

## Supporting Information

### Mass production of $\text{Li}_4\text{Ti}_5\text{O}_{12}$ with conductive network via In-situ spray pyrolysis as a long cycle life, high rate anode material for lithium ion batteries

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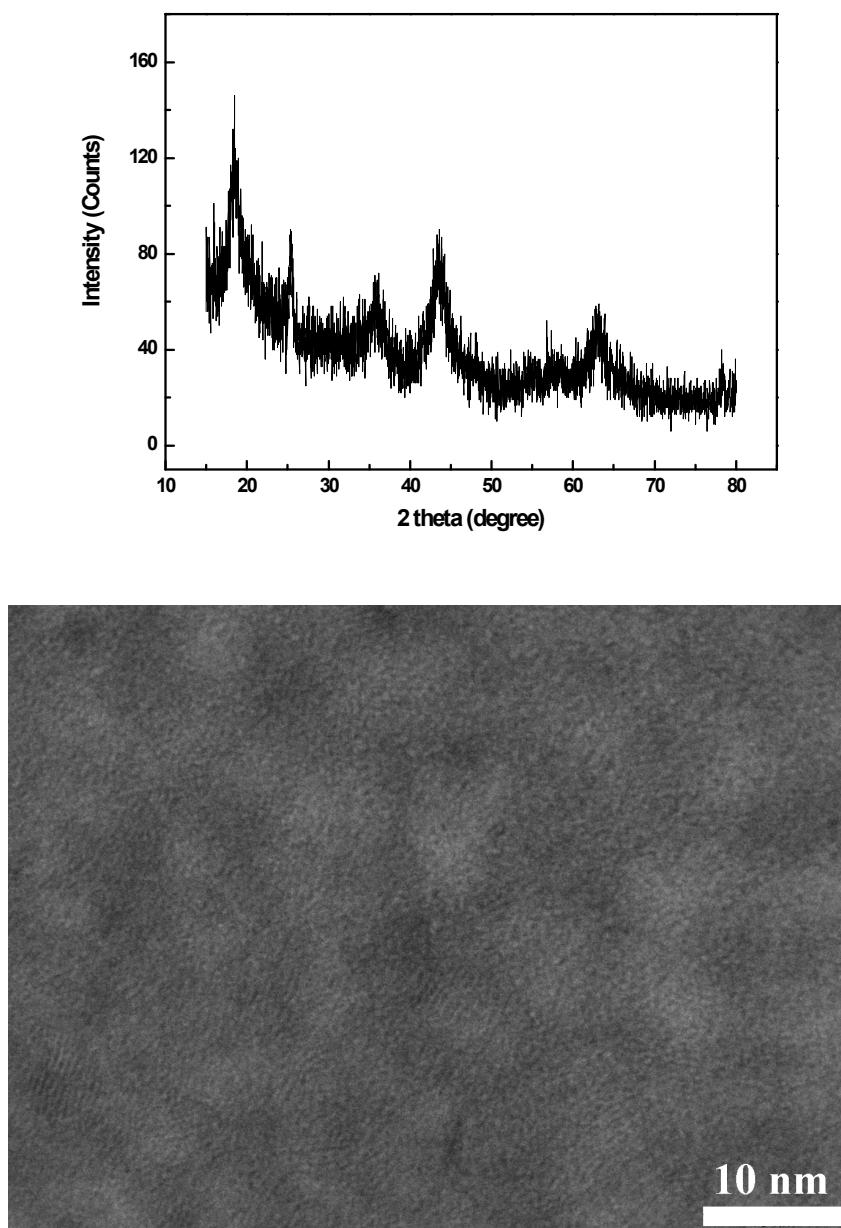


Figure S1. (a) XRD pattern and (b) high resolution TEM image of the raw  $\text{Li}_4\text{Ti}_5\text{O}_{12}$ .

