

Figure S1 The SEM images of NiCo₂O₄-NC (a) without acid surface treatment and (b) without use of TSC.

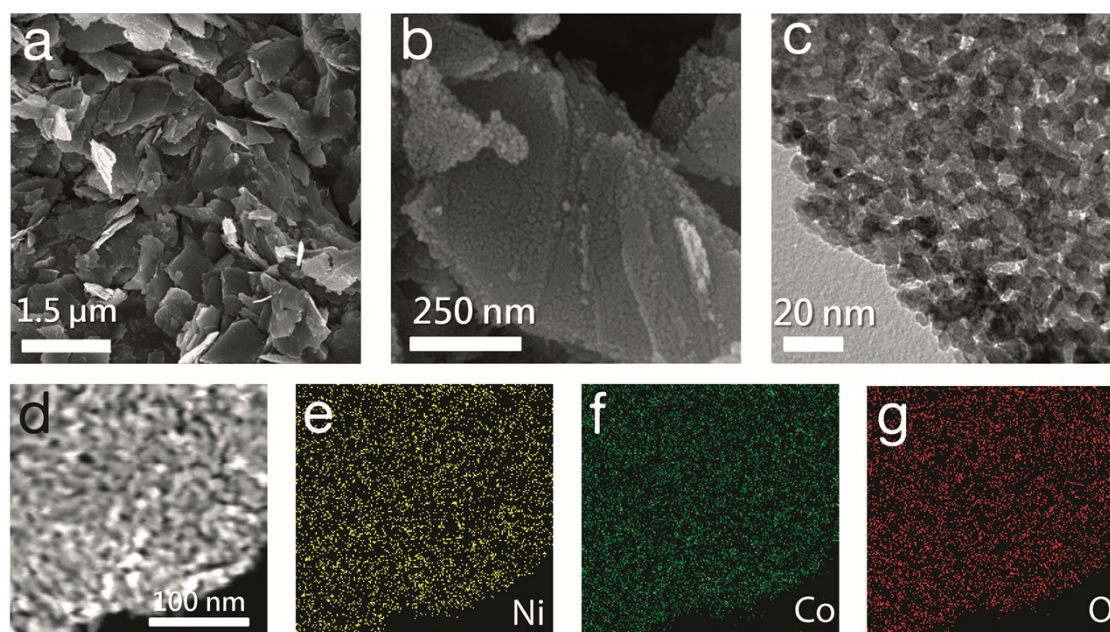


Figure S2 (a) Low-magnification SEM image, (b) high-magnification SEM image, (c) TEM image, and (d-g) EDS elemental mapping for bare NiCo₂O₄. The compositional ratio of Ni:Co is almost 1:2.

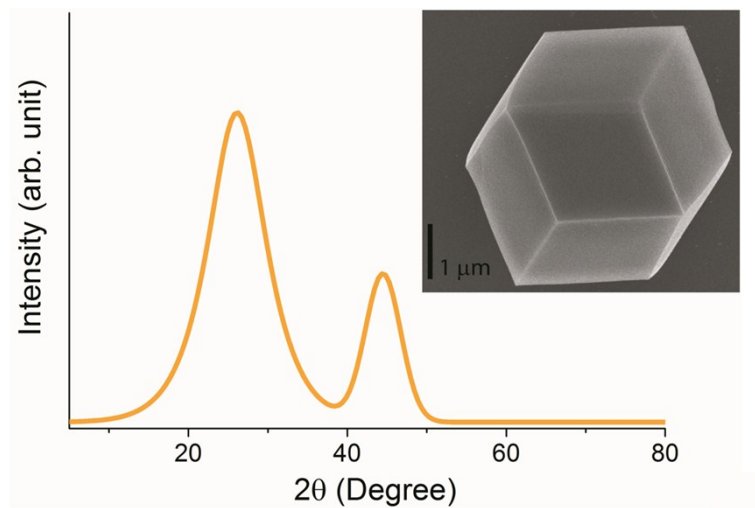


Figure S3 Wide-angle XRD pattern for NC. The inset image shows SEM image of single NC particle.

