Supplemental Materials

A Novel Radiation Method for Preparing MnO_2/BC Monolith Hybrids with Outstanding Supercapacitance Performance

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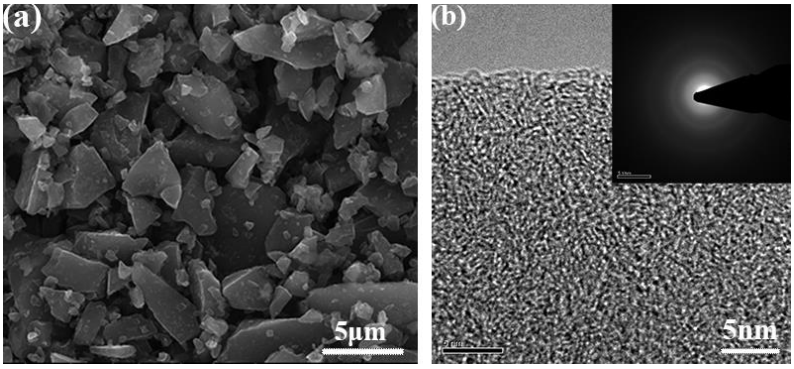

Figure S1. (**a**) Typical SEM images of BC, (**b**) HRTEM images of the BC (the inset shows SAED pattern).

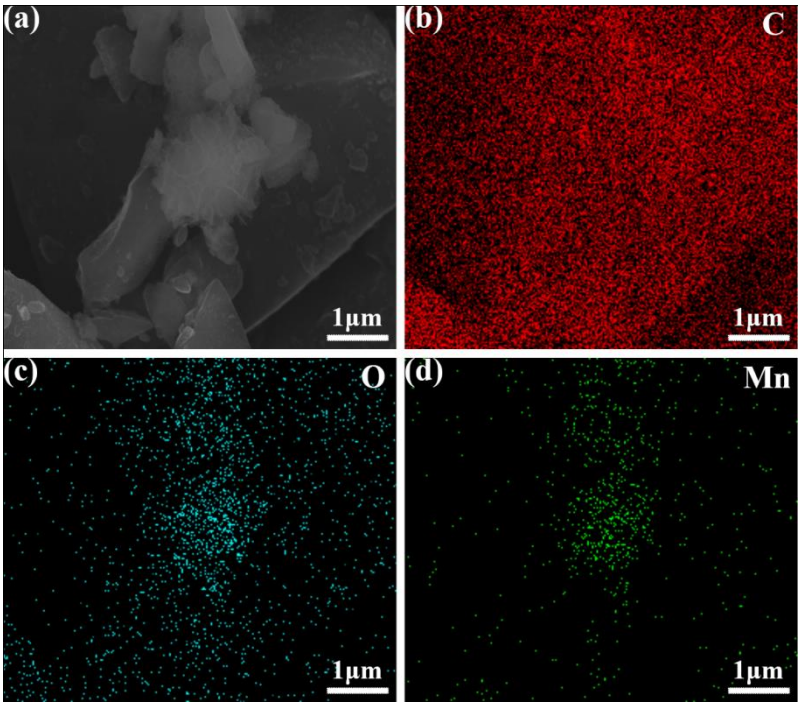

Figure S2. EDS mapping results of C, Mn, and O for the MnO_2/BC hybrids.

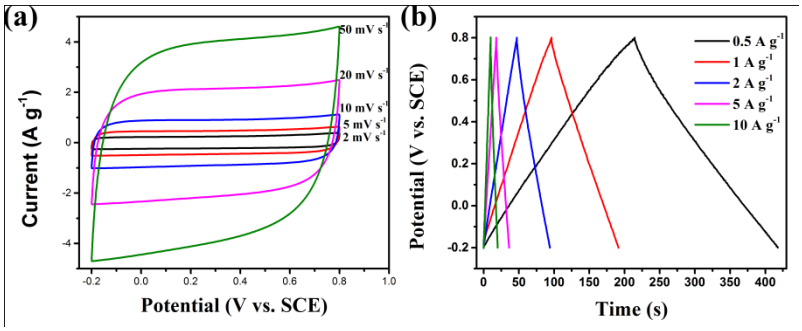

Figure S3. (**a**) The CV curves of the BC electrode at different scan rates and (**b**) GCD curves of the BC electrode at different current densities.

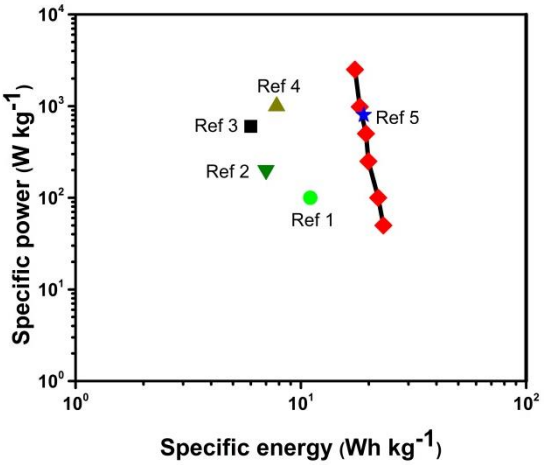

Figure S4. Ragone plots of the MnO_2/BC hybrids compared with the values of similar MnO_2 based supercapacitors.

Table S1. Comparison of various MnO_2-carbon based electrodes used in recent years as supercapacitors.

Sr. No.	Material	Synthesis method	Two/Three electrode	Specific capacitance	Cycling Stability	Ref.
1	MnO_2/carbon	chemical precipitation	Three electrode	132 F g^{-1} at 0.5 A g^{-1}	1000 (100%)	[6]
2	MnO_2/HPCs	chemical precipitation	Three electrode	326.9 F g^{-1} at 1 A g^{-1}	1000 (100%)	[7]
3	MnO_2/RHCs	co-precipitation	Three electrode	210.3F g^{-1} at 0.5 A g^{-1}	5000 (80.2%)	[8]
4	MnO_2/carbon nanotube	electrodeposition	Three electrode	300 F g^{-1} at 1 A g^{-1}	1000 (38.4%)	[9]
5	MnO_2/carbon nanofiber	Electrospinning method	Two electrode	228 F g^{-1} at 50 mV s^{-1}	1000 (88%)	[10]
6	CNFs/ MnO_2	Electrospinning method	Three electrode	151.1 F g^{-1} at 1 A g^{-1}	8000 (90%)	[11]
7	MnO_2/3D porous carbon	Hydrothermal method	Three electrode	386 F g^{-1} at 1 A g^{-1}	5000 (83%)	[12]
8	MnO_2/BC	γ-irradiation method	Three electrode	449 F g^{-1} at 0.5 A g^{-1}	10,000 (78%)	This work

Table S2. Impedance parameters derived by equivalent circuit model for BC and MnO_2/BC electrodes.

Sample	Rs (Ω)	Rct (Ω)
BC	0.57	0.11
MnO_2/BC	1.51	0.19

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