

Supplementary Information for

Mo-doped $\text{Na}_4\text{Fe}_3(\text{PO}_4)_2\text{P}_2\text{O}_7/\text{C}$ Composites for High Rate and Long-life

Sodium-ion Batteries

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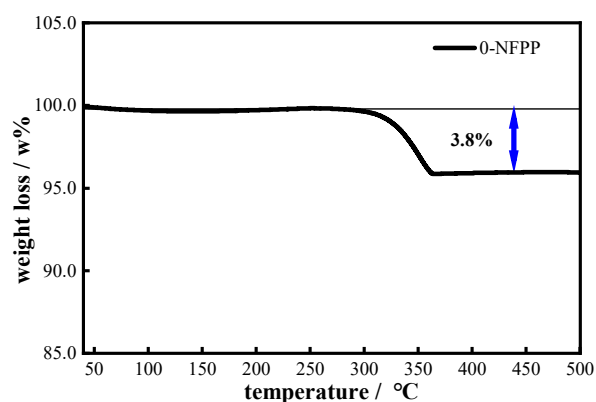


Figure S1 Thermogravimetric diagrams of 0-NFPP.

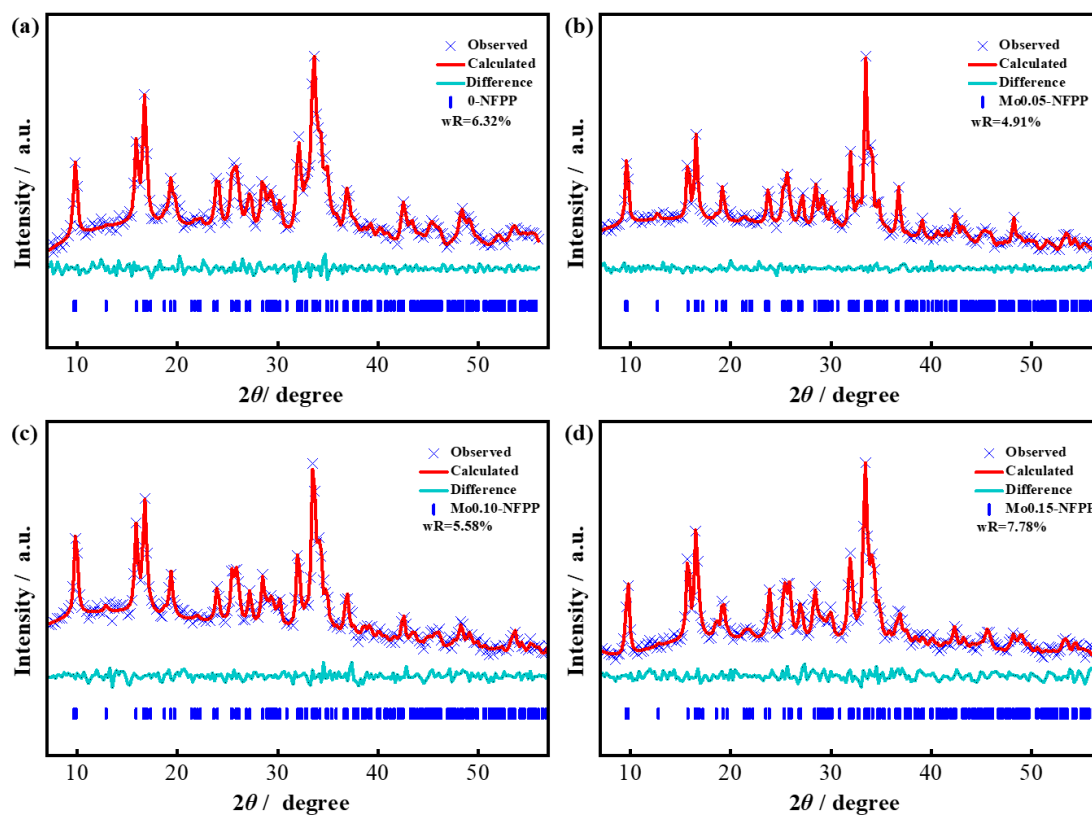


Figure S2 Rietveld refinements of the XRD patterns of (a) 0-NFPP, (b) Mo0.05-NFPP, (c) Mo0.10-NFPP, and (d) Mo0.15-NFPP samples.

