Supporting information for

Scalable synthesis of one-dimensional $Na_2Li_2Ti_6O_{14}$ nanofibers as ultrahigh rate capability anodes for lithium-ion batteries

Chao Wang,[a] Xing Xin,*[a,c] Miao Shu,[b] Shuiping Huang,*[a] Yang Zhang,[d] Xing Li*[a,b]

[a] Faculty of Science, College of Materials Science and Chemical Engineering, Ningbo University, Ningbo 315211, China

[b] Key Laboratory of Photoelectric Materials and Devices of Zhejiang Province, Ningbo 315211, China

[c] National Institute for Materials Science, 1-1 Namiki, Tsukuba 305-0044, Japan

[d] Electron Microscopy for Materials Science (EMAT), University of Antwerp, Groenenborgerlaan 171, 2020 Antwerp, Belgium

Corresponding author email: lixing@nbu.edu.cn

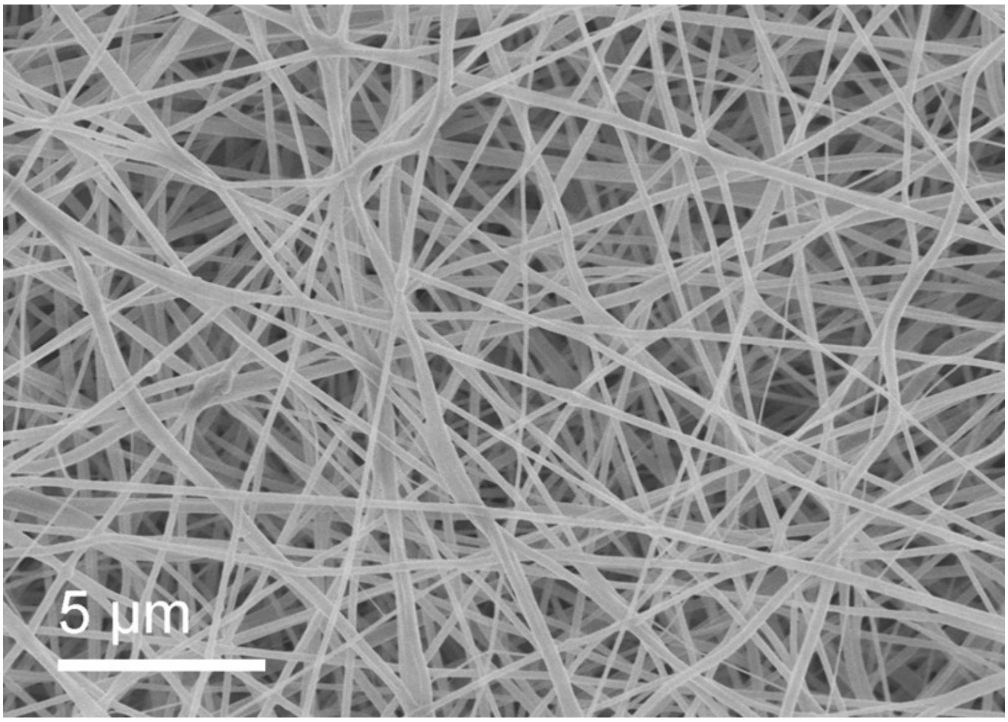

Fig. S1. SEM images of precursor nanofibers.

