

Supplementary Information for

Construction and application of NiCo₂O₄@MnS composite with hierarchical structure for hybrid supercapacitor

Xuan Liao,^a Xiaolong Hou,^a Caini Yi,^a Wang Guimiao,^a Wang Shuo,^a Ying Yang,^a Changguo

Chen,^a Danmei Yu,^{*a} Yuping Liu,^{*a} and Xiaoyuan Zhou ^{*b}

^a School of Chemistry and Chemical Engineering, Chongqing University, Chongqing, 401331, P.R. China

^b College of Physics, Chongqing University, Chongqing, 401331, P.R. China

Corresponding Authors

***Danmei Yu's** e-mail: yudanmei-1@163.com.

***Xiaoyuan Zhou's** e-mail: xiaoyuan2013@cqu.edu.cn.

***Yuping Liu's** e-mail: cgchen@cqu.edu.cn.

Notes

The authors declare no competing financial interest

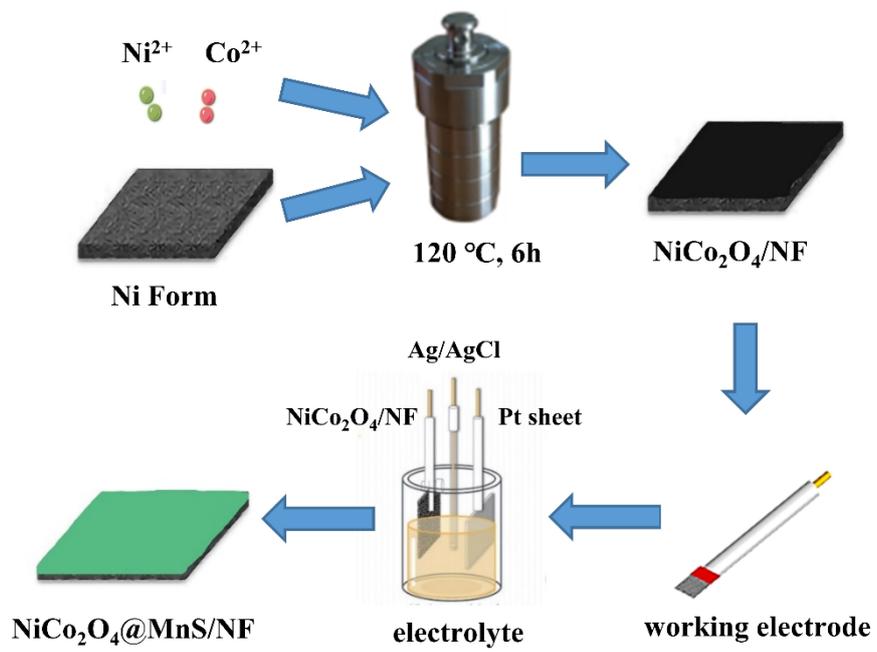


Fig. S1 Schematic illustration of synthesizing hierarchical $\text{NiCo}_2\text{O}_4@MnS/NF$ electrode.

