Supporting Information

High Rate $LiTi_2(PO_4)_3$@N-C Composite *via* Bi-nitrogen Sources Doping

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Samples	a/nm	c/nm
LTP-T	0.8501	2.0877
LTP-T-U	0.8513	2.0861

Table S1 The lattice parameters of as-prepared LTP-T and LTP-T-U

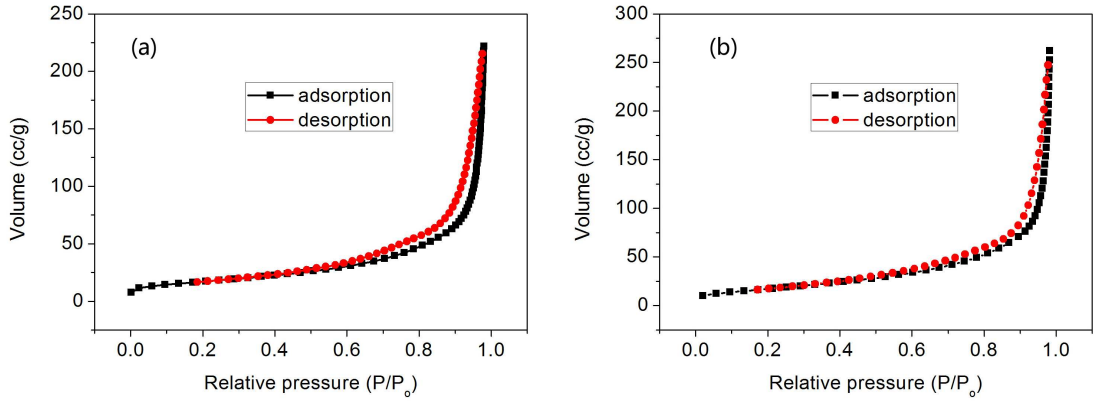

Fig. S1 N_2 adsorption-desorption isotherm of LTP-T (a) and LTP-T-U (b).

