Two-dimensional fence-like Co-doped $NiSe_2$/C nanosheets as anode for half/full sodium-ion batteries

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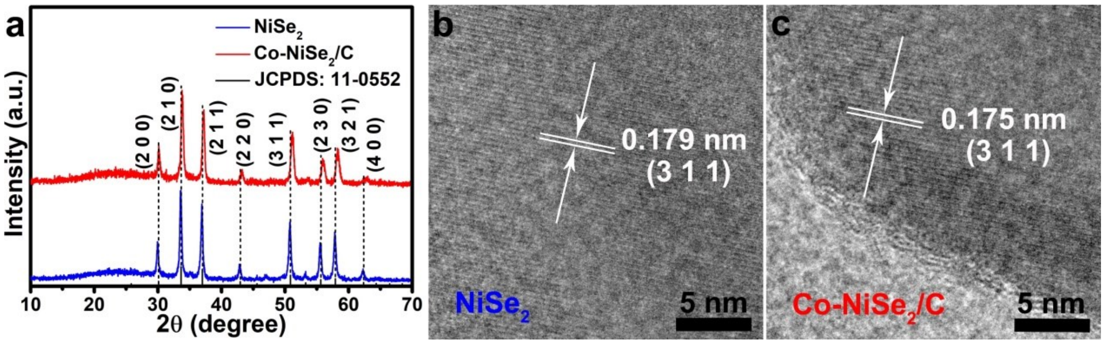

Fig. S1. (a) XRD patterns of Co-$NiSe_2$/C. Lattice fringes of $NiSe_2$ (b) and Co-$NiSe_2$/C (c).

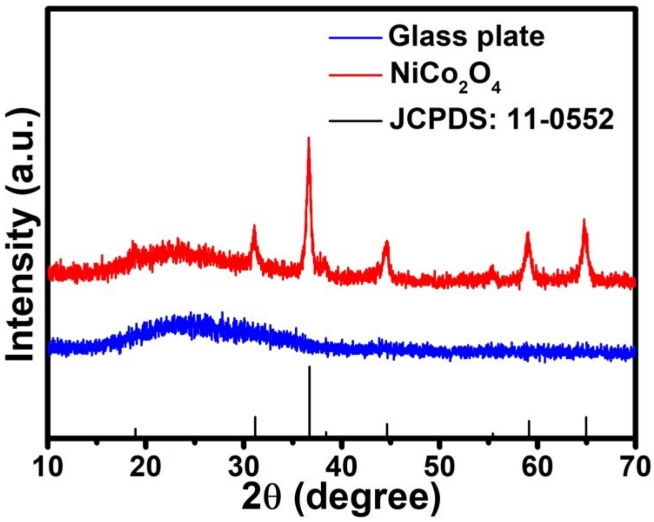

Fig. S2. XRD patterns of glass plate and $NiCo_2O_4$.

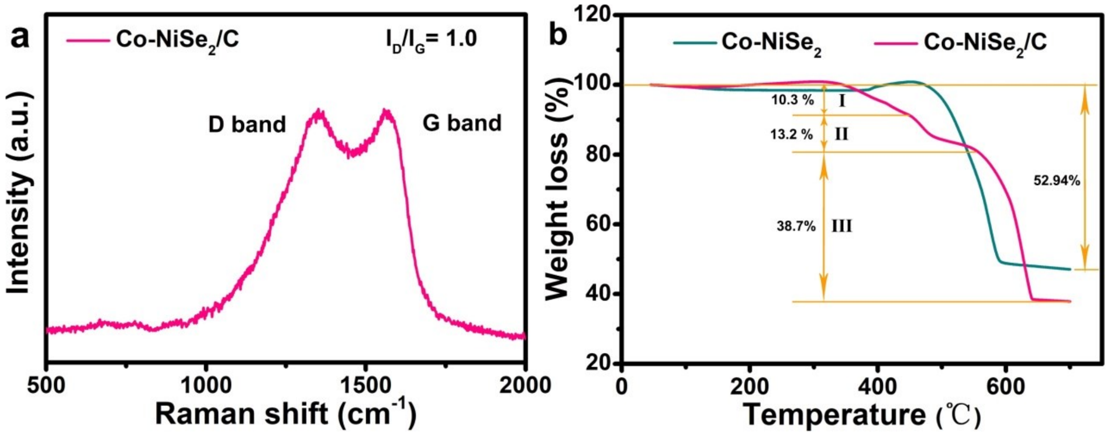

Fig. S3. The Raman spectra (a) of Co-$NiSe_2$/C and TGA curves (b) of Co-$NiSe_2$ and Co-$NiSe_2$/C.

