

**Supporting information**

**Self-assembled novel dandelion-like NiCo<sub>2</sub>O<sub>4</sub> microspheres@nanomeshes with superior electrochemical performance for supercapacitors and lithium-ion batteries**

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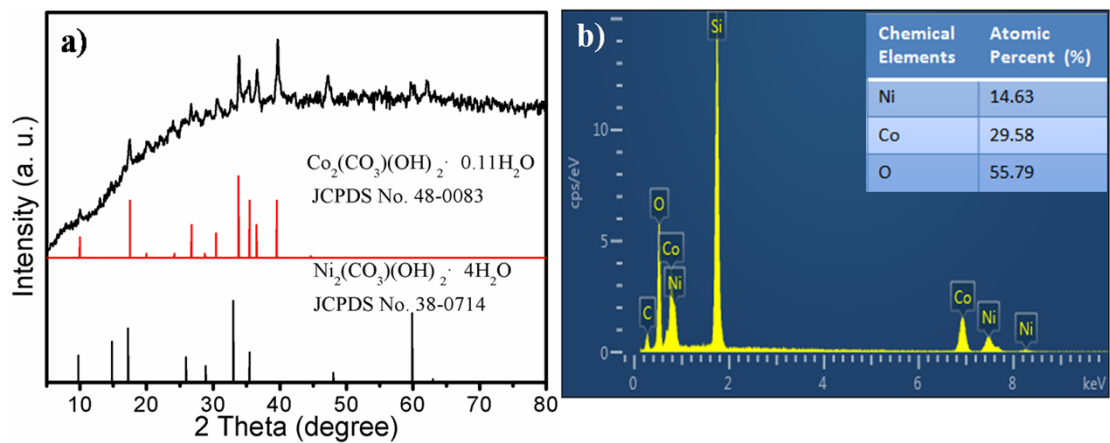


Figure S1. a) XRD patterns of the Co-Ni bimetallic carbonate hydroxide salts precursors, b) EDS image of NCO-M@N.

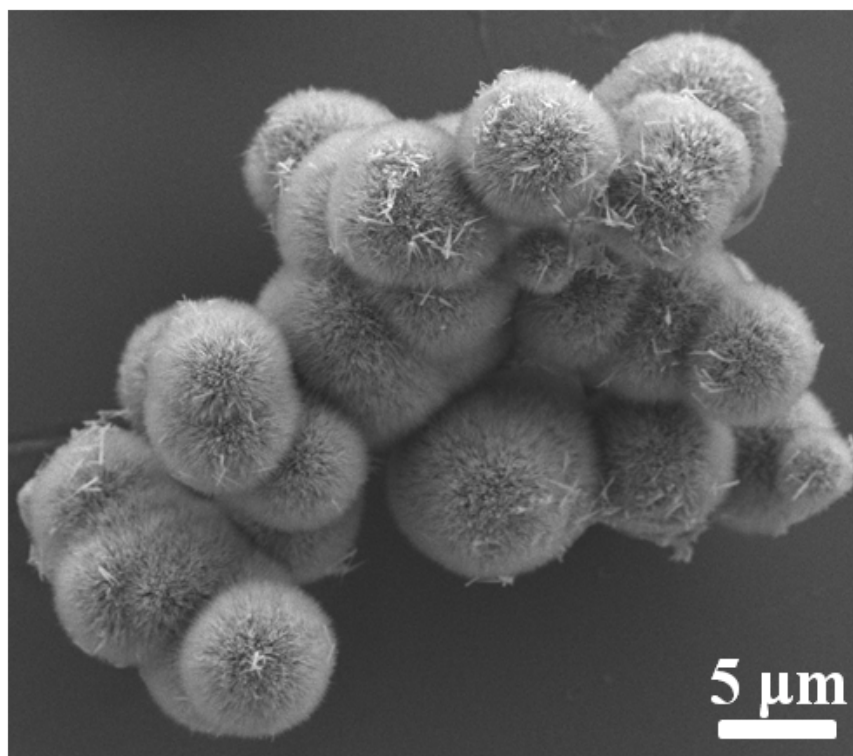


Figure S2. SEM image of the Co-Ni bimetallic carbonate hydroxide salts precursors.

