

Supporting Information

Mixed solvents assisted synthesis of high mass loading amorphous NiCo-MOF as promising electrode material for supercapacitors

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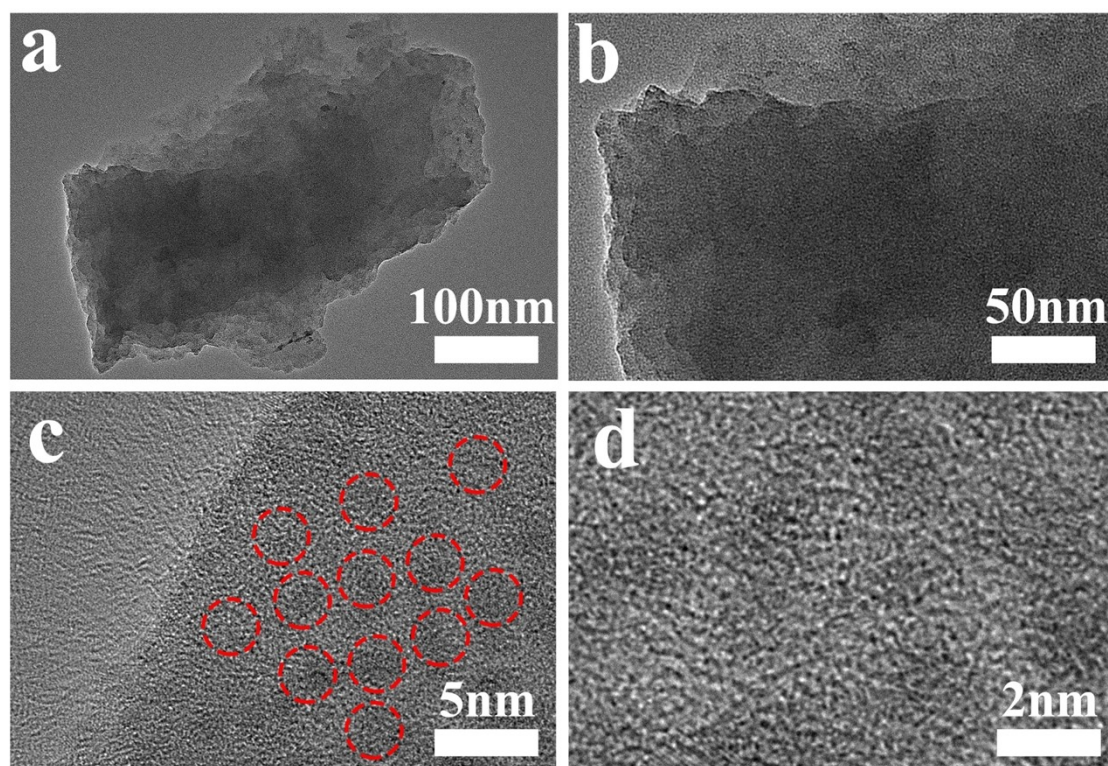


Fig. S1. TEM images of NiCo-MOF-2.

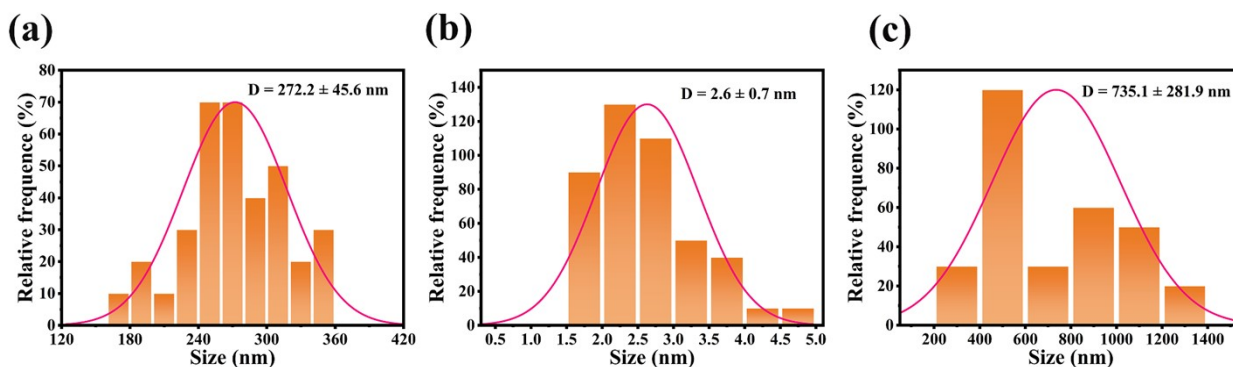


Fig. S2. The particle distribution plots of (a) NiCo-MOF-1, (b) NiCo-MOF-2 and (c) NiCo-MOF-3.

