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Support information

Ultrathin MnO_2 Nanosheets Grown on Fungal Conidium-derived Hollow Carbon Spheres as Supercapacitor Electrodes

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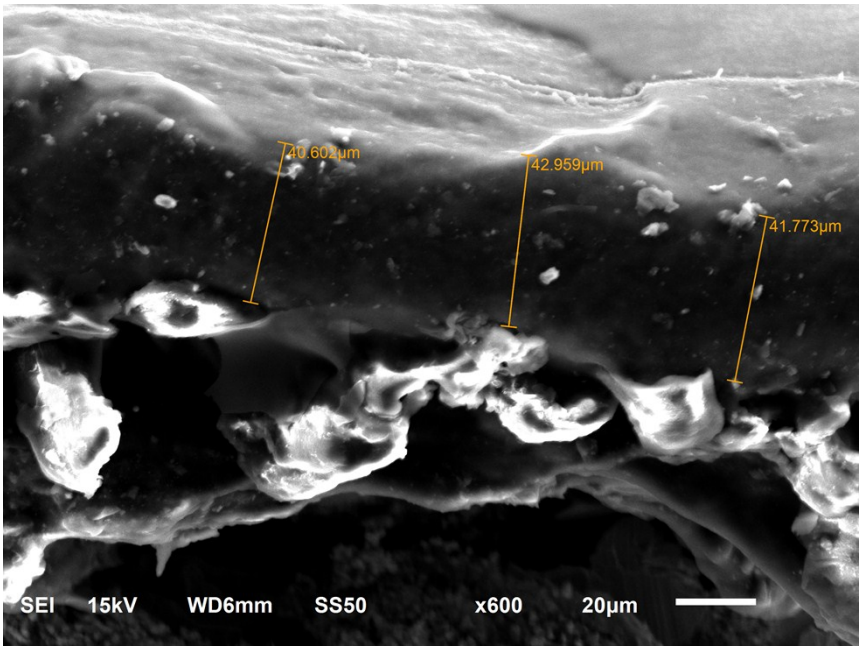

Figure S1. Cross-section SEM image of MnO_2@CC composites on the nickel form.

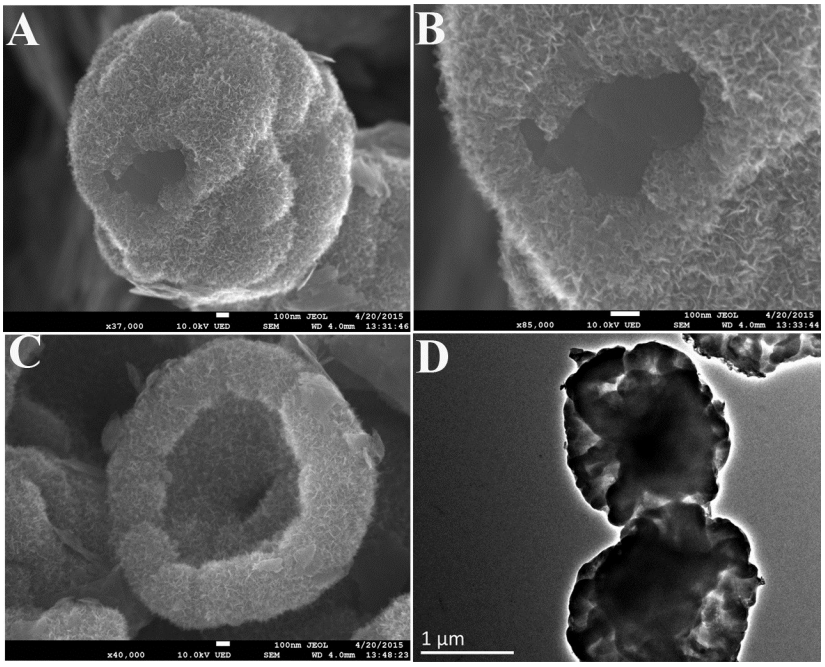

Figure S2. FESEM and TEM image of conidium-derived hollow carbon spheres.

