

Electronic Supplementary Information (ESI)

Regulating the oxidation degree of nickel foam: A smart strategy to controllably synthesize active Ni₃S₂ nanorod/nanowire arrays for high-performance supercapacitors

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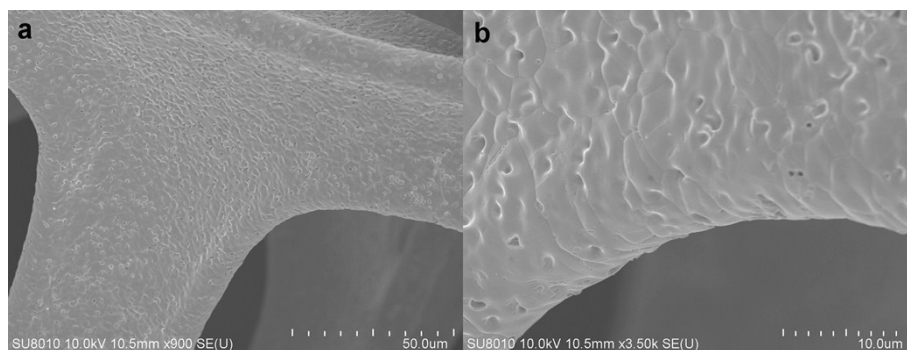


Fig. S1 SEM images of pure NF at different magnifications.

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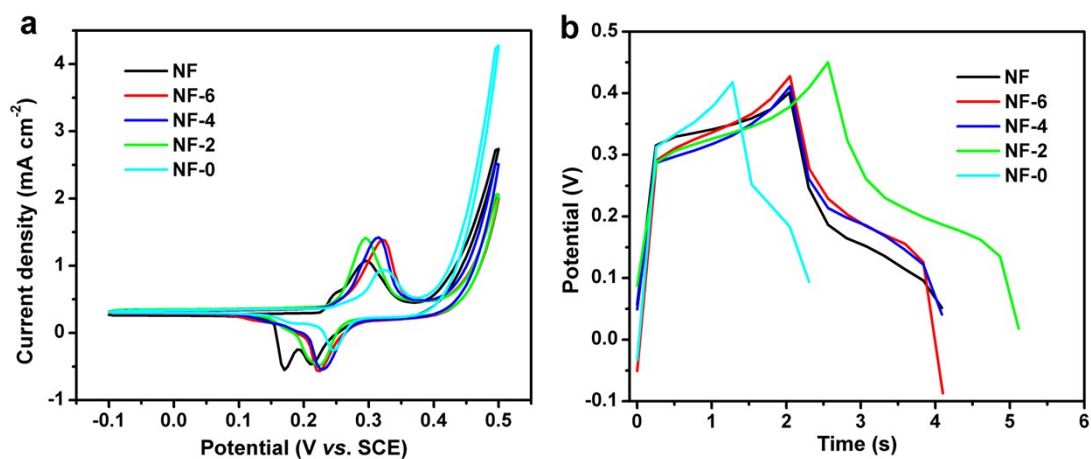


Fig. S2 Electrochemical performances of NF, NF-6, NF-4, NF-2 and NF-0 electrodes. (a) CV curves at a scan rate of 5 mV s^{-1} . (b) GCD curves at a current density of 5 mA cm^{-2} .

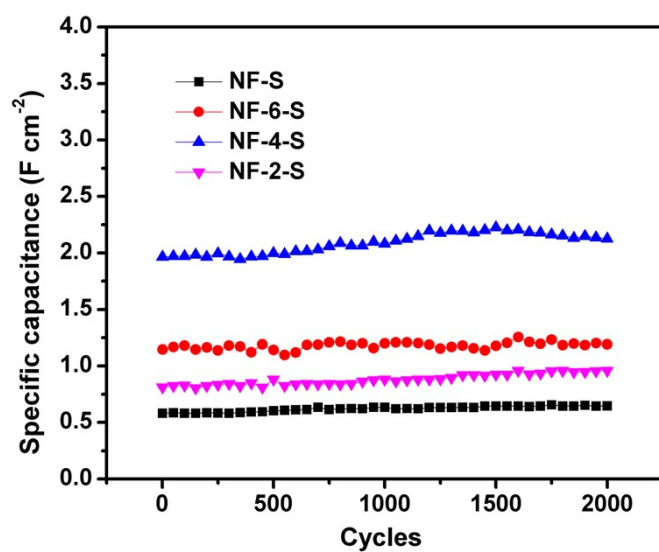


Fig. S3 Cycling performance of NF-S, NF-6-S, NF-4-S and NF-2-S electrodes at a current density of 20 mA cm^{-2} .

