

Supporting Information

Electronic Interaction of Ruthenium Species on Bimetallic Phosphide for Superior Electrocatalytic Hydrogen Generation

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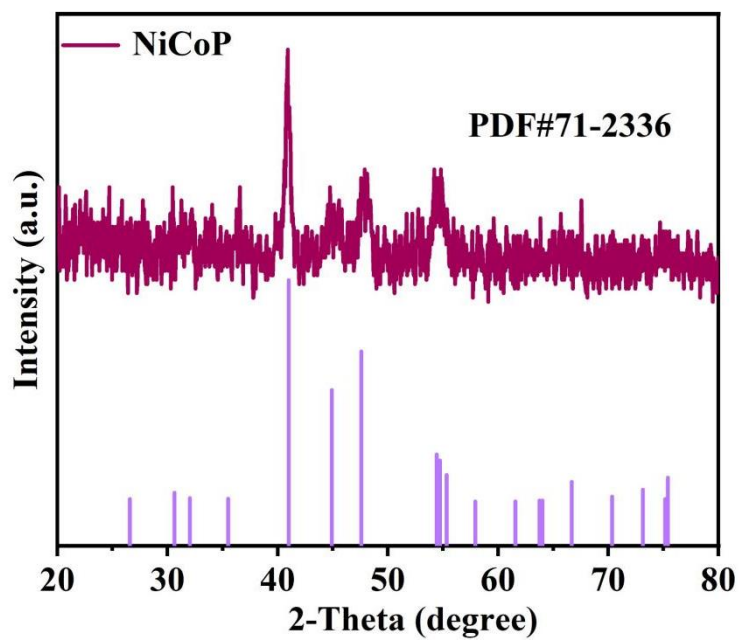


Figure S1 The XRD pattern of NiCoP sample.

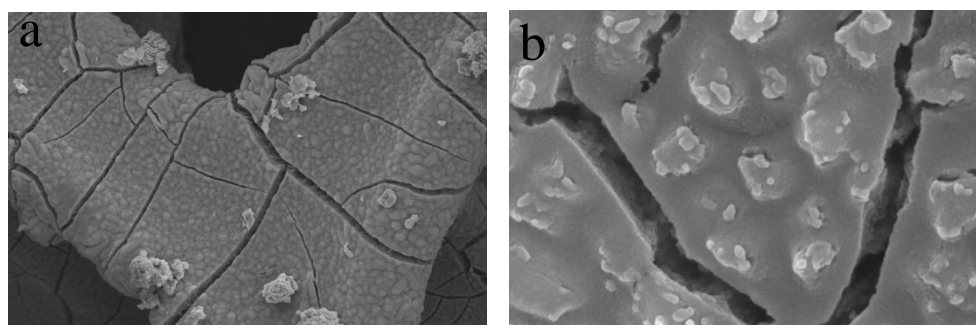


Figure S2 The SEM images of NiCoP/NF sample.

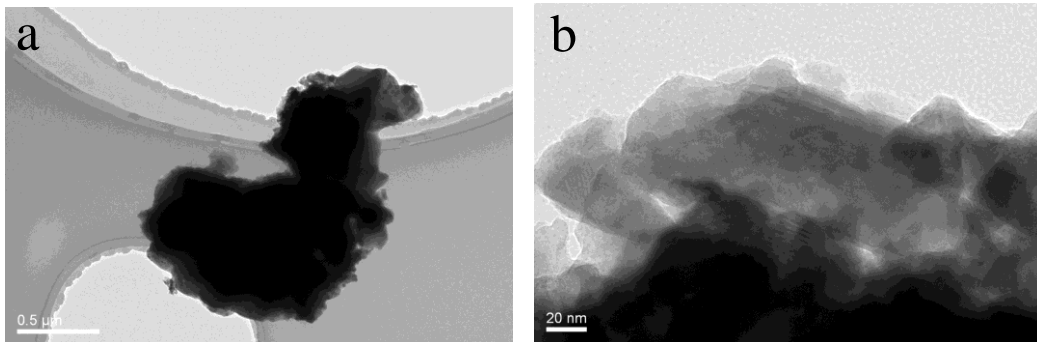


Figure S3 The TEM images of NiCoP sample.

