Supporting Information

Fabrication of Hierarchical MOF-Derived $NiCo_2S_4$@Mo-Doped Co-LDH Arrays for High-Energy-Density Asymmetric Supercapacitors

Siyi Cheng, Kang Du, Xiaowu Wang, Yufei Han, Longxiao Li and Guojun Wen *

School of Mechanical Engineering and Electronic Information, China University of Geosciences, Wuhan 430074, China; chengsiyi@cug.edu.cn (S.C.)
* Correspondence: wenguojun@cug.edu.cn; Tel.: +86-27-67883421

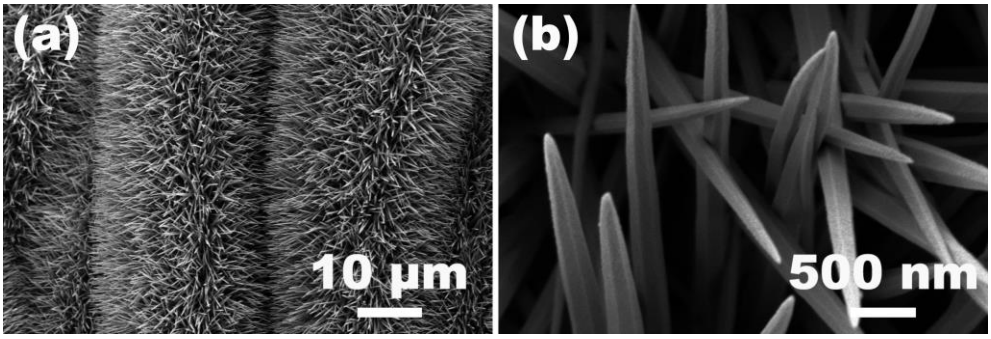

Figure S1. Low and high-resolution SEM images of the NiCo-precursor.

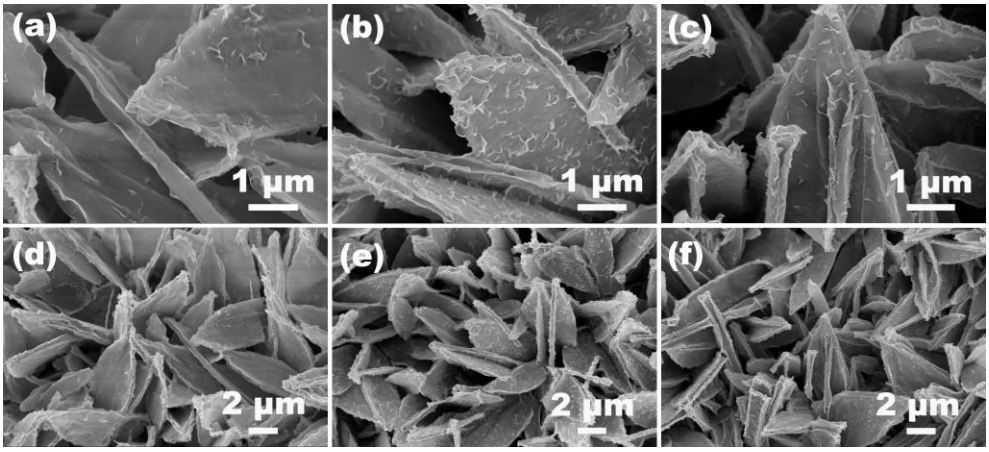

Figure S2. SEM of the $NiCo_2S_4$@Mo-doped Co-LDH at different synthesis time.

