Electronic Supplementary Material (ESI) for Materials Advances.

Substrate Surface Alloy Strategy for Integrated Sulfide Electrode for Sodium Ion Batteries with Superior Lifespan

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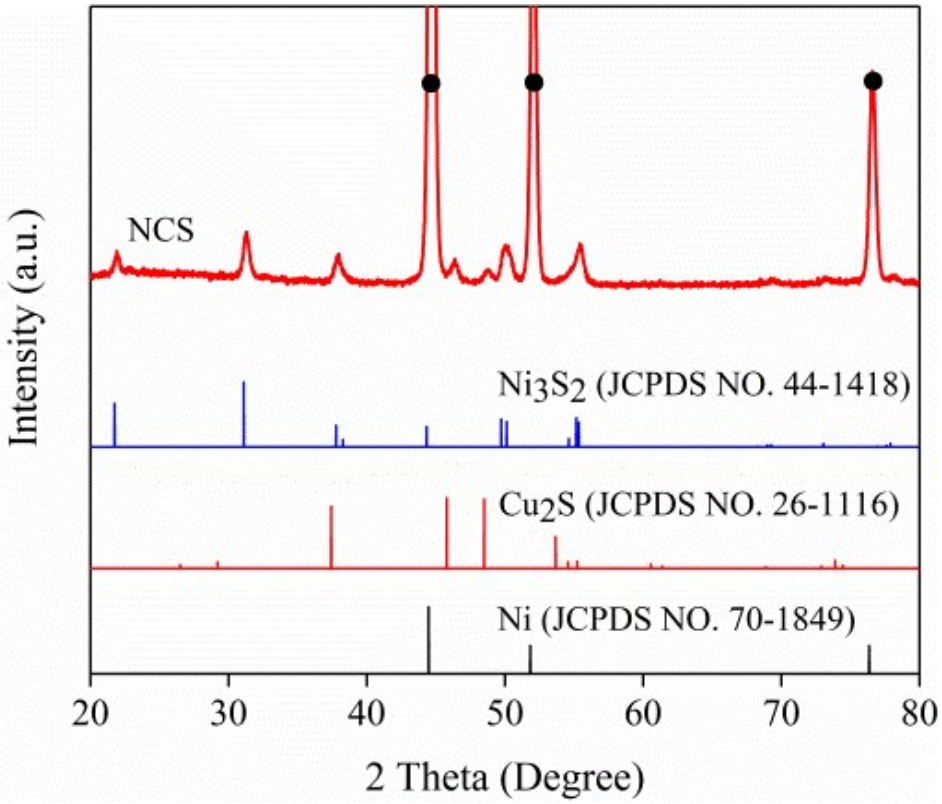

