

Supplementary Materials: Structure-Engineered Core–Shell Ni–Co–O/NiCo-LDH Nanospheres as High-Performance Supercapacitor Electrodes

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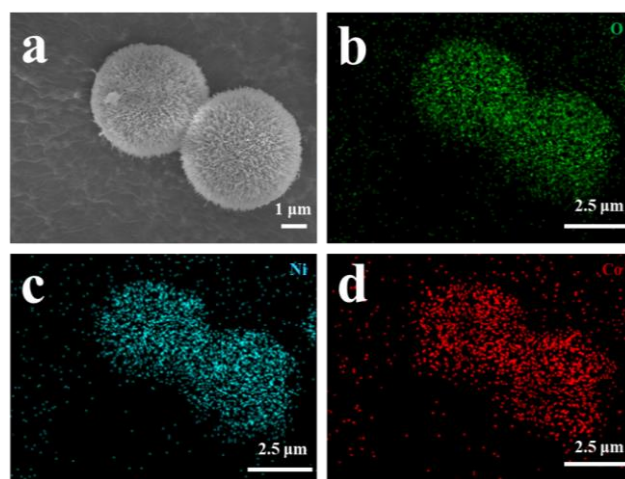


Figure S1. SEM (a) and EDS (b–d) images of NiCo-LDH.

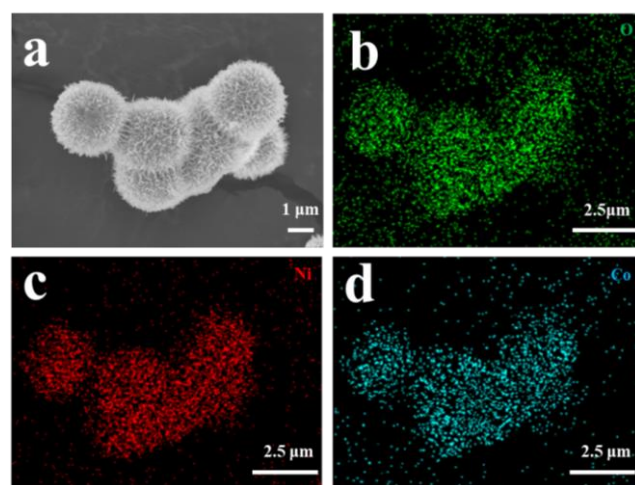


Figure S2. SEM (a) and EDS (b–d) images of Ni–Co–O.

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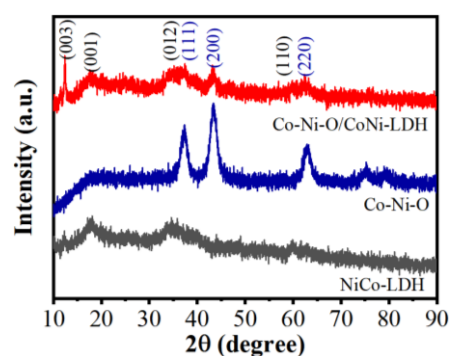


Figure S3. XRD patterns of NiCo-LDH, Ni-Co-O and Ni-Co-O/NiCo-LDH composite.

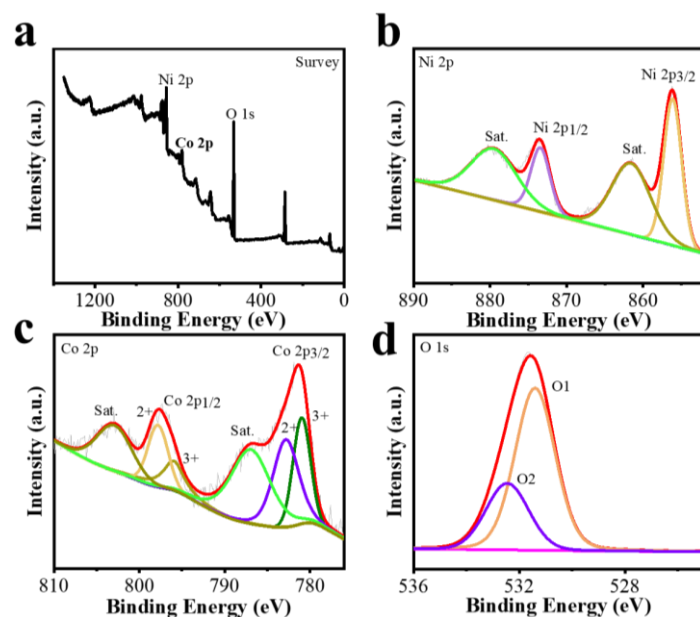


Figure S4. XPS survey spectrum (a), high-resolution spectra of Ni 2p (b), Co 2p (c), O 1s (d) for NiCo-LDH.

