

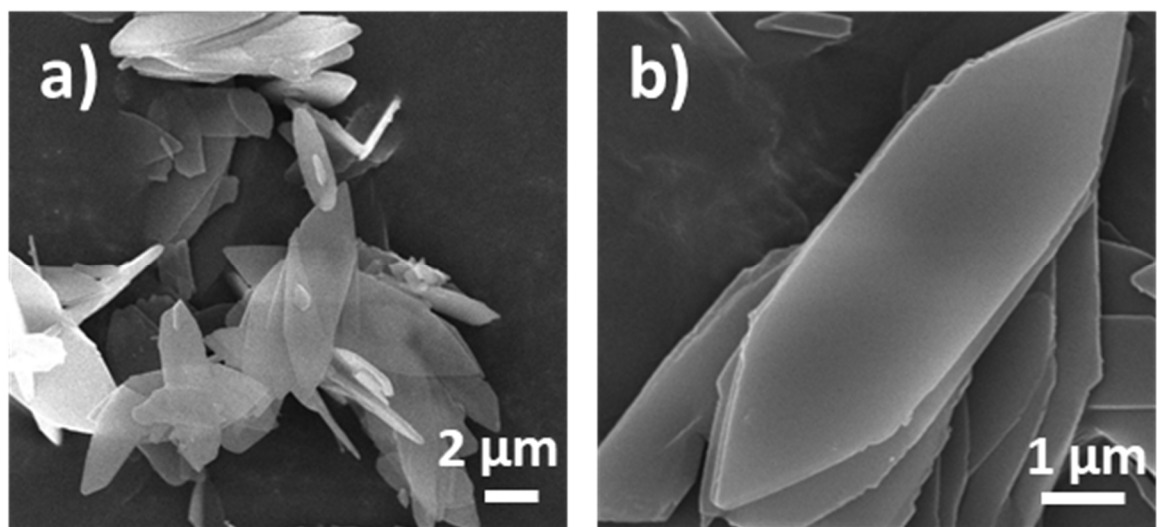
## **Supplementary Materials**

# **Synthesis of hollow leaf-shaped iron-doped nickel–cobalt layered double hydroxides using two-dimensional (2D) zeolitic imidazolate framework catalyzing oxygen evolution reaction**

