

Supporting Information

**Microorganism moulded pomegranate-like Na₃V₂(PO₄)₃/C
nanocomposite for advanced sodium-ion battery**

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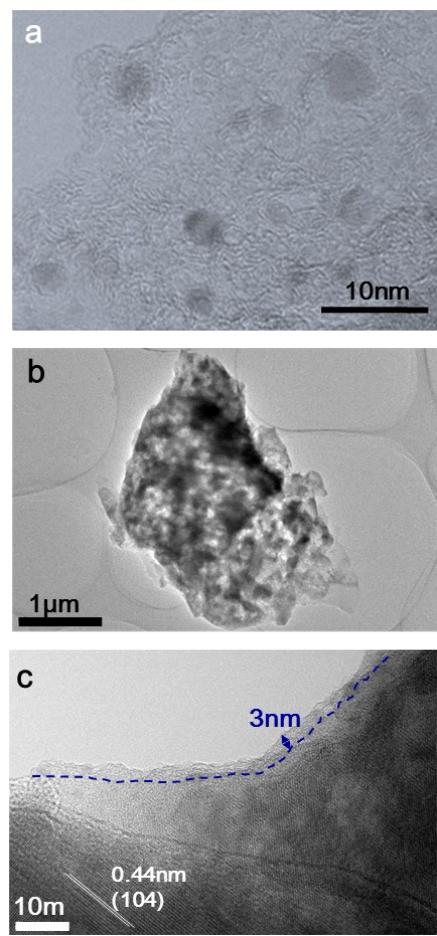


Fig. S1 (a) TEM image of the carbon capsule wall of the NVP/C-3; TEM images of the capsule fragment (b) and the carbon-coated NVP grains (c) in the NVP/C-3 sample after grinding.

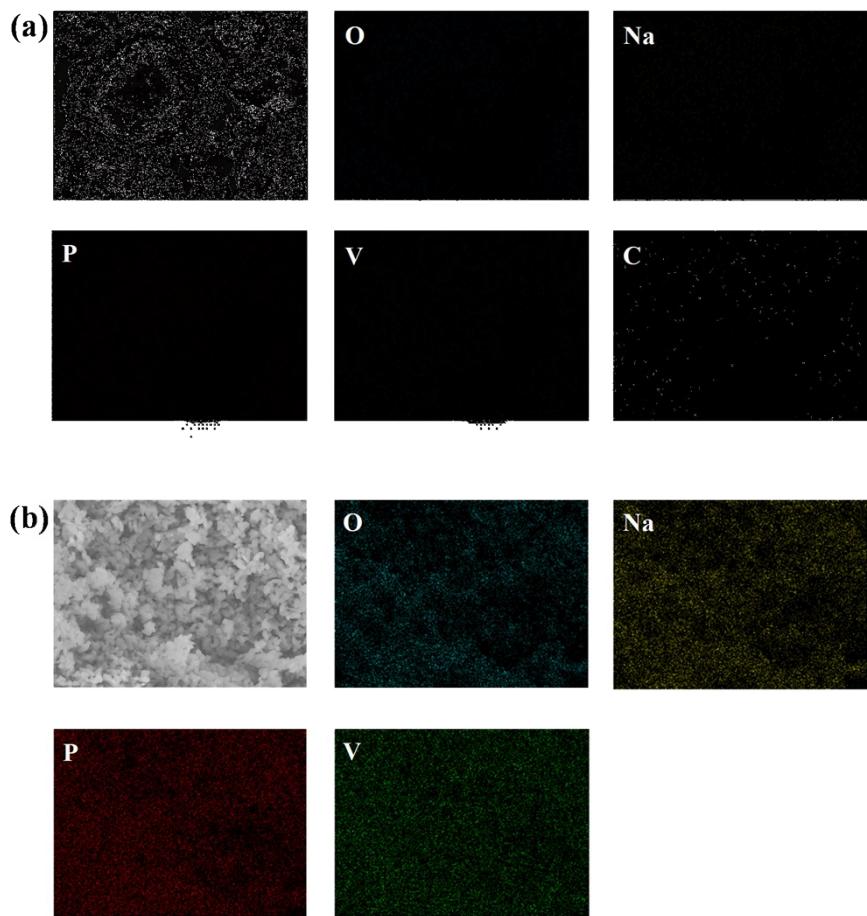


Fig. S2 EDS elemental mappings of the NVP/C-3 (a) and NVP (b).

