## **Supporting Information**

Facile Fabrication of Ni<sub>0.85</sub>Se Nanowires by Composite Alkali Salt Method as a

Novel Cathode Material for Asymmetric Supercapacitors

Shaolan Wang<sup>1</sup>, Shuan Ma<sup>2\*</sup>

1 School of Materials Science and Engineering, Shaanxi Key Laboratory of Green

Preparation and Functionalization for Inorganic Materials, Shaanxi University of

Science and Technology, 710021, Xi'an, P.R. China;

2 The Woodruff School of Mechanical Engineering, Georgia Institute of Technology,

GA 30332, Atlanta, USA

3 School of Aerospace, Xi'an Jiaotong University, 710049, Xi'an, P.R.China

\* Corresponding author: S. Ma (sma319@gatech.edu)



Figure S1 XRD pattern and SEM images (a-d) of Ni-Se samples without the addition of composite molten alkali salt at different reaction conditions. (a) 120°C of 12h, (b) 140°C of 12h, (c)160°C of 12h, (d) 180°C of 12h.



Figure S2 XRD pattern and SEM images (a-d) of Ni-Se samples with the addition of composite molten alkali salt at different reaction conditions. (a) 120°C of 12h, (b) 140°C of 12h, (c)160°C of 12h,(d) 180°C of 12h.



*Figure S3 The electrochemical performance of the as-prepared Ni-Se electrode in this work. (a) CV curves at 10 mV s<sup>-1</sup>; (b) GCD curves at 10 A g<sup>-1</sup>; (c) rate capability.* 



Figure S4 Electrochemical performance of AC electrode. (a)CV curves at different scan rates in 2 M KOH electrolyte; (b) GCD curves at various current densities; (c)

Specific capacitances at various current densities.



Figure S5 (a) Comparative CV curves of the  $Ni_{0.85}$ Se nanowires and AC, tested in a three-electrode system at 10 mV s<sup>-1</sup>; (b) Schematic illustration of the  $Ni_{0.85}$ Se//AC

asymmetric supercapacitors.

Sample	Specific capacity	Rate capacity
	(1 Ag <sup>-1</sup> )	(1 Ag <sup>-1</sup> to 30 Ag <sup>-1</sup> )
120 °C-12h	823 Fg <sup>-1</sup>	21%
140 °C-12h	766 Fg <sup>-1</sup>	31%
160 °C-12h	832 Fg <sup>-1</sup>	37%
180 °C-12h	914 Fg <sup>-1</sup>	35%
CMS-120 °C-12h	1343 Fg <sup>-1</sup>	46%
CMS-140 °C-12h	1354 Fg <sup>-1</sup>	50%
CMS-160 °C-12h	1225 Fg <sup>-1</sup>	38%
CMS-180 °C-12h	1233 Fg <sup>-1</sup>	27%

Table S1 The electrochemical performance of the Ni-Se electrode in this work