

Facile Synthesis of Porous Iron oxide/graphene Hybrid Nanocomposites and Potential Application in Electrochemical Energy Storage

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(Supporting Information)

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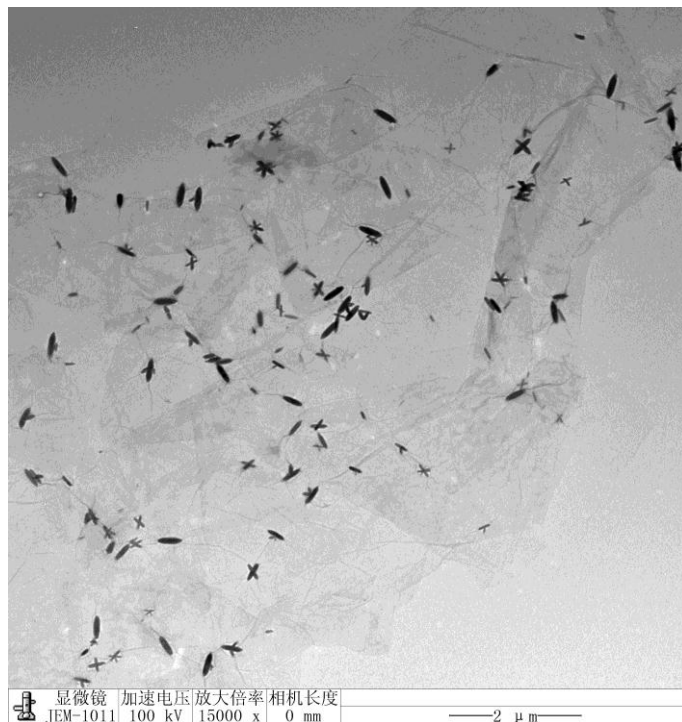


Figure S1. TEM image of FeOOH nanorods coated with graphene.

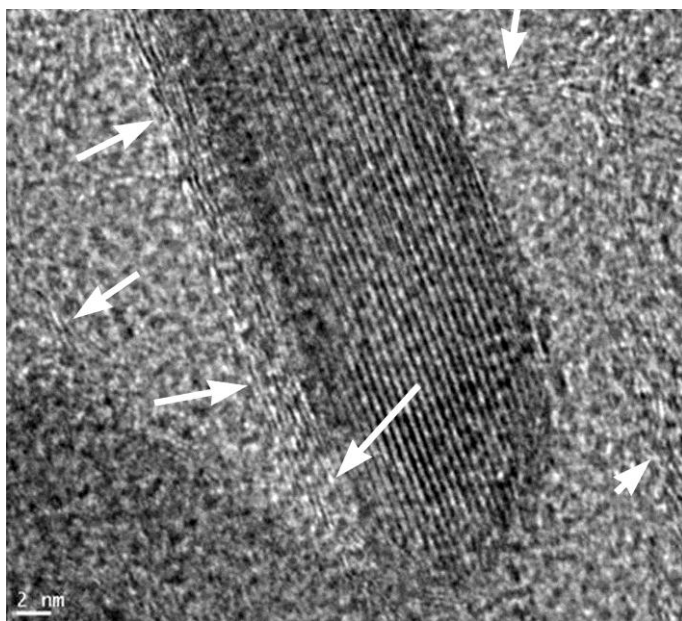


Figure S2. TEM image of Fe₂O₃ nanorods coated with graphene.