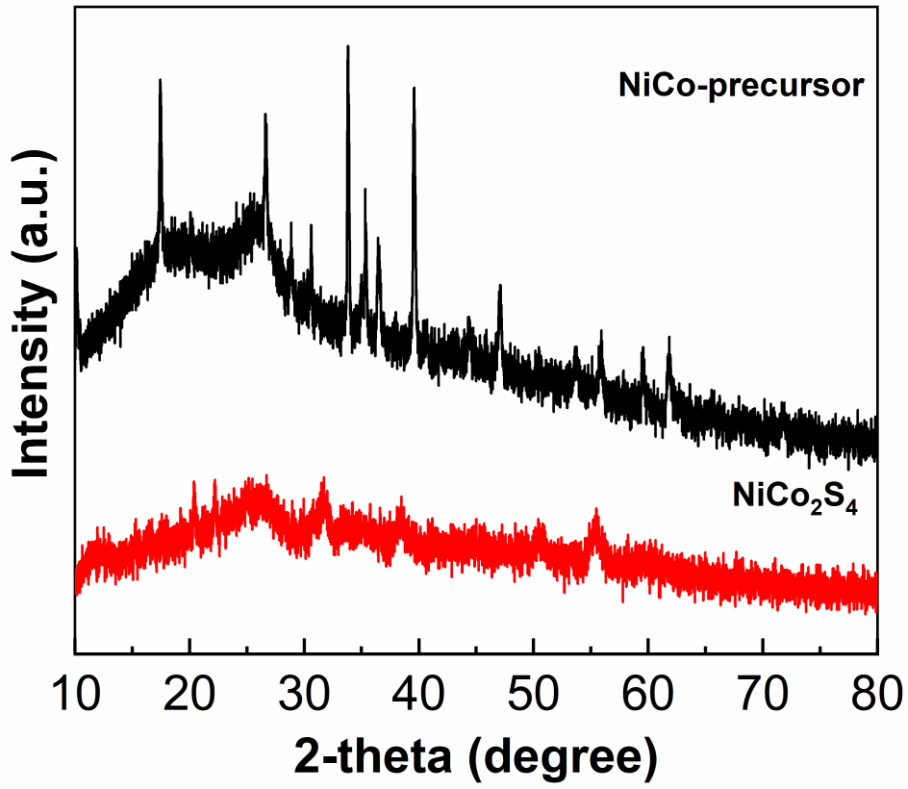

Figure S3. XRD patterns of the NiCo-precursor and $NiCo_2S_4$.

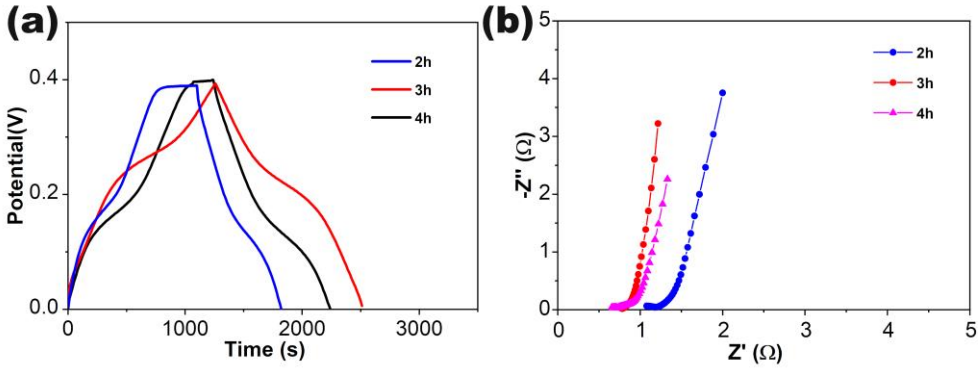

Figure S4. Comparison of GCD (a) and EIS (b) results of the $NiCo_2S_4$@Mo-doped Co-LDH at different synthesis time.