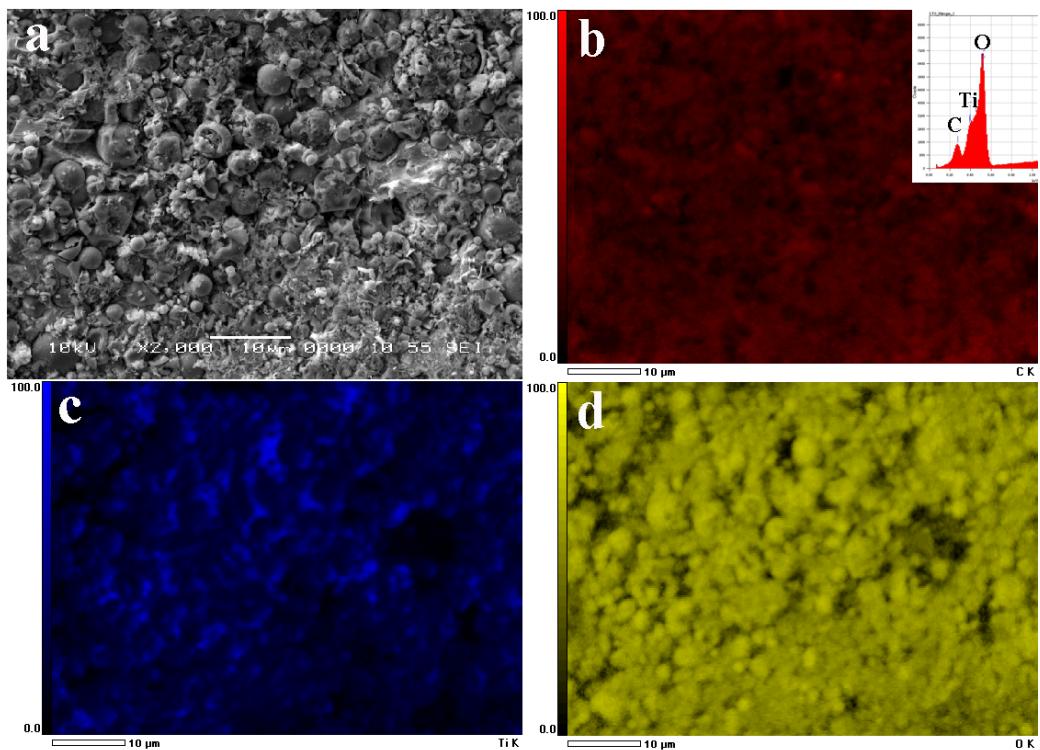


Figure S2. EDS mapping of sample LTO-N: (a) SEM image, (b) carbon distribution, with the inset showing the EDS spectrum, (c) titanium distribution, (d) oxygen distribution.

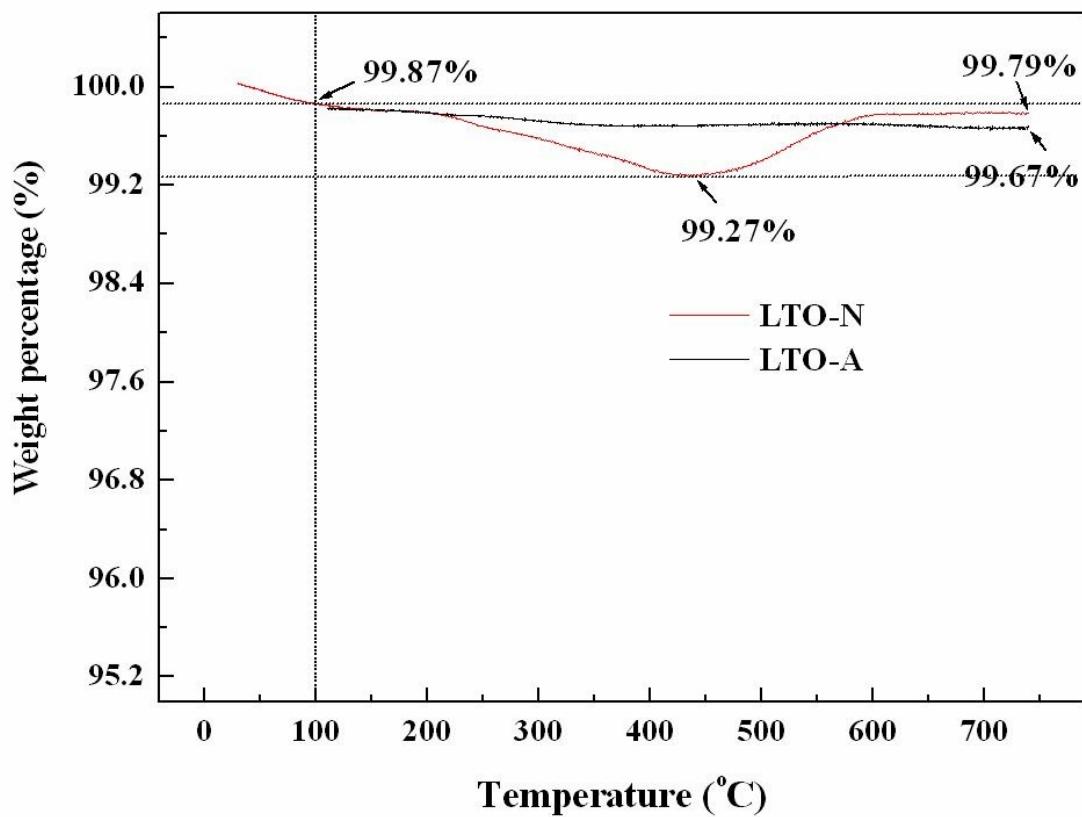


Figure S3. The TGA curves of LTO-N and LTO-A samples.