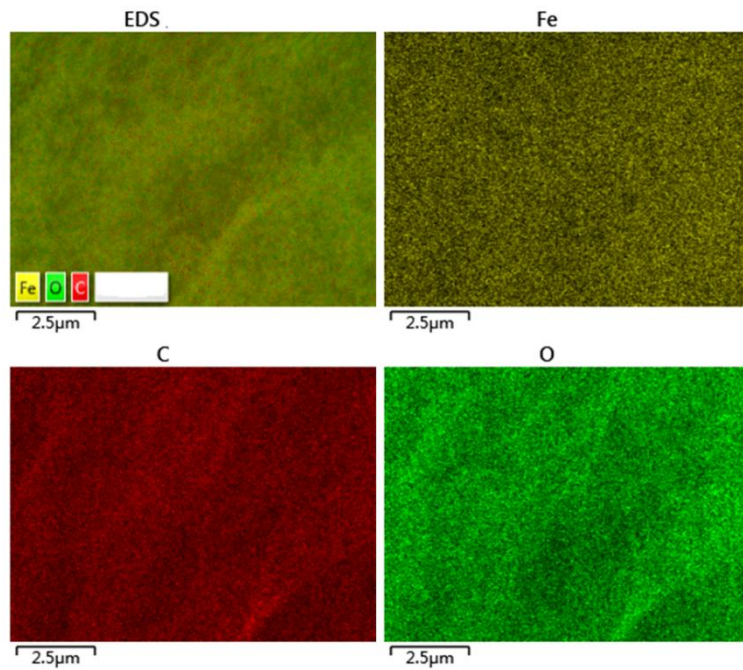


Figure S3a. Elemental mapping of FeOOH@GO.

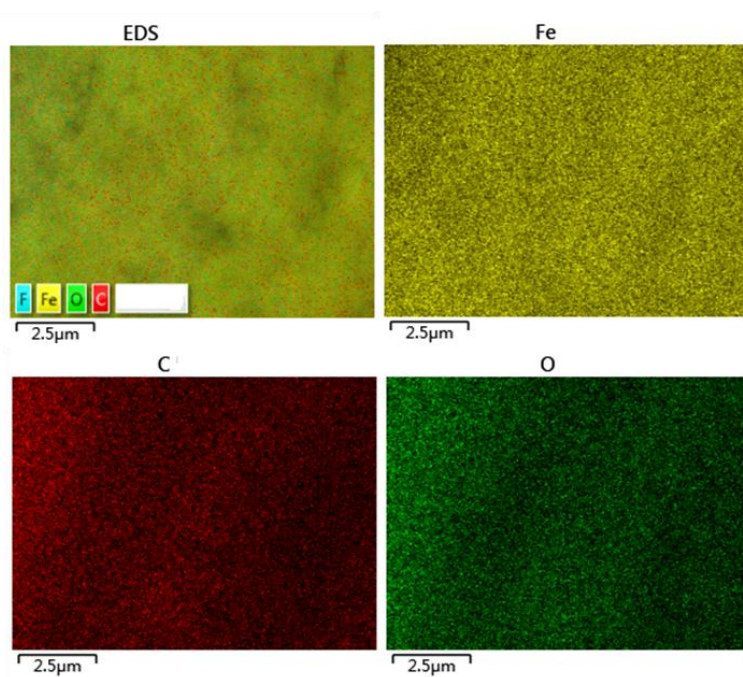


Figure S3b. Elemental mapping of Fe₂O₃@GNS.

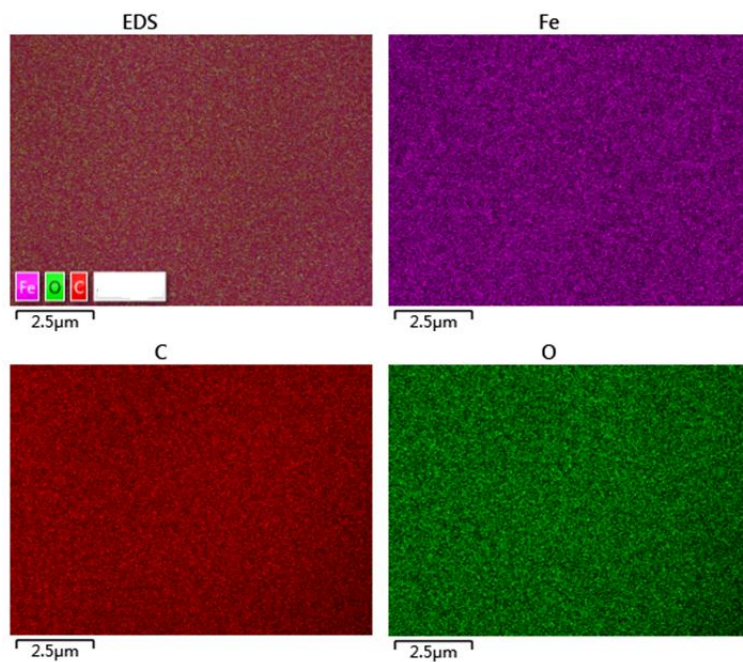


Figure S3c. Elemental mapping of Fe₃O₄@GNS.