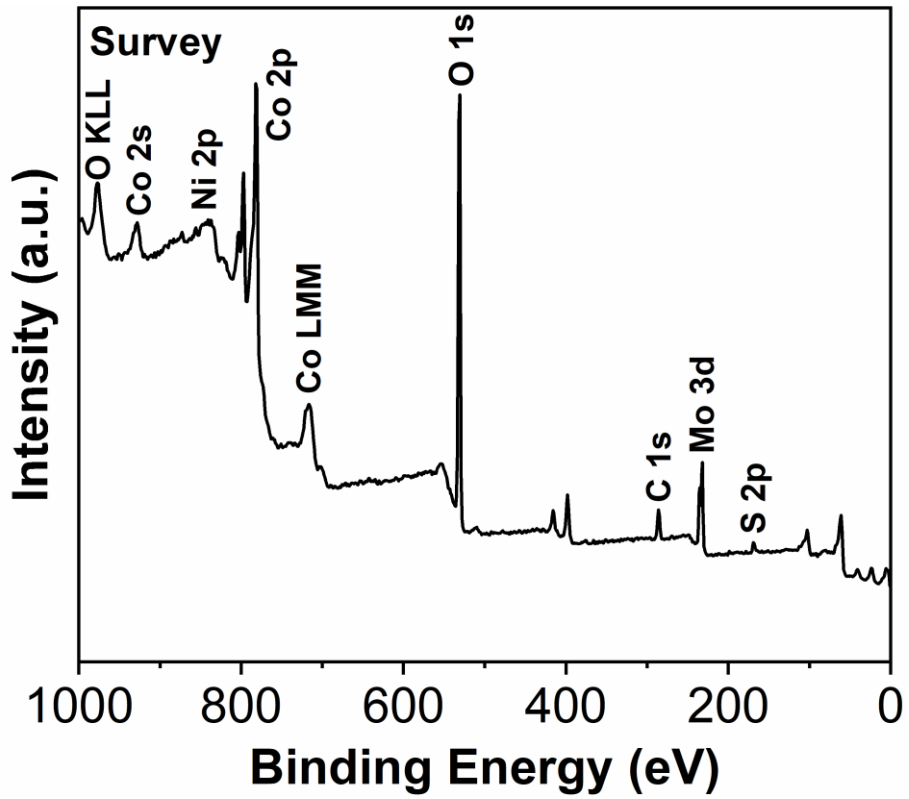

Figure S5. Survey XPS spectra of the $NiCo_2S_4$@Mo-doped Co-LDH.

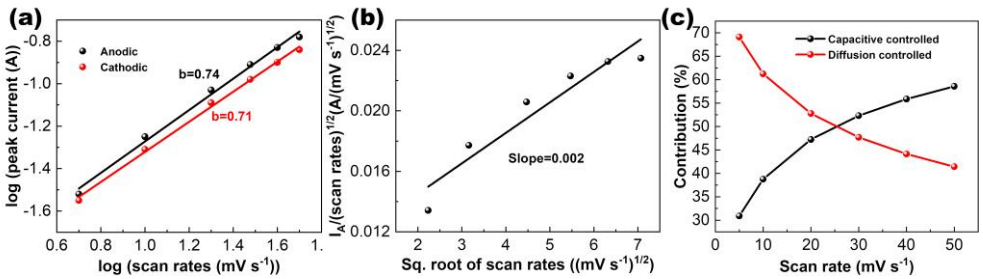

Figure S6. (a) Linear variation of log peak current and log scan rates. (b) Linear relation of i/v vs v. (c) Diffusion contribution and capacitive contribution at various scan rates.

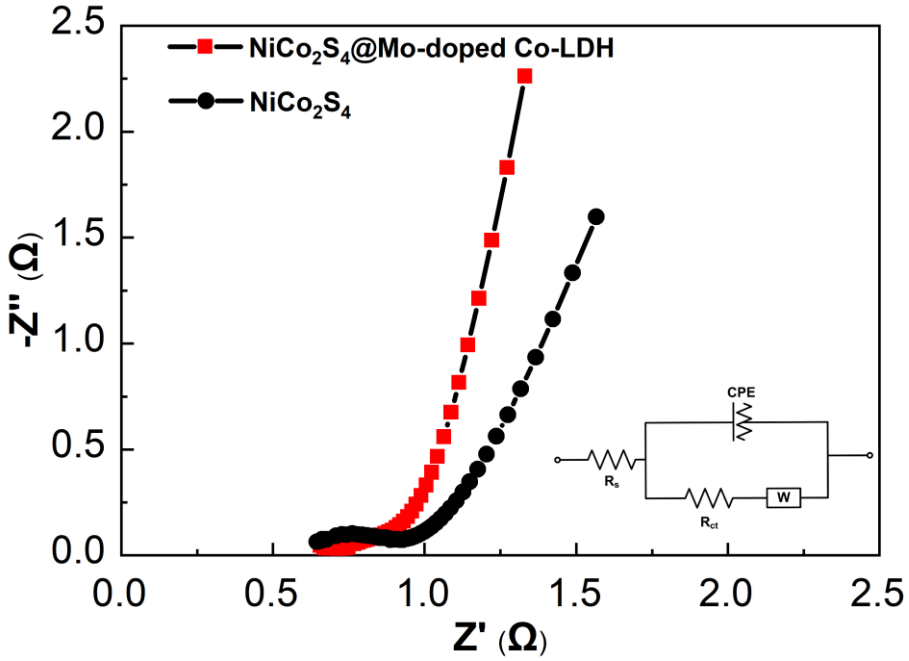

Figure S7. EIS results of the $NiCo_2S_4$ and $NiCo_2S_4$@Mo-doped Co-LDH. Inset: the corresponding equivalent circuit.

