

Supporting information

NiCo₂S₄@Ni₃S₂ hybrid nanoarray on Ni foam for high-performance supercapacitor

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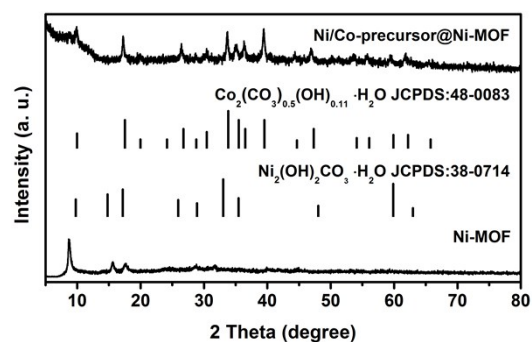


Fig. S1. XRD patterns of Ni/Co-precursor@Ni-MOF.

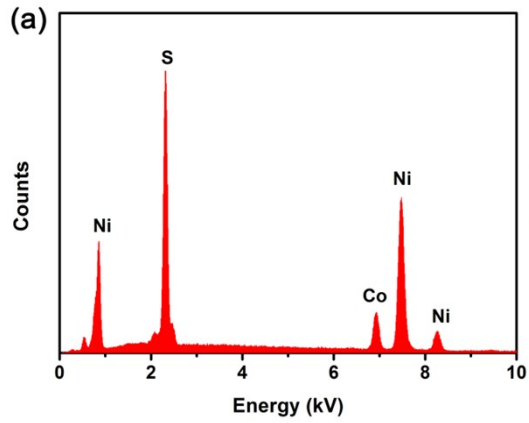


Fig. S2. EDS patterns of NiCo₂S₄@Ni₃S₂.

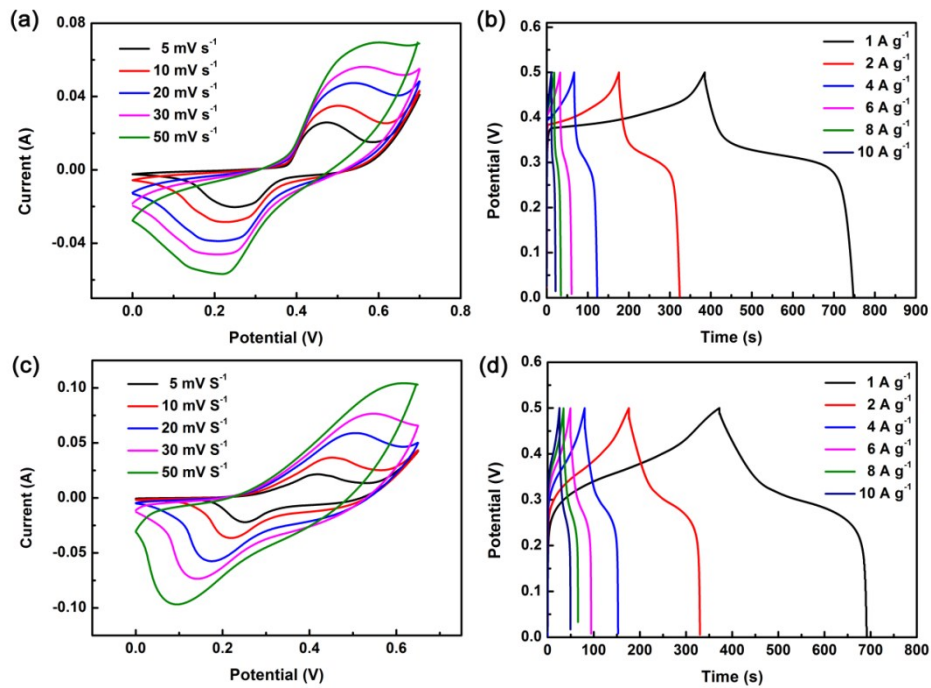


Fig. S3. (a) CV curves of the Ni₂S₃ electrode at different scan rates; (b) GCD curves of the Ni₂S₃ electrode at different current density; (c) CV curves of the NiCo₂S₄ arrays at different scan rates; (d) GCD curves of the NiCo₂S₄ arrays at different current density.

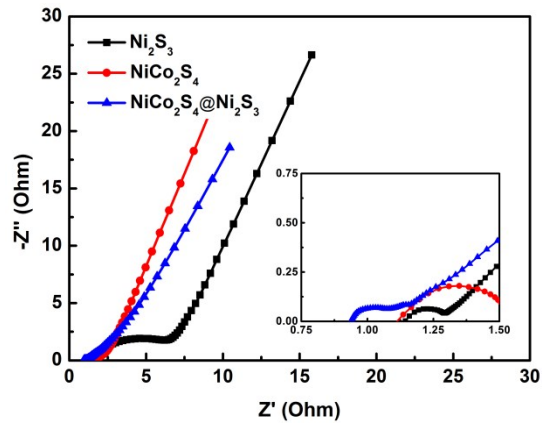


Fig. S4 Nyquist plots of Ni_3S_2 , NiCo_2S_4 and $\text{NiCo}_2\text{S}_4@ \text{Ni}_3\text{S}_2$ (inset shows the intercept with the X-axis).

