

Supplementary Materials

NiS_{1-x}Se_x Nanoparticles Anchored on Nitrogen-Doped Reduced Graphene Oxide as Highly Stable Anode for Sodium Ion Battery

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Table S1. Electrochemical performance of NiS_{1-x}Se_x@N-rGO composite electrode compared with previously reported metal sulfide and metal selenide electrodes.

Composites	Synthesis methods	Cycling stability(A/B/n)	Columbic efficiency (1st cycle)	Ref.
NiS _{1-x} Se _x @N-rGO	Hydrothermal and sulfoselenization	300/1.0/1000	91.3%	This work
Ni ₃ S ₂ @C	Solvothermal and sulfuration	308/1.0/200	51.9%	[S1]
NiS _x -NSC	Milling and annealing	250/1.0/300	72%	[S2]
NiS ₂ nanospheres	Hydrothermal	319/0.5/1000	--	[S3]
NiSe/C nanospheres	Hydrothermal and annealing	280/0.1/50	93.5%	[S4]
NiSe@C@NCNFs	Electrospinning and selenization	164/2.0/1000	60.7%	[S5]
ZnSe/HNC	Hydrothermal and selenization	251/0.5/500	60.6%	[S6]
Ni ₃ S ₄ /CAs-1	Hydrothermal and calcination	297/1.0/100	72.1%	[S7]
NiS@N-rGO	Hydrothermal and sulfuration	300/1.0/300	81.9%	[S8]
NiS ₂	Aging and sulfuration	187/0.5/100	76.2%	[S9]
h-NiS@N-C	Aging and sulfuration	290/1.0/1000	24.8%	[S10]

A/B/n means the capacity of A (mAh g⁻¹) at the certain rate current density of B (C) after cycles of n.

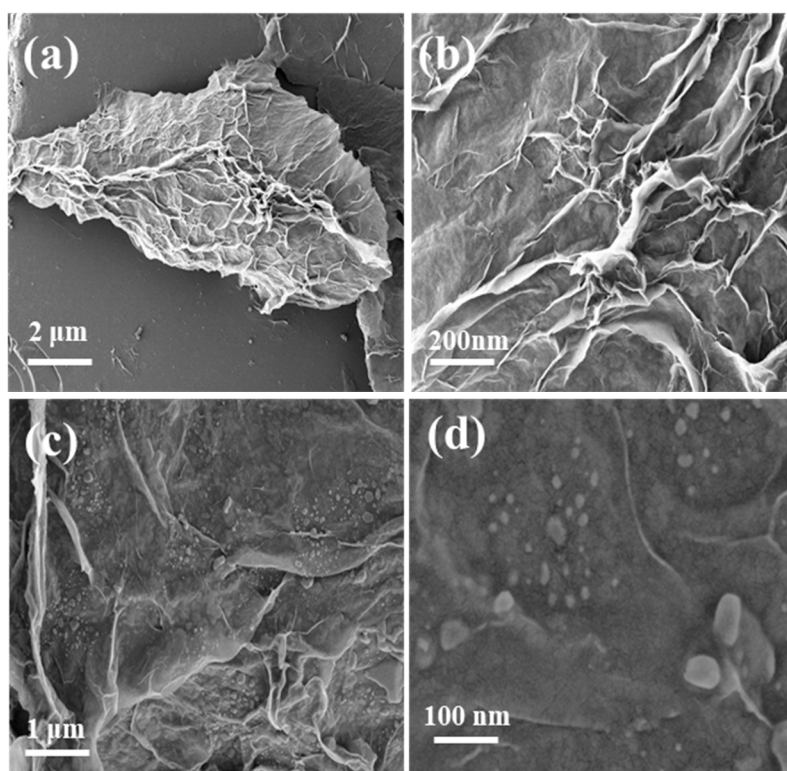


Figure S1. (a,b) FESEM images of $\text{Ni(OH)}_2@\text{GO}$ precursor, (c,d) FESEM images of NiS@N-rGO .

