

Electronic Supplementary Information (ESI)

Approach to flexible Na-ion batteries with exceptional rate capability and long lifespan using Na₂FeP₂O₇ nanoparticles on porous carbon cloth

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Table S1. Atomic ratio of Na, Fe, and P in each B-NFP and M-NFP-NPs by ICP analysis.

Sample	Element	Content (mg/L)	# of Moles	Atomic Ratio
B-NFP	Na	8.530	0.371	2.08
	Fe	9.755	0.175	0.98
	P	11.056	0.357	2.00
M-NFP-NPs	Na	7.782	0.338	2.10
	Fe	8.883	0.159	0.99
	P	9.974	0.322	2.00

Table S2. Comparison of electrochemical performance of recently reported Na₂FeP₂O₇ electrodes.

Materials		Voltage (V)	Cycle (#)	Rate (C)	Capacity (mA h g ⁻¹)	Ref.
Na ₂ FeP ₂ O ₇	Submicron	2.0-4.0	10	0.05	82	[18]
	Micron	2.0-4.5	80	0.05	92	[16]
	Micron	2.0-3.8	50	0.05	80	[19]
	CNT composite	2.0-4.0	140	1	86	[20]
			100	0.2	95	
	Nano	2.0-4.0	10000	10	72-87	This work
				60	46-55	

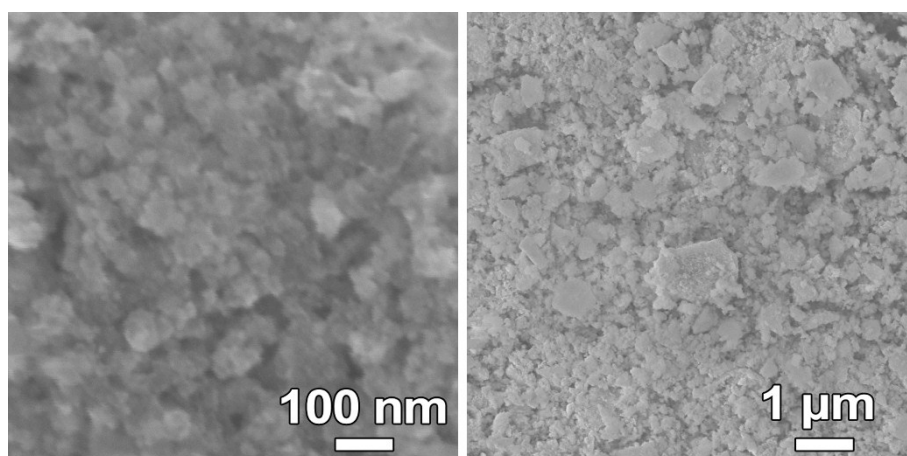


Fig. S1 FESEM image of dried NFP-NPs slurry after heat treatment and ball milling process.

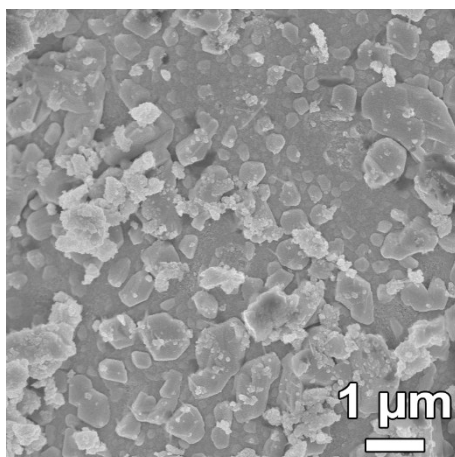


Fig. S2 FESEM image of NFP-NPs surface after heat treatment at 600 °C for 6 h.

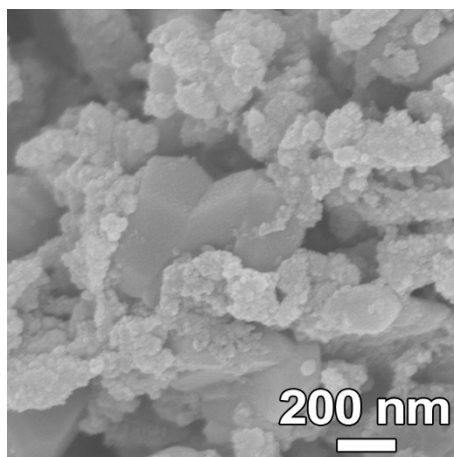


Fig. S3 FESEM image of NFP synthesized by a sol-gel method with low amounts of citric acid.