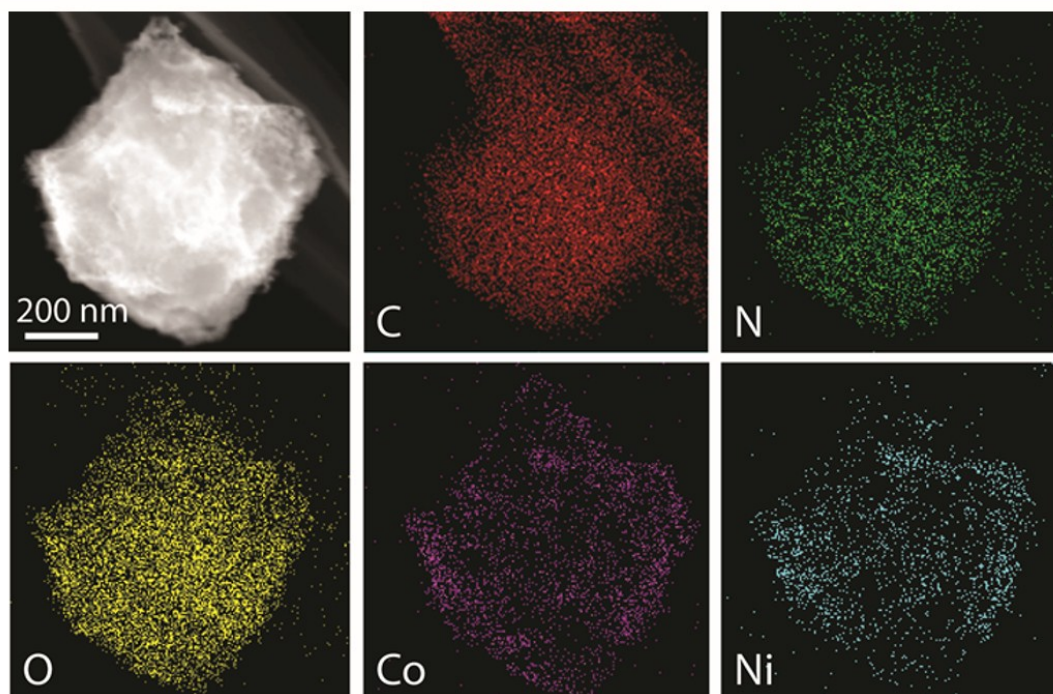


Figure S4 HAADF-STEM image and EDS elemental mapping for carbon, nitrogen, oxygen, cobalt and nickel in NiCo_2O_4 -NC sample.

