Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Hybrid cobalt-manganese oxides prepared by ordered steps with a ternary nanosheets structure and its high performance as binder-free electrode for energy storage

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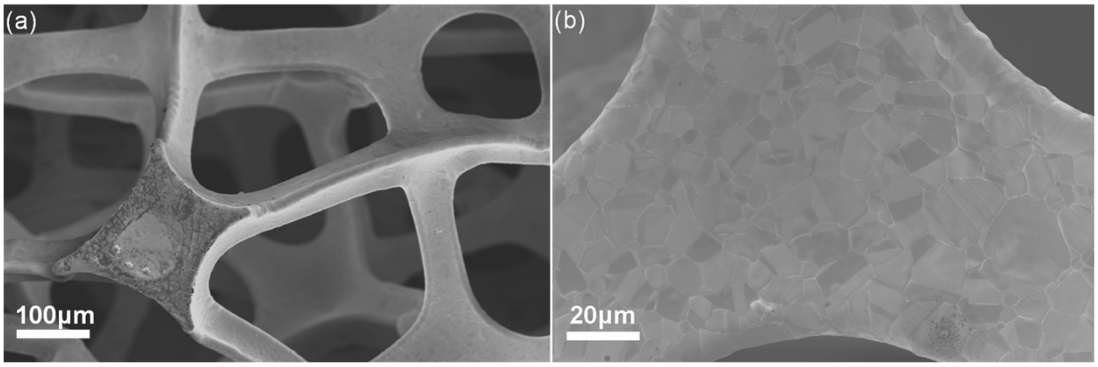

Fig. S1 (a-b) SEM images of treated nickel foam.

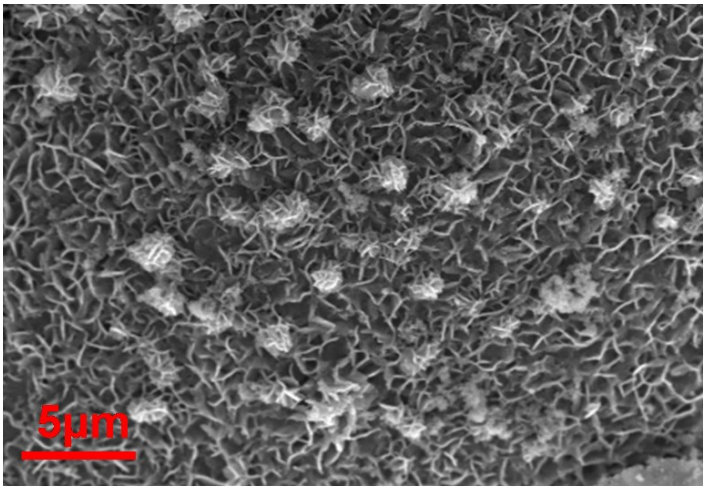

Fig. S2 SEM image of Co_3O_4/MnO_2.

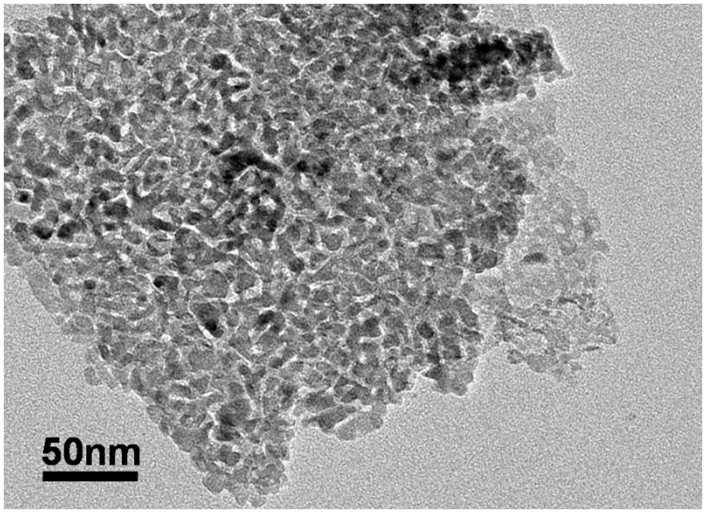

Fig. S3 TEM image of Co_3O_4.