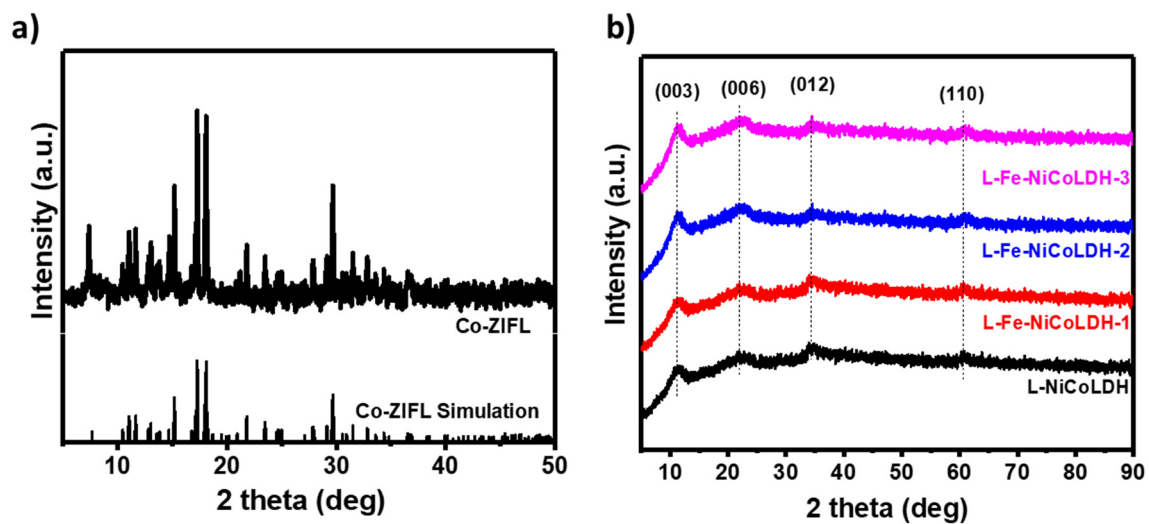
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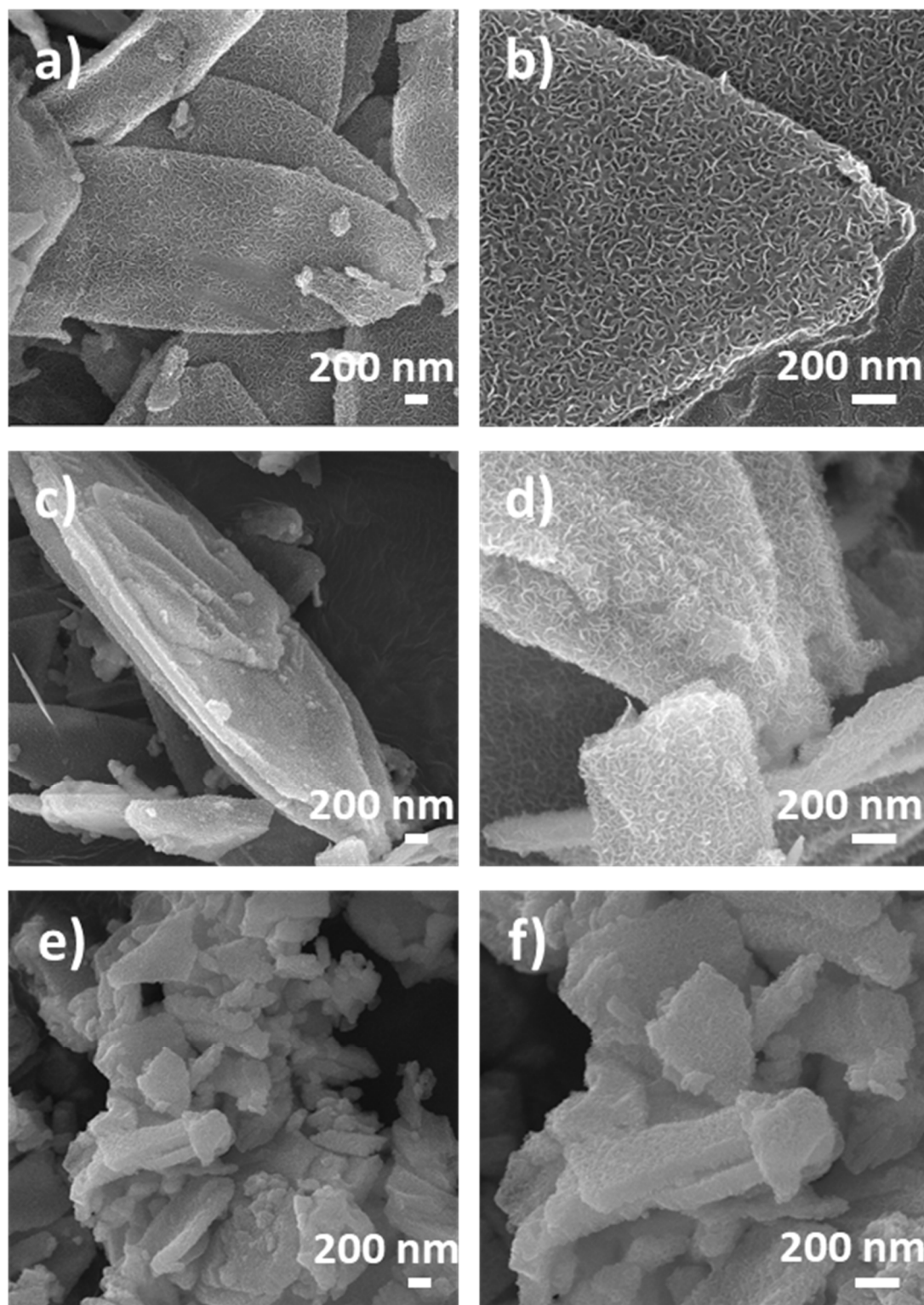
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**Figure S1** (a,b) FE-SEM images of Co-ZIFL.

