

**Construction of a stable interface in the cathode of $\text{Na}_{0.67}\text{Ni}_{0.33}\text{Mn}_{0.67}\text{O}_2$
by LiDFOB electrolyte additives for high-performance sodium-ion
batteries.**

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Captions

Table S1. The HOMO and LUMO energy levels of EC, DEC, PF₆⁻, DFOB⁻.

Table S2. Contents of each component in the five groups of electrolytes.

Table S3. Fitting results of the equivalent circuit model.

Fig. S1. Linear sweep voltammetry (LSV) of NNMO // Na containing LiDFOB of different amounts during the initial cathodic scan from 2 to 4.2 V at a current density of 0.1 mA.

Fig. S2. The equivalent circuit model for impedance fitting.

Fig. S3. The GITT profiles of P2-NNMO (a) in baseline electrolyte and (b) electrolyte containing 0.8 wt% LiDFOB at the voltage range of 2 – 4.2 V.

Fig. S4. Fig. S4. (a) Initial charge / discharge curves at 0.1 C (b) Rate capability. (c) Cycling performance at 1 C of the NNMO//HC full cell.

Fig. S5. The XPS spectra of NNMO cathode with 0.8 wt% LiDFOB electrolyte of B 1s spectra in the half cell.

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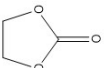
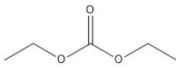

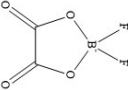
Molecule	Structure	E_{HOMO}/eV	E_{LUMO}/eV
EC		-6.903	-0.295
DEC		-7.221	-0.090
PF ₆ ⁻		-0.12	0.189
DFOB ⁻		-0.075	0.057

Table S2. Contents of each component in the five groups of electrolytes.

No.	EC	DEC	LiDFOB	NaPF ₆
D1	50%	50%	0.2 wt%	1.0 M
D2	50%	50%	0.4 wt%	1.0 M
D3	50%	50%	0.6 wt%	1.0 M
D4	50%	50%	0.8 wt%	1.0 M
D5	50%	50%	1.0 wt%	1.0 M

Table S3. Fitting results of the equivalent circuit model

Electrolyte		1 st	10 th	20 th	30 th	40 th
0 wt%	R _{CEI} /Ω	1260	1012	1309	1140	660.1
	R _{ct} /Ω	174.8	555.1	535.5	470.2	763
0.2 wt%	R _{CEI} /Ω	194.6	483.2	567	569.7	653
	R _{ct} /Ω	3015	6238	15467	3887	4529
0.4 wt%	R _{CEI} /Ω	179.4	344.4	394.3	213.9	89.28
	R _{ct} /Ω	8276	8251	9442	2446	2588
0.6 wt%	R _{CEI} /Ω	107.8	195.4	638.2	632.3	812.3
	R _{ct} /Ω	9346	12366	3631	6395	7949
0.8 wt%	R _{CEI} /Ω	7.936	82.38	147.1	124.8	126.2
	R _{ct} /Ω	32100	4830	10809	2911	6019

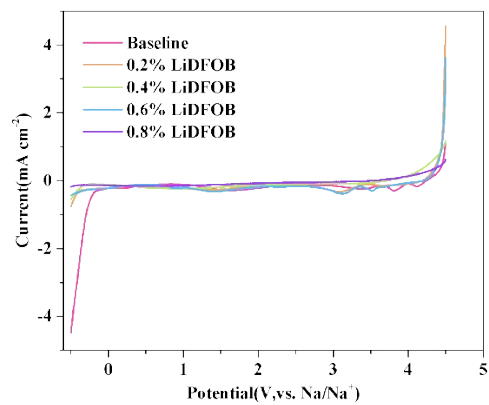


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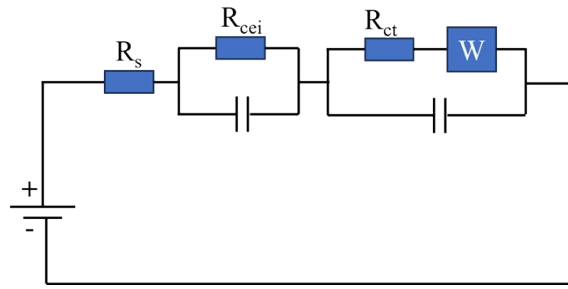


