

## Supporting Information

### **Porous CoFe-LDH free-standing electrodes for high-performance asymmetric supercapacitors**

Juan Chen,<sup>a</sup> Yanhua Sun,<sup>a</sup> Zi Li,<sup>a</sup> Guojun Yuan,<sup>\*a</sup> Guangmei Han<sup>\*b</sup>

<sup>a</sup> School of Environment and Life Health, Anhui Vocational and Technical College, Hefei, 230011 (China)

<sup>b</sup> Institute of Health Sciences and Technology, Institutes of Physical Sciences and Information Technology, Anhui University, Hefei, 230601 (China)

#### **Corresponding Authors**

**Guangmei Han** - Institute of Health Sciences and Technology, Institutes of Physical Sciences and Information Technology, Anhui University, Hefei, 230601 (China)

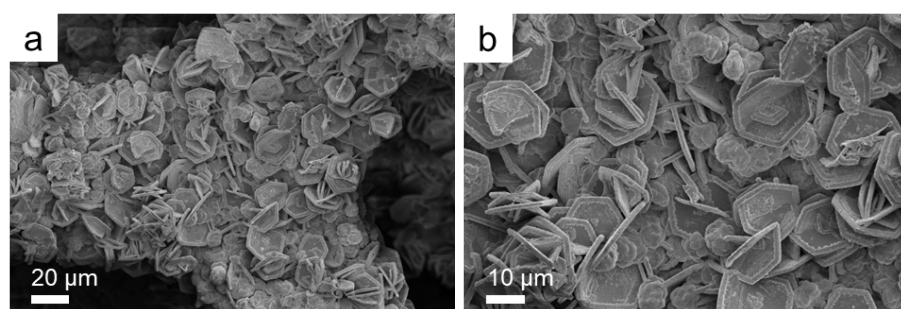
Email: gmhan@ahu.edu.cn

#### **Co-corresponding Author**

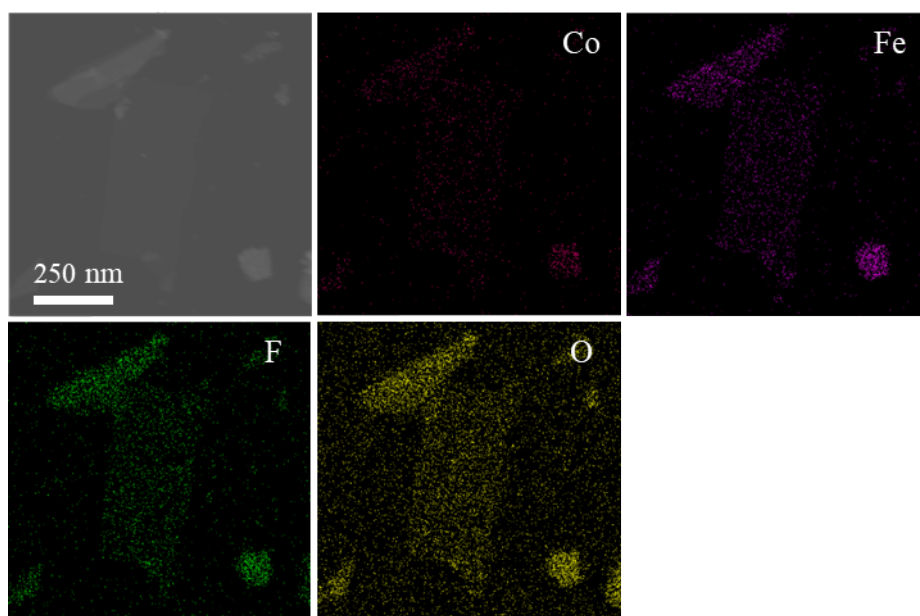
**Guojun Yuan**-School of Environment and Life Health, Anhui Vocational and Technical College, Hefei, 230011 (China)

Email: yuangj@uta.edu.cn

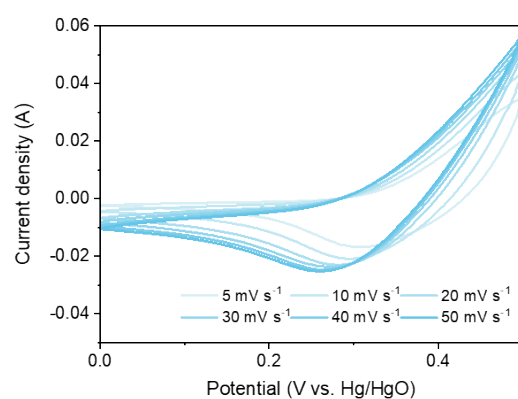
**Supplementary Figures:**



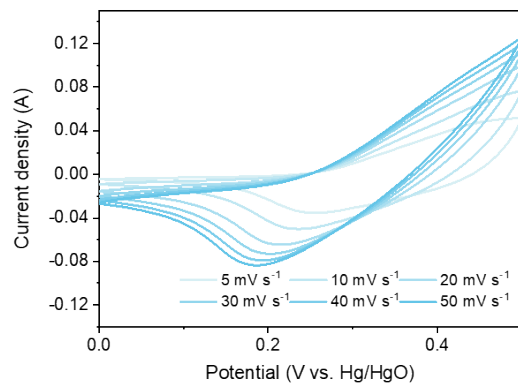
**Figure S1** The SEM images of CoFe-LDH/NF free-standing electrode