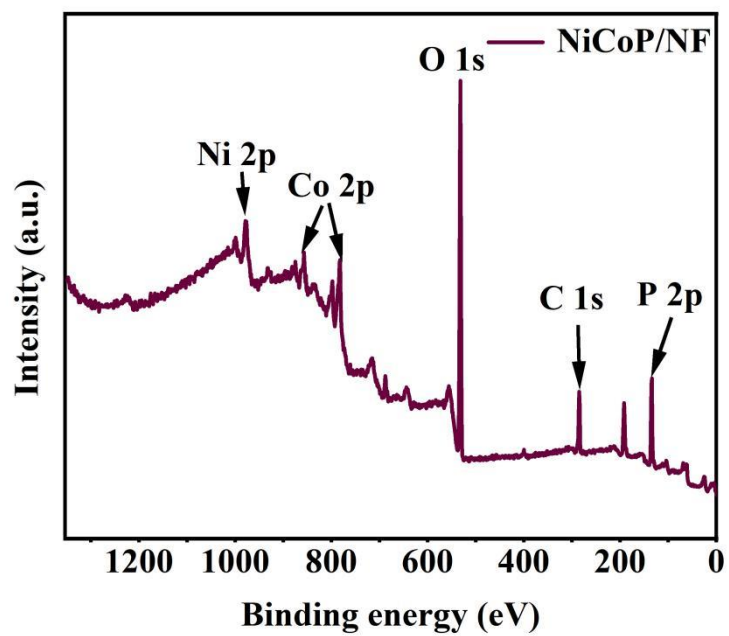


Figure S4 The XPS survey of NiCoP/NF sample.

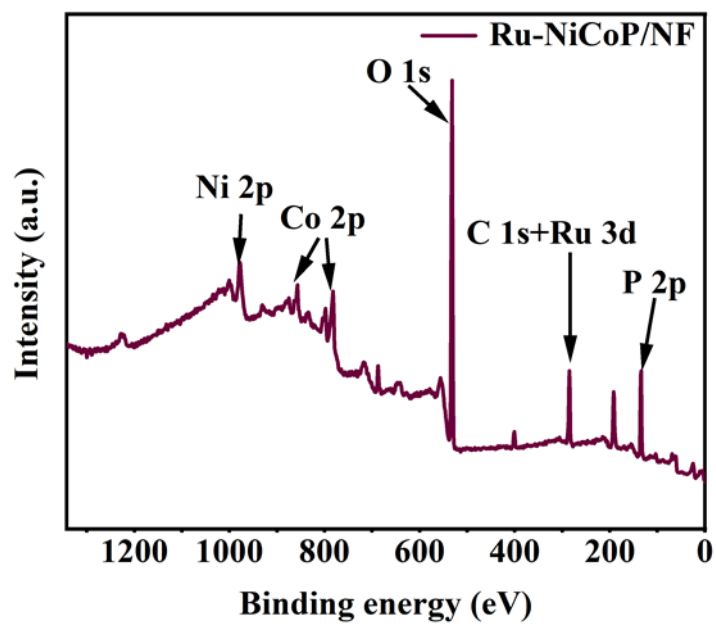


Figure S5 The XPS survey of Ru-NiCoP/NF sample.