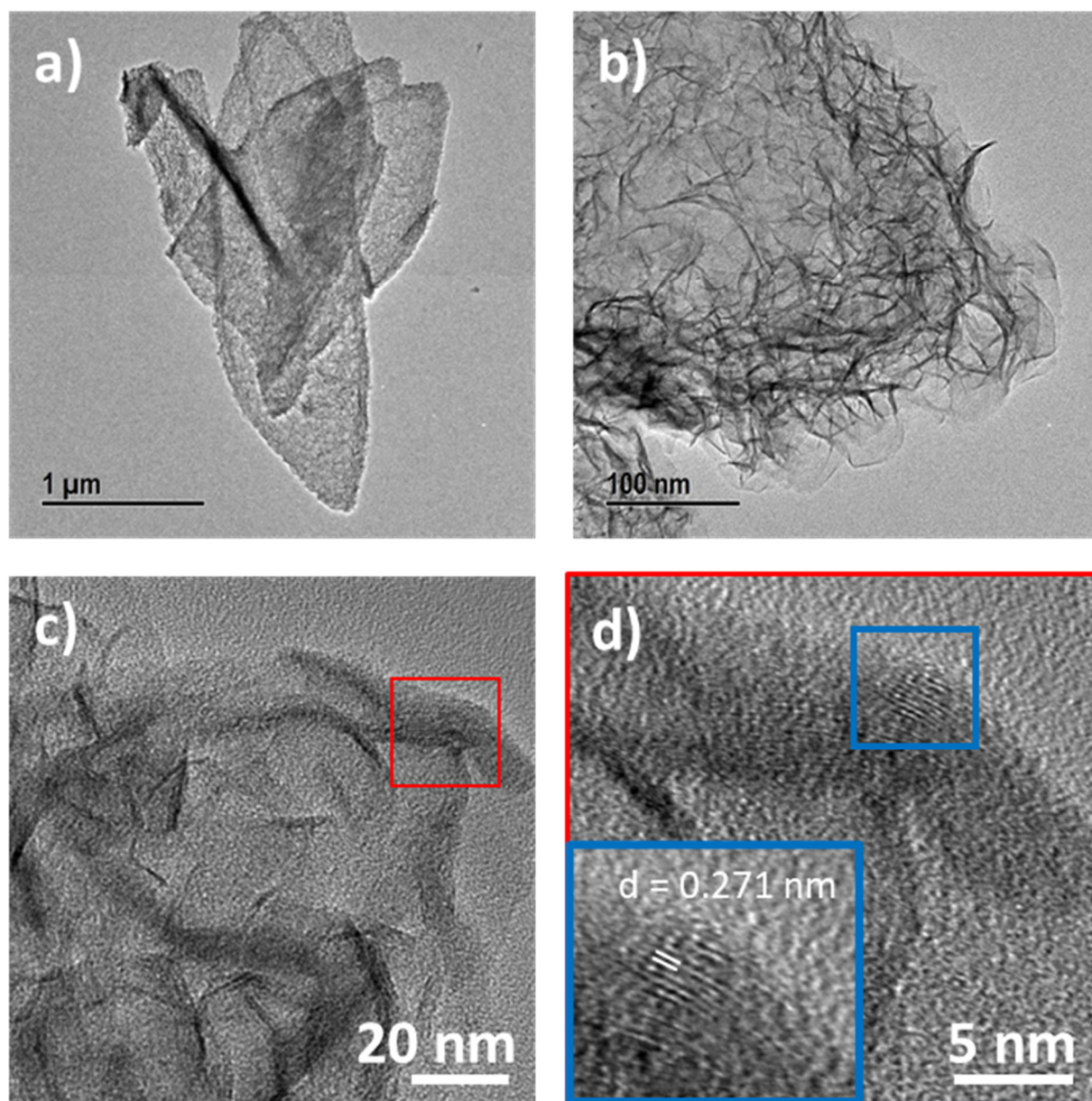


**Figure S2** Comparison of the XRD patterns of (a) Co-ZIFL and simulated Co-ZIFL patterns and (b) L-NiCoLDH and L-FeNiCoLDH-x.

