Supporting Information

Synthesis of Graphene@Fe_3O_4@C Core-Shell Nanosheets for High-Performance Lithium Ion Batteries

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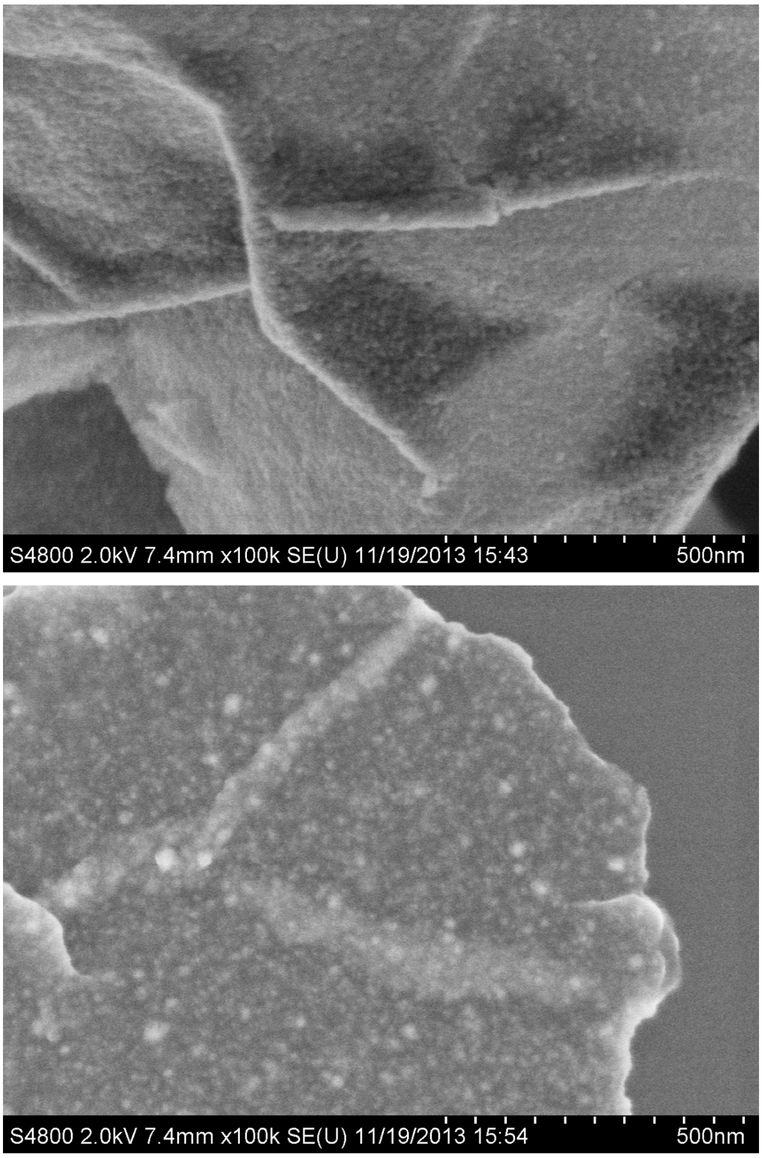

Figure S1. FESEM images of the graphene@Fe_3O_4@C core-shell nanosheets.

