

Electronic Supporting Information

Synthesis and Characterizations of $\text{Na}_4\text{MnCr}(\text{PO}_4)_3/\text{rGO}$ as NASICON-type Cathode Materials for Sodium-ion Batteries

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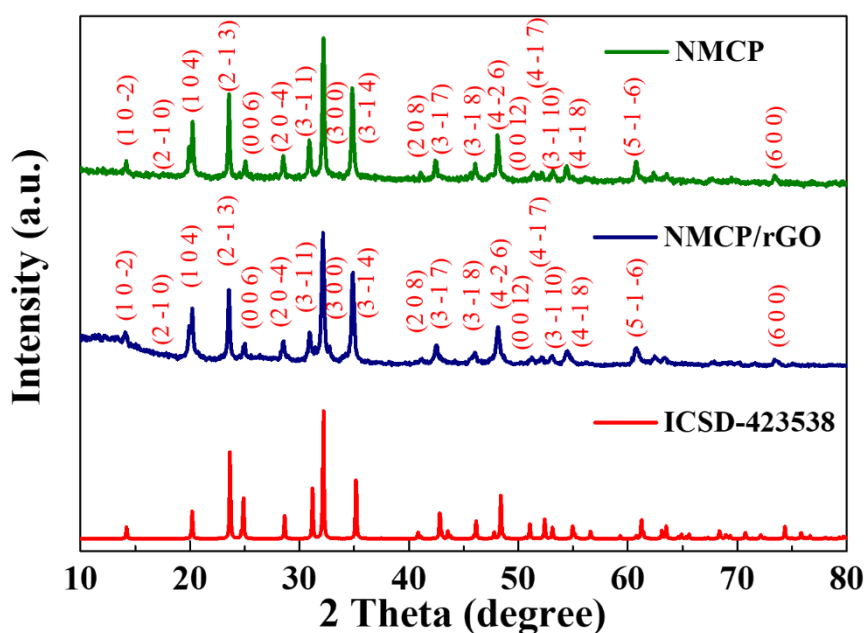


Figure S1 X-ray diffraction (XRD) and corresponding Rietveld refinement results of NMCP.

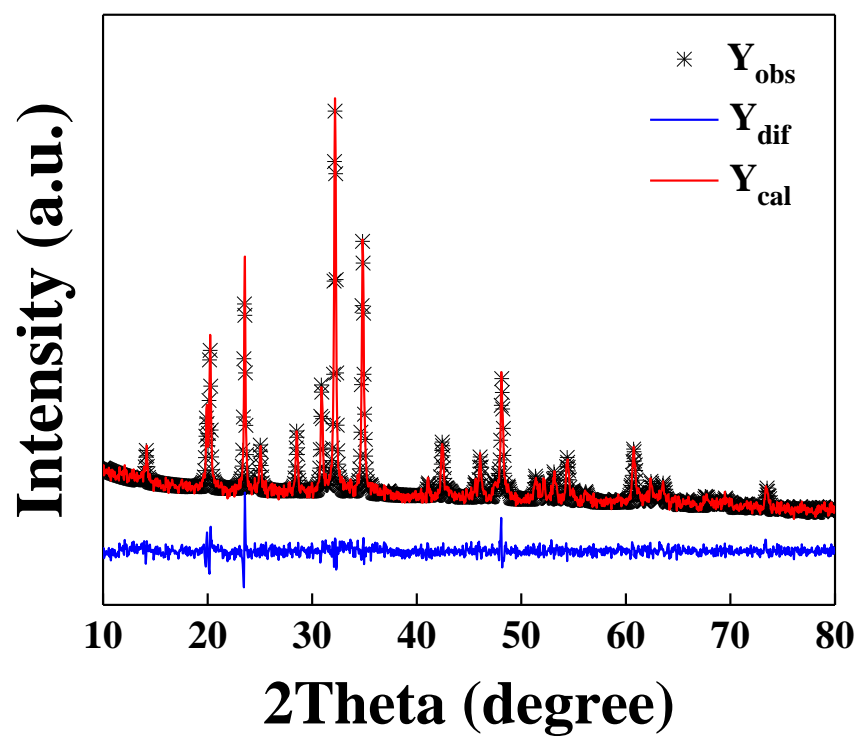


Figure S2 X-ray diffraction (XRD) and corresponding Rietveld refinement results of NMCP.

