

Supporting Information

Enhanced performance of electrical double-layer capacitor by controlling the specific surface area and pore structure of ZIF-67

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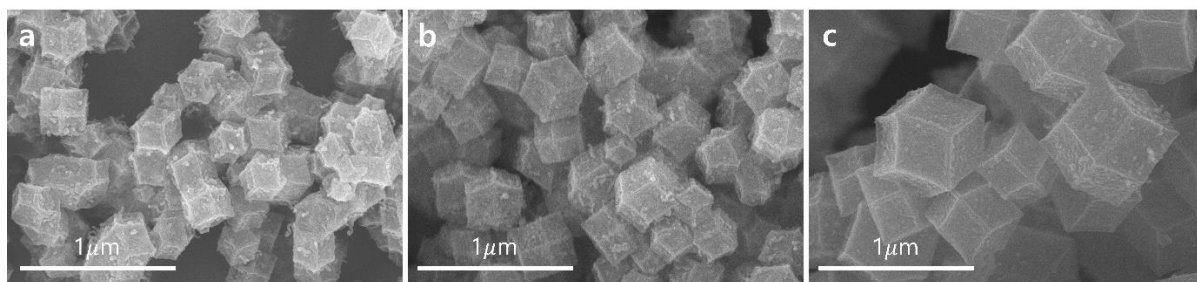


Figure S1. FE-SEM images of CoNCs (a) CoNC-100-200, (b) CoNC-200-400, and (c) CoNC-300-600

