

## Supplementary Material

# Synthesis of CNTs/CoNiFe-LDH Nanocomposite with High Specific Surface Area for Asymmetric Supercapacitor

Jianwei Wang <sup>†</sup>, Qian Ding <sup>†</sup>, Caihui Bai <sup>†</sup>, Feifei Wang, Shiguo Sun, Yongqian Xu and Hongjuan Li <sup>\*</sup>

Shaanxi Key Laboratory of Natural Products and Chemical Biology, College of Chemistry and Pharmacy, Northwest A&F University, Yangling 712100, China; wangjw19980228@163.com (J.W.); qi-anding@nwfufu.edu.cn (Q.D.); baicaihui@nwfufu.edu.cn (C.B.); wangfeifei6586@163.com (F.W.); sunsg@nwsuaf.edu.cn (S.S.); xuyq@nwsuaf.edu.cn (Y.X.)

<sup>\*</sup> Correspondence: hongjuanli@nwfufu.edu.cn; Tel.: +86-298-709-2226

<sup>†</sup> These authors contribute equally to this article.

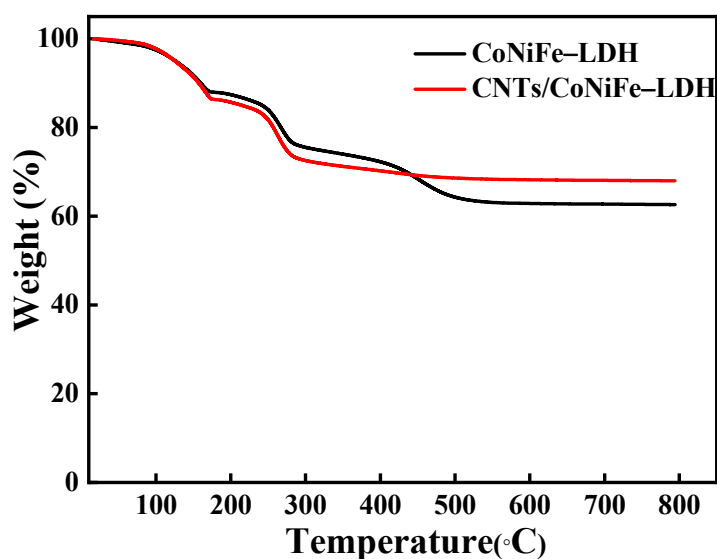


Figure S1. TGA curves of CoNiFe-LDH and CNTs/CoNiFe-LDH.

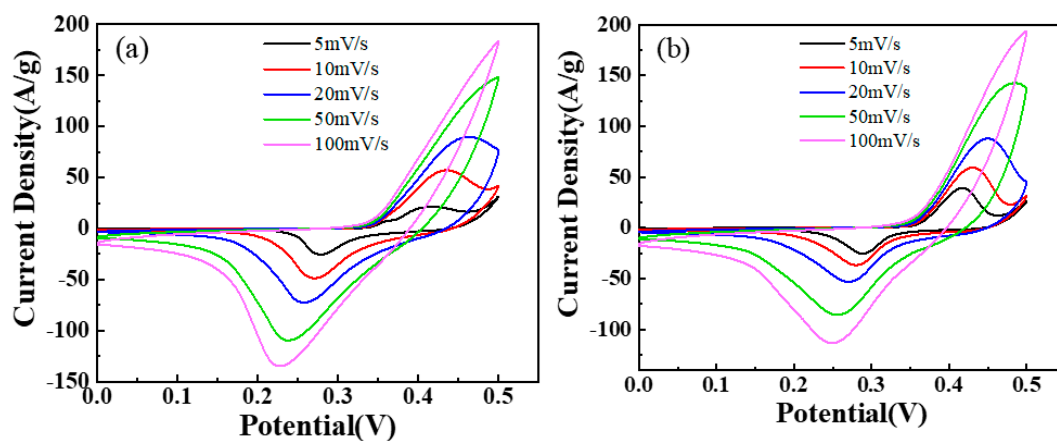


Figure S2. CV curves at different scan rates: (a) CoNiFe-LDH and (b) CNTs/CoNiFe-LDH.

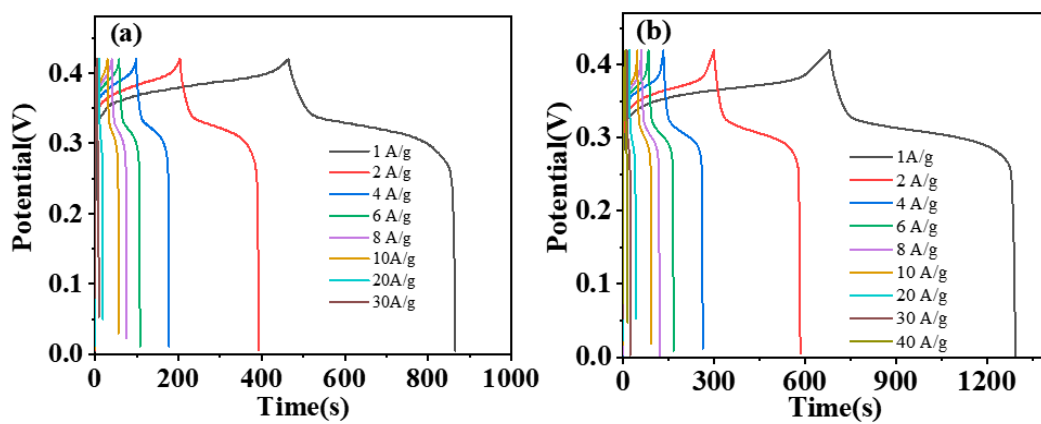


Figure S3. GCD curves at different current densities: (a) CoNiFe-LDH and (b) CNTs/CoNiFe-LDH.

