

Supporting Information

A novel acetic acid induced Na-rich Prussian blue nanocubes with iron defects as cathodes for sodium ion batteries

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Table S1 Elemental analysis results of PB-1, PB-2, PB-3, PB-4 and PB-5.

Sample	C wt. %	N wt. %	O wt. %	Na wt. %	Fe wt. %	H wt. %
PB-1	22.40	26.13	4.21	23.36	23.35	0.55
PB-2	22.71	26.49	3.92	26.02	20.38	0.48
PB-3	22.68	26.45	3.73	26.58	20.06	0.50
PB-4	22.79	26.59	3.60	27.65	18.81	0.56
PB-5	22.88	26.69	3.37	28.51	18.12	0.43

Table S2 The lattice parameters and diffusion coefficients of PB-2, PB-3, PB-4 and PB-5.

Sample	Lattice (Å)	Diffusion Coefficient (cm^2s^{-1})
PB-1	10.3438	3.56×10^{-11}
PB-2	10.2331	3.52×10^{-11}
PB-3	10.2909	3.49×10^{-11}
PB-4	10.2645	3.40×10^{-11}
PB-5	10.2645	3.42×10^{-11}

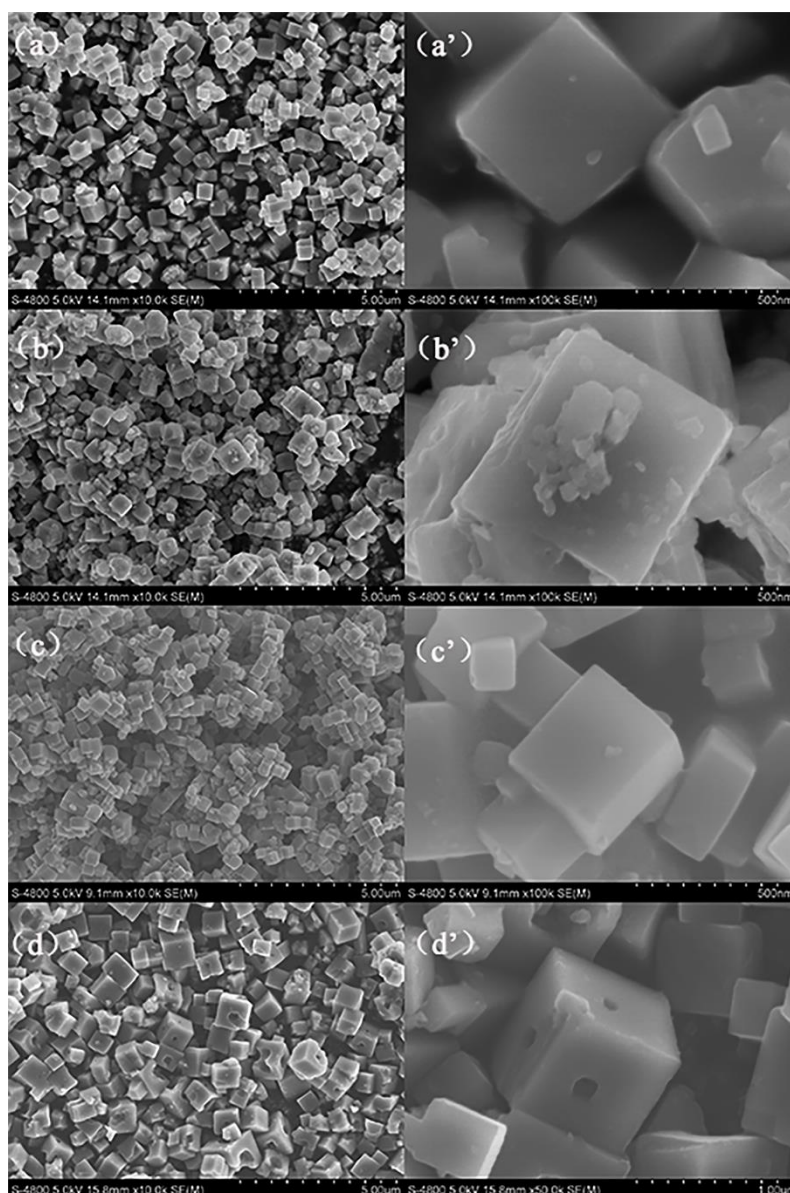


Fig. S1 FE-SEM images of (a) PB-2, (b) PB-3, (c) PB-4, (d) PB-5, and (a'), (b'), (c'), (d') represent the highly magnified images of these samples.