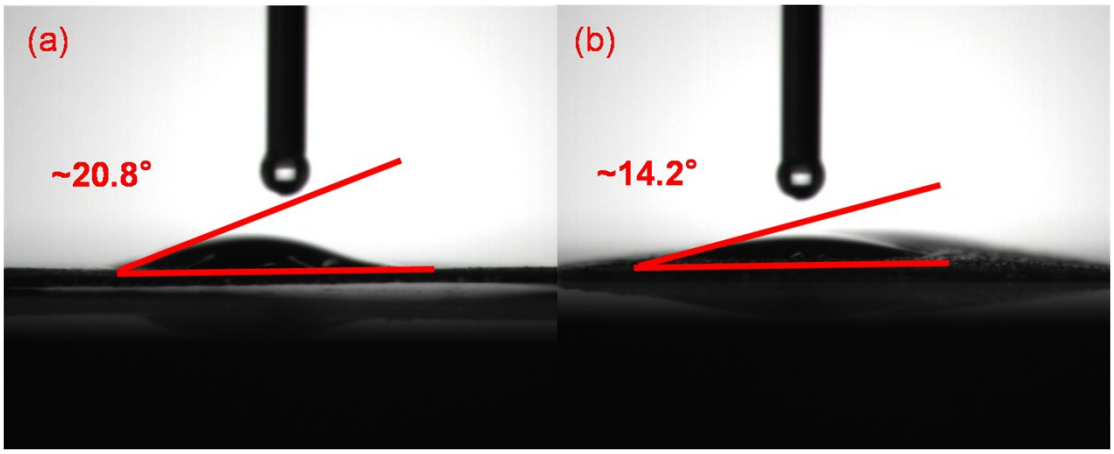

Fig. S4 Contact-angle of (a) $Co_3O_4/MnO_2/GO$ and (b) Co_3O_4/MnO_2.

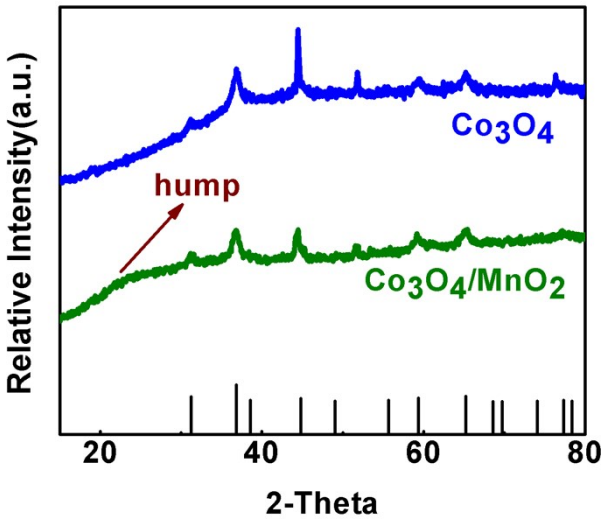

Fig. S5 XRD patterns of the samples.

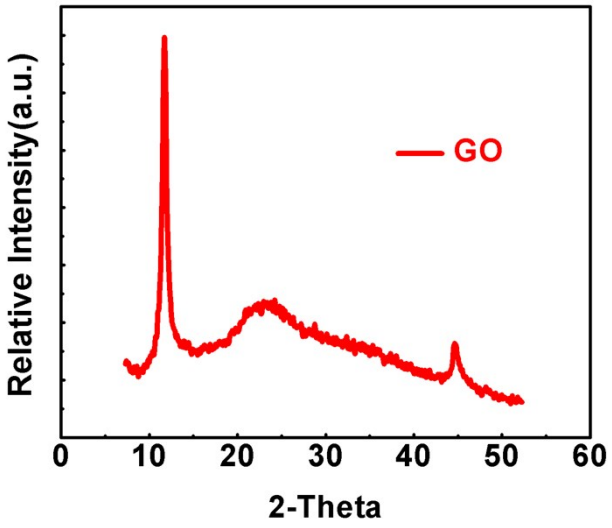

Fig. S6 XRD pattern of GO.

