

Fabrication and assembly of supercapacitors based on Ni-based MOF and their derivative materials for enhancing electrochemical performances

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Table S1 R_s and R_{ct} after EIS fitting of Ni-MOF-b-based materials.

Material	R_s	R_{ct}
Ni-MOF@C-a6-3	0.096299	1.738
Ni-MOF@C-a8-3	0.089375	1.75
Ni-MOF@C-a10-3	0.0738682	1.78
Ni-MOF@M-a4	0.062196	2.153

Table S2 Power density and energy density of electrode Ni-MOF-a-based materials at different current densities.

Ni-MOF@C-a6-3							
Current density (A/g)	0.5	1	2	5	10	15	20
P (W/kg)	450.13	899.71	1800	4500	9000	13520	18000
E (Wh/kg)	17.63	15.57	10.25	7.25	4.25	3.38	2
Ni-MOF@C-a8-3							
Current density (A/g)	0.5	1	2	5	10	15	20
P (W/kg)	465.92	884.68	1818.1	4725	9000	13516.4	17640
E (Wh/kg)	40.25	27.72	20.1	10.5	6.25	4.13	2.45
Ni-MOF@C-a10-3							
Current density (A/g)	0.5	1	2	5	10	15	20
P (W/kg)	320.97	652.54	1280.41	3232.87	6582.86	9592.94	12800
E (Wh/kg)	11.02	10.35	10.35	9.07	6.4	4.53	3.2
Ni-MOF@M-a4							
Current density (A/g)	0.5	1	2	5	10	15	20
P (W/kg)	501.37	1002.07	2016.32	5914.29	10080	15120	20160
E (Wh/kg)	79.94	74.71	49.96	1.15	0.84	0.84	0.56

Table S3 R_s and R_{ct} after EIS fitting of Ni-MOF-b-based materials.

Material	R_s	R_{ct}
Ni-MOF@C-b6-3	0.95188	1.636
Ni-MOF@C-b8-3	0.078927	1.733
Ni-MOF@C-b10-3	1.409	1.266
Ni-MOF@M-b4	0.091276	1.243

Table S4 Power density and energy density of electrode Ni-MOF-b-based materials at different current densities.

Ni-MOF@C-b6-3							
Current density (A/g)	0.5	1	2	5	10	15	20
P (W/kg)	618.38	641.44	2257.32	5621.2	11108.6	16662.9	22230
E (Wh/kg)	40.83	42.21	23.89	12.96	8.64	6.48	4.94
Ni-MOF@C-b8-3							
Current density (A/g)	0.5	1	2	5	10	15	20
P (W/kg)	405.04	809.83	1620	4050.99	7179.43	12155.3	16200
E (Wh/kg)	12.14	11.81	11.43	10.24	6.98	5.74	4.05
Ni-MOF@C-b10-3							
Current density (A/g)	0.5	1	2	5	10	15	20
P (W/kg)	405.12	810.17	1620.68	4050	8100	12171.4	16200
E (Wh/kg)	12.3	12.22	11.93	10.8	9	7.1	5.4
Ni-MOF@M-b4							
Current density (A/g)	0.5	1	2	5	10	15	20
P (W/kg)	252.43	493.7	979.67	2471.04	4897.5	7646.4	10417.5
E (Wh/kg)	11.71	11.41	9.96	8.58	6.53	5.31	4.63



Fig. S1 Post-pressing: Electrode materials loaded on nickel foam.

