Electronic Supplementary Information

A self-assembled Si/SWNT 3D-composite-nanonetwork as a

high-performance lithium ion battery anode

Xiurong Guan[a], Lina Wang[a b], Jia Yu[b], Yuchao Li[b], Shimou Chen[*b] and Suojiang Zhang[*b]

[a] School of Environmental and Chemical Engineering, Shenyang ligong University, Liaoning, 110159，PR China

[b] Beijing Key Laboratory of Ionic Liquids Clean Process, Key Laboratory of Green Process and Engineering, State Key Laboratory of Multiphase Complex Systems, Institute of Process Engineering, Chinese Academy of Sciences, Beijing 100190, PR China
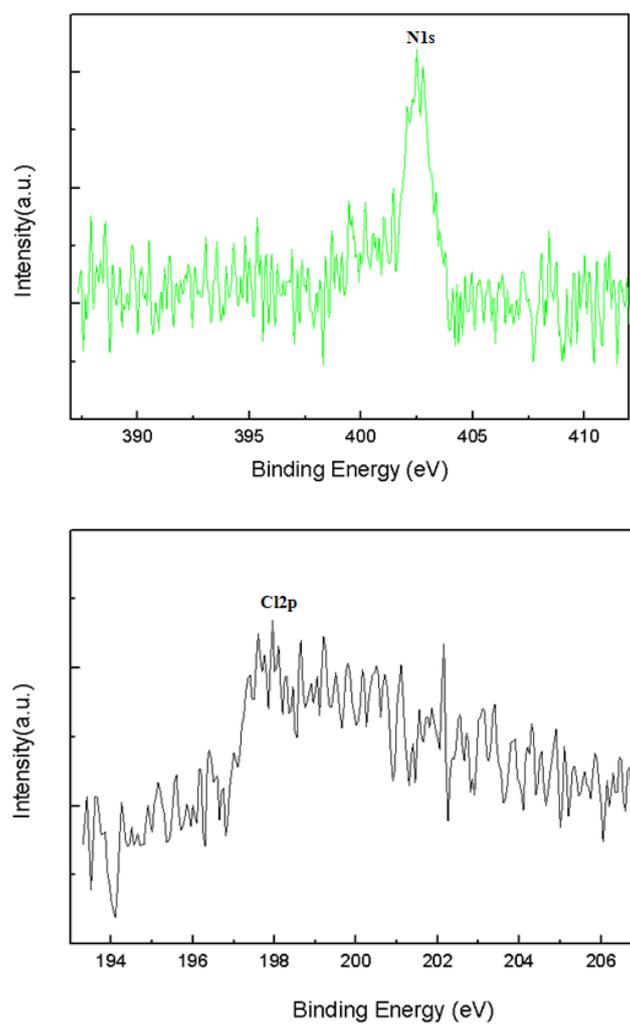
E-mail: chenshimou@ipe.ac.cn; sjzhang@ipe.ac.cn

Figure S1 XPS spectra of N1s and Cl2p for the PDDA-modified Si nanospheres.
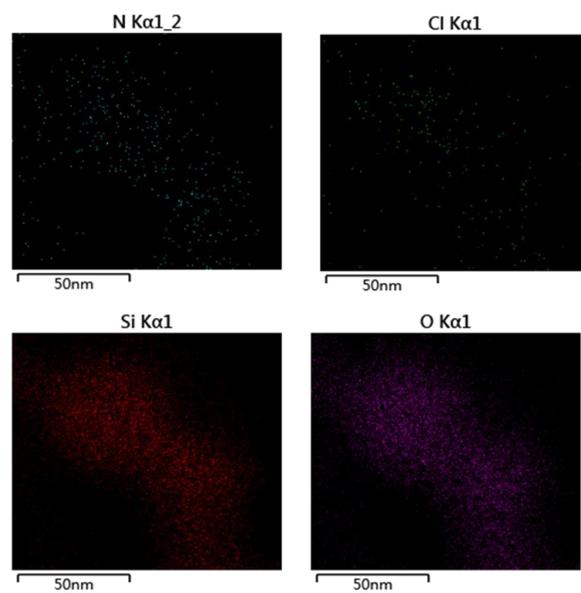
N Kα1_2

