Supporting Information

Unique Synthesis of Hollow Co_3O_4 Nanoparticles embedded in Thin Al_2O_3 Nanosheets for the Enhanced Lithium Storage

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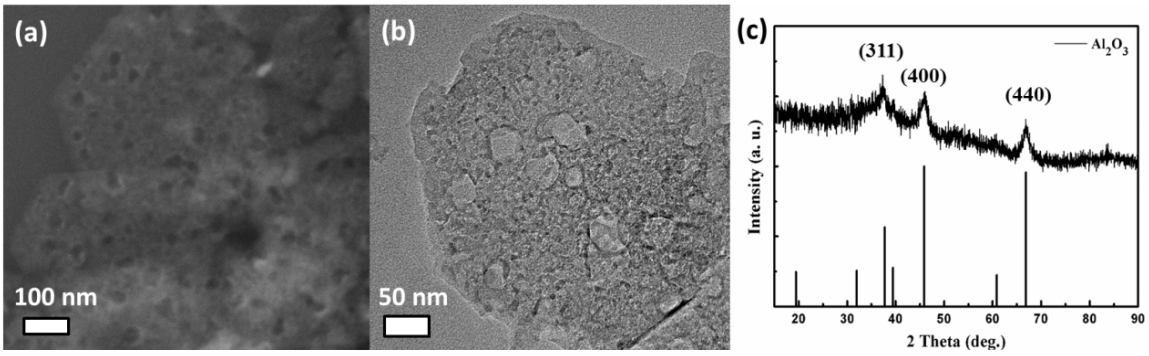

Fig. S1. SEM images (a), TEM images (b) and XRD pattern of the composite nanosheets after the dissolution of Co_3O_4-HNPs in weak HCl (1 M) aqueous solution.

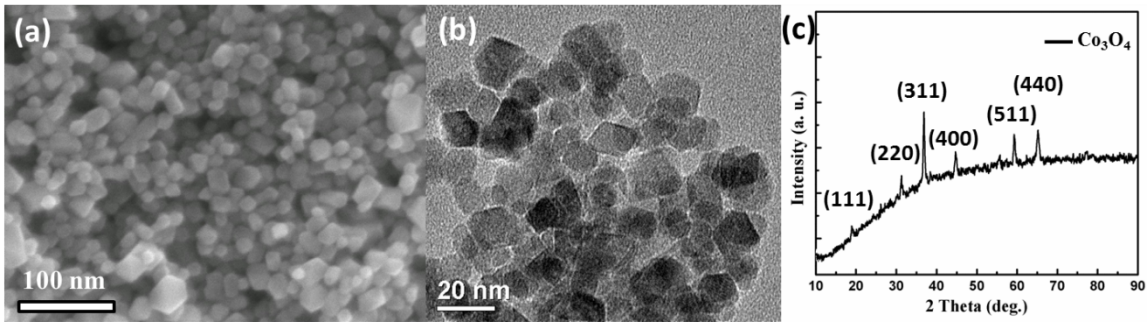

Fig. S2. SEM images (a), TEM images (b) and XRD pattern of pure Co_3O_4 NPs.

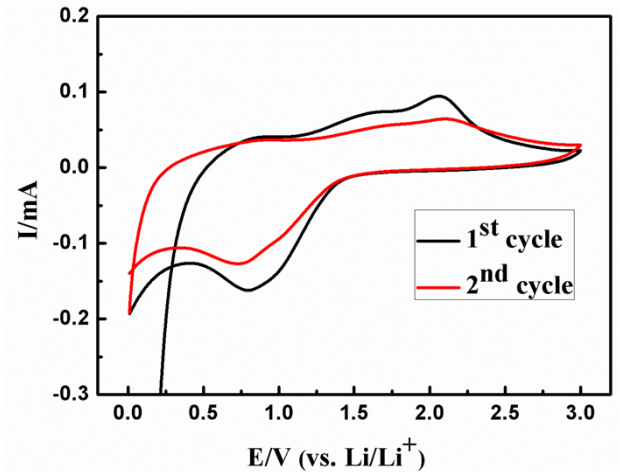

Fig. S3. CV curves of the Co_3O_4-HNPs/Al_2O_3 composite nanosheets between 0 and 3.0 V at a scan rate of 0.2 mV/s.

