

# **High Topological Tri-metal Phosphide of CoP@FeNiP Toward Enhanced Activities in Oxygen Evolution Reaction**

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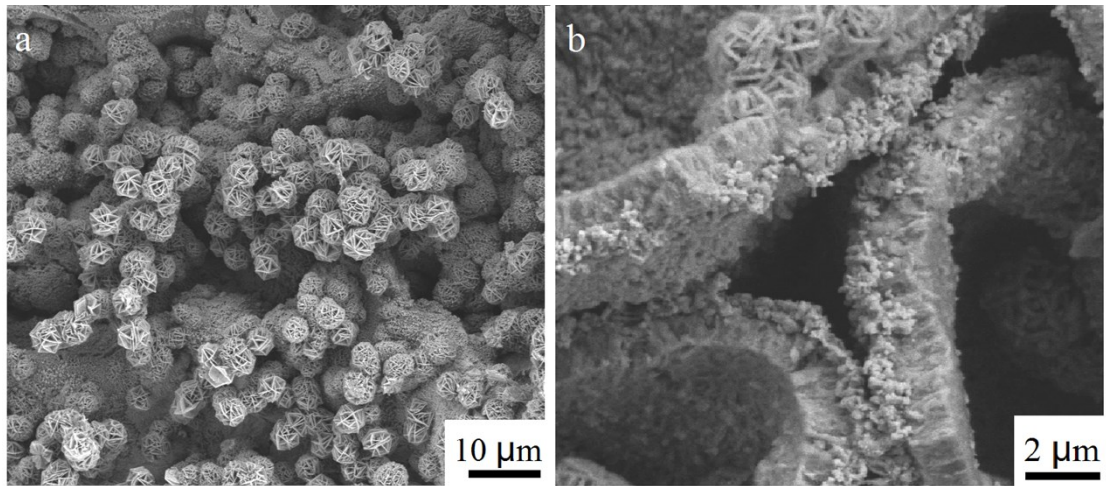


Figure S1. The SEM images of the FeNi LDH/NF with the addition of PVP.

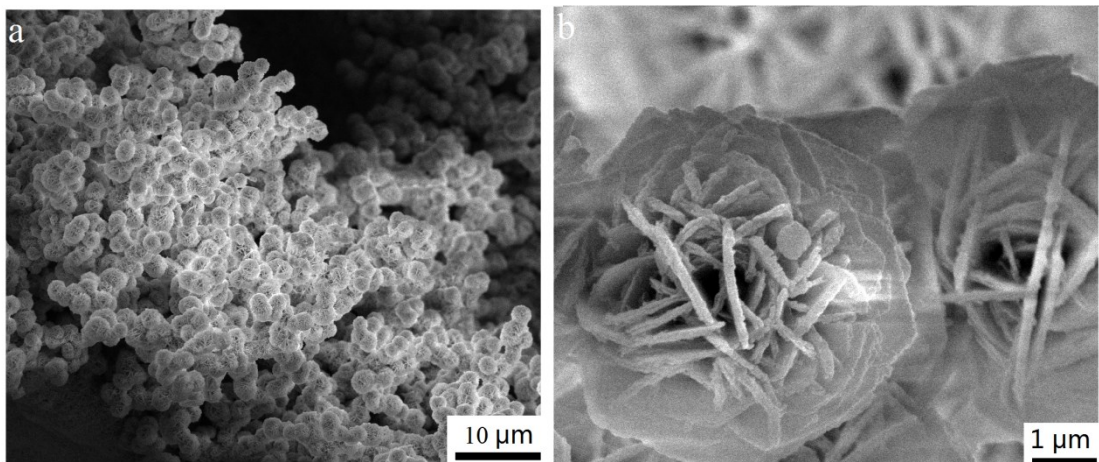


Figure S2. The SEM images of ZIF-67@FeNi LDH/NF without the addition of PVP.

