

Supplementary Data

Moisture-controlled Prussian white/CNT composite high energy cathode for next-generation sodium-ion batteries

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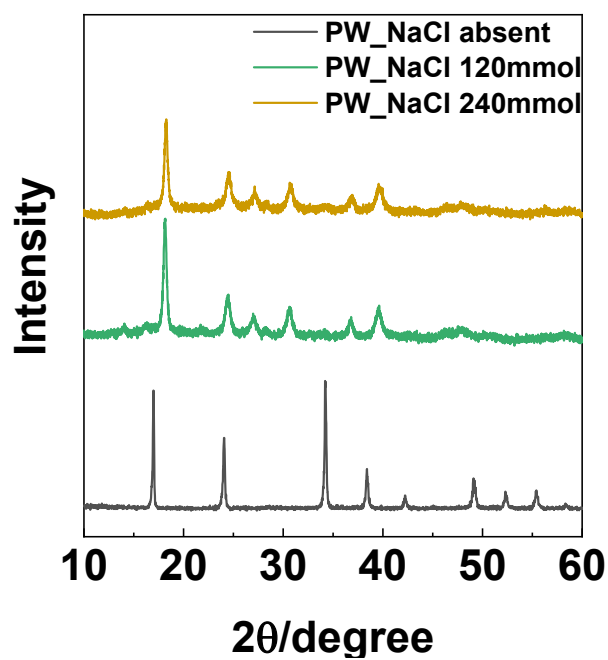


Fig. S1. XRD profile for PW samples with varying NaCl concentration, where other salts concentration are kept constant.

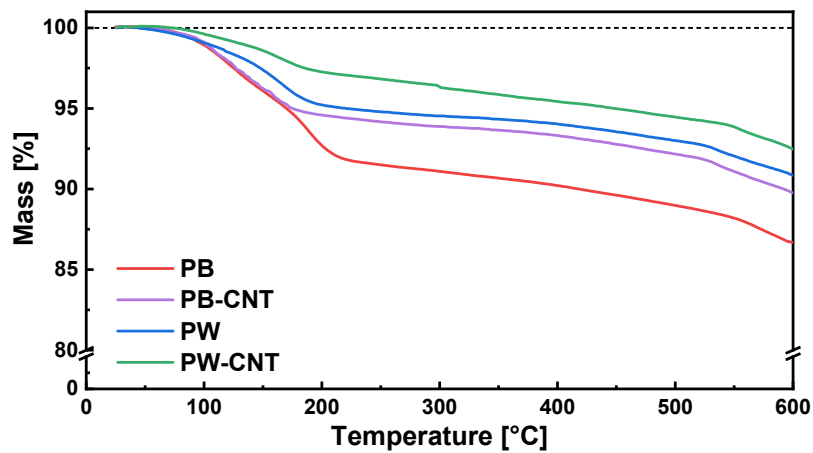


Fig. S2. Thermogravimetric plots obtained for PB, PB-CNT, PW and PW-CNT cathodes

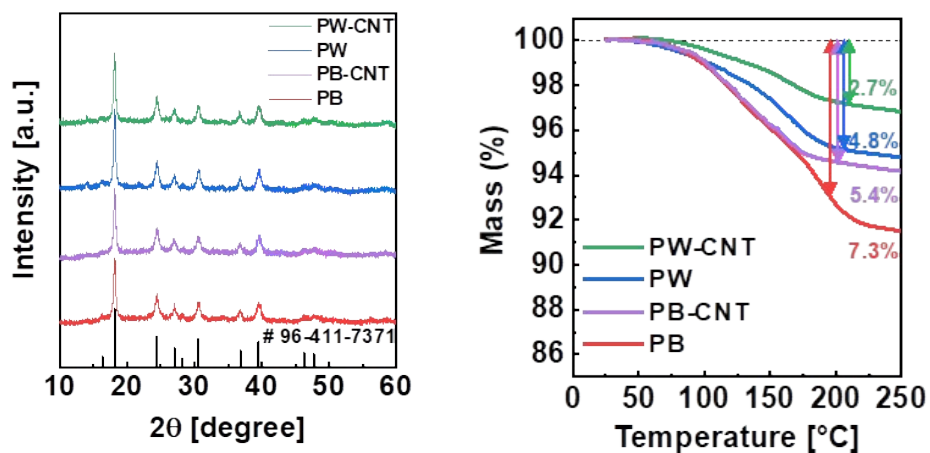


Fig. S3. (a) XRD comparison PB-CNT with other samples, and (b) Comparative TG plots of PB-CNT, PB, PW and PW-CNT samples (low temperature range from room temperature to 250 °C).

