

Supporting Information

MOF-derived manganese monoxide nanosheets-assembled microflowers for enhanced lithium-ion storage

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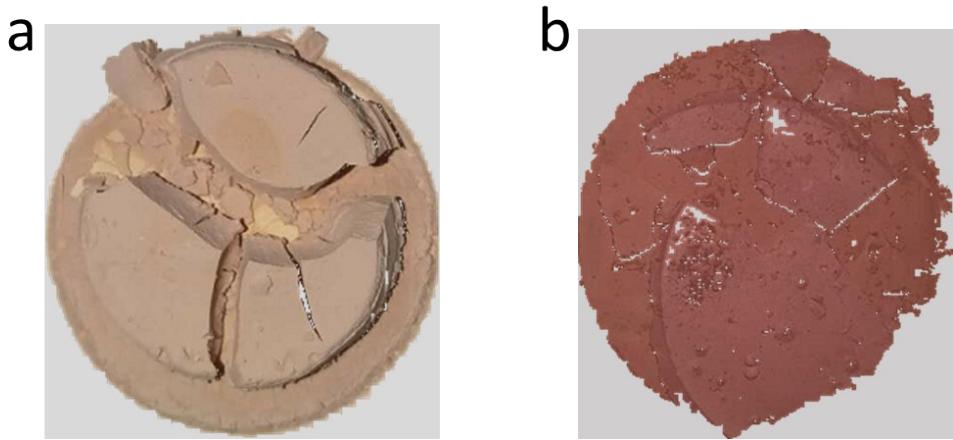


Fig. S1 (a) the resultant sample image of manganese acetylacetone, BTCA and ethylene glycol heated at 80°C for 12 h, (b) the resultant sample image of manganese acetylacetone and ethylene glycol heated for at 80°C 12 h.

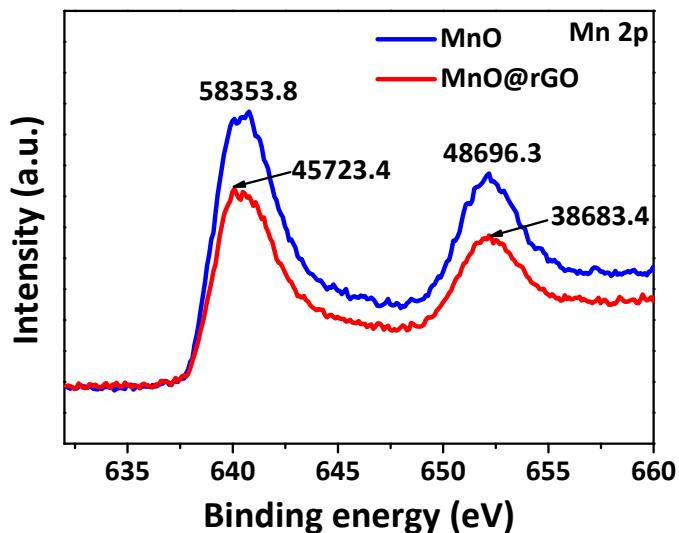


Fig. S2 The XPS results of MnO and MnO@rGO.

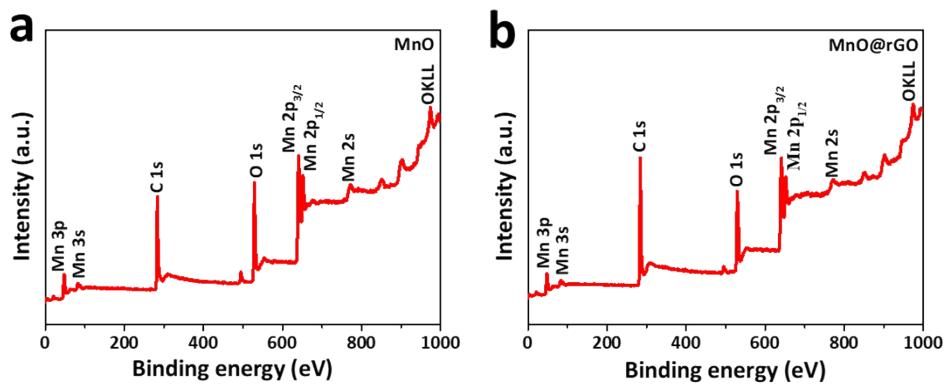


Fig. S3 XPS spectrums of (a) the MnO and (b) the MnO@rGO.

