Supplementary Information

Controlled construction of hierarchical Co$_{1-x}$S structures as high performance anode materials for lithium ion batteries

Shumin Liu$^{1,2}$, Jinxian Wang$^{1,2,*}$, Jianwei Wang$^{2,3}$, Feifei Zhang$^{2,1}$, Fei Liang$^2$ and Limin Wang$^{2,*}$

$^1$ School of Chemistry and Environmental Engineering, Changchun University of Science and Technology, Changchun 130025, China. E-mail: wjx87@sina.com

$^2$ State Key Laboratory of Rare Earth Resource Utilization, Changchun Institute of Applied Chemistry, CAS, Changchun 130022, China. Fax: +86-431-85262836; Tel: +86-431-85262447; E-mail: lmwang@ciac.ac.cn

$^3$ University of Chinese Academy of Sciences, Beijing 100049, China

Corresponding author: Limin Wang, Email: lmwang@ciac.ac.cn, Tel: +86-431-85262447, Fax: +86-431-85262836

![XRD patterns](image)

**Fig.S1** XRD patterns of the Co$_{1-x}$S samples obtained at 200°C for 24 h with the different Na3Cit content (a) 0 mmol, (b) 0.05 mmol, (c) 0.15 mmol and (d) 0.3 mmol.
Fig. S2 SEM images of the as-prepared products formed in the presence of (a) CTAB, (b) PVP