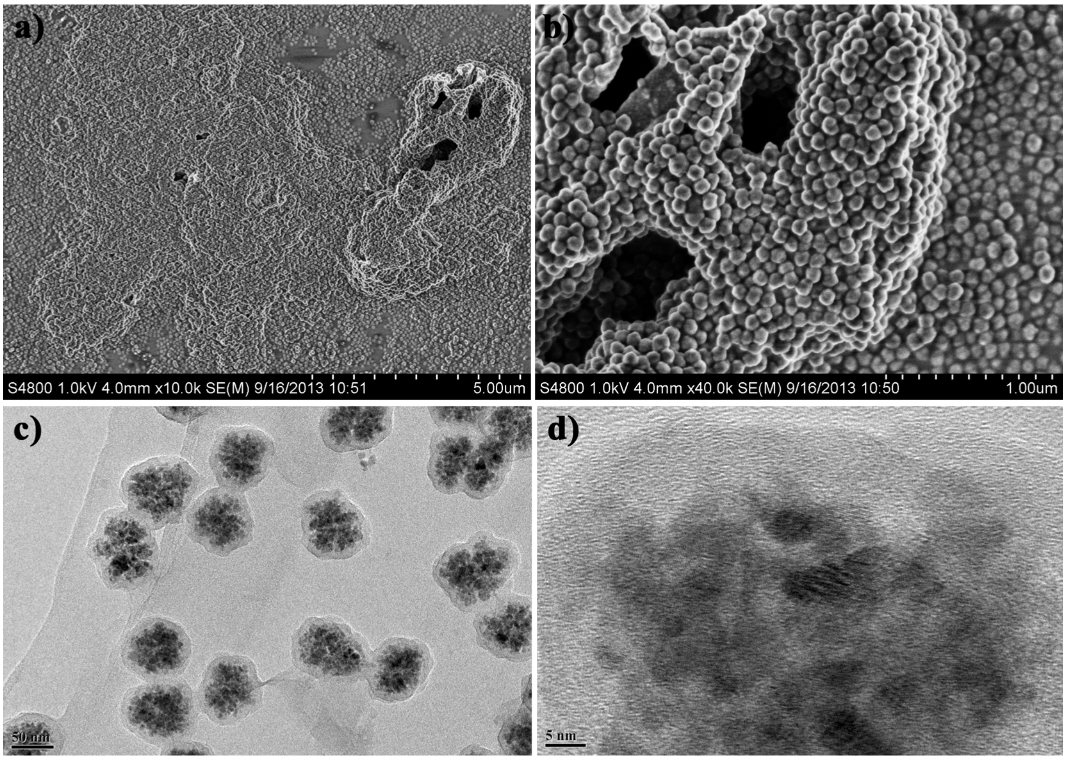

Figure S2. FESEM (a, b) and TEM (c, d) images of the Fe_3O_4@C core-shell nanospheres.

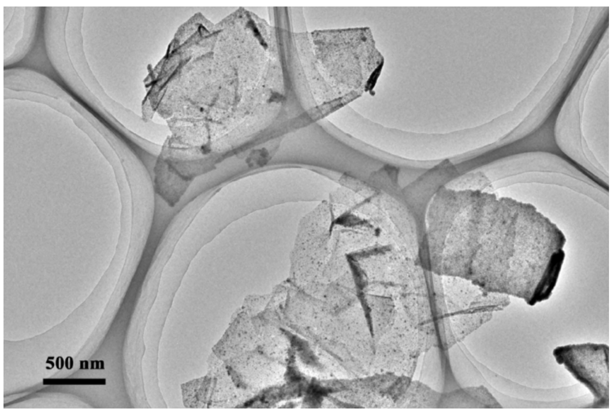

Figure S3. TEM images of the graphene@Fe_3O_4@C core-shell nanosheets.

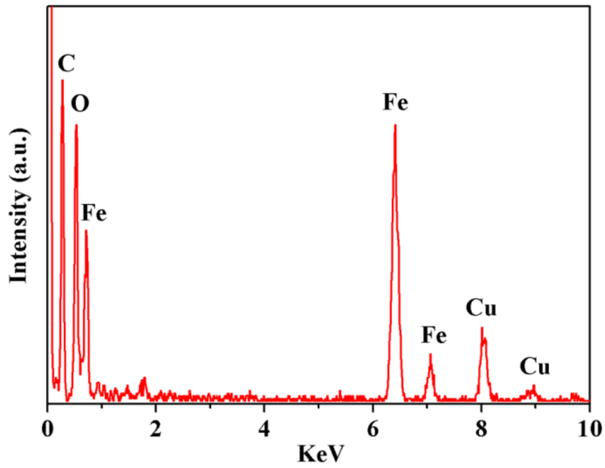

Figure S4. The energy dispersive X-ray spectrum (EDX) spectrum of the graphene@Fe_3O_4@C core-shell nanosheets.