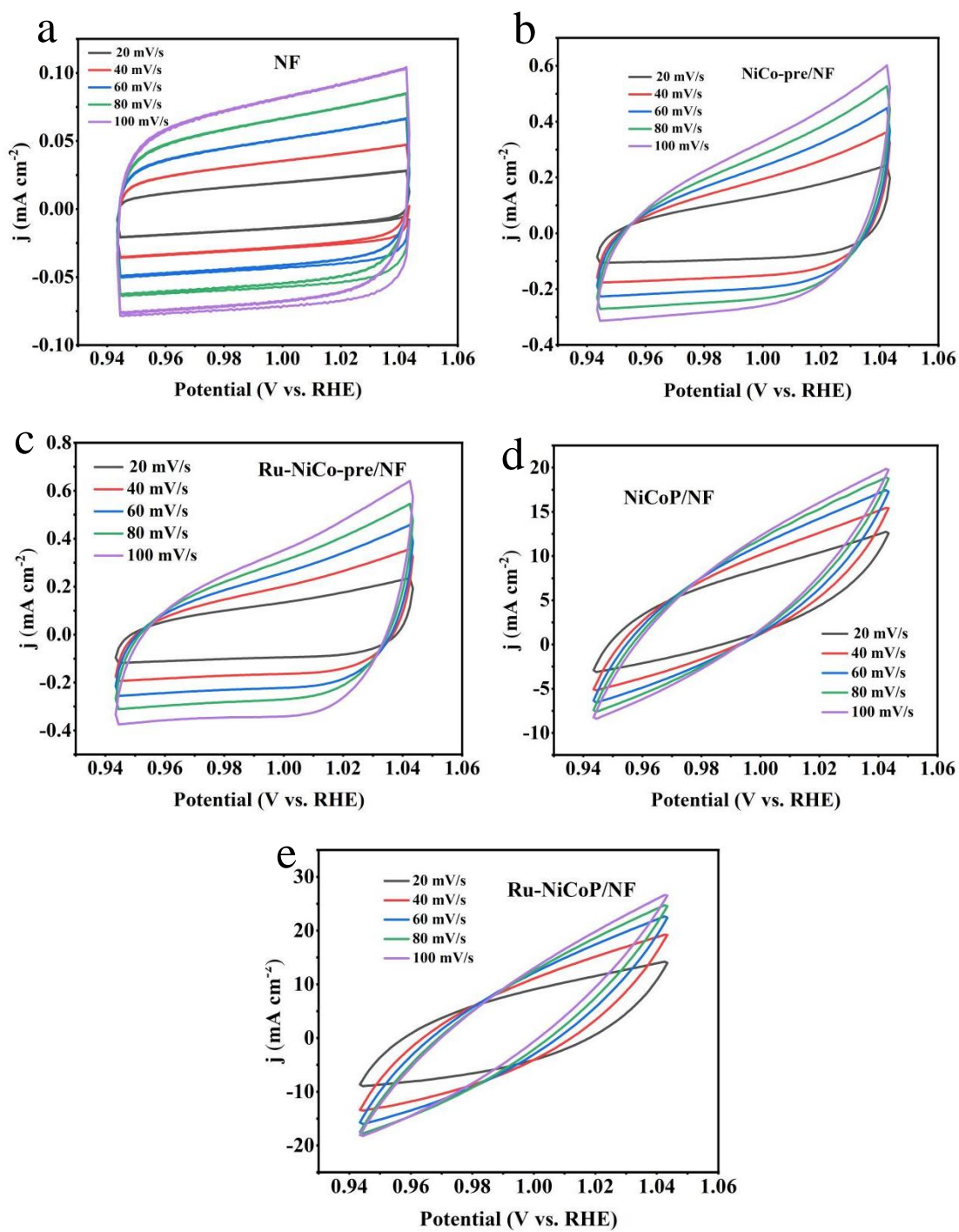


Figure S6 CV curves for (a) NF, (b) NiCo-Pre/NF, (c) Ru-NiCo-Pre/NF, (d) NiCoP/NF and (e) Ru-NiCoP/NF under different scan rates from 20 to 100 mV s^{-1} in 1.0 M KOH.