Table S1 Lattice parameters of pristine NMCP and as-synthesis NMCP/rGO.

Samples	a (Å)	c (Å)	Cell volume (Å ³)	R _{wp}
NMCP	8.921	21.332	1470.245	6.631
NMCP/rGO	8.912	21.396	1471.612	10.821

Table S2 Summary BET data of the NMCP and NMCP/rGO samples.

Samples	Surface area (m ² /g)	Pore volume (m ³ /g)	Pore size (nm)
NMCP	34.202	0.0438	5.801
NMCP/rGO	12.631	0.0234	7.8081

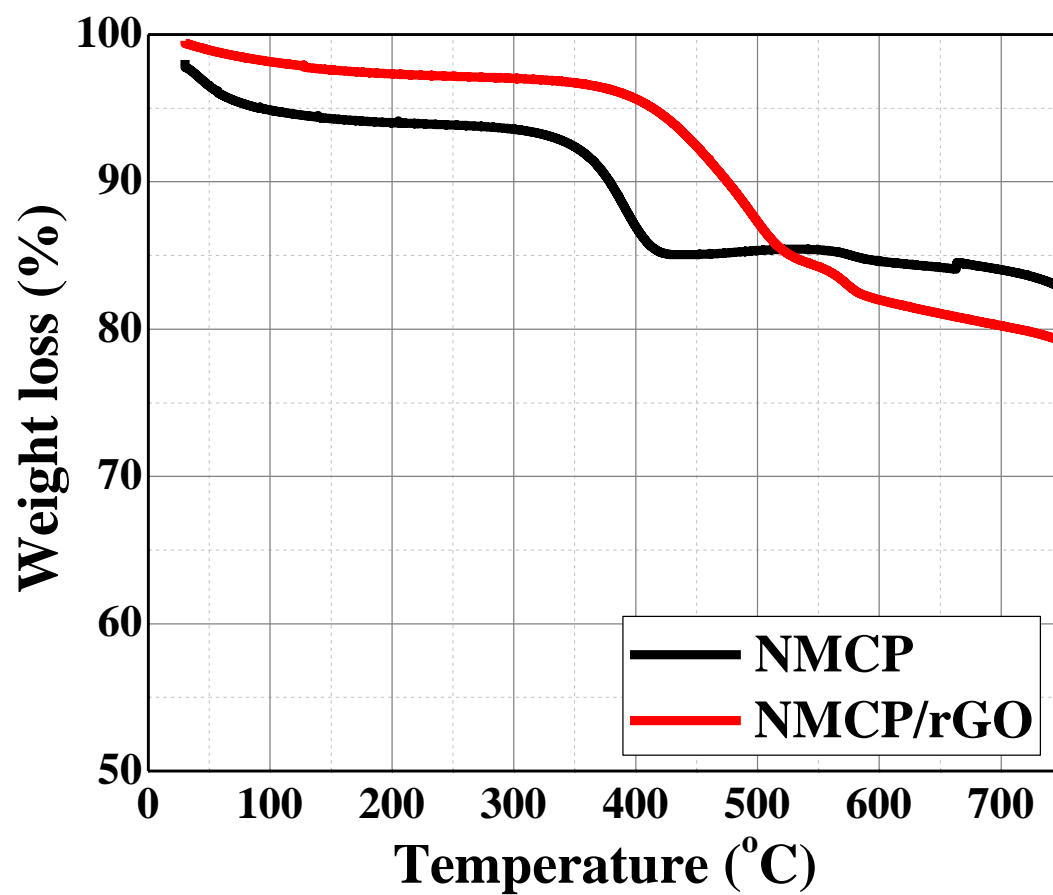


Figure S3 TG analyses of pristine NMCP and NMCP/rGO composite under a heat rate of 5 °C/min in air.

