Electronic Supplementary Material

g-C_3N_4-coated MnO_2 hollow nanorod cathode for stable aqueous Zn-ion batteries

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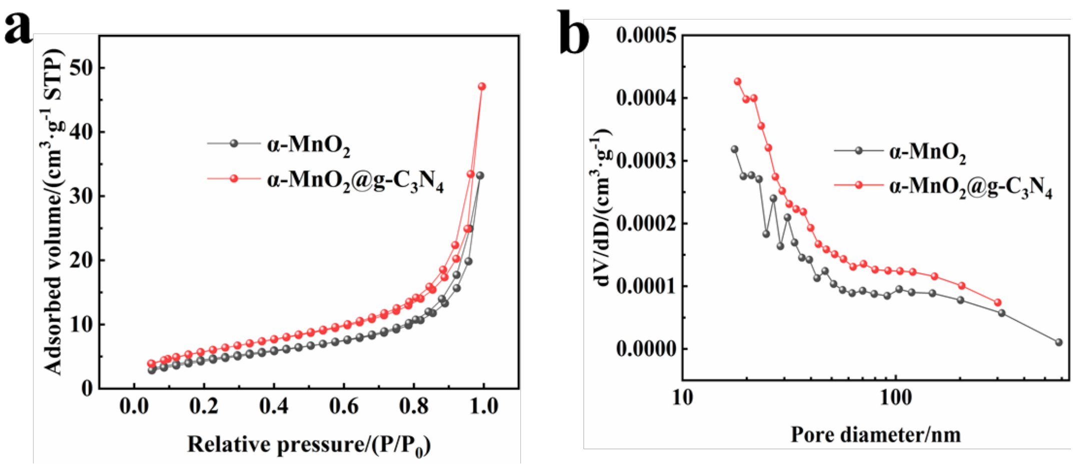

Fig. S1. (a) N_2 adsorption-desorption isotherms; (b) BJH pore-size distributions.

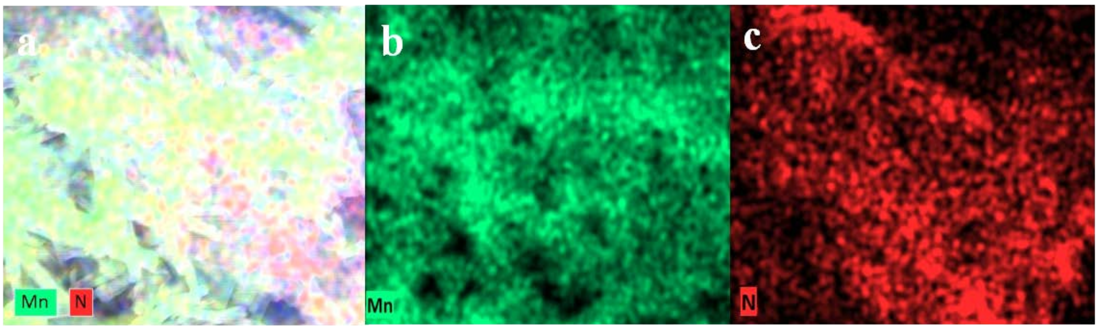

Fig. S2. (a–c) Elemental mapping image of the α-MnO_2@g-C_3N_4 nanocomposite.

Table S1. Elemental content of C, N, Mn and O in different samples.

Sample	Mn/mol-%	N/mol-%	C/mol-%	O/mol-%
α-MnO_2	21.02	0.14	34.48	44.36
α-MnO_2@g-C_3N_4	20.67	1.61	32.21	45.51

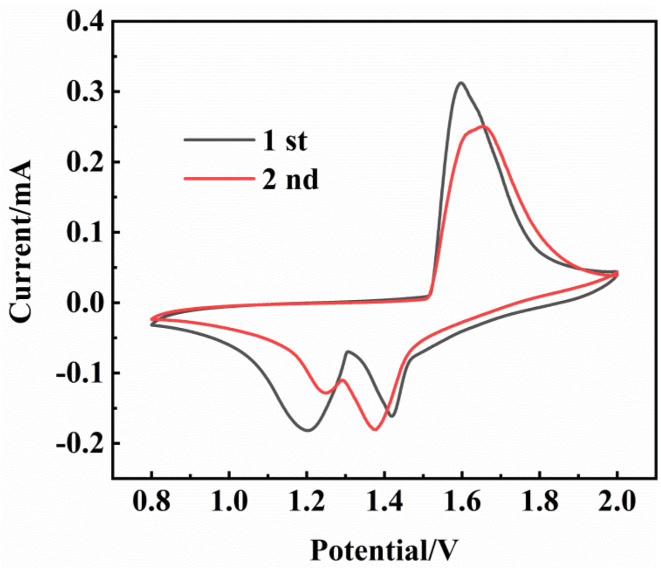

Fig. S3. CV curve at 0.1 mV·s^{-1} after 5000 cycles.

