**Supplementary Information**

**Conversion of carbon nanotube into curved graphene with improved capacitance**

LI Xiao-yan1, WANG Qiang2, \*, WANG Huan-wen3

*(1. School of Chemistry and Chemical Engineering, Shanxi University, Taiyuan 030006, China；*

*2. State Key Laboratory of Coal Conversion, CAS Key Laboratory of Carbon Materials, Institute of Coal Chemistry, Chinese Academy of Sciences, Taiyuan 030001, China;*

*3. Faculty of Material Science and Chemistry, China University of Geosciences, Wuhan 430074, China* *)*

Corresponding author: WANG Qiang, associate professor. E-mail: [wqiang@sxicc.ac.cn](mailto:wqiang@sxicc.ac.cn)

**Materials characterization**

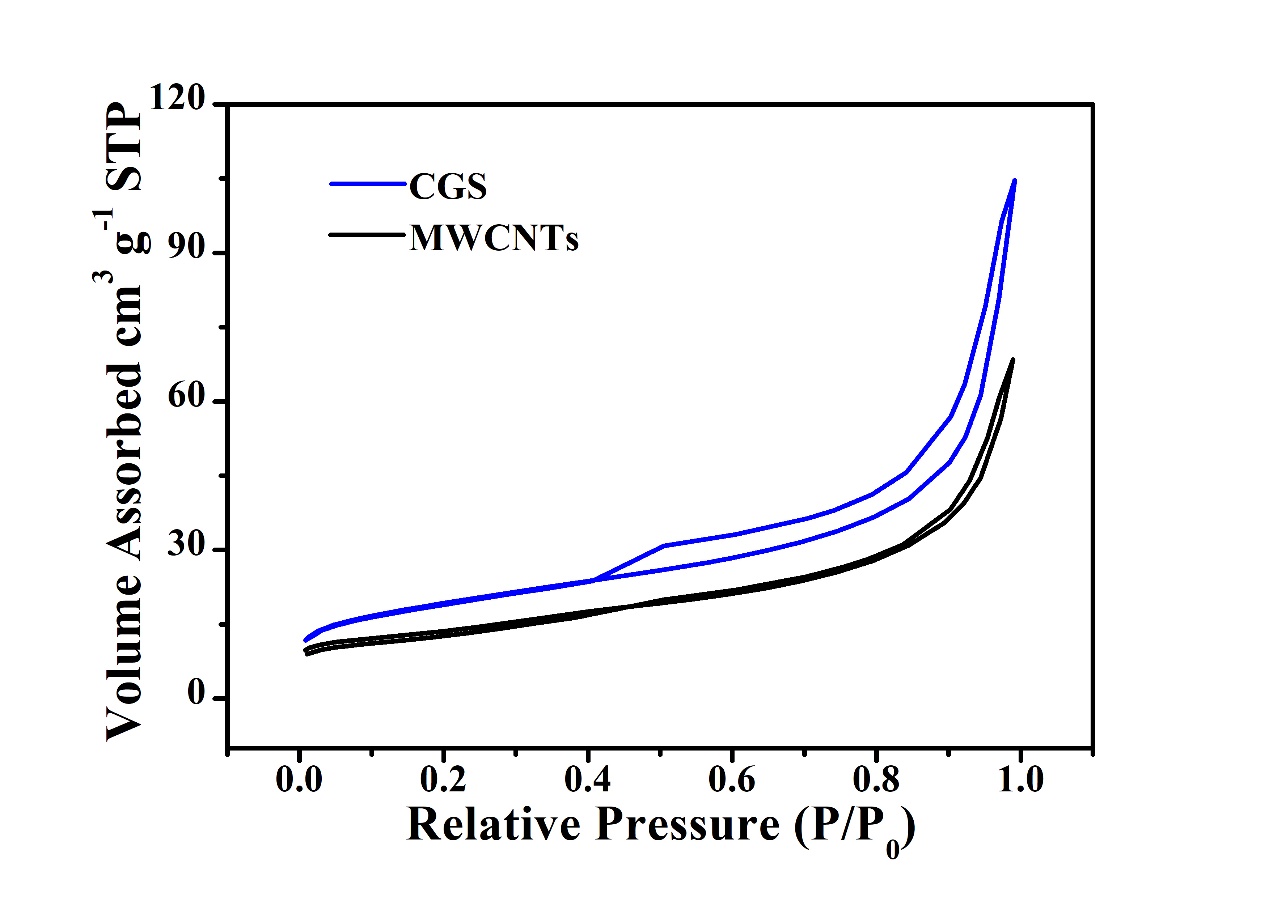
The morphology and microstructure were characterized by XRD (Bruker D8 Advance with Cu-Kα radiation), SEM (Hitachi SU8010 at 10.0 kV) and TEM (Titan G260-300).

