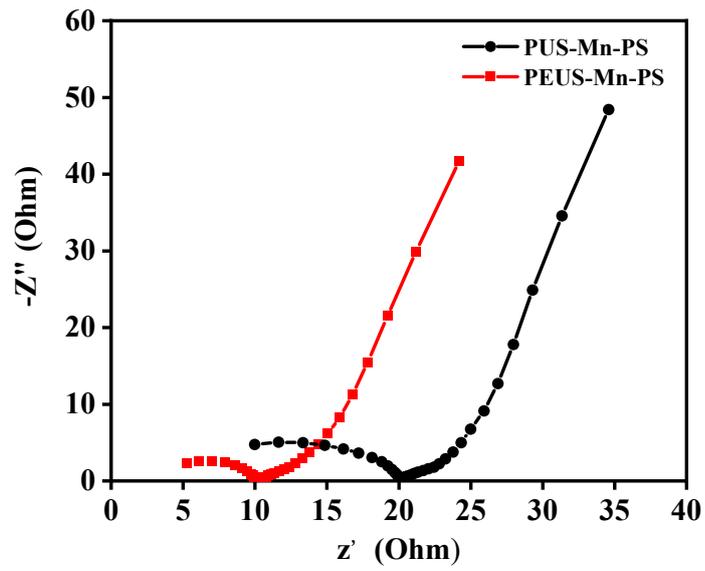


Fig. S11. Nyquist plots of PUS-Mn-PS and PEUS-Mn-PS.