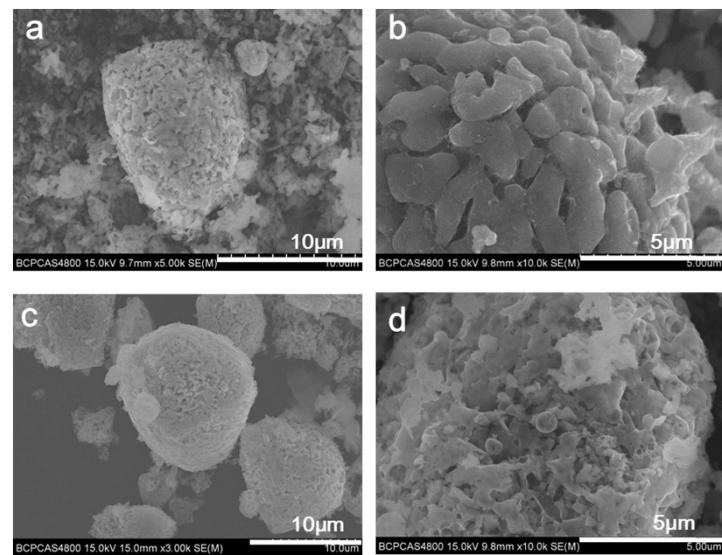


Fig. S3. SEM images of the NVP/C-1 (a, b) and NVP/C-2 (c, d) samples.

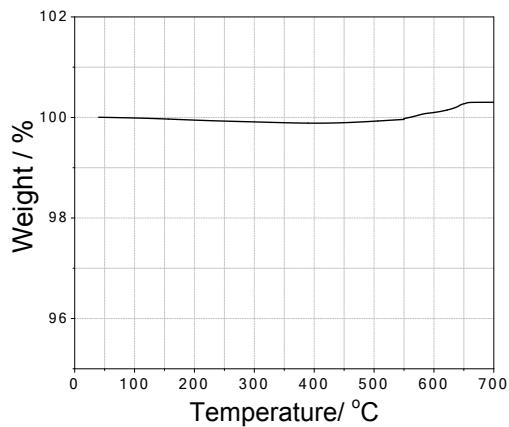


Fig. S4 TG curve of the pristine NVP sample in air.

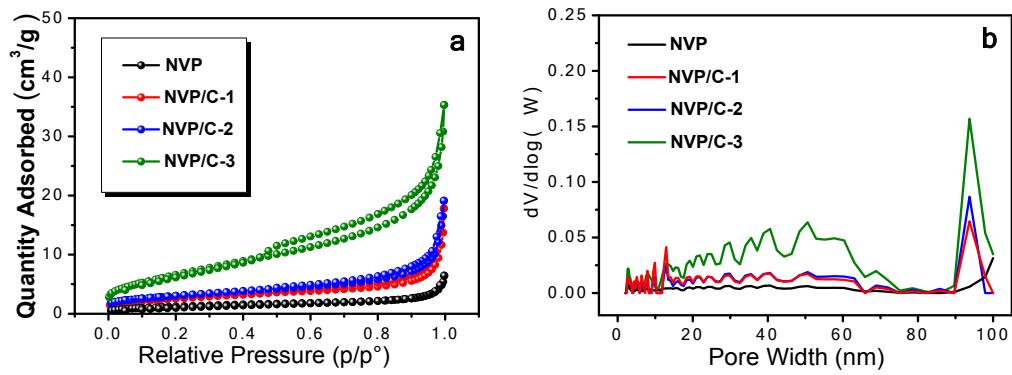


Fig. S5 N₂-sorption isotherms (a) and pore-size distribution (b) of the NVP/C composite materials and the pristine NVP .