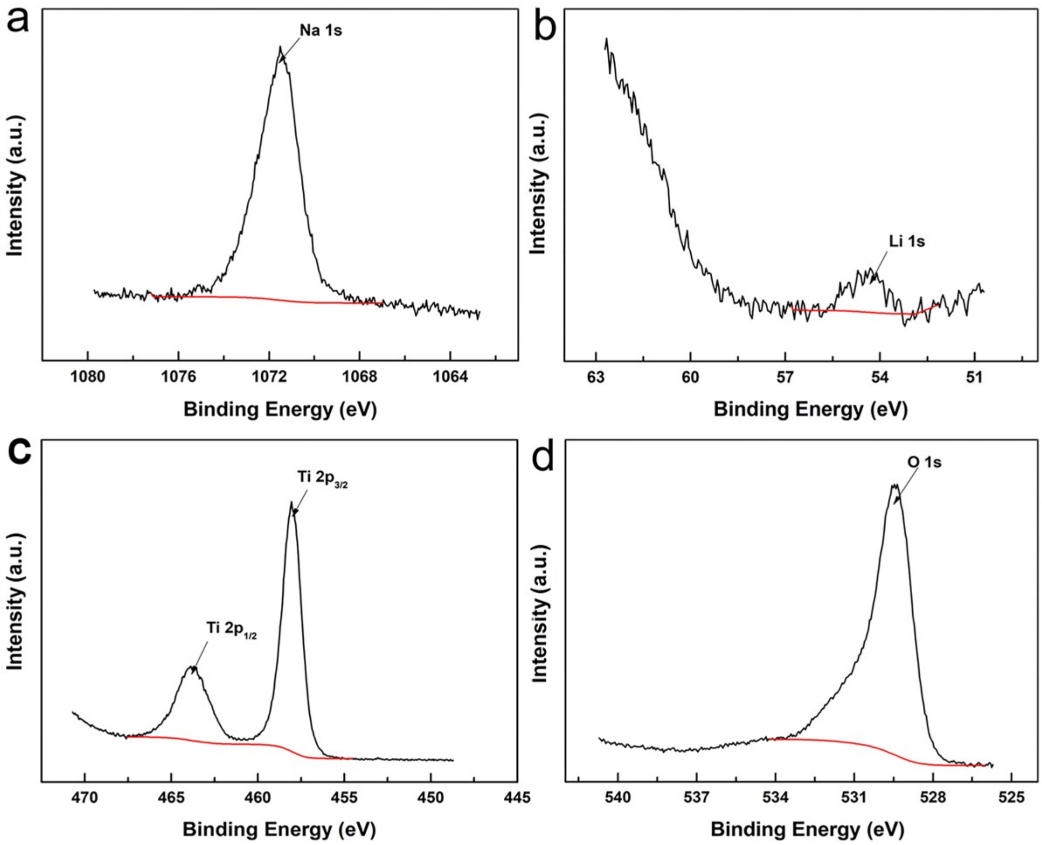

Fig. S2. High-resolution XPS spectra of Na (a), Li (b), Ti (c) and O element (d) .

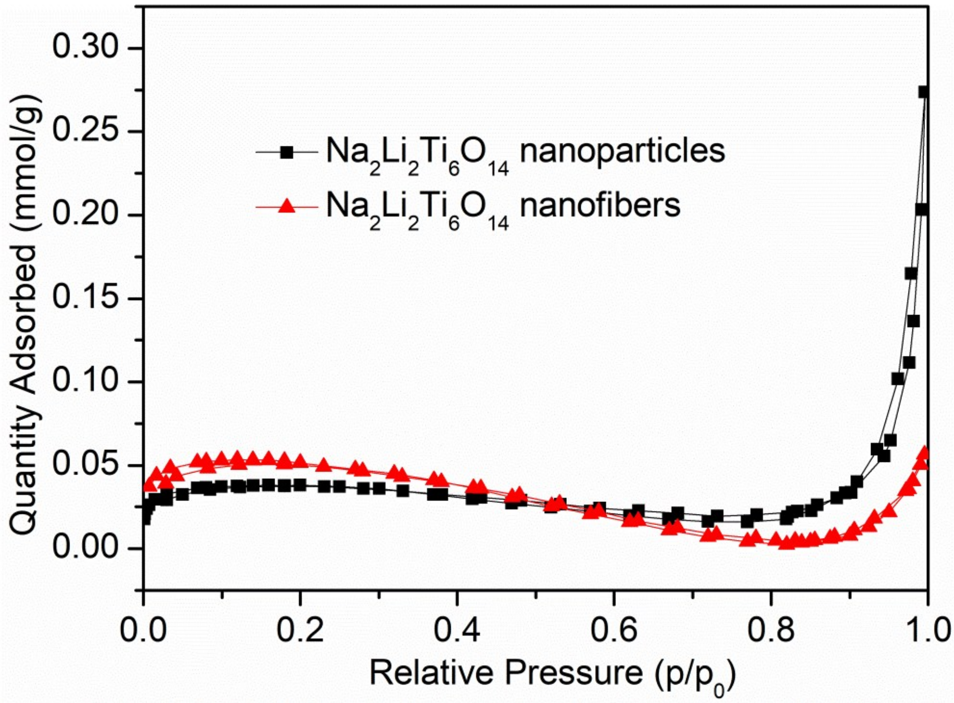

Fig. S3 The BET isothermal curves of the $Na_2Li_2Ti_6O_{14}$ nanofibers and nanoparticles.