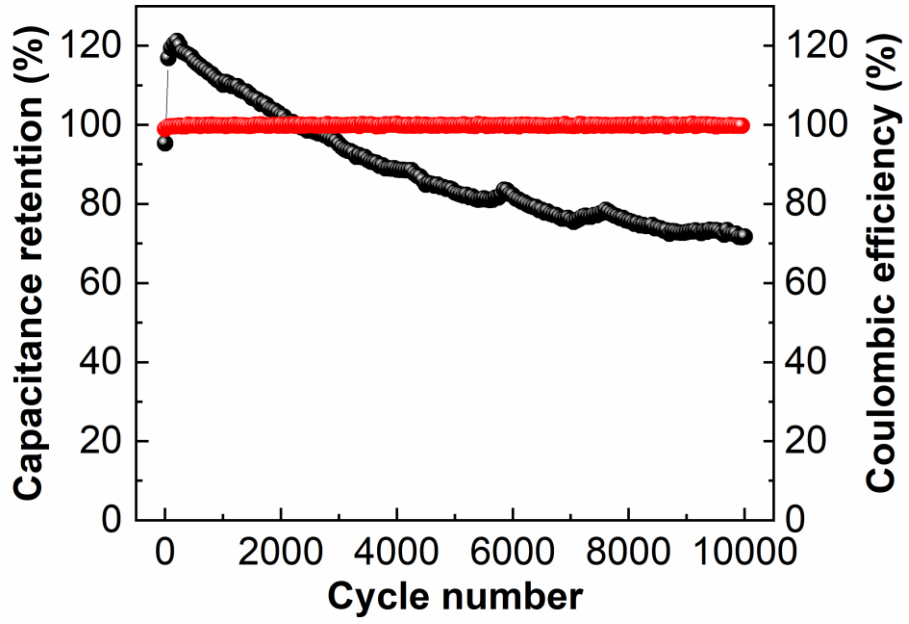

Figure S8. Cycling performance of the $NiCo_2S_4$ electrode at 10 A g^{-1}.

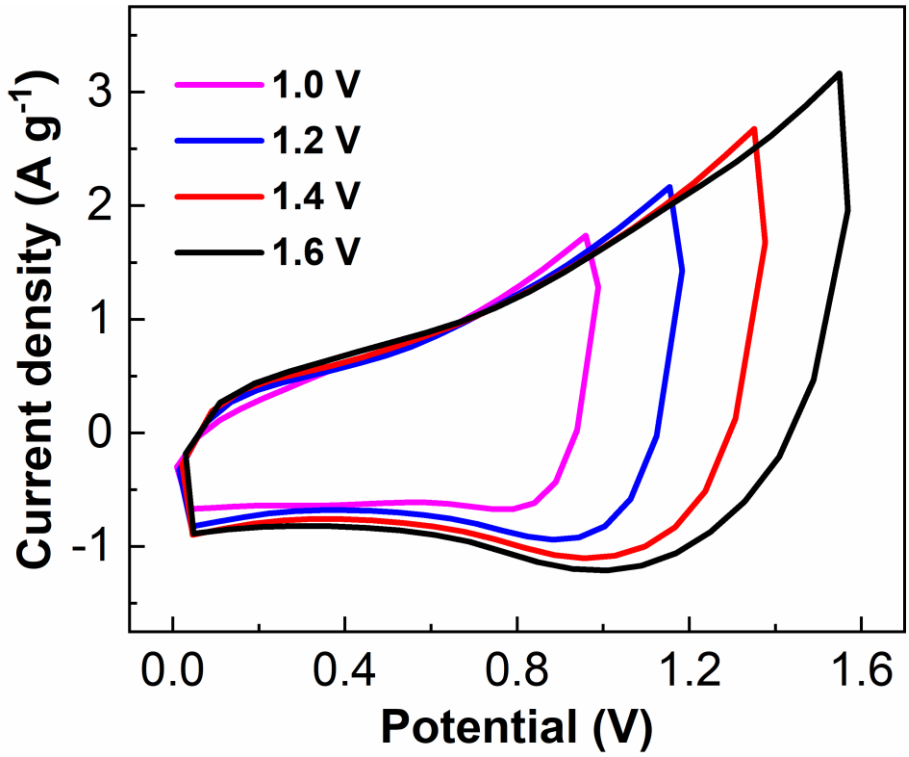

Figure S9. CV curves of the $NiCo_2S_4$@Mo-doped Co-LDH//AC ASC at various voltage window.