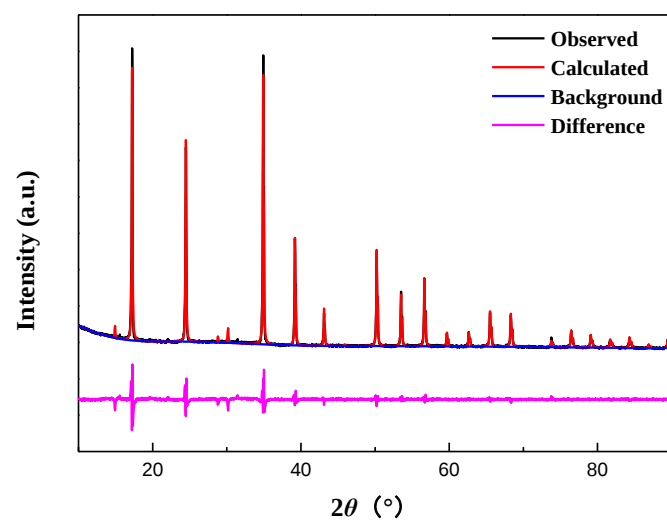


Fig. S2 XRD pattern with Rietveld refinement using a cubic structural model (space group *Fm-3m*) of PB-1.

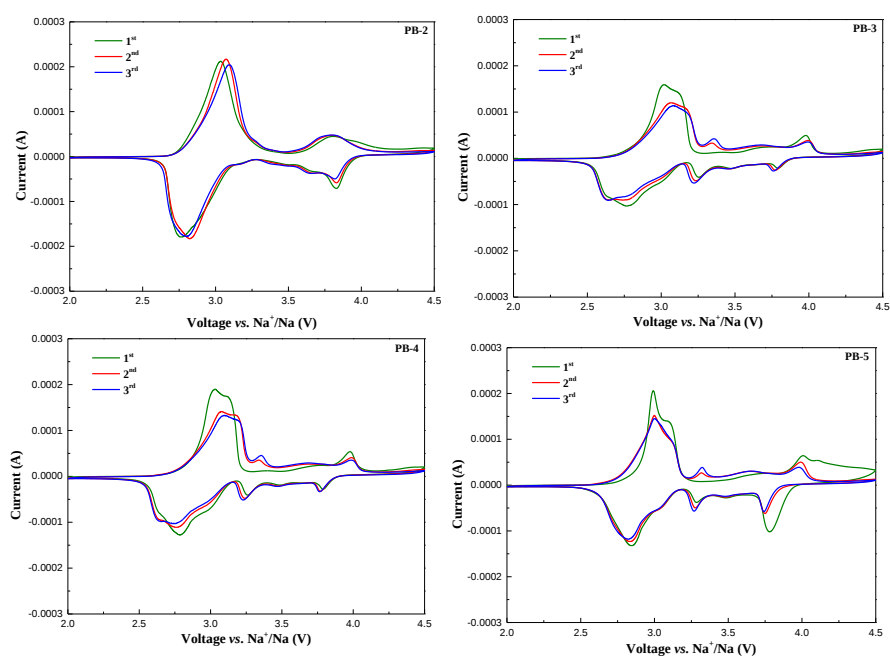


Fig. S3 CV curves of the PB-2, PB-3, PB-4, and PB-5 electrodes from 2.0 to 4.5 V at a scan rate of 0.1 mV s^{-1} .

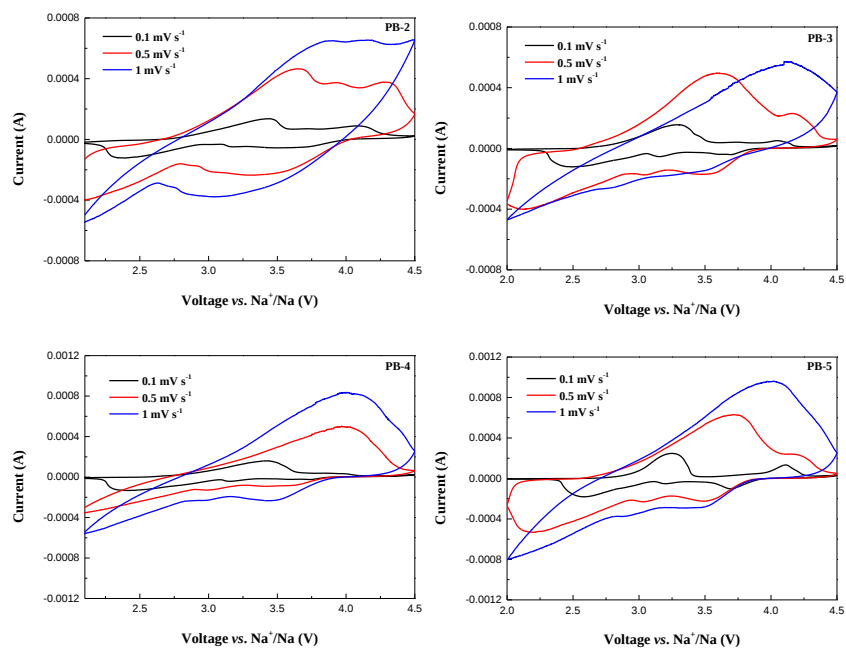


Fig. S4 CV curves of the PB-2, PB-3, PB-4, and PB-5 electrodes with different scan rates after three cycles.

