

**Supporting Information for**  
**Biomorphic synthesis of mesoporous Co<sub>3</sub>O<sub>4</sub> microtubules and their pseudocapacitive**  
**performance**

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**Experimental details**

**Synthesis of mesoporous Co<sub>3</sub>O<sub>4</sub> microtubules.** In a typical experiment to prepare biomorphic Co<sub>3</sub>O<sub>4</sub>, 1 g of cobaltous (II) nitrate hexahydrate (Co (NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O, Shanghai Chemical Regent Co., analytical grade) was dissolved in 20 mL of water. Absorbent cotton (1.35 g) was then immersed in the solution, which resulted in the cotton becoming fully wet. The cotton was dried at 60 °C for 12 h and then calcinated at 400 °C for 3 h in air, to obtain biomorphic Co<sub>3</sub>O<sub>4</sub>. For comparison, bulk Co<sub>3</sub>O<sub>4</sub> was also prepared by drying and calcination of Co (NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O solution under the same conditions.

**Material characterizations:** The structures were determined by an X-ray diffraction diffractometer (XRD, Rigaku Geigerflex D/Max 2200), using Cu K $\alpha$  radiation. The 2 $\theta$  ranges from 10° to 80° with a scan rate of 4°/min and a step width of 0.02°. The morphologies of the obtained samples were analyzed by and a scanning electron microscope (SEM, JSM-56010LV).

Thermo-gravimetric differential scanning calorimetry analysis (TG-DSC, Netzsch STA-449F3) was carried out in air from room temperature up to 900 °C at a heating rate of 20 °C/min. Fourier-transform-infrared spectroscopy (FT-IR) technique was performed by a Bruker TENSOR27 spectrophotometer. The specific surface area and pore size distribution of the as-prepared  $\text{Co}_3\text{O}_4$  was measured by an ASAP 2020 analyzer.

**Electrochemical measurements.** The as-prepared  $\text{Co}_3\text{O}_4$ , acetylene black and polytetrafluoroethylene (PTFE) were mixed in a mass ratio of 8:1.5:0.5, and then the mixture was pressed onto a foamed nickel. The mass loading of active materials is  $2.5 \text{ mg/cm}^2$ . Electrochemical measurements were carried out using an electrochemical workstation (CHI 660E) in a conventional three-electrode system. Electrochemical impedance spectroscopy (EIS) was performed with an amplitude of 5 mV over a frequency range of 0.01-100 kHz. A solution of KOH (3.0 M) was used as the electrolyte.