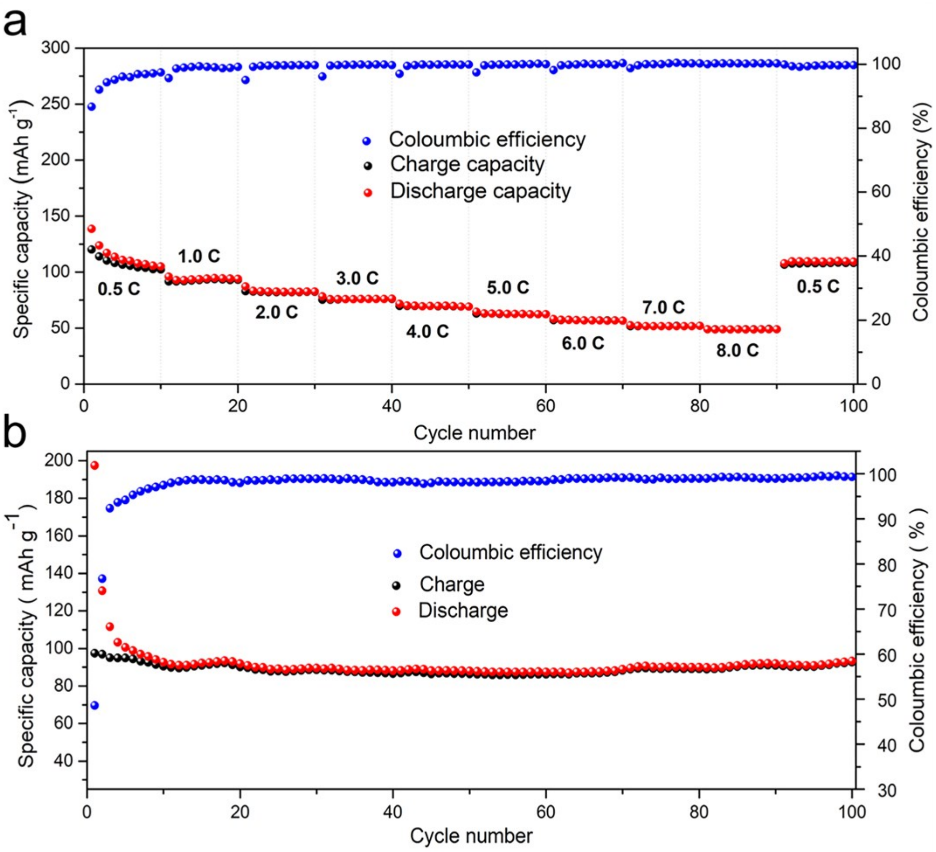

Fig. S4 (a) Rate performance of $Na_2Li_2Ti_6O_{14}$ nanoparticles. (b) Cycling performances at current densities of 1 C.