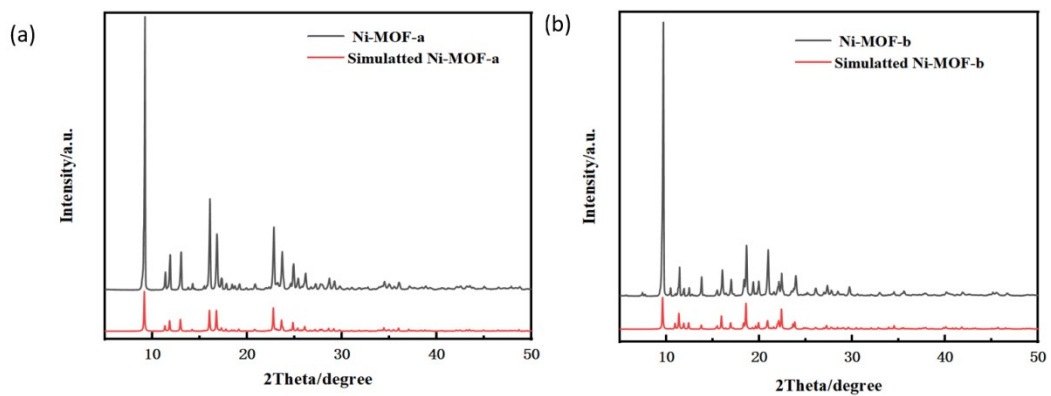


Fig. S2 PXRD control plots of Ni-MOF-a (a) and Ni-MOF-b (b).

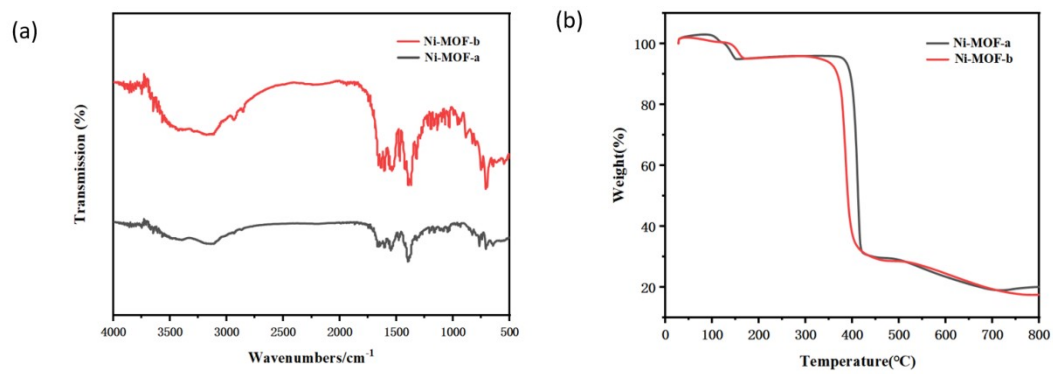


Fig. S3 FTIR spectra (a) and TG curves (b) of Ni-MOF-a and Ni-MOF-b.

