Supporting Information

Oxygen Vacancy Enriched Hollow Cobaltosic Oxide Frames with Ultrathin Walls for Efficient Energy Storage and Biosensing

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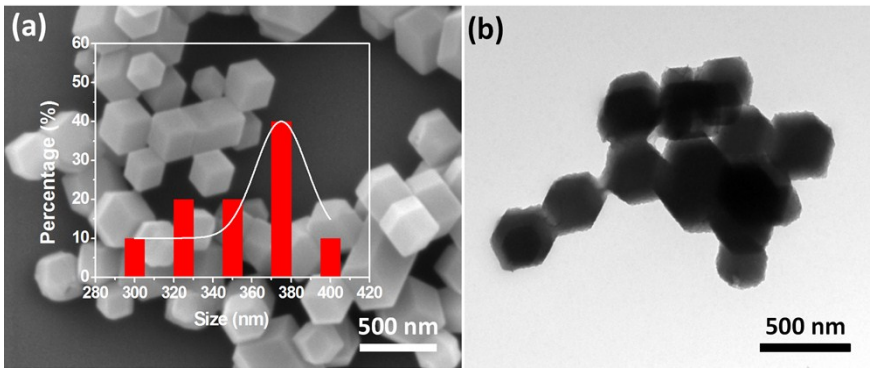

Fig. S1 Typical SEM (a) and TEM (b) images of Co-MOF (ZIF-67) rhombic dodecahedron. Inset in (a) is the size distribution of ZIF-67.

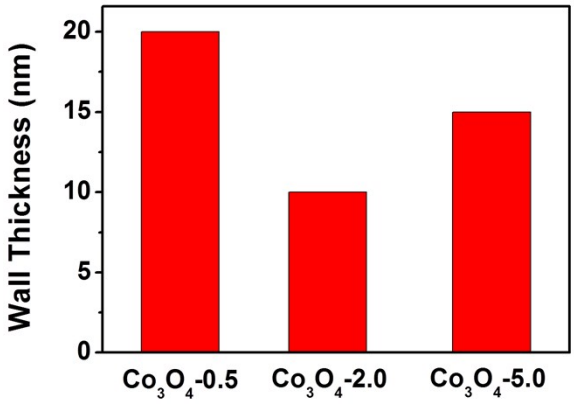

Fig. S2 The wall thickness of Co_3O_4-0.5, Co_3O_4-2.0 and Co_3O_4-5.0.

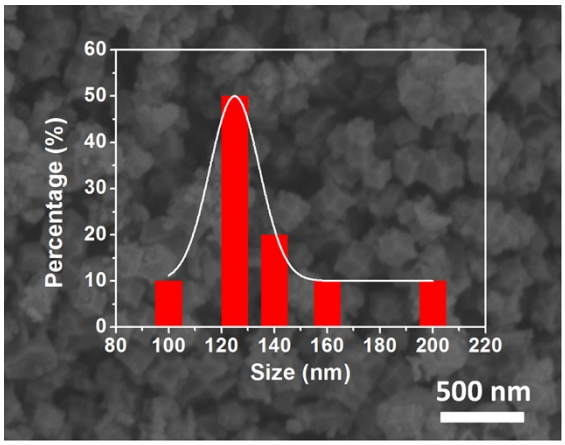

Fig. S3 Typical SEM image of Co_3O_4-10.0 obtained by calcination of ZIF-67 in air at 300 °C with the ramping rate of 10.0 °C min^{-1}. Inset is the size distribution of Co_3O_4-10.0.

Table S1 Summary of O 1s XPS spectra of Co_3O_4-0.5, Co_3O_4-2.0 and Co_3O_4-5.0.

	Co_3O_4 samples	O_L (Co-O)	O_V (vacancy)
Co_3O_4-0.5	binding energy (eV)	530.0	530.9
	relative percentage (%)	68.0	32.0
Co_3O_4-2.0	binding energy (eV)	530.2	531.0
	relative percentage (%)	56.2	43.8
Co_3O_4-5.0	binding energy (eV)	530.0	530.9
	relative percentage (%)	76.8	23.2

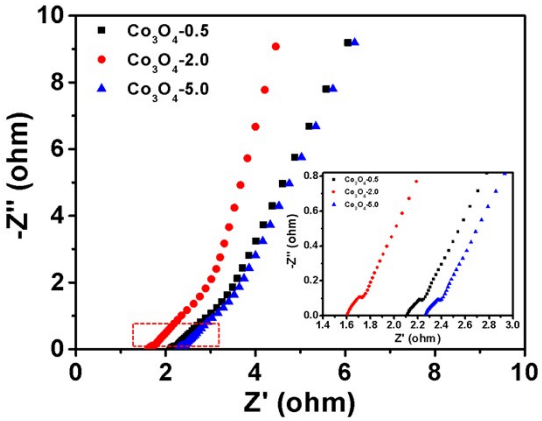

Fig. S4 Nyquist plots of the EIS of Co_3O_4-0.5, Co_3O_4-2.0 and Co_3O_4-5.0.

