Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Supporting Information

Growing Co-Ni-Se nanosheets on 3D carbon frameworks as advanced dual functional electrodes for supercapacitors and sodium ion batteries

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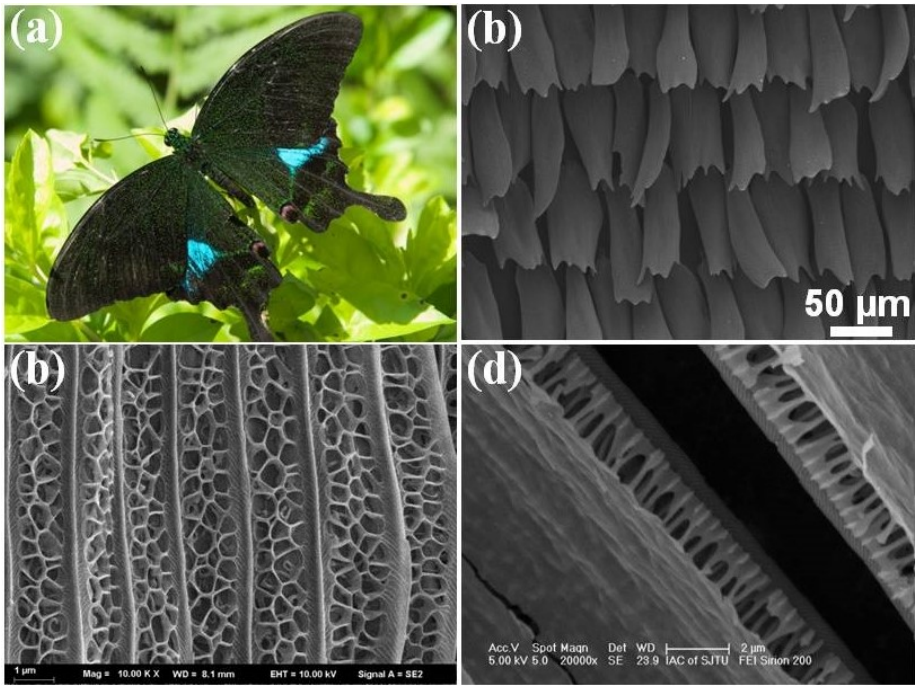

Fig. S1 (a) The photograph of butterfly; (b-d) butterfly-wing-derived carbon framework.

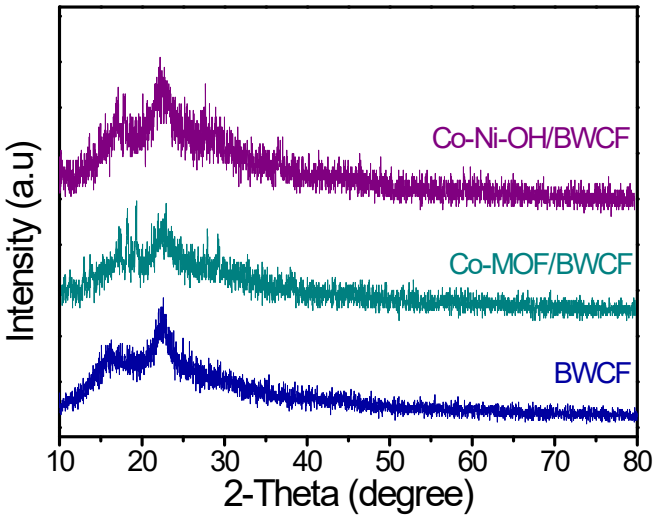

Fig. S2 XRD patterns of BWCF, Co-MOF/BWCF (ZIF-67/BWCF) and Co-Ni-OH/BWCF.