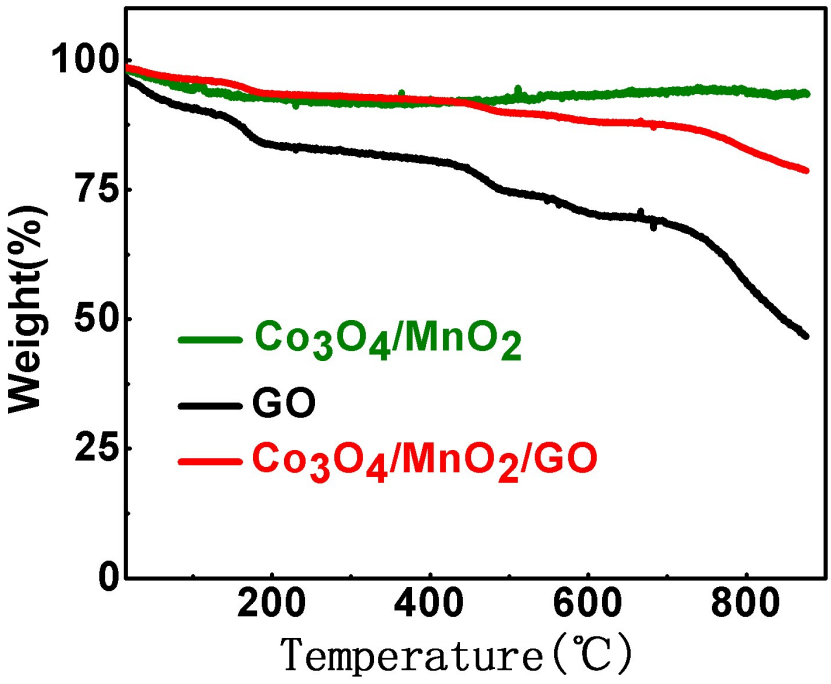

Fig. S7 TG curves of the samples.

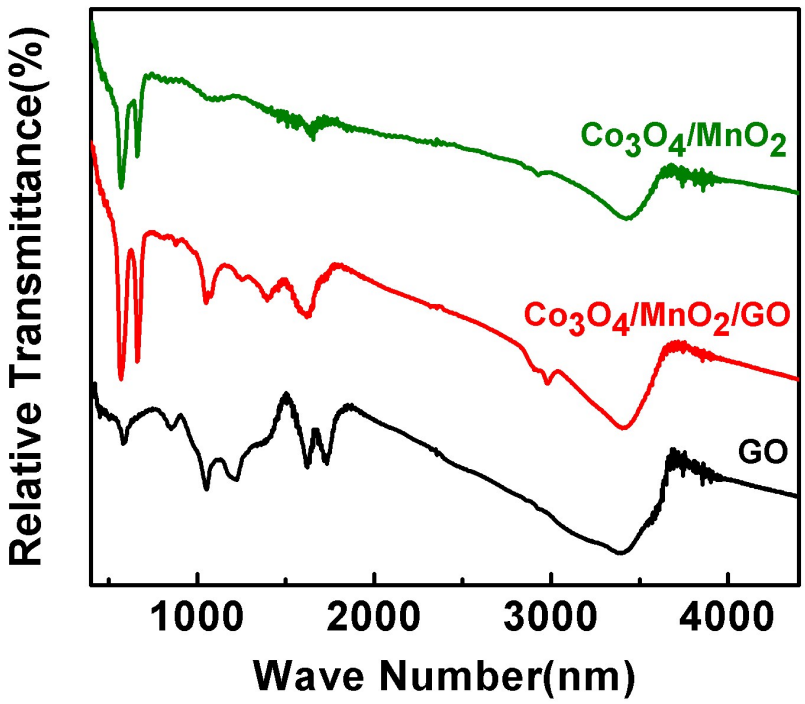

Fig. S8 FT-IR patterns of the samples.

