Electronic Supplementary Material

Synthesis of 3D flower-like hierarchical NiCo-LDH microspheres with boosted electrochemical performance for hybrid supercapacitors

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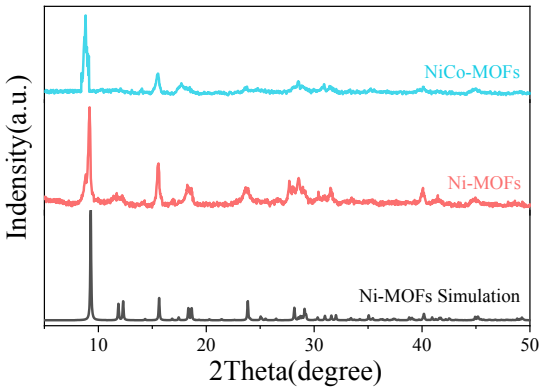

Fig. S1. The XRD patterns of Ni-MOFs and NiCo-MOFs precursor.

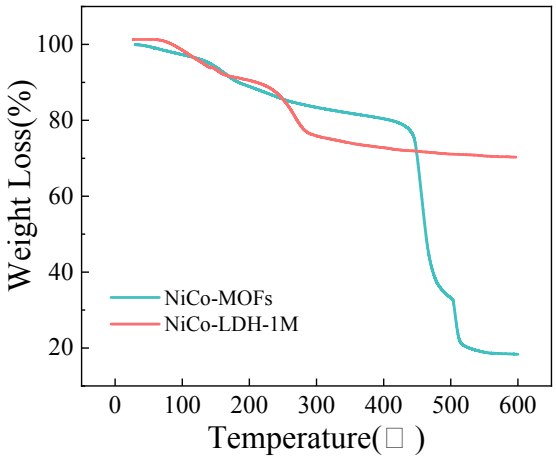

Fig. S2. The TG curves of NiCo-MOFs and NiCo-LDH-1M.

Fig. S3. N_2 adsorption/desorption isotherms and pore size disribution of (a) NiCo-LDH-0.5M and (b) NiCo-LDH-1.5M.

Fig. S4. (a) GCD curves for NiCu-MOFs, NiCu-LDH-1M tested at a current density of 0.5 $A \cdot g^{-1}$; (b) GCD curves of NiMn-MOFs precursor, NiMn-LDH-1M at a current density of 0.5 $A \cdot g^{-1}$.

Fig. S5. CV curves of (a) NiCo-MOFs precursor; (c) NiCo-LDH-0.5M and (e) NiCo-LDH-1.5M at scan rates of 5-50 $mV \cdot s^{-1}$; GCD curves of (b) NiCo-MOFs precursor, (d) NiCo-LDH-0.5M and (f) NiCo-LDH-1.5M at different current densities.

Fig. S6. GCD curves of (a) NiCo-LDH-0.75M and (b) NiCo-LDH-1.25M at different current densities.

Fig. S7. (a) CV and (b) GCD curves of AC measured in the 2M KOH; (c) CV curves of the NiCo-LDH-1M//AC HSC tested at a scan rate of 50 mV s^{-1} with different voltage windows; (d) rate performance of the NiCo-LDH-1M//AC HSC.

Table S1. Comparison of electrochemical performance between the NiCo-LDH-1M composites and previous reports.

Materials	Current density	Specific capacitance	Cycling performance	Energy density($Wh \cdot kg^{-1}$)	Power density($W \cdot kg^{-1}$)	Ref.
NiMn-LDH	1 $A \cdot g^{-1}$	1183 $C \cdot g^{-1}$	95.7%, 2000 cycles	16.9	1350	27
MOF-derived $Co(OH)_2$	0.1 $A \cdot g^{-1}$	604.5 $F \cdot g^{-1}$	84.5%, 200 cycles	13.6	140	39
MOF-derived $Ni_xCo_{1-x}(OH)_2$	0.5 $A \cdot g^{-1}$	1235.9 $F \cdot g^{-1}$	73%, 10000 cycles	21.9	348.9	57
MCF-35-$Ni(OH)_2$-3h	0.5 $A \cdot g^{-1}$	2255 $F \cdot g^{-1}$	-	42.54	370.8	58
nano-$Ni(OH)_2$/graphite	4.8 $A \cdot g^{-1}$	1190 $F \cdot g^{-1}$	90%, 500 cycles	19	3000	59
Ni-Mn LDH/MnO_2	10 $A \cdot g^{-1}$	680 $F \cdot g^{-1}$	85%, 10000 cycles	15	1500	60
Y-doped-$Ni(OH)_2$	1 $A \cdot g^{-1}$	1860 $F \cdot g^{-1}$	78%, 5000 cycles	22	754.6	61
Ni/$Ni(OH)_2$	2 $mA \cdot cm^{-1}$	62 $F \cdot g^{-1}$	90%, 6000 cycles	23.5	530	62
C/N-$Ni(OH)_2$/Ni_xS_y	0.5 $A \cdot g^{-1}$	1731.2 $F \cdot g^{-1}$	140.9%, 10000 cycles	38.9	404.4	63
NiCo-LDH-1M	1 $A \cdot g^{-1}$	1750 $F \cdot g^{-1}$	91%, 3000 cycles	48.6	850	This work