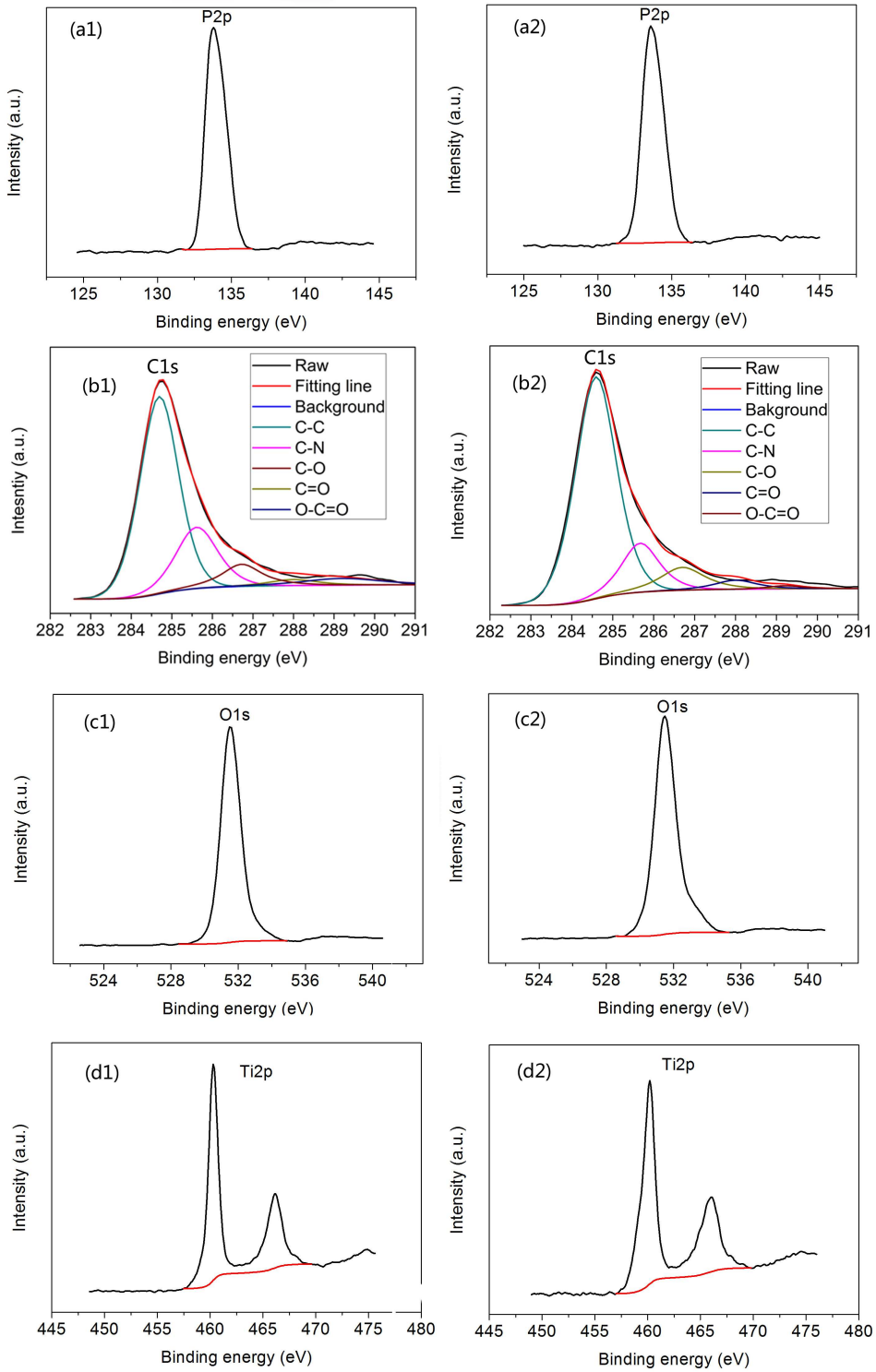

Fig. S2 The high-resolution XPS images of P2p (a1), C1s (b1), O1s (c1), Ti2p (d1) in LTP-T-U and P2p (a2), C1s (b2), O1s (c2), Ti2p (d2) in LTP-T.

Table S2 I_{pa}/I_{pc} of LTP-T-U at different sweep rates

Samples	I_{pa}/I_{pc}			
	0.2 mV	0.4 mV	0.6 mV	0.8 mV
LTP-T-U	1.0526	1.0035	1.0639	1.0352

Table S3 Impedance parameters of LTP-T and LTP-T-U

Samples	R_s (Ω)	R_f (Ω)	R_{ct} (Ω)
LTP-T	4.3	8.7	15.9
LTP-T-U	3.1	6	11.5

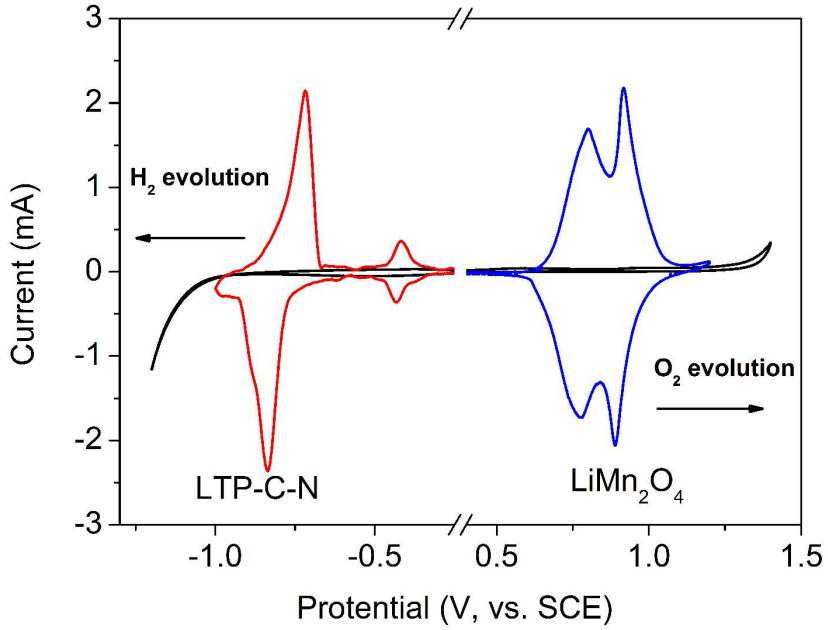

Fig. S3 CV curves of as-prepared LTP/C-55 and $LiMn_2O_4$ electrode in Li_2SO_4 solution at a sweep rate of 0.4 $mV \cdot s^{-1}$, respectively, measured by a three-electrodes system using a platinum sheet as the counter electrode and a saturated calomel electrode (SCE) as the reference electrode.

