Supporting Information for

Coupling Hierarchical Iron Cobalt Selenide Arrays with N-doped Carbon as Advanced Anodes for Sodium Ion Storage

Peijia Wang, a Jiajie Huang, a Jing Zhang, a Liang Wang, a Peiheng Sun, a Yefeng Yang,* a, b and Zhujun Yao* a

a School of Materials Science and Engineering, Zhejiang Sci-Tech University, Hangzhou 310018, China.

b MOE Key Laboratory of Advanced Textile Materials and Manufacturing Technology, Zhejiang Sci-Tech University, Hangzhou 310018, China.

Email address: yangyf@zstu.edu.cn (Dr. Y. Yang), yaozj@zstu.edu.cn (Dr. Z. Yao)

Tel: +86-571-8684 5569
Fig. S1. HRTEM image of FeCo-Se anode in the core region.

Fig. S2. Typical SAED pattern of FeCo-Se anode.
**Fig. S3.** SEM images of (A) Co-Se, (B) FeCo-Se-1.5, (C) FeCo-Se-2, and (D) FeCo-Se-3.

**Fig. S4.** XRD patterns of Co-Se, FeCo-Se-1.5, FeCo-Se-2, and FeCo-Se-3.
**Fig. S5.** The linear relationship between the practical Fe contents of (Fe/Fe+Co) in products and the feeding Fe contents in the starting materials for the samples.

![Graph showing linear relationship between Fe content in products and feeding Fe content in starting materials.](image)

**Fig. S6.** (A, B) Typical low- and high-magnification SEM images of the iron selenide arrays, and (C) cycling stability of the iron selenide electrode tested at 0.5 A g⁻¹.

![SEM images and cycling stability graph.](image)
Fig. S7. The cycling performances of the Co-Se, FeCo-Se-1.5, FeCo-Se-2, and FeCo-Se-3 tested at 0.5 A g⁻¹.

Fig. S8. CV curves of (A) Co-Se and (B) FeCo-Se anodes at a scan rate of 0.1 mV s⁻¹, and first five discharge–charge curves of (C) Co-Se and (D) FeCo-Se anodes at 0.5 A g⁻¹.
**Fig. S9.** Comparative CV curves for the FeCo-Se@NC, N-doped carbon on carbon cloth and bare carbon cloth tested at a scan rate of 1.0 mV s$^{-1}$.

**Fig. S10.** (A) Low- and (B) high-magnification SEM images of the FeCo-Se@NC electrode after cycling.
Fig. S11. (A) EIS spectra of the FeCo-Se@NC electrode after different cycles measured at discharged state of 0.5 V, and (B) the corresponding relationship of $Z'$ versus $\omega^{-1/2}$.

Fig. S12. N$_2$ adsorption-desorption isotherms of the FeCo-Se@NC sample tested at 77 K for the evaluation of specific surface area.
**Fig. S13.** (A) SEM image of Na$_3$V$_2$(PO$_4$)$_3$/C cathode, (B) XRD pattern of Na$_3$V$_2$(PO$_4$)$_3$/C cathode, (C) rate capability and (D) cycling stability of the Na$_3$V$_2$(PO$_4$)$_3$/C cathode (1C = 0.374 A g$^{-1}$).

**Fig. S14.** First five charge-discharge curves of the full cell tested at 0.5 A g$^{-1}$ without presodiation.