Supporting Information

Mn Cluster-Embedded N/F Co-Doped Carbon toward Mild Aqueous Supercapacitors

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Supplementary Figures and Tables

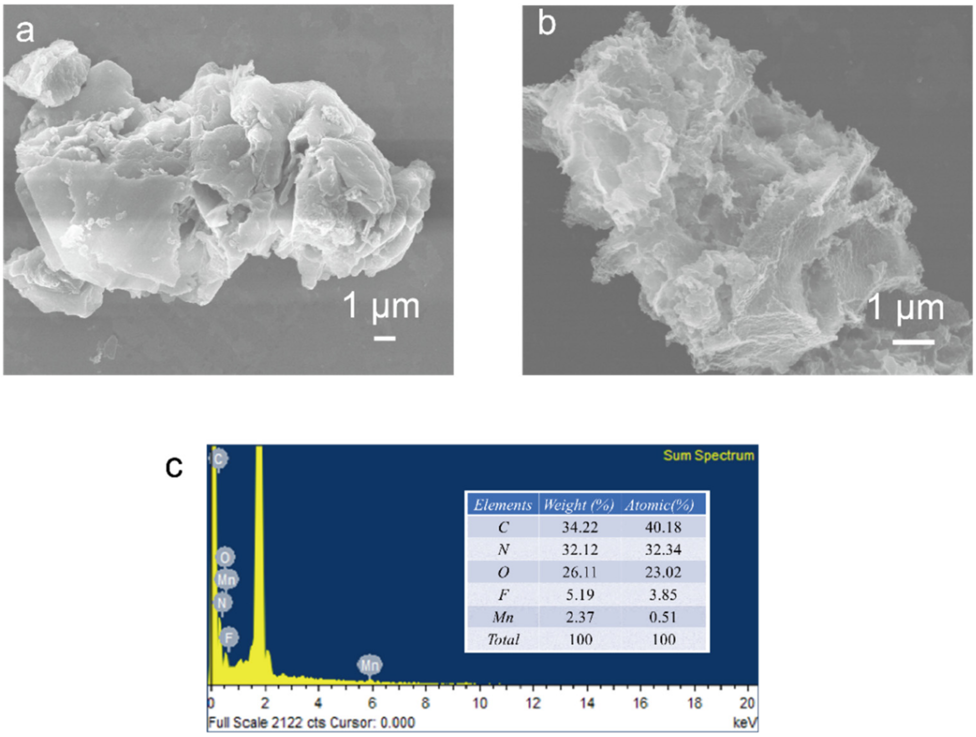

Figure S1. SEM image of (**a**) the NC; (**b**) the NCM-0; (**c**) EDS spectra collected for NCM-0.5 sample.

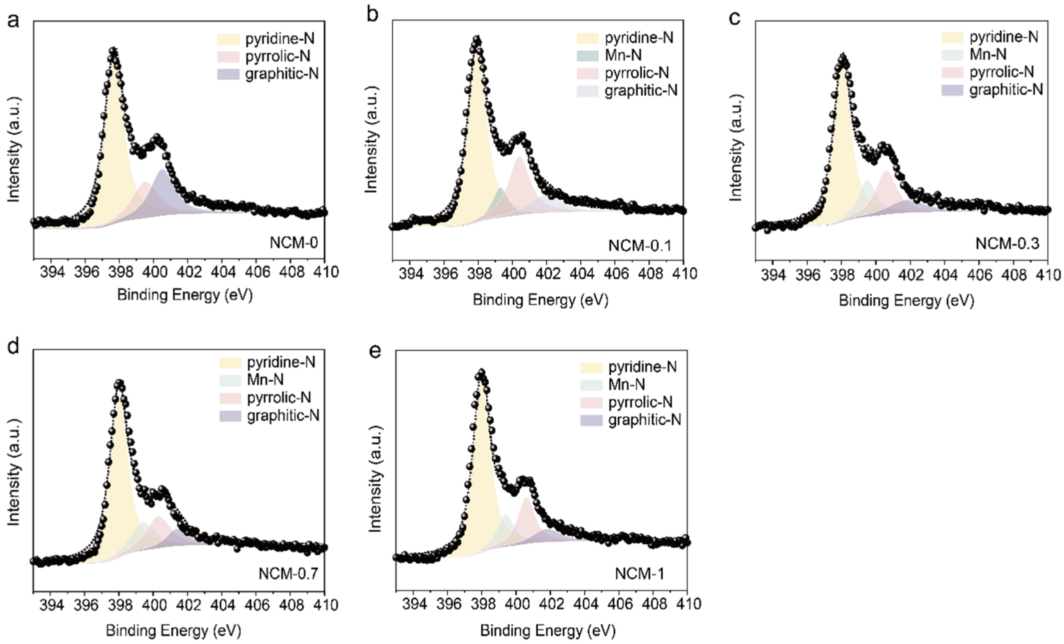

Figure S2. High resolution XPS spectrums of N 1s of (**a**) NCM-0; (**b**) NCM-0.1; (**c**) NCM-0.3; (**d**) NCM-0.7; (**e**) NCM-1.