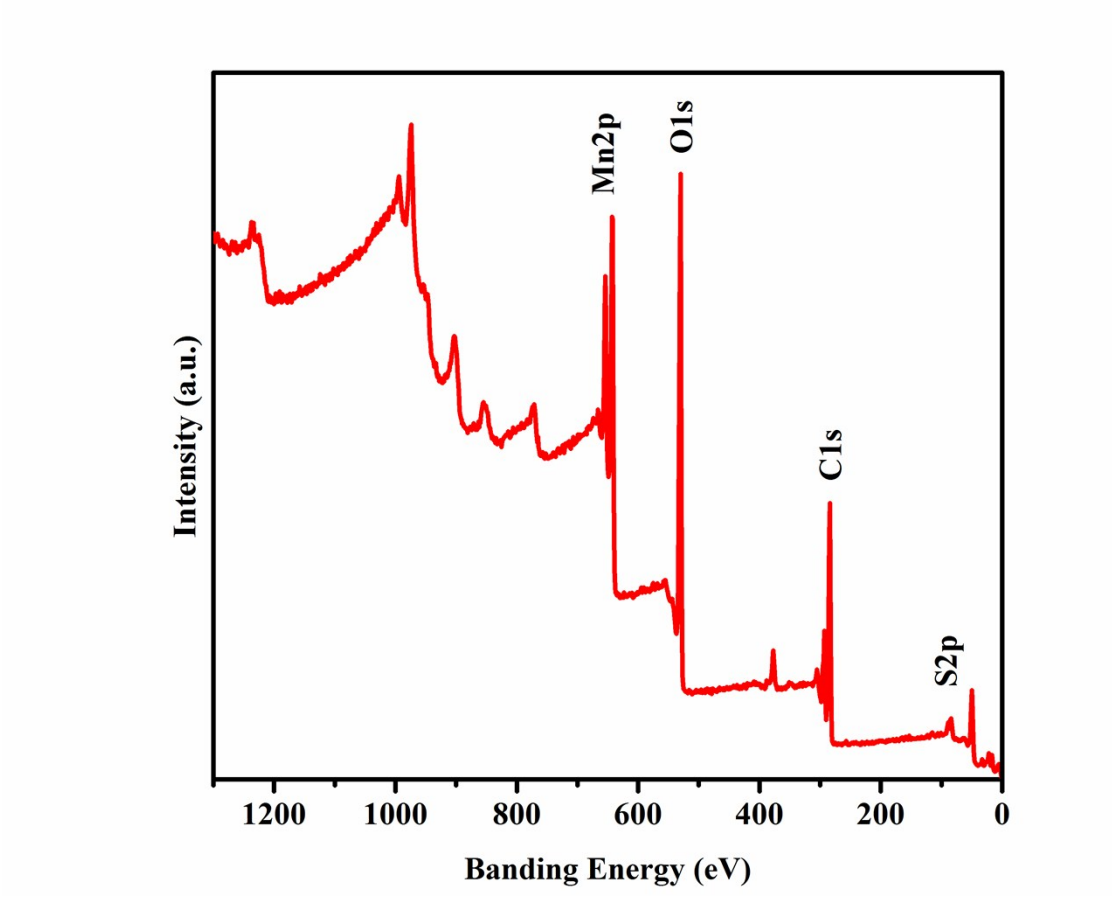

Figure S3. Survey spectrum of MnO_2@CC.