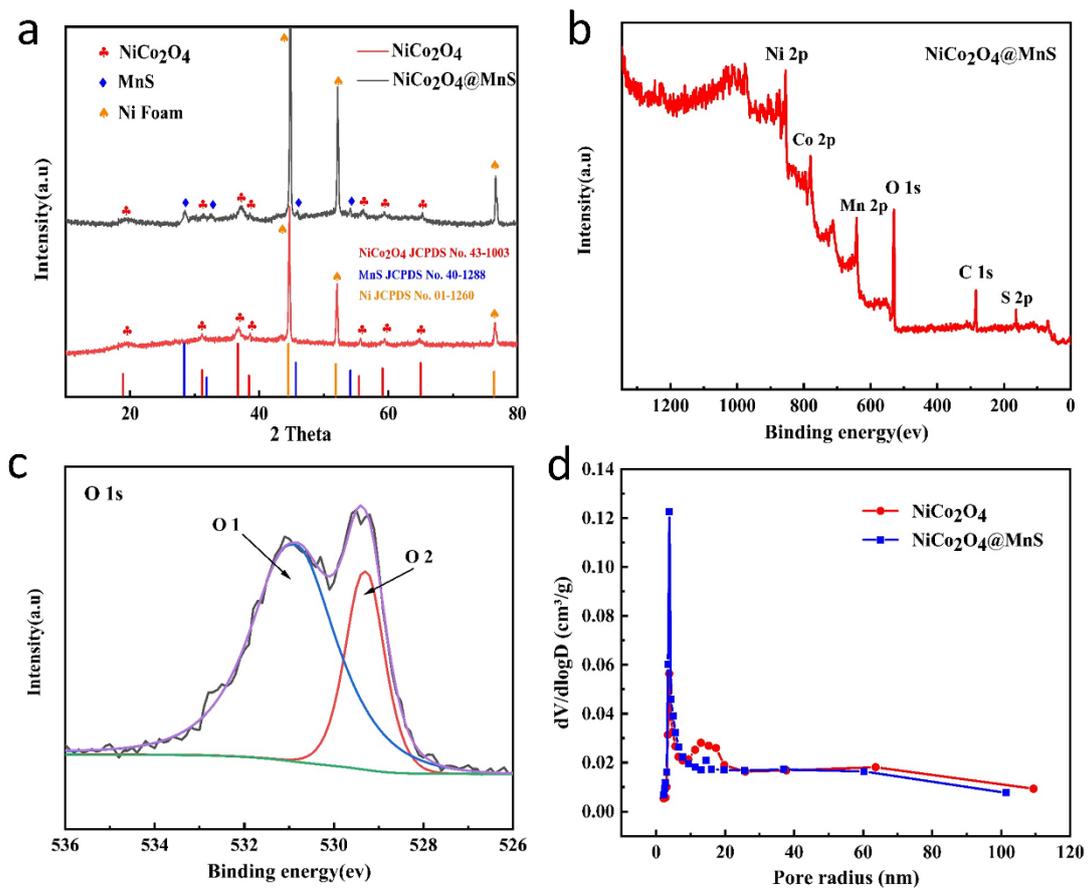


Fig. S2(a)XRD patterns of prepared materials, (b)XPS survey spectra of NiCo₂O₄@MnS composite, (c) XPS spectra of O 1s and (d) Pore size distribution curves of prepared materials.