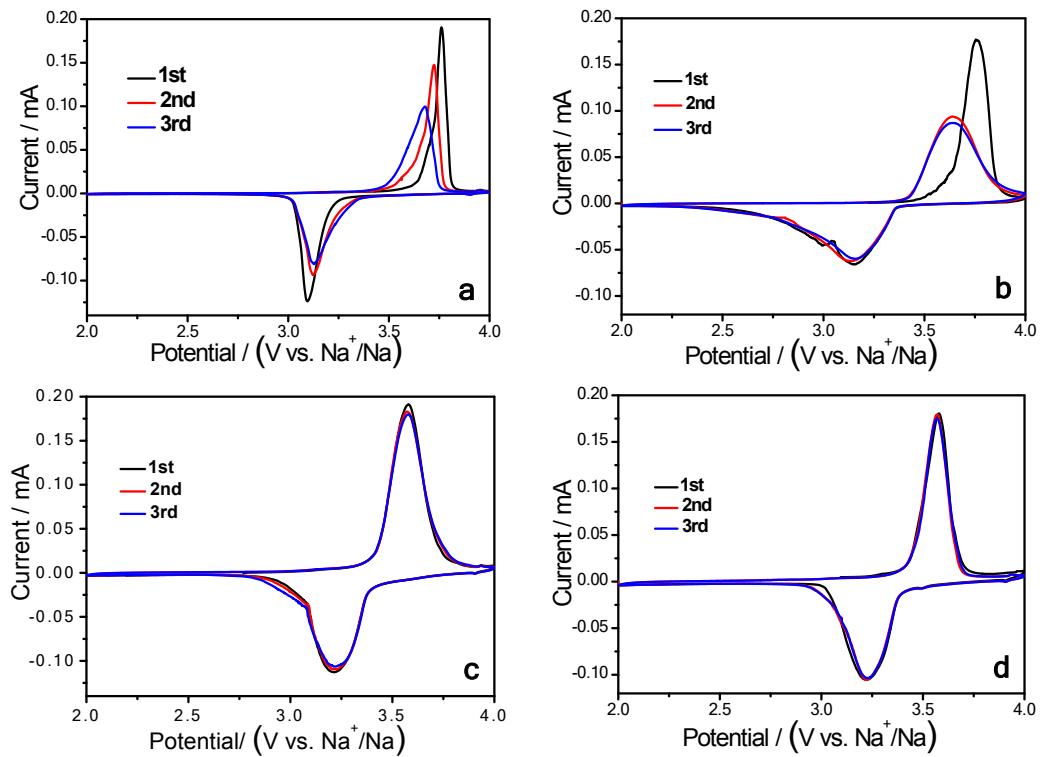


Fig. S6 CV curves for the first three cycles of the pristine NVP and the NVP/C composite cathodes.

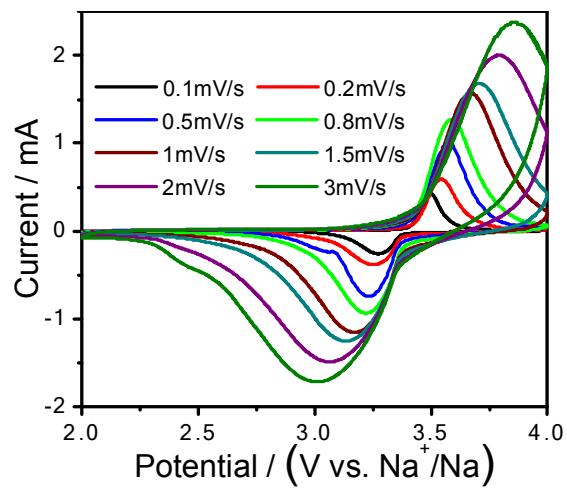


Fig. S7 CV curves of the NVP/C-3 composite cathode at different scan rates.

Table S1. Pore structure parameters of the pristine NVP and the NVP/C composite.

	NVP	NVP/C -1	NVP/C-2	NVP/C-3
BET Surface Area / m ² g ⁻¹	4.6	9.9	10.6	14.9
Pore Volume / cm ³ g ⁻¹	0.01	0.026	0.028	0.073

Table S2. Fitting data of the resistance of the NVP/C and NVP samples with the equivalent circuit.

	R_b	R_{SEI}	R_{CT}
NVP / Ω	8.9	73.7	541.8
NVP/C-1 / Ω	5.3	39.7	187.6
NVP/C-2 / Ω	4.1	28.5	141.1
NVP/C-3 / Ω	2.7	28.5	123.9

Table S3 Electrochemical capacities at various current rates of the NVP-based cathodes.

	0.1C	1C	5C	10C	20C
NVP / mAh g ⁻¹	87.1	63.9	30.9	9.5	-
NVP/C-1 / mAh g ⁻¹	108.1	107	100.4	85.8	33.2
NVP/C-2 / mAh g ⁻¹	112.8	110.9	105.7	101.6	51.4
NVP/C-3 / mAh g ⁻¹	113.5	116.1	111.3	109.6	78

Table S4 Capacities before and after 600 cycles at various current rates of the NVP-based cathodes.

	1st				600th			
	1C	5C	10C	20C	1C	5C	10C	20C
NVP / mAh g ⁻¹	70.4	35.2	11.6	-	46.1	26.1	3.4	-
NVP/C-1 / mAh g ⁻¹	106.8	106.3	85.5	34.4	89.4	92.2	64.6	18.5
NVP/C-2 / mAh g ⁻¹	116.4	104.6	101.2	59.2	109.6	100.4	87.3	46.5
NVP/C-3 / mAh g ⁻¹	116.3	115.7	113.9	79.2	106.4	103.5	98.8	76.4

Table S5. Fitting data of the resistance of the NVP/C-3 cell after different cycles.

	R _b / Ω	R _{SEI} / Ω	R _{CT} / Ω
1st	2.7	28.5	123.9
100th	2.7	22.2	92.9
1000th	2.6	23.0	94.6
5000th	2.6	22.8	95.5
10000th	2.7	22.4	114.8