Supporting Information

Nanoengineering of NiO/MnO_2/GO Ternary Composite for Use in High-Energy Storage Asymmetric Supercapacitor and Oxygen Evolution Reaction (OER)

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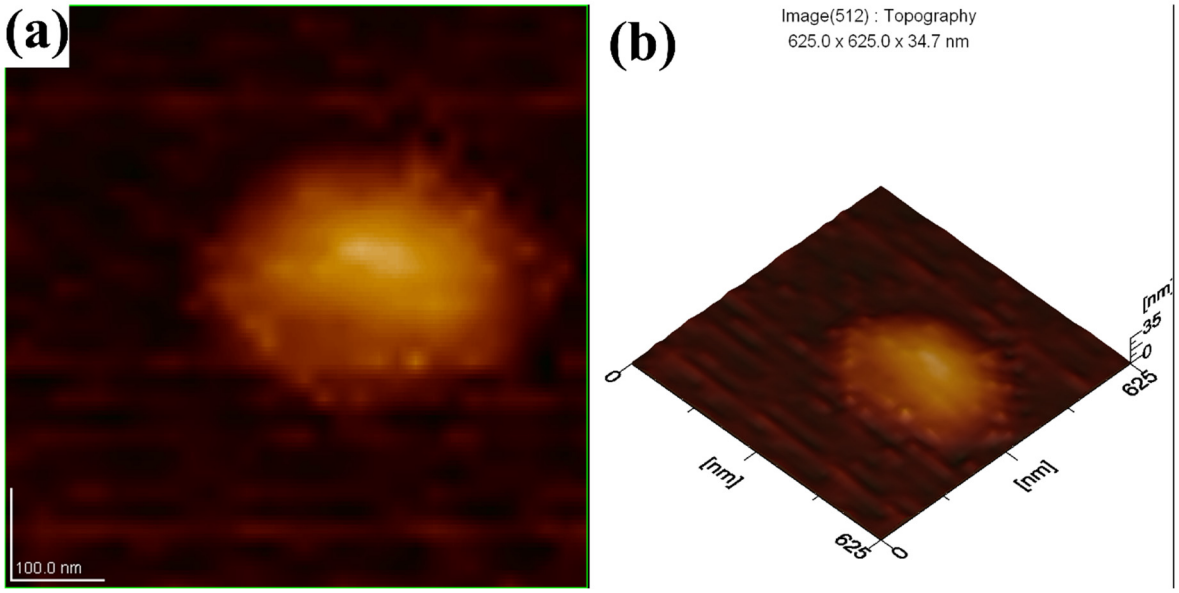

Figure S1. **(a)** AFM scanned 2D image of GO and **(b)** AFM scanned 3D image of GO.