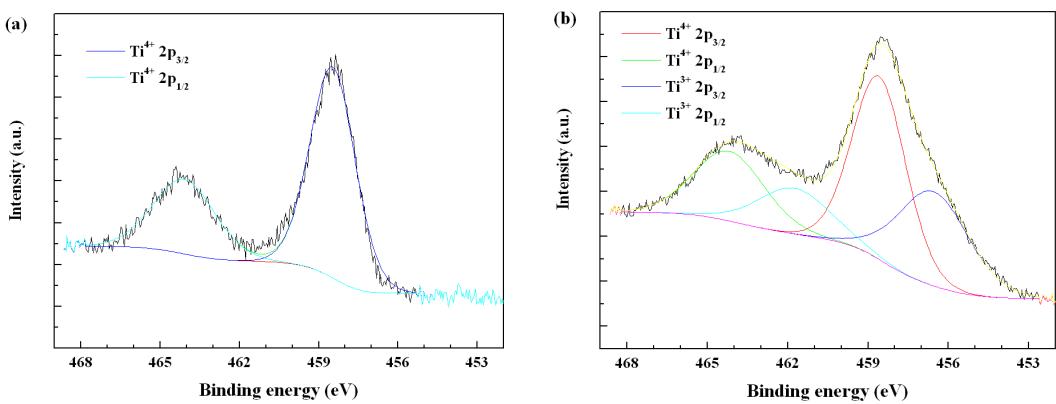


Figure S4. X-ray photoelectron Ti 2p core level spectra of the LTO-N sample: (a) outer surface layer and (b) after Ar ion etching.

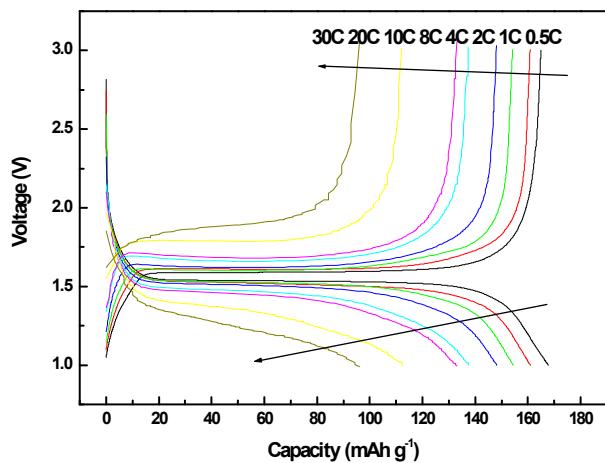


Figure S5. Galvanostatic charge/discharge curves of  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  annealed in  $\text{N}_2$  at different C-rates.

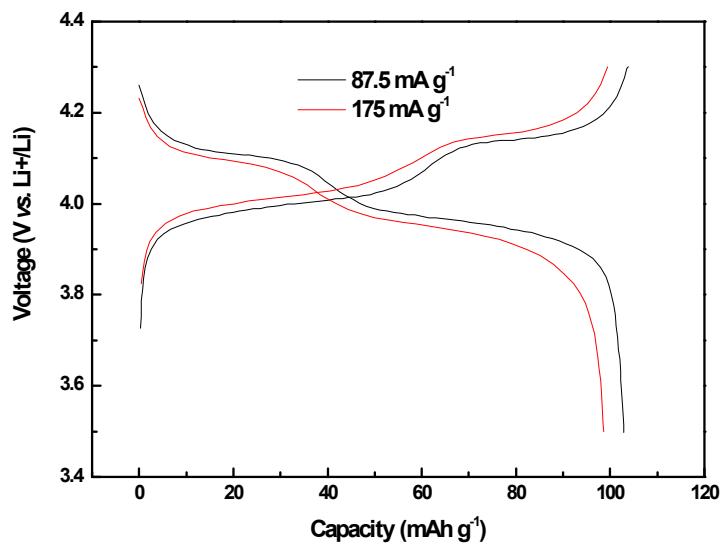


Figure S6. Galvanostatic charge/discharge curves of  $\text{Li}(\text{Co}_{0.16}\text{Mn}_{1.84})\text{O}_4$  vs.  $\text{Li}^+/\text{Li}$  at current densities of  $87.5 \text{ mA g}^{-1}$  and  $175 \text{ mA g}^{-1}$ .

Table S1. Lattice parameter, oxygen positional parameter (only atomic parameter that was refined), atomic displacement parameters and the fitting statistics for the Rietveld refinements.

Sample	Lattice Parameter ( $\text{\AA}$ )	Oxygen positional parameter $x = y = z$	Atomic displacement parameters ( $100 * U_{\text{iso}}$ ) Li, Li/Ti, O	R <sub>p</sub>	wR <sub>p</sub>	$\chi^2$ (goodness-of-fit term)
N <sub>2</sub>	8.3692(3)	0.2628(2)	4.9(6), 3.9(1), 3.0(1)	8.87	11.38	1.33
Air	8.3607(1)	0.2633(2)	6.8(8), 4.1(1), 3.2(1)	7.19	9.25	1.61