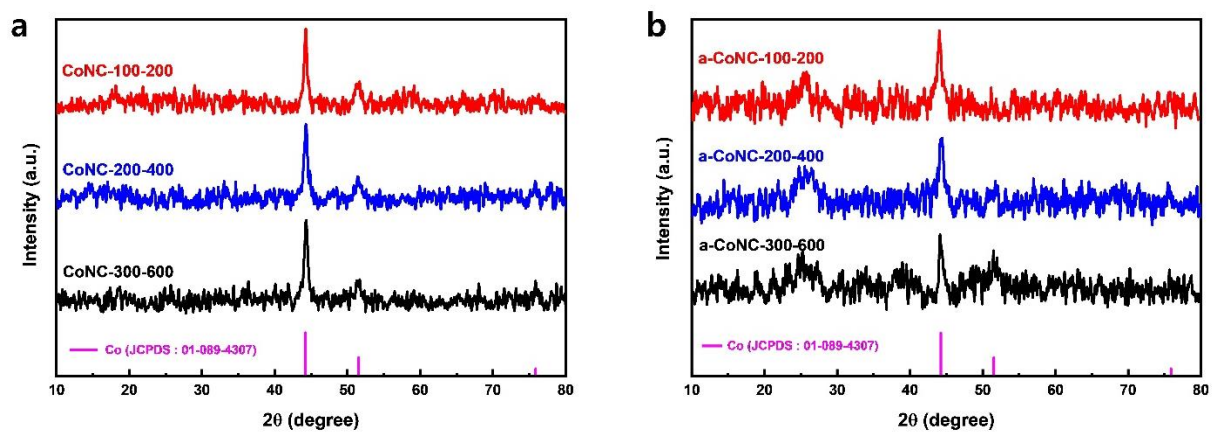


Figure S2. XRD patterns of (a) CoNCs and (b) a-CoNCs

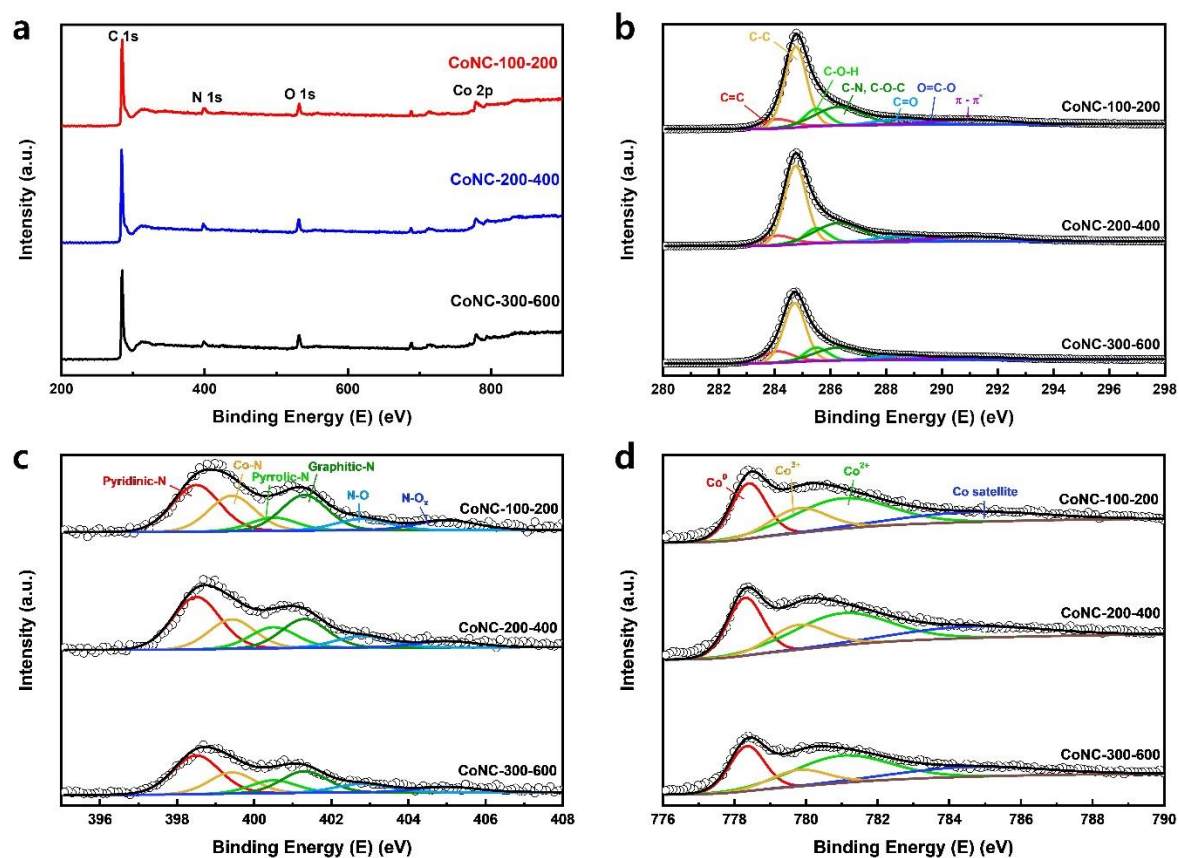


Figure S3. XPS spectrum of CoNCs (a) wide scan survey (b) C 1s, (c) N 1s, (d) Co 2p

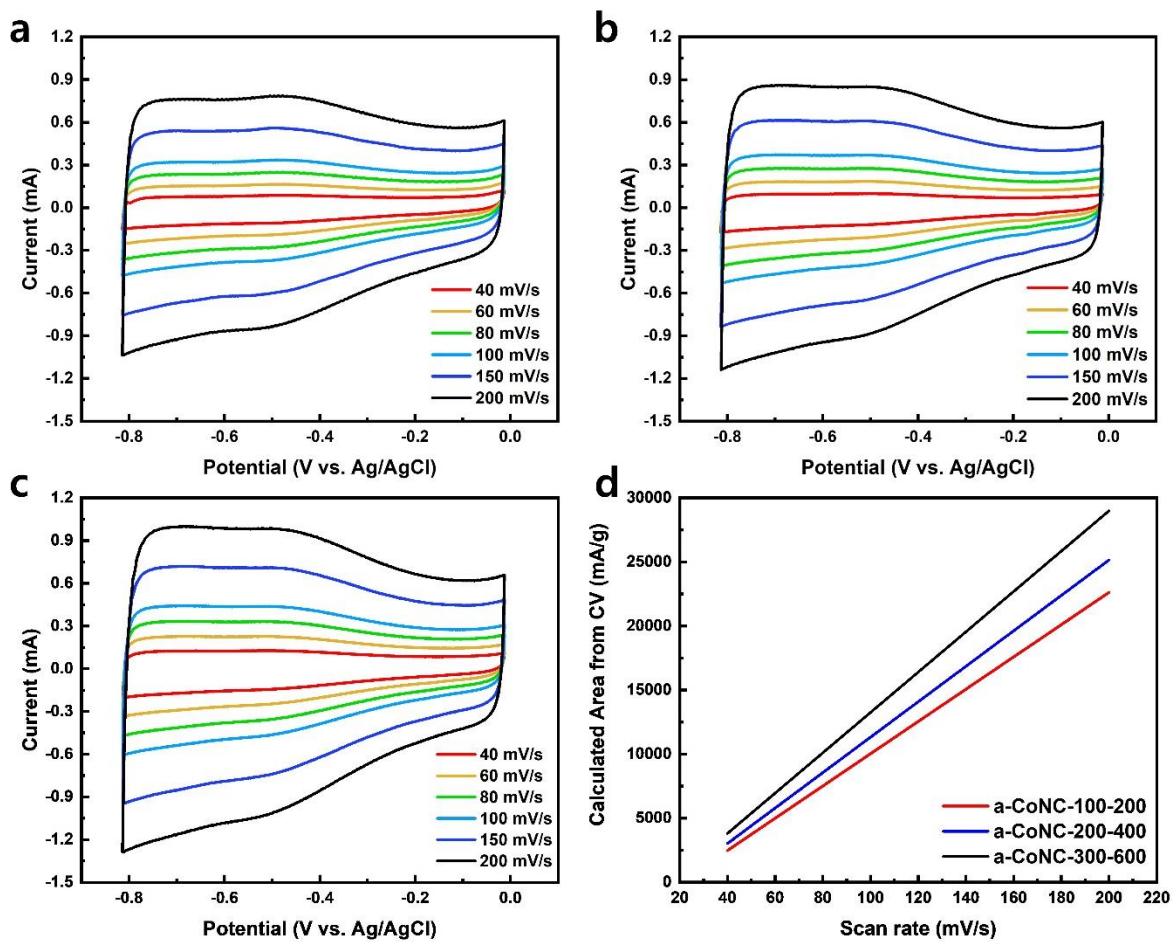


Figure S4. CV curves at different scan rates for (a) a-CoNC-100-200, (b) a-CoNC-200-400, and (c) a-CoNC-300-600, and (d) linear fitted plots calculated from CV curves