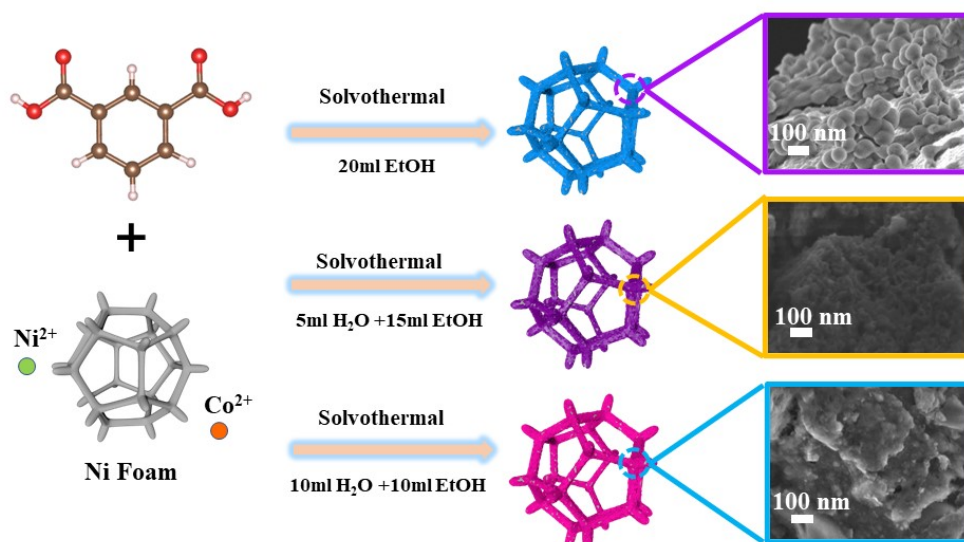


Fig. S3. Schematic illustration of the synthesis of NiCo-MOF-1, NiCo-MOF-2 and NiCo-MOF-3 and their representative morphologies.

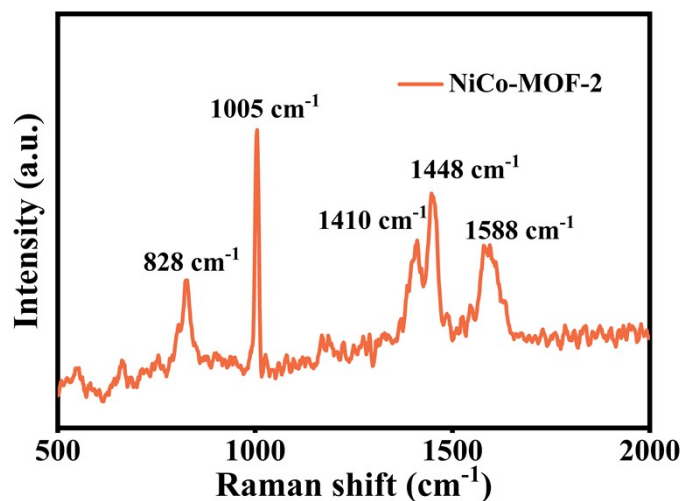


Fig. S4. The Raman spectroscopy of NiCo-MOF-2.