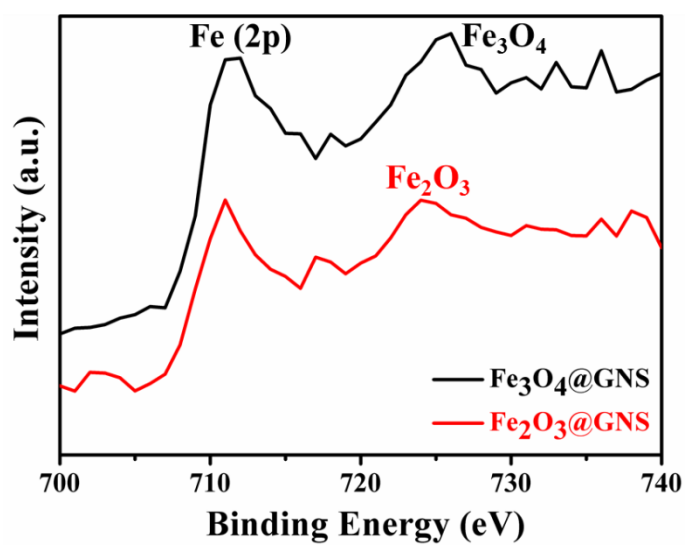


Figure S3d. XPS spectra of iron element in Fe₂O₃@GNS and Fe₃O₄@GNS.

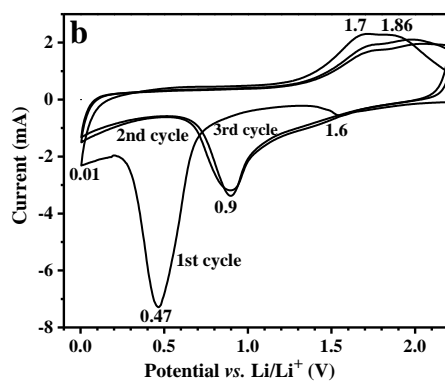
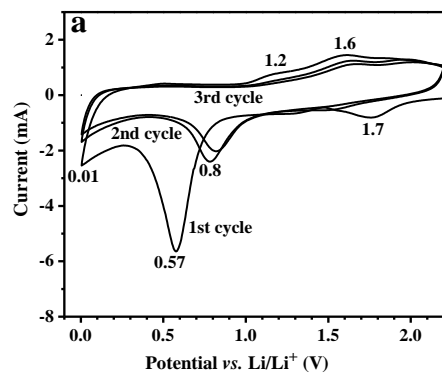


Figure S4. Cycling voltammetry profiles of (a) Fe₂O₃@GNS and (b) Fe₃O₄@GNS. (Potential range: 0.005-2.2 V vs. Li/Li⁺, Scan rate: 0.1 mV/s).

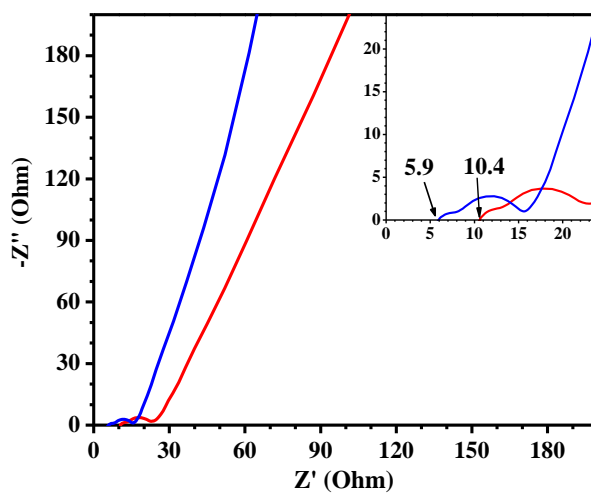


Figure S5. Nyquist plot of Fe₂O₃@GNS (red) and Fe₃O₄@GNS (blue).