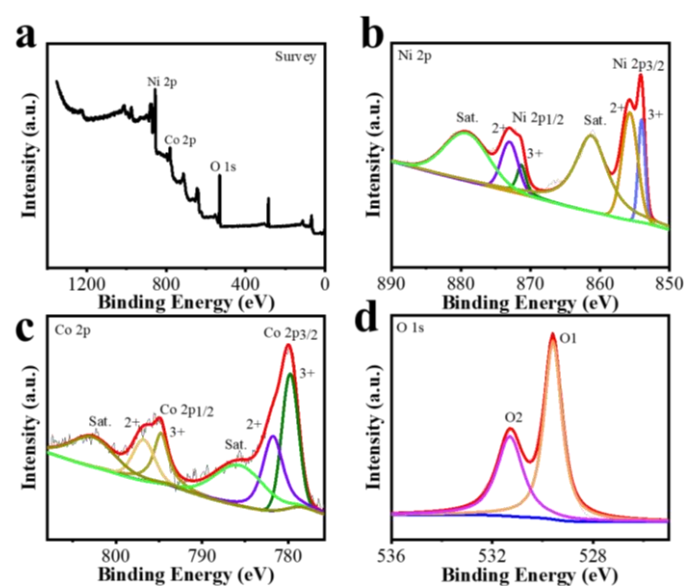


Figure S5. XPS survey spectrum (a), high-resolution spectra of Ni 2p (b), Co 2p (c), O 1s (d) for Ni-Co-O.

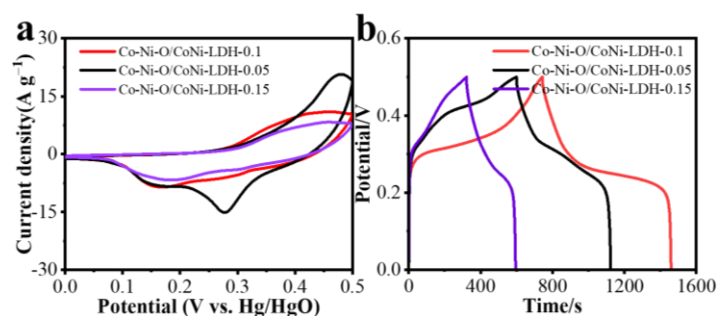


Figure S6. CV (a) and GCD (b) curves of different ratio of the two components of the Ni-Co-O/NiCo-LDH composite.

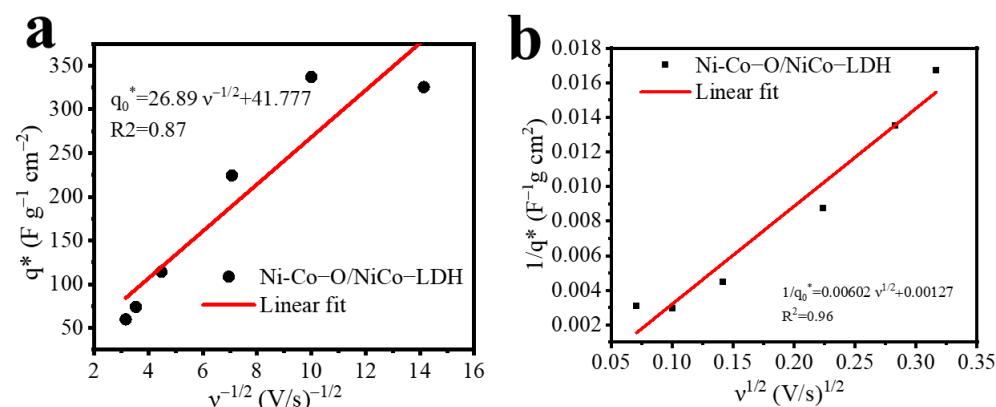


Figure S7. (a) a linear fit of capacity (q) vs. reciprocal of square root of scan rate ($v^{-1/2}$) of Ni-Co-O/NiCo-LDH, (b) linear fit of reciprocal of capacity (q^{-1}) vs. square root of scan rate ($v^{1/2}$) of Ni-Co-O/NiCo-LDH.