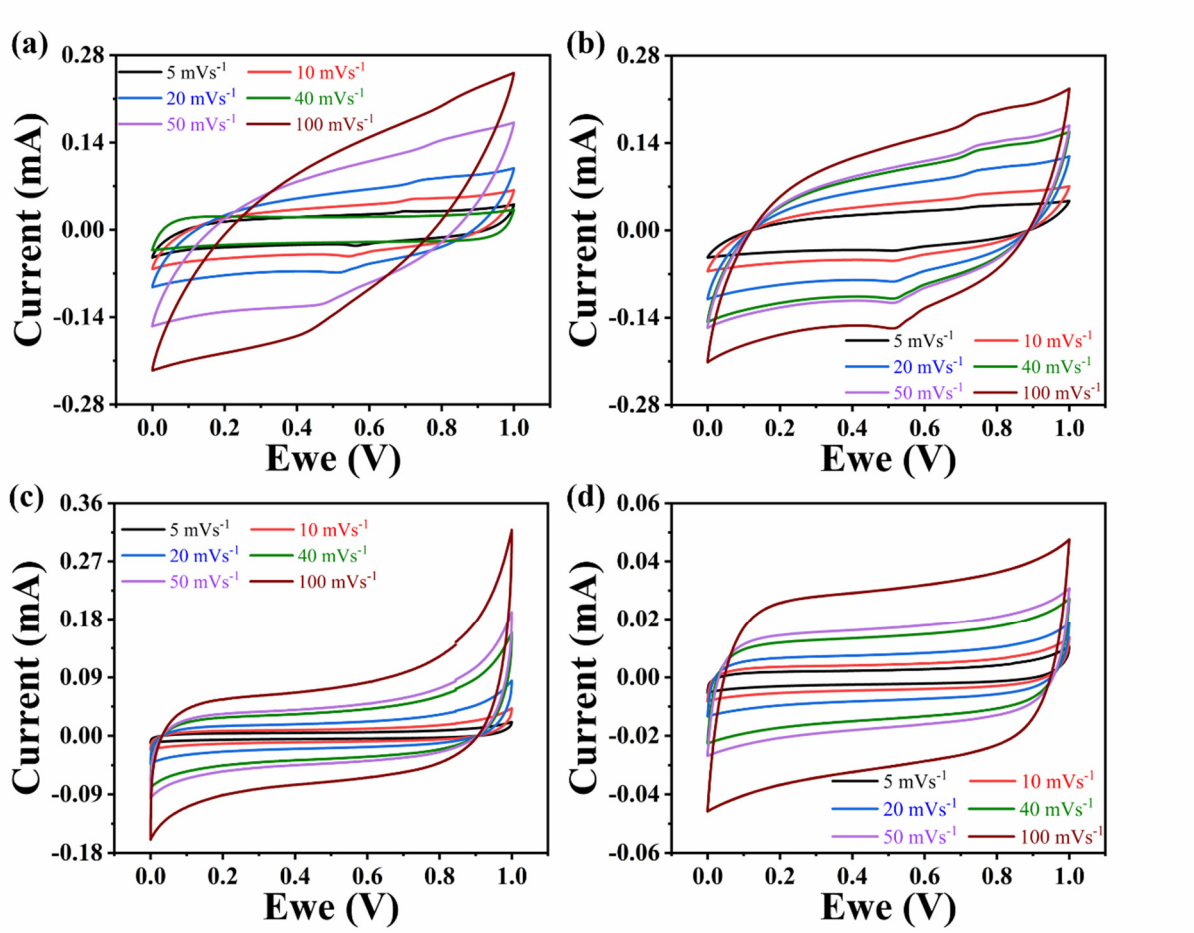

Figure S2. Cyclic Voltammogram at different scan rate for **(a)** NMGO, **(b)** NGO, **(c)** MGO and **(d)** GO.

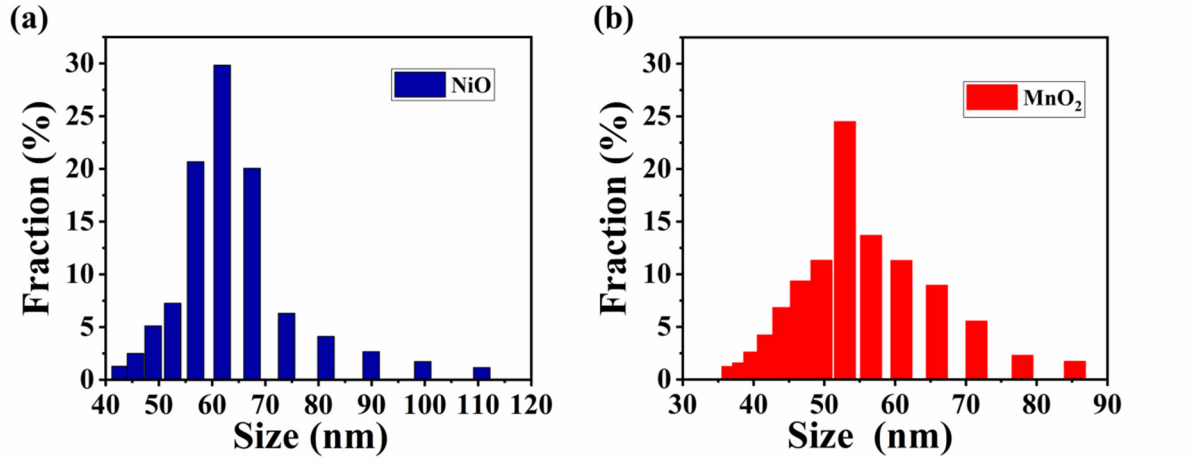

Figure S3. Particle size distribution of (a) NiO and (b) MnO_2.