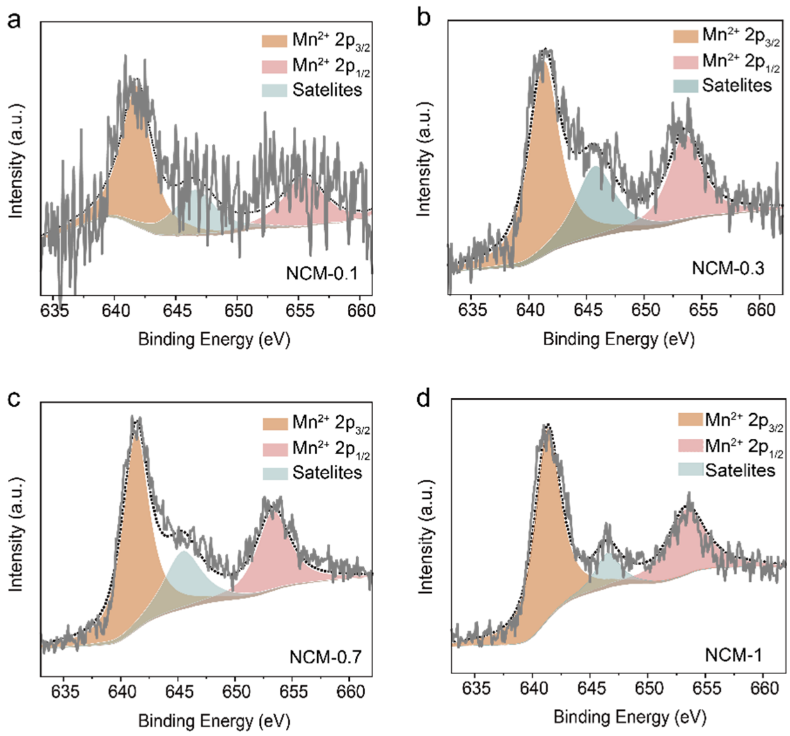

Figure S3. High resolution XPS spectrums of Mn 2p of (**a**) NCM-0.1; (**b**) NCM-0.3; (**c**) NCM-0.7; (**d**) NCM-1.