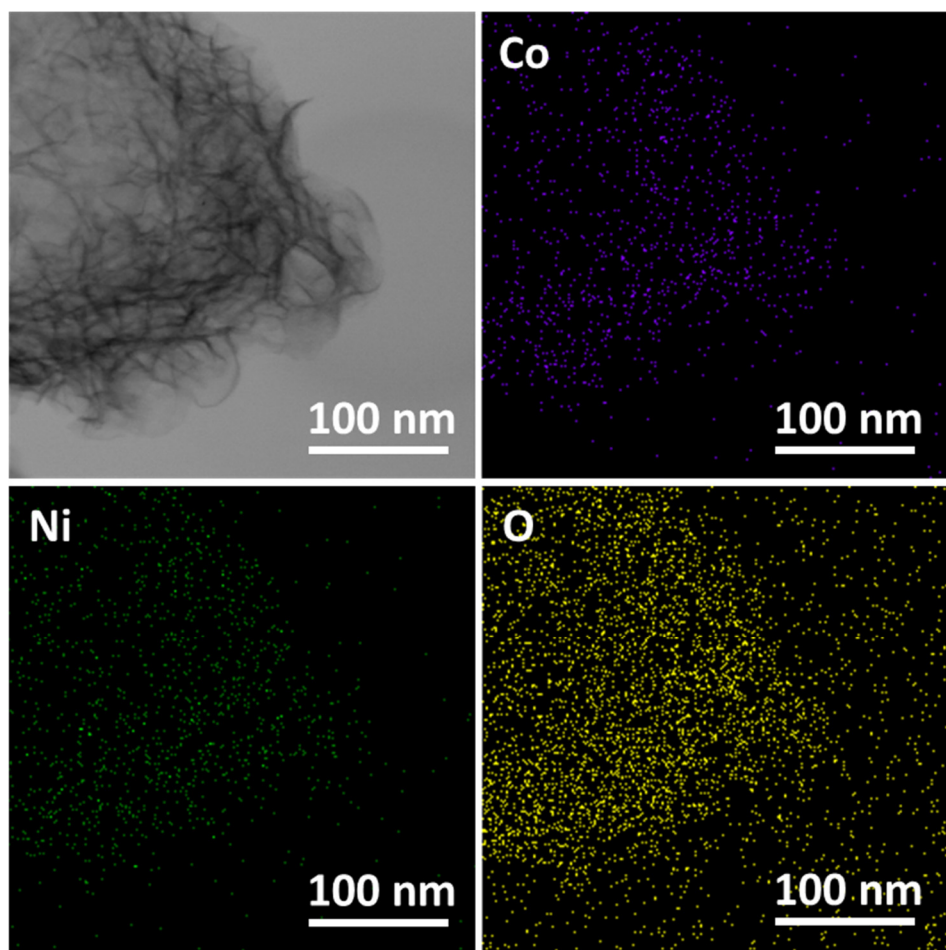


**Figure S3** SEM images of (a,b) L-NiCoLDH (c,d) L-Fe-NiCoLDH-1, and (e,f) L-Fe-NiCoLDH-3 from Co-ZIFL.