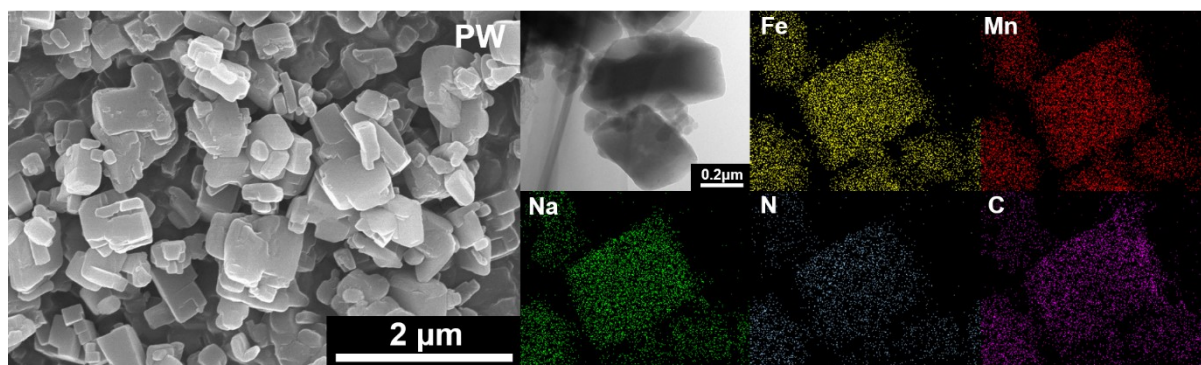


Fig. S4. SEM and elemental mapping images recorded for the PW cathode prepared by the co-precipitation technique.

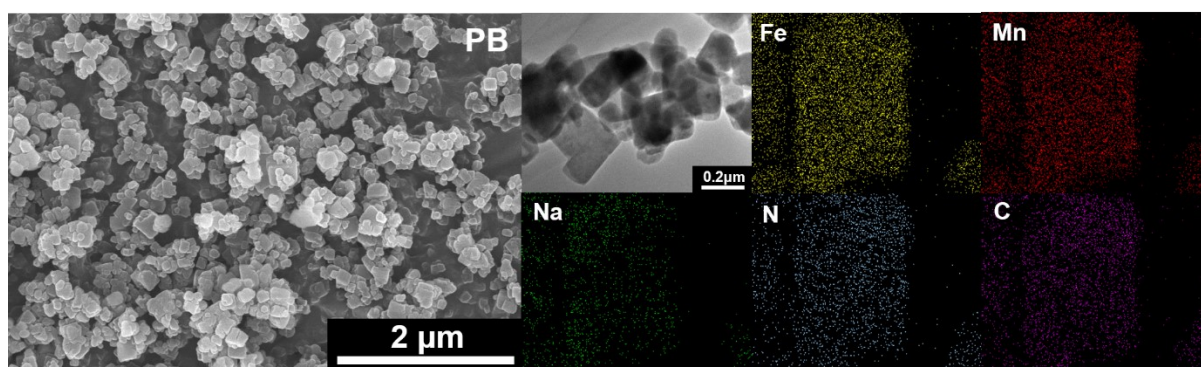


Fig. S5. SEM and elemental mapping images recorded for the PB cathode prepared by the co-precipitation technique.

