Supporting Information

Hierarchically porous anatase TiO_2 microspheres composed of tiny octahedra with enhanced electrochemical properties in lithium-ion batteries †

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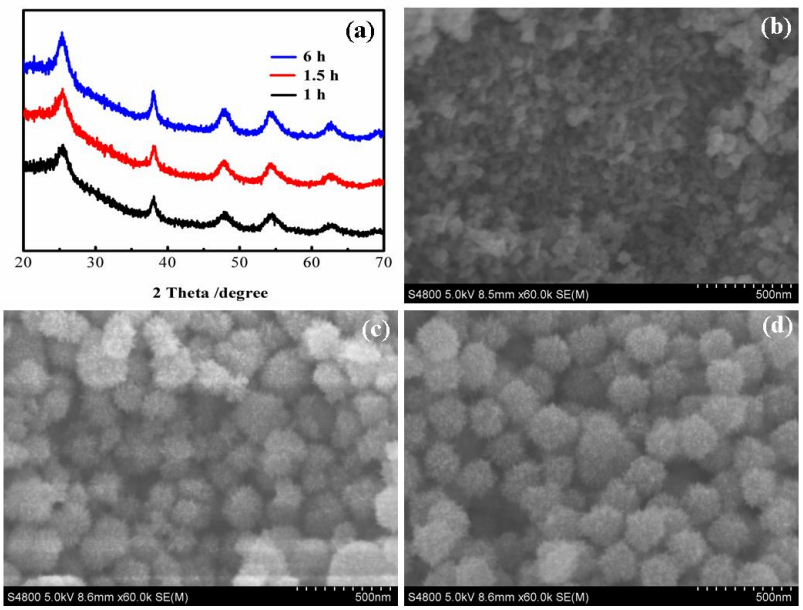

Fig. S1 Anatase TiO_2 obtained at 120 ^{o}C for different times: (a) XRD patterns, and SEM images of (b) 1, (c) 1.5 and (d) 6 h.

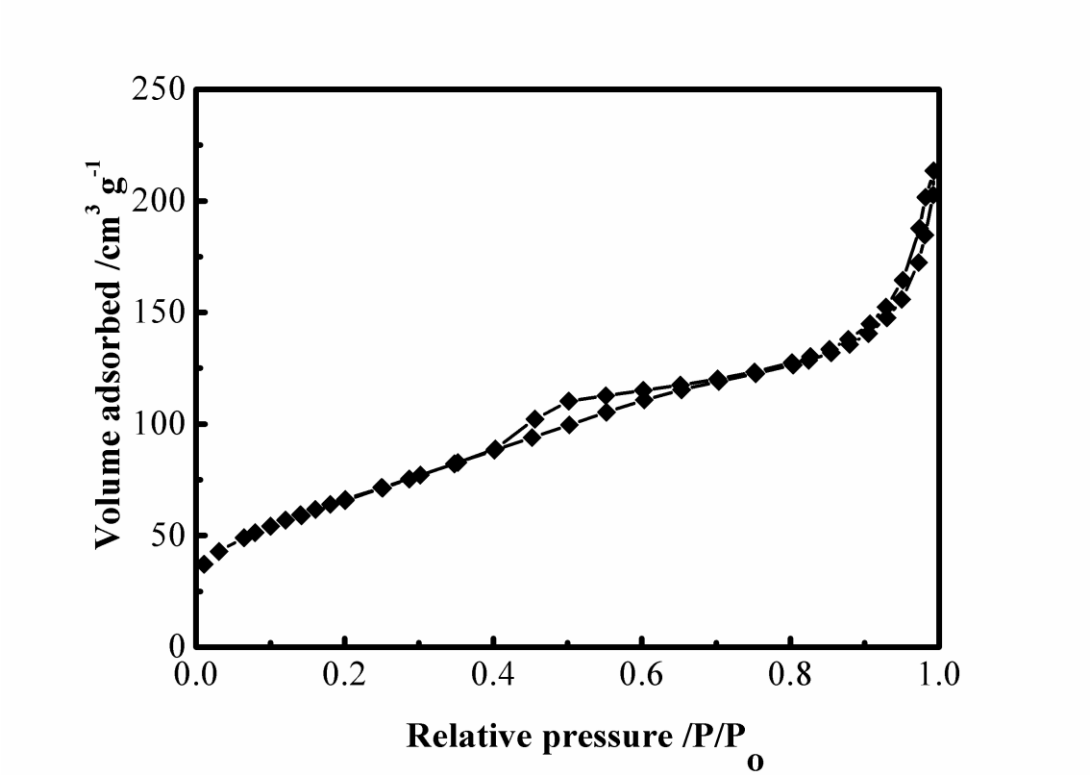

Fig. S2 N_2 adsorption-desorption isotherms of anatase TiO_2 obtained at 120 ^oC for 12 h.

