Controllable synthesis of Cu-Ni-M (M= S, P and Se) hybrid nanoarrays for efficient water splitting reaction

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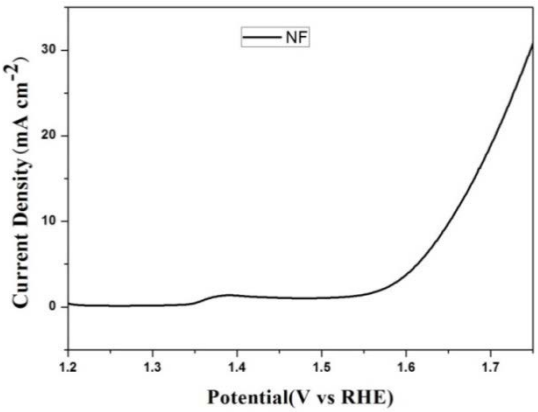

Fig. S1 Polarization curves of NF in 1.0 M KOH at a potential sweep rate of 5 mV s^{-1}.

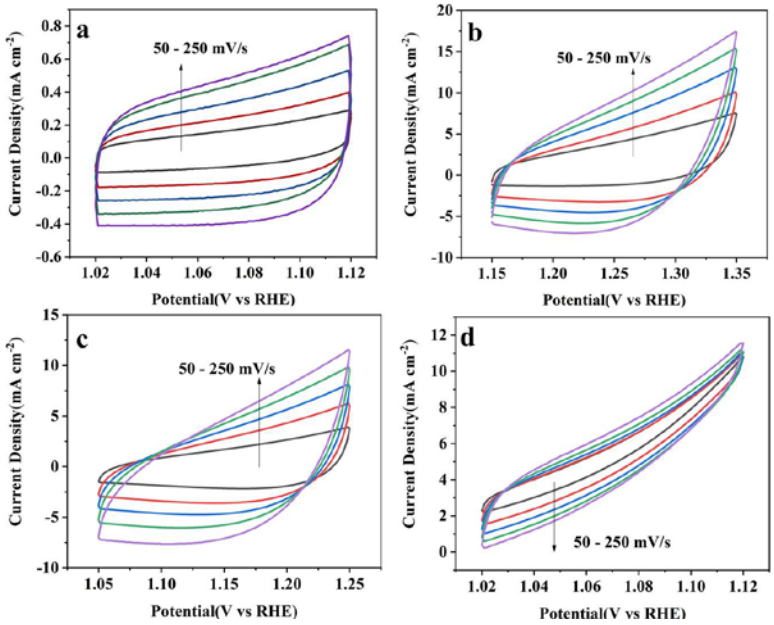

Fig.S2 CV curves with different scan rates in OER, (a) Cu-Ni-precursor, (b) Cu-Ni-S/NF (c) Cu-Ni-P/NF and (d) Cu-Ni-Se/NF.

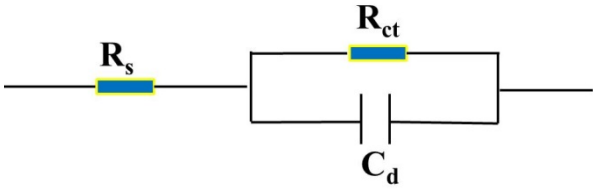

Fig. S3 Equivalent circuit diagram of electrochemical impedance spectroscopy.