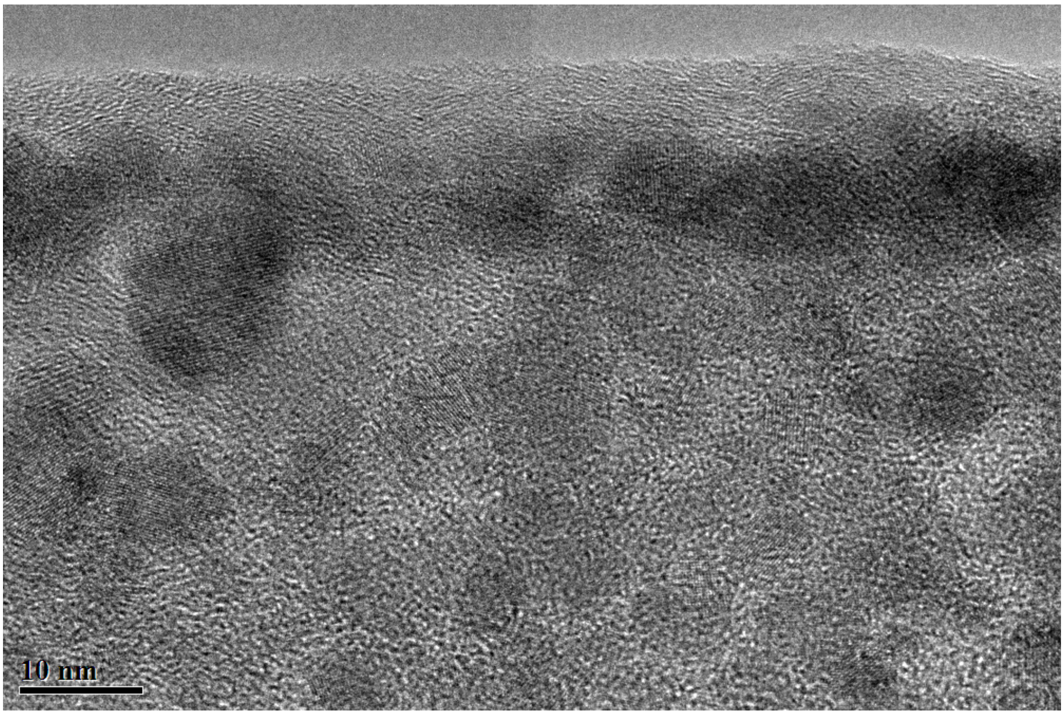

Figure S5. HRTEM images of the graphene@Fe_3O_4@C core-shell nanosheets.

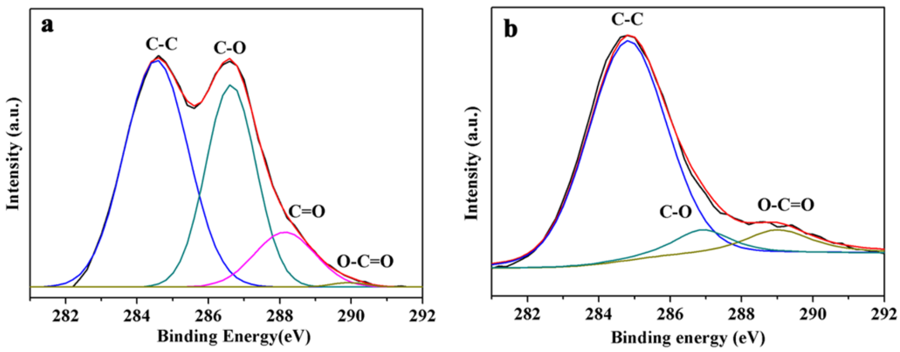

Figure S6. High-resolution XPS spectra of C 1s from GO and thermal-reduced graphene sheets.