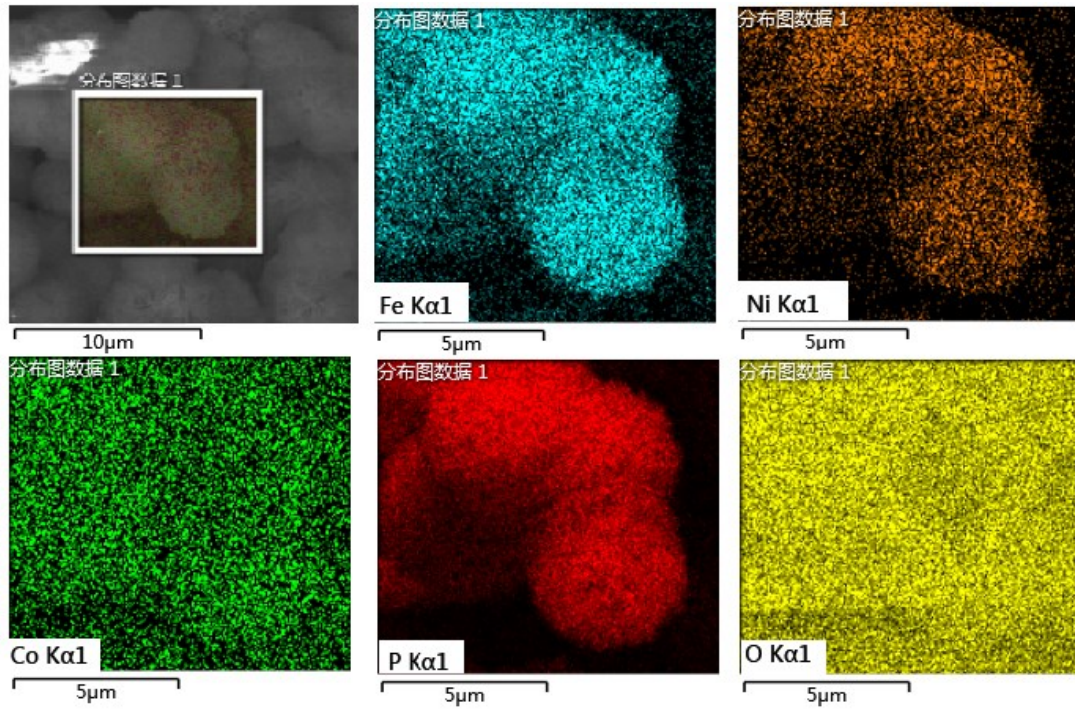


Figure S3. EDX mappings from Fe K $\alpha$ , Ni K $\alpha$ , Co K $\alpha$ , and P K $\alpha$  of CoP@FeNiP/NF.

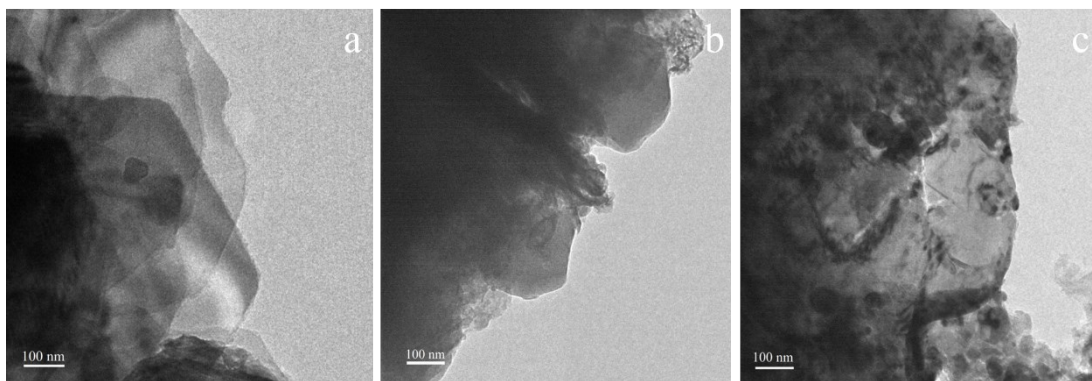


Figure S4. TEM images of the (a) FeNi LDH, (b) ZIF-67@FeNi LDH/NF and (c) FeNiP/NF.