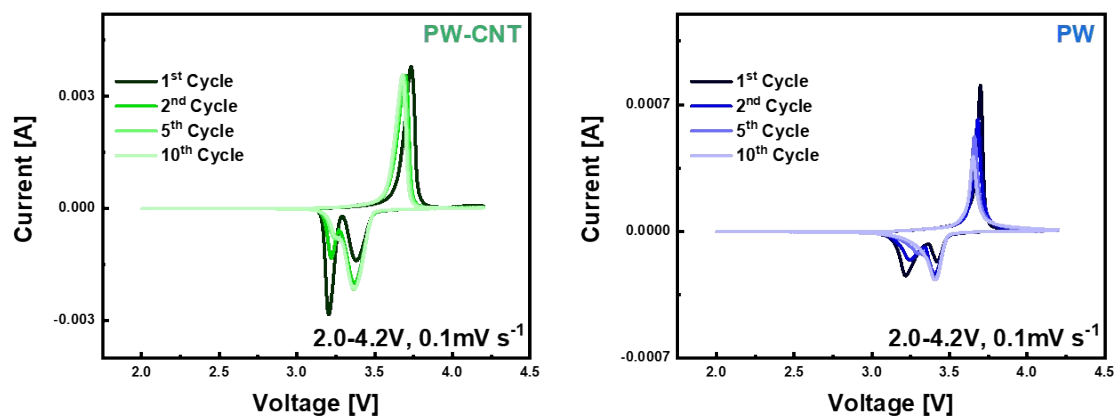


Fig. S6. (a) Cyclic voltammetry curves for the PW-CNT and PW cathodes.

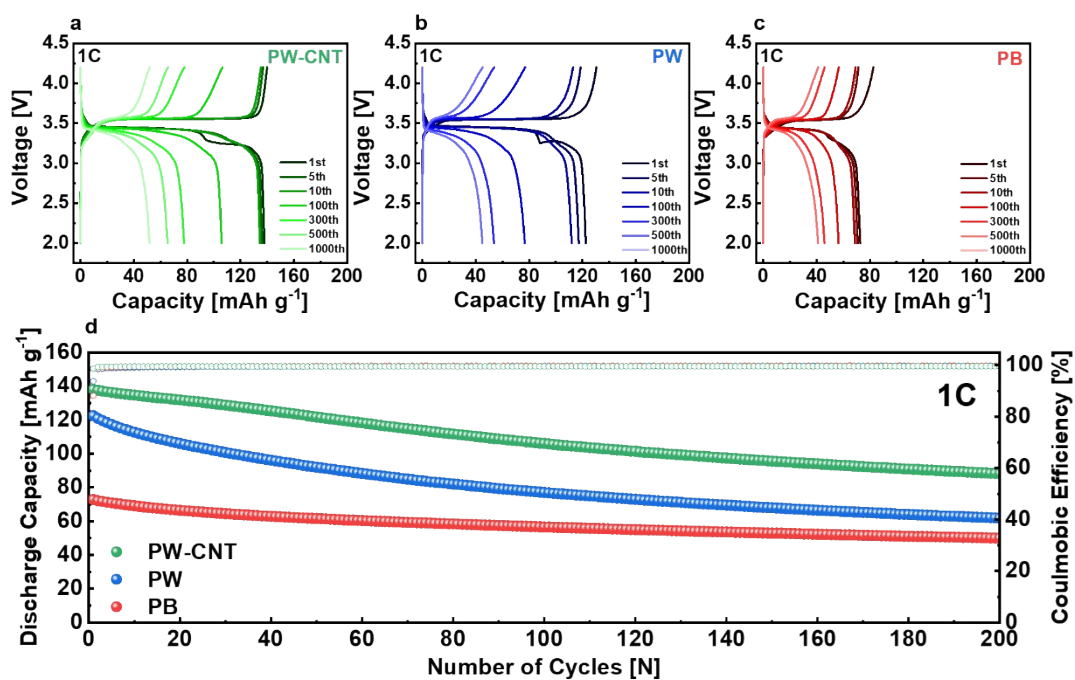


Fig. S7. Selected charge-discharge profiles of the (a) PW-CNT (b) PW and (c) PB cathodes with their (d) cycle-life profiles at 1 C.