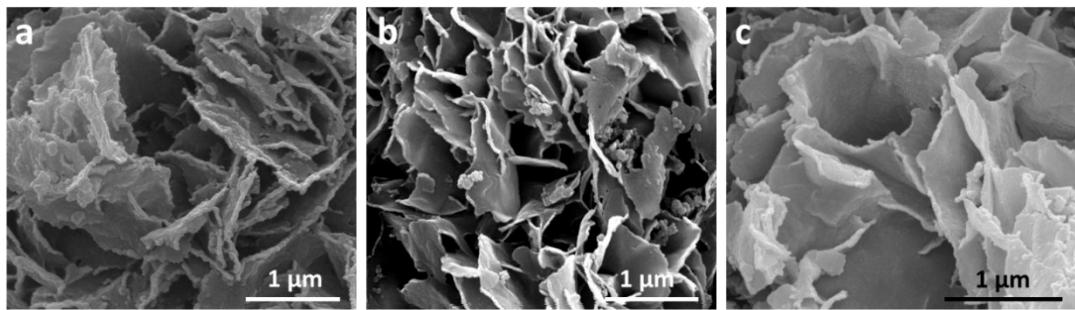


Fig. S4 SEM images of the precursor MnO, the pure MnO after annealing and the MnO@rGO after annealing at a high-resolution of 1 μm , respectively.

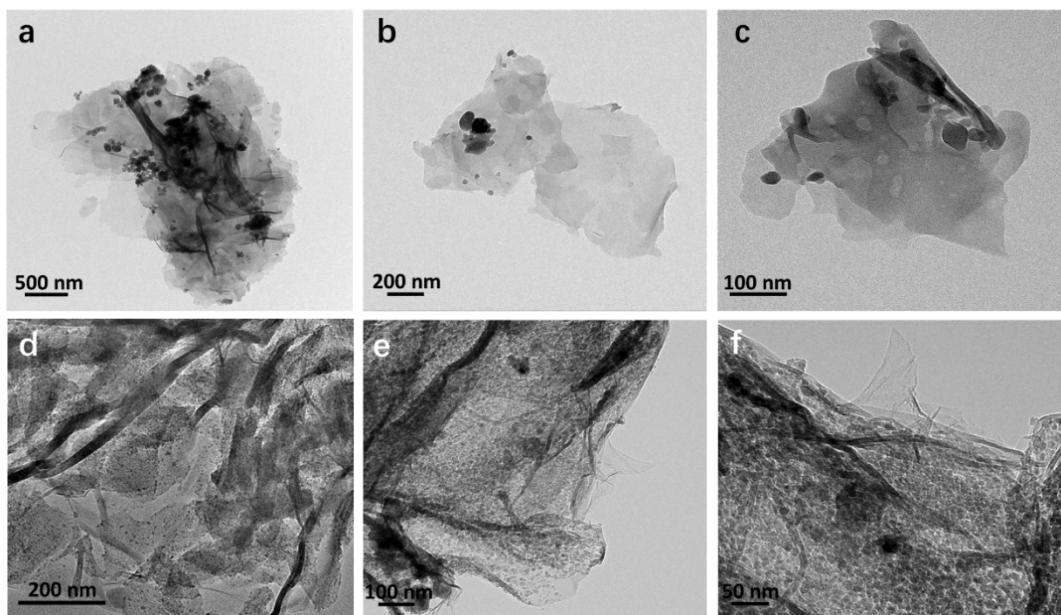


Fig. S5 TEM images of MnO (a)-(c) and MnO@rGO (d)-(f) nanosheets.