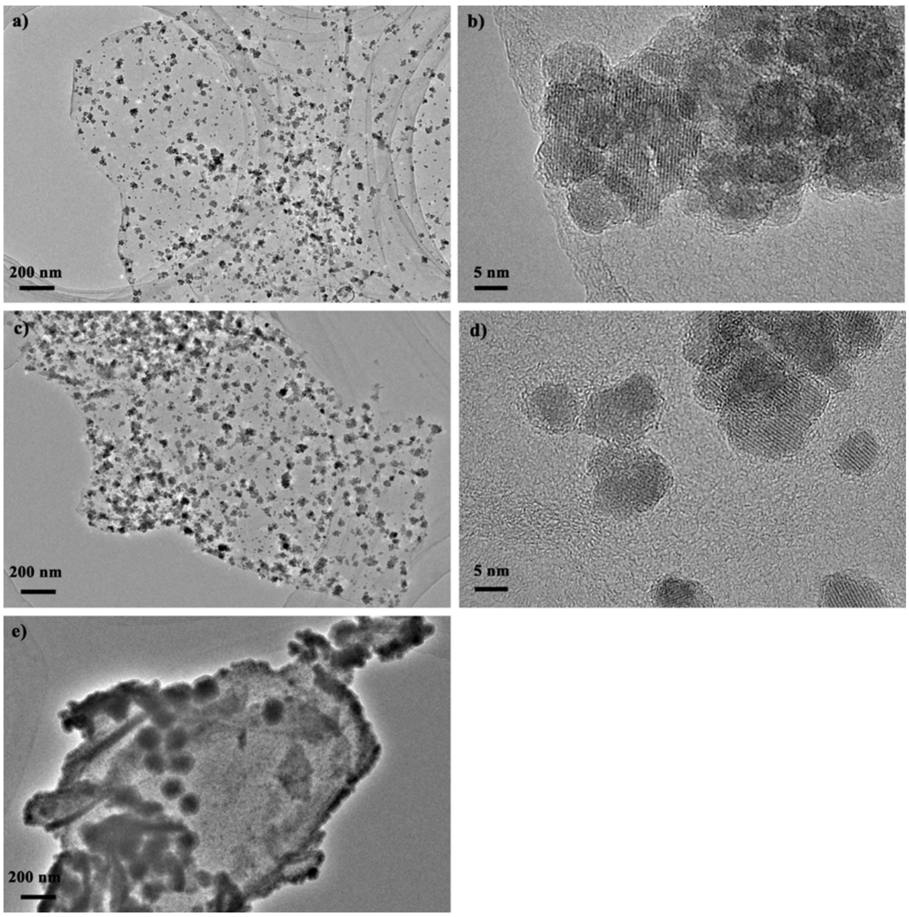

Figure S7. TEM and HRTEM images of the graphene@Fe_3O_4@C nanosheets prepared by hydrothermal treatment of ferrocene with different concentrations: (a, b) 0.03 g, (c, d) 0.05 g, and (e) 0.09 g.

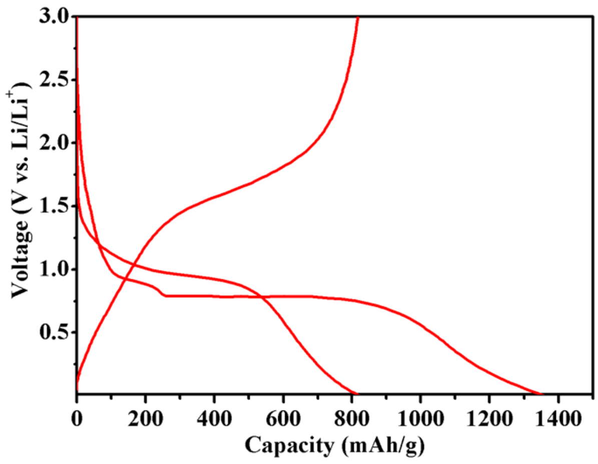

Figure S8. (A) Charge/discharge curves of the Fe_3O_4@C (a) and Fe_3O_4 nanosphere electrodes at a current density of 100 mA/g.