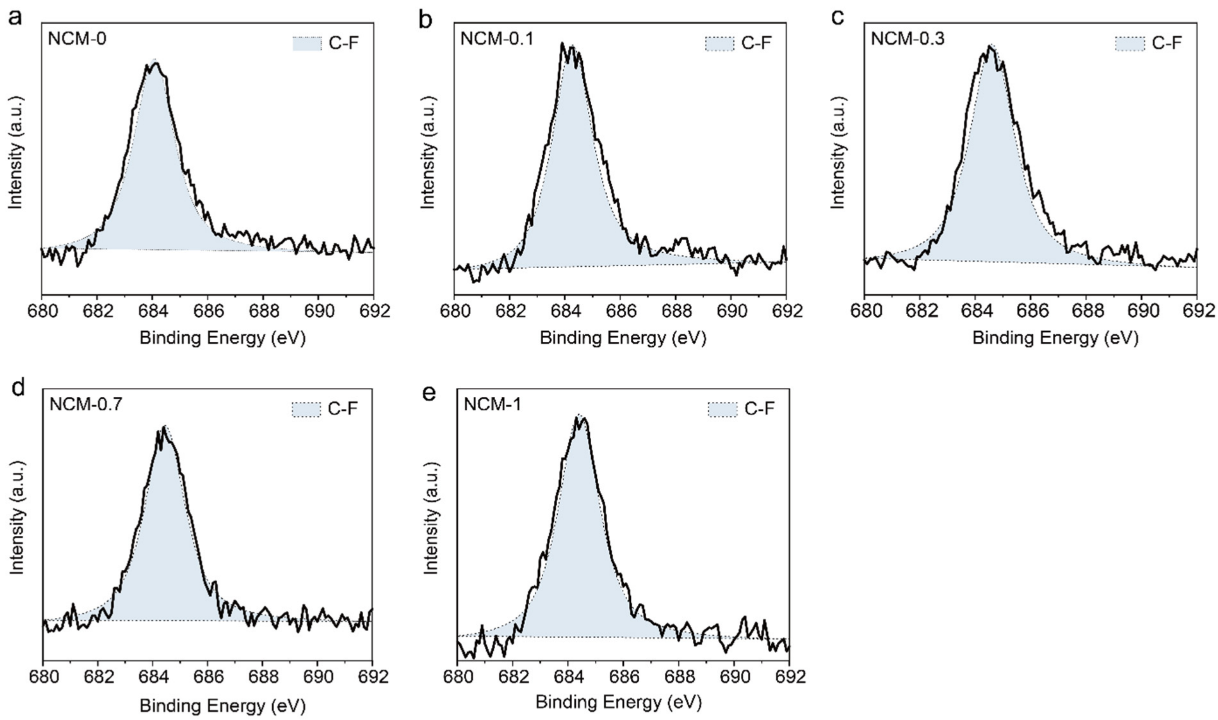

Figure S4. High resolution XPS spectrums of F 1s of (**a**) NCM-0; (**b**) NCM-0.1; (**c**) NCM-0.3; (**d**) NCM-0.7; (**e**) NCM-1.

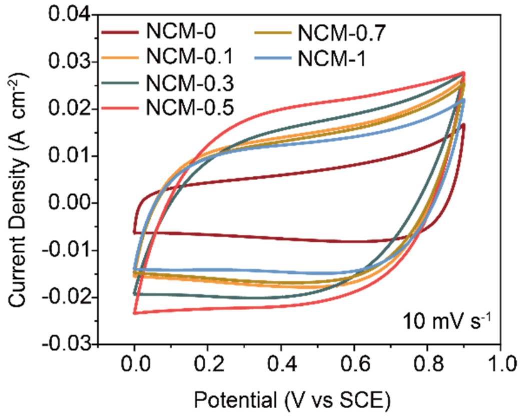

Figure S5. CV curves of NCM-x (x=0, 0.1, 0.3, 0.5, 0.7, 1) at the scanning rate of 10 mV s^{-1}.

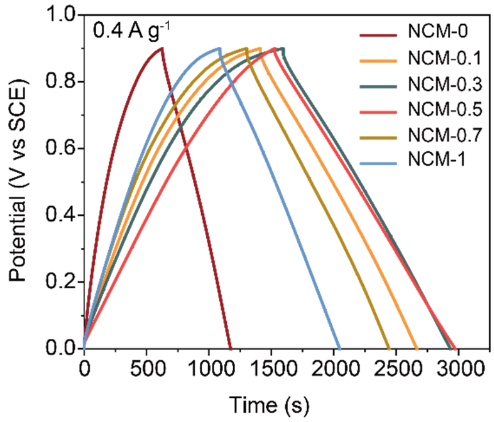

Figure S6 GCD profiles of the NCM-x (x=0, 0.1, 0.3, 0.5, 0.7, 1) at the current density of 0.4 A g^{-1}.

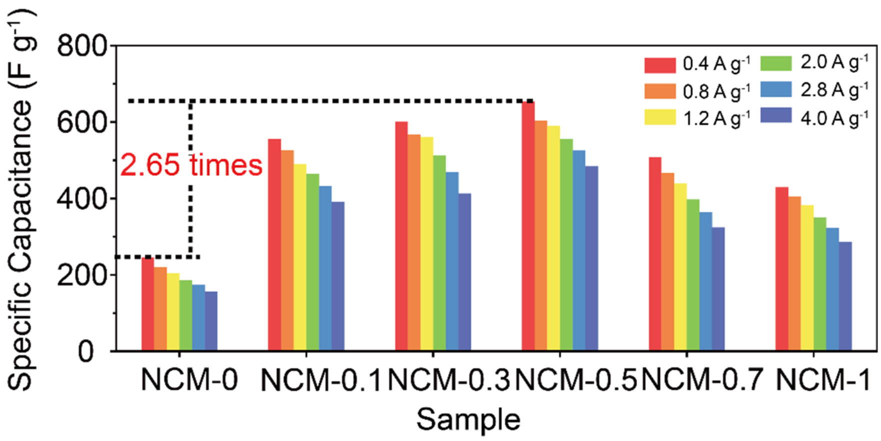

Figure S7 the specific capacitance of the NCM-x (x=0, 0.1, 0.3, 0.5, 0.7, 1) at various current densities.

Table S1. Comparison of specific capacitance, rate capability and cycling stability of NCM-0.5 with recently reported carbon-based electrodes.

