Supporting Information

Hierarchical Porous $\text{Li}_4\text{Ti}_5\text{O}_{12}$-$\text{TiO}_2$ Composite Anode Materials with Pseudocapacitive Effect for High-Rate and Low-Temperature application

Chao Huang $^{a,b}$, Shi-Xi Zhao$^a$*, Hang Peng $^{a,b}$, Yuan-Hua Lin$^b$ and Ce-Wen Nan$^b$, Guo-Zhong Cao$^c$

$^a$Graduate School at Shenzhen, Tsinghua University, Shenzhen, 518055, China.
$^b$School of Materials Science and Engineering, Tsinghua University, Beijing, 100084, China
$^c$Department of Materials Science and Engineering, University of Washington, Seattle, WA 98195, USA

*Corresponding author: Email: zhaosx@sz.tsinghua.edu.cn (S.X.Zhao); gzcao@uw.edu (G.Z.Cao)

Supplementary Figures

Figure S1. The XRD patterns of as-prepared hierarchical hydrogen porous titanium oxide hydrate (HP HTOH) microspheres.

Figure S2. The XRD refinement data of HP LTO-TO microspheres.
**Figure S3.** The SEM images of HP LHTO (a) before and (b-f) after calcined at 500, 600, 700 and 800 °C for 2h in air.

**Figure S4.** Nitrogen adsorption-desorption isotherms and the Barrett-Joyner-Halenda (BJH) pore size distributions of the HP LTO-TO microspheres sample of Li: Ti=5:5 calcined at 500 °C for 2 h.
**Figure S5.** The ratios of the faradaic pseudocapacitive effect and diffusion-limited reaction benefiting enhancement of capability. The data were taken at the slow sweep rate of 0.5 mV/s.

**Figure S6.** The discharge voltage profiles of HP LHTO at various current density from 0.1 C to 30 C (broken line is due to the test program take less points at larger rate).
Figure S7. The XRD patterns and SEM images of (a,c) a commercial LTO (b,d) a commercial graphite.

Figure S8. (a) Graph of $Z_{Re}$ plotted against $\omega^{-1/2}$ at low frequency section of C-LTO. (b) The linear relationship between $lnD$ and $10^3/T$ at different temperature.