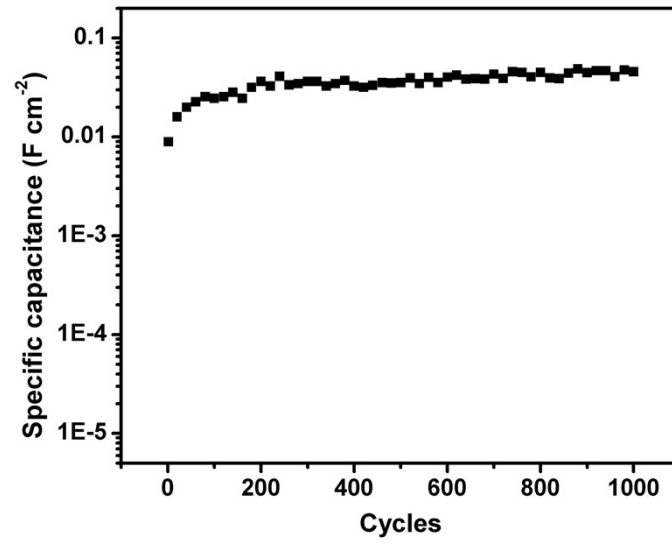


Fig. S4 Cycling performance of NF electrode at a current density of 5 mA cm⁻².

Table S1 Comparison of electrochemical performance of different electrode materials

Electrode materials	Capacitance	Rate capability	Capacitance retention after cycling	Reference
NF-4-S	4.52 F cm ⁻² (1051 F g ⁻¹) at 1.25 mA cm ⁻²	53% from 2.5 to 30 mA cm ⁻²	108.3% after 2000 cycles at 20 mA cm ⁻²	This work
NiCo ₂ S ₄ nanotubes@ NiCo ₂ S ₄ nanosheets	1948 mF cm ⁻² at 1.0 mA cm ⁻²	79% from 1.0 to 20 mA cm ⁻²	94% after 5000 cycles at 2 mA cm ⁻²	Ref. 54
Flaky Ni ₃ S ₂	717 F g ⁻¹ at 2 A g ⁻¹	57.3% from 2 to 32 A g ⁻¹	62% after 1000 cycles at 4 A g ⁻¹	Ref. 52
NiCo ₂ S ₄ /CFP	1.19 F cm ⁻² at 1.0 mA cm ⁻²	70.0% from 1.0 to 25 mA cm ⁻²	75.9% after 5000 cycles at 20 mA cm ⁻²	Ref. 55
CNT@Ni ₃ S ₂ hybrid	514 F g ⁻¹ at 4 A g ⁻¹	70.4% from 4 to 13.3 A g ⁻¹	88% after 1200 cycles at 5.3 A g ⁻¹	Ref. 22
NiCo ₂ S ₄ porous nanotubes	1093 F g ⁻¹ at 0.2 A g ⁻¹	85.4% from 0.2 to 1.0 A g ⁻¹	63% after 1000 cycles at 1.0 A g ⁻¹	Ref. 56
Ni ₃ S ₂ dendrites	710.4 F g ⁻¹ at 2.0 A g ⁻¹	66.2% from 2.0 to 14 A g ⁻¹	No capacitance loss after 2000 cycles at 5.0 A g ⁻¹	Ref. 32
Ni ₃ S ₂ nanoflakes	0.387 F cm ⁻² at 10 mA cm ⁻²	70.9% from 1.0 to 10 mA cm ⁻²	77.2% after 5000 cycles at 10.0 mA cm ⁻²	Ref. 23
NiS nanosheets	2.64 F cm ⁻² (527 F g ⁻¹) at 2.5 mA cm ⁻²	56.4% from 2.5 to 100 mA cm ⁻²	90% after 2000 cycles at 10 mA cm ⁻²	Ref. 53