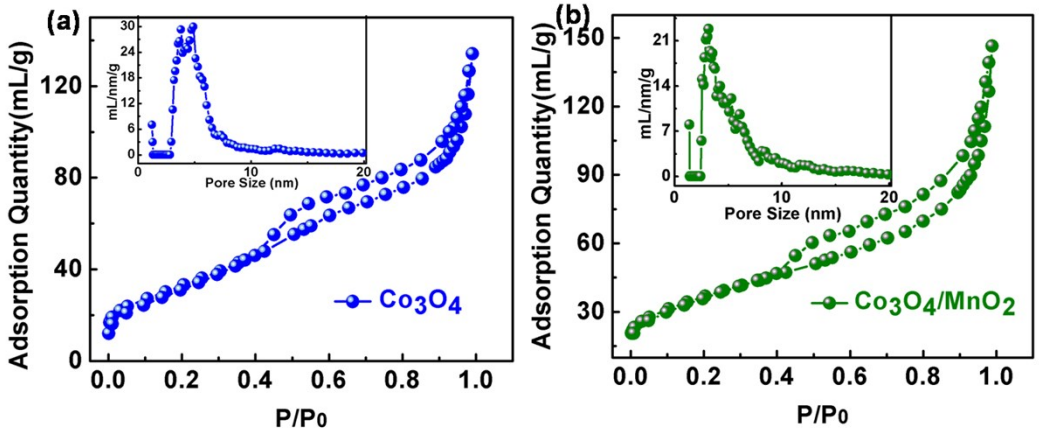

Fig. S9 (a) N_2 desorption/adsorption isotherms and pore size distribution of Co_3O_4. (b) N_2 desorption/adsorption isotherms and pore size distribution of Co_3O_4/MnO_2.

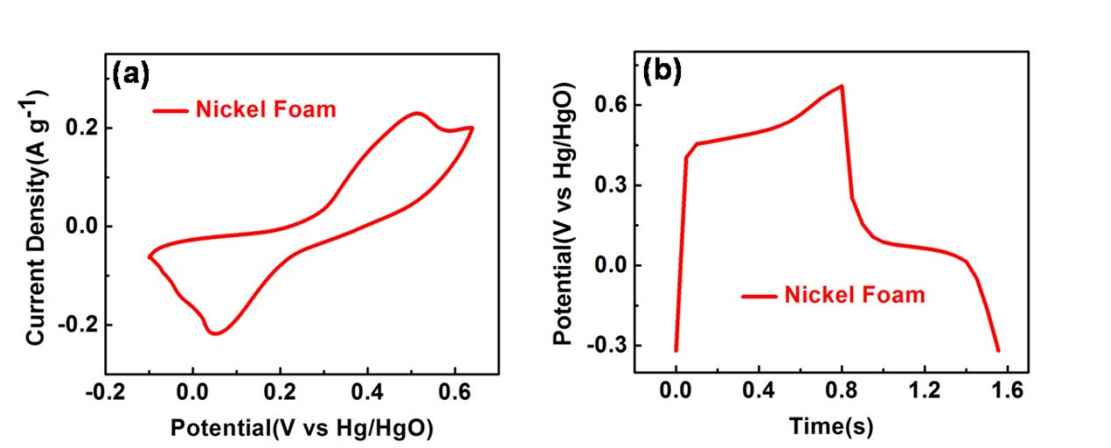

Fig. S10 CV curve at 200 mV s^{-1} and GCD curve at 0.5 A g^{-1} of the pure nickel foam.

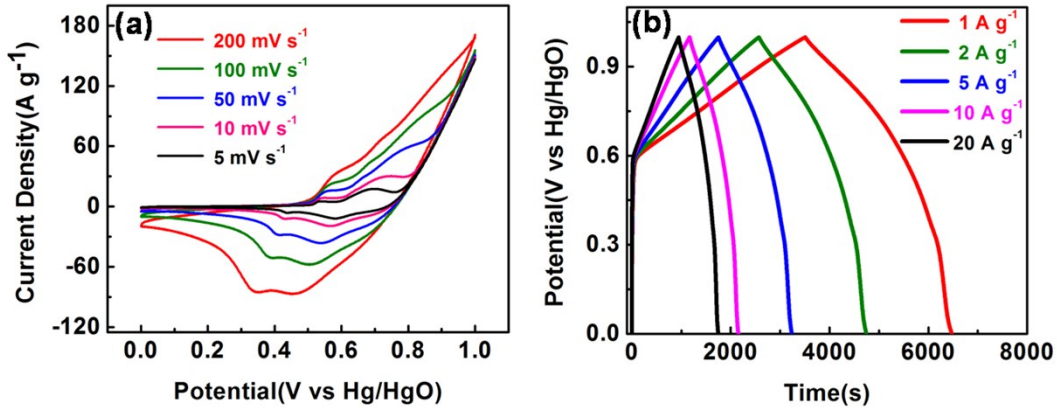

Fig. S11 (a) CV curves of Co_3O_4/MnO_2/GO electrode at different scan rates. (b) GCD curves of Co_3O_4/MnO_2/GO electrode at different current densities.

