## Electronic Supplementary Information

## Layered/spinel heterostructured Li-rich materials synthesized by one-step solvothermal strategy with enhanced electrochemical performance for Li-ion batteries

Ya-Ping Deng<sup>a</sup>, Fang Fu<sup>b</sup>, Zhen-Guo Wu<sup>a,c</sup>, Zu-Wei Yin<sup>a</sup>, Tao Zhang<sup>a</sup>, Jun-Tao Li<sup>a</sup>,

Ling Huang<sup>b</sup> and Shi-Gang Sun<sup>a,b</sup>\*

a School of Energy Research, Xiamen University, Xiamen 361005, China.

b State Key Lab of Physical Chemistry of Solid Surface, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen 361005, China.

c School of Chemical Engineering, Sichuan University, Chengdu 610065, China.

\* Corresponding author. Emails: sgsun@xmu.edu.cn; Tel/Fax: +86-592-2180181.



**Fig. S1.** XRD pattern (a), Rietveld refinement Results (b), charge-discharge curves (c) and cycle life (d) tested at varies rates of T12 sample.



**Fig. S2.** The corresponding dQ/dV plots at 0.2C rate of T24 (a) and T36 (b). The solid lines are for the first cycle and the dashed lines for second cycle.



Fig. S3. Cross section SEM image of electrode slice of T24 (a) and T36 (b).



**Fig. S4** Plots of chronoamperometry at first discharge process and the relationship of ln(I) versus *t* for T24 (a, c) and T36 (b, d).