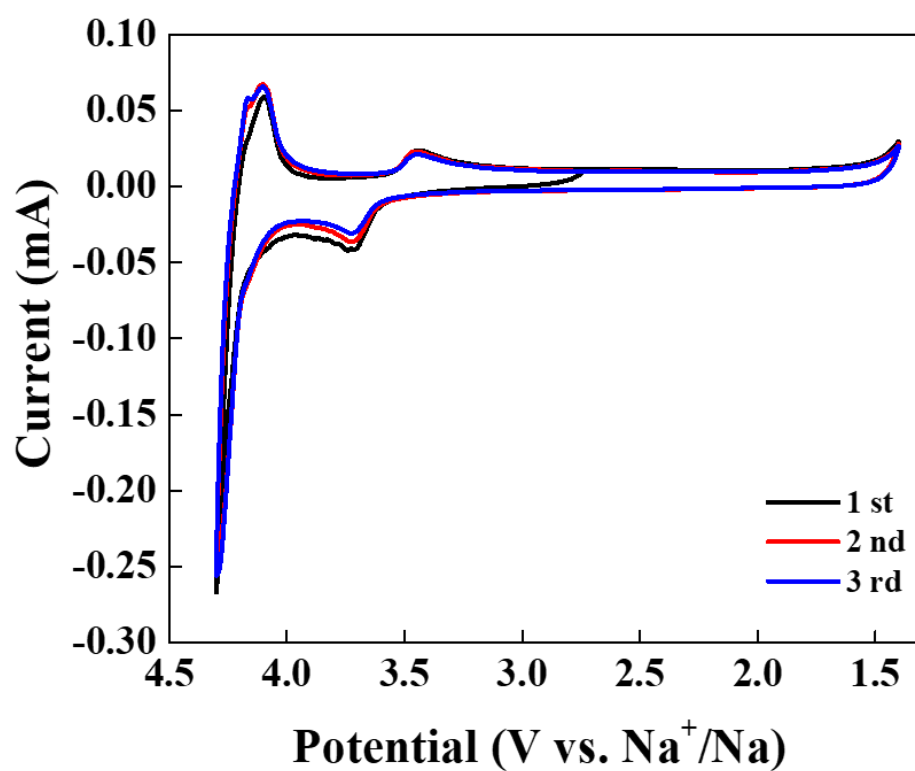


Figure S4 Cyclic voltammetry profiles of pristine NMCP at 0.1 mV/s for three cycles.

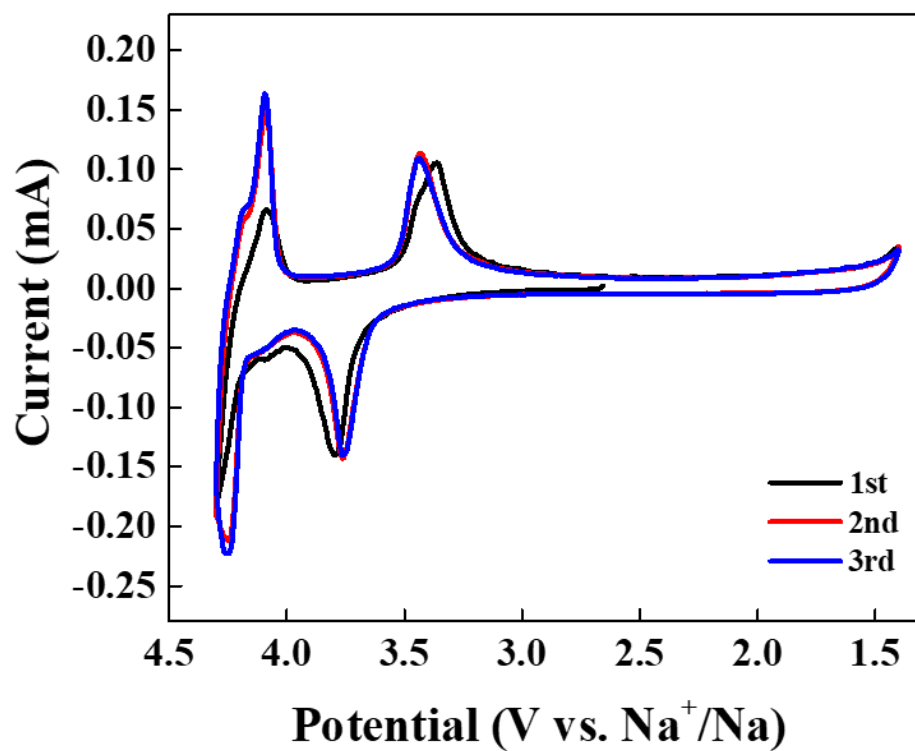


Figure S5 Cyclic voltammetry profiles of as-synthesis NMCP/rGO at 0.1 mV/s for three cycles.