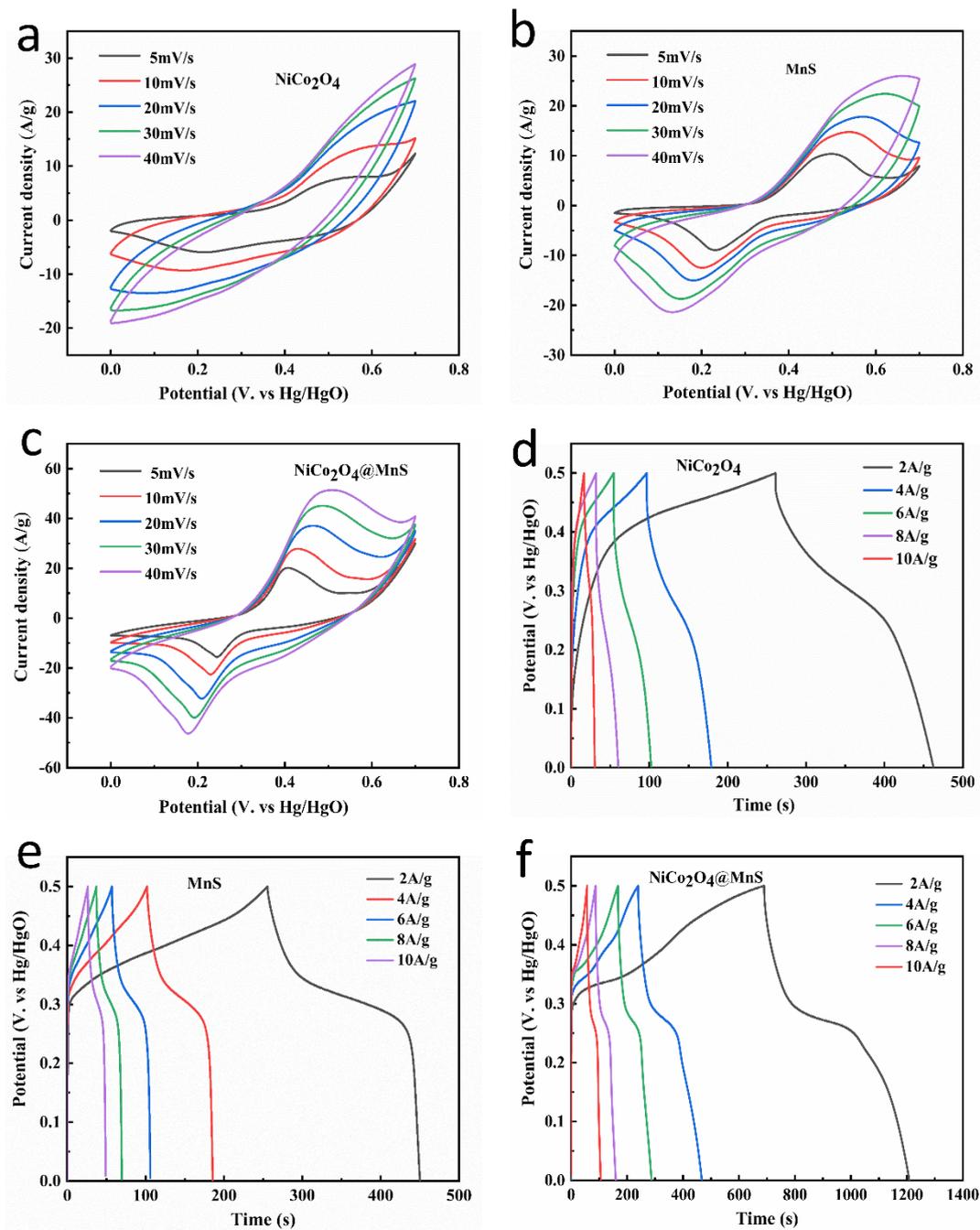


Fig. S3(a-c) CV curves of NiCo_2O_4 , MnS and $\text{NiCo}_2\text{O}_4@\text{MnS}$ at different scan rates, (d-f) GCD curves of NiCo_2O_4 , MnS and $\text{NiCo}_2\text{O}_4@\text{MnS}$ at different current densities.

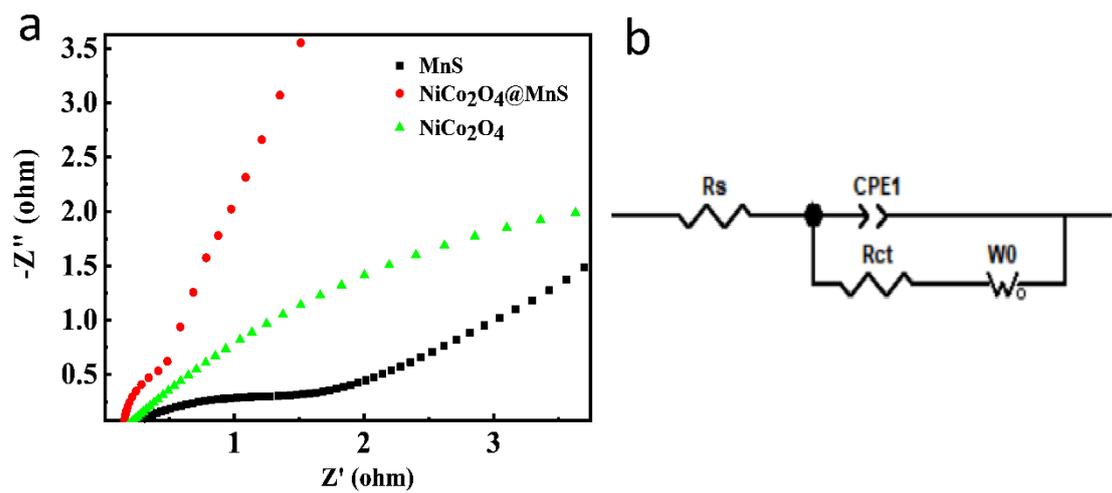


Fig. S4(a) Magnification of Nyquist plot of prepared materials, (b) equivalent circuit diagram.

