# supporting information

## NiFeP nanosheets for efficient and durable Hydrazine-assisted electrolytic Hydrogen Production

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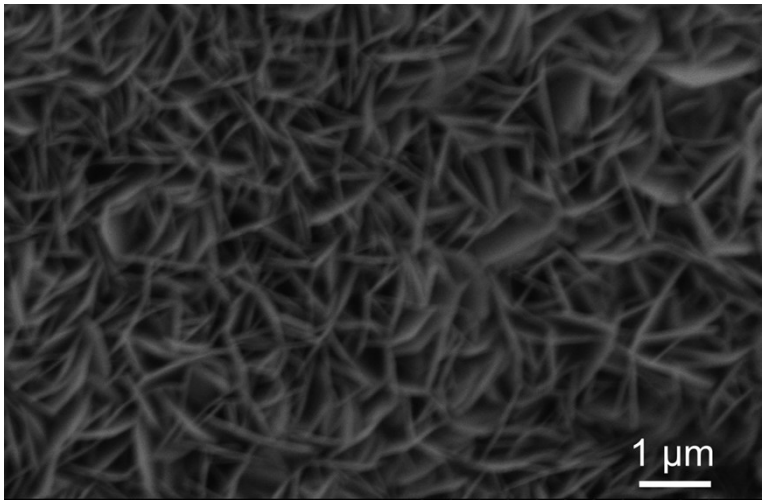


Figure S1. SEM of NiFe LDH/NF.

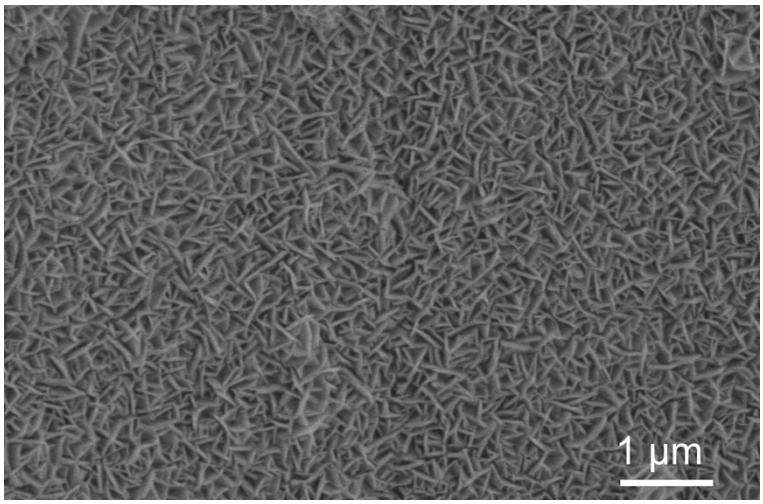


Figure S2. SEM of NiFeO/NF.

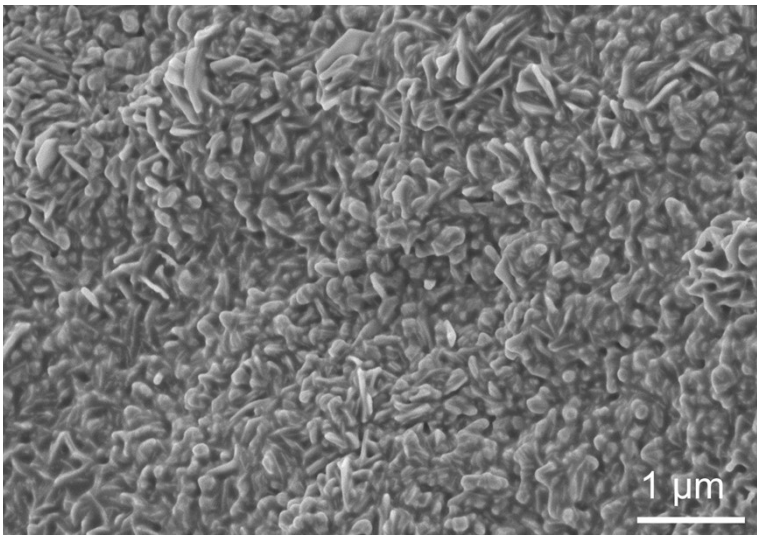


Figure S3. SEM of NiFeP/NF (synthesized with 2g $NaH_2PO_2$).