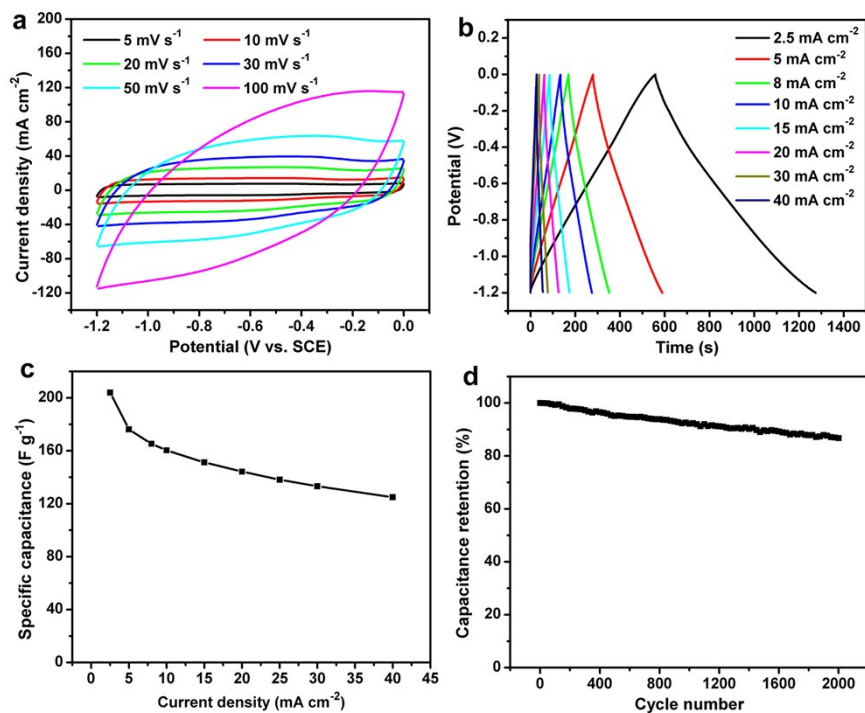


Fig. S5 (a) CV curves of NPGC electrode at different scan rates in 3 M KOH. (b) GCD curves of NPGC electrode at different current densities. (c) Specific capacitance of the NPGC electrode at various current densities. (d) Cycle performance of the NPGC electrode at a current density of 30 mA cm⁻².

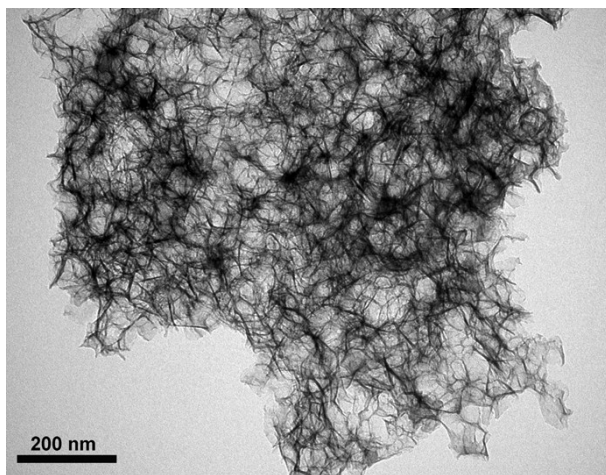


Fig. S6 TEM image of NPGC.

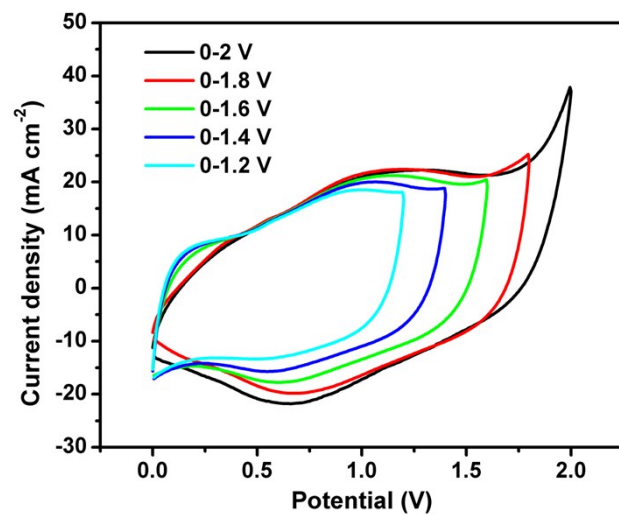


Fig. S7 CV curves of NF-4-S//NPGC asymmetric supercapacitor at scan rate of 20 mV s^{-1} with different scan voltage windows in 3 M KOH electrolyte.