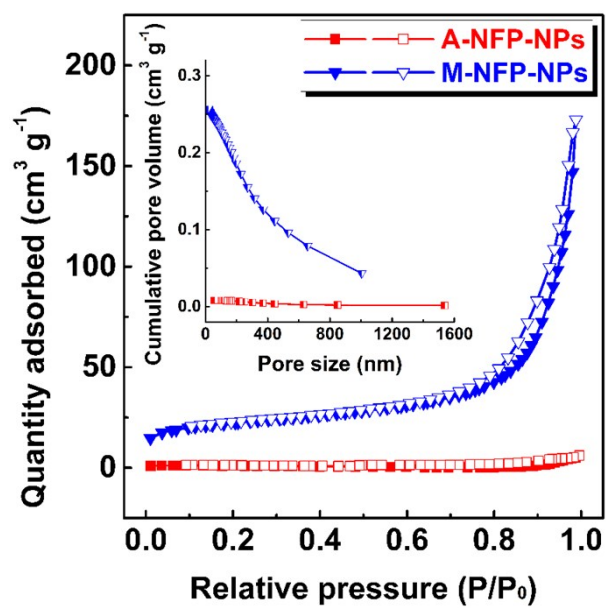


Fig. S4 Nitrogen adsorption-desorption isotherms and their pore size distributions (inset) of A-NFP-NPs and M-NFP-NPs.

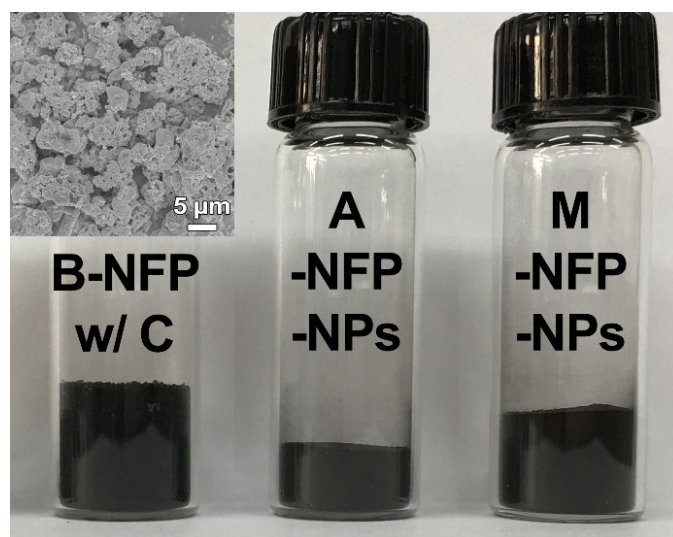


Fig. S5 Digital photographs of B-NFP, A-NFP-NPs and M-NFP-NPs powder in glass 4 ml vials (1 g each). Inset shows the FESEM image of B-NFP.

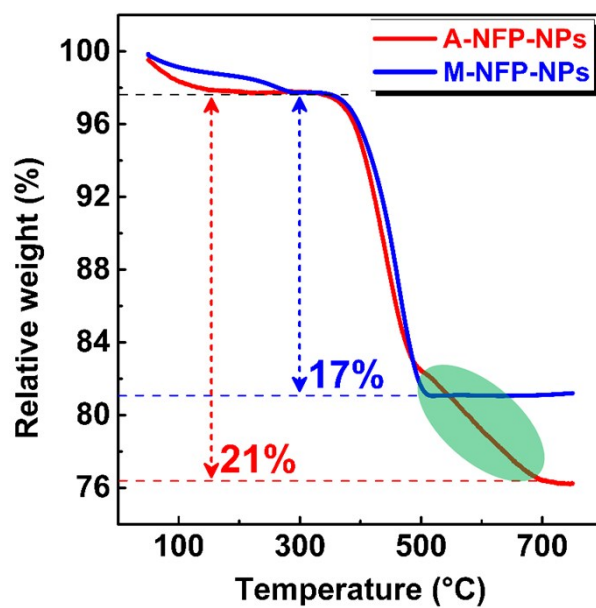


Fig. S6 TGA (weight loss) curves of A-NFP-NPs and M-NFP-NPs.