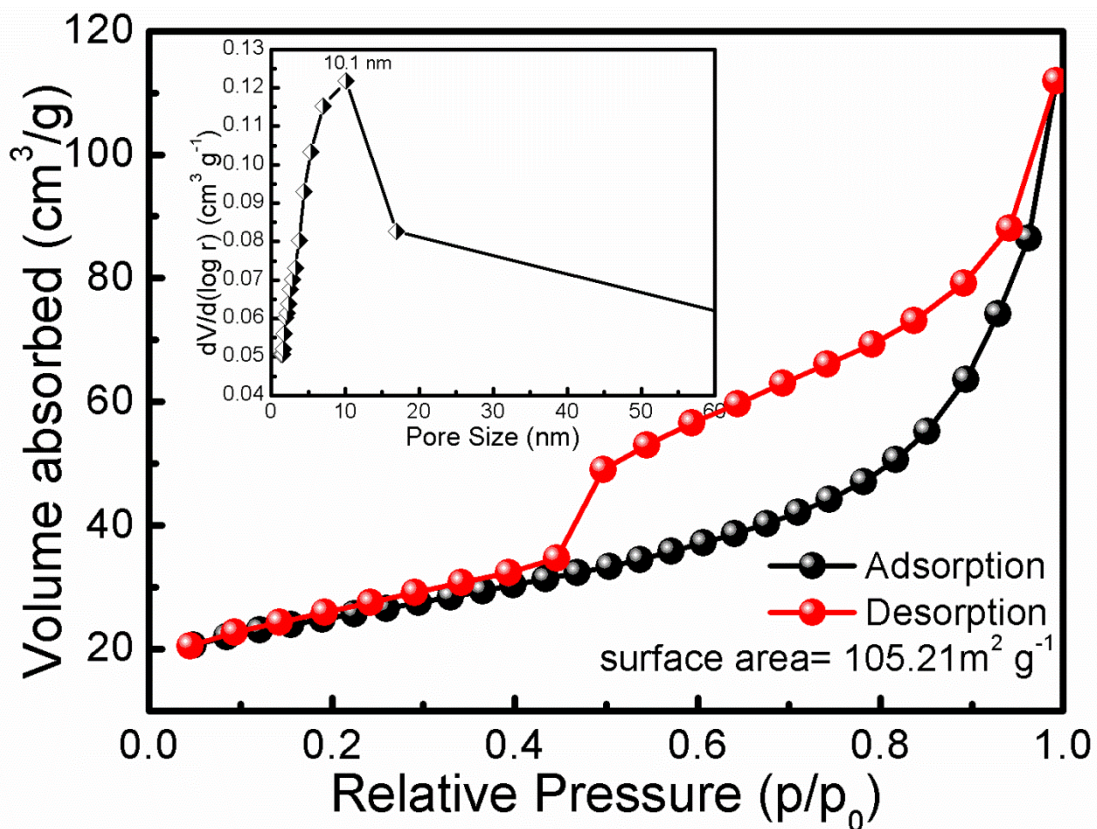


Figure S3. Nitrogen adsorption-desorption isotherm and the corresponding pore size distribution (inset) of NCO-M@N.

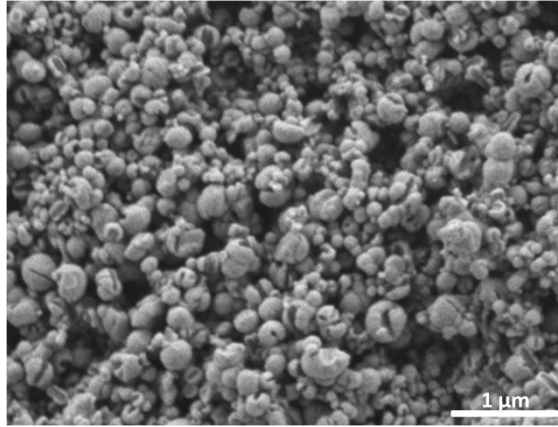


Figure S4. SEM image of the precursor obtained after reaction for 30 min.

Table S1. Comparison of electrochemical performance with other lastly available pseudocapacitive materials.