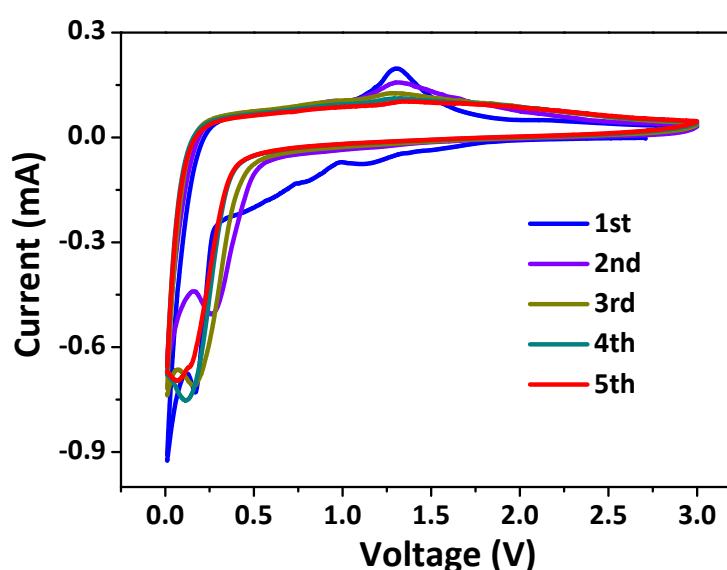


Fig. S6 Cyclic voltammetry measurement on MnO nanosheet during the first five cycles.

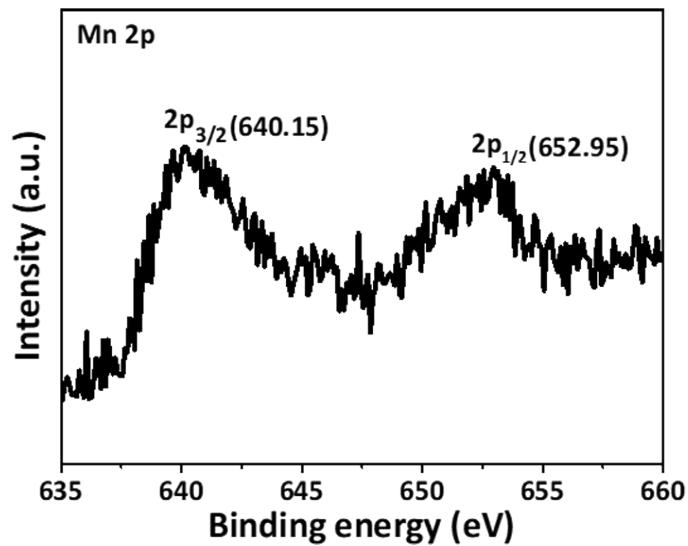


Fig. S7 XPS spectrum of Mn 2p in the MnO@rGO electrode of the 100th discharge/charge cycle at 2.1 V.