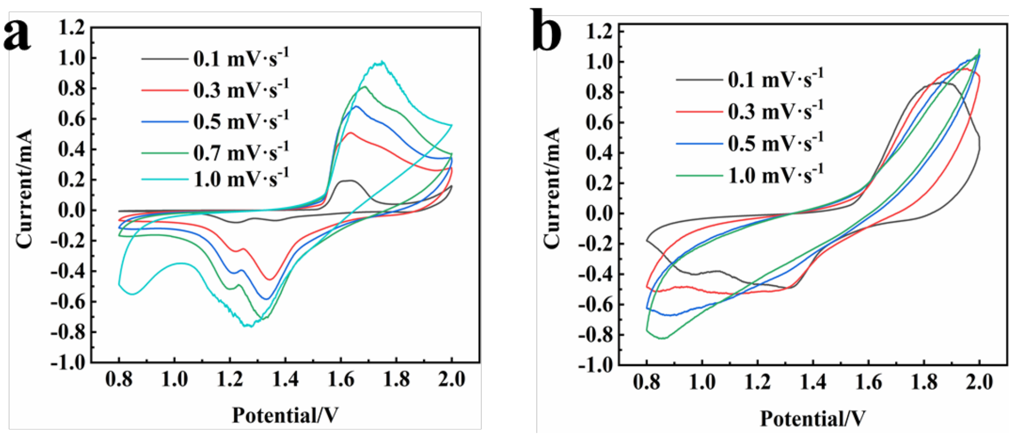

Fig. S4. (a) CV curves of α-MnO_2 at different scan rates; (b) CV curves of g-C_3N_4 at different scan rates.

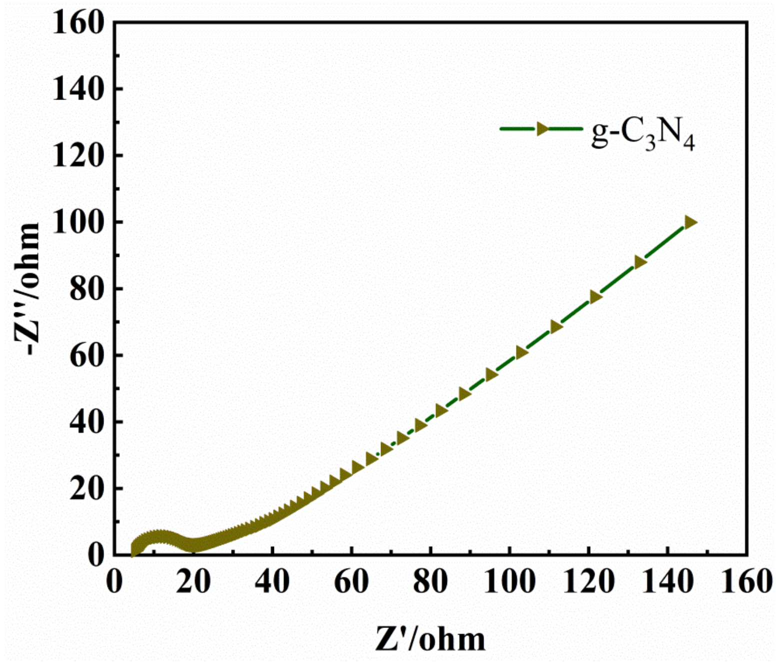

Fig. S5. Nyquist plots of g-C_3N_4.

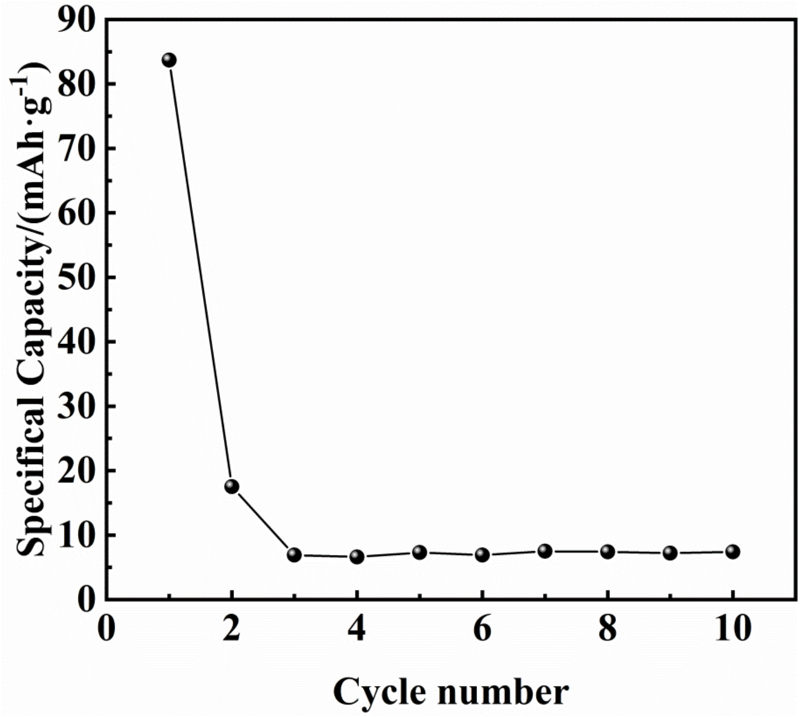

Fig. S6. The electrochemical performance of g-C_3N_4 for the first 10 cycles at 0.1 $A{\cdot}g^{-1}$.