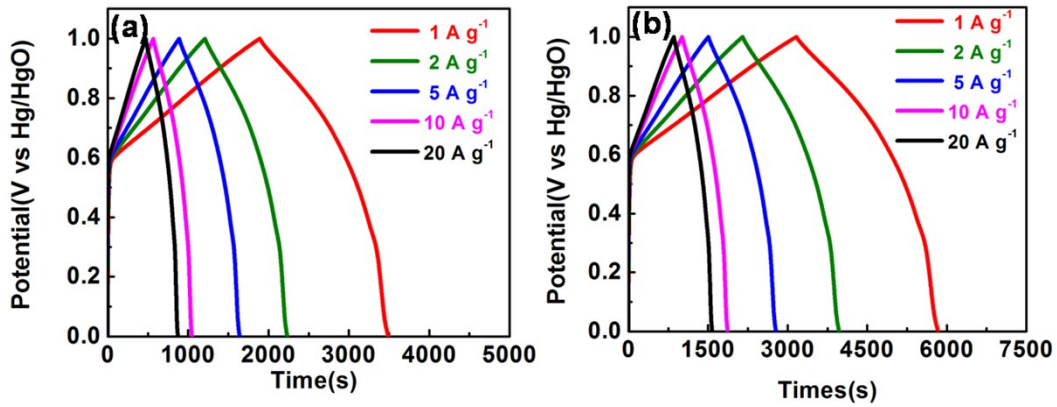

Fig. S12 (a) GCD curves of Co_3O_4 electrode at different current densities. (b) GCD curves of

Co_3O_4/MnO_2 electrode at different current densities.

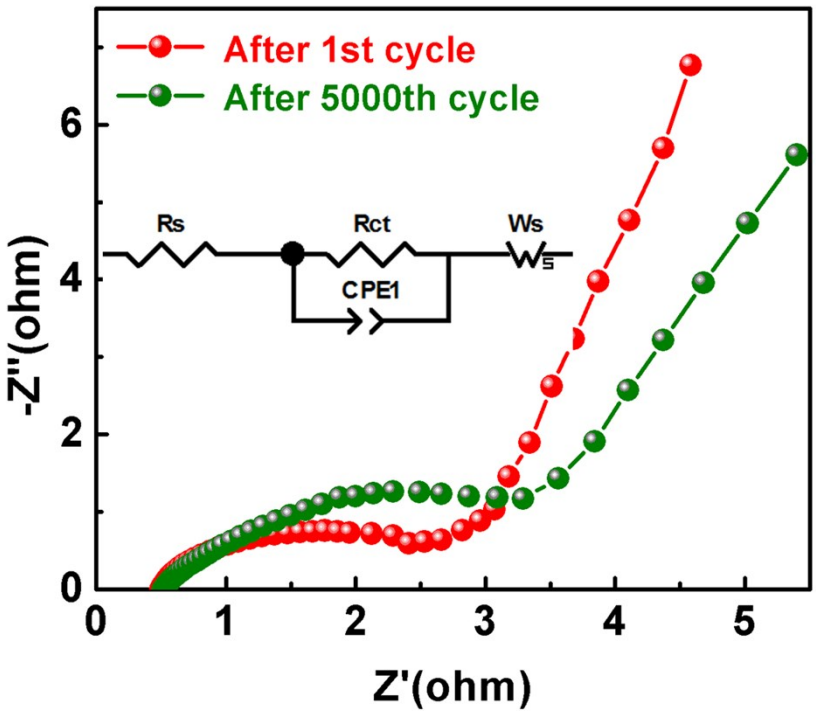

Fig. S13 Nyquist plots of Co_3O_4/MnO_2/Go binder-free electrode after 1st cycle and 5000th cycle.