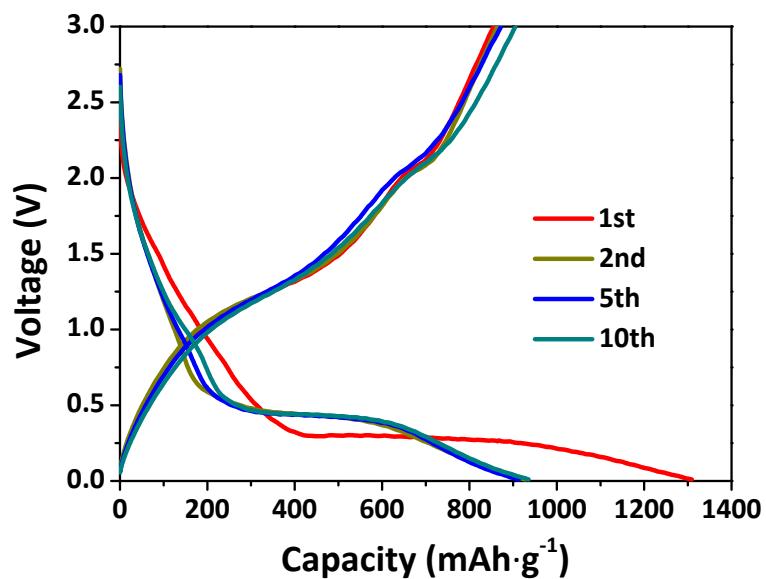


Fig. S8 Discharge-charge profiles of MnO nanosheet. The cell was tested for 10 cycles between 0.1 V and 3.0 V under a current density of 0.1 A g⁻¹.

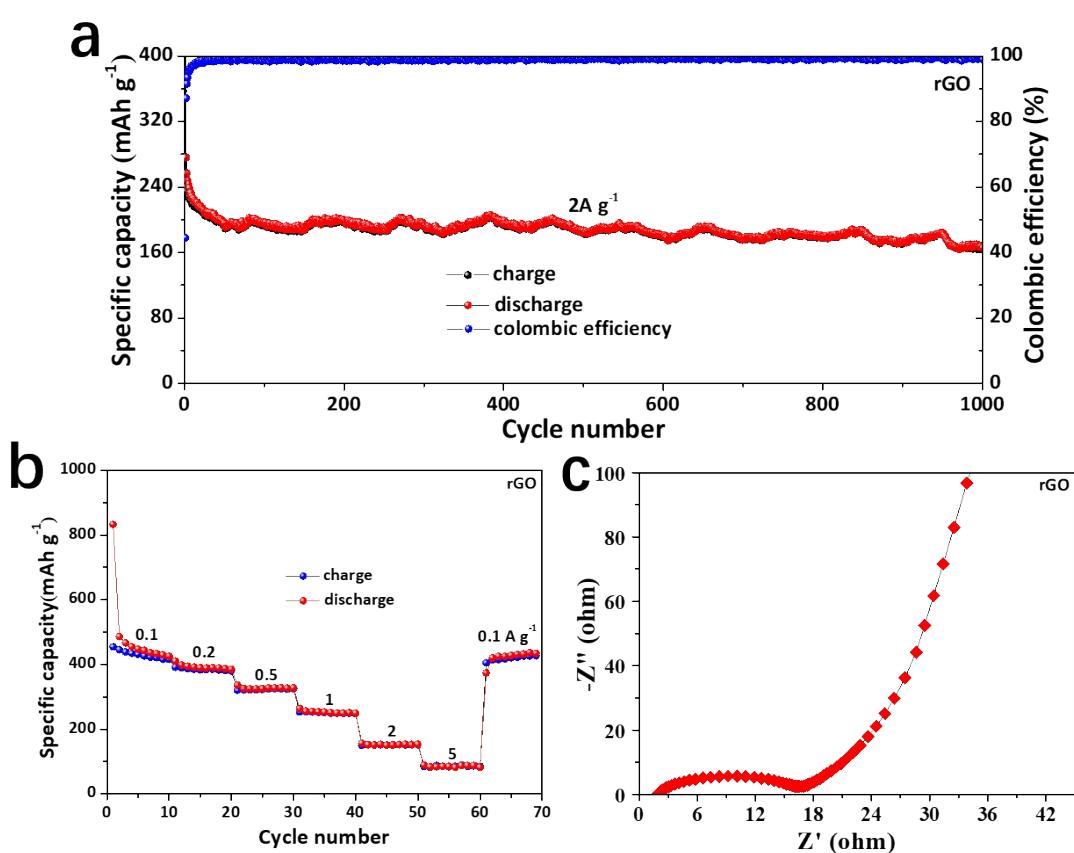
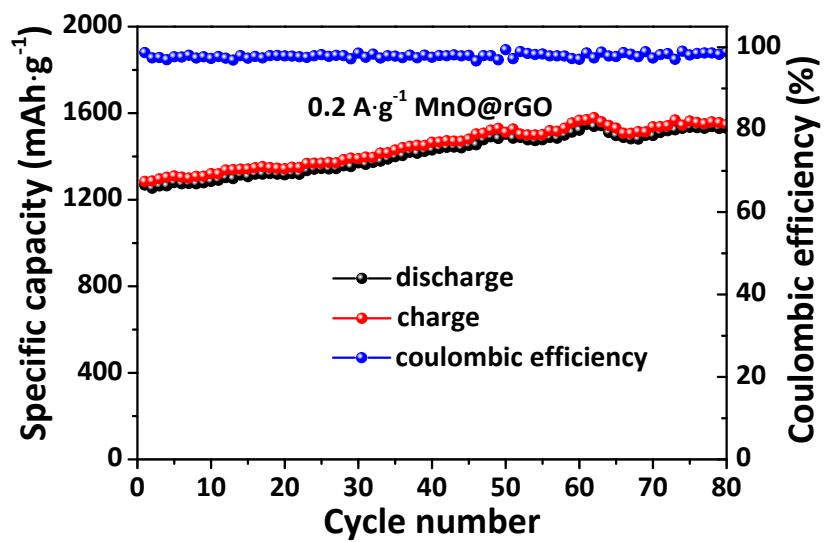