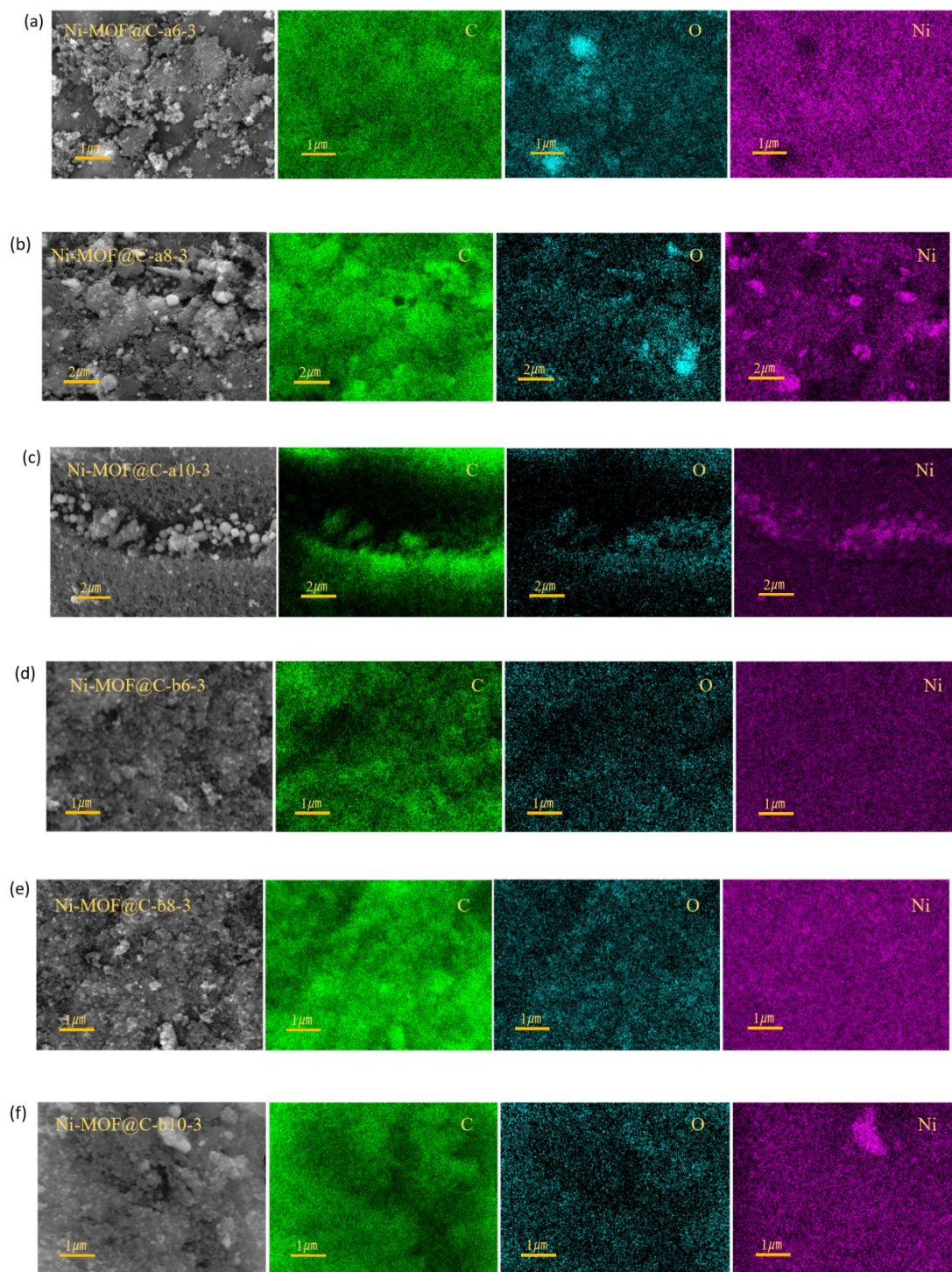


Fig. S4 SEM and EDX of Ni-MOF@C-a6-3 (a), Ni-MOF@C-a8-3 (b), Ni-MOF@C-a10-3 (c) Ni-MOF@C-b6-3 (d), Ni-MOF@C-b8-3 (e), and Ni-MOF@C-b10-3 (f).

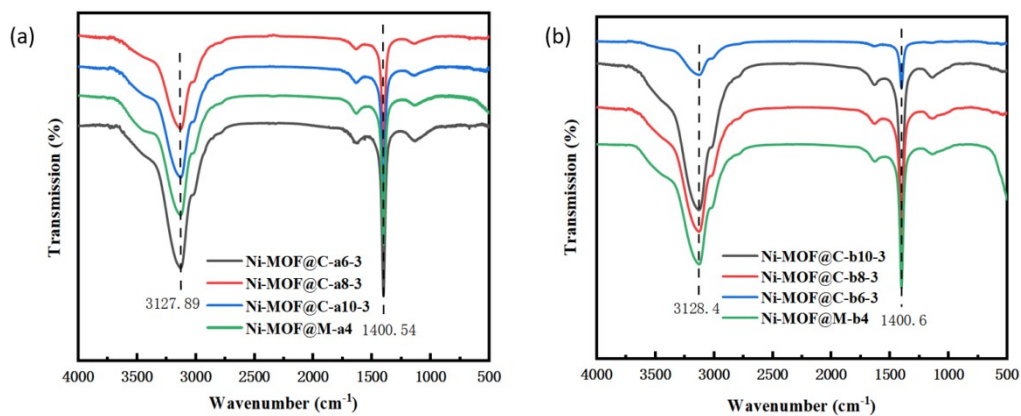


Fig. S5 FTIR spectra of the Ni-MOF-a-based (a) and Ni-MOF-b-based (b) electrode materials.

