Supporting Information

Rational design of nickel-cobalt selenides@selenium nanostructure by adjusting the synthesis environment for high performance sodium-ion batteries

Xiaofei Wang[a], Chenchen Pei[a], Qian Wang[b]*, Yue Hu[a], Hui Wang[c], Haixing Liu[a], Lifeng Zhang[a], Shouwu Guo[a,d]**

[a] School of Materials Science and Engineering, Shaanxi Key Laboratory of Green Preparation and Functionalization for Inorganic Materials, Shaanxi University of Science and Technology, Xi'an, 710021, PR China

[b] School of Materials Science and Chemical Engineering, Xi'an Technological University, Xi'an Middle Xuefu Road No. 2, PR China

[c] Interdisciplinary Materials Research Center, Institute for Advanced Study, Chengdu University, Chengdu, 610106, China

[d] Department of Electronic Engineering, School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai 200240, PR China

*Corresponding authors:

Tel.:+86 02986173324; +86 029 86168688

E-mail: wangxiaof@sust.edu.cn (X.F. Wang);

E-mail:drifting_leaf@126.com (Q. Wang);

E-mail:swguo@sjtu.edu.cn (S.W. Guo)

Table S1 ICP-OES analysis results of the fabricated nanocomposites

Number	Element	Element content in the sample Cx（mg/L)
$NiCoSe_2$-G	Co	0.465
$NiCoSe_2$@Se-L_6	Co	0.472
$NiCoSe_2$-G	Ni	1.058
$NiCoSe_2$@Se-L_6	Ni	1.076

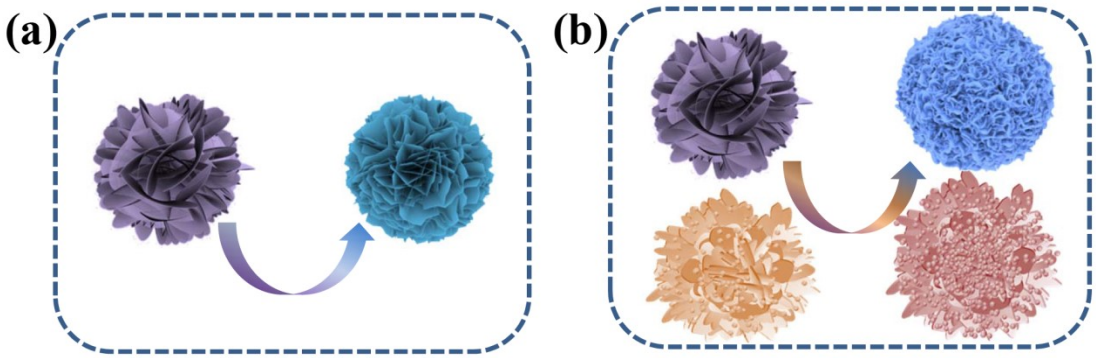

Figure S1. The schemetic illustrations of the evolution process that fabricated under (a) gas and (b) liquid phase strategies.

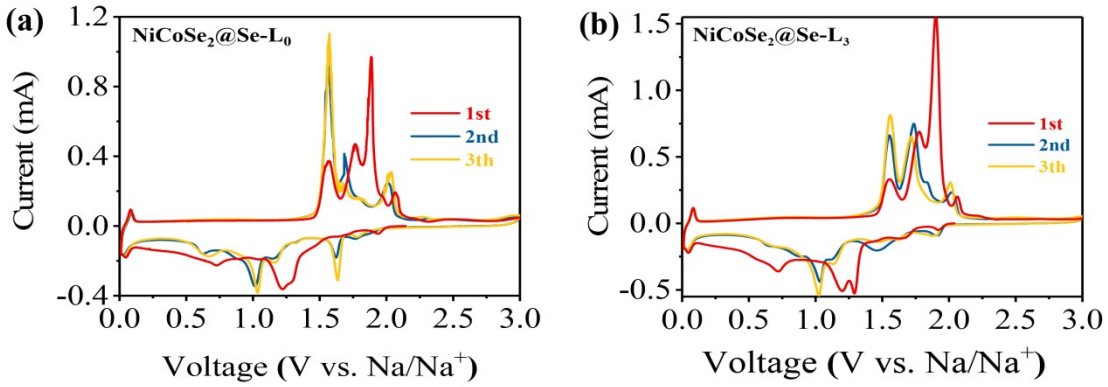

Figure S2. The first three CV curves of the (a) $NiCoSe_2$@Se-L_0 and (b) $NiCoSe_2$@Se-L_3 electrodes.