Table S1 Lattice parameters of Mox-NFPP materials.

Sample	0-NFPP	Mo0.05-NFPP	Mo0.10-NFPP	Mo0.15-NFPP
a (Å)	18.038751	18.102355	18.055107	18.015246
b (Å)	6.555948	6.555246	6.569176	6.590088
c (Å)	10.706099	10.678863	10.714705	10.706736
V (Å ³)	1266.15	1267.212	1270.841	1271.126
wR	6.32%	4.91%	5.58%	7.78%

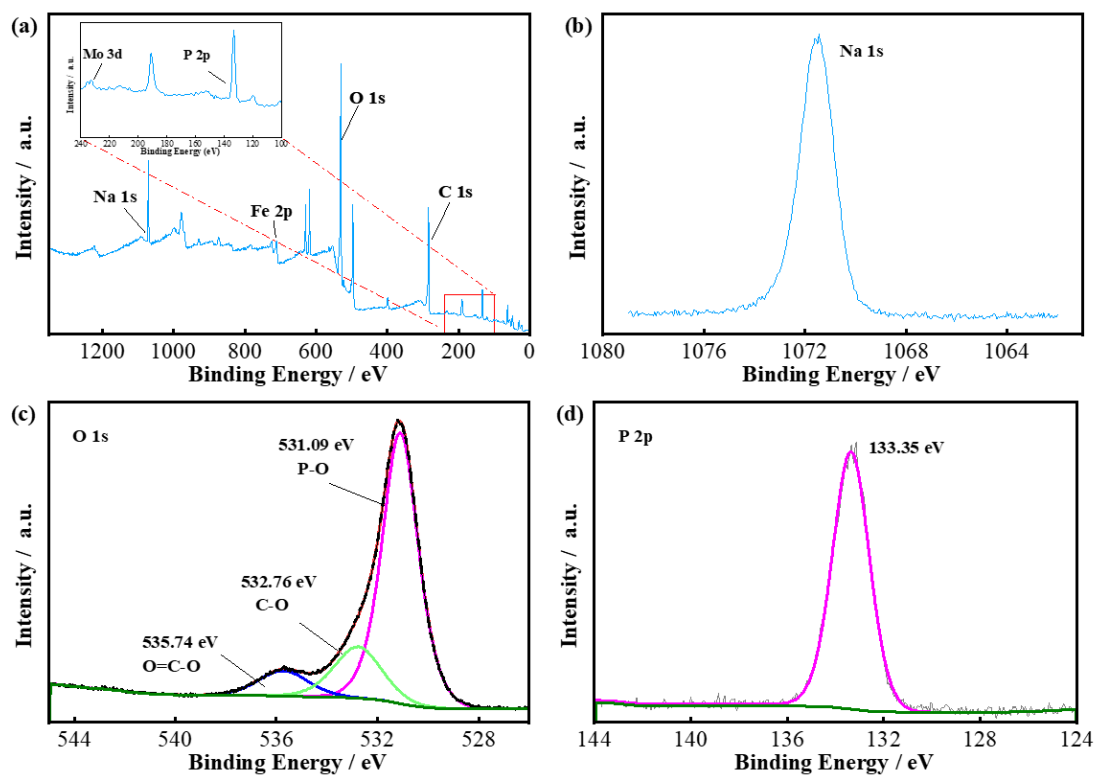


Figure S3 (a) XPS survey, and (b) Na 1s, (c) O 1s, (d) P 2p spectra of Mo_{0.10}-NFPP.

Table S2 Impedance parameters of Mox-NFPP materials

Sample	0-NFPP	Mo0.05-NFPP	Mo0.10-NFPP	Mo0.15-NFPP
$R_s (\Omega)$	6.50	5.60	4.50	4.00
$R_{ct} (\Omega)$	1485	1253	725	1144
$W (\Omega \text{ s}^{-1/2})$	182	261	310	312
CPE	300 nF	300 nF	300 nF	300 nF
	$\alpha=0.82$	$\alpha=0.81$	$\alpha=0.80$	$\alpha=0.82$