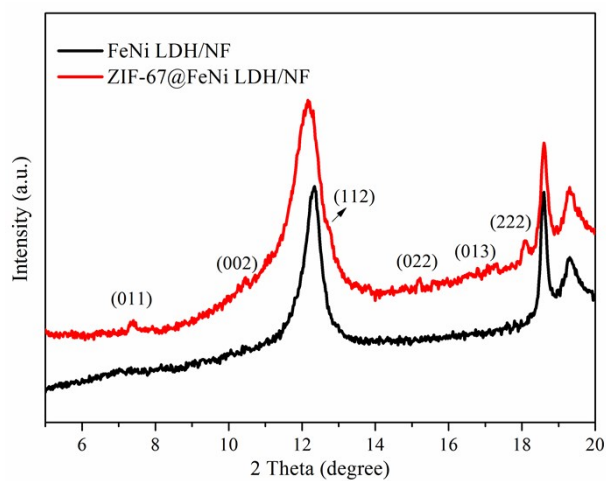


Figure S5. XRD patterns of FeNi LDH/NF and ZIF-67@FeNi LDH/NF at  $\theta = 5-20^\circ$ .

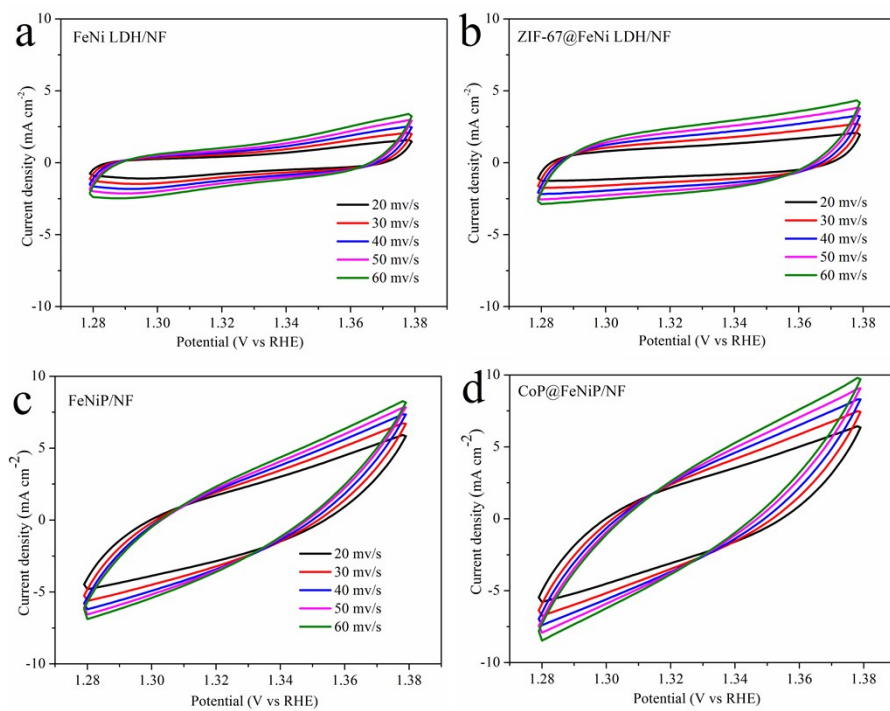


Figure S6. CV curves of (a) FeNi LDH, (b) ZIF-67@FeNi LDH/NF, (c) FeNiP/NF and (d) CoP@FeNiP/NF electrodes at different scan rates.