Fig. S10 (a) Discharge-charge profile of pure rGO at 2 A g^{-1} . (b) Rate capability test for pure rGO at various current densities ($0.1\text{--}5 \text{ A g}^{-1}$). (c) The corresponding equivalent circuit.

Table S1 The cycling performance comparison of the MOF-derived MnO electrode and previously reported MnO-based anode materials

Samples	Current density (mA g ⁻¹)	Cycle number	Capacity (mA h g ⁻¹)	Ref.
MnO@N-C/rGO	100	70	864.7	1
C-MnO/rGO	200	75	1081.5	2
MnO/rGO	150	50	977.1	3
MnO/graphene	100	50	1247.3	4
MnO@rGO/NC	200	130	989.8	5
MnO@C	300	200	934	6
p-MnO/rGO	100	120	988.6	7
MnO@NC	200	100	775.4	8
MnO/rGO	200	100	750	9
MOF-derived MnO	100	240	1408	
MOF-derived MnO@rGO	2000	150	910	This work

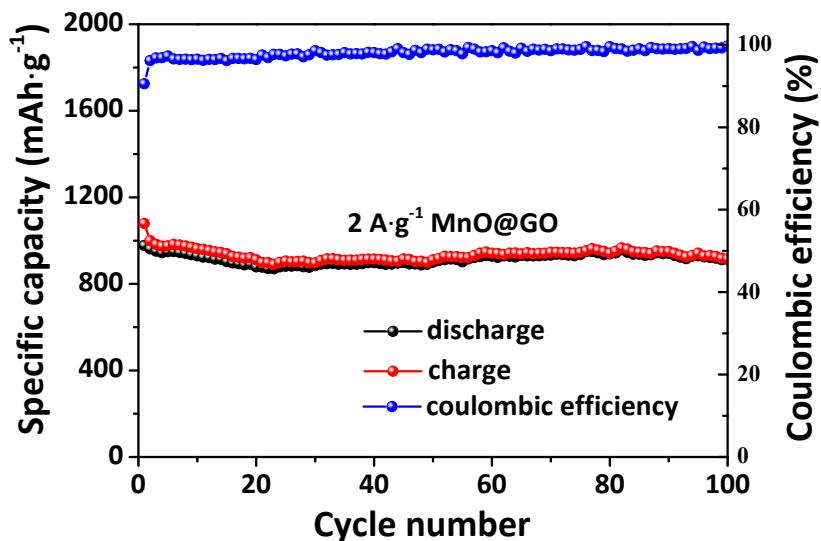


Fig. S11 Cycle-life performance of MnO@rGO electrode at 2 A g⁻¹.

