Electronic Supplementary Information

Controllable Synthesis of 3D Ni$_x$Co$_{1-x}$ Oxides with Different Morphology for High-Capacity Supercapacitors

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The data include Fig. S1-S4.

The specific capacitance of the electrode can be calculated from the CV curves according to the following equation:

$$ C = \left( \int IdV \right) / (vm\Delta V) \quad (1) $$

Where $C$ (F g$^{-1}$) is the specific capacitance of the electrode, $I$ (A) is the current of discharge, $\nu$ (mV s$^{-1}$) is the scan rate, $\Delta V$ (V) is the total potential window, and $m$ (g) is the mass of active material within the electrode.

Fig. S1 CV curves of Ni$_{0.61}$Co$_{0.39}$ oxide and AC electrodes performed using the three-electrode cell in a 2M KOH solution with a Hg/HgO reference electrode at a scan rate of 10 mV s$^{-1}$.
Fig. S2 FESEM images of the corresponding hydroxide precursors of Ni$_x$Co$_{1-x}$ oxides prepared in a series of electrodeposition electrolytes with different Co/Ni molar ratio. (a)
NiCoOH1; (b) NiCoOH2; (c) NiCoOH3; (d) NiCoOH4; (e) NiCoOH5; (f) NiCoOH6; (g) NiCoOH7.

Fig. S3 (a) The separate impedance slope plot and (b) The separate diameter of semicircle polt on Nyquist plot of Ni$_x$Co$_{1-x}$ oxides in the frequency range 0.01 to $10^5$ Hz.
Fig. S4 Electrochemical performance of Ni$_x$Co$_{1-x}$ oxides with different areal masses (The mass loading of active materials are 3.0, 4.7 and 7.1 mg cm$^{-2}$, respectively). (a, b) CV curves at 10 mV s$^{-1}$; (c, d) The specific capacitance at the current density of 2 A g$^{-1}$; (e, f) The plots of the corresponding specific capacitance as a function of current density.