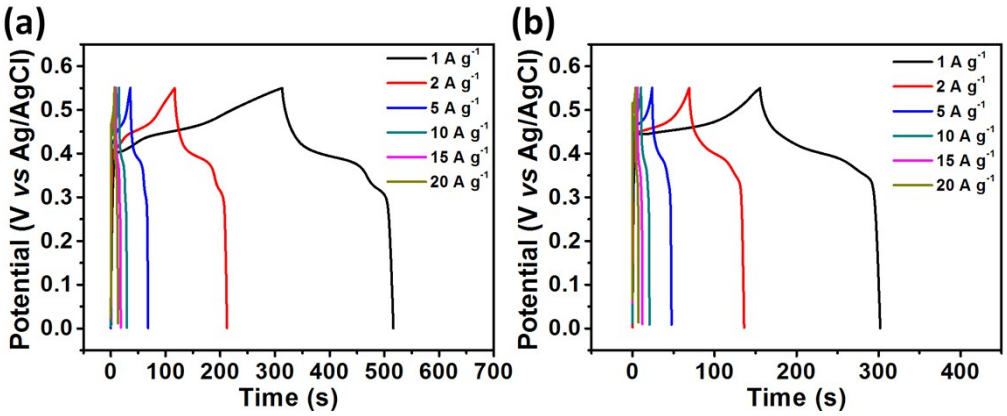

Fig. S5 Charge-discharge curves of (a) Co_3O_4-0.5 and (b) Co_3O_4-5.0 measured at different current densities.

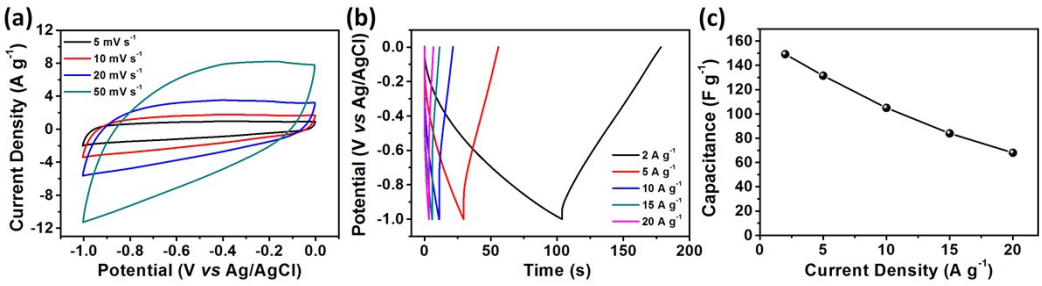

Fig. S6 (a) Cyclic voltammogram curves of holey graphene at different scan rates ranging from 5 to 50 mV s^{-1}. (b) Charge-discharge curves and (c) the corresponding specific capacitance of holey graphene measured at different current densities.

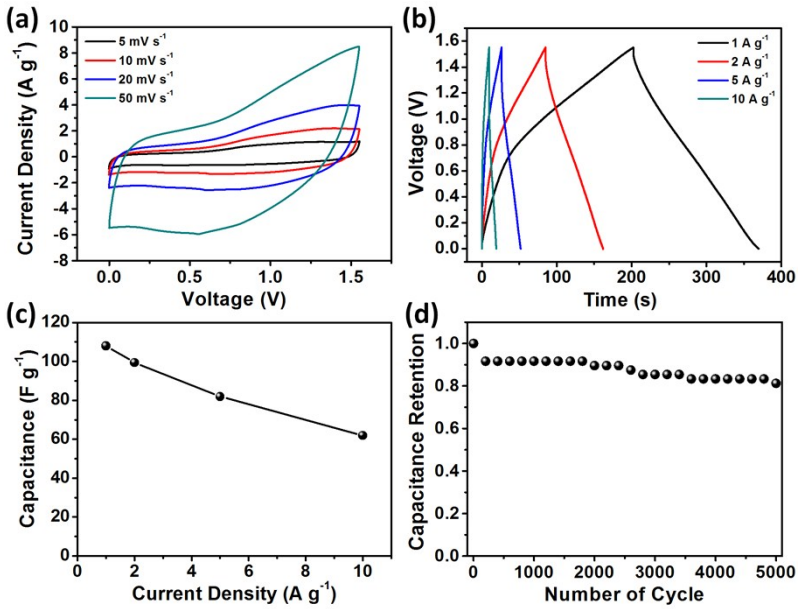

Fig. S7 (a) The CV curves of the hybrid supercapacitors made of Co_3O_4-2.0 and holey graphene as the positive and negative respectively at different scan rates ranging from 5 to 50 mV s^{-1}. (b) Charge–discharge curves and (c) the corresponding specific capacitance of the hybrid supercapacitor at different current densities. (d) Cycling performance of the hybrid supercapacitor at the current density of 10 A g^{-1}.