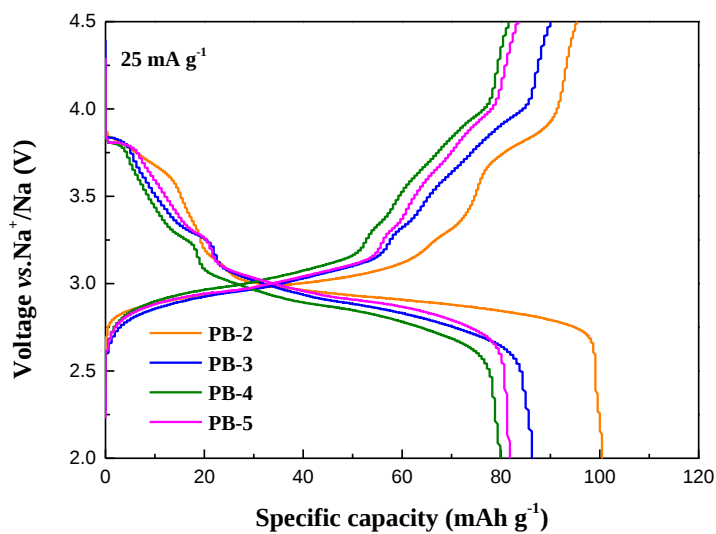


Fig. S5 Second charge and discharge curves of the Prussian blue electrodes from 2.0 to 4.5 V at 25 mA g⁻¹.

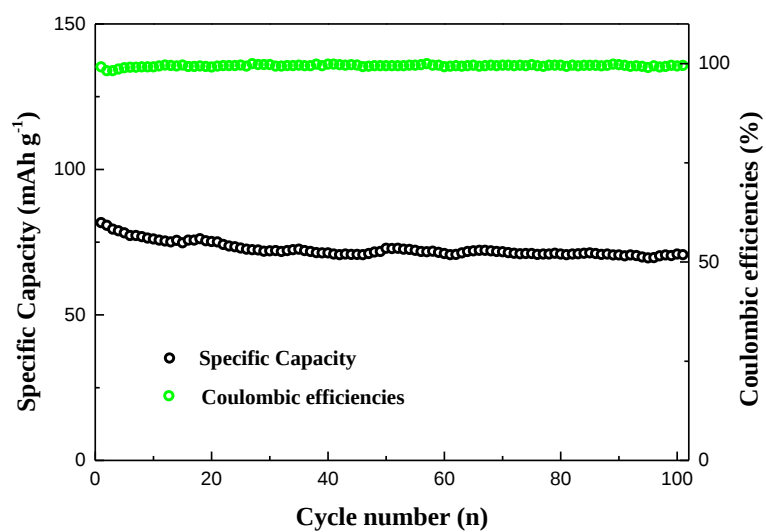


Fig. S6 Cycling performance of the PB-1 electrodes after activation at a current density of 100 mA g⁻¹ with a voltage window of 2.0-4.0V.

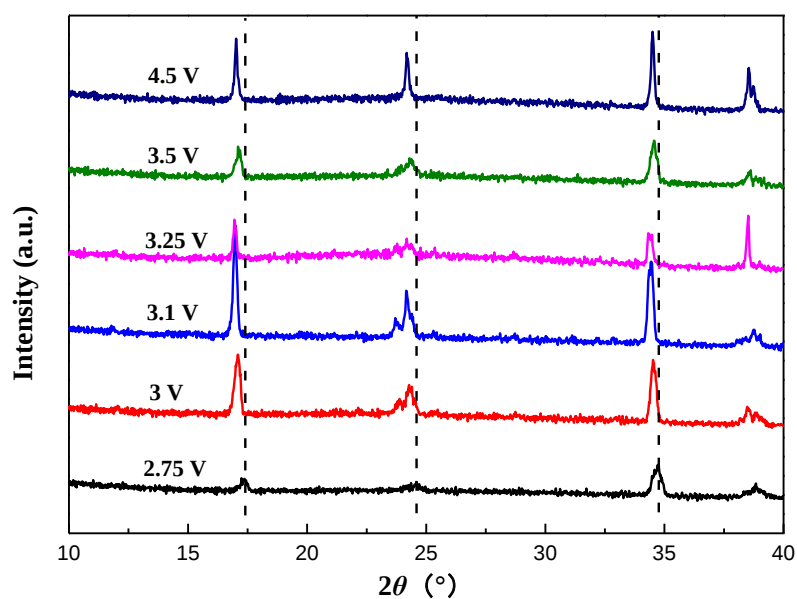


Fig. S7 *Ex situ* XRD patterns of the PB-1 electrode in the first charge process at various charge/discharge states.