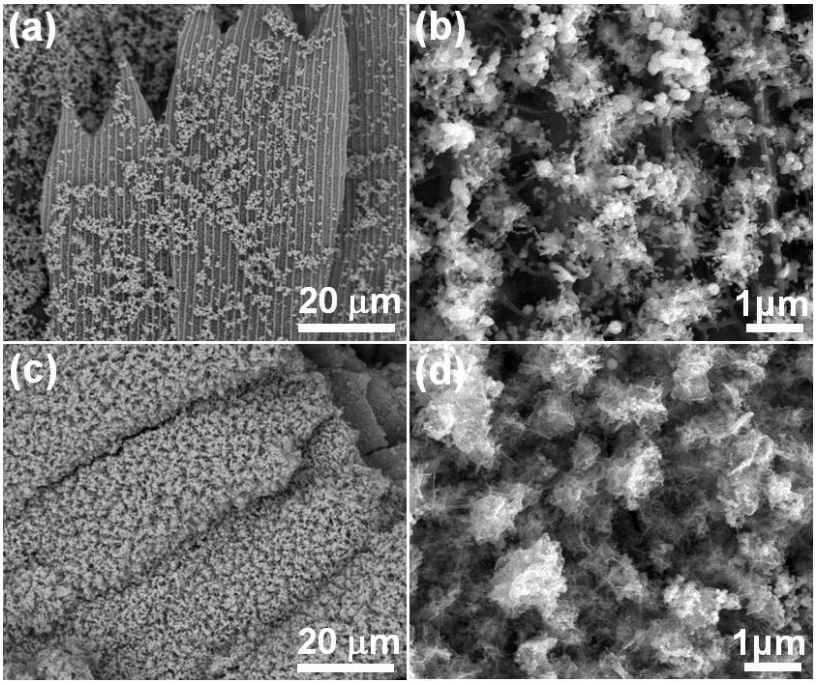

Fig. S3 FESEM images: (a, b) Co-Ni-Se/BWCF-140; (c, d) Co-Ni-Se/BWCF-180.

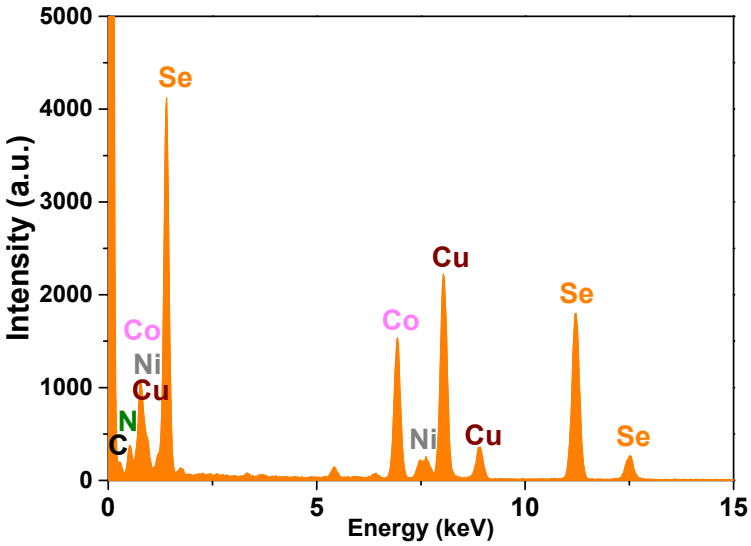

Fig. S4 EDS spectrum of Co-Ni-Se/BWCF-160.