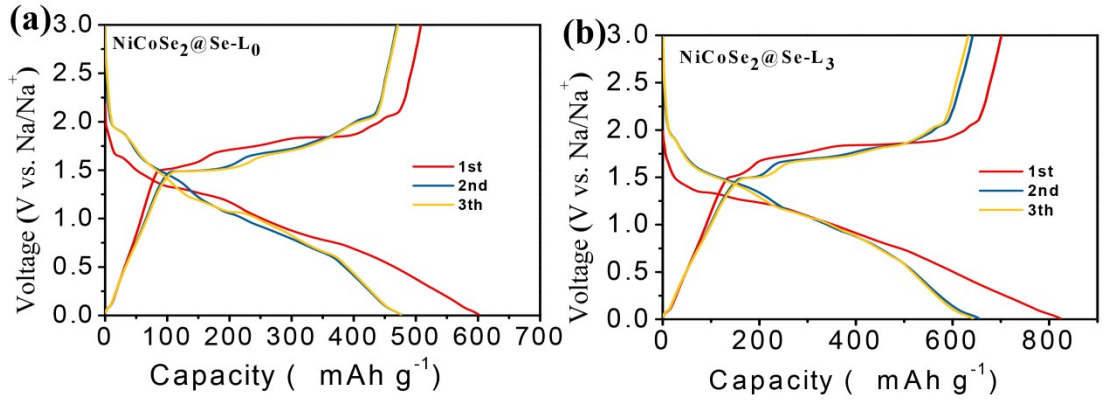

Figure S3. The first three discharge and charge curves of the (a) $NiCoSe_2$@Se-L_0 and (b) $NiCoSe_2$@Se-L_3 electrodes.

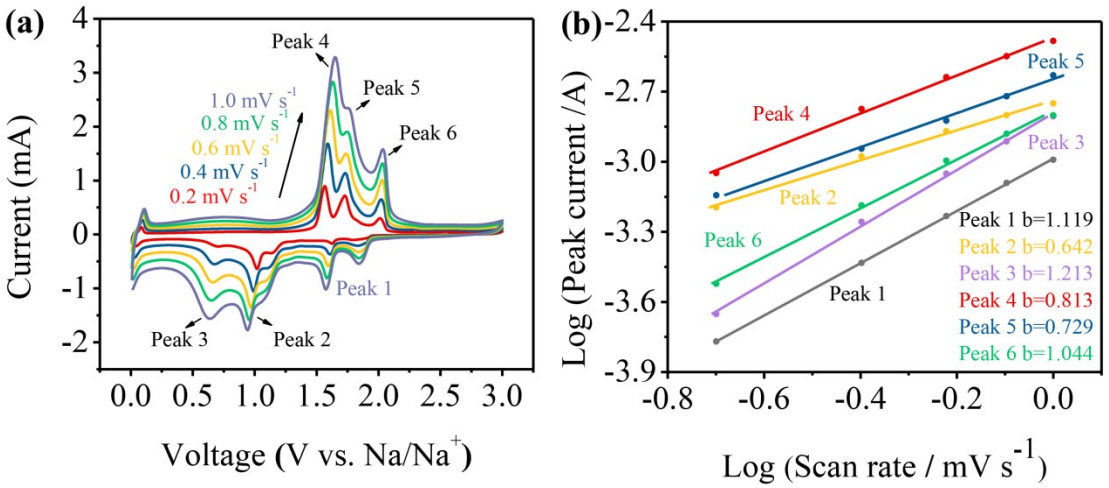

Figure S4. (a) CV curves of the $NiCoSe_2$@Se-L_3 electrode at different scan rates; (b) Corresponding log (peak current) *vs* log (scan rate) at six peaks.