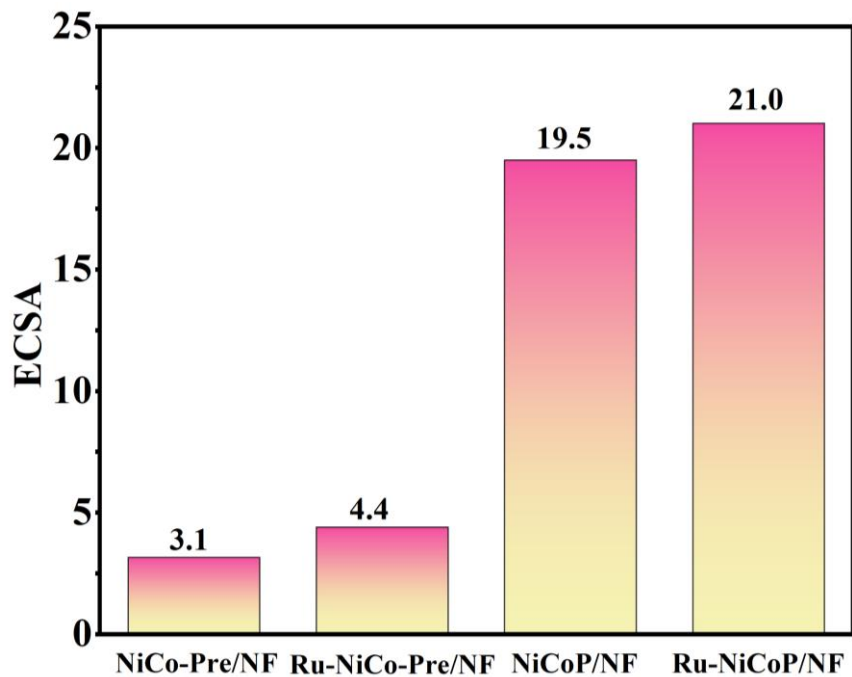


Figure S7 The ECSA values of the prepared samples.

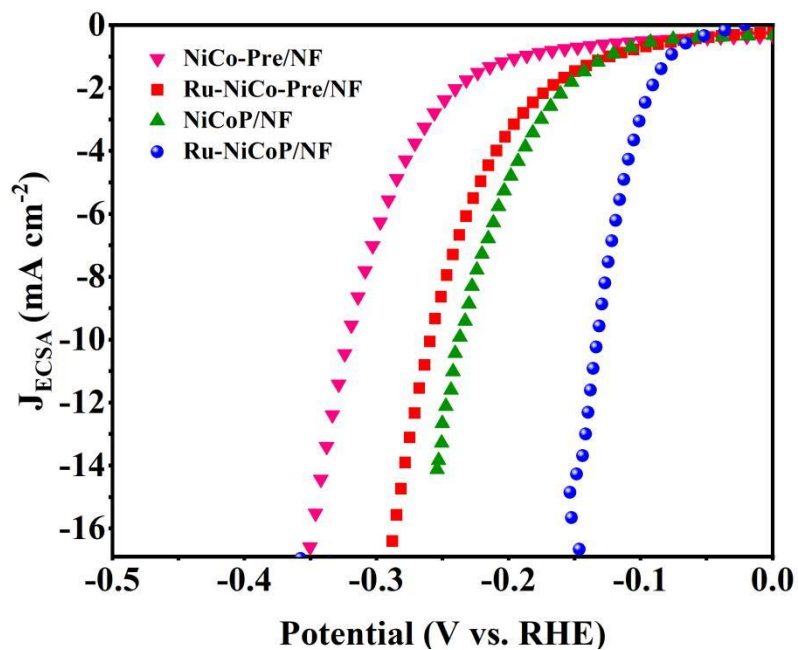


Figure S8 The ECSA normalized polarization curves of the prepared catalysts.

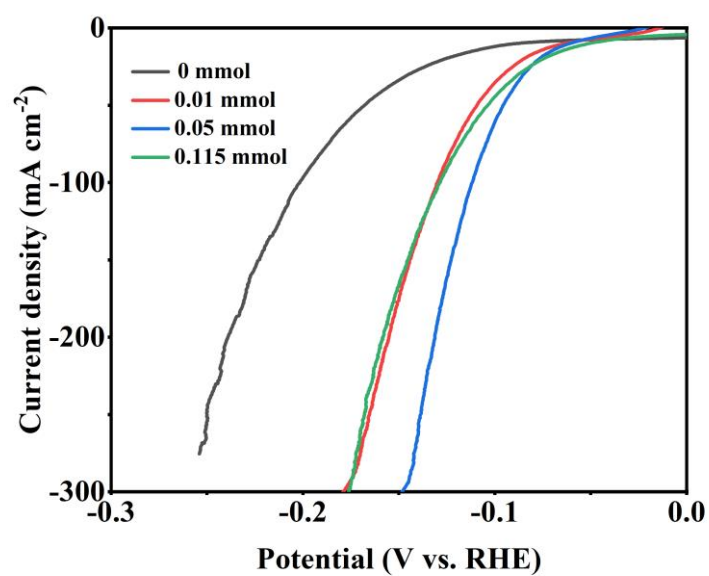


Figure S9 The polarization curves of Ru-NiCoP/NF samples with using different amount of Ru sources.