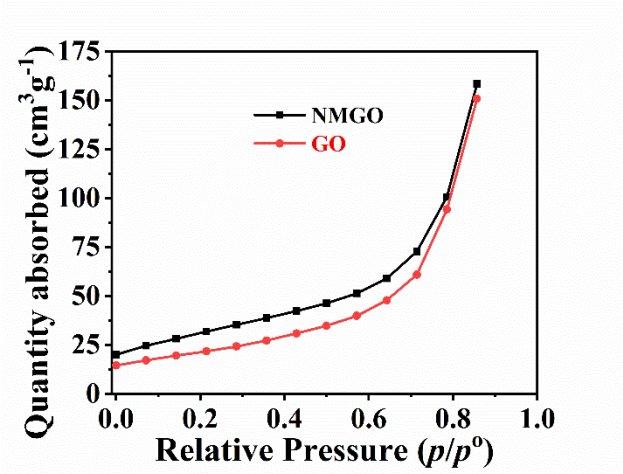

Figure S4. N_2 adsorption isotherm at 77K of NMGO composite.

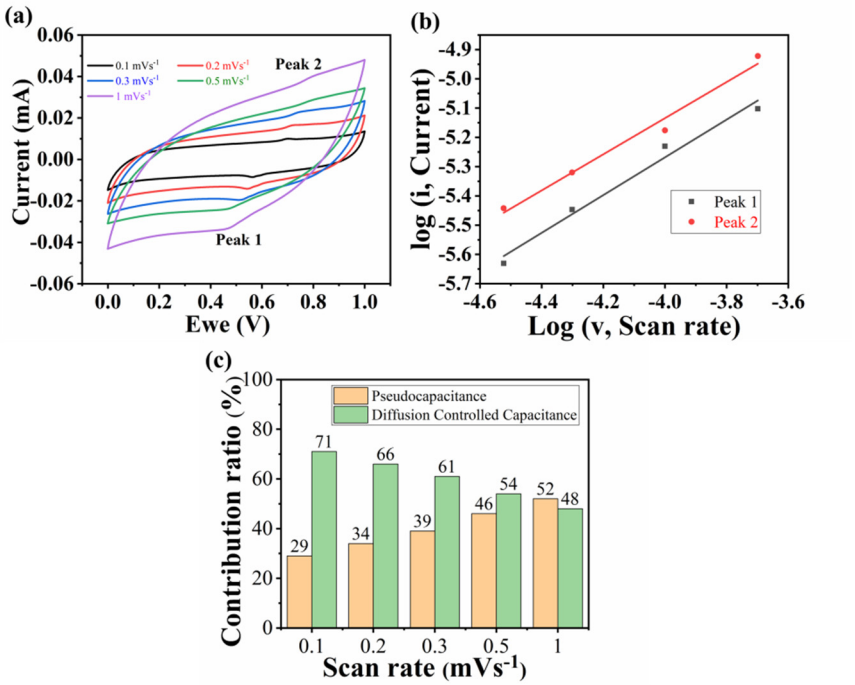

Figure S5. (a) Cyclic voltammogram at slow scn rates (b) *log i* vs *log v* for NMGO composite, (c) Pseudo capacitive and diffusion controlled charge storage contribution at different scan rates.

Table S1. Comparison of electrochemical performance of asymmetric supercapacitors assembled with different nanostructures.

Electrode material	Synthesis process	Specific Capacitance	Operating Potential Window (V)	Current Density	Capacitance retention	Ref
graphene/MnO_2	Hydrothermal	192 .2Fg^{-1}	-0.2-0.7	0.5 Ag^{-1}	79 % after 5000 cycles	[1]
graphene/MnO_2	Sonochemical	292 Fg^{-1}	-0.2-0.8	5 mV/s^{-1}	91 % after 1000 cycles	[2]
rGO/MnO_2	Reflux	234 Fg^{-1}	0-0.8	0.1 Ag^{-1}	100 % after 20000 cycles	[3]
RGO quantam dots	hydrothermal	312 Fg^{-1}	-0.2-0.8	0.5 Ag^{-1}	91 % after 10000 cycles	[4]

GO/Polypyrole	In situ oxidation polymerization	323 Fg^{-1}	0-0.8	0.25 Ag^{-1}	78 % after 5000 cycles	[5]
MnO_2/rGO	Hydrothermal	122 Fg^{-1}	-0.1-0.7	0.2 Ag^{-1}	92 % after 5000 cycles	[6]
GO/MnO_2/NiO	Hydrothermal	402 Fg^{-1}	0-1	1 Ag^{-1}	93% after 14000 cycles	This work

References:

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