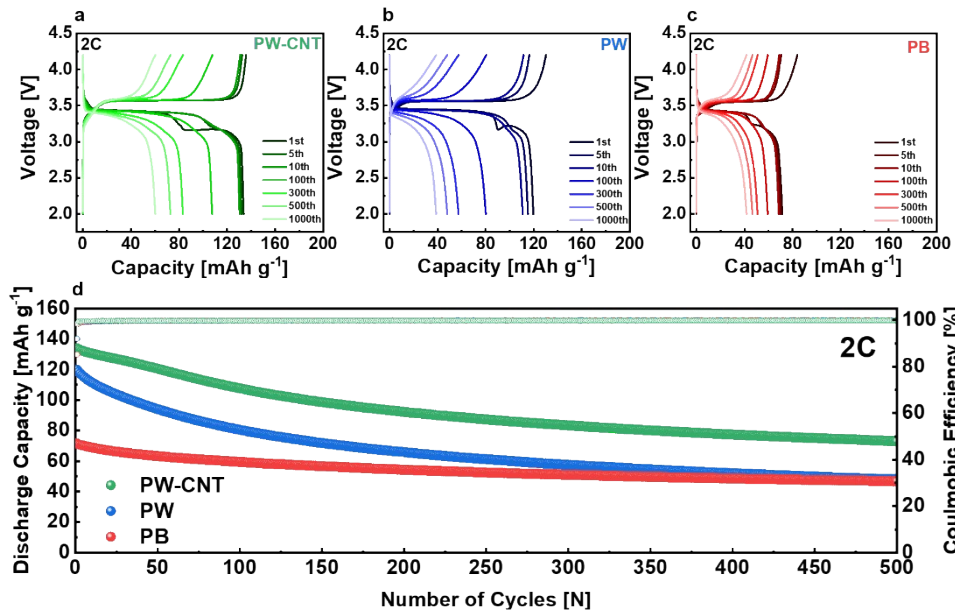


Fig. S8. Selected charge-discharge profiles of the (a) PW-CNT (b) PW and (c) PB cathodes with their (d) cycle-life profiles at 2 C.

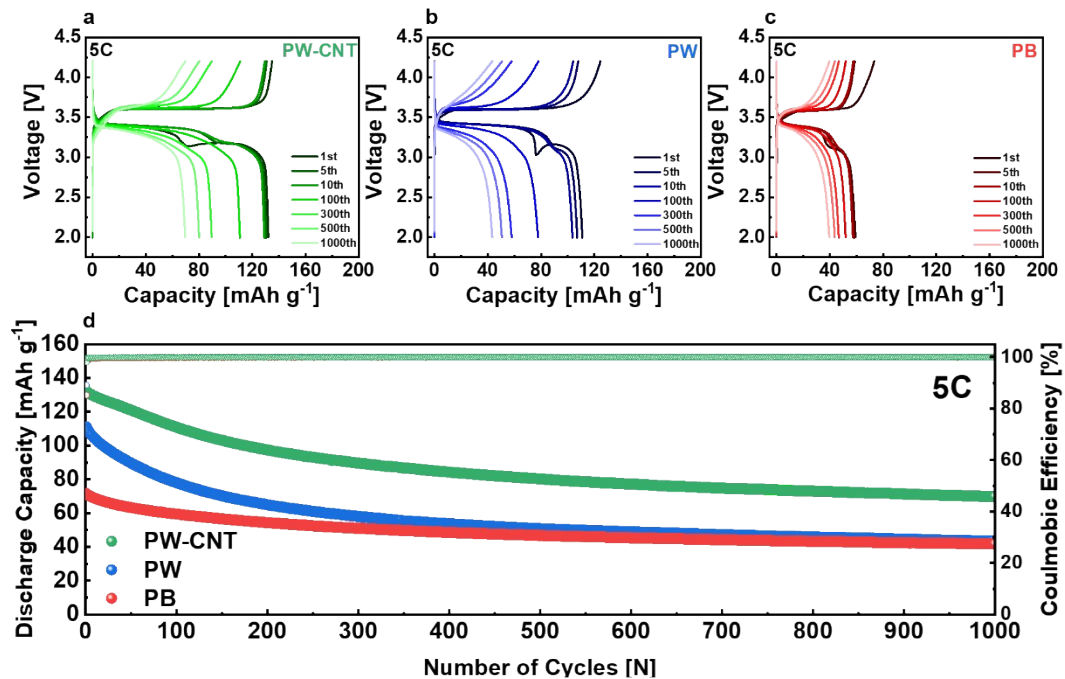


Fig. S9. Selected charge-discharge profiles of the (a) PW-CNT (b) PW and (c) PB cathodes with their (d) cycle-life profiles at 5 C.