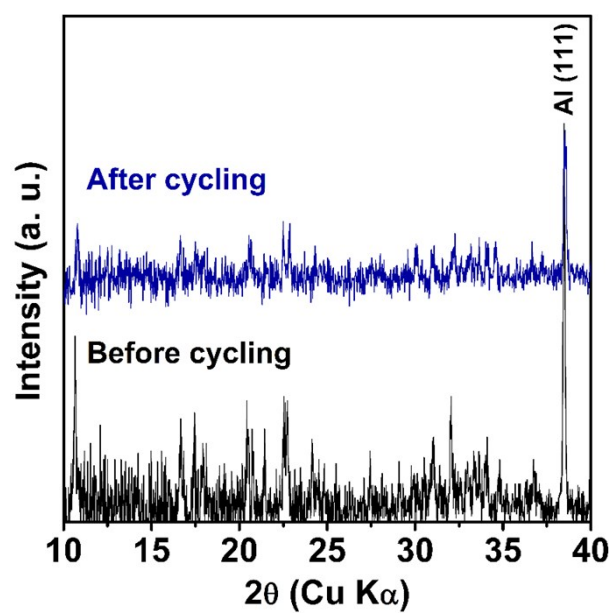


Fig. S7 XRD patterns of M-NFP-NPs before cycling and after 100 cycles.

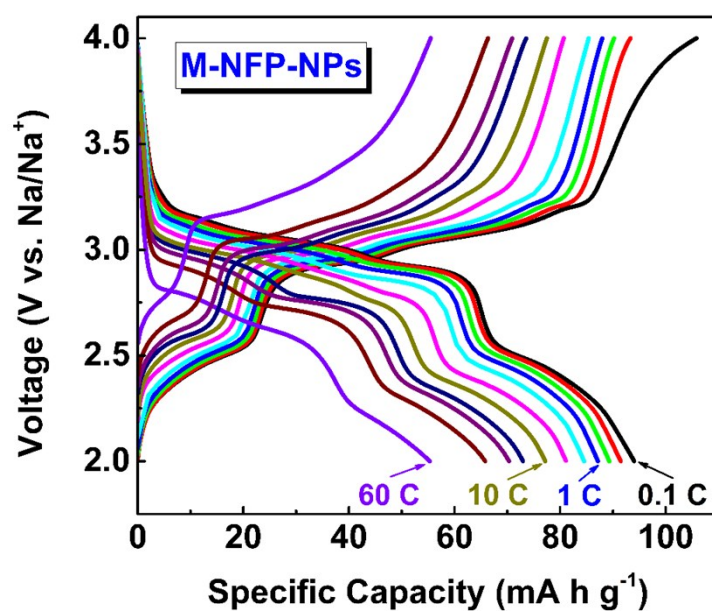


Fig. S8 Galvanostatic voltage profiles of M-NFP-NPs at different rates from 0.1 to 60 C.

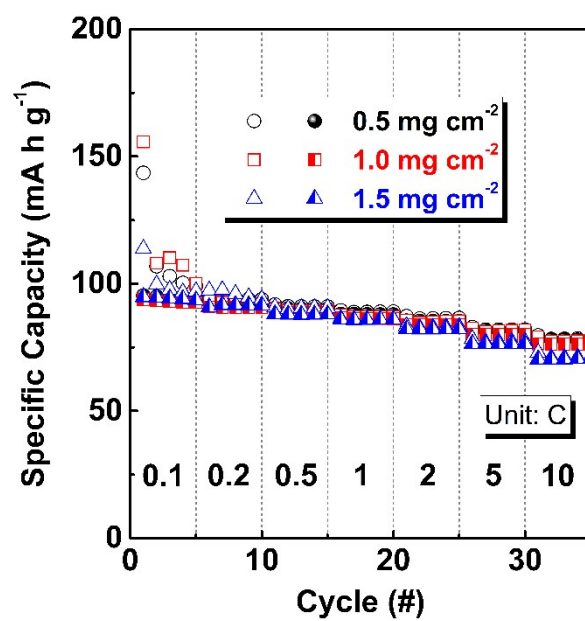


Fig. S9 Rate capability of M-NFP-NPs with different loading of active material at different rate from 0.1 to 10 C.