Table S3 Electrode kinetic parameters obtained from equivalent circuit fitting of EIS

for NMCP and NMCP/rGO samples.

Material	R_s (ohm)	R_{ct} (ohm)	R_{CEI} (ohm)	ω (ohm/s ^{1/2})
NMCP	5.005	591.9	21.332	0.413
NMCP/rGO	3.995	102.7	32.37	30.19

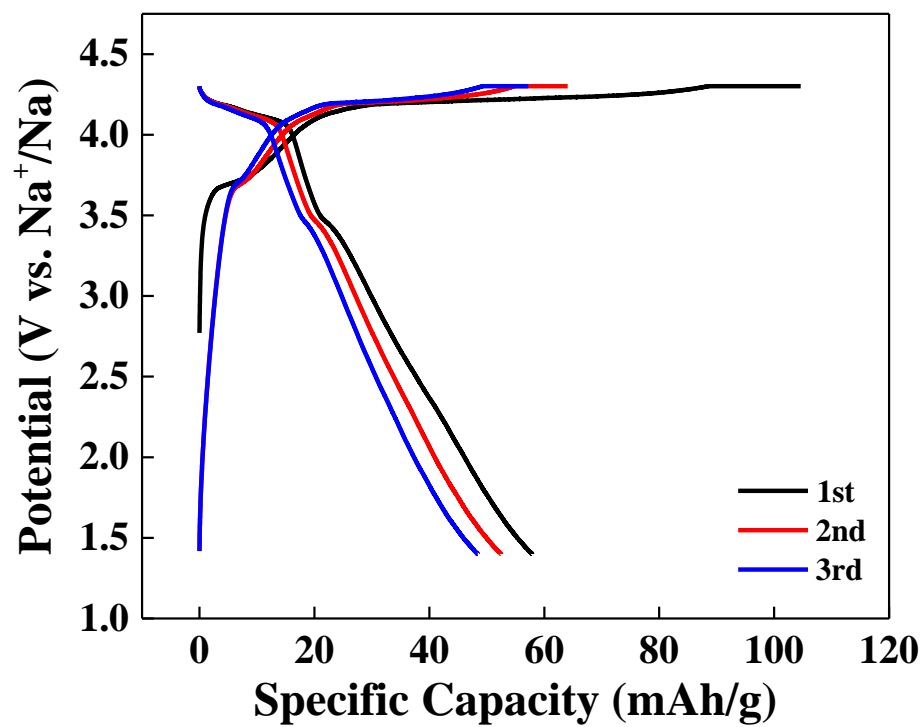


Figure S6 Representative charge/discharge curves of NMCP at 0.01 A/g for three cycles.