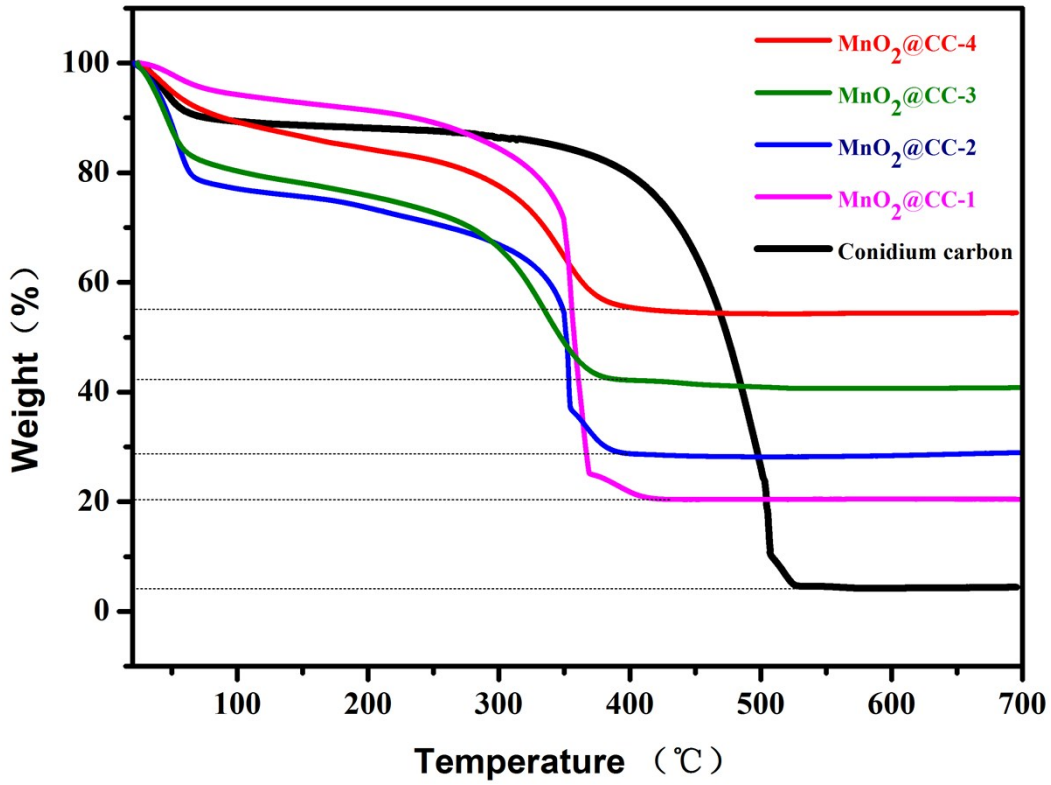

Figure S4. TGA curves of conidium carbon and MnO_2@CC composites.

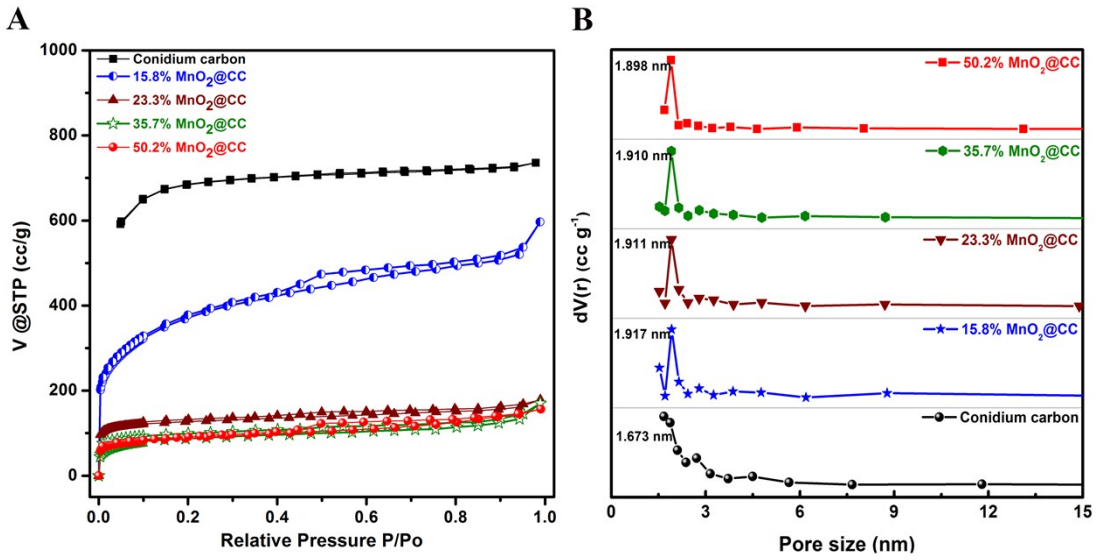

Figure S5. N_2 adsorption−desorption isotherms (A) and the corresponding pore size distribution (B) of conidium-derived and MnO_2@CC composites

