Fig. S1. TGA curves of CM and CMCS (10℃/min heating in air).

Table S1. Elemental contents in CM

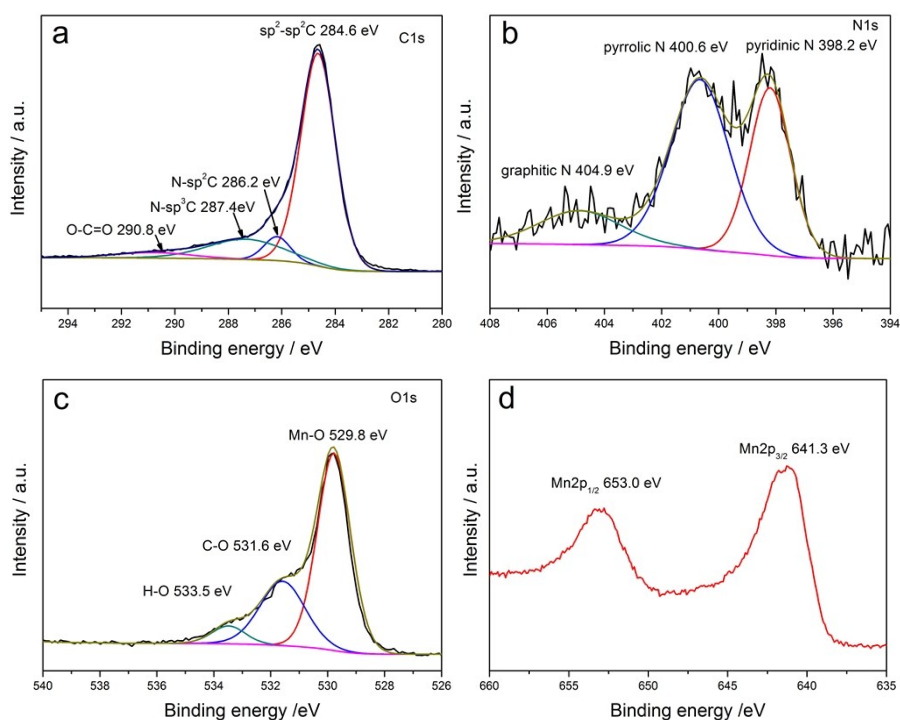| Element	O	C	N	Mn
wt%	16.7	30.39	3.21	49.7

Fig. S2. XPS spectra of CM: (a) high-resolution of C1s, (b) high-resolution of N1s, (c) high-resolution of O1s, (d) high-resolution of Mn2p.
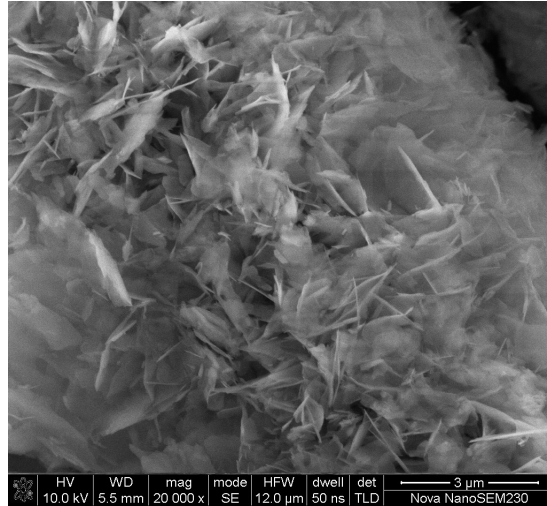
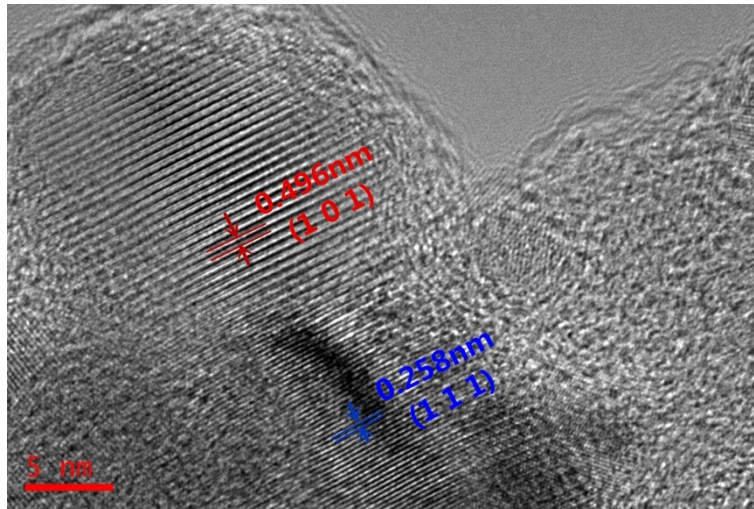Fig. S3. SEM images of basic magnesium carbonate

Fig. S4. HRTEM image of CMCS.