Figure S1. XRD pattern of NCS on Ni foam

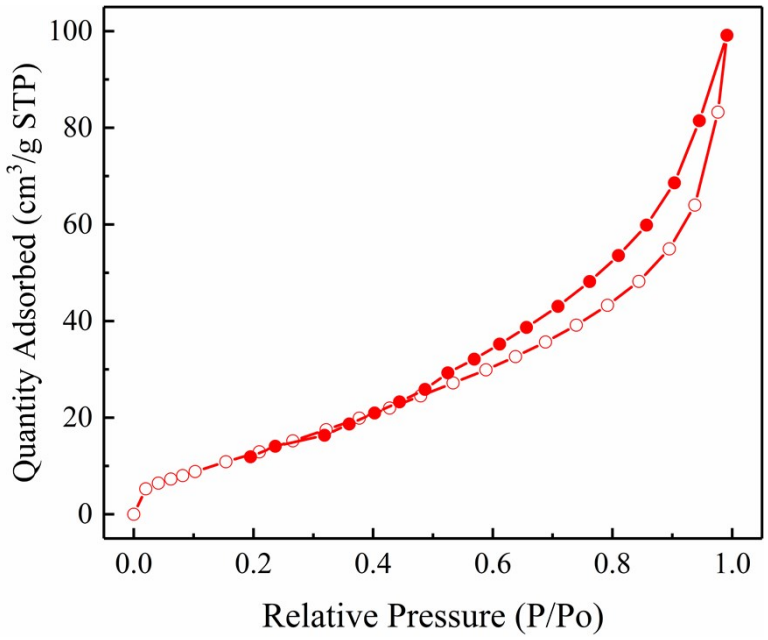

Figure S2. Nitrogen adsorption-desorption isotherm measurement

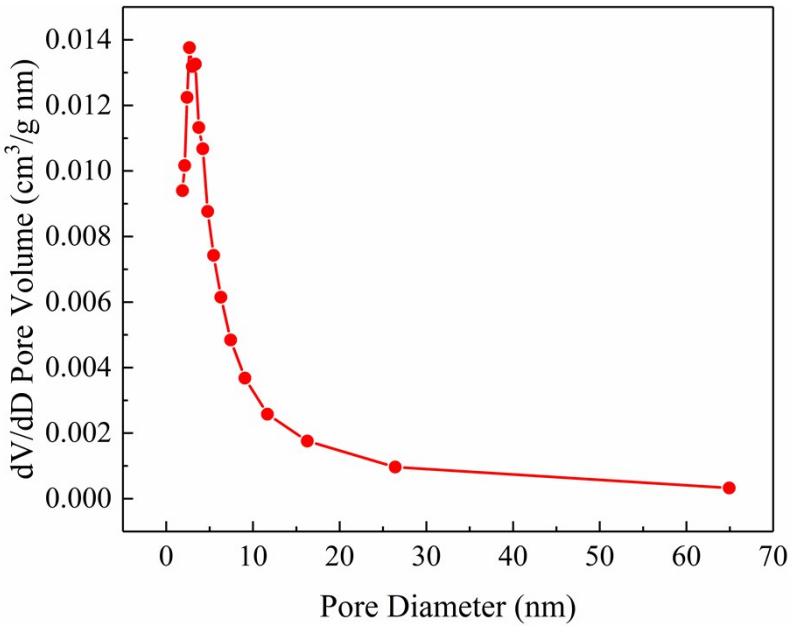

Figure S3. Pore diameter and pore volume distribution

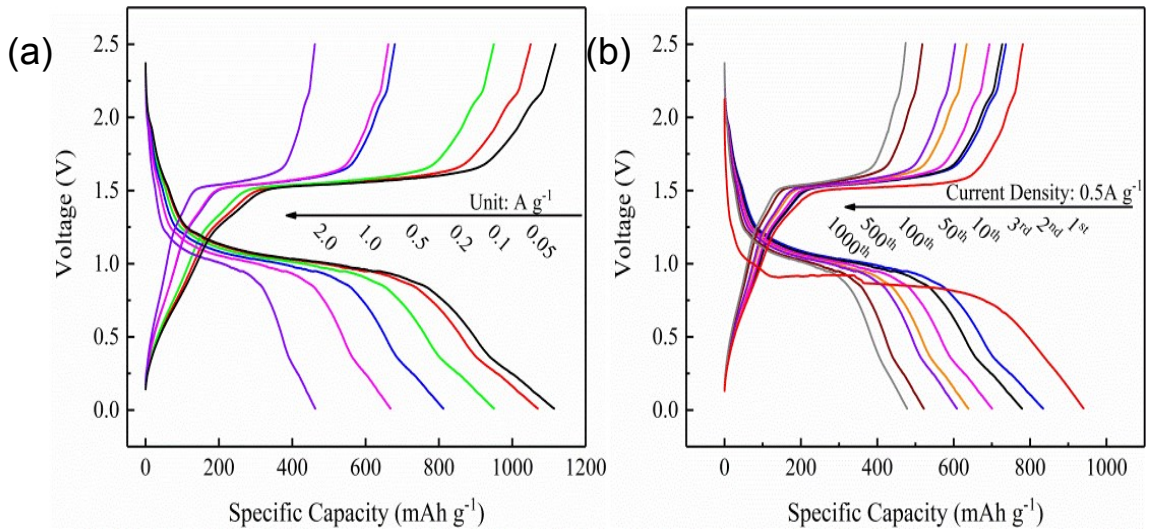

Figure S4. (a) The charge and discharge curves under different current density (0.05-2.0 A g^{-1}); (b) The charge and discharge curves under different cycles.