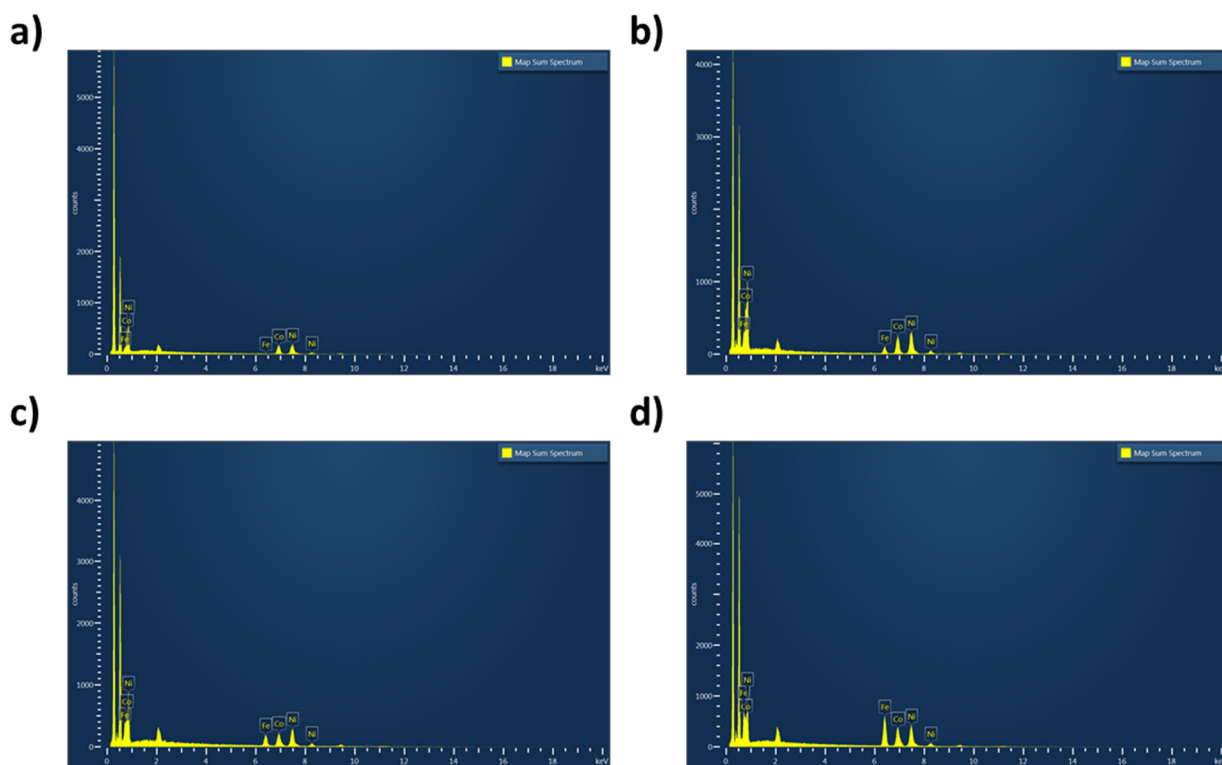




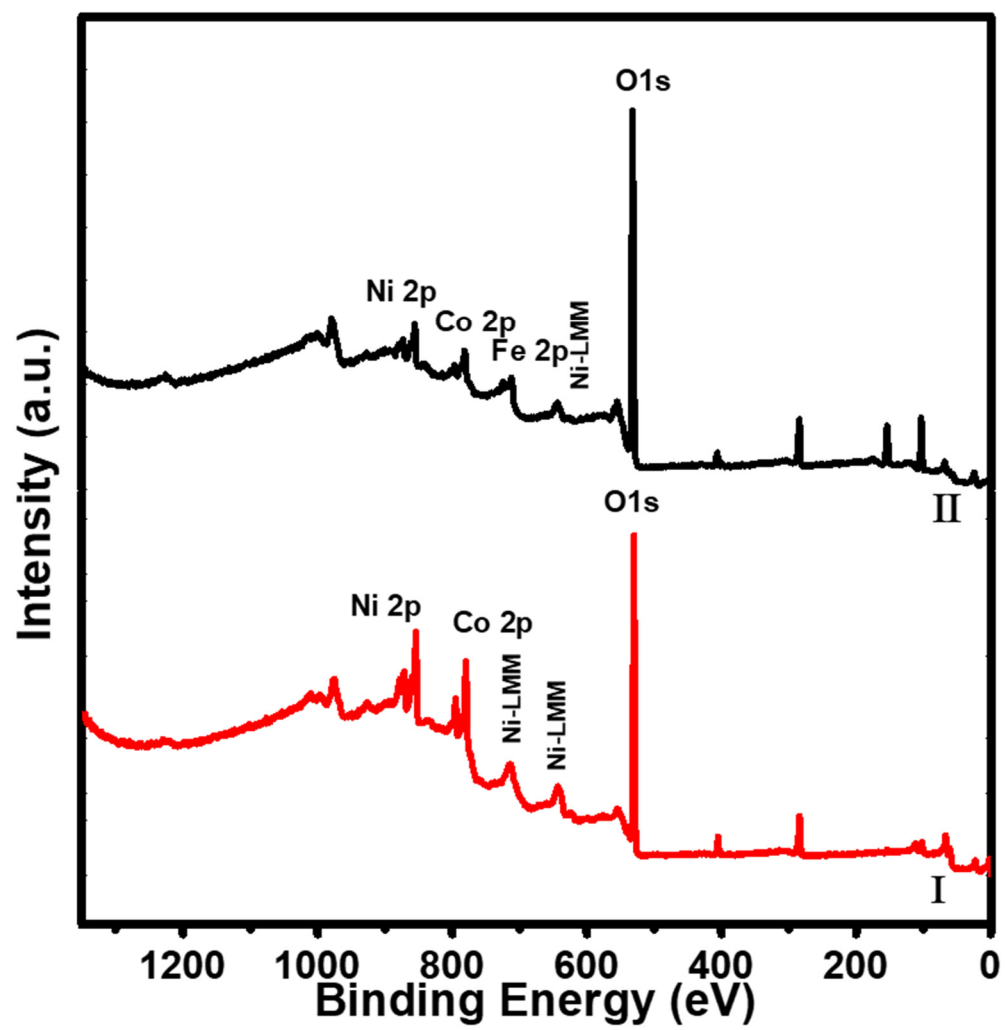
**Figure S4** (a–d) FE-TEM images of L-NiCoLDH obtained from Co-ZIFL.