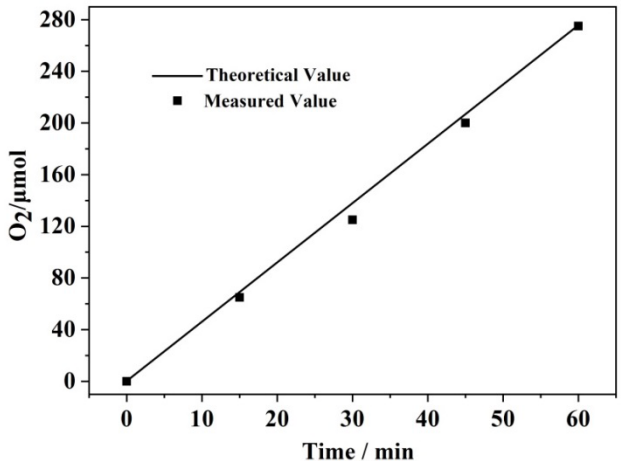

Fig. S4 Electrocatalytic efficiency of O_2 production over Cu-Ni-S/NF measured for 60 min.

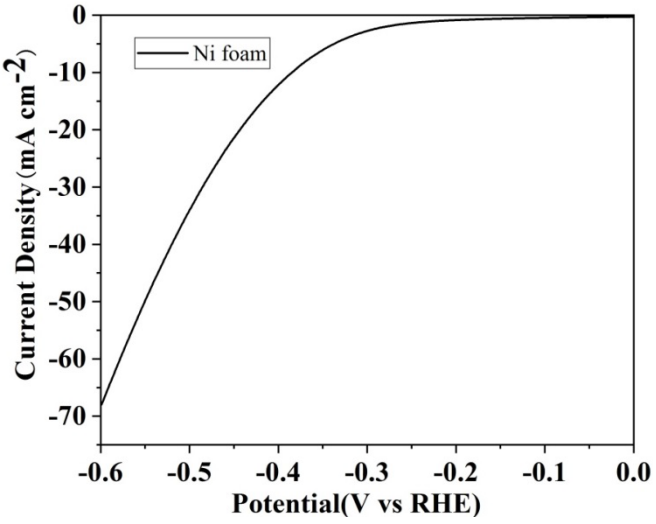

Fig. S5 Polarization curves of NF in 1.0 M KOH at a potential sweep rate of 5 mV s^{-1}.

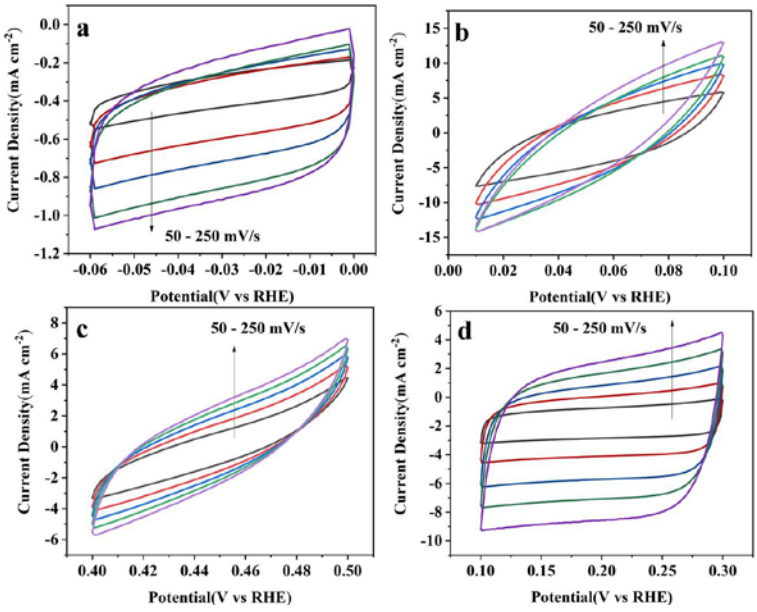

Fig.S6 CV curves with different scan rates in HER, (a) Cu-Ni-precursor, (b) Cu-Ni-S/NF (c) Cu-Ni-P/NF and (d) Cu-Ni-Se/NF.