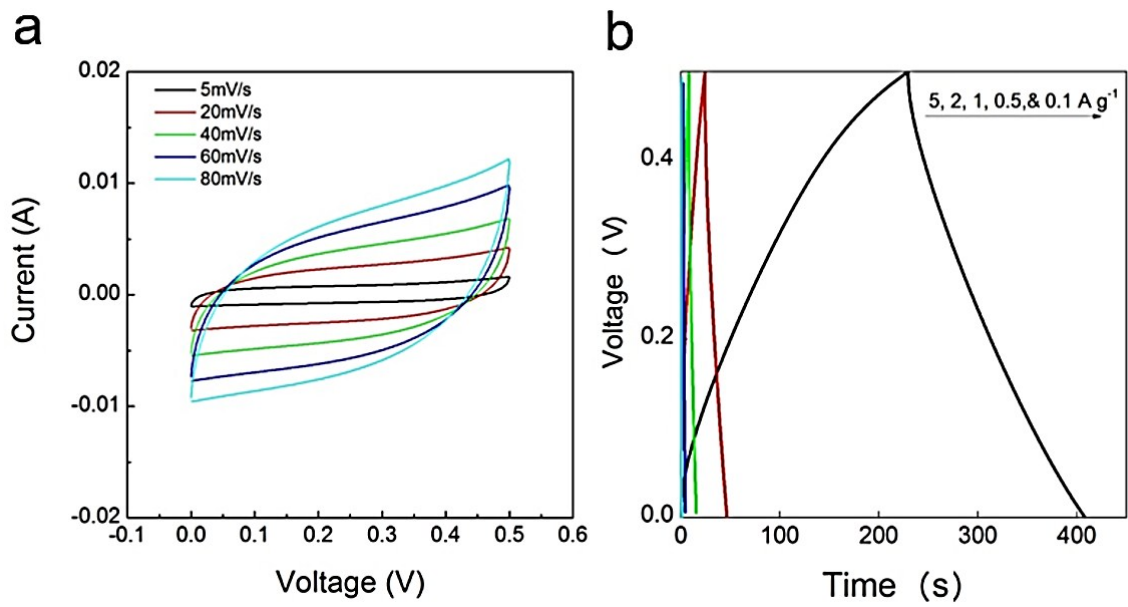


Figure S5 (a) CVs at scan rates from 5 to 80 $\text{mV}\cdot\text{s}^{-1}$ and (b) charge-discharge curves for the NiCo₂O₄-NC/NiCo₂O₄-NC SSC device at the current densities ranging from 0.1 to 5 $\text{A}\cdot\text{g}^{-1}$.

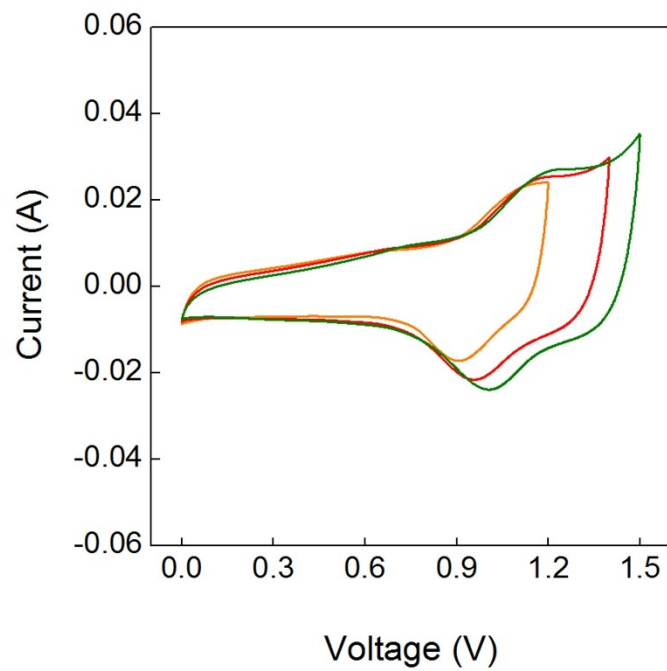


Figure S6 Potential window variation for the upper potential windows ranging from 1.2 V to 1.5 V for ACS.

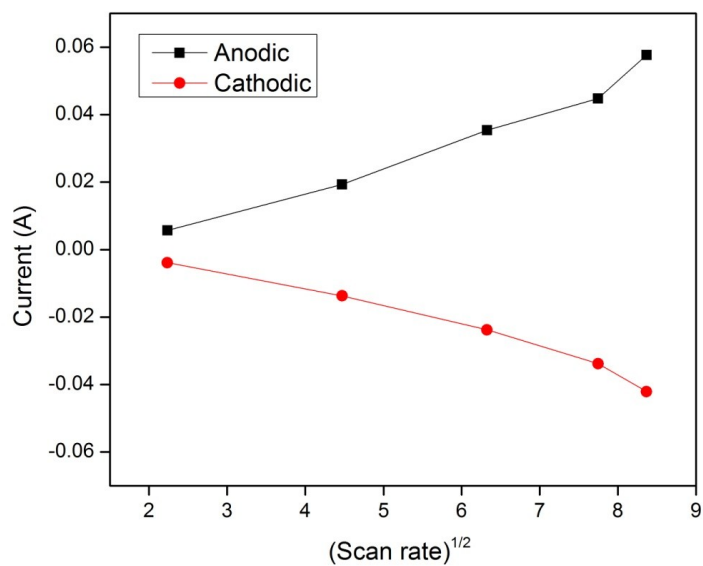


Figure S7 Peak current as a function of the square root of the scan rate for the ASC device.