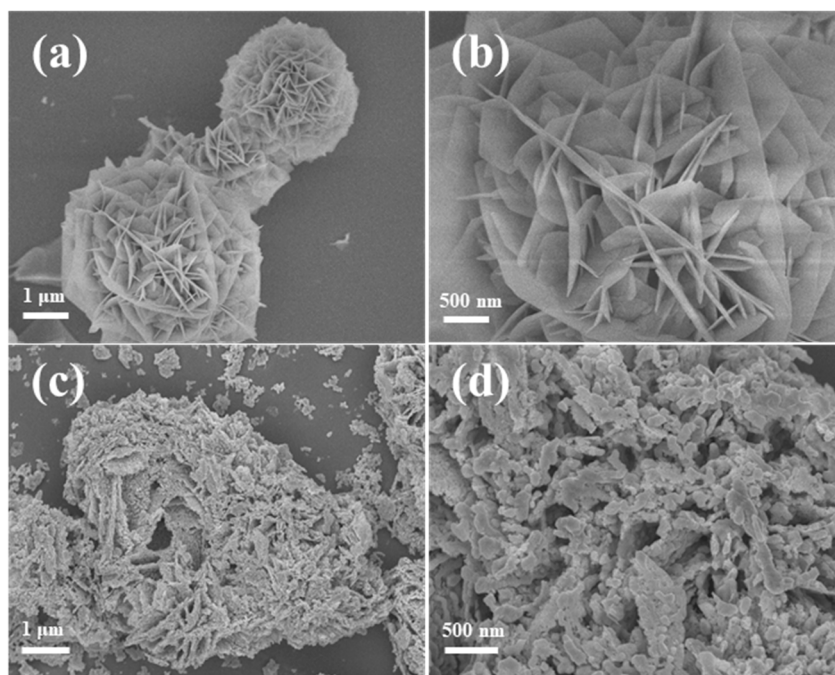


Figure S2. FESEM images of (a,b) pure Ni(OH)_2 and (c,d) pure $\text{NiSi}_{1-x}\text{Se}_x$.

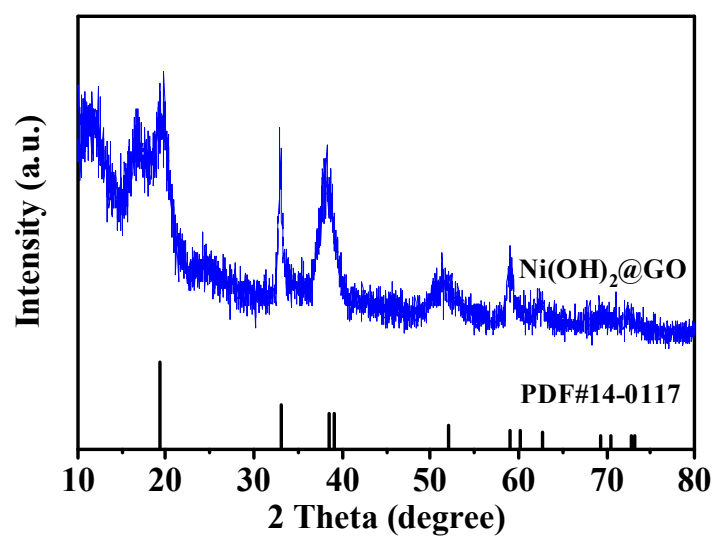


Figure S3. XRD pattern of Ni(OH)₂@GO precursor.