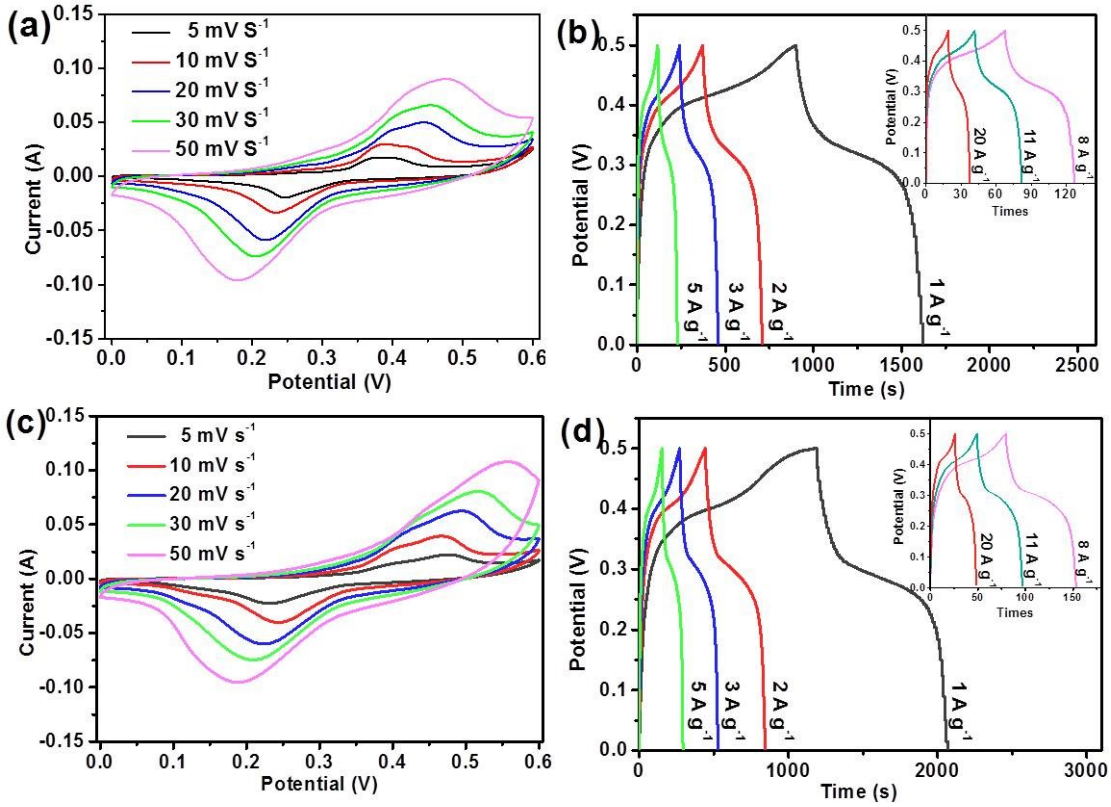

Fig. S5 (a) CV curves of Co-Ni-Se/BWCF-140 at various sweep rates; (b) Galvanostatic charge/discharge curves of Co-Ni-Se/BWCF-140 at different current densities; (c) CV curves of Co-Ni-Se/BWCF-180 at various sweep rates; (d) Galvanostatic charge/discharge curves of Co-Ni-Se/BWCF-180 at different current densities.

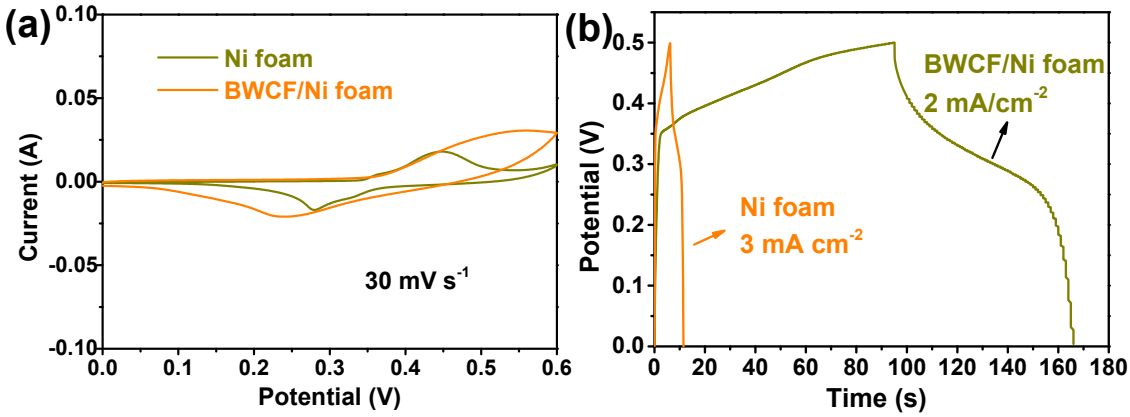

Fig. S6 (a) CV curves at different scan rates and (b) GCD curves at different current densities of Ni foam and BWCF/Ni foam.

