Supporting Information for

Fabrication of Co_3O_4 Nanoparticles in Thin Porous Carbon shell from Metal-Organic Frameworks for Enhanced Electrochemical Performance

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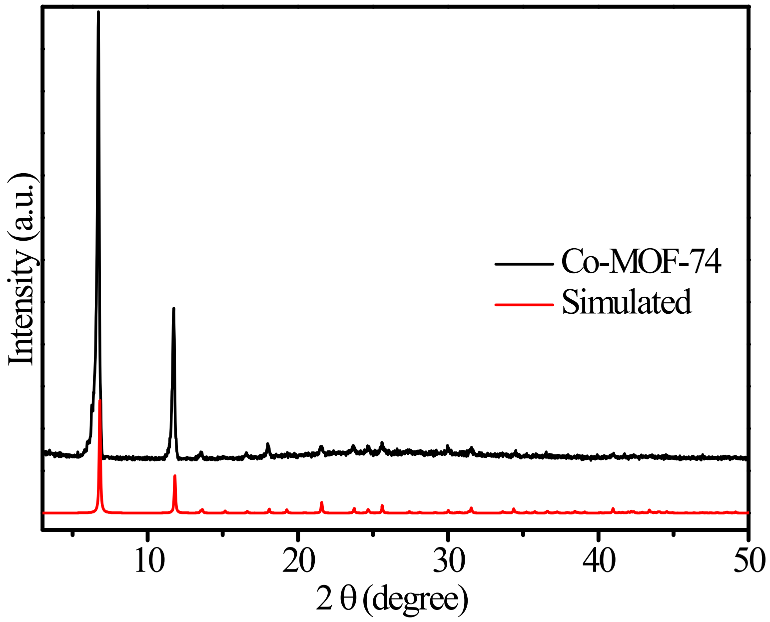

Fig. S1. XRD patterns of as-synthesized Co-MOF-74.

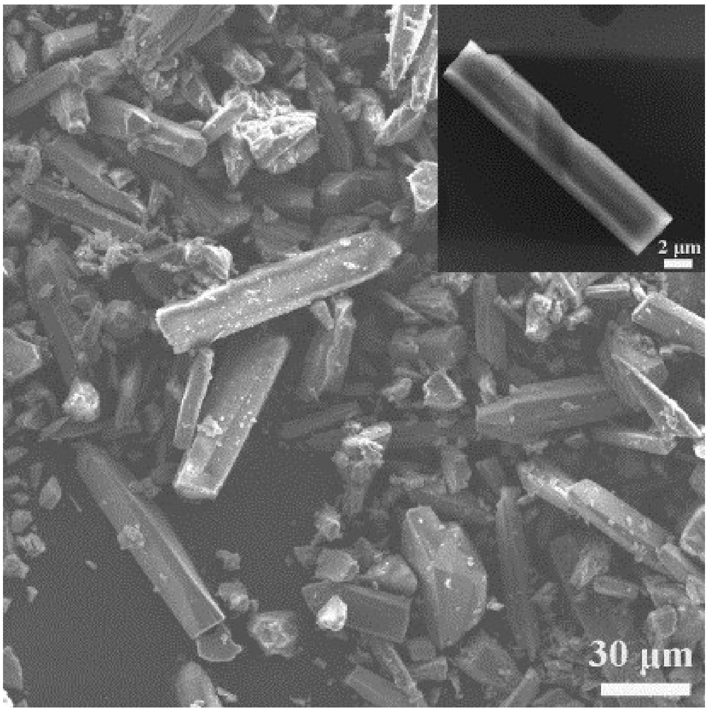

Fig. S2. SEM images of nanorod Co-MOF-74 synthesized by hydrothermal method.