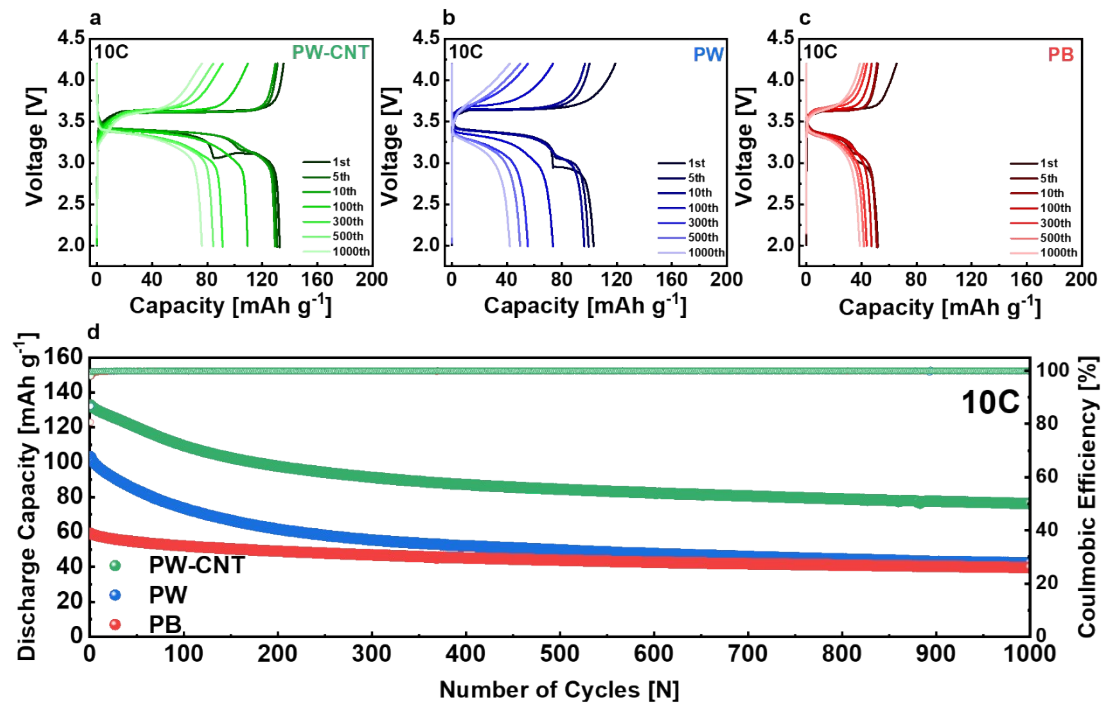


Fig. S10. Selected charge-discharge profiles of the (a) PW-CNT (b) PW and (c) PB cathodes with their (d) cycle-life profiles at 10 C.

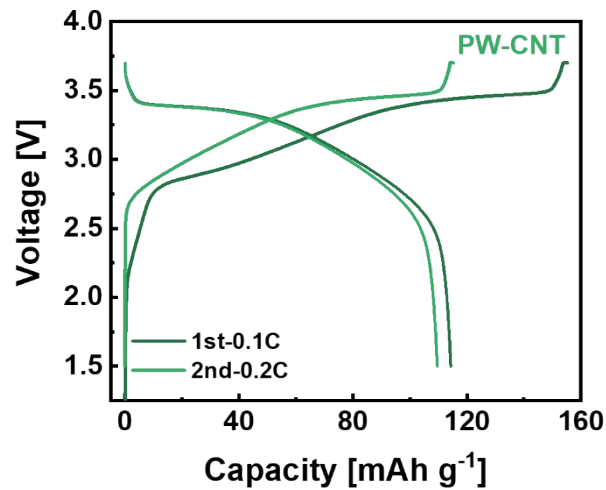


Fig. S11. Initial two electrochemical profiles of the full cell with the prepared PW-CNT cathode at 0.1 and 0.2 C rates, respectively to realize electrode activation.

