Supporting Information

for

$Na_{0.5}Bi_{0.5}TiO_3$ Perovskite Anode for Lithium Ion Battery

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Table S1. Crystallographic parameters derived from the Rietveld refinement of lab XRD data (Cu Kα) of $Na_{0.5}Bi_{0.5}TiO_3$ at 25 °C.

Formula	$Na_{0.5}Bi_{0.5}TiO_3$
Crystal system	*Trigonal*
Space group	*R*3*c* (#161)
Unit cell parameter (Å)	$a = b = 5.4844$, $c = 13.50305$
Unit cell volume (Å^3)	$V = 351.744$
Theoretical density (g/cm^3)	6.001
Refinement factors	$R_{Bragg} = 2.34\%$, Global $\chi^2 = 24$

Atom	Wyckoff Position	*x*/*a*	*y*/*b*	*z*/*c*	Occupancy	B_{iso} /Å^2
Na	6*a*	0	0	0.3	0.5	1.73(63)
Bi	6*a*	0	0	0.3	0.5	1.73(63)
Ti	6*a*	0	0	0	1	-0.47(12)
O	18*b*	0.1286(63)	0.2921(60)	0.1124	1	1

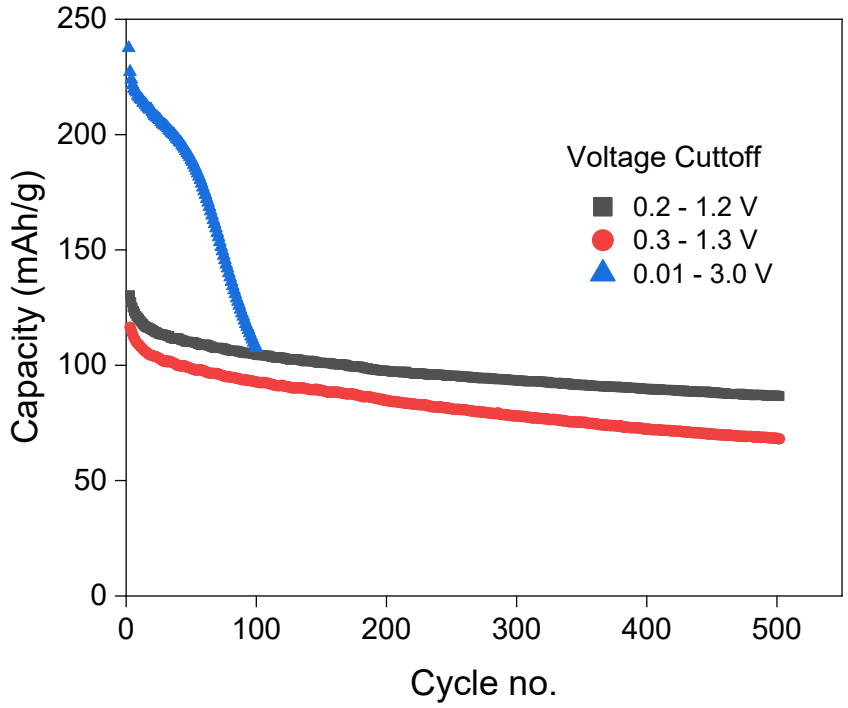

Figure S1. Cycling performance of NBT perovskite anode in different voltage windows: (0.01-3.0 V) -red, (0.2-1.2 V) - green, and (0.3-1.3 V) – blue.