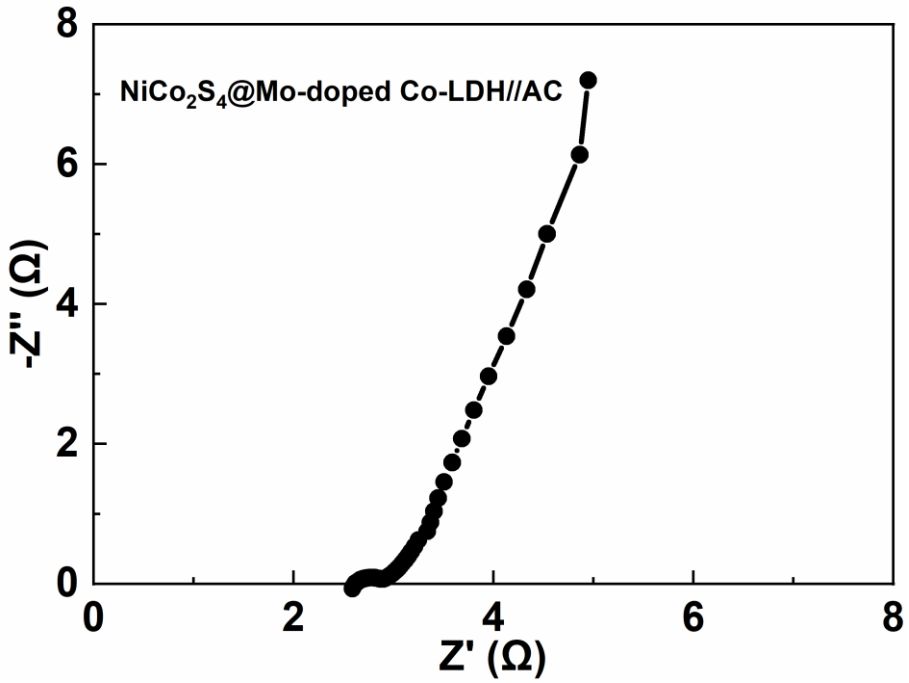

Figure S10. EIS curve of the $NiCo_2S_4$@Mo-doped Co-LDH//AC ASC device.

Table S1. Comparison of $NiCo_2S_4$@Mo-doped Co-LDH with other materials.

Materials	Current density	Specific capacitance	Energy density	Power density	Ref
$NiCo_2S_4$@$CoMoO_4$//AC	1 A g^{-1}	2118.8 F g^{-1}	66.6 Wh kg^{-1}	800 W kg^{-1}	1
$NiCo_2S_4$/Co_9S_8 HSs//AC	1 A g^{-1}	2180 F g^{-1}	96.5 Wh kg^{-1}	800 W kg^{-1}	2
$NiCo_2S_4$@Co_9S_8//AC	1 A g^{-1}	2390.2 F g^{-1}	47.7 Wh kg^{-1}	1275 W kg^{-1}	3
$CoMoO_4$-$Co(OH)_2$//AC	1 A g^{-1}	2028 F g^{-1}	61 Wh kg^{-1}	800 W kg^{-1}	4
ZnS/$NiCo_2S_4$/Co_8S_9 nanotube	1 A g^{-1}	1618.1 F g^{-1}	66 Wh kg^{-1}	750 W kg^{-1}	5
RGO@$NiCo_2S_4$@NiMo-LDH	1 A g^{-1}	1346 F g^{-1}	59.38 Wh kg^{-1}	808.19W kg^{-1}	6
$NiCo_2S_4$@$NiMoO_4$	5mA/cm^2	2006 F g^{-1}	12.6 Wh kg^{-1}	1158W kg^{-1}	7
$CuCo_2S_4$@ $CoMoO_4$//AC	1mA/cm^2	2058 F g^{-1}	45.73 Wh kg^{-1}	198.8 W kg^{-1}	8
CoNi-LDH/$NiCo_2S_4$/RGO//AC	1A g^{-1}	1846.66 F g^{-1}	28.8 Wh kg^{-1}	800 W kg^{-1}	9
$NiCo_2S_4$@MoS_2//AC	3mA/cm^2	719.32 F g^{-1}	48.63 Wh kg^{-1}	250.1 W kg^{-1}	10
$ZnCo_2O_4$@ CoMoO4//AC	10mA/cm^2	1096.08 C g^{-1}	29.24 Wh kg^{-1}	884.57 W kg^{-1}	11
$NiCo_2S_4$@Mo-doped Co-LDH//AC	1 A g^{-1}	3052.88 Fg^{-1}	95.56 Wh kg^{-1}	797.93 W kg^{-1}	This work

References

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