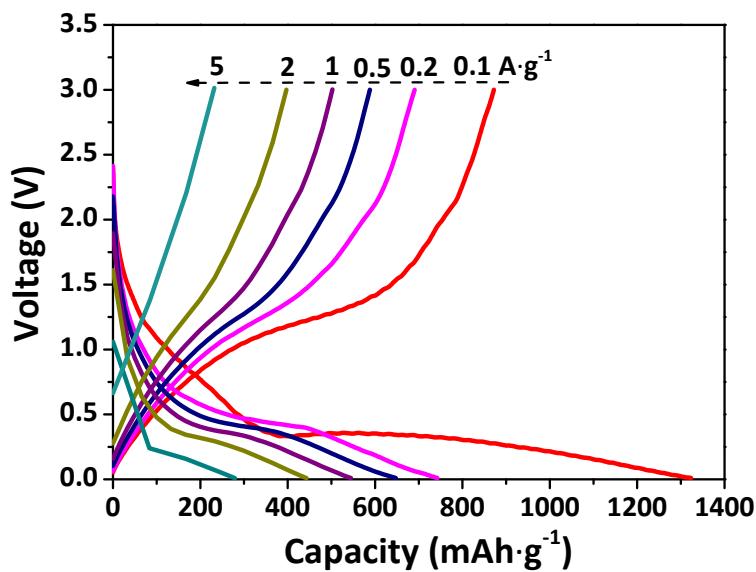


Fig. S12 Discharge-charge profile of MnO nanosheet at various current densities ($0.1\text{--}5\text{ A g}^{-1}$).

Table S2 EIS Fitting results of MnO@rGO and MnO composite electrode.

Materials		R_e (Ohm)	CPE1 (Ohm)	R_f (Ohm)	CPE2 (Ohm)	R_{ct} (Ohm)	Z_w (Ohm)
MnO@rGO	Results	35.46	0.825	6.145	0.0195	36.45	27.49
	Error (%)	0.773	0.0054	0.823	4.8	1.58	4.373
MnO	Results	70.53	0.684	1.958	0.705	70.95	61.32
	Error (%)	4.22	0.981	1.35	0.674	0.526	2.67

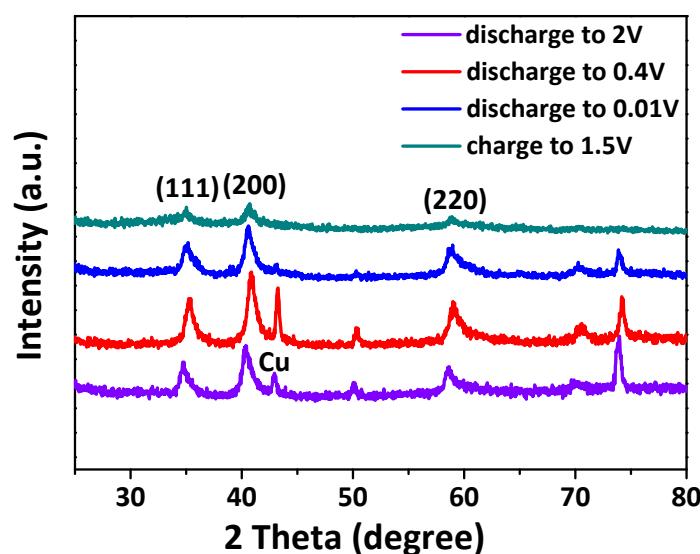


Figure. S13 The in situ XRD patterns of MnO electrodes at different discharge voltage values of the initial circle and charge voltage value of the second circle at 1.5 V.

References

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