

Preparation of Flower-Like Nickel-Based Bimetallic Organic Framework Electrodes for High-Efficiency Hybrid Supercapacitors

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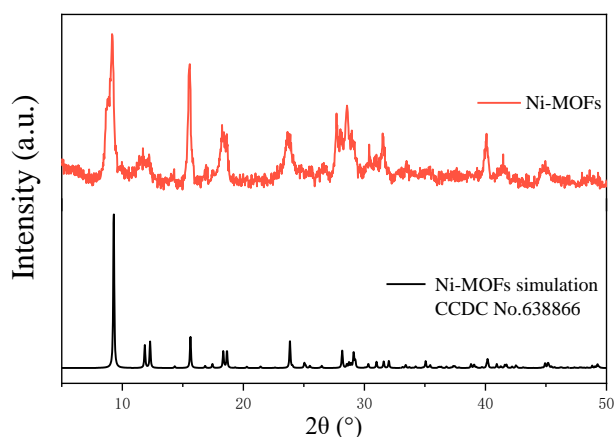


Figure S1. The XRD spectra of Ni-MOFs and Ni-MOFs simulation (CCDC No.638866).

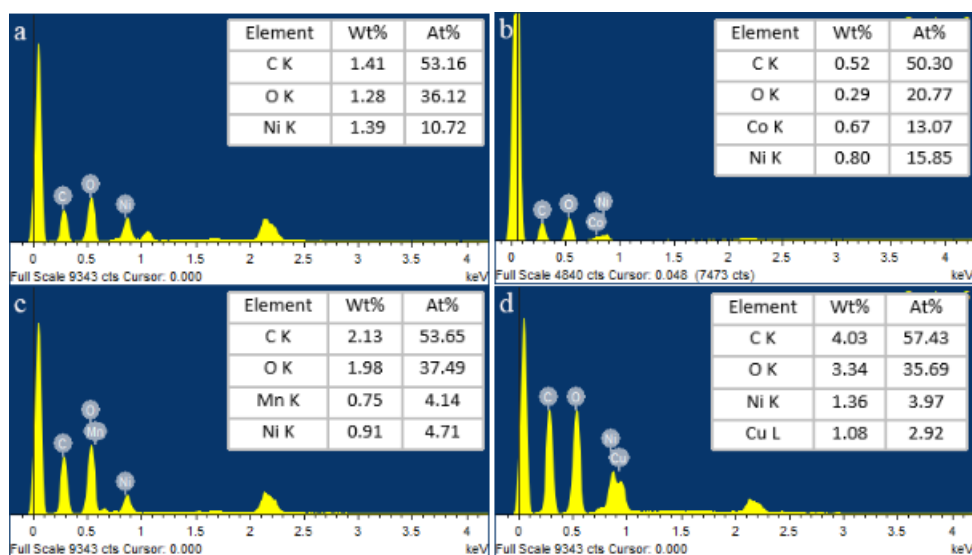


Figure S2. The EDS spectra of (a) Ni-MOFs, (b) NiCo-MOFs, (c) NiMn-MOFs and (d) NiCu-MOFs.