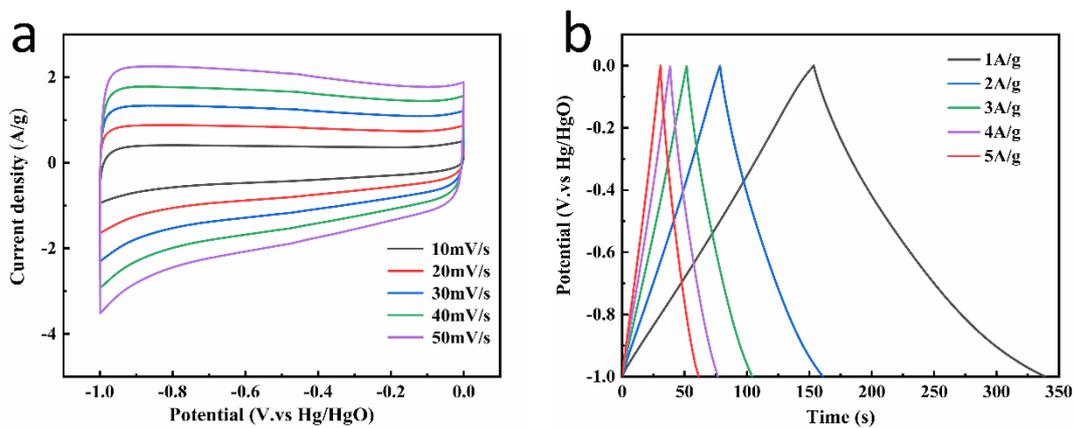


Fig. S5 Electrochemical properties of activated carbon (AC) negative electrode: (a) CV curves, (b) GCD curves.