Fig. S2. The equivalent circuit model for impedance fitting

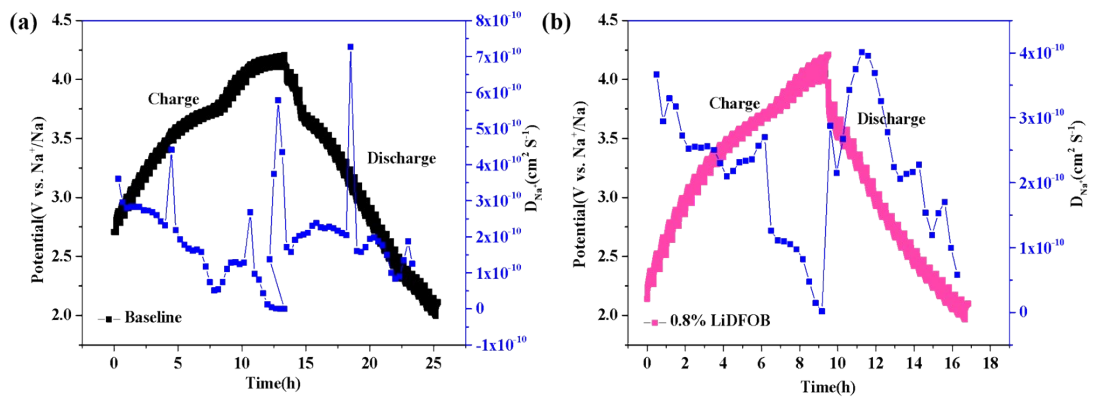


Fig. S3. The GITT profiles of P2-NNMO (a) in baseline electrolyte and (b) electrolyte containing 0.8wt% LiDFOB at the voltage range of 2 – 4.2 V.

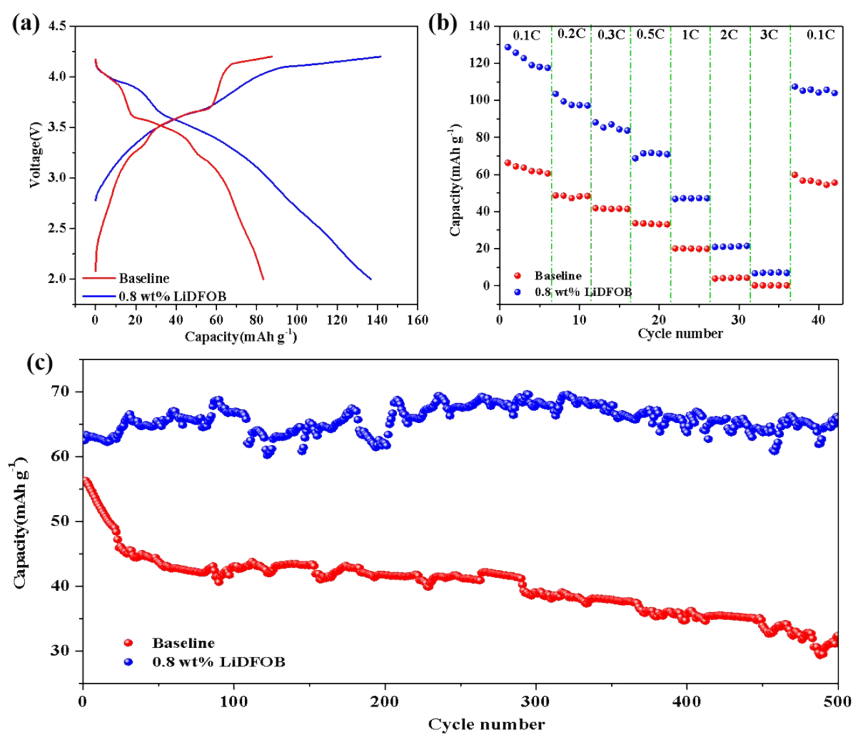


Fig. S4. (a) Initial charge / discharge curves at 0.1 C (b) Rate capability. (c) Cycling performance at 1 C of the NNMO//HC full cell.

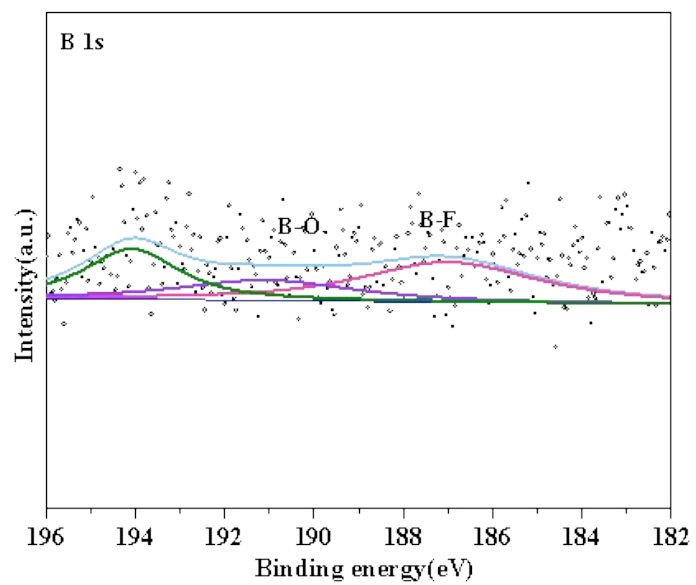


Fig. S5. The XPS spectra of NNMO cathode with 0.8 wt% LiDFOB electrolyte of B 1s spectra in the half cell.