**Preparation of electrodes**

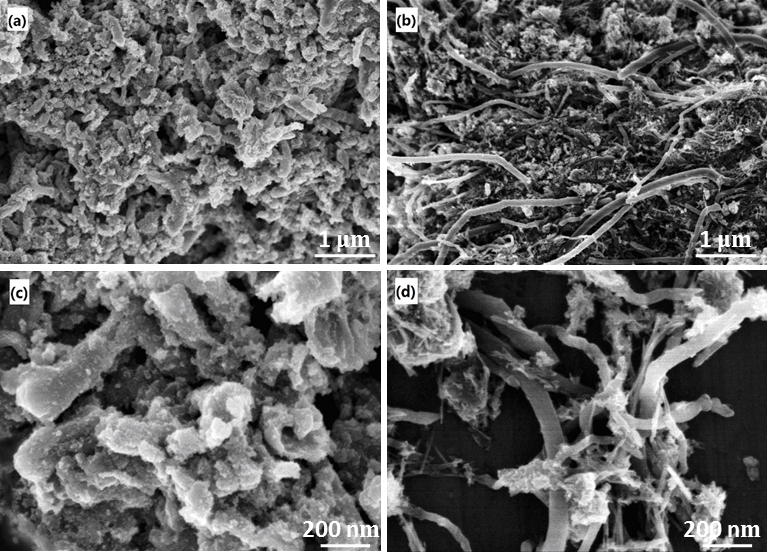
The samples, super P and PTFE binder were mixed in a weight ratio of 80:10:10, using N-methyl-2-pyrrolidone as the solvent to form a paste, which was coated onto nickel foam, and the mass of active material was 2.0 mg cm‒1.

**Electrochemical characterization**

A three-electrode experimental cell with the working electrode, the platinum foil counter electrode, and the SCE reference electrode was used to measure electrochemical properties in 1 M Na2SO4 aqueous electrolyte. Cyclic voltammetry (CV) was carried out on a CHI660B electrochemical working station. The specific capacitance of the electrode can be calculated according to C= (∫IdV)/(ʋmV), where C is the specific capacitance (F g‒1), I is the response current density (A cm‒2), V is the potential (V), ʋ is the potential scan rate (mV s‒1), and m is the mass of the electroactive materials in the electrodes (g).



**Fig. S1.** Nitrogen adsorption and desorption isotherms for (a) CGS and (b) MWCNTs.



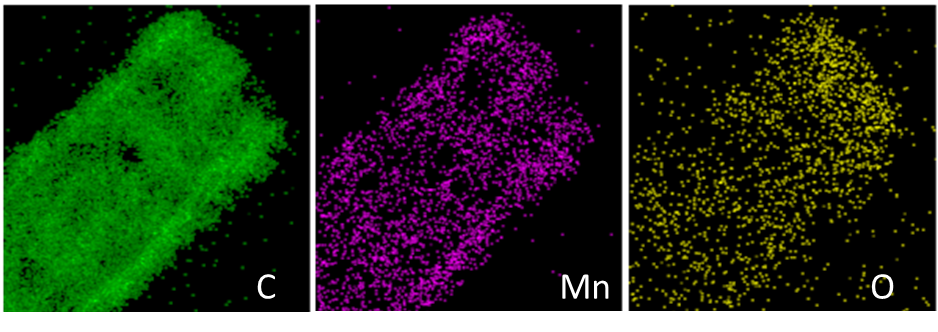
**Fig. S2.** FESEM images of **(a, c)** the CGS-MnO2 composite and **(b, d)** MWCNTs-MnO2 composite.

****

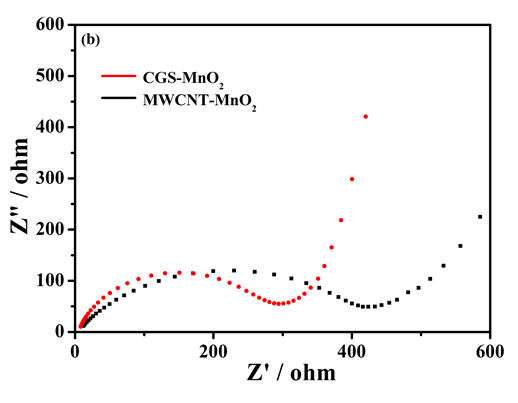
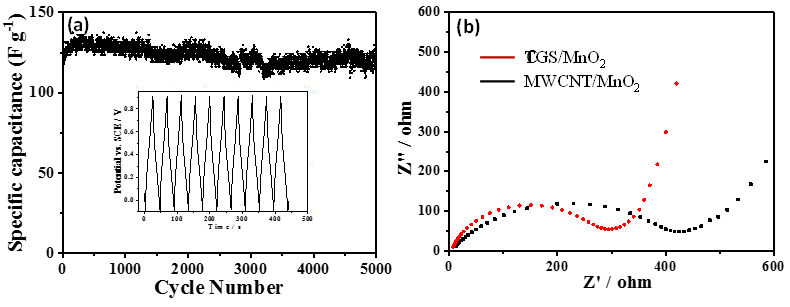
**Fig. S3.** TG/DTG curves of the CGS-MnO2 composite.



**Fig. S4.** N2 adsorption–desorption isotherms of CGS-MnO2.



**Fig. S5.** EDS mapping results of CGS-MnO2.



**Fig. S6.** (a) Cycling stability of CGS-MnO2 obtained by galvanostatic charge/discharge. (b) EIS data of CGS-MnO2 and MWCNT-MnO2.

**1 μm**

**200 nm**

**1 μm**

**200 nm**