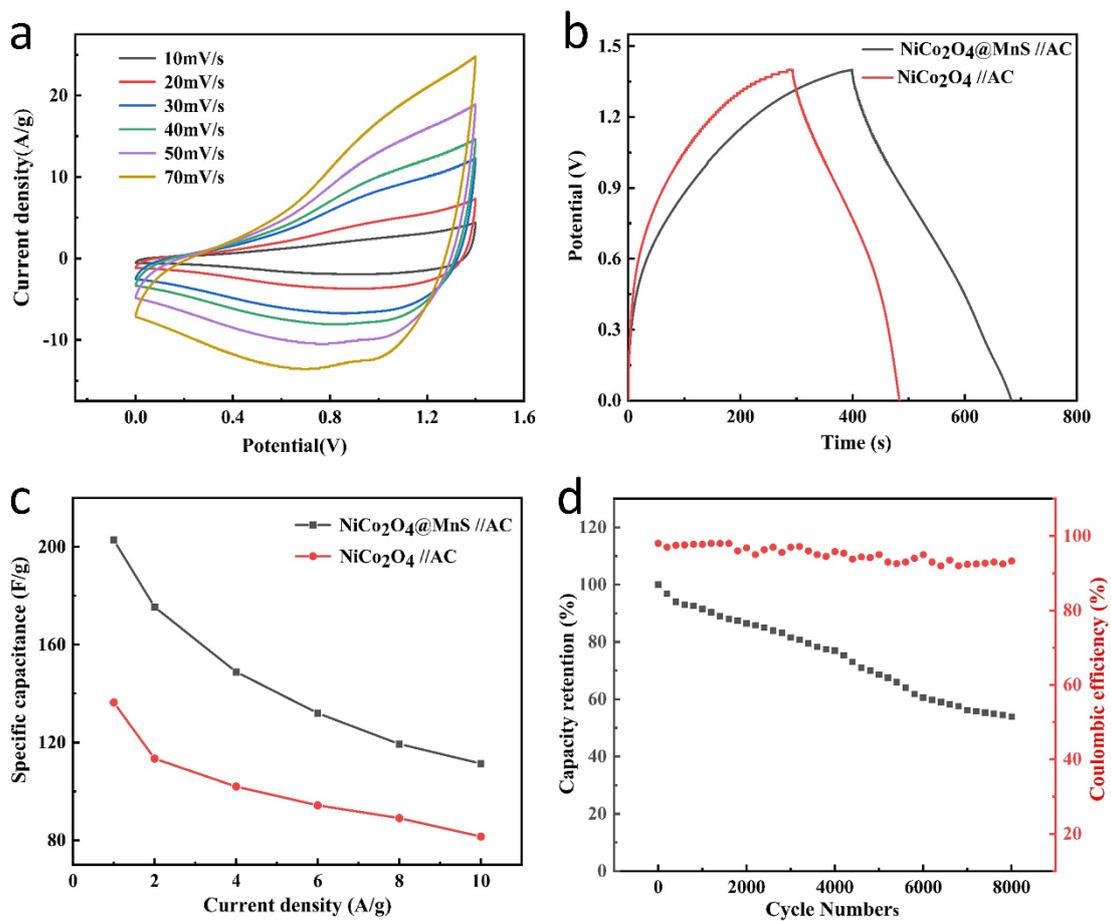


Fig. S6(a) CV curves of NiCo₂O₄//AC, (b) Comparison GCD curves of NiCo₂O₄@MnS//AC and NiCo₂O₄//AC at 1 A/g, (c) The specific capacity change plot of NiCo₂O₄@MnS//AC and NiCo₂O₄//AC with the current density and (d) Cyclic stability of NiCo₂O₄//AC.

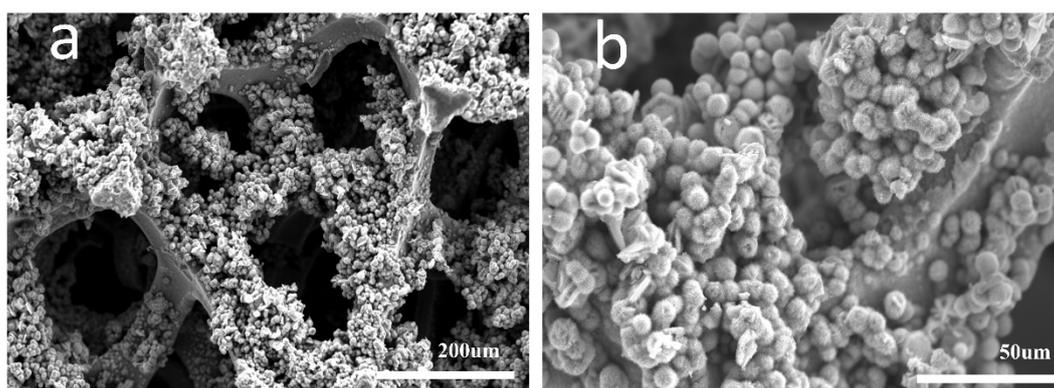


Fig. S7 Different magnifications SEM images of (a-b) NiCo₂O₄

Table.S1 Electrochemical properties comparison of some NiCo₂O₄ based materials

Electrode materials	Specific capacitance (F/g)	Current density (A/g)	Electrolyte	Ref.
NiCo ₂ O ₄ @ NiCoAl-LDH	1814.24 F/g	1 A/g	2 M KOH	2017 ¹
NiCo ₂ O ₄ @MnO ₂	913.6 F/g	0.5 A/g	1 M KOH	2016 ²
NiCo ₂ O ₄ @Co ₃ O ₄	822.36 F/g	1 A/g	2 M KOH	2023 ³
NiCo ₂ O ₄ @GO	709.7F/g	1 A/g	1 M KOH	2018 ⁴
PPy-NiCo ₂ O ₄ @CPF	910 F/g	1 A/g	1 M KOH	2017 ⁵
NiCo₂O₄@MnS	2100 F/g	2 A/g	3 M KOH	This work

Reference

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