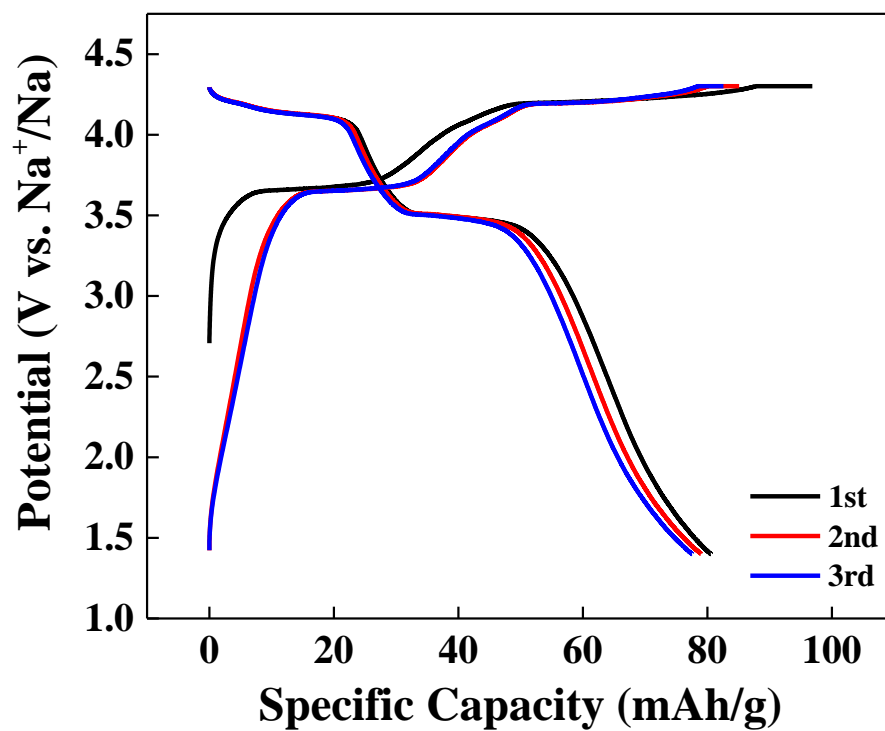


Figure S7 Representative charge/discharge curves of NMCP/rGO at 0.01 A/g for three cycles.

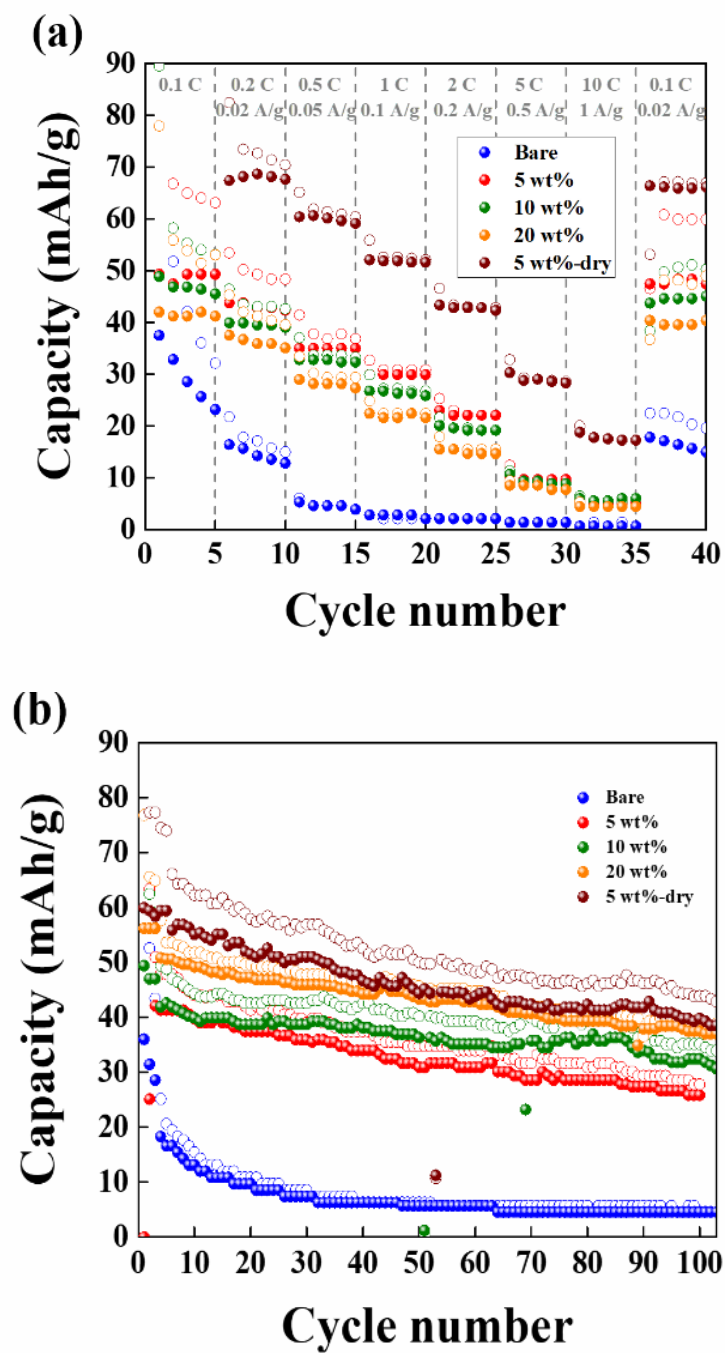


Figure S8 Pristine NMCP and NMCP/rGO with different rGO content (a) C-rate (b) Cycle life.