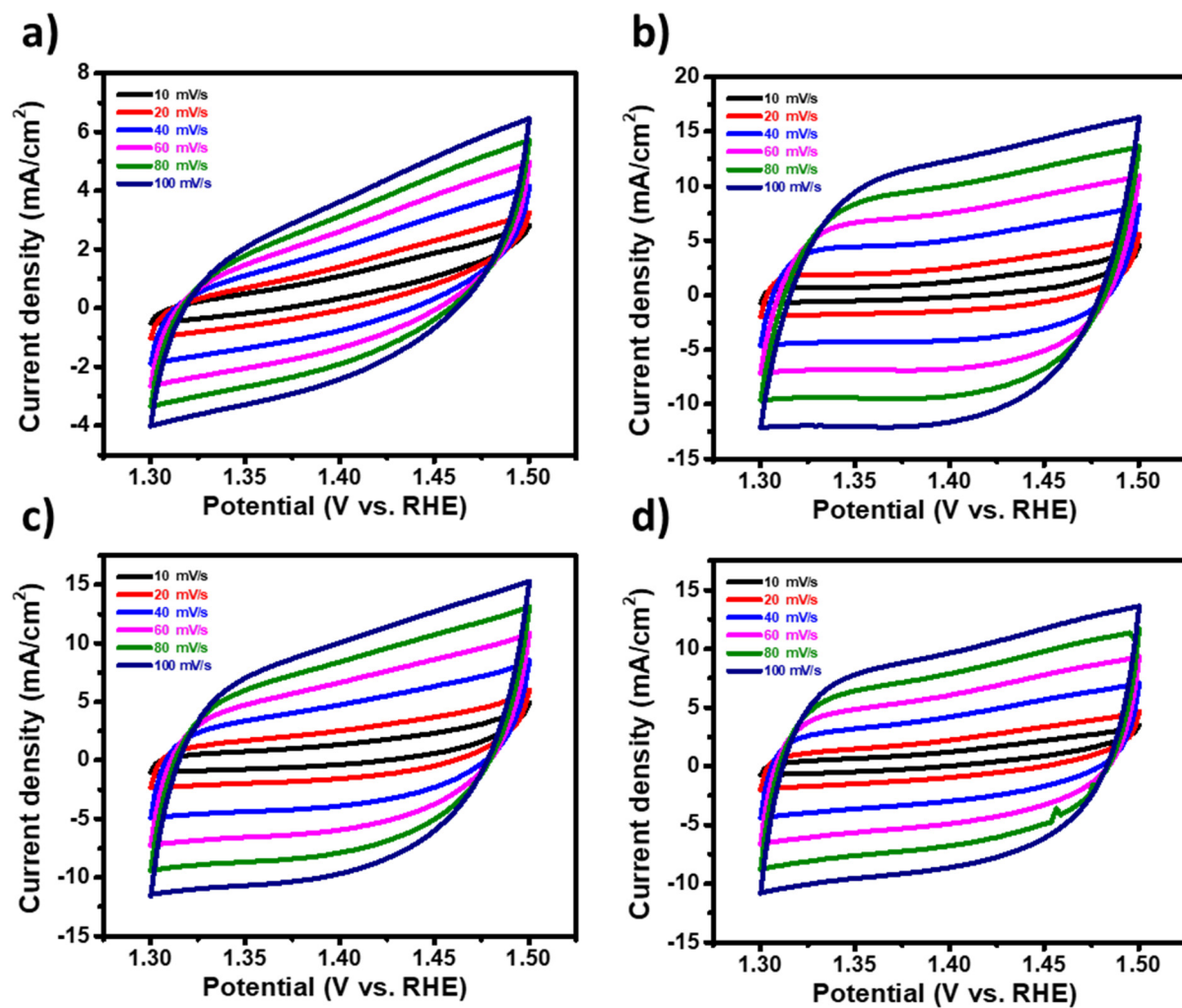
**Figure S5** EDX mapping of L-NiCoLDH obtained from Co-ZIFL.