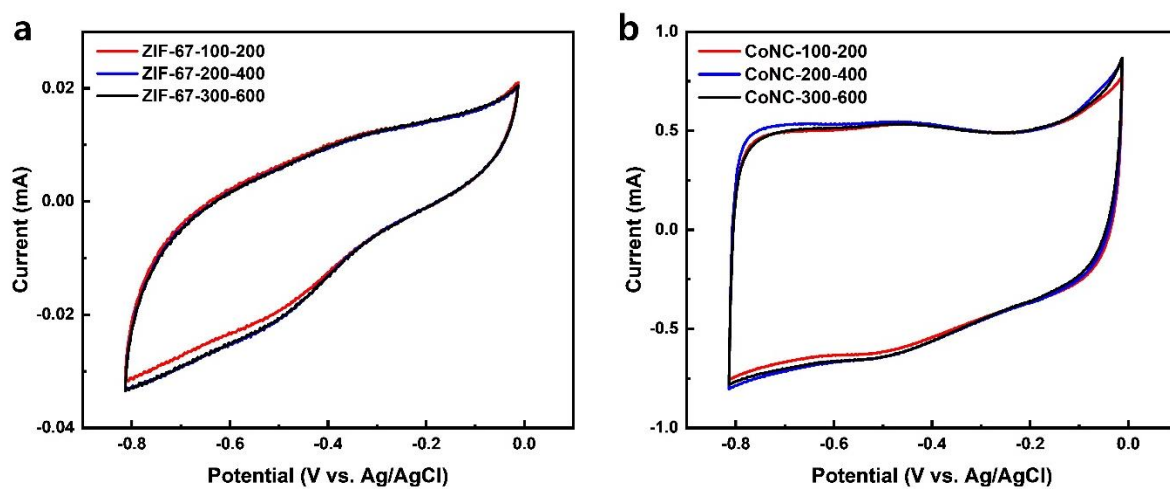


Figure S5. Cyclic voltammetry curves at a scan rate of 200 mV/s for (a) ZIF-67s and (b) CoNCs

Table S1. BET surface area and micro, mesopore volume calculated from BET results

	BET surface area (m²/g)	Micropore Volume (cm³/g)	Mesopore Volume (cm³/g)
ZIF-67-100-200	1405.4	0.558	0
ZIF-67-200-400	1418.2	0.553	0
ZIF-67-300-600	1456.5	0.568	0
CoNC-100-200	339.0	0.089	0.054
CoNC-200-400	342.5	0.091	0.058
CoNC-300-600	362.9	0.098	0.061
a-CoNC-100-200	357.8	0.092	0.060
a-CoNC-200-400	417.4	0.104	0.072
a-CoNC-300-600	483.3	0.133	0.075

Table S2. Atomic percent for deconvoluted components from XPS data

Atomic %	CoNC- 100-200	CoNC- 200-400	CoNC- 300-600	a-CoNC- 100-200	a-CoNC- 200-400	a-CoNC- 300-600
C=C	6.13	6.44	9.82	5.97	6.14	7.62
C-C	37.33	36.36	35.54	38.19	38.34	37.97
C-O-H	8.51	7.4	8.6	7.77	8.22	7.86
C-O-C, C-N	18.83	19.68	17.06	19.47	19.16	17.82
C=O	5.8	5.84	5.76	5.33	5.61	5.87
π-π^*	7.76	8.29	6.05	8.39	7.85	8.27
Pyridinic-N	2.53	2.81	2.75	2.29	2.58	2.43
Co-N	1.87	1.71	1.46	2.13	1.68	1.53
Pyrrolic-N	0.7	0.93	0.89	0.98	1.28	1.5
Graphitic-N	1.88	1.64	1.5	1.82	1.69	1.65
Oxidized-N	1.39	1.14	1.2	1.34	1.37	1.32
Co⁰	0.51	0.52	0.53	0.44	0.35	0.27
Co²⁺	0.96	1.02	1.14	0.61	0.58	0.47
Co³⁺	0.35	0.35	0.31	0.25	0.21	0.21
Co satellite	0.37	0.42	0.54	0.28	0.24	0.3
Total C	84.36	84.01	82.83	85.12	85.32	85.41
Total N	8.37	8.23	7.8	8.56	8.6	8.43
Total O	2.19	2.31	2.52	1.58	1.38	1.25