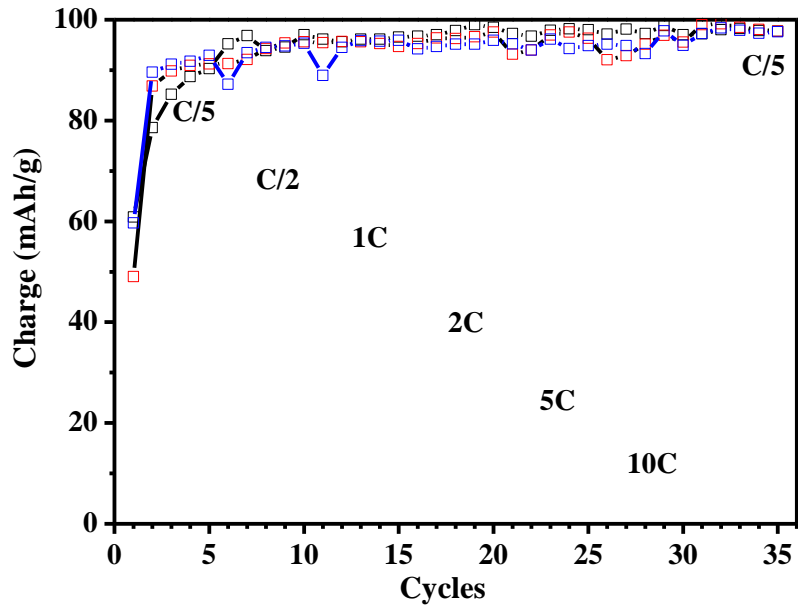


Figure S6. Coulombic efficiency of $\text{Fe}_2\text{O}_3@\text{GNS}$ (red) and $\text{Fe}_3\text{O}_4@\text{GNS}$ (blue)

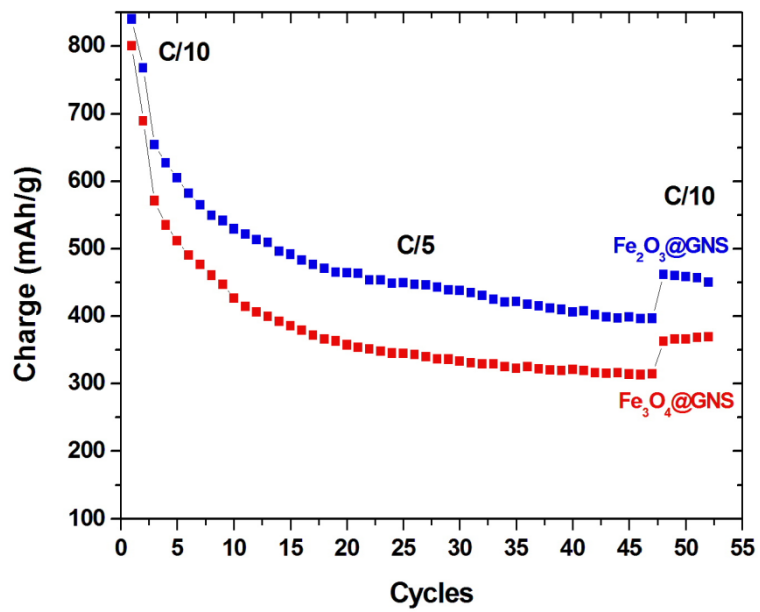


Figure S7. Long term stability of $\text{Fe}_2\text{O}_3@\text{GNS}$ (red) and $\text{Fe}_3\text{O}_4@\text{GNS}$ (blue).

Table S1. Comparison of reversible capacities with other iron oxide/carbon-based materials in the lithium-ion battery system reported in literature.

Materials	Reversible Capacity	Current density	Reference
Fe ₃ O ₄ @C	254 mAh/g (100 cycles)	300 mA/g	J. Mater. Chem. A 2013, 1, 12879-12884
Fe ₂ O ₃ /GO	350 mAh/g (100 cycles)	0.2 C	J. Mater. Chem. 2012, 22, 3868-3874
Fe ₃ O ₄ @N-rich C	670 mAh/g (30 cycles)	92.6 mA/g	Electrochimica Acta 2014, 130, 679-688
Fe ₃ O ₄ /GNS	492 mAh/g (30 cycles)	0.2 C	Present work