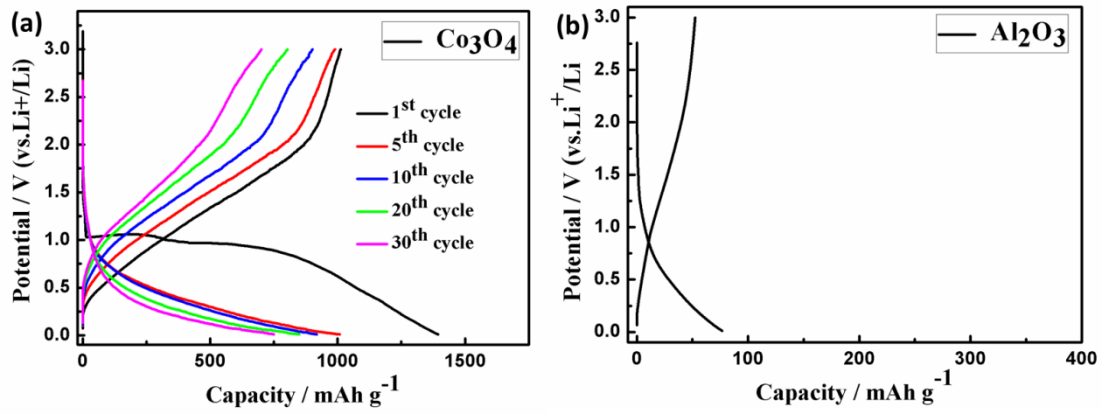

Fig. S4. Charge/discharge curves of (a) the bare Co_3O_4 NPs and (b) the bare Al_2O_3 at 0.1 A g^{-1}.

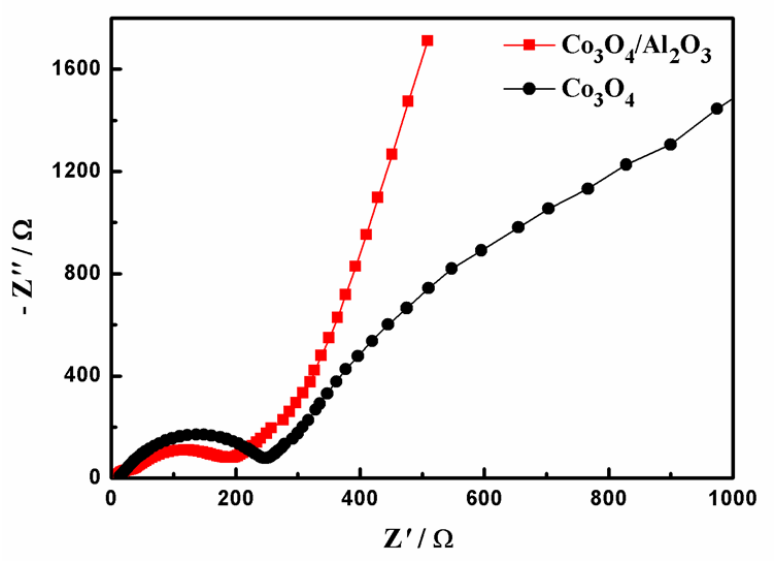

Fig. S5. Nyquist plots of Co_3O_4-HNPs/Al_2O_3 nanocomposite and bare Co_3O_4 nanoparticles (NPs).

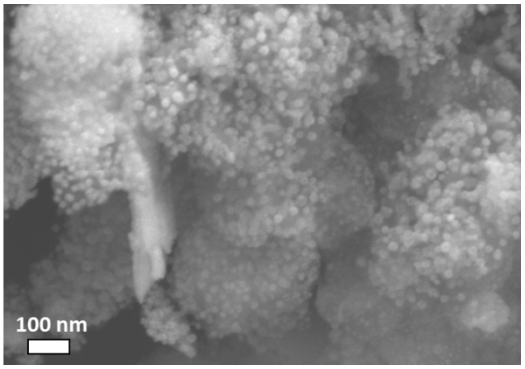

Fig. S6. SEM images of Co_3O_4-HNPs /Al_2O_3 composite after charge/discharge cycles.

Table S1.The comparisons of the electrochemical performance of Co_3O_4-HNPs /Al_2O_3 composite nanosheets with the reported results.

Active nanomaterials	Current density (A g^{-1})	Cycle number	Capacity (mAh g^{-1})	reference
Co_3O_4-HNPs/Al_2O_3 composite nanosheets	0.1	100	1215	This work
	0.5	20	1054	
	1	30	942	
	2	40	838	
	5	50	643	
Co_3O_4 carbon nanotube	0.2	60	823	[1]
Co_3O_4 nanocages	0.178 (0.2 C)	50	864	[2]
macro-/mesoporous Co_3O_4 nanosheet arrays	0.2	10	1043	[3]
	0.5	20	894	
	1	30	784	
	2	40	709	
	5	50	582	
Needlelike Co_3O_4 Nanotubes	0.05	30	918	[4]
	0.1	80	380	
porous Co_3O_4 nanoflake thin film	0.1	50	406	[5]
	0.4	50	318	
Co_3O_4 nanocages	0.05	30	970	[6]
Co_3O_4/graphene	0.2	42	778	[7]
Co_3O_4–graphene sheet-on-sheet composites	0.089 (0.1 C)	30	1065	[8]

References

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