Table S1. Summary of the representative iron oxide/carbon anode materials for lithium-ion batteries for comparsion.

Strategies	Typical examples	Electrochemical properties	Ref.
Graphene hybridization and carbon coating	Graphene@Fe_3O_4@C core-shell nanosheets	1200 mAh g^{-1} after 100 cycles at a current density of 0.2 A/g	Current work
Carbon nanocoating	Carbon-coated Fe_3O_4 nanospindles	530 mAh g^{-1} after 80 cycles at a current density of 0.5 C	1
	Carbon-coated Fe_3O_4 nanorods	808 mAh g^{-1} after 100 cycles at a current density of 924 mA g^{-1}	2
	Fe_3O_4 nanospheres within carbon matrix	712 mAh g^{-1} after 60 cycles at a current density of 200 mA g^{-1}	3
	Fe_3O_4@C matrix	610 mAh g^{-1} after 100 cycles at a current density of 50 mA g^{-1}	4
	Mesoporous Fe_3O_4@C submicrospheres	930 mAh g^{-1} after 50 cycles at a current density of 100 mA g^{-1}	5
	Fe_3O_4 nanoparticles on hierarchical porous carbon	1462 mAh g^{-1} after 100 cycles at a current density of 100 mA g^{-1}	6
	Fe_3O_4@C hollow particles	864 mAh g^{-1} after 50 cycles at a current density of 1 A g^{-1}	7

	Carbon encapsulated 3D hierarchical Fe_3O_4 spheres	960 mAh g^{-1} after 600 cycles at a current density of 1 A g^{-1}	8
	Porous olive-like carbon decorated Fe_3O_4	730 mAh g^{-1} after 235 cycles at a current density of 1500 mA g^{-1}	9
	Fe_3O_4/carbon core-shell nanotubes	932 mAh g^{-1} after 10 cycles at a current density of 100 mA g^{-1}	10
	Carbon-coated Fe_3O_4 nanoflakes	740 mAh g^{-1} after 10 cycles at a current density of 200 mA g^{-1}	11
Hybridization with graphene	3D graphene/Fe_3O_4 aerogel	1100 mAh g^{-1} after 50 cycles at a current density of 200 mA g^{-1}	12
	3D Hierarchical Fe_3O_4/graphene composites	434 mAh g^{-1} after 50 cycles at a current density of 92.5 mA g^{-1}	13
	3D Fe_3O_4/graphene foam	1059 mAh g^{-1} after 150 cycles at a current density of 93 mA g^{-1}	14
	Graphene-encapsulated Fe_3O_4 nanoparticles	650 mAh g^{-1} after 100 cycles at a current density of 100 mA g^{-1}	15
	Fe_2O_3/graphene aerogel	955 mAh g^{-1} after 50 cycles at a current density of 100 mA g^{-1}	16
	Fe_3O_4 nanocrystals@graphene composites	538.7 mAh g^{-1} after 30 cycles at a current density of 100 mA g^{-1}	17
	Fe_3O_4/graphene nanocomposite	1089 mAh g^{-1} after 100 cycles at a current density of 270 mA g^{-1}	18
	Fe_3O_4/reduced graphene oxide nanocomposites	1000 mAh g^{-1} after 30 cycles at a current density of 35 mA g^{-1}	19
	Fe_3O_4 nanoparticle decorated graphene nanosheets	833 mAh g^{-1} after 133 cycles at a current density of 900 mA g^{-1}	20

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