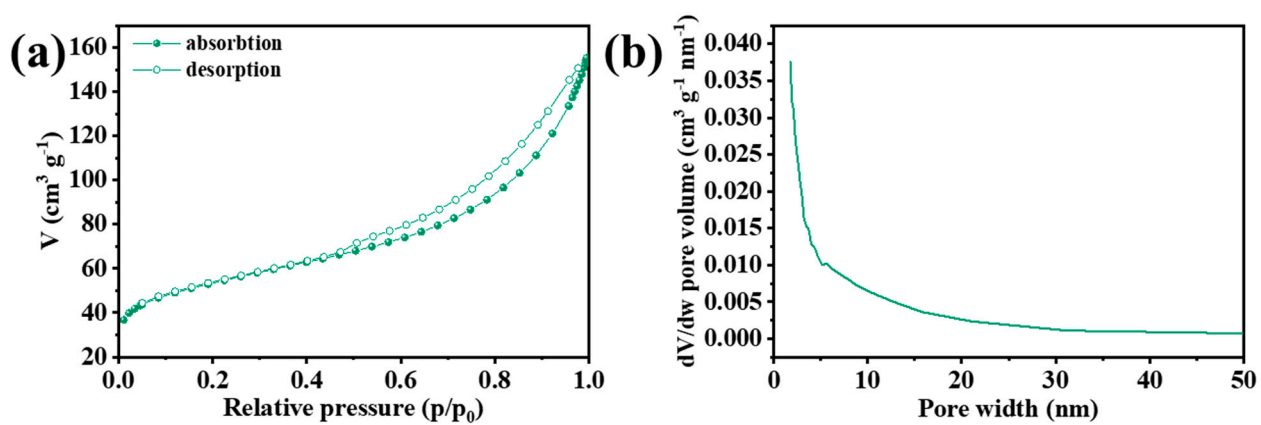


Figure S4. (a) N_2 sorption isotherms and (b) pore size distribution of NiS@N-rGO composites.

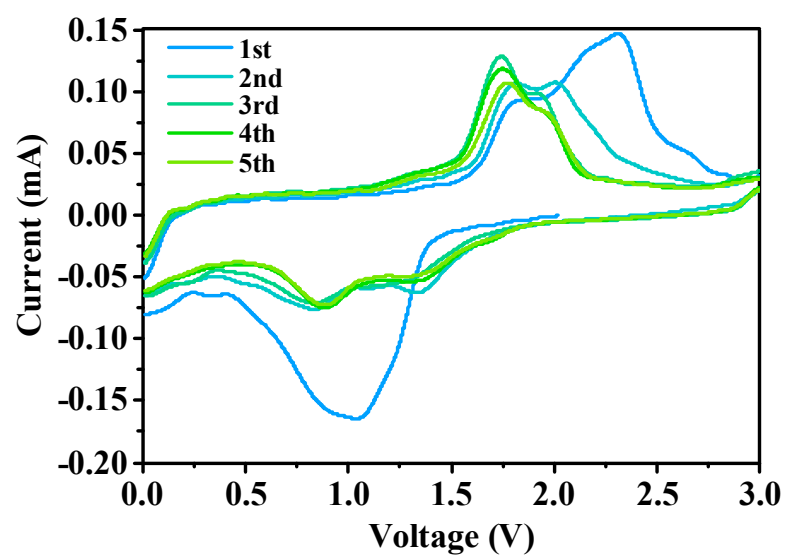


Figure S5. CV curves of $\text{NiSi}_{1-x}\text{Se}_x@\text{N-rGO}$ electrode at 0.01–3 V.

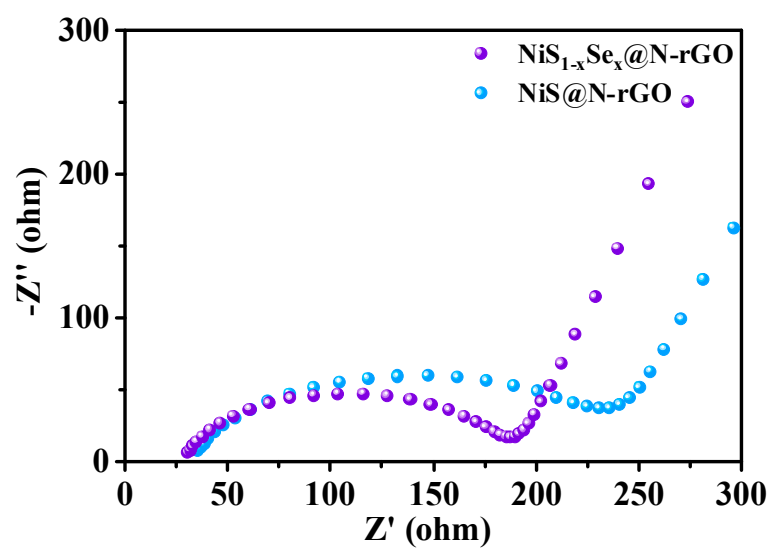


Figure S6. Electrochemical impedance spectra of $\text{NiS}_{1-x}\text{Se}_x@\text{N-rGO}$ and $\text{NiS}@\text{N-rGO}$ electrodes.

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