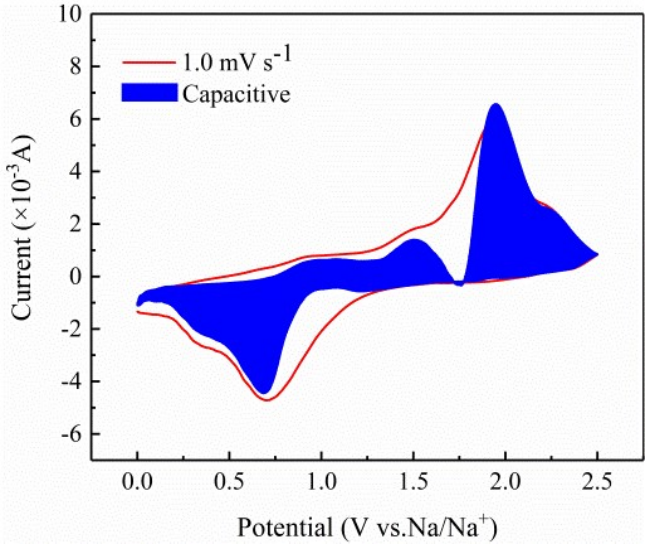

Figure S5. The CV curve at a scan rate of 1 mV s^{-1} with the capacitive contribution to the total current shown by the shaded region.

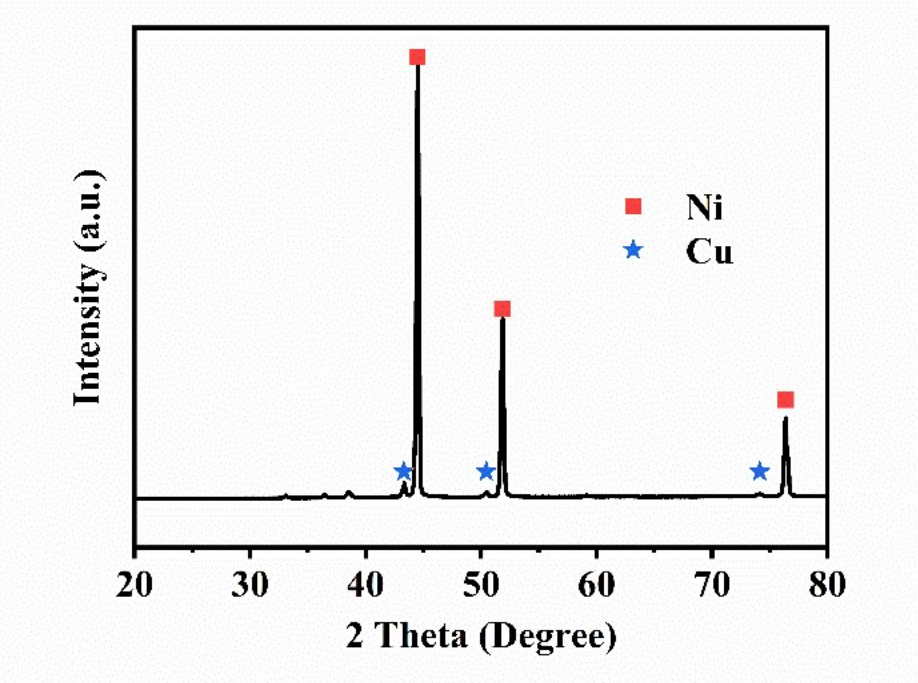

Figure S6 XRD curves of Ni-Cu alloy.