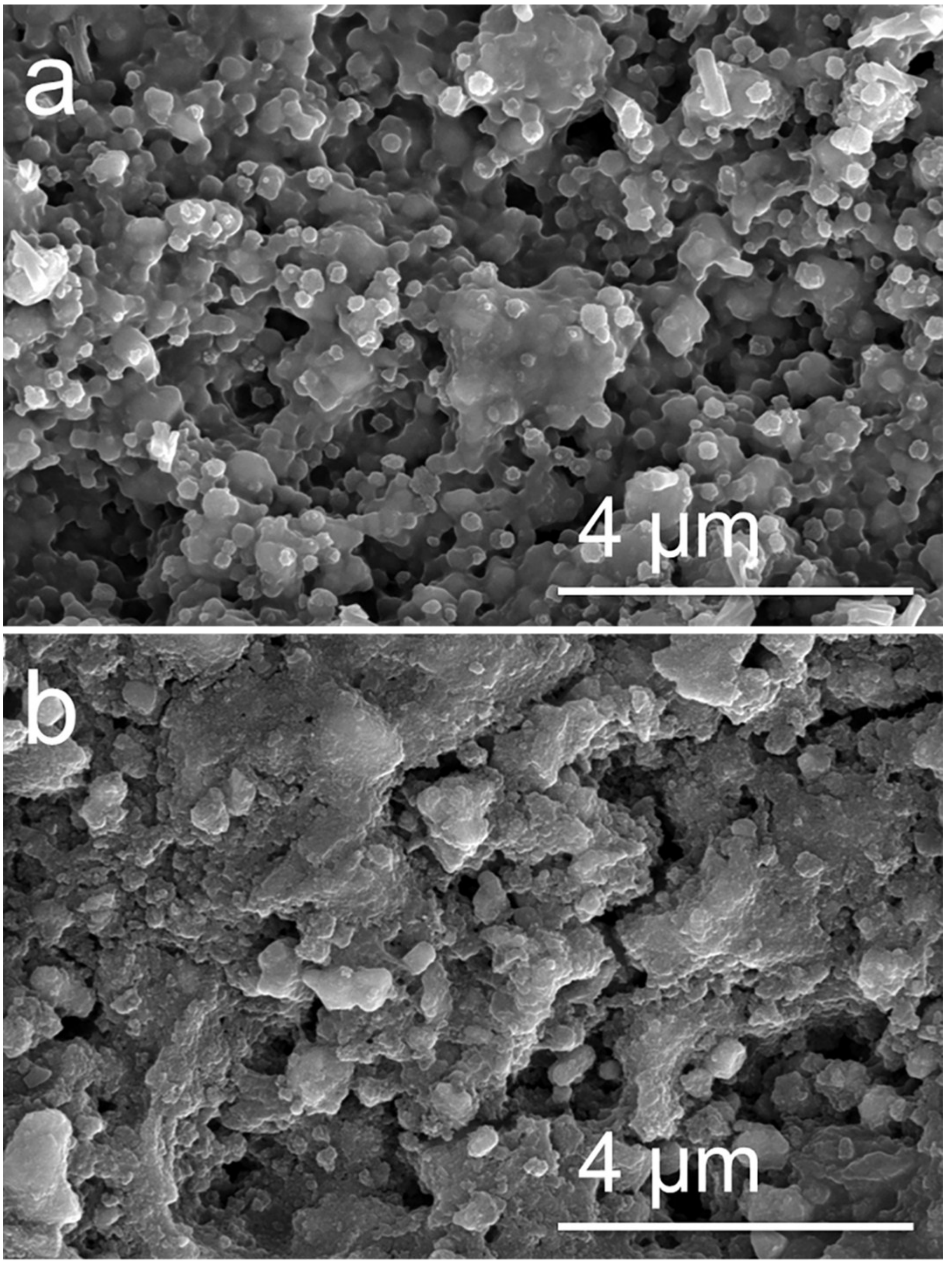

Fig. S5 the SEM images of the $Na_2Li_2Ti_6O_{14}$ nanoparticle electrodes before (a) and after (b) cycling.

Table S1 The surface area of $Na_2Li_2Ti_6O_{14}$ nanofibers and nanoparticles

sample	Surface area
$Na_2Li_2Ti_6O_{14}$ nanofibers	5.0084±0.0840m^2/g
$Na_2Li_2Ti_6O_{14}$ nanoparticles	2.8776±0.0600m^2/g

Table S2 Cycling stability comparison of rechargeable $Na_2Li_2Ti_6O_{14}$ reported in recent literatures.

Preparation method	Loading (mg/cm^2)	Morphology	Cycle performance	Reference
Electrospinning	1.98± 0.2	fibers	100 mA g^{-1}, 100 cycles, 116.5 mAh g^{-1} 1000 mA g^{-1}, 800 cycles, 77.8 mAh g^{-1}	This work
Sol-gel	5-6		100 mA g^{-1}, 60 cycles, 74 mAh g^{-1}	*1*
Solid-state		particles	50 mA g^{-1}, 50 cycles, 86.9 mAh g^{-1}	*2*
Solid-state		particles	100 mA g^{-1}, 50 cycles, 74 mAh g^{-1}	*3*
Solid-state and Chemical deposition decomposition		particles	100 mA g^{-1}, 50 cycles, 94.2 mAh g^{-1}	*4*
Solid-state	2.38	particles	100 mA g^{-1}, 50 cycles, 75.2 mAh g^{-1}	*5*
Molten salt synthesis	5	whiskers and particles	100 mA g^{-1}, 200 cycles, 70 mAh g^{-1} 100 mA g^{-1}, 500 cycles, 62 mAh g^{-1}	*6*
Sol-gel Solid-state reaction		particles	20 mA g^{-1}, 40 cycles, 114.7 mAh g^{-1} 20 mA g^{-1}, 40 cycles, 82.3 mAh g^{-1}	*7*
Solid state reaction	1.25	particles	100 mA g^{-1}, 50 cycles, 177.5 mAh g^{-1}	*8*
Solid-state (dry) and Solution-assisted sonochemical (wet)		particles	0.05 C, 50 cycles,> 80 mAh g^{-1}, 0.05 C, 50 cycles, 60 mAh g^{-1}	*9*
Solvothermal		particles and spheres	50 mA g^{-1}, 50 cycles, 103.9 mAh g^{-1}	*10*
Solvent thermal	0.80	Hollow microspheres	50 mA g^{-1}, 50 cycles, 172.3 mAh g^{-1}	*11*
Sol-gel synthesis		particles	10 mA g^{-1}, 50 cycles, 95 mAh g^{-1}	*12*
Solid-state reaction		particles	100 mA g^{-1}, 50 cycles, 211.8 mAh g^{-1}	*13*
Solid state	1.25	particles	100 mA g^{-1}, 50 cycles, 75.2 mAh g^{-1}	*14*
Solid-state	1.13	particles	100 mA g^{-1}, 50 cycles, 189.2 mAh g^{-1}	*15*
Solid-state	2.03	particles	50 mA g^{-1}, 50 cycles, 206.7 mAh g^{-1}	*16*
Solid state reaction		particles	50 mA g^{-1}, 50 cycles, 73.2 mAh g^{-1}	*17*
Solid-state		particles	500 mA g^{-1}, 100 cycles, 136.9 mAh g^{-1}	*18*