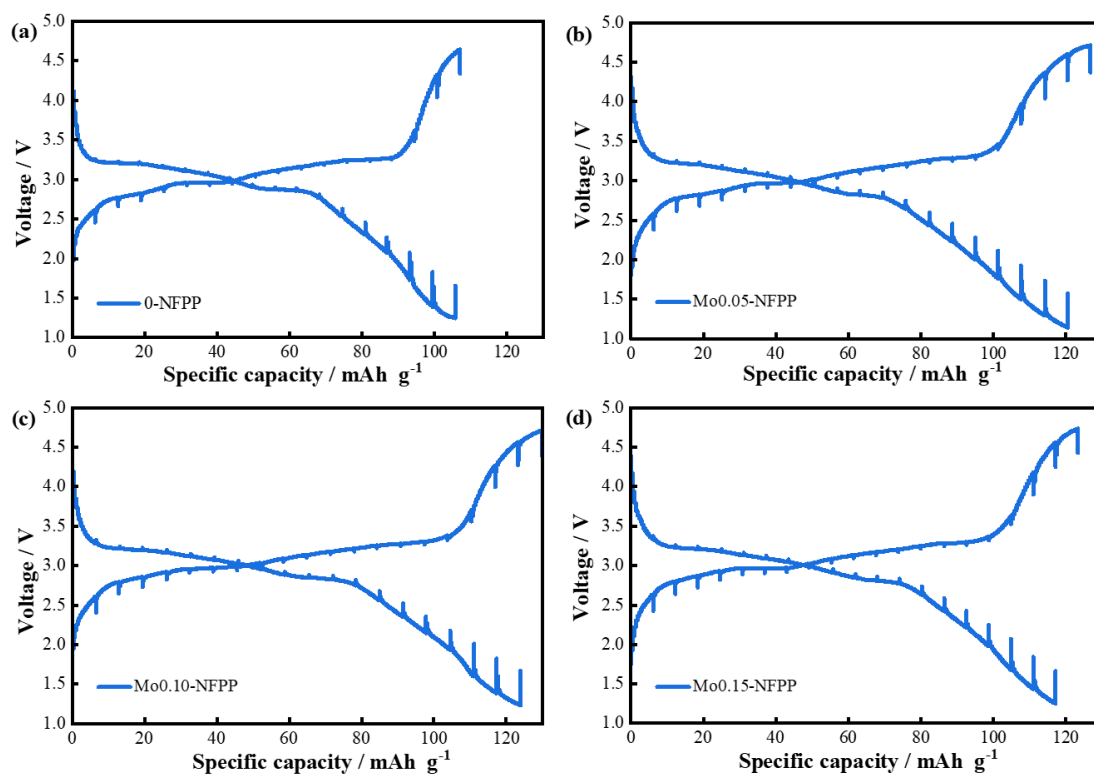


Figure S4 GITT curves of (a) 0-NFPP, (b) Mo0.05-NFPP, (c) Mo0.10-NFPP, (d) Mo0.15-NFPP.

Table S3 Comparison of electrochemical performance of ions doped NFPP materials from different research.

Doped ions	Conductive coating materials	Discharge capacity (mAh g ⁻¹)	Capacity retention	Ref.
Mo ⁶⁺	C	123.9 (0.1C)		This work
		95.71 (5C)	96.18% (500 cycles, 10C)	
		86.09 (10C)		
Mn ²⁺	rGO	131.5 (0.1C)	91.6% (200 cycles, 2C)	[S1]
		97.3 (5C)	96.7% (700 cycles, 5C)	
		90.8 (10C)	97.2 (2000 cycles, 10C)	
Mn ²⁺	C	119.6 (0.1C)		[S2]
		88.97 (5C)	94.6% (1000 cycles, 10C)	
		81.66 (10C)		
Mg ²⁺	C	104 (0.05 A g ⁻¹) ~75 (5 A g ⁻¹)	90.4% (5000 cycles, 5 A g ⁻¹)	[S3]
	C	105.44 (0.1C)	91.97% (500 cycles, 10C)	
Cr ³⁺	CNT	89 (5C)		[S4]
		120.64 (0.1C)	92.37% (2000 cycles, 10C)	
		87.11 (20C)		
Ti ⁴⁺	C	105.3 (0.2C)	91.4% (200 cycles, 1C)	[S5]
		84.9 (5C)	93.8% (2000 cycles, 10C)	
		80 (10C)		
V ³⁺	C	123.4 (0.1C)		[S6]
		105.7 (5C)	81.65% (10000 cycles, 20C)	
		102.3 (10C)		

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