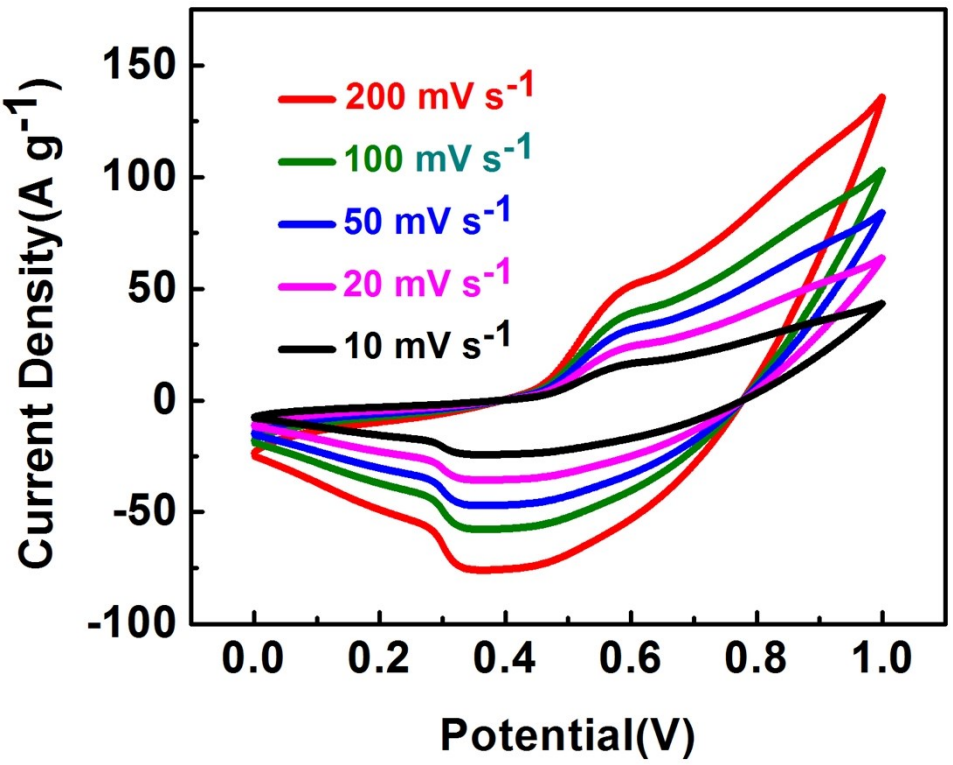

Fig. S14 CV curves of the device at different scan rates.

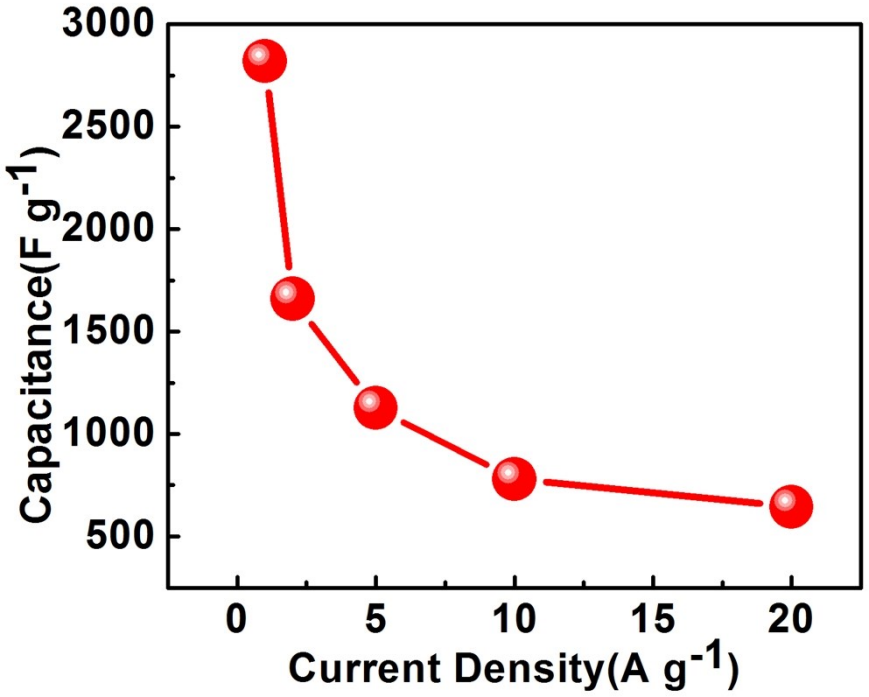

Fig. S15 Capacitance values of the device at different current densities.

Table S1. SSA and pores properties of the three samples.

Samples	SSA (m^2/g)	Pore volume (cc/g)	Average pore size (nm)
Co_3O_4	124.17	0.21	6.68
Co_3O_4/MnO_2	141.87	0.23	6.93
$Co_3O_4/MnO_2/GO$	140.15	0.22	7.07

Table S2. Resistance values of the samples.

Samples	Rs (Ω)	Rct (Ω)	Ws (Ω)
Co_3O_4	0.4	2.36	8.57
Co_3O_4/MnO_2	0.54	2.18	9.08
$Co_3O_4/MnO_2/GO$	0.49	1.45	5.82