**Figure S6** EDX signals of (a) L-NiCoLDH, (b) L-Fe-NiCoLDH-1, (c) L-Fe-NiCoLDH-2, and (d) L-Fe-NiCoLDH-3.

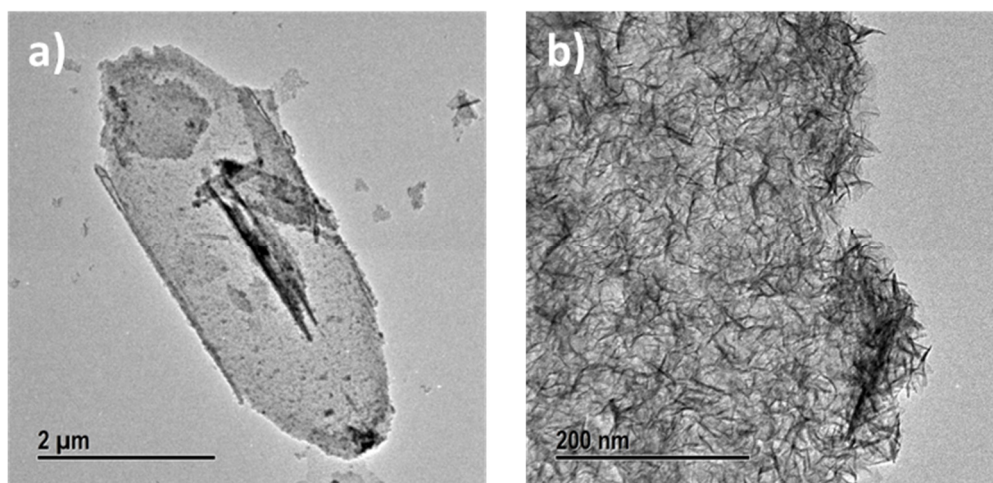


**Figure S7** XPS spectra of (I) L-NiCoLDH and (II) L-Fe-NiCoLDH-2.

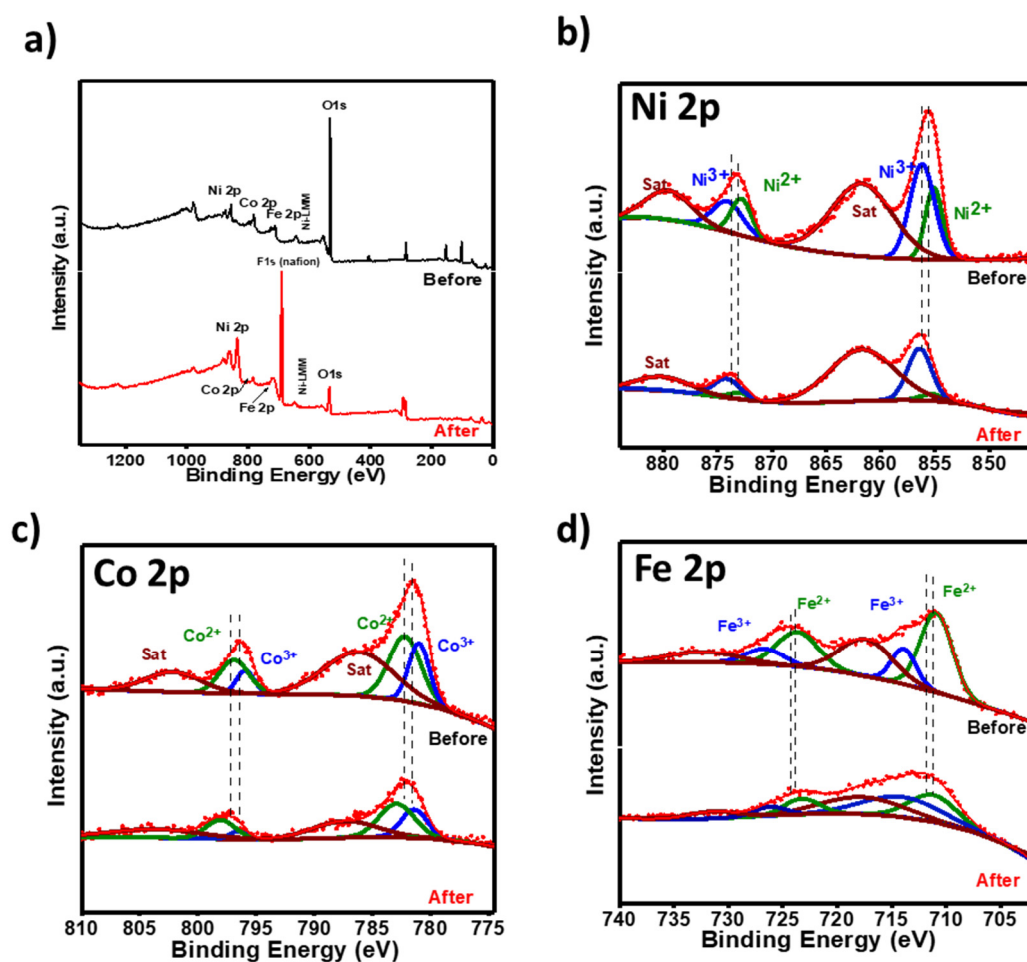


**Figure S8** CV diagrams (a) L-NiCoLDH, (b) L-Fe-NiCoLDH-1, (c) L-Fe-NiCoLDH-2, and (d) L-Fe-NiCoLDH-3 in 1.0 M KOH within the range of 1.3–1.5 V vs. RHE at 10, 20, 40, 60, 80 and 100 mV s<sup>-1</sup>, respectively.