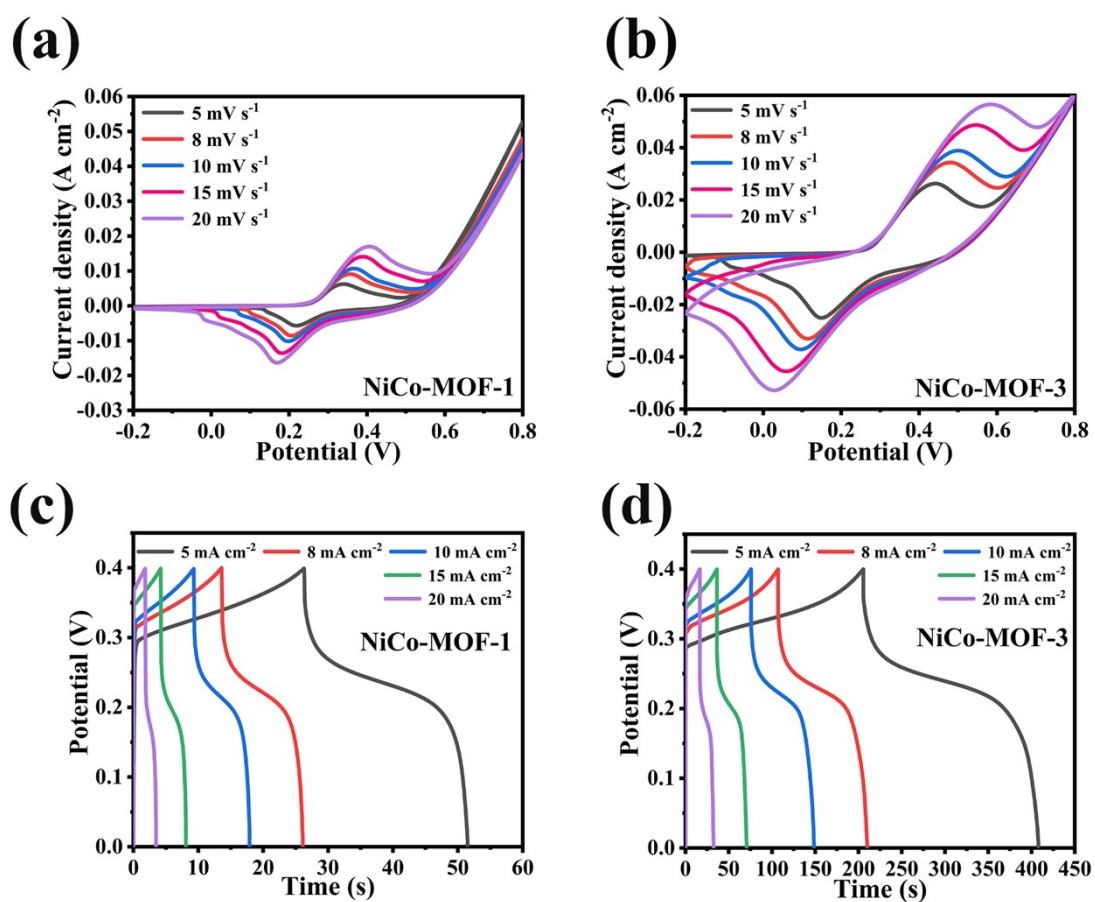


Fig. S5. (a-b) The CV curves and (c-d) GCD curves of NiCo-MOF-1 and NiCo-MOF-3.

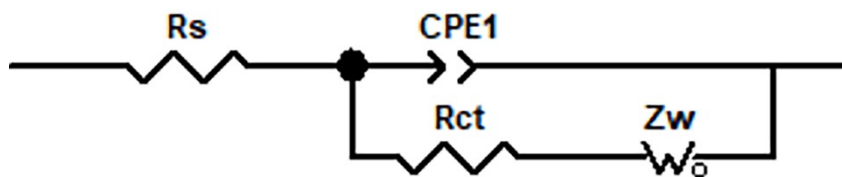


Fig. S6. The equivalent circuit model fitting Nyquist diagram.

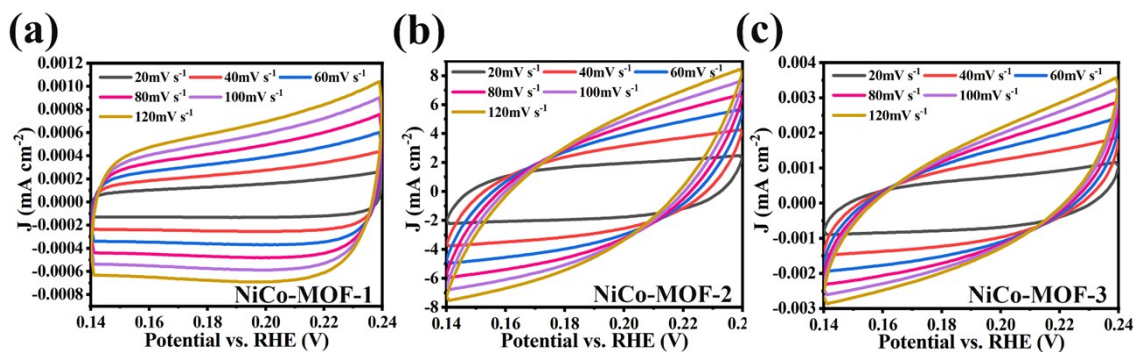


Fig. S7. CV curves of NiCo-MOF-1, NiCo-MOF-2 and NiCo-MOF-3 at different sweep speeds in the potential range of 0.14 V to 0.24 V.