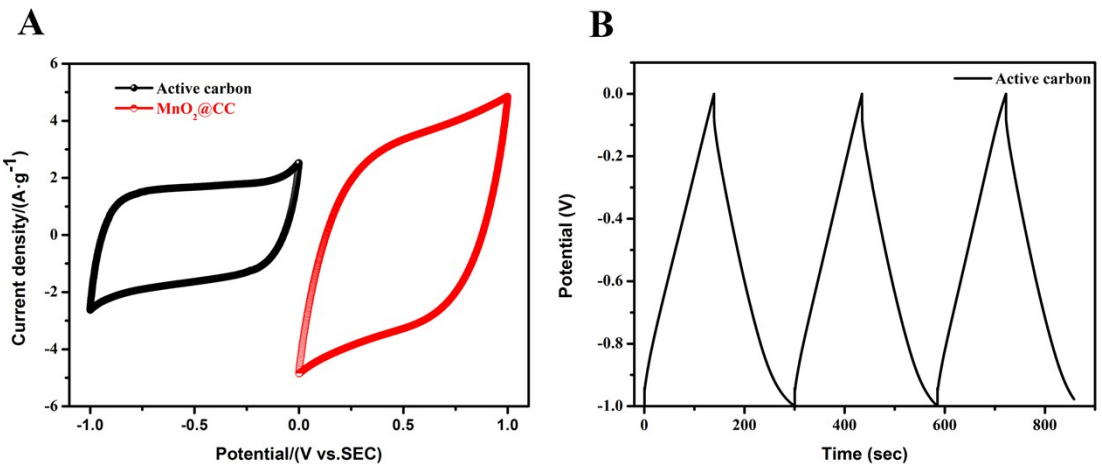

Figure S6. CV curves of active carbon and MnO_2@CC composites recorded in a three-electrode cell.