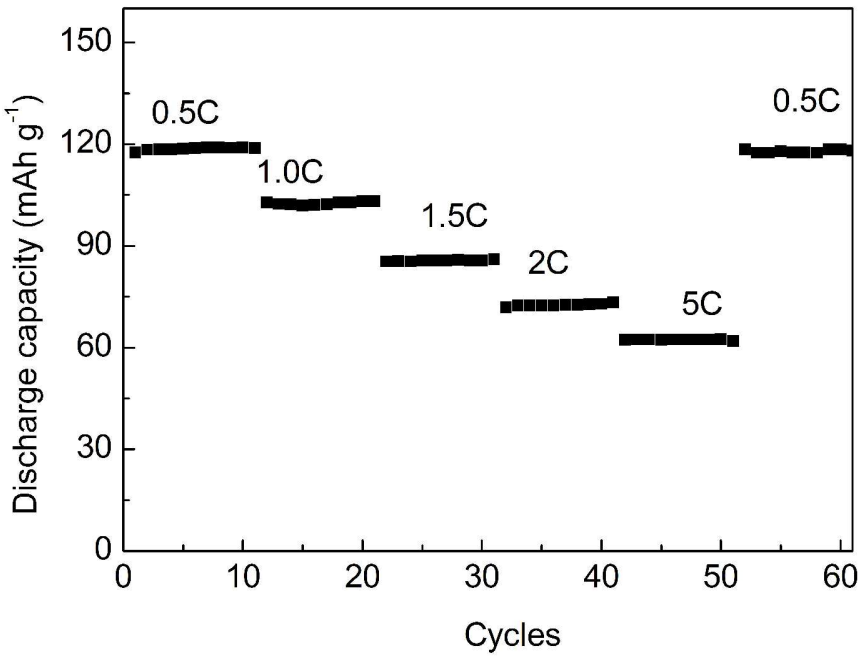

Fig. S4 The rate capability of commercial $LiMn_2O_4$ in organic electrolyte.

Table S4 The rate capability of LTP-T-U in organic electrolyte.

Current rate (1C=150 mA g^{-1})	1C	4C	10C	20C	30C	40C	50C
Capacity (mAh g^{-1})	126.7	124.5	120.4	116.8	109.8	100.2	87.2

Table S5 Cycling performance of ALIBs reported by different research groups

No.	Battery system	Capacity retention/Cycles	Rate	Ref.
1	VO_2(B)/C//$LiMn_2O_4$	Failed/25	0.69 mA cm^{-2}	1
2	$V_2O_5 \cdot nH_2O$//$LiMn_2O_4$	89%/100	50 mA g^{-1}	2
3	$H_2V_3O_8$*	72%/50	0.1 A g^{-1}	3
4	LiV_3O_8//$LiMn_2O_4$	78.7%/50	0.2 C	4
5	Polyaniline//$LiMn_2O_4$	81.4%/150	75 mA g^{-1}	5
6	LiV_3O_8//$LiCo_2O_4$	36%/100	3.4 mA cm^{-2}	6
7	LiV_3O_8//$LiNi_{0.81}Co_{0.19}O_2$	40%/100	1 mA cm^{-2}	7
8	TiP_2O_7//$LiCo_2O_4$	37%/25	0.1C	8
9	LiV_3O_8*	30.85%/100	0.1C	9
10	LiV_3O_8//$LiMn_2O_4$	53.5%/100	0.2C	10
11	$Li_{1.2}V_3O_8$*	88%/50	0.2C	11
12	Polypyrrole-coated LiV_3O_8	84%/10	250 mA cm^{-2}	12
13	$Na_2V_6O_{16} \cdot 0.14H_2O$//$LiMn_2O_4$	77%/200	300 mA g^{-1}	13
14	NaV_6O_{15}//$LiMn_2O_4$	80%/400	300 mA g^{-1}	14
15	$LiTi_2(PO_4)_3$/C//$LiMn_2O_4$	82%/200	10 mA cm^{-2}	15
16	$LiTi_2(PO_4)_3$/C//$LiFePO_4$	85%/50	~0.125C	16
17	$LiTi_2(PO_4)_3$/C//$LiMn_2O_4$	75%/10	0.1C	8
18	$LiTi_2(PO_4)_3$//$LiMn_{0.05}Ni_{0.05}Fe_{0.9}PO_4$	<80%/50	0.2 mA cm^{-2}	17
19	$LiTi_2(PO_4)_3$/C*	90%/100	0.2C	18
20	$LiTi_2(PO_4)_3$//$LiNi_{1/3}Mn_{1/3}Co_{1/3}O_2$	92%/200	0.2 mA cm^{-2}	19
21	MoO_3/PPy// $LiMn_2O_4$	90%/150	1000 mA g^{-1}	20
22	$LiTi_2(PO_4)_3$/C//$LiMn_2O_4$	90%/300 84%/1300	30 mA g^{-1} (0.2C) 150 mA g^{-1}(1C)	21
22	$LiTi_2(PO_4)_3$@N-C//$LiMn_2O_4$	**91.2%/100** **90.4%/400**	30 mA g^{-1} (0.2C) 150 mA g^{-1}(1C)	this work

	84.0%/1000	750 mA g^{-1}(5C)

∗ The electrochemical properties of materials are tested using a three-electrode system.

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