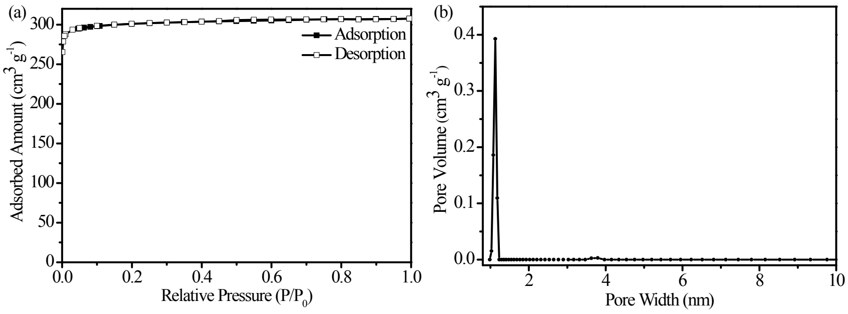

Fig. S3. (a) N_2 sorption/desorption isotherms, and (b) pore size distribution of the as-synthesized Co-MOF-74 nanorods.

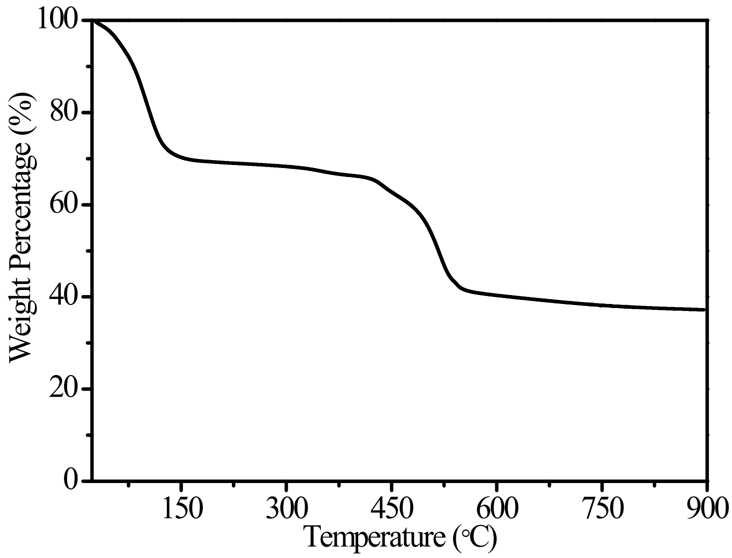

Fig. S4. Thermogravimetric analysis (TGA) result of Co-MOF-74 under N_2.

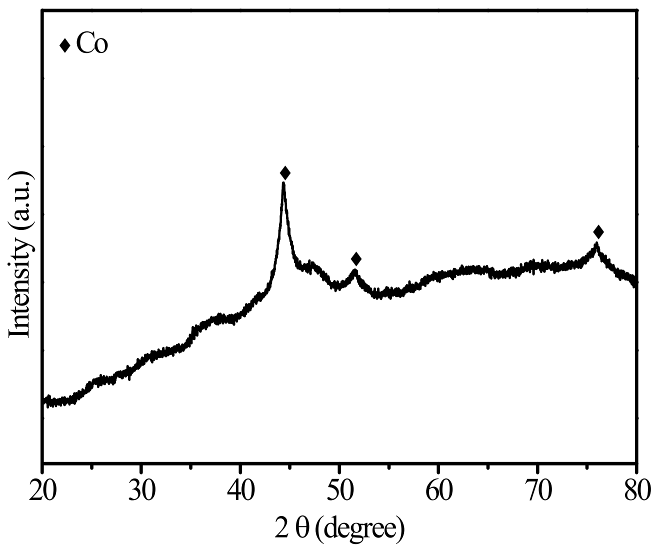

Fig. S5. XRD patterns of Co@C nanocomposites.

