Supporting Information

3D Interconnected Hierarchically Macro-mesoporous TiO₂ Network Optimized by Biomolecular Self-assembly for High Performance Lithium Ion Battery

Xiao-Ning Ren,^{†a} Liang Wu,^{†a} Jun Jin,^a Jing Liu,^a Zhi-Yi Hu,^b Yu Li,^{*a} Tawfique Hasan,^c Xiao-Yu Yang,^a Gustaaf Van Tendeloo^b and Bao-Lian Su^{*a,d,e}

^aLaboratory of Living Materials at the State Key Laboratory of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, 122 Luoshi Road, 430070, Wuhan, Hubei, China; Email: yu.li@whut.edu.cn; baoliansu@whut.edu.cn.

^b EMAT (Electron Microscopy for Materials Science), University of Antwerp, 171 Groenenborgerlaan, B-2020 Antwerp, Belgium.

^c Cambridge Graphene Centre, University of Cambridge, 9 JJ Thomson Avenue, Cambridge CB3 0FA, United Kingdom

^dLaboratory of Inorganic Materials Chemistry (CMI), University of Namur, 61 rue de Bruxelles, B-5000 Namur, Belgium; E-mail: bao-lian.su@unamur.be

^eDepartment of Chemistry and Clare Hall, University of Cambridge, Cambridge CB21 EW, United Kingdom; E-mail: <u>bls26@cam.ac.uk</u>

† These two authors contributed equally to this work.



Figure S1. Charge and discharge curves of (a) RPC TiO_2 and (b) RPC-P TiO_2 at the 1st, 50th, 100th and 200th cycle at 1C.



Figure S2. (a,b) SEM images and (c,d) TEM images of the as-prepared RPC TiO_2 . The SEM image in (a) clearly shows the macroporous structure. The SEM image in (b) displays the nanoparticles constructed the walls. The TEM image in (c) reveals the inter-particles mesopores (also called worm-like mesopores). The HRTEM image presents the (101) crystal plane of one anatase nanoparticle.



Figure S3. The HRTEM image of RPC-P TiO_2 at 2C after 1000 cycles, clearly demonstrating the remained inner-particle mesopores.