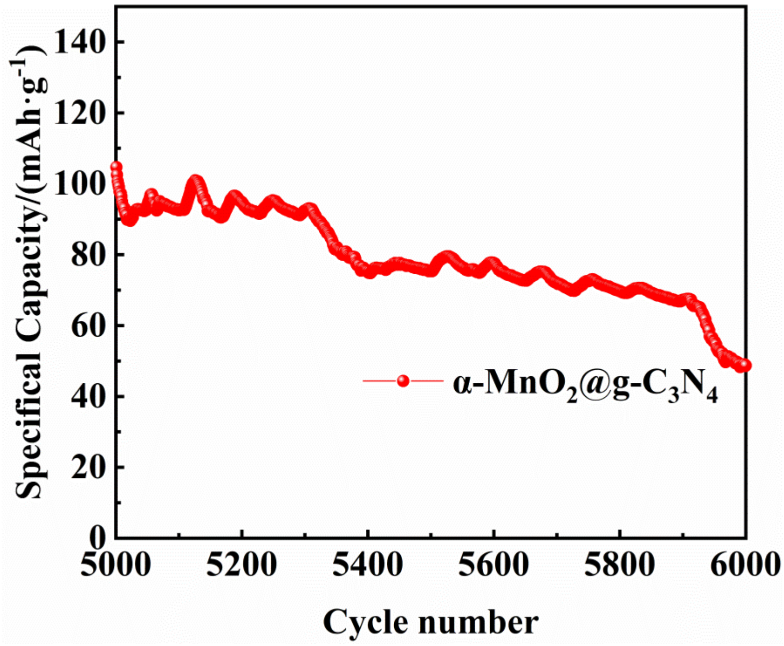

Fig. S7. 5000−6000 cycles performance (1 A·g^{-1}).

Table S2. Performance comparison of manganese based cathode materials for aqueous ZIBs batteries.

Cathode Material	Electrolyte Component	Testing Voltage	Cyclability /(mAh·g^{-1})	Discharge Capacity	Ref
MG10	2 M $ZnSO_4$ + 0.5 M $MnSO_4$	1.2−1.8 V	68.7 after 1000 cycles at 1 A·g^{-1}	230 mAh·g^{-1} (0.1 A·g^{-1})	[1]
MnO-Co@NC	3 M $ZnSO_4$ + 0.1 M $MnSO_4$	0.8−2.0 V	30 after 550 cycles at 2 A·g^{-1}	192 mAh·g^{-1} (0.2 A·g^{-1})	[2]
AUM	2 M $ZnCl_2$ + 0.1 M $MnCl_2$	1.0−1.8 V	170.2 after 1000 cycles at 1 A·g^{-1}	243.6 mAh·g^{-1} (0.1 A·g^{-1})	[3]
α-(Mn_2O_3@MnO_2)	2 M $ZnSO_4$ + 0.1 M $MnSO_4$	0.9−1.9 V	170 after 2000 cycles at 0.5 A·g^{-1}	176 mAh·g^{-1} (0.2 A·g^{-1})	[4]
MGS	2 M $ZnSO_4$ + 0.2 M $MnSO_4$	1.0−1.8 V	87.4 after 800 cycles at 7 A·g^{-1}	362.2 mAh·g^{-1} (0.3 A·g^{-1})	[5]
CNT@MnO_2	2 M $ZnSO_4$ + 0.2 M $MnSO_4$	1.0−1.9 V	105.6 after 1000 cycles At 3 mA·cm^{-2}	293 mAh·g^{-1} (0.2 mA·cm^{-2})	[6]
CNT/MnO_2-PPy	2M $ZnSO_4$ + 0.1 M $MnSO_4$	1.0−1.8 V	150 after 1000 cycles at 1 A·g^{-1}	270 mAh·g^{-1} (0.1 A·g^{-1})	[7]
Vo-MnO_2/CNT	2 M $ZnSO_4$ + 0.1 M $MnSO_4$	0.8−1.8 V	170 after 1000 cycles at 5 A·g^{-1}	314 mAh·g^{-1} (0.2 A·g^{-1})	[8]
α-MnO_2@g-C_3N_4	**2 M $ZnSO_4$ + 0.1 M $MnSO_4$**	**0.8−2.0 V**	**100 after 5000 cycles at 1 A·g^{-1}**	**298 mAh·g^{-1} (0.1 A·g^{-1})**	**This work**

References

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