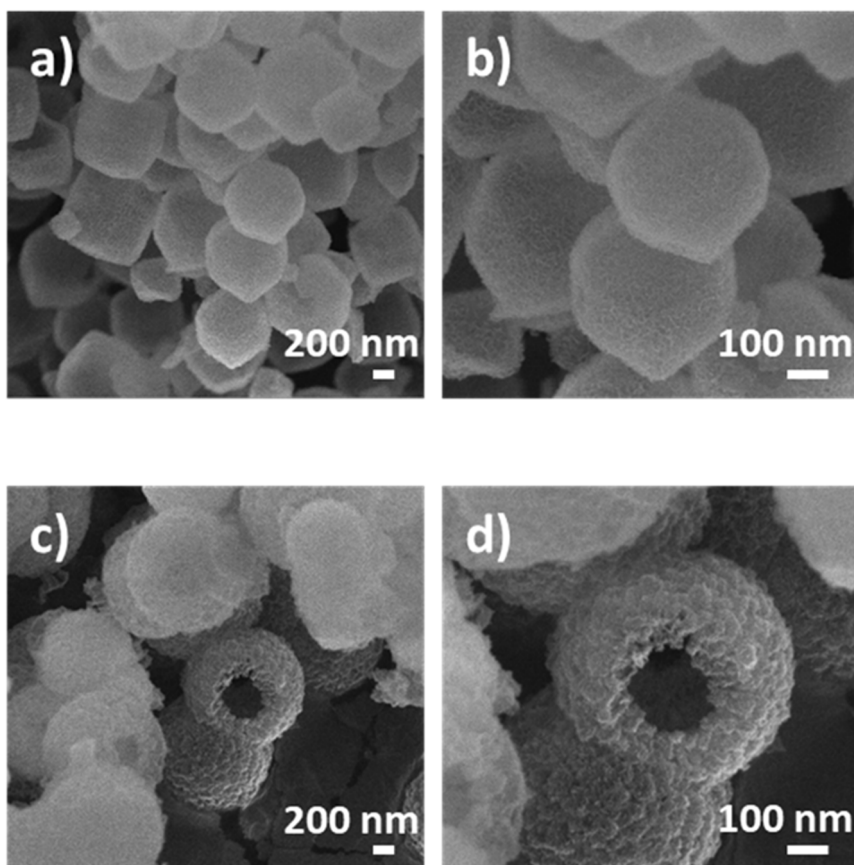




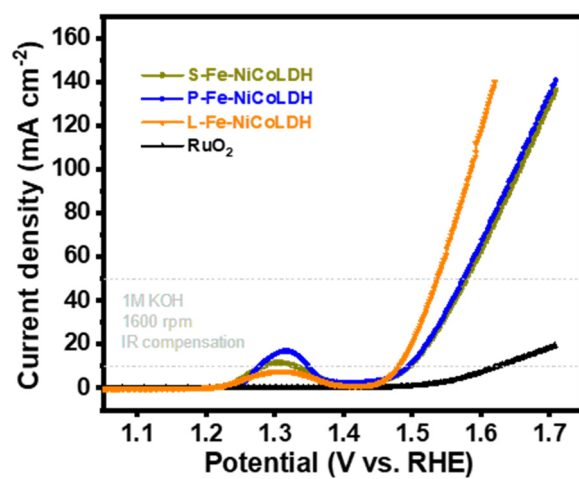
**Figure S9** (a,b) FE-TEM image of L-Fe-NiCoLDH-2 after stability test.



**Figure S10** XPS data of L-Fe-NiCoLDH-2 after stability test (a) XPS spectra, (b) Ni 2p (c) Co 2p, (d) Fe 2p.



**Figure S11** SEM images of (a,b) P-Fe-NiCoLDH from the P-ZIF-67, and (c,d) S-Fe-NiCoLDH from the S-ZIF-67.



**Figure S12** OER performance of P-Fe-NiCoLDH, S-Fe-NiCoLDH, and L-Fe-NiCoLDH.

**Table S1.** Summary of the EDX elemental analysis of the catalysts.

Sample	Element		
	Ni	Co	Fe
L-NiCoLDH	55.58	44.42	---
L-Fe-NiCoLDH-1	53.93	35.99	10.08
L-Fe-NiCoLDH-2	51.27	29.05	19.67
L-Fe-NiCoLDH-3	45.55	27.21	27.24

**Table S2.** Surface atomic concentrations of elements collected from the XPS spectra of L-Fe-NiCoLDH-2 and L-NiCoLDH.

Name	L-NiCoLDH	L-Fe-NiCoLDH-2
O 1s	74.17	82.23
Fe 2p	---	6.81
Co 2p	11.27	4.73
Ni 2p	14.56	6.23