Table S2 Electrochemical performances of the reported manganese oxide anode materials

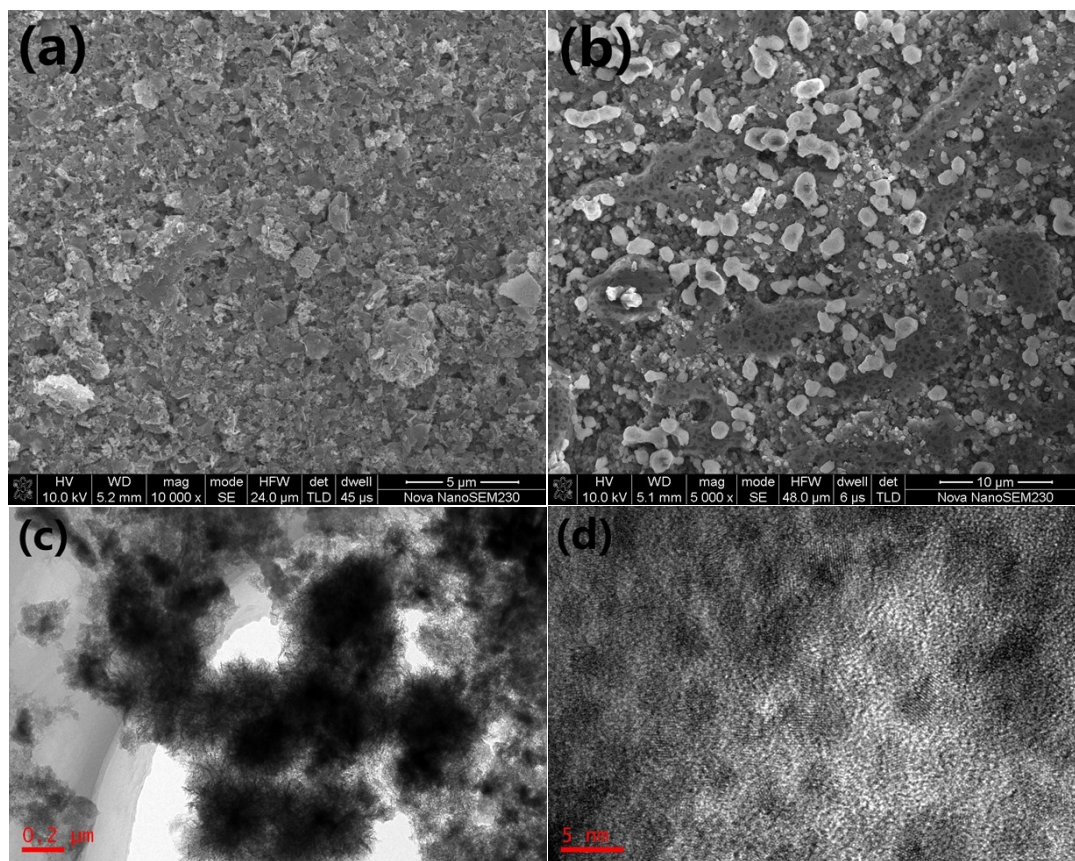| Sample	Current (A/g)	Cycle number	Capacity (mAh/g)	Ref.
Mn_3O_4 nano-octahedra	0.05	50	~ 500	36
Mn_3O_4/graphene composites	0.06	40	500	9
MnO/nitrogen-doped carbon composites	0.1	50	473	33
MnO nanoparticles coated with nitrogen-doped carbon	0.1	100	634	29
N-doped MnO/graphene nanosheets	0.1	90	772	27
MnO/rGO composite	0.2	100	750	26
MnO/MWNTs	0.216	200	480.6	18
Mesoporous Mn_3O_4 nanotubes	0.5	100	641	14
MnO/rGO nanocomposite	0.5	150	775.8	31
MnO/C nanostructured spheres	0.5	300	501	6
Nitrogen-doped C/MnO_x/C composite	0.2	100	770.9	Our work

Fig. S5. SEM images of CM electrode (a) before discharge/charge, (b) after discharge/charge. (c) TEM image of CM after discharge/charge. (d) HRTEM image of CM after discharge/charge.
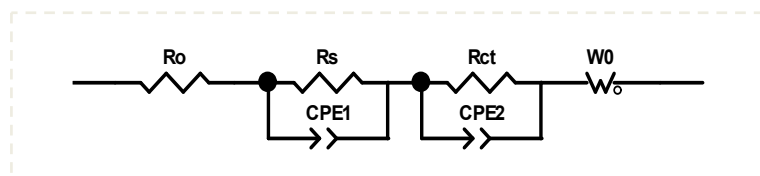

Fig. S6 The relevant equivalent circuit model.