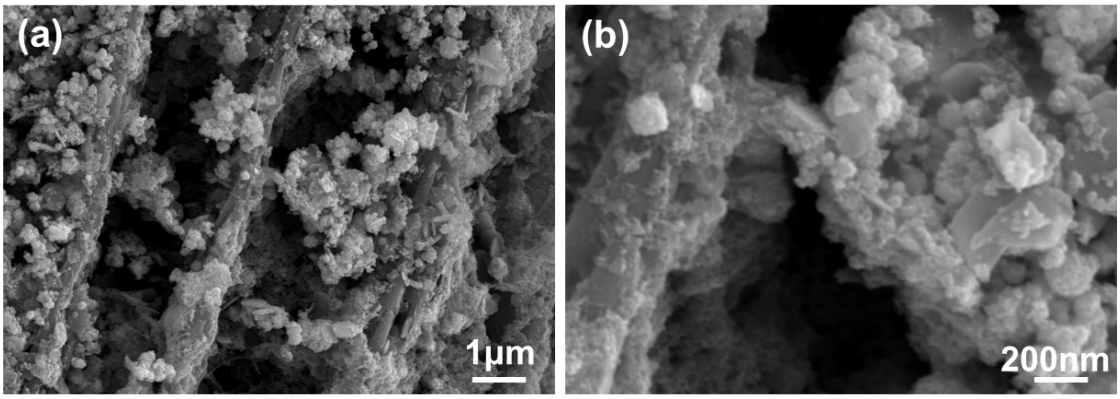

Fig. S7 SEM images of Co-Ni-Se/BWCF-160 after testing in SCs for 200 cycles under 20 A g^{-1}.

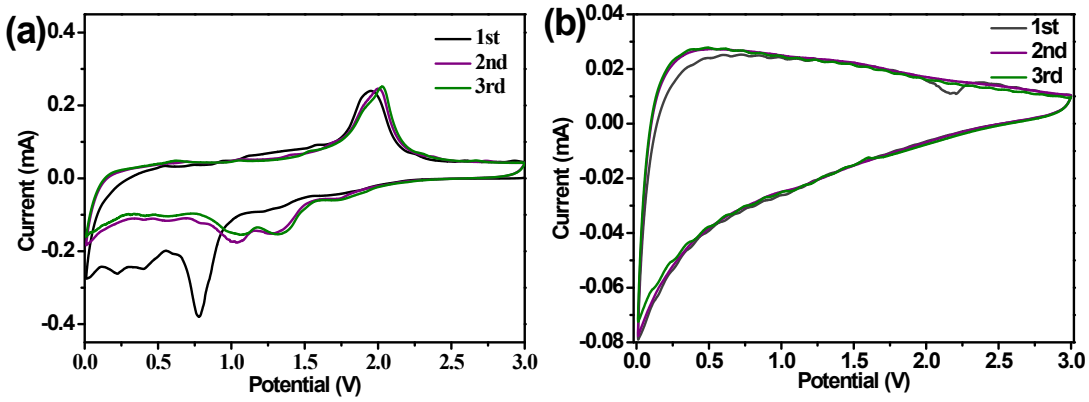

Fig. S8 CV curves of (a) Co-Se/BWCF and (b) BWCF as SIB anodes at 0.2 mV·s^{-1}.

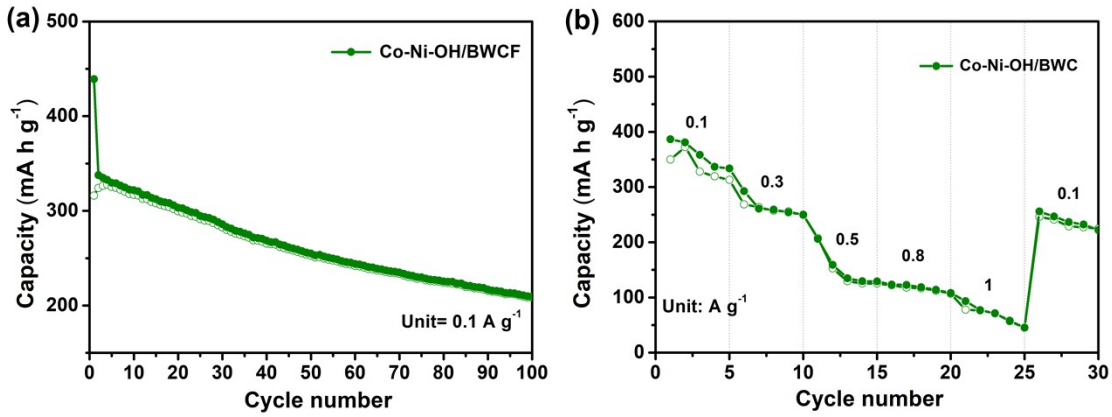

Fig. S9 (a) Cycling performance at 0.1 A·g^{-1} and (b) rate performance of Co-Se-OH/BWCF as SIB anode.