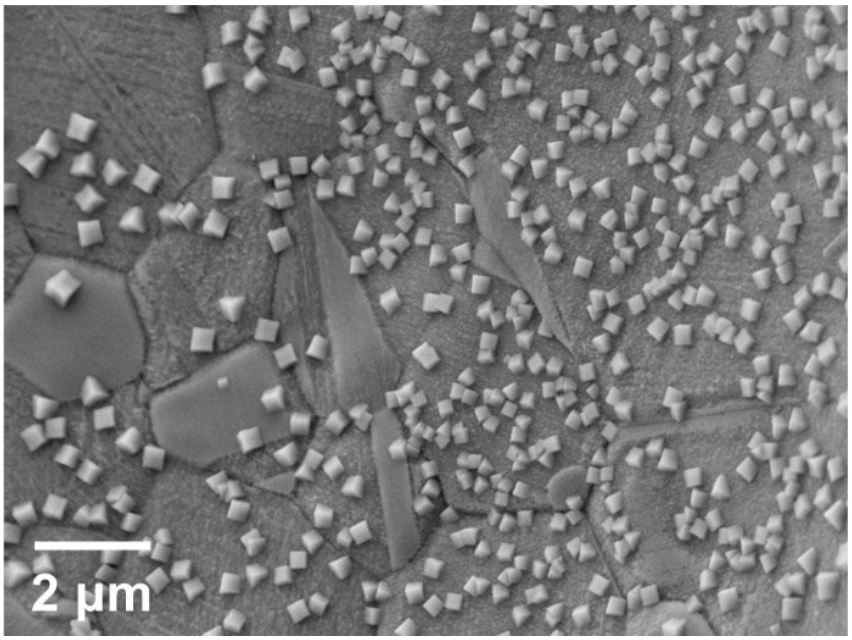

Figure S7 SEM images of Ni-Cu alloy.

Figure S8 Immersion experiment in ultrasonic environment. (a) NCS on the surface of NiCu alloy. (b) NCS on the surface of Ni foam.

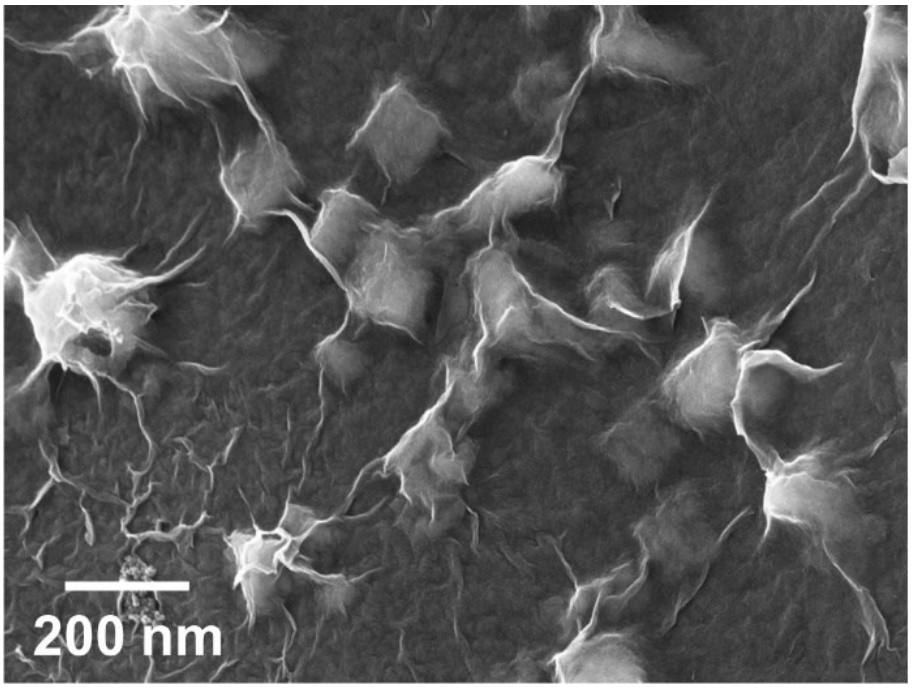

Figure S9 The SEM image of crystal growth on the surface of NiCu alloy.

Table. S1 Comparison of the electrochemical performance of the metal sulfide SIB anodes reported in the literatures.

Meterials	Current density (A g-1)	Initial charge capacity (mAh g-1)	Cycle number	Capacity retention (%)	Ref.
CuS-RGO	1	~360	450	96.03	1
Cu_2S	~0.5	~400	450	>100	2
$CuSbS_2$	0.2	730	20	64.38	3
NiS_2 Nanospheres	0.5	~720	1000	44.31	4
$(Ni_{0.3}Co_{0.7})_9S_8$/RGO	1	~570	400	44.56	5
NiS_2-GNS	~0.08	528	200	77	6
NCS	0.5	782	1000	61.28	This work

Reference

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