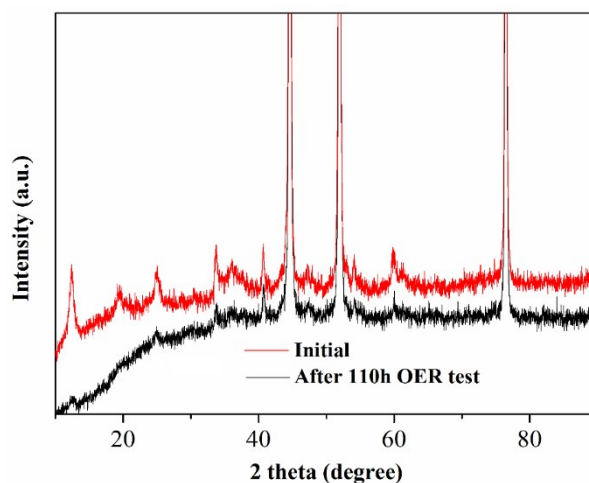


Figure S7. XRD patterns of CoP@FeNiP/NF before and after 110h OER stability test.

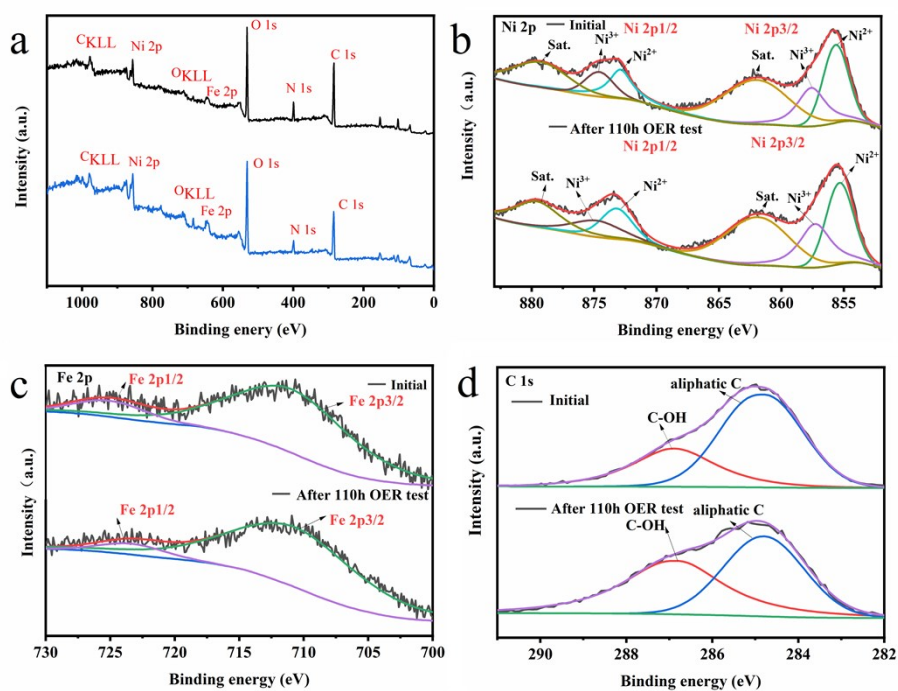


Figure S8. XPS spectra of FeNi-LDH before and after 110h OER stability test.

Table 1. A comparison of OER properties of various transition metal compounds.

LDH derivative electrocatalysts	Electrolyte	Current density [mA cm <sup>-2</sup> ]	Overpotential for OER [mV]	Tafel slope [mV decade <sup>-1</sup> ]	Ref
Fe-CoOOH/G	1 M KOH	10	330	37	[1]
Fe-doped CoP	1 M KOH	10	230	67	[2]
NiCoP	1 M KOH	10	280	87	[3]
Ni <sub>3</sub> FeN	1 M KOH	10	280	46	[4]
Fe-Ni <sub>3</sub> S <sub>2</sub> /FeNi	1 M KOH	10	282	54	[5]
Ni-Fe-OH@Ni <sub>3</sub> S <sub>2</sub> /NF	1 M KOH	100	300	93	[6]
CuCo <sub>2</sub> S <sub>4</sub>	1 M KOH	10	310	86	[7]
CoP@FeNiP/NF	1 M KOH	100	283	32	Our work

## References

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