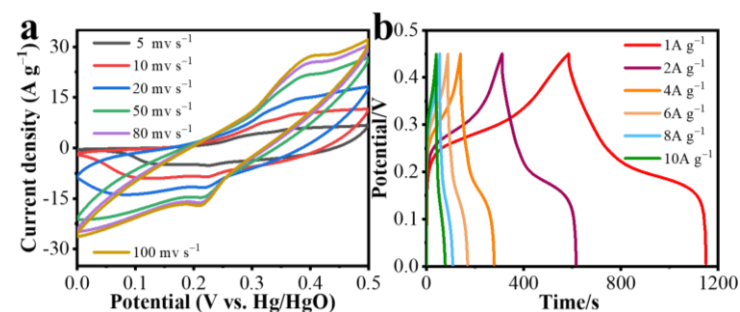


Figure S8. (a) CV and (b) GCD curves of NiCo-LDH.

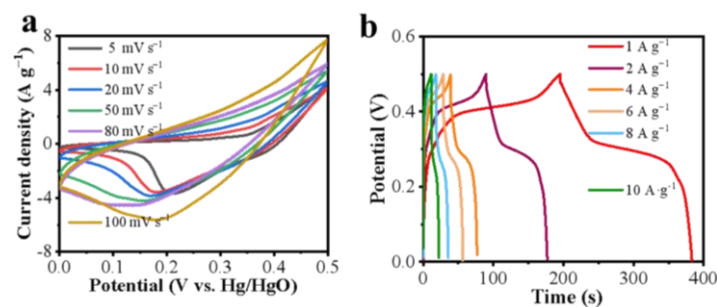


Figure S9. (a) CV and (b) GCD curves of Ni-Co-O.

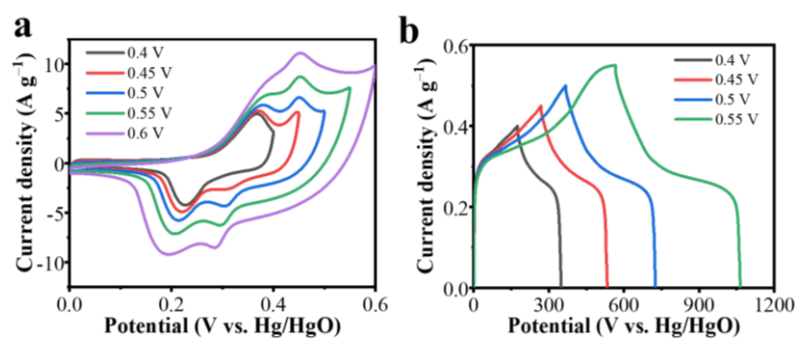


Figure S10. (a) CV and (b) GCD curves of Ni-Co-O/NiCo-LDH composite under different potential window.

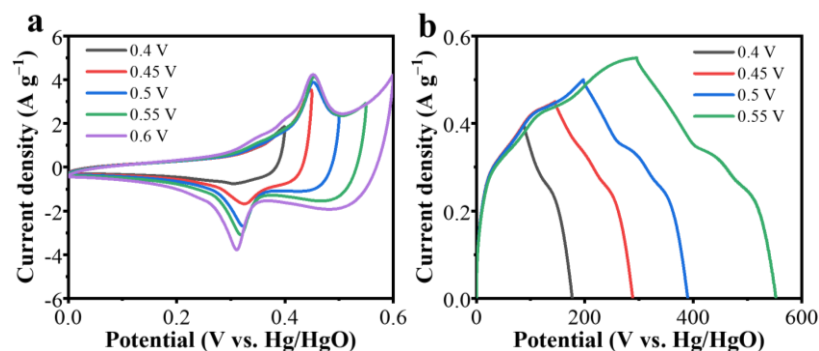


Figure S11. (a) CV and (b) GCD curves of Ni-Co-O under different potential window.