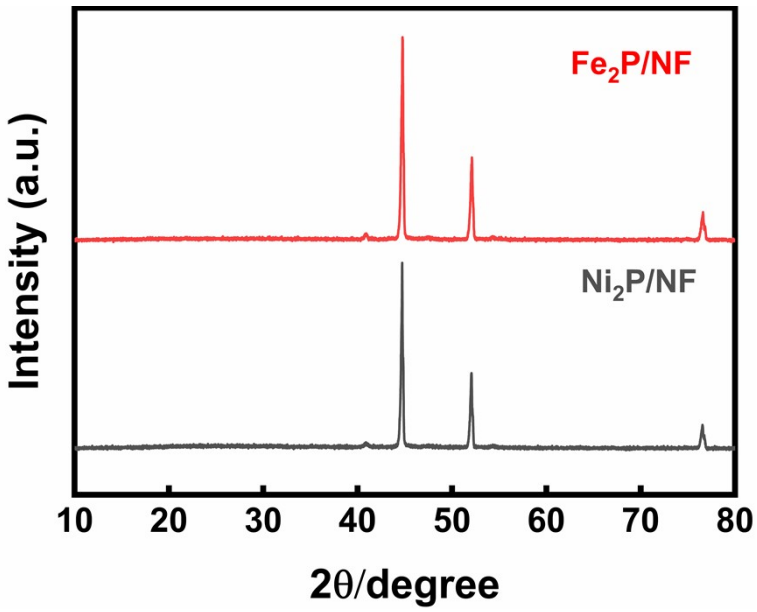


Figure S4. XRD of $Fe_2P$/NF and $Ni_2P$/NF.

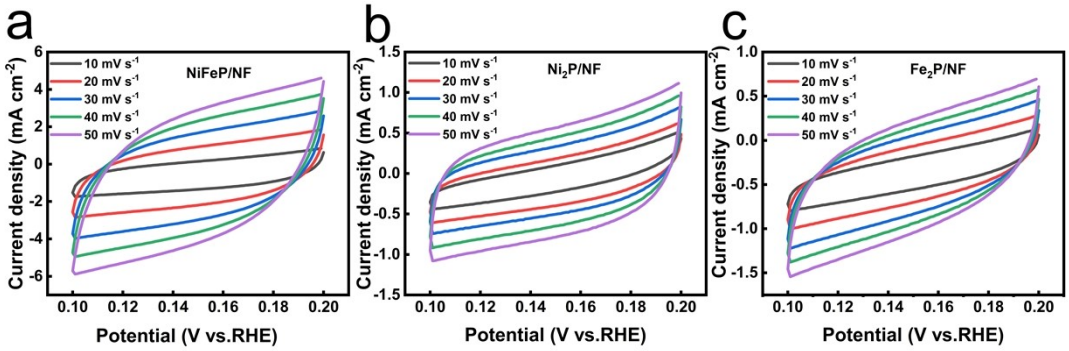


Figure S5. Cycle voltammetry curves of (a) NiFeP/NF, (b) $Ni_2P$/NF and (c) $Fe_2P$/NF in alkaline water.

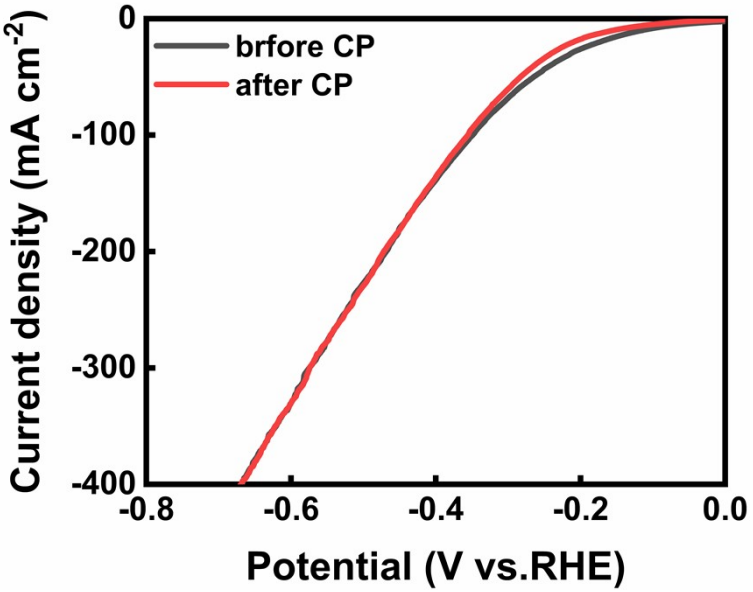


Figure S6. HER LSV of after CP test.

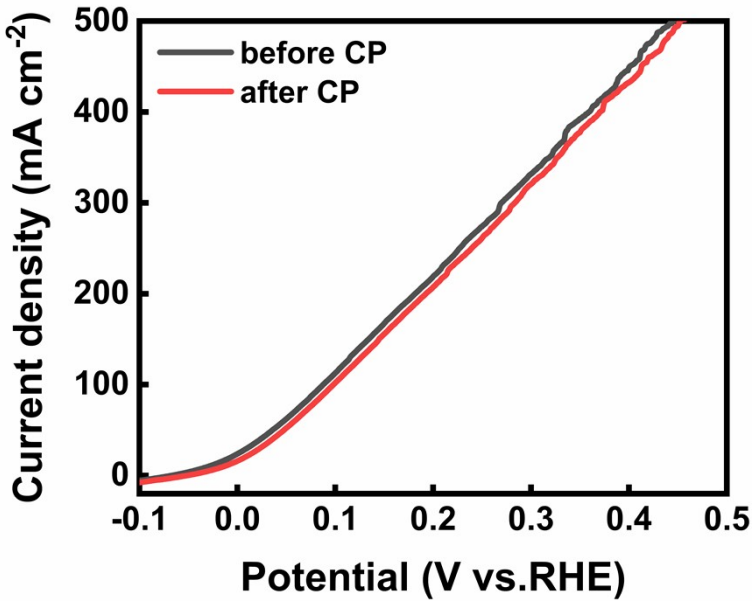


Figure S7. HzOR LSV of after CP test.