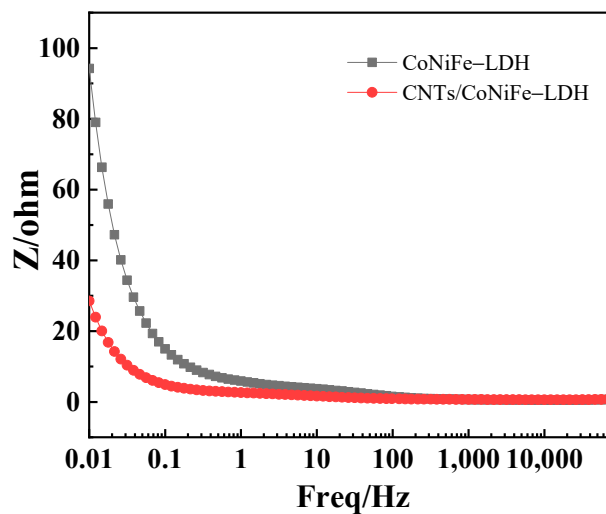


Figure S4. Bode modulus plots of CoNiFe-LDH and CNTs/CoNiFe-LDH.

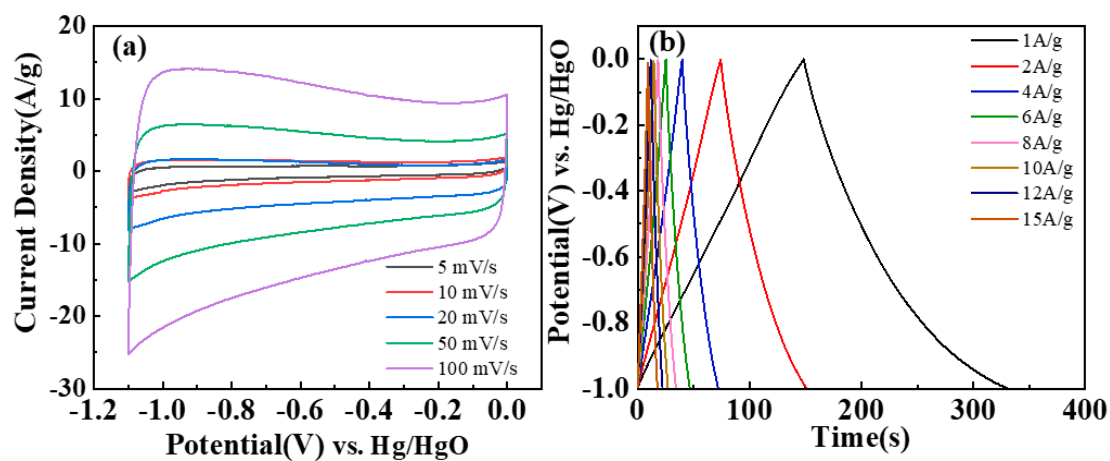


Figure S5. (a) CV curves of activated carbon at different scan rates; (b) GCD curves of activated carbon at different current densities.

**Table S1.** Comparison of electrochemical performances of CNTs/CoNiFe-LDH in this work and other literatures.

Electrode materials	Specific capacity	Rate capability	Device capacitance retention	Refs.
CNTs/CoNiFe-LDH	170.6 mA h g <sup>-1</sup> (1 A g <sup>-1</sup> ) 614.0 C g <sup>-1</sup> (1 A g <sup>-1</sup> )	75% (1–10 A g <sup>-1</sup> ) 66% (1–20 A g <sup>-1</sup> )	85.0% (3000)	This work
FeCoNi-LDH nanosheets	316 C g <sup>-1</sup> (1 A g <sup>-1</sup> )	59.2% (1–10 A g <sup>-1</sup> )	81% (2000)	21
FeCoNi-LDH Nanocage	490 C g <sup>-1</sup> (1 A g <sup>-1</sup> )	93% (1–20 A g <sup>-1</sup> )	93.1% (5000)	23
NiCoFe-LDH	541.8 C g <sup>-1</sup> (1 A g <sup>-1</sup> )	12.8% (1–10 A g <sup>-1</sup> )	50.7% (3000)	24
Ce-Doped NiCo-LDH@CNT	355.7 C g <sup>-1</sup> (1 A g <sup>-1</sup> )	68% (1–10 A g <sup>-1</sup> )	85.6% (9000)	31
CNTs/Ni Co LDH	732.6 C g <sup>-1</sup> (1 A g <sup>-1</sup> )	66.6% (1–10 A g <sup>-1</sup> )	99.4% (10000)	32
CoNi-LDHs/SCNTF	476.2 C g <sup>-1</sup> (1 A g <sup>-1</sup> )	80.1% (1–10 A g <sup>-1</sup> )	81.0% (5000)	27

**Table S2.** Fitted results of the EIS data for CoNiFe-LDH and CNTs/CoNiFe-LDH electrodes.

Electrode	Re ( $\Omega$ )	Rct ( $\Omega$ )	Cdl (F)
CoNiFe-LDH	0.59823	3.016	0.0011579
CNTs/CoNiFe-LDH	0.70281	1.308	0.0067043