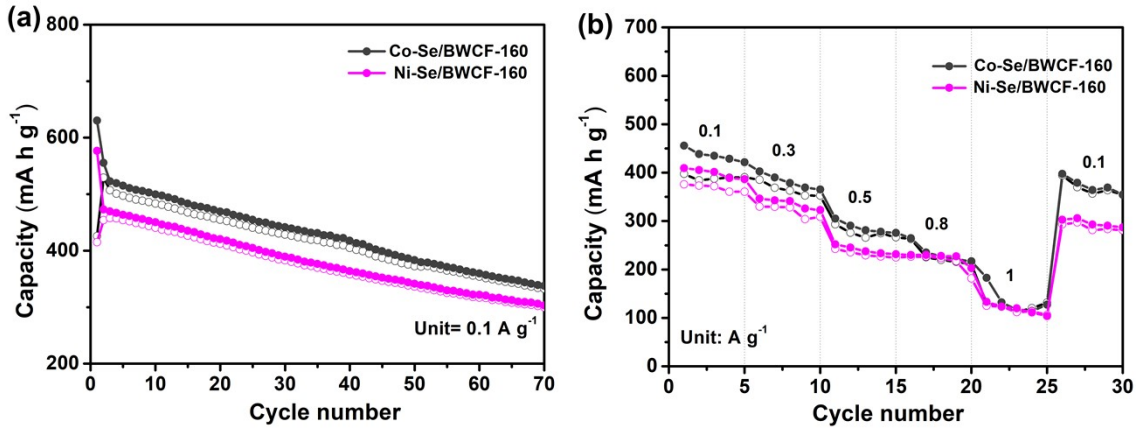

Fig. S10 (a) Cycling performances at 0.1 A·g^{-1} and (b) rate performances of Co-Se/BWCF-160 and Ni-Se/BWCF-160.

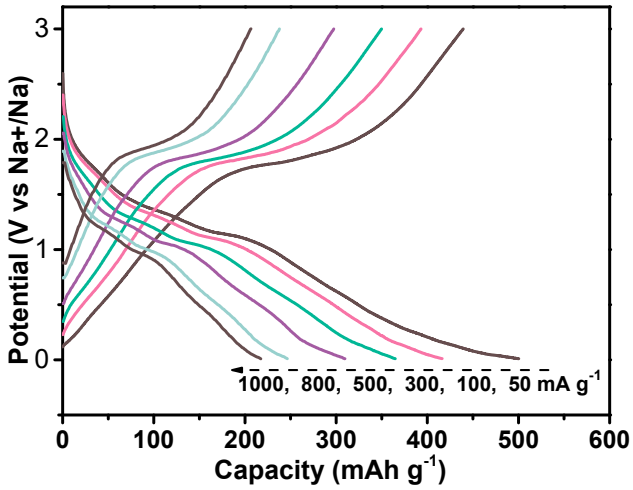

Fig. S11 Charge-discharge curves of Co-Ni-Se/BWCF-160 in the first cycle at different current densities.