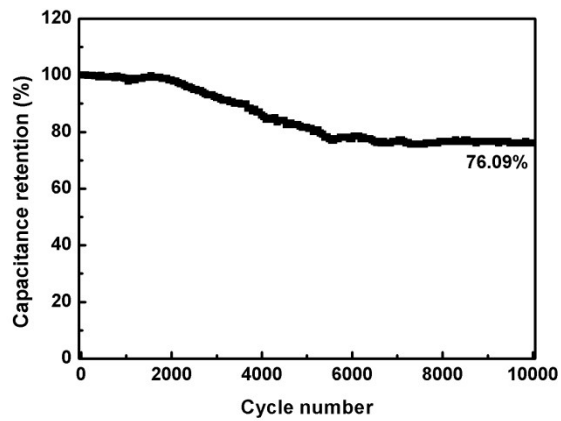


Fig. S5. Cycling performance of $\text{NiCo}_2\text{S}_4@ \text{Ni}_3\text{S}_2$.

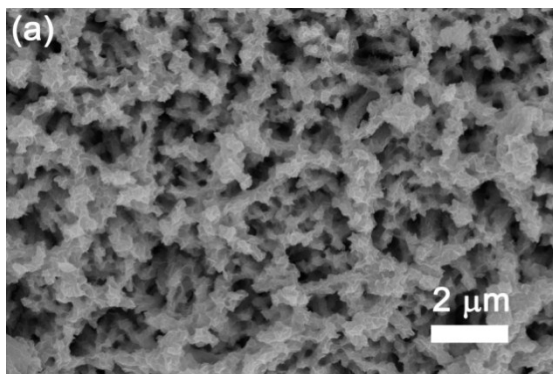


Fig. S6. SEM of image of $\text{NiCo}_2\text{S}_4@ \text{Ni}_3\text{S}_2$ after 10000 cycles.

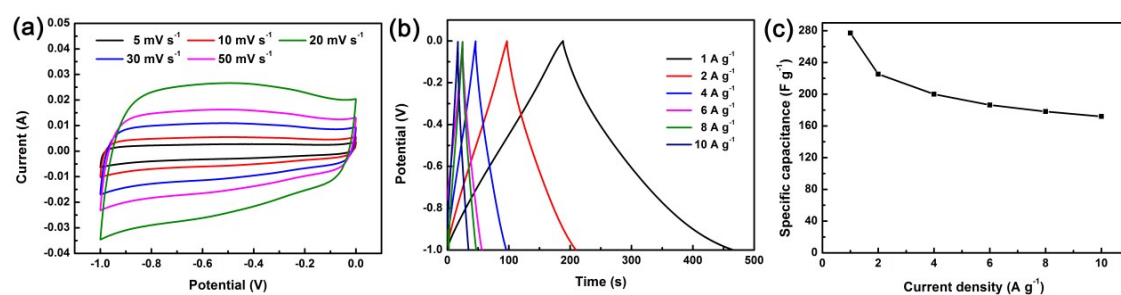


Fig. S7. (a) CV curves of AC electrode at various sweep rates; (b) GCD curves of AC electrode at various current density; (c) Specific capacitance of AC electrode at different current densities.

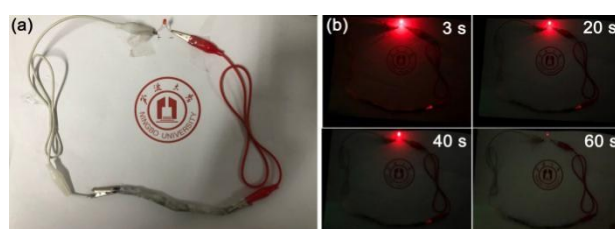


Fig. S8. LED indicator lighted up by (a-b) NiCo₂S₄@Ni₃S₂//AC ASC.

Table S1. The compared electrochemical properties of different electrode materials.

Electrode materials	Morphology	Electrolyte (KOH)	Specific capacitance	Current density	Refs
NiCo ₂ S ₄	nanotube	6M	738 F g ⁻¹	4 A g ⁻¹	45
Ni ₃ S ₂	nanosheet	1 M	2.44 F cm ⁻²	2 mA cm ⁻²	9
Ni-Co-S	nanosheet	1 M	1418 A g ⁻¹	5 A g ⁻¹	49
NiCo ₂ S ₄ @Ni ₃ S ₂	core-shell	6 M	4.55 C cm ⁻²	5 mA cm ⁻²	35
NiCo ₂ O ₄	nanoneedle	6 M	0.998 C cm ⁻²	2 mA cm ⁻²	2
NiCo ₂ O ₄ @Ni-S	nanoplate	1 M	926 F g ⁻¹	8 mA cm ⁻²	18
ZnCo ₂ O ₄ @MnCo ₂ O ₄	nanosheet	6 M	254 F g ⁻¹	1 A g ⁻¹	50
Co ₃ O ₄ @NiMnO ₄	nanowire	2 M	0.89 F cm ⁻²	1.6 mA cm ⁻²	51
NiCo ₂ O ₄ @NiCo ₂ O ₄	nanoflake	2M	1.55 F cm ⁻²	2 mA cm ⁻²	52
NiCo ₂ S ₄ @Ni ₃ S ₂	nanoneedle	1 M	1536.8 F g ⁻¹ (2.3 F cm ⁻²)	1 A g ⁻¹ (2.5 mA cm ⁻²)	this work