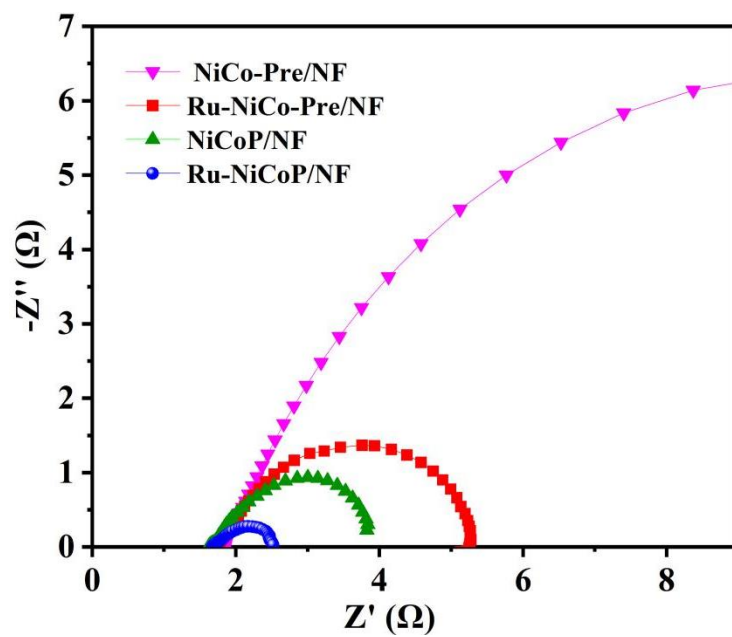


Figure S10 The EIS spectra of the prepared catalysts in 1 M KOH solution.

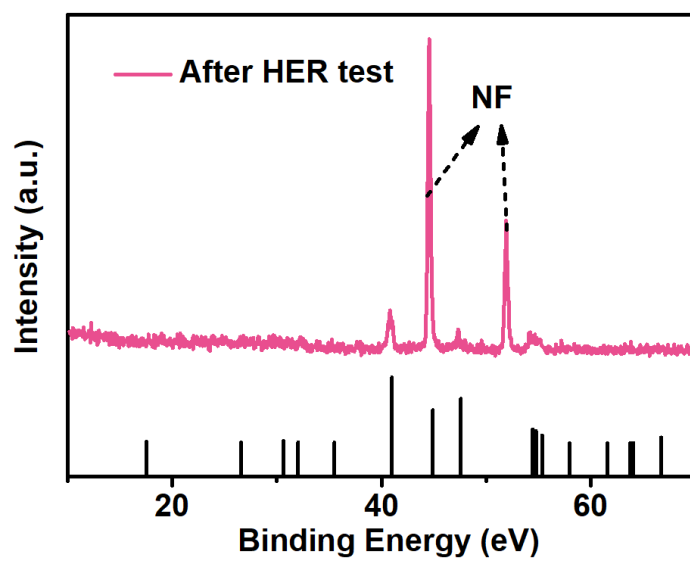


Figure S11 The XPS pattern of the Ru-NiCoP/NF sample after HER test.