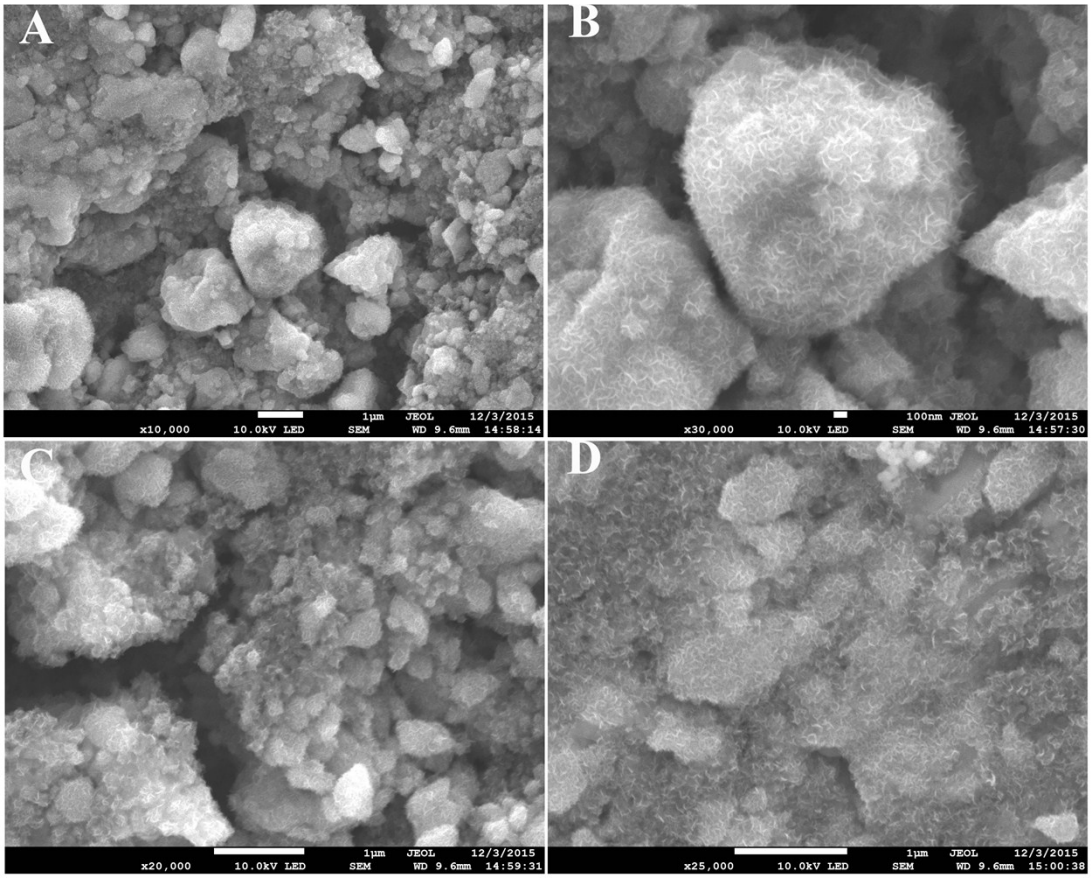

Figure S7. FESEM images of MnO_2@CC composites after 1000 cycles in asymmetric supercapacitor.

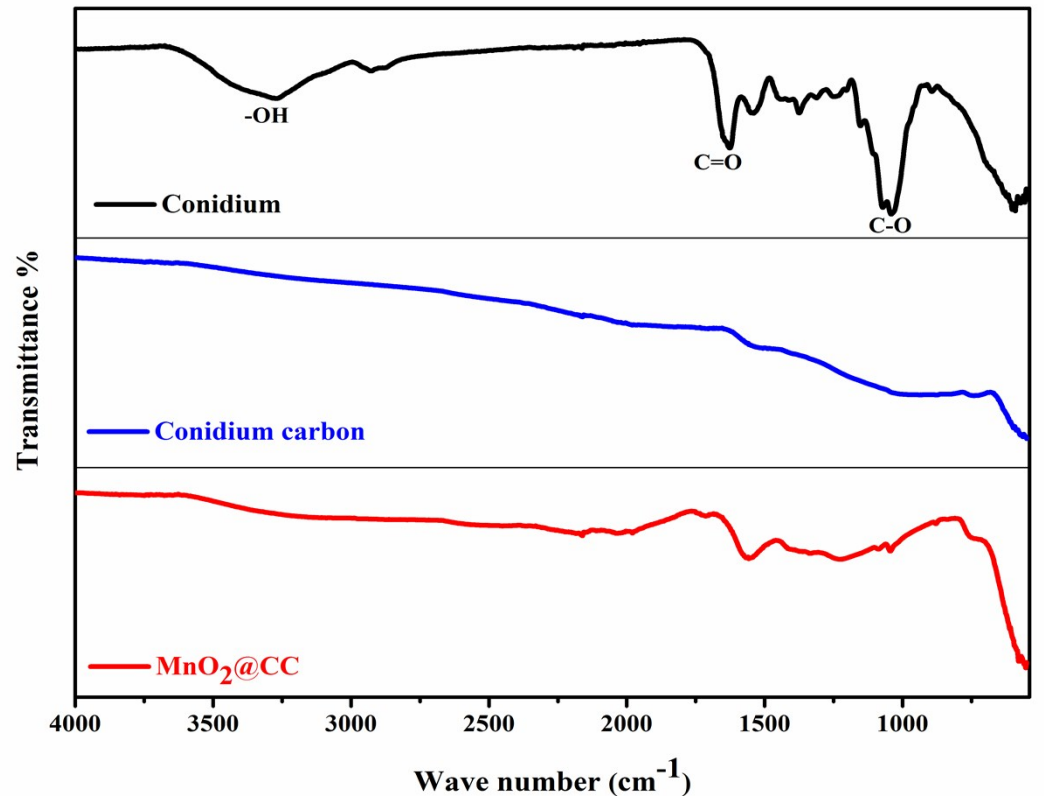

Figure S8. FTIR spectra of the samples.