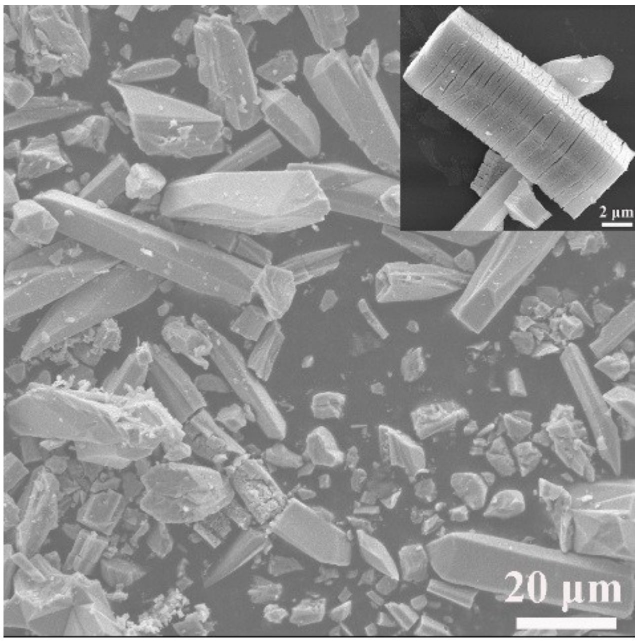

Fig. S6. SEM images of as-synthesized Co@C nanocomposites.

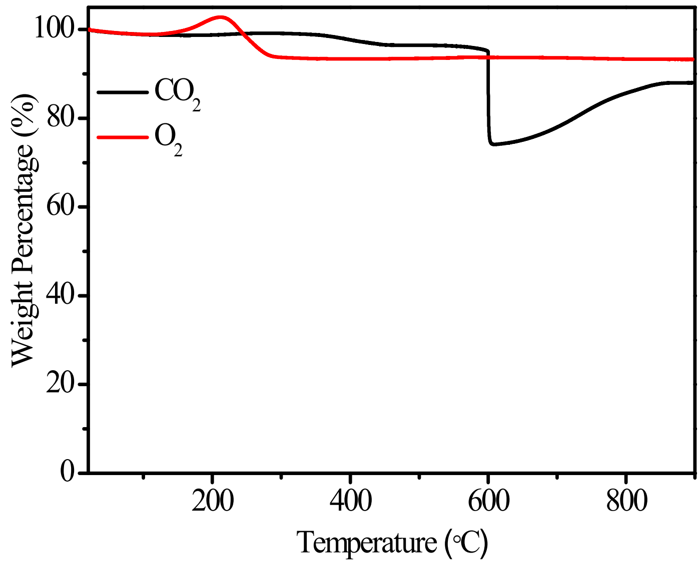

Fig. S7. Thermogravimetric analysis (TGA) result of Co@C composites under CO_2 and Air atmosphere.

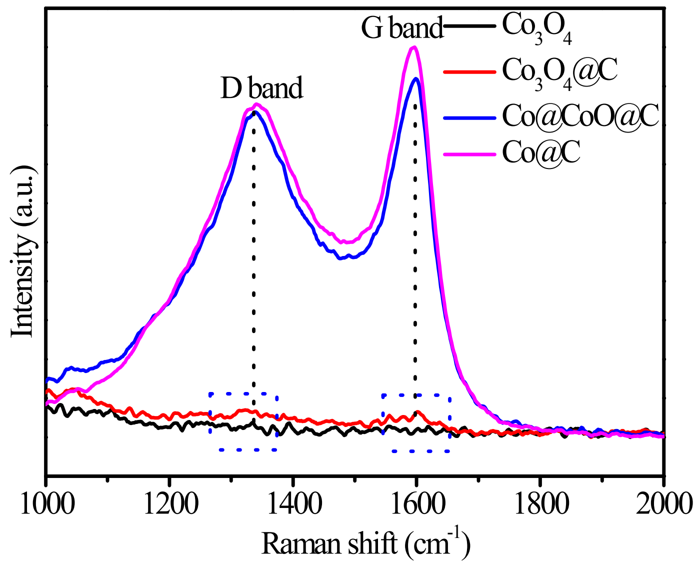

Fig. S8. Raman spectrum of as-synthesized Co@C, Co_3O_4, Co@CoO@C and Co_3O_4@C composites.

