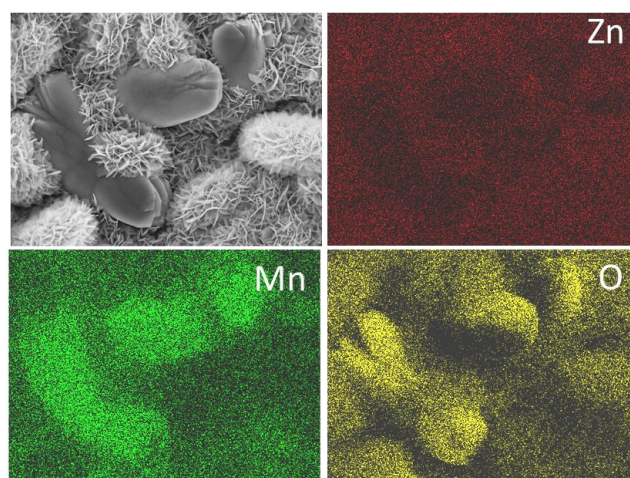
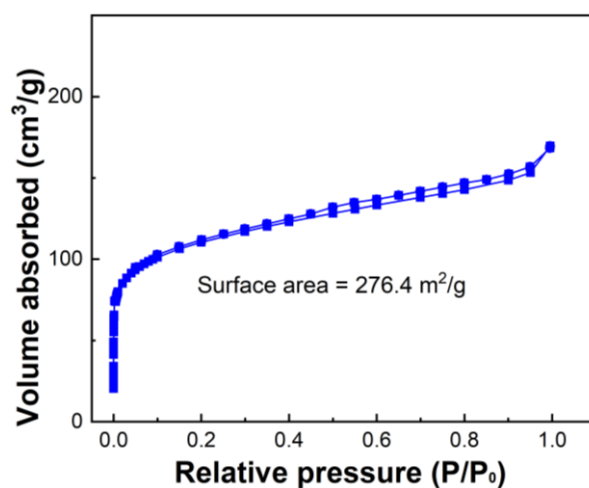


# Facile Synthesis of Nitrogen-Doped Graphene Quantum Dots/MnCO<sub>3</sub>/ZnMn<sub>2</sub>O<sub>4</sub> on Ni Foam Composites for High-Performance Supercapacitor Electrodes



**Figure S1.** FESEM image and its EDS elemental mapping images of MC/ZM on Ni foam.



**Figure S2.** Nitrogen adsorption–desorption isotherms of N/MC/ZM.

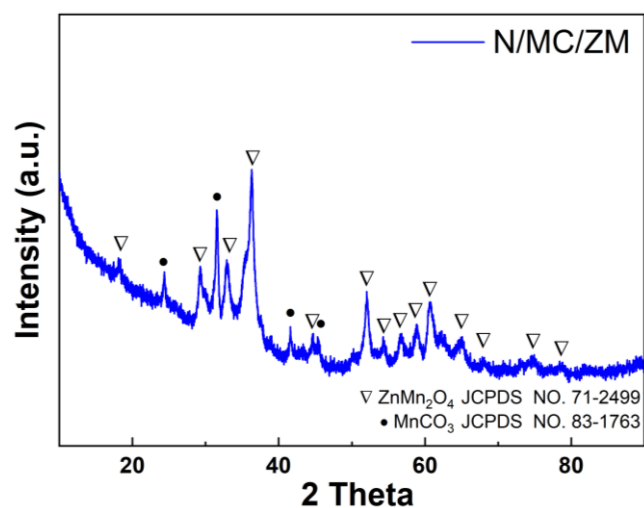


Figure S3. XRD patterns of N/MC/ZM composite.