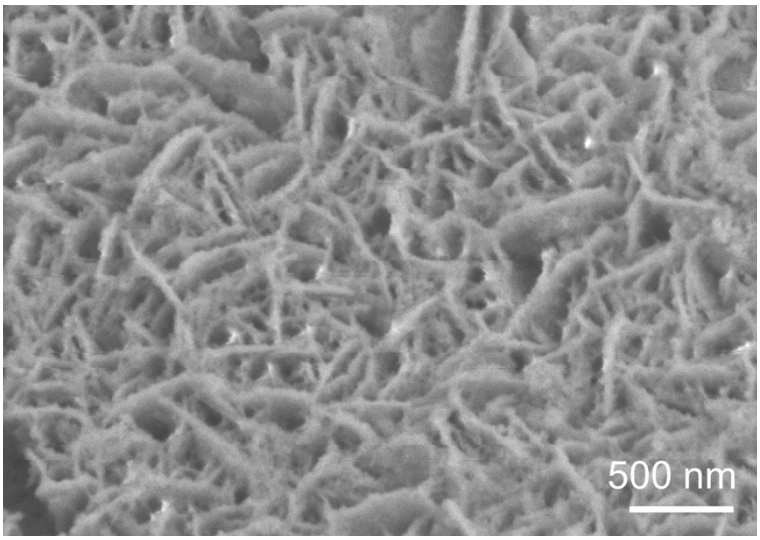


Figure S8. SEM of NiFeP/NF after HzOR.

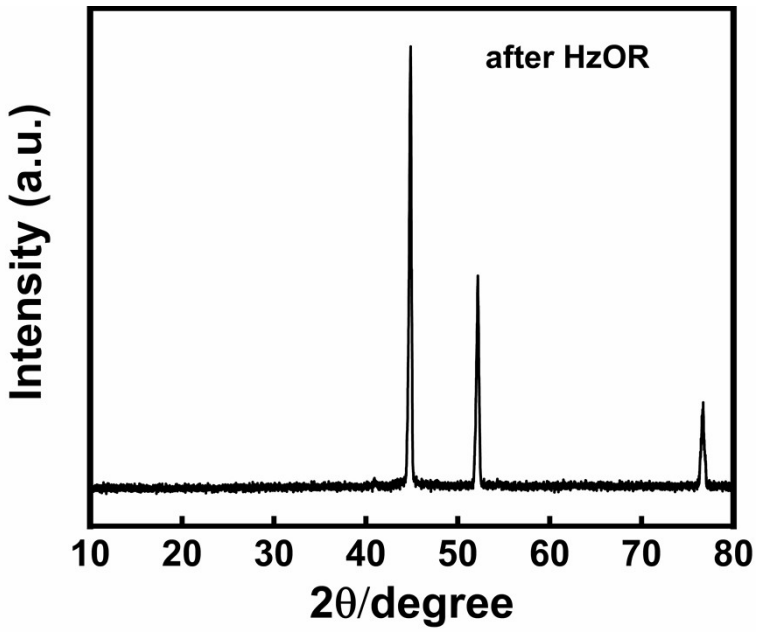


Figure S9. XRD of NiFeP/NF after HzOR.

**Table.S1**. Comparison of the overpotentials at 10 mA $cm^{-2}$ and 100 mA $cm^{-2}$ in 1 M KOH + 0.5 M $N_2H_4$ with recently reported HzOR catalysts.

| **Catalysts** | **$\eta_{(10)}$(mV)** | **$\eta_{(100)}$(mV)** | **Reference** |
|---|---|---|---|
| NiFeP/NF | -32 | 90 | This work |
| IrB NSs/NF | -15 | 120 | 1 |
| $Co(OH)_2/MoS_2$/CC | | 180 | 2 |
| Ni–Co–Fe–P | 94 | | 3 |
| ZIF67@CoNiSe-3 | -10 | 100 | 4 |
| $Cu_1Ni_2$-N | 0.5 | | 5 |
| 0.2-NiSe/NF | | 350 | 6 |
| Rh/Pd metallene | 7 | | 7 |
| Co-FeNiSOH/NFF | | 355 | 8 |
| Mn-$CoS_2$ | 77 | 160 | 9 |
| $Co_{0.5}$NiS-NSs/NF | | 340 | 10 |

# Reference


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