Materials	Capacitance	Current density	Capacity retention	Reference
dandelion-like NCO-M@N	2184 F /g	1 A/g	94.2 % after 4000 cycles	This work
Hierarchical NiCo <sub>2</sub> O <sub>4</sub> nanowires	760 F /g	1 A/g	81 % after 3000 cycles	1
Porous NiCo <sub>2</sub> O <sub>4</sub> nanowires	743 F /g	1 A/g	93.8% after 3000 cycles	2
Hierarchical NiCo <sub>2</sub> O <sub>4</sub> nanosheets	778 F /g	2 A/g	93.2% after 6000 cycles	3
Single crystal NiCo <sub>2</sub> O <sub>4</sub> nanoneedle arrays	1118.6 F /g	~ 6 A/g	89.4 % after 2000 cycles	4
NiCo <sub>2</sub> O <sub>4</sub> nanosheets arrays	1743 F /g	7 A/g	93 % after 3000 cycles	5
NiCo <sub>2</sub> O <sub>4</sub> @NiO hybrid arrays	2220 F /g	1 A/g	93.1 % after 3000 cycles	6

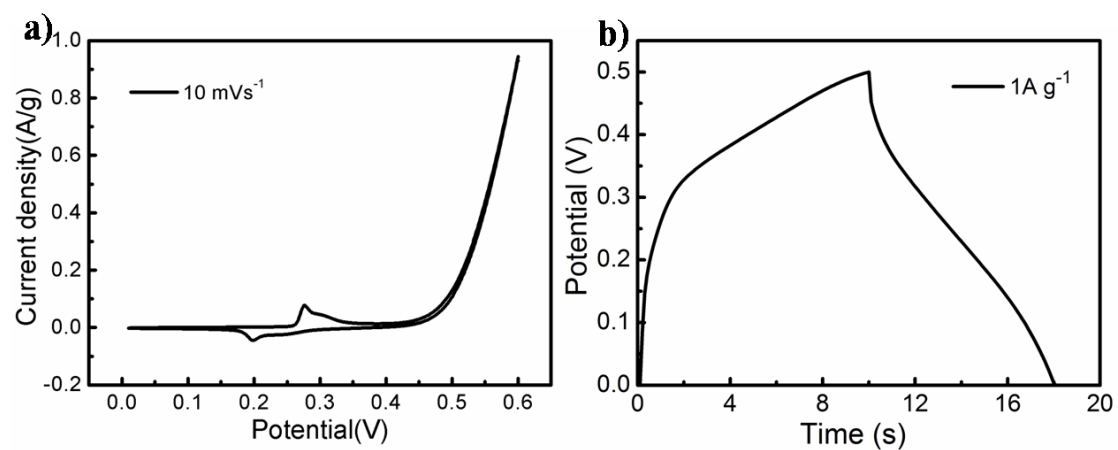


Figure S5. a) CV curves at the scan rates of 10 mV s<sup>-1</sup> of pure Ni foam, b) Charge-discharge voltage profiles at the current densities of 1 A g<sup>-1</sup> of pure Ni foam.