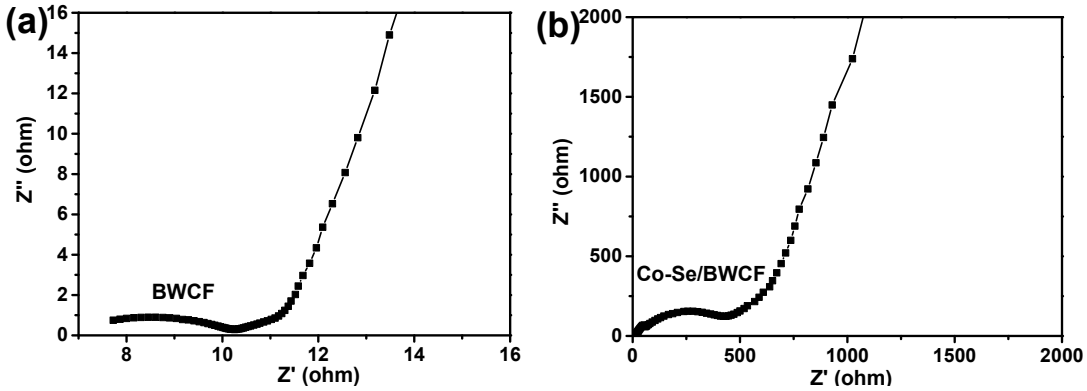

Fig. S12 Nyquist plots: (a) BWCF; (b) Co-Se/BWCF.

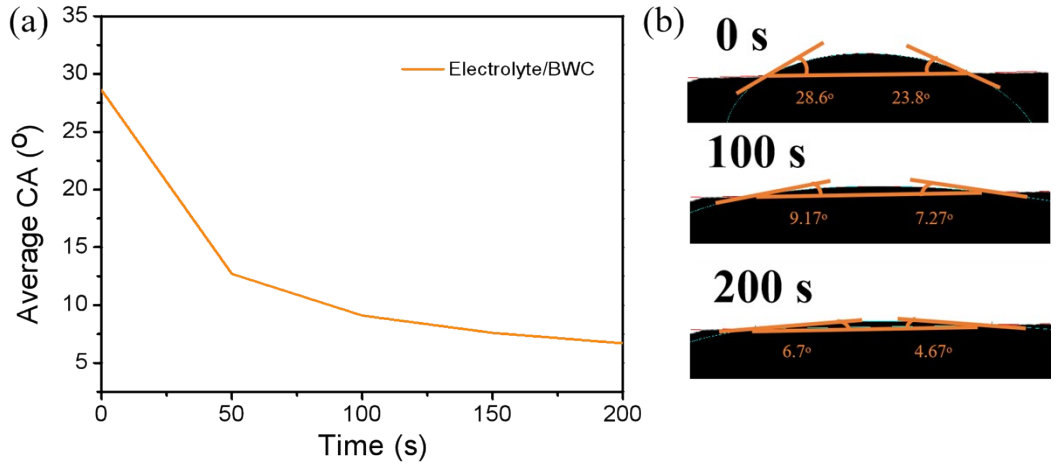

Fig.S13 (a) Evolution of contact angle between electrolyte and Co-Ni-Se/BWCF-160; (b)Black and white photographs of drop evolution with time.

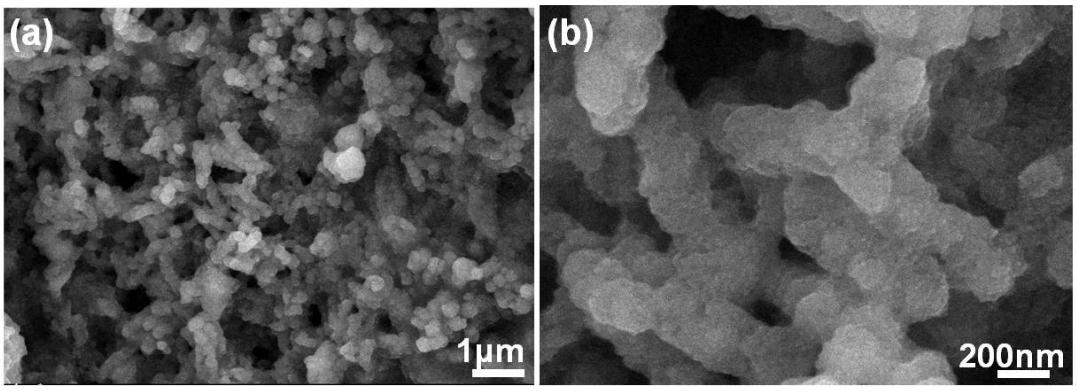

Fig. S14 SEM images of Co-Ni-Se/BWCF-160 after 200 cycles.