

Supplementary Information for

“Synthesis and high-rate performance of spinel $\text{Li}_4\text{Ti}_5\text{O}_{12}$ with core-shell hierarchical macro-mesoporous structure” by

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1. The precursor prepared by using a hydrothermal reaction method

The XRD pattern of the precursor with a hydrothermal reaction time of 48 h is shown in Fig. S1. The pattern of the precursor indicates that it is a mixture of anatase titania and layered hydrous lithium titanate species (M. Sugita, M. Tsuji, M. Abe, Bull. Chem. Soc. Jpn., 1990, 63, 1978).

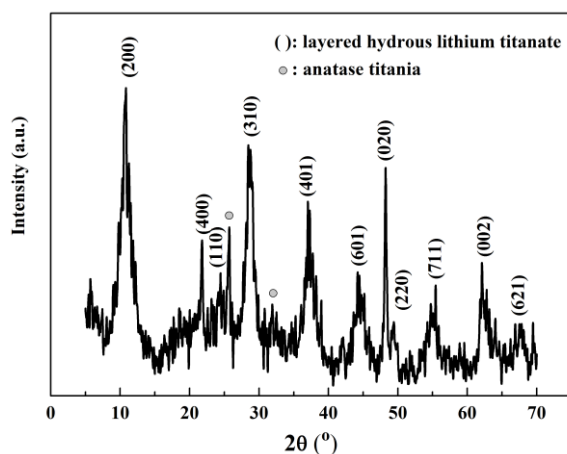


Fig. S1 XRD pattern of the precursor with a hydrothermal reaction time of 48 h. Reflections originating from TiO_2 are indicated by solid dots.

The SEM image of the precursor with a hydrothermal reaction time of 48 h is shown in Fig. S2. The precursor has a core-shell hierarchical macro-mesoporous structure. The shells are constructed by a large number of nanosheets all pointing

toward the center of the sphere.

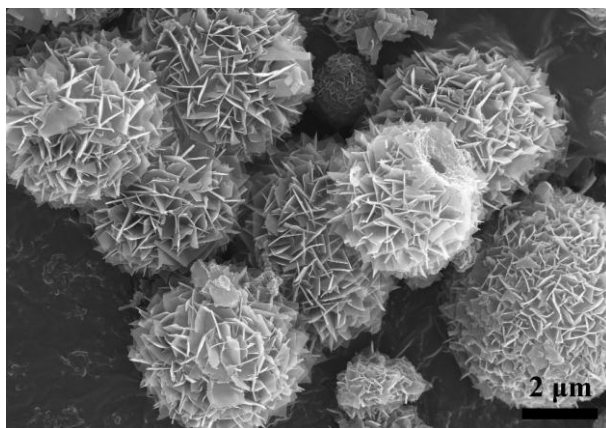


Fig. S2 SEM image of the precursor with the hydrothermal reaction time of 48 h.

The SEM image of the precursor with the hydrothermal reaction time of 72 h is shown in Fig. S3. The precursor of 72 h still has the similar structure with the precursor of 48 h, but the cores are almost dissolved.

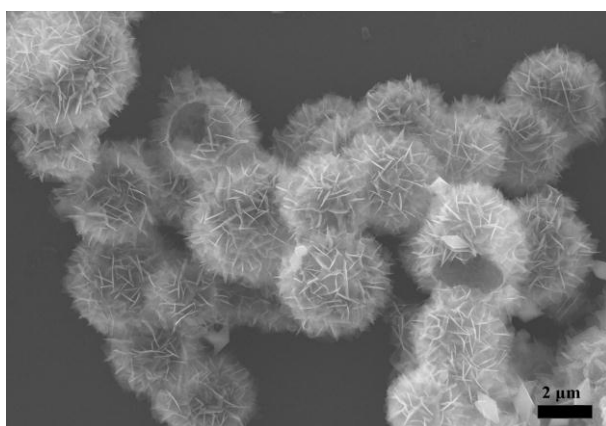


Fig. S3 SEM image of the precursor with the hydrothermal reaction time of 72 h.

2. The control sample of bulk $\text{Li}_4\text{Ti}_5\text{O}_{12}$

Bulk $\text{Li}_4\text{Ti}_5\text{O}_{12}$ (labeled as B- $\text{Li}_4\text{Ti}_5\text{O}_{12}$) was prepared by using a solid state reaction method from Li_2CO_3 , TiO_2 (anatase structure) with a Li:Ti molar ratio of 4.2:5.0. Then, the mixture was ball-milled in a container containing ethanol for 3 h and dried at 80°C for 12 h. Finally, the mixture was fired at 600°C for 8 h and 800°C

for 12 h in air.

The XRD pattern of B-Li₄Ti₅O₁₂ is shown in Fig. S4 and all of the diffraction peaks can be indexed well as the spinel structure of pure Li₄Ti₅O₁₂.

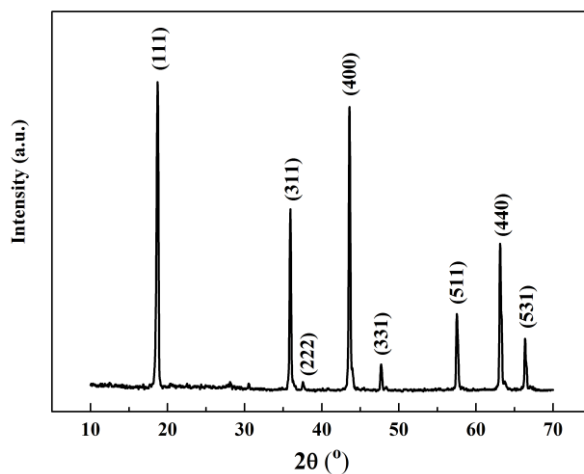


Fig. S4 XRD pattern of B-Li₄Ti₅O₁₂ prepared by using a solid state reaction method.

The SEM image of B-Li₄Ti₅O₁₂ is shown in Fig. S5. The B-Li₄Ti₅O₁₂ has a glazed surface and an average particle size of about 500 nm.

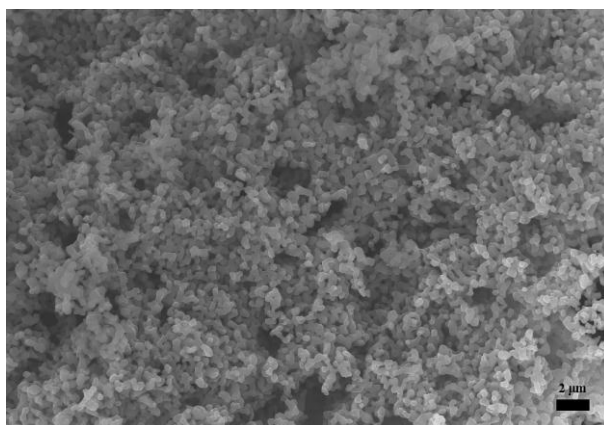


Fig. S5 SEM image of B-Li₄Ti₅O₁₂ prepared by using a solid state reaction method.