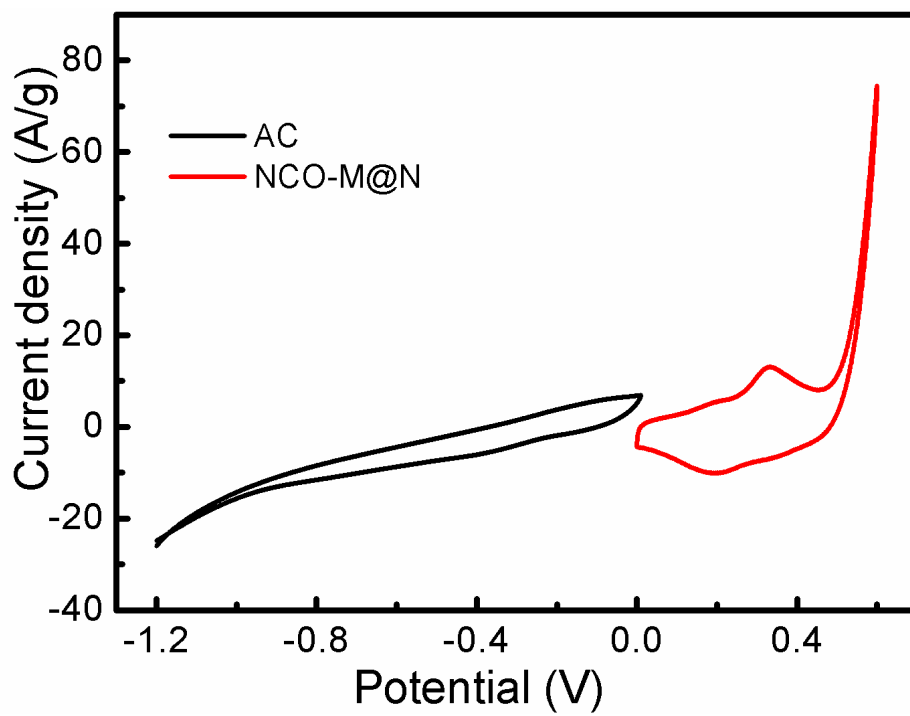


Figure S6. CV curves of NCO-M@N electrode and AC electrode obtained in 2 M KOH aqueous solution with a scan rate of 10 mV s<sup>-1</sup>.



Table S2. Comparison of electrochemical performance with other recently available pseudocapacitive materials, fabricated in an asymmetric supercapacitor device.

Materials	Capacitance	Current density	Energy density	Power density	reference
dandelion-like NCO-M@N	127.5 F/g	1 A/g	45.3 Wh/kg	533.3 W/ kg	This work
Hollow urchin-like NiCo <sub>2</sub> O <sub>4</sub> microspheres	95 F/g	1 A/g	~36 Wh/kg	852 W/ kg	7
NiCo <sub>2</sub> O <sub>4</sub> @NiO hybrid arrays	~75 F/g	1 A/g	31.5 Wh/kg	215.2 W/ kg	6
NiCo <sub>2</sub> O <sub>4</sub> @MnO <sub>2</sub> nanowire arrays	112 F/g	1 mA/cm <sup>2</sup>	35 Wh/kg	163 W/ kg	8
ZnCo <sub>2</sub> O <sub>4</sub> @MnO <sub>2</sub> core-shell	161 F/g	2.5 mA/cm <sup>2</sup>	37.8 Wh/kg	648 W/ kg	9

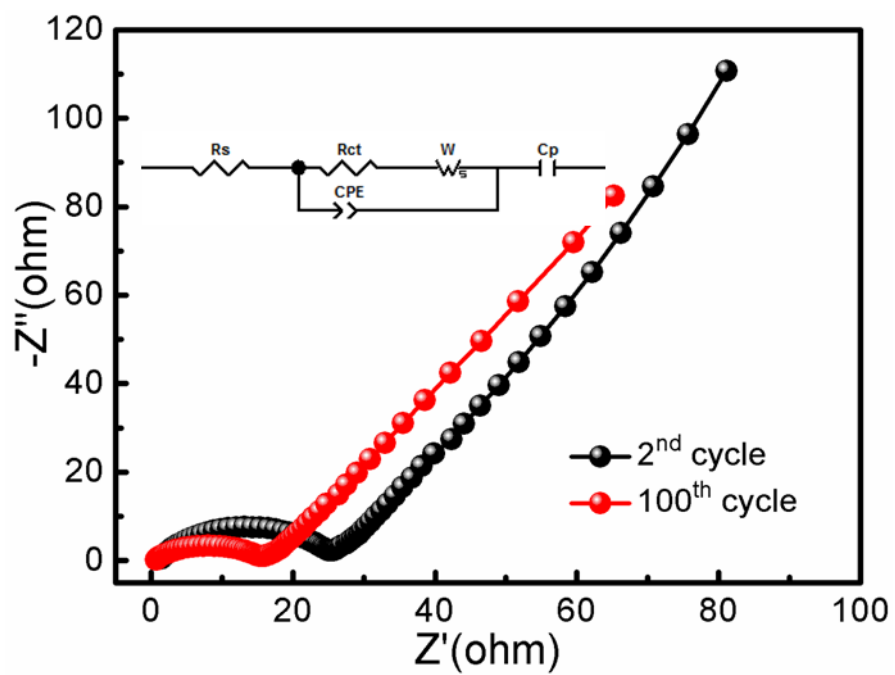


Figure S7. Nyquist plots and the equivalent circuit images (inset) of NCO-M@N before and after 100 cycles.

#### References and notes

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