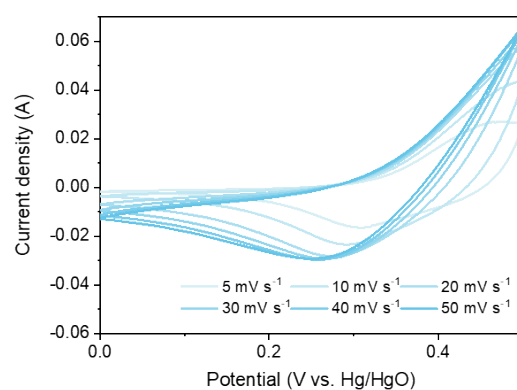
**Figure S2** HAADF-STEM and the corresponding EDX elemental mapping images of CoFe-LDH



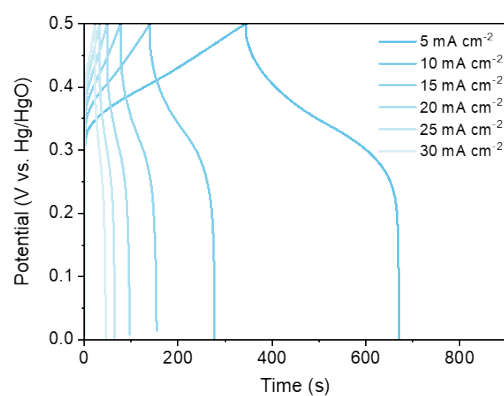
**Figure S3** The CV curves of Co<sub>1</sub>Fe<sub>3</sub>-LDH/NF at different scan rates



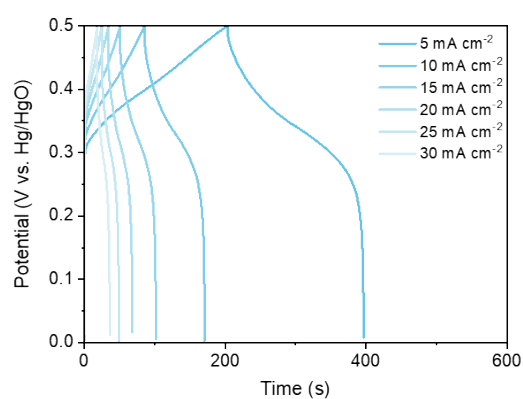
**Figure S4** The CV curves of Co<sub>2</sub>Fe<sub>2</sub>-LDH/NF at different scan rates



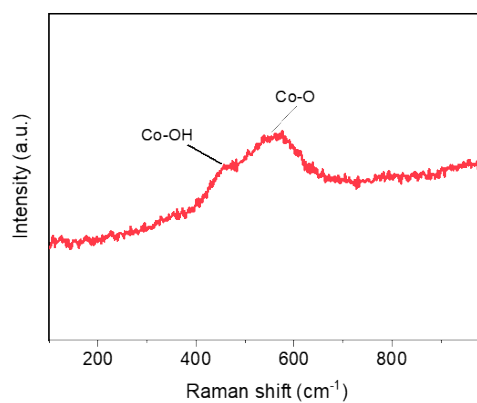
**Figure S5** The CV curves of Co<sub>3</sub>Fe<sub>1</sub>-LDH/NF at different scan rates



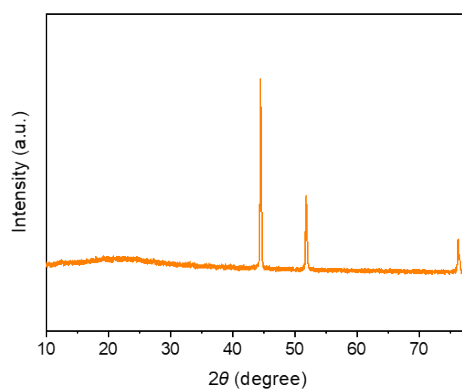
**Figure S6** The GCD curves of Co<sub>1</sub>Fe<sub>3</sub>-LDH /NF at different current densities



**Figure S7** The GCD curves of  $\text{Co}_3\text{Fe}_1\text{-LDH/NF}$  at different current densities



**Figure S8** The Raman spectrum of  $\text{Co}_2\text{Fe}_2\text{-LDH/NF}$  after 10000 charge/discharge cycles



**Figure S9** The XRD pattern of Co<sub>2</sub>Fe<sub>2</sub>-LDH/NF after 10000 charge/discharge cycles

**Table S1** Comparison of electrochemical properties for LDHs based electrodes for supercapacitor devices

Sample	Electrolyte	Voltage (V)	Specific capacity (mF cm <sup>-2</sup> )	Energy density (mWh cm <sup>-2</sup> )	Stability (cycles)	Ref.
SN-NiCo-LDH@CNTs@NCF	KOH	1.6	1.99	0.617	5000	[50]
NiCoAl <sub>0.1</sub> LDH	KOH	2.0	1.566	0.84	150000	[51]
NiCo-LDH	KOH	1.7	876.0	5.61	10000	[52]
CoSe <sub>2</sub> @NiCo-LDH	KOH	1.6	510	183.0	5000	[53]
Co(OH)F@NiCo-LDH	KOH	1.6	651.6	231.7	5000	[54]
Co <sub>2</sub> Fe <sub>2</sub> -LDH/NF	KOH	1.6	953.1	338.9	10000	This work