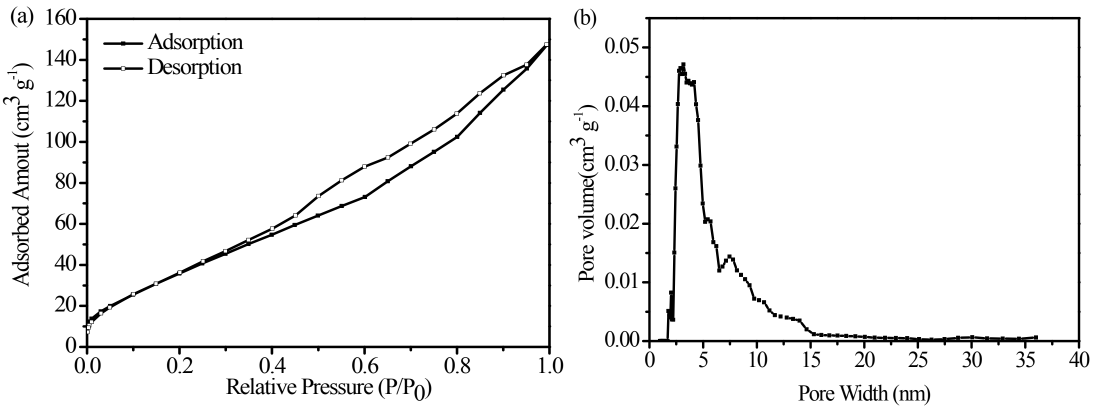

Fig. S9. (a) N_2 sorption/desorption isotherms, and (b) pore size distribution of the as-synthesized.

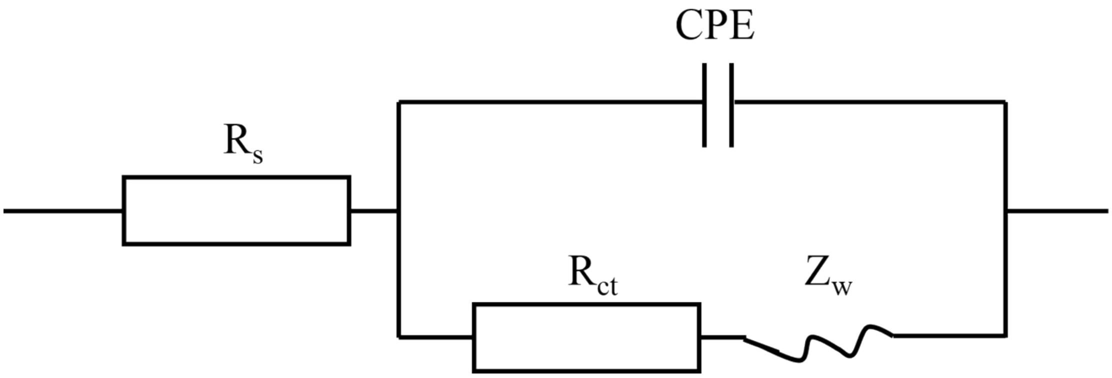

Fig. S10 The equivalent-circuit model of three samples for as-prepared batteries.

Table S1. The carbon content in the obtained samples from element analysis

Samples	C (wt%)
Co@C	12.38
Co_3O_4	0.15
Co@CoO@C	10.7
Co_3O_4@C	3.17

Table S2. Comparison of the capacity of present work with the reported Co_3O_4@C electrode materials derived from metal organic frameworks

Samples	Current density	Cycle number	Capacity	Ref.
Co_3O_4 hollow dodecahedrons	100 mA g^{-1}	100	1355 mAh g^{-1}	1
Co_3O_4 hollow dodecahedra	100 mA g^{-1}	100	780 mAh g^{-1}	2
Co_3O_4 nanoparticles	50 mA g^{-1}	50	965 mAh g^{-1}	3
Co_3O_4 composites	200 mA g^{-1}	60	913 mAh g^{-1}	4
MWCNTs/Co_3O_4 nanocomposite	100 mA g^{-1}	100	813 mAh g^{-1}	5
Co_3O_4/C nanosheets	100 mA g^{-1}	100	1082 mAh g^{-1}	6
Co_3O_4@C composites	100 mA g^{-1}	100	1137 mAh g^{-1}	This work

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