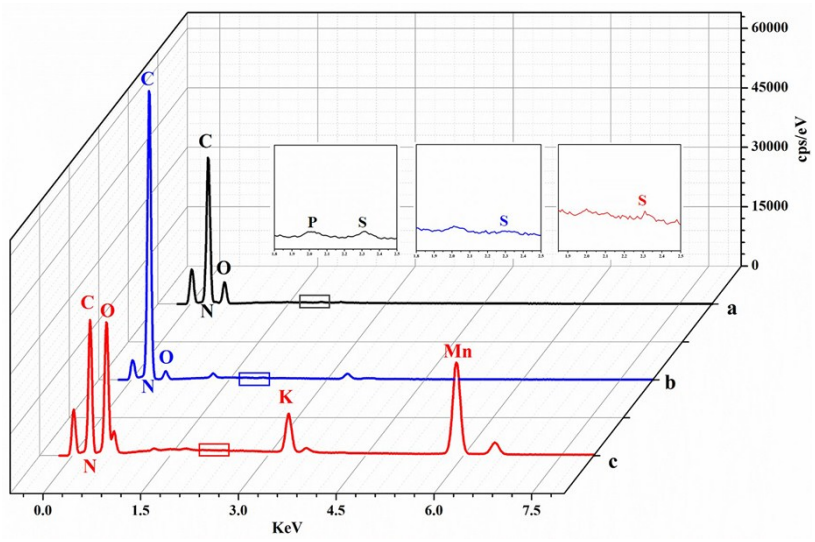

Figure S9. EDS spectra of MnO_2@CC.

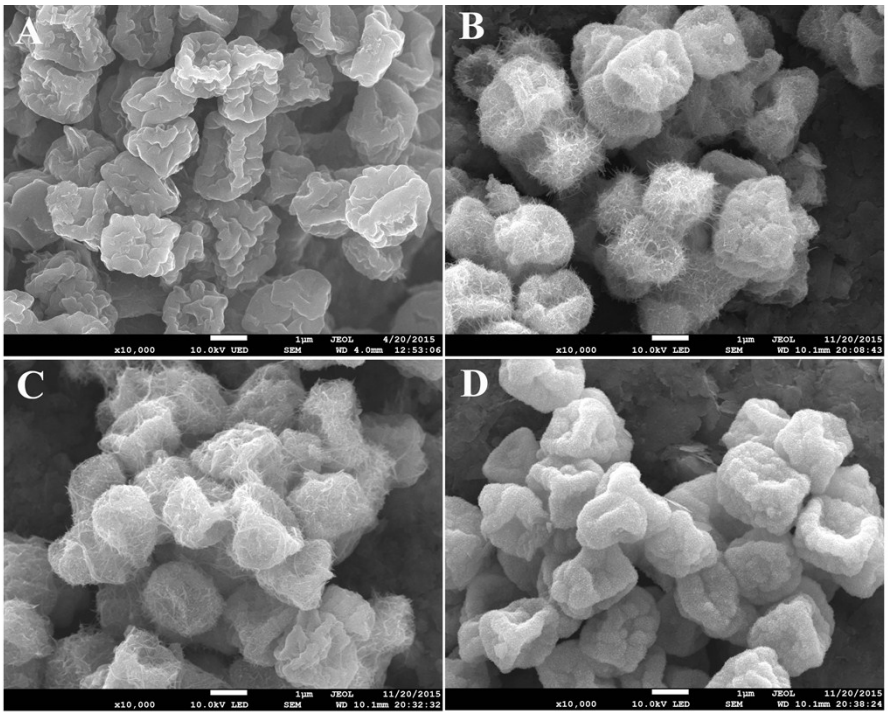

Figure S10. FESEM images of conidium carbon and MnO_2@CC composites: (A) conidium carbon, (B) 15.8% MnO_2@CC composites, (C) 23.3%MnO_2@CC composites, (D) 35.7% MnO_2@CC composites