Table S1. ICP results for the prepared samples by the co-precipitation method. Fe is used as the reference element here.

Sample Name	Na	Mn	Fe
PB	0.94	1.17	1.00
PW	1.92	0.95	1.00
PW-CNT	2.00	0.988	1.00

Table S2. Comparative electrochemical performances of PBA-based cathodes in literature with that of the present PW-CNT cathode synthesized by the chelating-agent-assisted co-precipitation method.

Materials	Voltage range (V)	Best Capacity [mAh g ⁻¹]	Best rate capability [mAh g ⁻¹]	Best cycling	Full Cell	Anode	Best cycling	Ref
Na ₂ MnFe(CN) ₆ -CNT	2.0 – 4.2	140.9 at 0.1C	110.4 at 30 C	57% after 1000 cycles at 10C	O	Hard carbon	58% after 1500 cycles at 1C	This work
NaK-MnHCF@3DNC Na _{1.73} K _{0.13} Mn[Fe(CN) ₆] _{0.977} · □ _{0.03}	2.0 – 4.2	220 at 20 mA g ⁻¹	110 at 500 mA g ⁻¹	85% after 500 cycles at 100 mA g ⁻¹	O	Hard carbon, 1.0-4.2V, 40mA g ⁻¹		[1]
C-MnHCF Na _{1.38} Mn[Fe(CN) ₆] _{0.92} □ _{0.08} · 2.57 H ₂ O	2.0 – 4.2	115 at 25 mA g ⁻¹	755/113 3.8 at 600m A g ⁻¹	70% after 500 cycles at 200 mA g ⁻¹	O	TiO ₂ anode, pre- sodiation	52.7% after 100 cycles at 200 mA g ⁻¹	[2]
NaMHCF-14-170°C Na _{1.94} Mn[Fe _{0.99} (CN) ₆] _{0.95} · □ _{0.05} · 1.92 H ₂ O	2.0 – 4.2	168.8 at 10 mA g ⁻¹	126.6 at 2000 mA g ⁻¹	87.6% after 100 cycles at 100 mA g ⁻¹	O	NaTi ₂ (PO ₄) ₃ (NTP)	84% after 500 cycles at 100 mA g ⁻¹	[3]
Na _{1.80} Mn[Fe(CN) ₆] _{0.98} □ _{0.02} · 1.76 H ₂ O	2.0 – 4.0 1C=150m A g ⁻¹	144.0 at 0.1C	86.6 at 10C	72.7% after 2100 cycles at 1 C	X	-	-	[4]
H-PBM Na _{1.92} Mn[Fe(CN) ₆] _{0.98} · 1.38 H ₂ O	2.0 – 4.0 1C=100m A g ⁻¹	152.8 at 0.1C	110.3 at 10C	82% after 500 cycles at 1C	X	-	-	[5]
HQ-MnCoNi-PB Na _{1.59} Mn _{0.17} Co _{0.18} Ni _{0.04} Fe _{0.61} [Fe(CN) ₆] _{0.92}	2.0 – 4.0 (1C=170 mA g ⁻¹)	117 at 0.1C	70 at 9C	78.7% after 1500 cycles at 1C	X	-	-	[6]
MnHCF@PEDOT Na _{1.71} Mn[Fe(CN) ₆] _{0.94} · 1.66 H ₂ O	2.0 – 4.0 1C=150m A g ⁻¹	147.9 at 0.1C	90.1 at 20C	78.2% after 1000 cycles at 1C	X	-	-	[7]
Na _{1.20} Mn[Fe(CN) ₆] _{0.79} · 2.64H ₂ O	2.0 – 4.2 1C=150m A g ⁻¹	162.4 at 0.1C	109.2 at 5C	76% after 100 cycles at 1C	X	-	-	[8]

References for Table S2

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