Electrode	Maximum Specific Capacitance	Minimum Specific Capacitance	Rate Capability	Capacitance Retention
HPC-700[1]	412.5 F g^{-1} @ 0.5 A g^{-1}	253 F g^{-1} @ 50 A g^{-1}	61.3%	99.6% (10000)
NIPCG[2]	673 F g^{-1} @ 1 A g^{-1}	481 F g^{-1} @ 10 A g^{-1}	71.5%	95% (1000)
B/N-CNS[3]	423 F g^{-1} @ 0.2 A g^{-1}	125 F g^{-1} @ 50 A g^{-1}	29.5%	100% (30000)
pCA-KOH-700[4]	467 F g^{-1} @ 1 A g^{-1}	330 F g^{-1} @ 10 A g^{-1}	70.6%	85.7% (10000)
HPC-700[5]	330 F g^{-1} @ 1 A g^{-1}	221 F g^{-1} @ 20 A g^{-1}	66.9%	90.5% (10000)
NS-PCM-1000[6]	461.5 F g^{-1} @ 0.1 A g^{-1}	187 F g^{-1} @ 10 A g^{-1}	40.5%	90% (23000)
NCNF2-900[7]	224 F g^{-1} @ 0.5 A g^{-1}	149 F g^{-1} @ 10 A g^{-1}	66.5%	97% (10000)
N/S-HCSs[8]	280 F g^{-1} @ 1 A g^{-1}	134 F g^{-1} @ 50 A g^{-1}	47.8%	94.4% (10000)
AHPC[9]	576 F g^{-1} @ 1 A g^{-1}	460.8 F g^{-1} @ 10 A g^{-1}	80%	95% (10000)
900N-Ti_2CT_x[10]	327 F g^{-1} @ 1 A g^{-1}	282 F g^{-1} @ 10 A g^{-1}	86.2%	96.2% (5000)
MAC-N-0.5[11]	385 F g^{-1} @ 0.2 A g^{-1}	332 F g^{-1} @ 20 A g^{-1}	86.3%	100% (10000)
NOPC-2[12]	527 F g^{-1} @ 1 A g^{-1}	246 F g^{-1} @ 200 A g^{-1}	46.7%	94.3% (20000)
N-GQD@cZIF-8/CNT[13]	540 F g^{-1} @ 0.5 A g^{-1}	332.1 F g^{-1} @ 20 A g^{-1}	61.5%	90.9% (8000)
HHCF[14]	361 F g^{-1} @ 1 A g^{-1}	182 F g^{-1} @ 100 A g^{-1}	50.4%	95.8% (10000)
NPCN[15]	267 F g^{-1} @ 1 A g^{-1}	145 F g^{-1} @ 50 A g^{-1}	54%	——
FCL700[16]	505.4 F g^{-1} @ 0.1 A g^{-1}	216.1 F g^{-1} @ 20 A g^{-1}	42.7%	70.3% (2000)
KNOSC[17]	402.5 F g^{-1} @ 1 A g^{-1}	308.5 F g^{-1} @ 100 A g^{-1}	76.6%	90% (30000)

2D CoSNC[18]	360.1 F g^{-1} @ 1.5 A g^{-1}	204.5 F g^{-1} @ 30 A g^{-1}	56.8%	90% (2000)
N-CNFs-900[19]	202 F g^{-1} @ 1 A g^{-1}	164 F g^{-1} @ 30 A g^{-1}	81.2%	97% (3000)
NCA-800[20]	300 F g^{-1} @ 0.5 A g^{-1}	242 F g^{-1} @ 10 A g^{-1}	80.6%	98% (5000)
PCNS-6[21]	470 F g^{-1} @ 1 A g^{-1}	338 F g^{-1} @ 20 A g^{-1}	72%	98% (50000)
2D-HPCs[22]	250 F g^{-1} @ 0.5 A g^{-1}	185 F g^{-1} @ 10 A g^{-1}	74%	96% (10000)
ZIF-8/ZTP[23]	341.2 F g^{-1} @ 0.1 A g^{-1}	181.3 F g^{-1} @ 10 A g^{-1}	53.1%	91.5% (50000)
TCNQ-CTF-800[24]	383 F g^{-1} @ 0.2 A g^{-1}	197 F g^{-1} @ 10 A g^{-1}	51.4%	100% (10000)
MPC-800[25]	430 F g^{-1} @ 0.5 A g^{-1}	327 F g^{-1} @ 10 A g^{-1}	76.0%	100% (10000)
NCM-0.5	**653 F g^{-1} @ 0.4 A g^{-1}**	**484 F g^{-1} @ 4 A g^{-1}**	**74.1%**	**40000 (97.4%)**

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