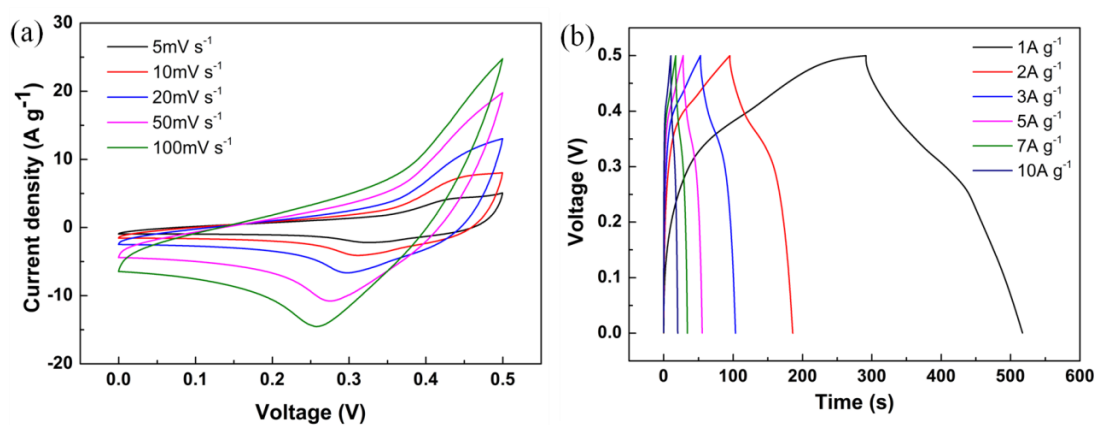


Figure S4. (a) CV curves of MC/ZM at different scan rates and (b) GCD curves of MC/ZM at different current densities.

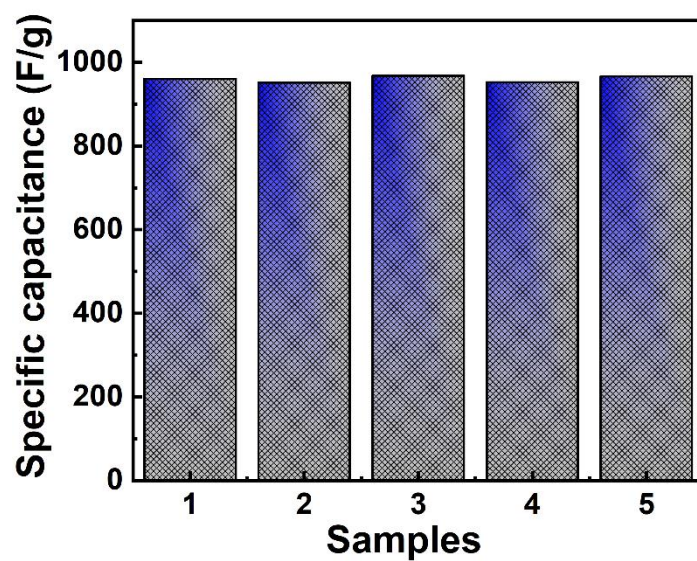
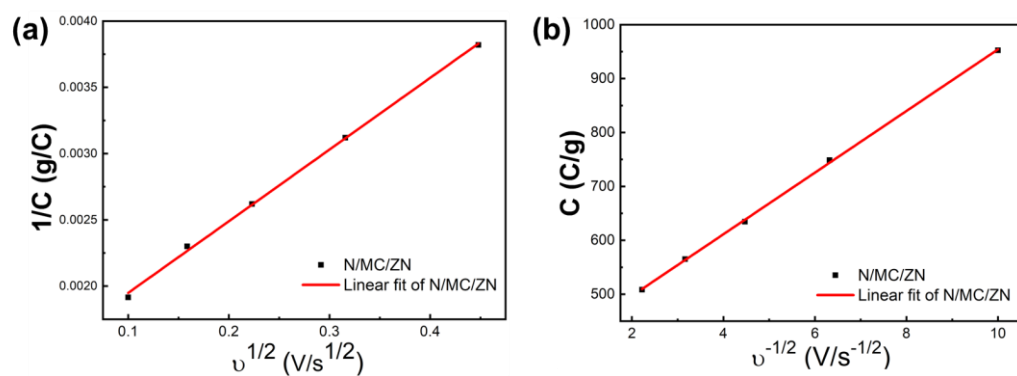
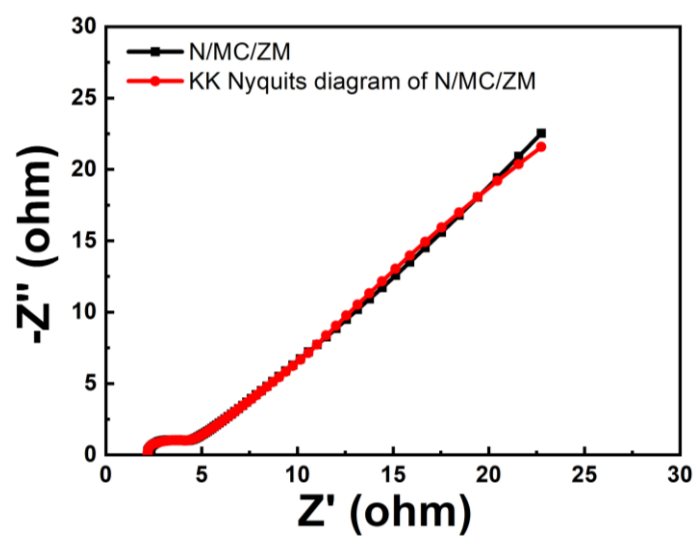