Cl Kα1

50nm

50nm

Si Kα1

O Kα1

50nm

50nm

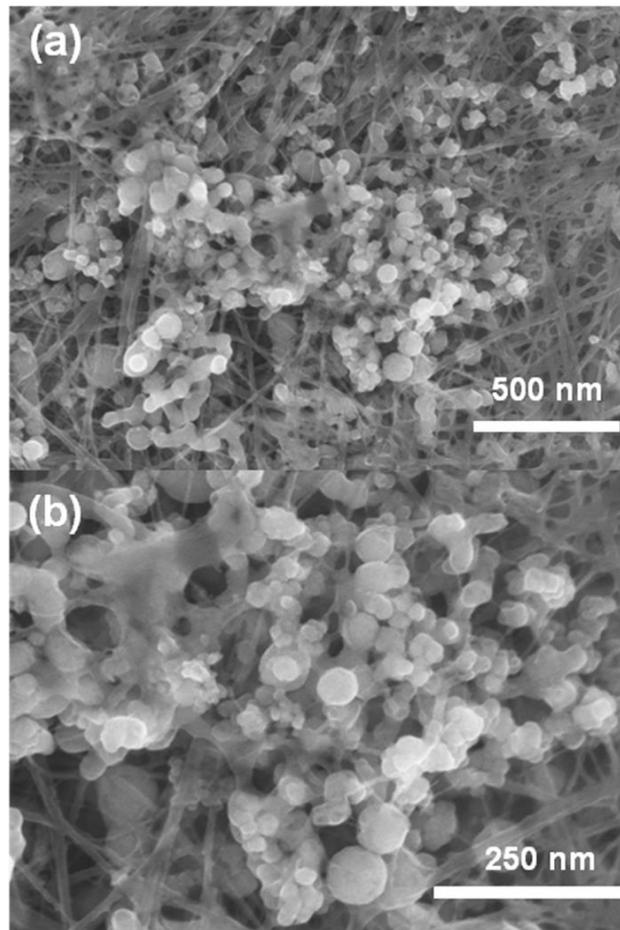**Figure S2** TEM-EDS analysis of the PDDA-modified Si nanospheres.

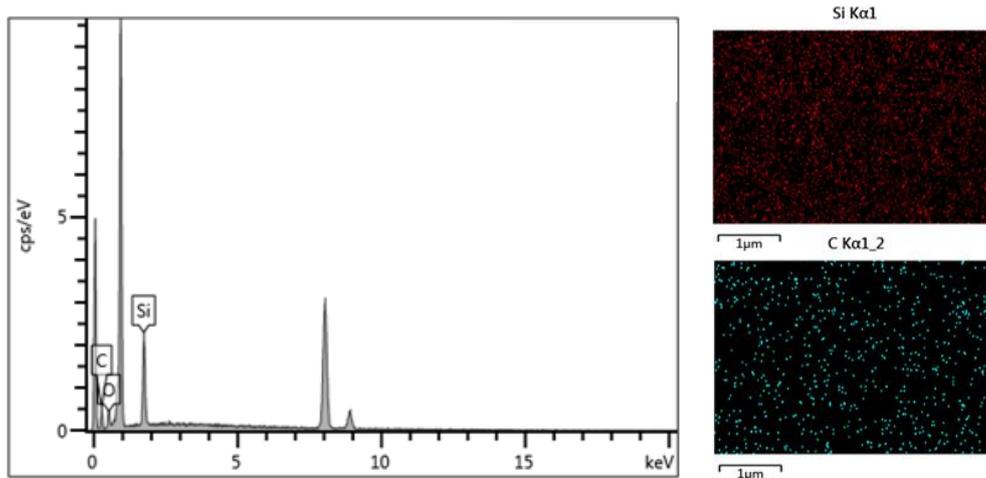**Figure S3** SEM images of the Si/SWNT 3D-composite-nanonetwork material without the PDDA-modifying process.