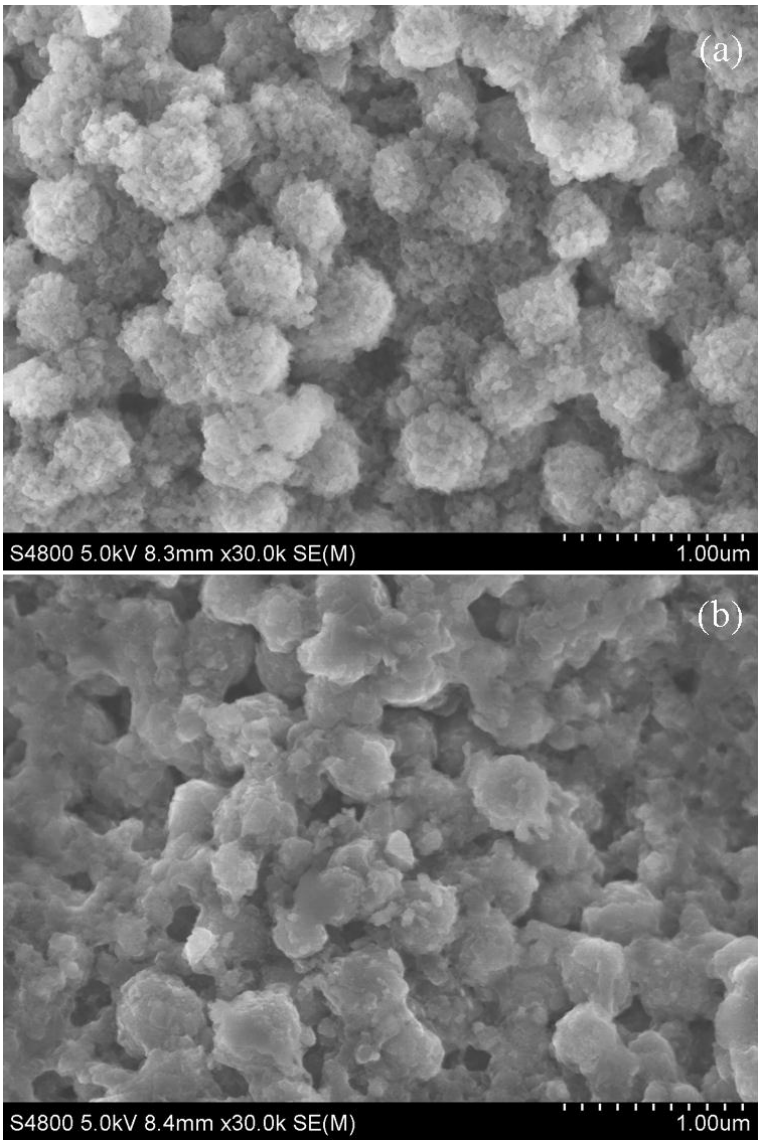

Fig. S3 SEM images of hierarchical TiO_2 microspheres (a) before discharge-charge and (b) after 200 discharge-charge at 10 C.

In order to further understand the enhanced electrochemaical properties of hierarchical TiO_2 microspheres, the morphology of hierarchical TiO_2 microspheres after 200 cycles charge/discharge was investigated. As showed in Fig. S3, the microspherical structures mainly can be retained.

Table 1 Summary of discharge capacity for various hierarchical TiO_2 as an anode for LIBs.

Hierarchical TiO_2	Discharge capacity ($mA\ h\ g^{-1}$)	Current density ($mA\ g^{-1}$)	Reference
Hierarchical TiO_2 composed of tiny octahedra	**142.3 (after 200 cycles)**	**1680**	**Present work**
Hierarchical TiO_2 composed of nanosheets	136 (after 100 cycles)	850	S1
TiO_2 composed of nano-grains	135 (after 5 cycles) 108 (after 500 cycles)	1675	S2
Spherical TiO_2 composed of nanowires	102 (after 50 cycles)	1000	S3
Hierarchical TiO_2 composed of nanorods	129.1 (after 100 cycles)	850	S4
Hierarchical TiO_2 with high surface area of 221.9 $m^2\ g^{-1}$**	229 (after 100 cycles)	1685	S5

** the sample contains brookite TiO_2.

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[S3] F. Wu, Z. Wang, X. Li and H. Guo, *J. Mater. Chem.*, 2011, **21**, 12675.

[S4] L. Gao, X. Li, H. Hu, G. Li, H. Liu and Y. Yu, *Electrochi. Acta*, 2014, **120**, 231.

[S5] J. Y. Shin, D. Samuelis and J. Maier, *Adv. Funct. Mater*., 2011, **21**, 3464.