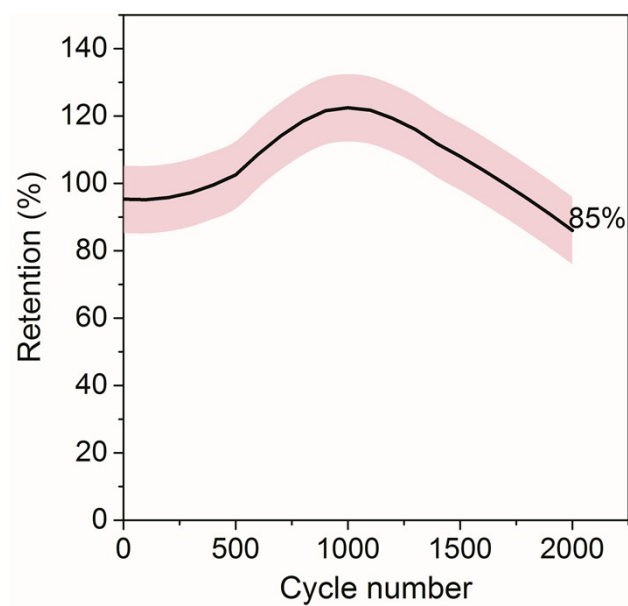


Figure S8 Stability test of NiCo₂O₄-NC//NC ASC device up to 2000 repeated cycles. The error bars are shown by pink color in background.

Table S1 Comparison of the electrochemical performance of our sample with those reported in the literature that use standard three-electrode setups.

Sample name	Current Density (A·g ⁻¹)	Scan rate (mV·s ⁻¹)	Specific Capacitance (F·g ⁻¹)	Electrolyte	Refs
NiCo ₂ O ₄ -NC	-	5	310	6M KOH	Present work
Hollow NiCo ₂ O ₄ flowerlike microstructures	1	-	387	3M KOH	S1
Nickel cobaltite grown on carbon cloth	1	-	245	1 M KOH	S2
Porous hexagonal NiCo ₂ O ₄ nanoplates	1	-	294	1 M KOH	S3

Table S2 Comparison of specific capacitance of our sample with literature reports using two-electrode setups.

Sample name	Current Density (A·g ⁻¹)	Scan rate (mV·s ⁻¹)	Specific Capacitance (F·g ⁻¹)	Electrolyte	Refs
NiCo ₂ O ₄ -NC//NC	0.1	-	89.0	1 M KOH	Present work
NiO//carbon	-	1	37.0	6 M KOH	S4
NiCo ₂ O ₄ -rGO//AC	0.5	-	99.4	2 M KOH	S5
porous Ni//AC	-	2	34.0	6 M KOH	S6

Table S3 Comparison of the ED and PD performance of our ASC device with literature reports using two electrode device configurations.

Materials	Operating voltage (V)	Energy density (W·h·kg ⁻¹)	Power density (W·kg ⁻¹)	Device type	Ref.
NiCo ₂ O ₄ -NC//NC	1.5	14.6	70.0	HS test cell	Present work
NiO//carbon	1.5	11.7	28.3	Sandwich-type two electrode cell	S4
NiCo ₂ O ₄ -rGO//AC	1.4	23.3	324.9	Coin cell	S5
Ni _x Co _{1-x} LDH-ZTO//AC	1.2	23.7	284.2	Swagelok cell	S7
rGO//rGO	1.2	6.7	7.6	Beaker cell	S8
NC//NC carbon	1.4	14.6	70.0	HS test cell	S9

References

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