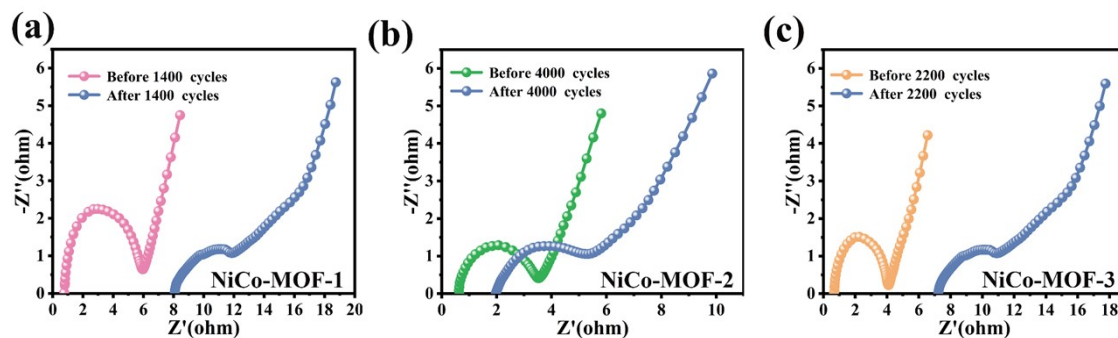


Fig. S8. EIS curves of NiCo-MOF-1, NiCo-MOF-2 and NiCo-MOF-3 before and after the stability test.

