Electronic Supplementary Information

Micro-scale spherical carbon-coated Li$_4$Ti$_5$O$_{12}$ ultra high power anode material for lithium batteries

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Fig. S1. XRD pattern of as-prepared mesoporous TiO$_2$.

As-prepared mesoporous TiO$_2$ has a typical anatase type crystal structure. The broad diffraction peaks indicate the smaller crystallite size of the product as shown in Fig. 2a-4. The tetragonal structure belongs to $I4_1/amd$ space group, and the calculated lattice parameters by a least square method are $a = 3.780(9)$ Å and $c = 9.525(20)$ Å.
**Fig. S2** SEM images of (a) 5 wt% pitch coated Li$_4$Ti$_5$O$_{12}$ and (b) 20 wt% pitch coated Li$_4$Ti$_5$O$_{12}$. 
Fig. S3 TEM image and corresponding carbon elemental mapping image obtained by EELS from 20 wt% pitch coated Li$_4$Ti$_5$O$_{12}$ emphasizing the uniform carbon distribution in the particle interior.
Fig. S4 Nitrogen sorption isotherms diagram obtained for the C-free Li$_4$Ti$_5$O$_{12}$ powders.