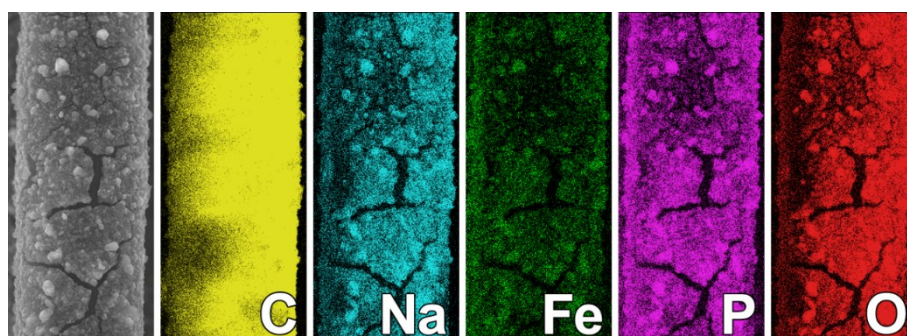


Fig. S10 SEM EDS elemental mapping of NFP-NPs@PCC.

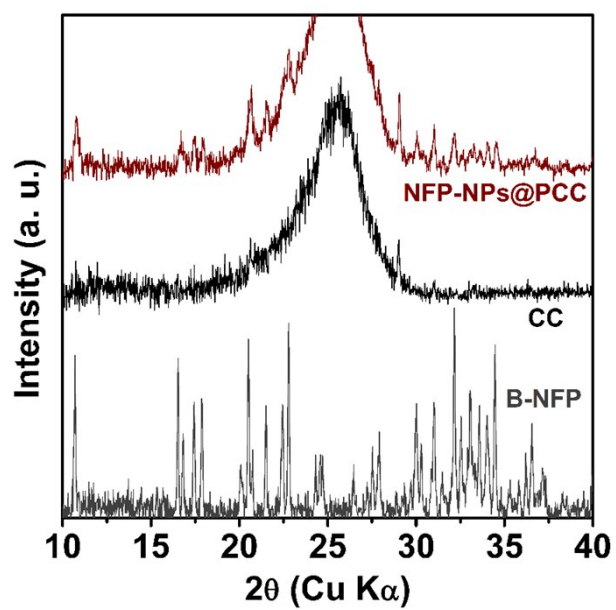


Fig. S11 XRD patterns of commercial bare-CC and NFP-NPs@PCC.

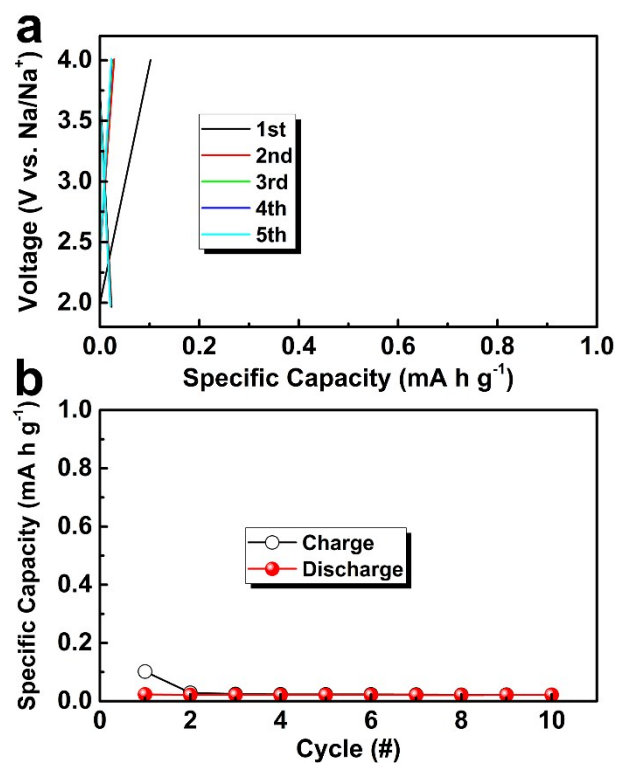


Fig. S12 (a) Galvanostatic voltage profiles and (b) Specific capacity of PCC.