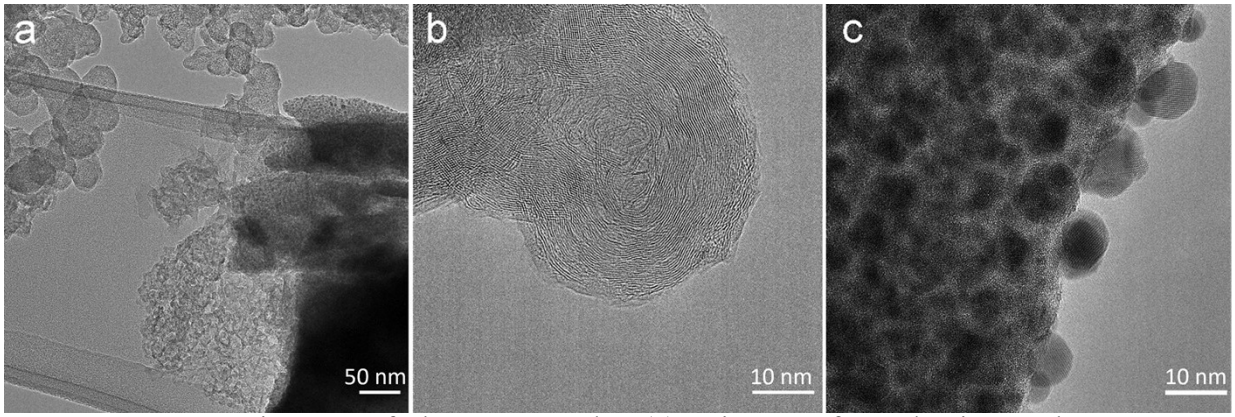

Figure S2. TEM images of the 1C sample: (a) mixture of conductive carbon, parent $Na_{0.5}Bi_{0.5}TiO_3$ and Li_2O, (b) magnified image of conductive carbon, and (c) magnified image of the surface of pristine $Na_{0.5}Bi_{0.5}TiO_3$.

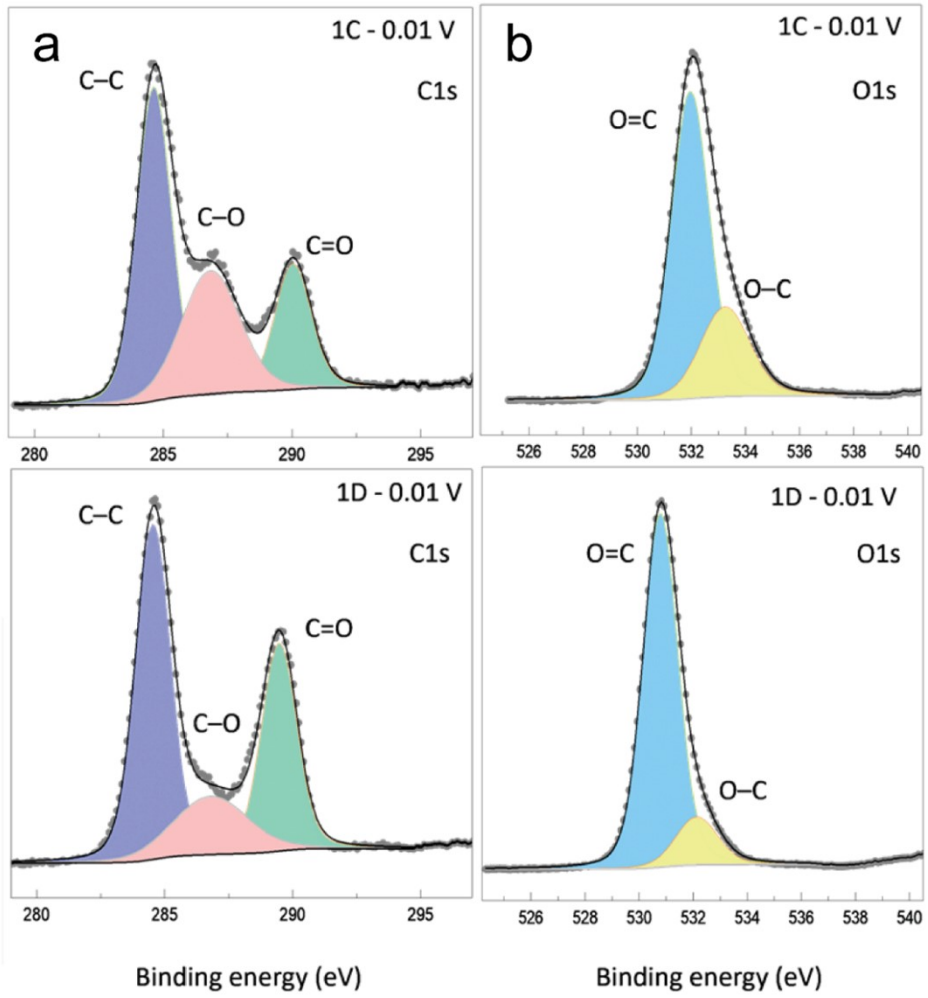

Figure S3. Ex-situ XPS study showing (a) C 1*s* spectra after full charge (top) and full discharge (bottom); and (b) O 1*s* spectra after full charge (top) and full discharge (bottom).