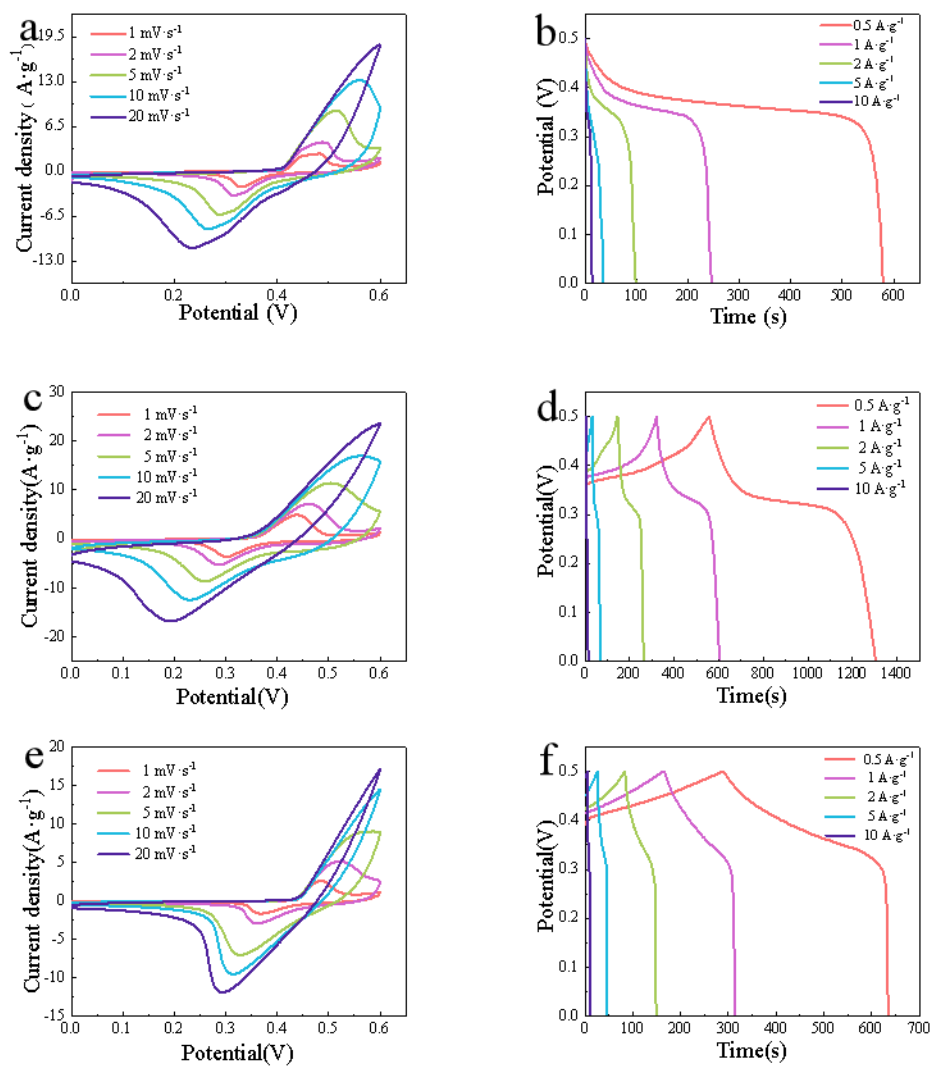


Figure S3. CV curves of (a) Ni-MOFs; (c) NiMn-MOFs and (e) NiCu-MOFs at scan rates of 1–20 $\text{mV} \cdot \text{s}^{-1}$; GCD curves of (b) Ni-MOFs, (d) NiMn-MOFs and (f) NiCu-MOFs at different current densities.

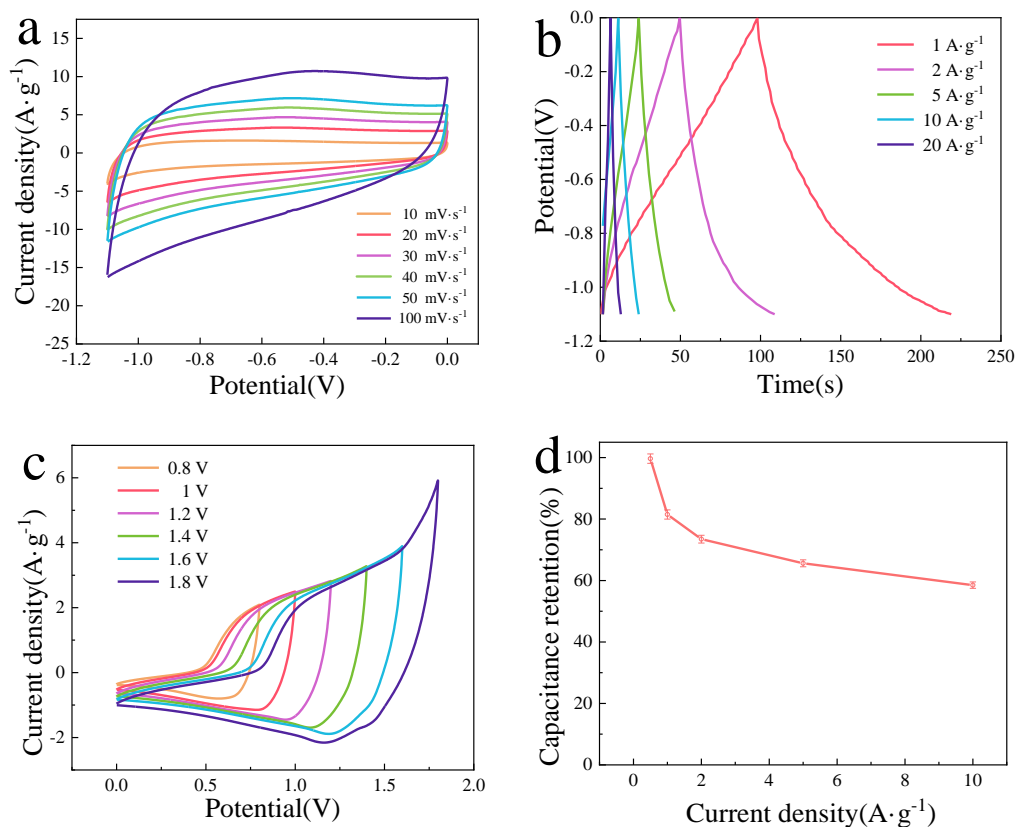


Figure S4. (a) CV and (b) GCD curves of AC measured in the 2M KOH; (c) CV curves of the NiCo-MOFs//AC HSCs tested at a scan rate of 50 mV·s⁻¹ with different voltage windows; (d) rate performance of the NiCo-MOFs//AC HSCs.

Table S1. Specific surface area of the four synthesized samples

Samples	Ni-MOFs	NiCo-MOFs	NiMn-MOFs	NiCu-MOFs
specific surface area (m ² ·g ⁻¹)	28.31±0.03	16.11±0.05	15.57±0.01	14.97±0.1

Table S2. Comparison of electrochemical performance between the NiCo-MOFs and previous reports.

Materials	Current density	Specific capacitance	Cycling performance	Energy density(Wh·kg ⁻¹)	Power density(W·kg ⁻¹)	Ref.
Ni-MOF	1 A·g ⁻¹	804 F·g ⁻¹	37.6%, 5000 cycles	31.5	800	26
Ni-based MOF	1 A·g ⁻¹	726 F·g ⁻¹	94.6%, 1000 cycles	16.5	2078	28
Pillared Ni-MOF	1 A·g ⁻¹	522 F·g ⁻¹	98%, 16000 cycles-	-	-	29
Co-BPDC MOF	1 A·g ⁻¹	179.2 F·g ⁻¹	5.7%, 1000 cycles	31.4	5640	19
Ni/Zn-MOFs	1.3 A·g ⁻¹	548 F·g ⁻¹	-	-	-	35
NiCo-MOFs	0.5 A·g ⁻¹	882 F·g ⁻¹	90.1%, 3000 cycles	18.33	400	This work
NiMn-MOFs	0.5 A·g ⁻¹	747 F·g ⁻¹	64.5%,3000cycles	-	-	
NiCu-MOFs	0.5 A·g ⁻¹	345 F·g ⁻¹	27.8%,3000 cycles	-	-	