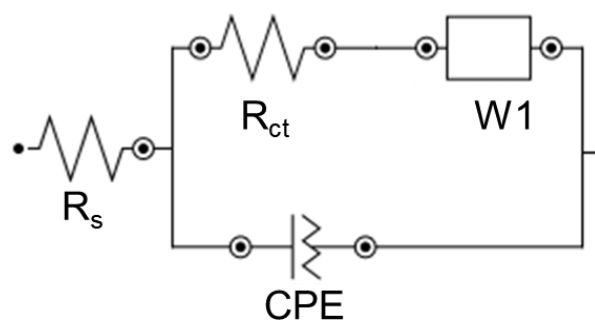


Figure S12. The equivalent circuit of EIS data fitting.

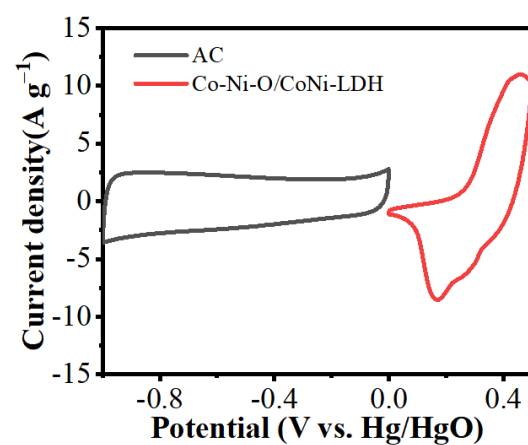


Figure S13. CV curves of Ni-Co-O/NiCo-LDH electrodes (0–0.5 V) and AC/NF electrodes (−1.0–0 V) at a scan rate of $10 mV s^{-1}$.

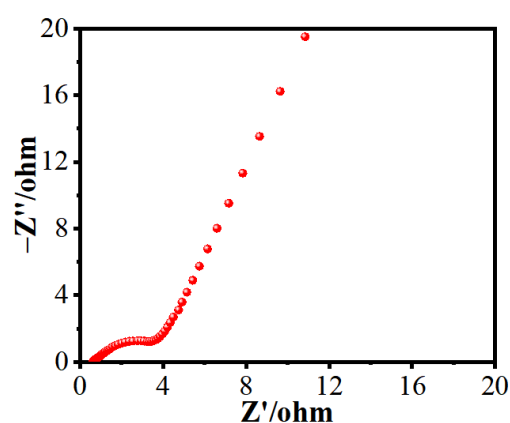


Figure S14. EIS of Ni-Co-O/NiCo-LDH//AC device.

Table S1. The R_{ct} and R_s of different samples. R_s related to the series resistance and R_{ct} denotes the charge transfer resistance.

Electrode	R_s (Ω)	R_{ct} (Ω)
NiCo-LDH	0.24	1.56
Ni-Co-O	0.77	0.96
Ni-Co-O/NiCo-LDH	0.24	1.06

Table S2. Comparison of electrochemical properties of NiCo-LDH/Ni-Co-O electrode with other literatures.

Positive Electrode	Negative Electrode	Capacity (Positive Electrode)	Capacity (Device)	Energy Density (Wh/kg)	Power Density (W/kg)	Ref.
$\text{CuCo}_2\text{O}_4@\text{Co}(\text{OH})_2$	AG	424 F/g at 0.5 A/g	70 F/g at 0.5 A/g	19.2	350	[39]
$\text{CuCo}_2\text{O}_4@\text{Ni}_{0.5}\text{Co}_{0.5}(\text{OH})_2$	AC	295.6 mAh/g at 1 A/g	90 F/g at 1 A/g	32	800	[43]
$\text{ZnCo}_2\text{O}_4@\text{Ni}_x\text{Co}_{2x}(\text{OH})_{6x}$	AC	419.1 mAh/cm ² at 5 mA/cm ²	—	26.2	511.8	[44]
CN-GLS	CN-GLS	294 F/g at 0.5 A/g	—	17.0	225	[45]
Vanadium nitride/Porous carbon	$\text{Ti}_3\text{C}_2\text{T}_x$	283 F/g at 0.5 A/g	105 F/g at 1 A/g	12.8	985.8	[46]
$\text{Co}_3\text{O}_4/\text{SiO}_2$	—	679 at 1 A/g	—	—	—	[47]
Ni-Co-O/NiCo-LDH	AC	1434 F/g at 1 A/g	72.5 F/g at 1 A/g	26	807	This work

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