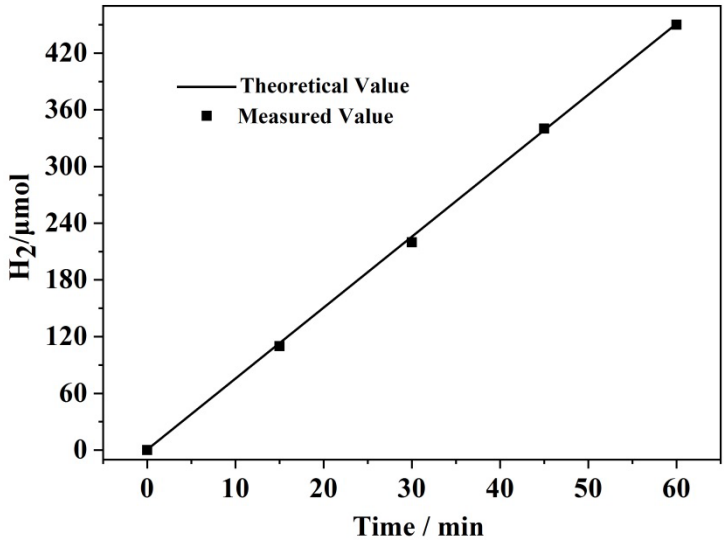

Fig. S7 Electrocatalytic efficiency of H_2 production over Cu-Ni-P/NF measured for 60 min.

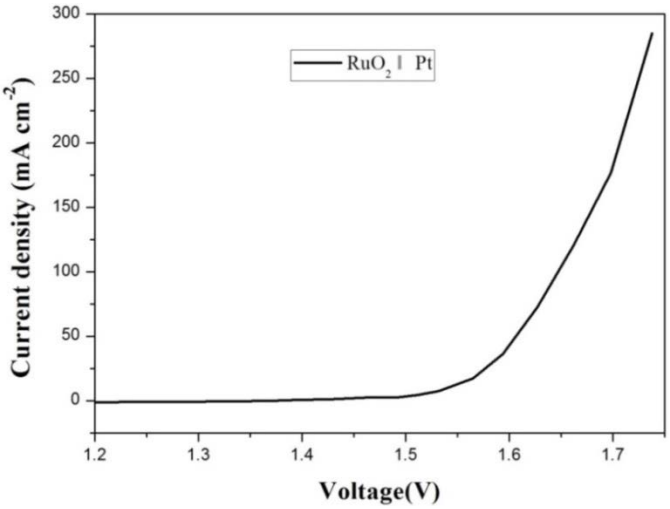

Fig. S8 Polarization curve of the RuO_2 and Pt for water splitting with a scan rate of 5 mV s^{-1} in 1 M KOH.

Fig. S9 A photograph showing generation of H_2 bubbles on the Cu-Ni-P/NF electrodes.

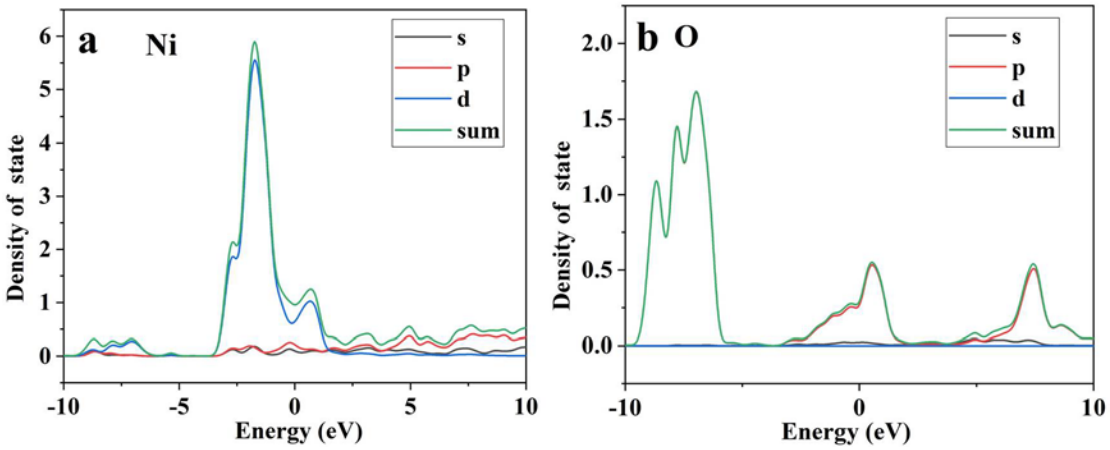

Fig. S10 Calculated density of states for Ni and O in NiOOH.