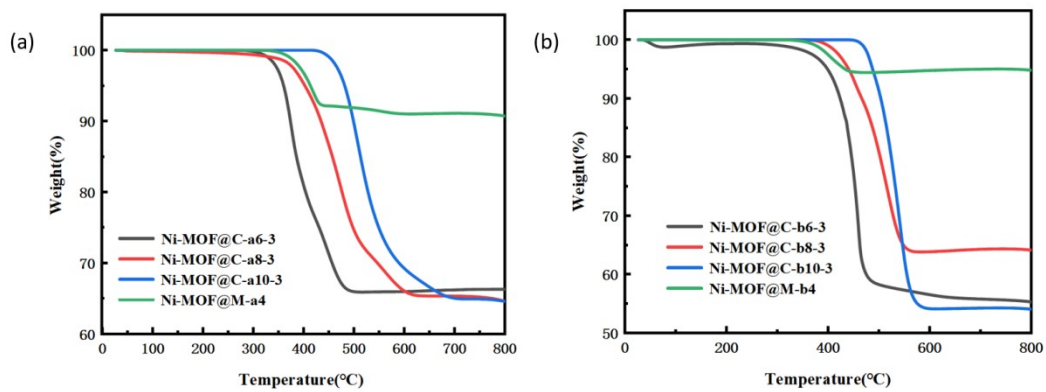


Fig. S6 TG curves of the Ni-MOF-a-based (a) and Ni-MOF-b-based (b) electrode materials.

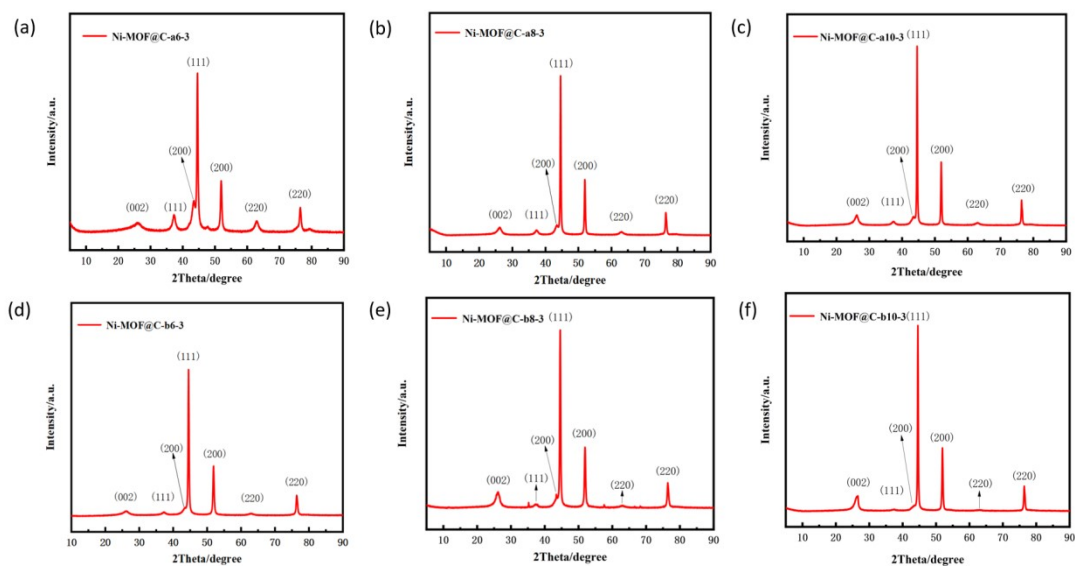


Fig. S7 XRD patterns of Ni-MOF@C-a6-3 (a), Ni-MOF@C-a8-3 (b), Ni-MOF@C-a10-3 (c), Ni-MOF@C-b6-3 (d), Ni-MOF@C-b8-3 (e), and Ni-MOF@C-b10-3 (f).