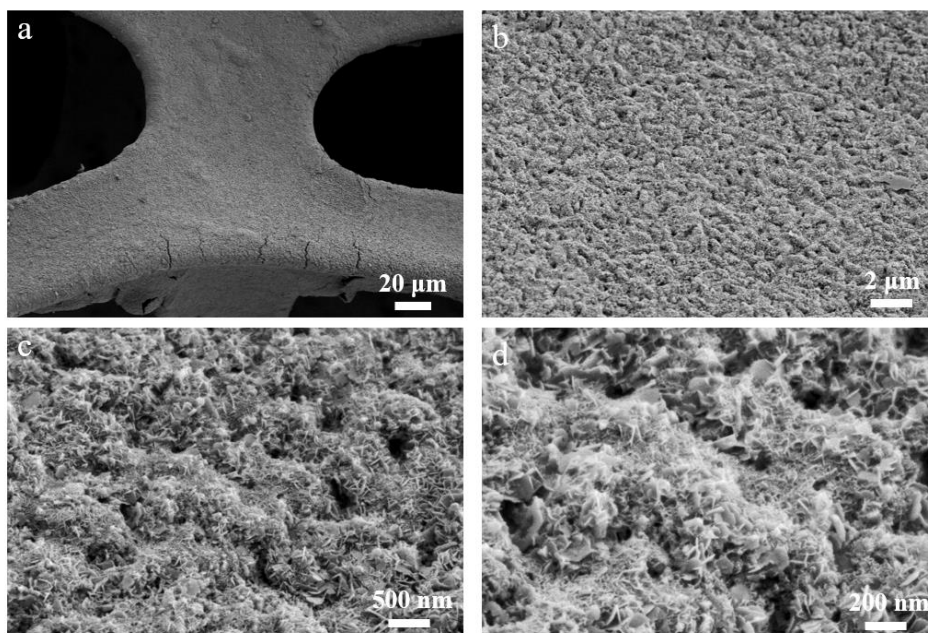


Figure S12 The SEM images of the Ru-NiCoP/NF sample after HER test.

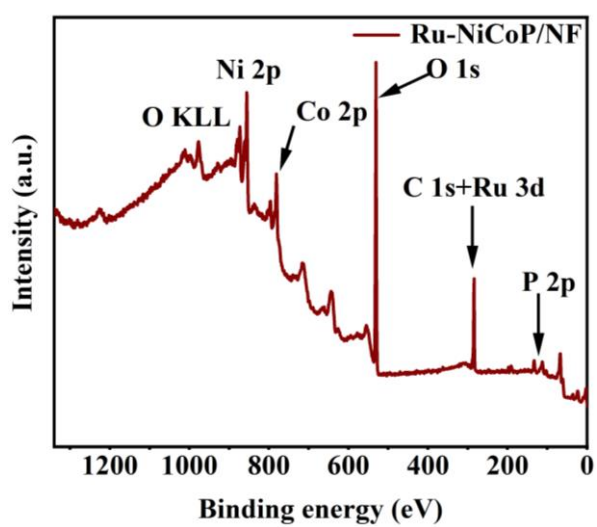


Figure S13 The XPS survey of the Ru-NiCoP/NF sample after HER test.

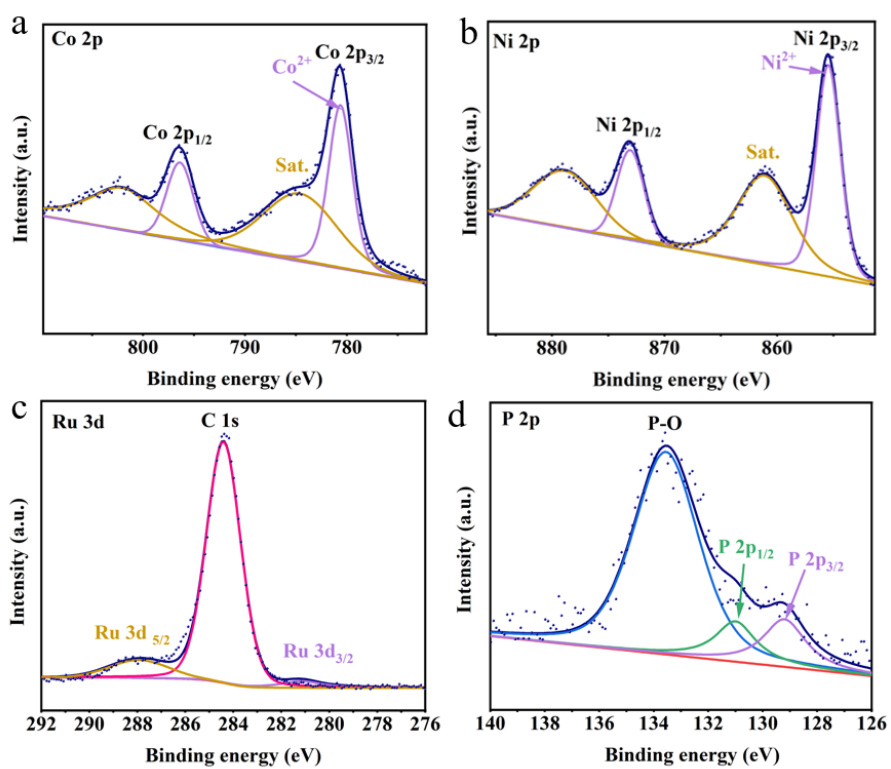


Figure S14 The XPS spectra of the Ru-NiCoP/NF sample after HER test, (a) Co 2p, (b) Ni 2p, (c) Ru 3d and P 2p.