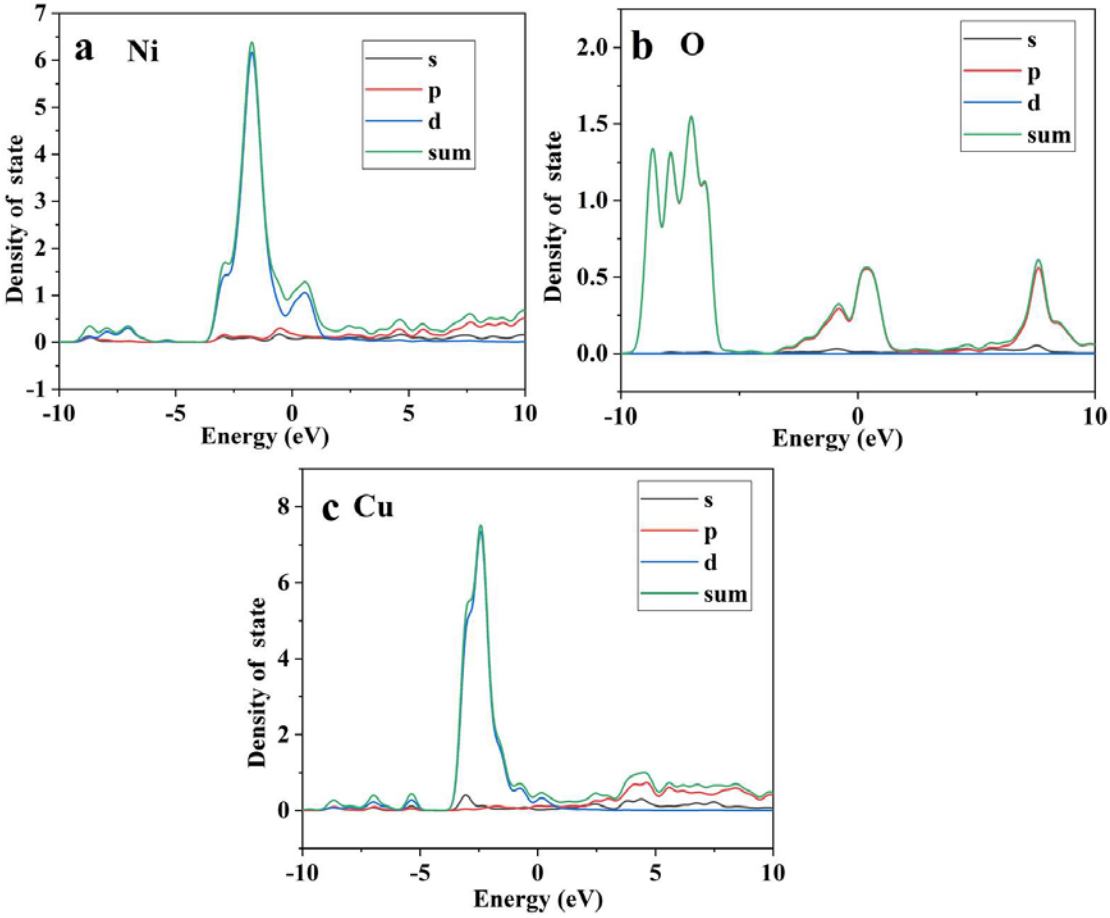

Fig. S11 Calculated density of states for Ni , O and Cu in Cu-NiOOH.