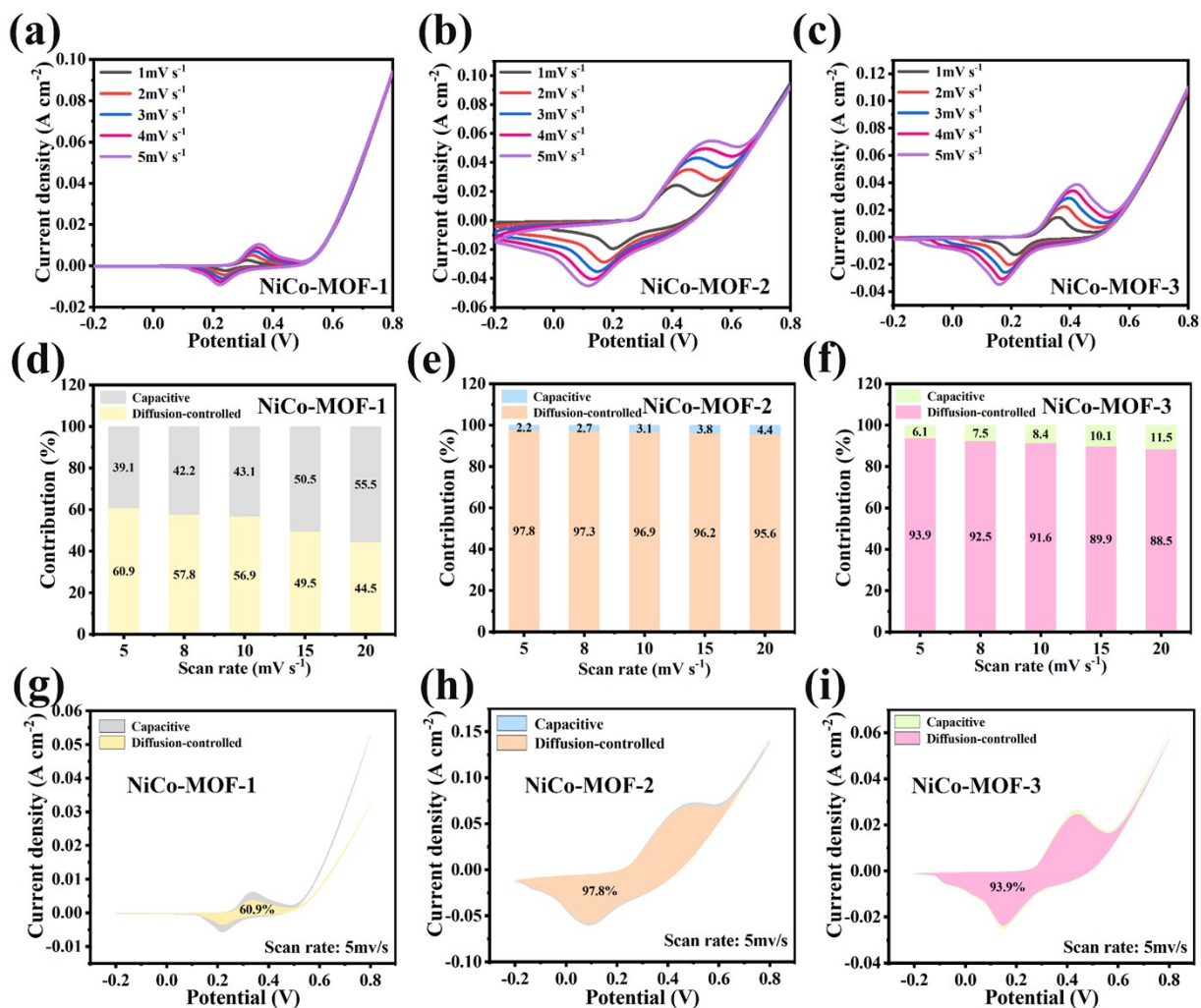


Fig. S9. (a-c) CV curves with the scan rate range from 1 mV s⁻¹ to 5 mV s⁻¹ in the potential range of -0.2-0.8 V; (d-f) Contribution ratio of capacitive and diffusion-controlled charge storage processes of NiCo-MOF-1, NiCo-MOF-2 and NiCo-MOF-3 and (g-i) the capacitive contribution and diffusive contribution of the NiCo-MOF-1, NiCo-MOF-2 and NiCo-MOF-3 at the scan rate of 5 mV s⁻¹.

Table S1. Comparison of the internal resistance (R_s) value and charge-transfer resistance (R_{ct}) value of NiCo-MOF-1, NiCo-MOF-2 and NiCo-MOF-3.

Sample	R_s (Ω)	R_{ct} (Ω)
NiCo-MOF-1	0.8	4.9
NiCo-MOF-2	0.6	2.9
NiCo-MOF-3	0.7	3.2

Table S2. Comparison of electrochemical performance of NiCo-MOF-2 with other works.

Electrode materials	Electrolyte	Areal specific capacitance	Specific capacitance	Rate capability	Capability retention	Ratio of diffusion-control	Refs.
NiCo-MOFs/rGO	2 M KOH	4.31 F cm ⁻² at 1 mA cm ⁻²	—	36.2%	—	36.66%	1
Co-MOF/NF	1 M LiOH	1.54 F cm ⁻² at 1 mA cm ⁻²	—	—	71% (1000 cycles)	—	2
Ni/Co-MOF	2 M KOH	—	758 F g ⁻¹ at 1 A g ⁻¹	—	75% (5000 cycles)	—	3
Ni-MOF/NC	3 M KOH	—	828 F g ⁻¹ at 1 A g ⁻¹	44.68%	—	95.6%	4
Ni@Cu-MOF	6 M KOH	—	526 F g ⁻¹ at 1 A g ⁻¹	52.2%	80% (1200 cycles)	—	5
NiCo MOF	3 M KOH	—	927.1 F g ⁻¹ at 1 A g ⁻¹	69.7%	—	—	6
CoNi _{0.5} -MOF	2 M KOH	—	663.6 F g ⁻¹ at 1 A g ⁻¹	—	—	70%	7
NiCo-MOF	2 M KOH	—	916.1 F g ⁻¹ at 1 A g ⁻¹	76.6%	—	—	8
NiCo-MOF-2	1 M KOH	9.7 F cm ⁻² at 5 mA cm ⁻²	941.75 F g ⁻¹ at 0.49 A g ⁻¹	71.1%	82.83% (4000cycles)	97.8	This work

Table S3. Comparison of the R_s and R_{ct} value of NiCo-MOF-1//AC, NiCo-MOF-2//AC and NiCo-MOF-3//AC.

Sample	R_s (Ω)	R_{ct} (Ω)
NiCo-MOF-1//AC	3.0	3.8
NiCo-MOF-2//AC	1.3	2.1
NiCo-MOF-3//AC	3.2	1.2

Reference

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