References

1. S. Y. Yin, L. Song, X. Y. Wang, Y. H. Huang, K. L. Zhang and Y. X. Zhang, *Electrochem. Commun.*, 2009, **11**, 1251-1254.
2. K. Q. Wu, J. Shu, X. T. Lin, L. Y. Shao, P. Li, M. Shui, M. M. Lao, N. B. Long and D. J. Wang, *J. Power Sources,* 2015, **275**, 419-428.
3. P. Li, K. Q. Wu, P. F. Wang, X. T. Lin, H. X. Yu, M. Shui, X. Zhang, N. B. Long and J. Shu, *Ceram. Int.*, 2015, **41**, 14508-14516.
4. S. S. Qian, H. X. Yu, L. Yan, P. Li, X. T. Lin, Y. Bai, S. J. Wang, N. B. Long, M. Shui and J. Shu, *Ceram. Int.,* 2016, **42**, 6874-6882.
5. J. Shu, K. Q. Wu, P. F. Wang, P. Li, X. T. Lin, L. Y. Shao, M. Shui, N. B. Long and D. J. Wang, *Electrochim. Acta*, 2015, **173**, 595-606.
6. S. Y. Yin, C. Q. Feng, S. J. Wu, H. L. Liu, B. Q. Ke, K. L. Zhang and D. H. Chen, *J. Alloys Compd.*, 2015, **642**, 1-6.
7. K. Q. Wu, D. J. Wang, X. T. Lin, L. Y. Shao, M. Shui, X. X. Jiang, N. B. Long, Y. L. Ren, J. Shu, *J. Electroanal. Chem.*, 2014, **717-718**, 10-16.
8. P. F. Wang, P. Li, T. F. Yi, X. T. Lin, H. X. Yu, Y. R. Zhu, S. S. Qian, M. Shui and J. Shu, *J. Power Sources,* 2015, **297**, 283-294.
9. S. Ghosh, Y. Kee, S. Okada and P. Barpanda, *J. Power Sources,* 2015, **296**, 276-281.
10. S. S. Fan, H. T, Yu, Y. Xie, T. F. Yi and G. H. Tian, *Electrochim. Acta*, 2018, **259**, 855-864.
11. S. S. Fan, H. Zhong, H. T. Yu, M. Lou, Y. Xie and Y. R. Zhu, *Sci. China Mater.*, 2017, **60**, 427-437.
12. D. Dambournet, L. Belharouak and K. Amine, *Inorg. Chem.*, 2010, **49**, 2822–2826.
13. M. M. Lao, X. T. Lin, P. Li, L. Y. Shao, K. Q. Wu, M. Shui, N. B. Long, Y. L. Ren and J. Shu, *Ceram. Int.,* 2015, **41**, 2900-2907.
14. K. Q. Wu, J. Shu, X. T. Lin, L. Y. Shao, M. M. Lao, M. Shui, P. Li, N. B. Long and D. J. Wang, *J. Power Sources,* 2014, **272**, 283-290.
15. P. F. Wang, S. S. Qian, T. F. Yi, H. X. Yu, L. Yan, P. Li, X. T. Lin, M. Shui and J. Shu, *ACS Appl. Mater. Interfaces,* 2016, **8**, 10302−10314.
16. H. Lan, S. S. Qian, Q. Wang, L. Yan, H. X. Yu, P. Li, N. B. Long, M. Shu and J. Shu, *Ceram. Int.,* 2017, **43**, 1552-1557.
17. C. Sun, X. Li, X. Z. Wu, C. C. Zhu, H. X. Yu, Z. Y. Guo and J. Shu, *J. Electroanal. Chem.,* 2017, **802**, 100-108.
18. X. Han, X. Gui, W. Tao, X. F. Li and T. F. Yi, *Ceram. Int.,* 2018, **44**, 12273-12281.