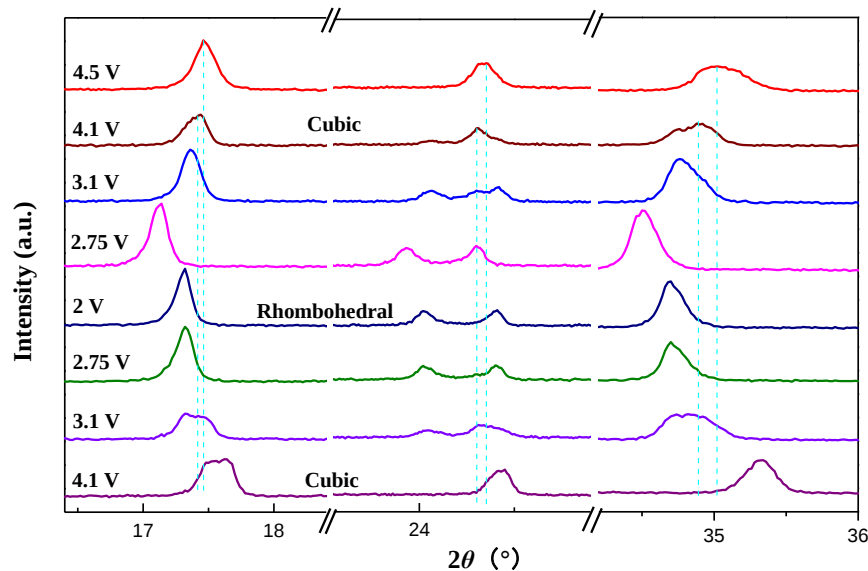


Fig. S8 The expanded *ex situ* XRD patterns between 16° and 36° of the PB-1 electrode after 3 cycles at different charge/discharge states.

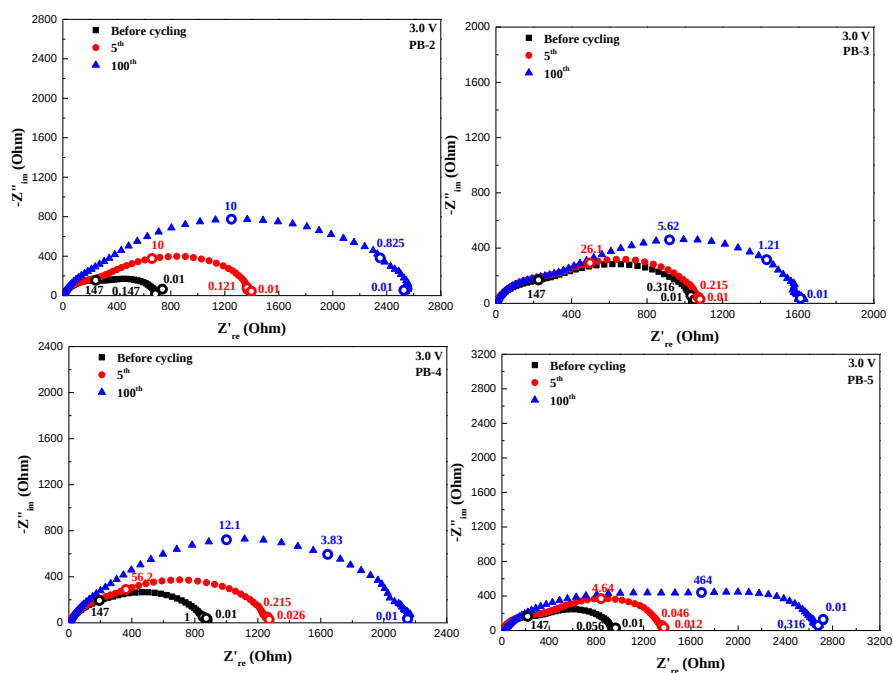


Fig. S9 Typical EIS of the PB-2, PB-3, PB-4, and PB-5 electrodes before cycling, after 5 cycles and after 100 cycles at 3.0 V, and the number of points on each EIS is frequency (KHz).