Figure S5. The calculated specific capacitances of different N/MC/ZM electrode samples.



**Figure S6.** Linear fit of (a)  $C^{-1}$  as function of  $v^{1/2}$  and (b)  $C$  as function of  $v^{-1/2}$ .



**Figure S7.** Nyquist plots measured using PEIS technique and Kramers-Kronig transforms.

**Table S1.** The specific capacitance comparison of N/MC/ZM composite with other Mn- and Zn based-electrodes.

Materials	Electrolyte	Specific Capacitance	Ref
Porous hollow double-walled Mn <sub>2</sub> O <sub>3</sub> nanocubes	1 M KOH	256.25 F·g <sup>-1</sup> @ 1 A g <sup>-1</sup>	[47]
Carbon- MnO <sub>x</sub>	6 M KOH	213.7 F·g <sup>-1</sup> @ 0.5 A g <sup>-1</sup>	[48]
K-dope MnO <sub>2</sub>	6 M KOH	726 F·g <sup>-1</sup> @ 1 A g <sup>-1</sup>	[49]
ZnO/activated carbon	1 M Na <sub>2</sub> SO <sub>4</sub>	298 F·g <sup>-1</sup> @ 1 A g <sup>-1</sup>	[50]
ZnO nanorod/MnO <sub>2</sub> nanowires	1 M KOH	304 F·g <sup>-1</sup> @ 1 A g <sup>-1</sup>	[51]
polyindole/NiO/ZnO	1.0 M H <sub>2</sub> SO <sub>4</sub>	310.9 F·g <sup>-1</sup> @ 0.5 A g <sup>-1</sup>	[52]
N-GQDs/MnCO <sub>3</sub> /ZnMn <sub>2</sub> O <sub>4</sub>	1 M KOH	960.6 F·g <sup>-1</sup> @ 1 A g <sup>-1</sup>	This study

**Table S2.** Fitted EIS values for the components of the Nyquist equivalent circuit.

Component	N/MC/ZM	MC/ZM
R <sub>s</sub> (Ω)	2.14	2.48
R <sub>ct</sub> (Ω)	1.12	4.02
Q <sub>1</sub> (F·s <sup>-1</sup> )	0.009	0.002
Q <sub>2</sub> (F·s <sup>-1</sup> )	0.749	0.401