Figure S4 SEM-EDS mapping of the Si/SWNT 3D-composite-nanonetwork material which demonstrated the presence of Si nanospheres and SWNTs.
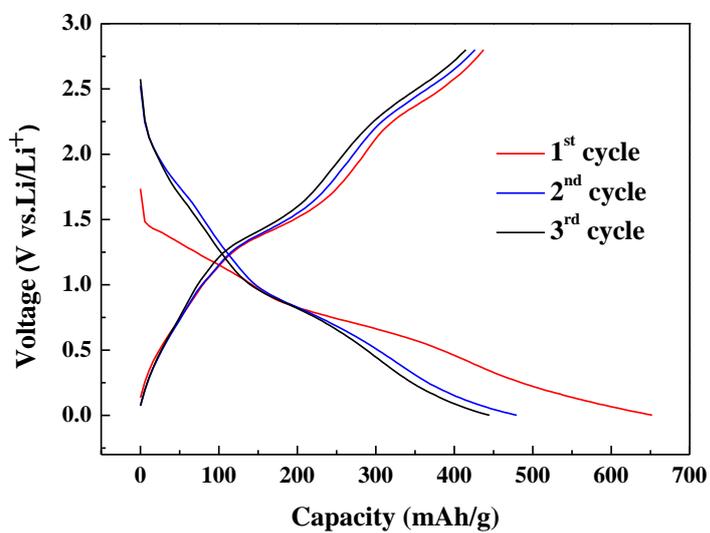

Figure S5 First three charge/discharge profiles of the pure SWNT at a current density of 400 mAg^{-1}.
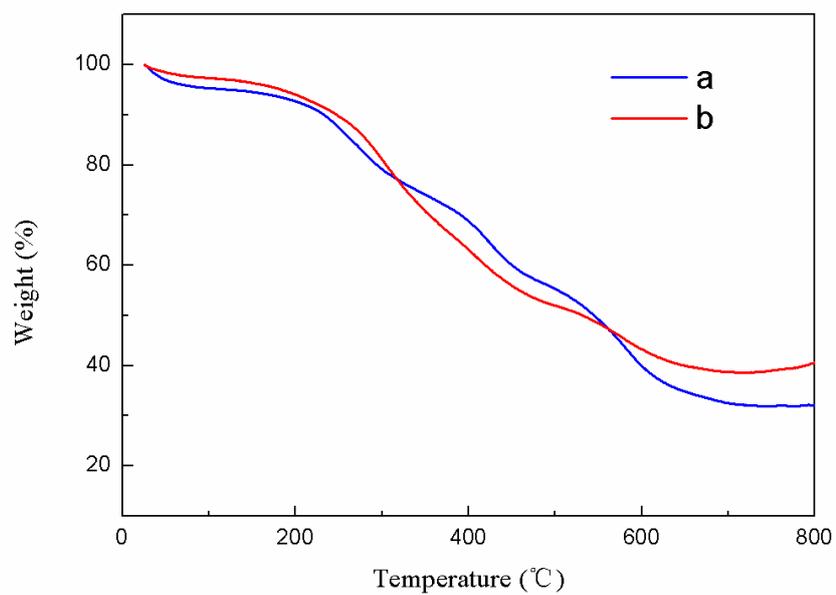
Figure S6 TGA curves of Si/SWNT 3D-composite-nanonetwork materials with the Si content of (a) 36% and (b) 28%.
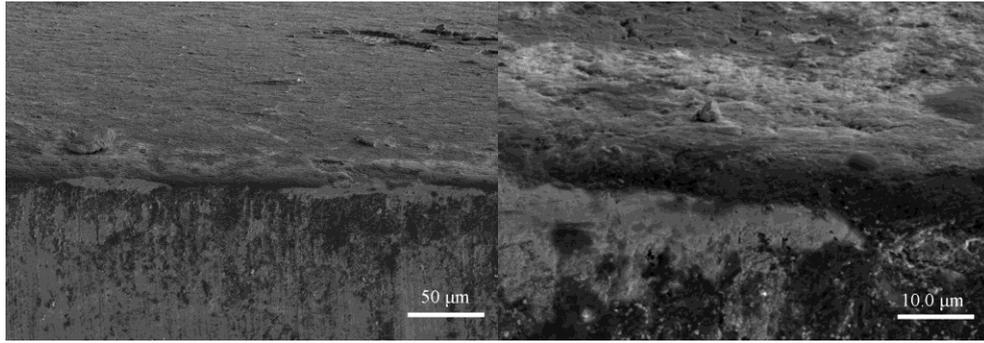
Figure S7 Cross-section SEM images of the Si/SWNT 3D-composite-nanonetwork after 50 cycles.