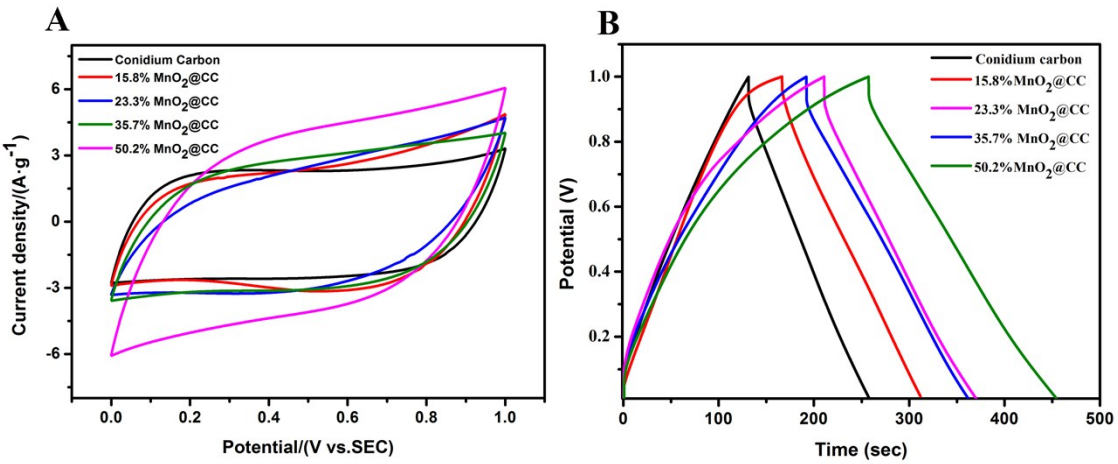

Figure S11. (A) CV curves of conidium carbon and MnO_2@CC composites at the scan speed of 20 mV/s; (B) Galvanostatic charge/discharge curves at a current density of 1 A/g for conidium carbon and MnO_2@CC composites.

Table 1 Characterization of different content of MnO_2 in the composites

Samples	**Content of MnO_2** (wt%)	**S_{BET}** ($m^2 g^{-1}$)	**Pore size** (nm)	**Specific capacitance** ($F g^{-1}$)
Conidium carbon	0	2123.96	1.67	107.8
MnO_2@CC-1	15.8	1362.98	1.91	147.4
MnO_2@CC-2	23.3	484.53	1.91	160.0
MnO_2@CC-3	35.7	337.90	1.91	172.5
MnO_2@CC-4	50.2	324.08	1.90	263.5

Table S2 Comparison of the specific capacitances of MnO2 and MnO2-carbon composites electrodes

Materials	**Specific capacitance** ($F\ g^{-1}$)	**Electrolyte**	**Ref.**
Crystalline MnO_2	110 (2mV/s)	0.1 M K_2SO_4	1
MnO_2 Nanorods	201 (10 mV/s)	0.5 M Li_2SO_4	2
3D Manganese Oxide Nanoflowers	121.5 (5mV/s)	6 M KOH	3
Needle-like MnO_2	233.5(100mV/s)	1 M Na_2SO_4	4
Manganese Oxide Nanorod	140(1mV/s)	1 M Na_2SO_4	5
Manganese oxide films	230.5(25 mV/s)	1 M Na_2SO_4	6
MnO_2 loaded biomass carbonaceous aerogel composites (MnO_2@CA)	123.5 (5 mV/s)	6 M KOH	7
MnO_2 dipped biomass carbon skeleton from Lotus Pollen (MnO_2/C)	257 (0.5 A/g)	1 M Na_2SO_4	8
MnO_2 loaded Bacterial-Cellulose-Derived Carbon (p-BC@MnO2// p-BC@MnO_2)	256.7(1.0 A/g)	1 M Na_2SO_4	9
MnO_2-doped, polyaniline-grafted rice husk ash nanocomposites (PANI/MnO_2/RHA)	135 (0.5 mA/g)	0.5 M Na_2SO_4	10
MnO_2 grown on Fungal Conidium-derived Hollow Carbon Spheres(MnO_2@CC)	263.5 (1.0 A/g)	1 M Na_2SO_4	Our work

Reference

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