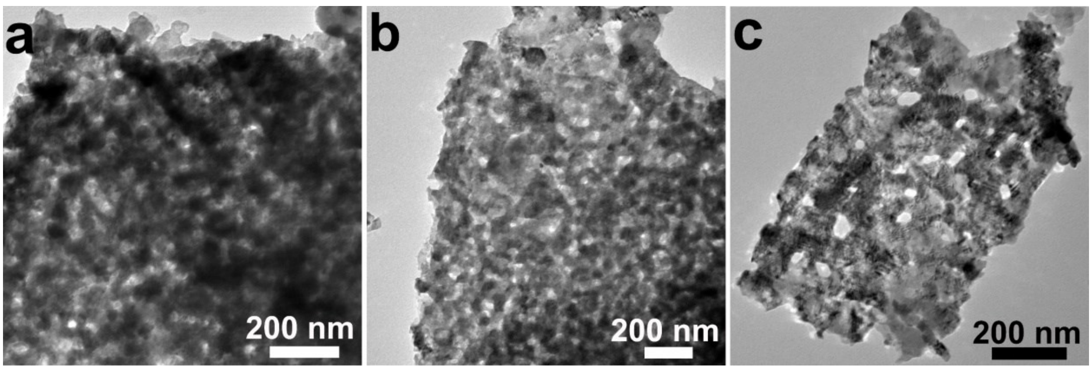

Fig. S4. TEM images of Co-$NiSe_2$/C after 60 (a), 200 (b) and 1000 (c) cycles.

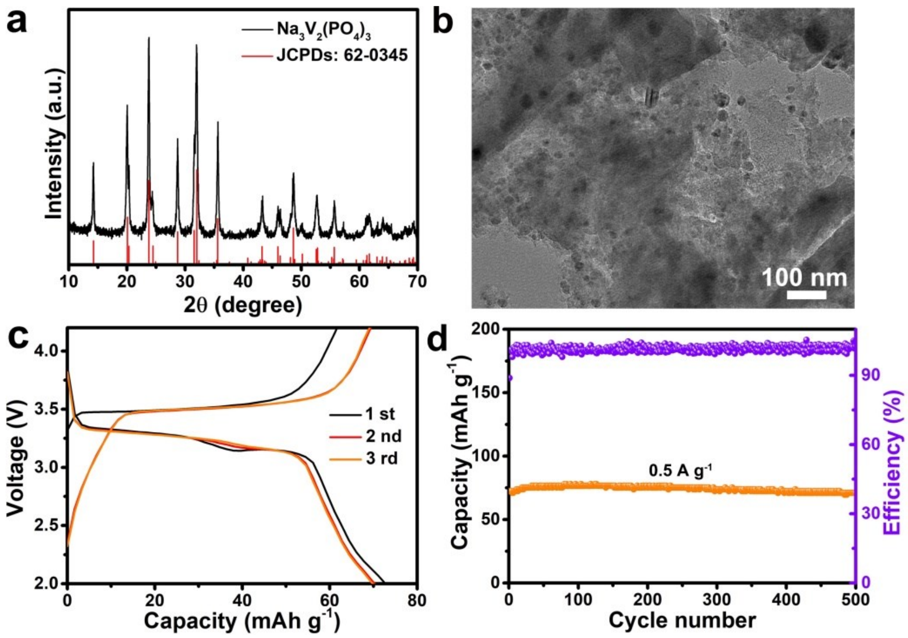

Fig. S5. XRD pattern (a), TEM image (b), discharge/charge curves (c) and cycling performance (d) of $Na_3V_2(PO_4)_3$ at a current density of 0.5 A g^{-1}.

Table S1. Cycling performance of Co-$NiSe_2$/C and full-cell reported in previous works.

Typical materials	Capacity ($mAh\ g^{-1}$)	Current ($A\ g^{-1}$)	Cycle number	Full cell performance	Ref.
Nanobox $CoSe_2$@C	234 $mAh\ g^{-1}$	5	2000	-	1
Urchin Like $CoSe_2$	410	1	1800	372 $mAh\ g^{-1}$ (0.5 $A\ g^{-1}$, 50 cycles)	2
Cobblestone Like $CoSe_2$@C	345	4.5	10000	-	3
$CoSe_2$ nanorods	386	5	2000	-	4
$CoSe_2$/ZnSe nanoflakes	200	10	4000	130 $mAh\ g^{-1}$ (1 $A\ g^{-1}$, 800 cycles)	5
$MoSe_2$@CoSe/N	347	2	300	197 $mAh\ g^{-1}$ (2 $A\ g^{-1}$, 100 cycles)	6
Porous Ni-$CoSe_2$ nanospheres	316	10	8000	208.3 $mAh\ g^{-1}$ (0.5 $A\ g^{-1}$,70 cycles)	7
Fence-like Co-$NiSe_2$/C	306.1	5	5000	269.1 $mAh\ g^{-1}$ (0.5 $A\ g^{-1}$,100 cycles)	This work

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