## Electronic Supplementary Information for

Metal organic frameworks-derived Co<sub>3</sub>O<sub>4</sub> hollow dodecahedrons with controllable

interiors as outstanding anodes for Li storage

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## **Supplementary figures**



Fig. S1 TG curve of Co<sub>3</sub>O<sub>4</sub> obtained through one-step calcination of ZIF-67.



Fig. S2 TEM image of ball-in-dodecahedron  $Co_3O_4$  taken at the edge of one typical dodecahedron. The average size of nanoparticles as marked with red lines was estimated to be about 18 nm.



Fig. S3  $N_2$  adsorption/desorption isotherms of ball-in-dodecahedron  $Co_3O_4$  and the corresponding pore-size distribution curve.



Fig. S4 TG curve of the intermediate products after the first-step calcination of ZIF-67 under  $N_2$  atmosphere.



Fig. S5 C1s XPS spectrum of the intermediate products after the first-step calcination of ZIF-67 under  $N_2$  atmosphere.



Fig. S6 The typical TEM image of  $Co_3O_4$  obtained through two-step calcination of ZIF-67.



Fig. S7  $N_2$  adsorption/desorption isotherms of concave-dodecahedron  $Co_3O_4$  and the corresponding pore-size distribution curve.



Fig. S8 TG curve of Co<sub>3</sub>O<sub>4</sub> obtained through two-step calcination of ZIF-67.



Fig. S9 Raman spectrum of Co<sub>3</sub>O<sub>4</sub> obtained through two-step calcination of ZIF-67.



Fig. S10 Cycling behaviors of ball-in-dodecahedron Co<sub>3</sub>O<sub>4</sub> tested in two coin-cells.