Supporting Information

Self-supported Cu_3P nanowires electrode as an efficient electrocatalyst for oxygen evolution reaction

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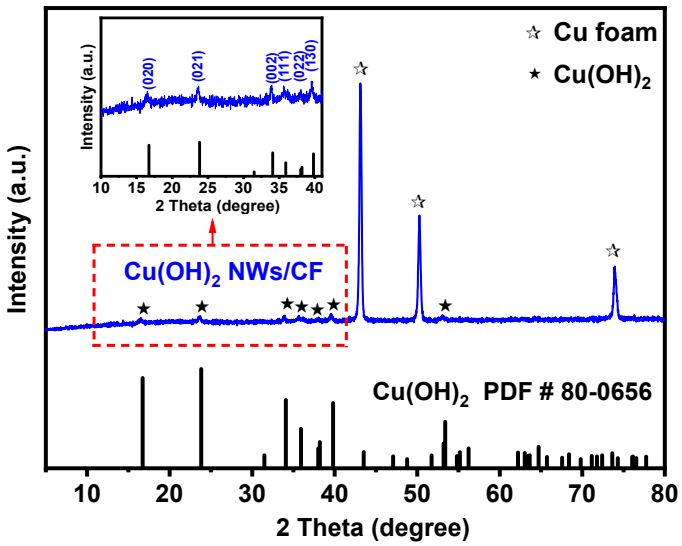

Figure S1. XRD patterns of $Cu(OH)_2$ NWs/CF.

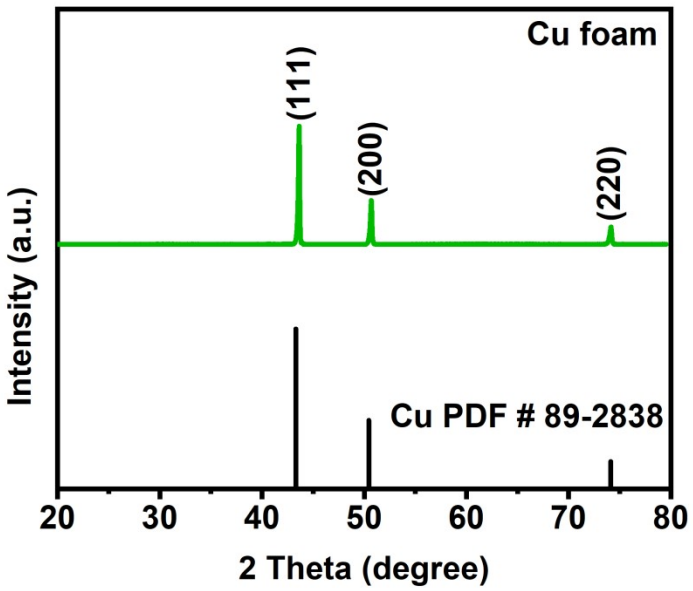

Figure S2. XRD patterns of bare Cu foam.

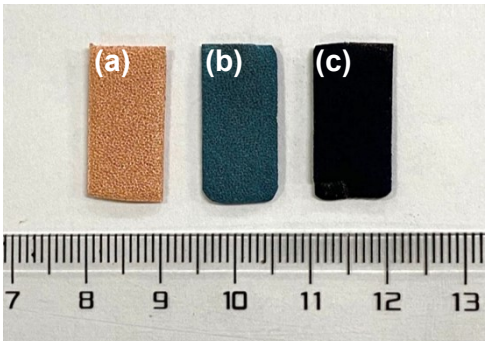

Figure S3. Optical photograph of (a) Cu foam, (b) $Cu(OH)_2$ NWs/CF, and (c) Cu_3P NWs/CF.

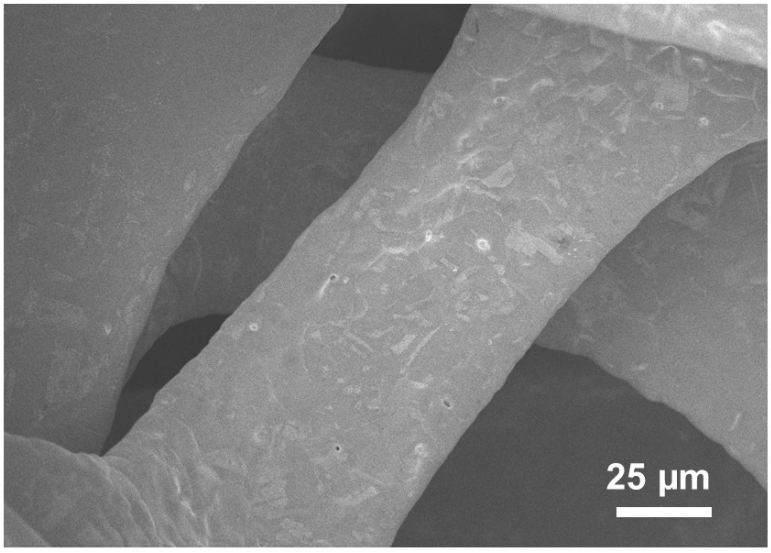

Figure S4. SEM image of bare Cu foam.

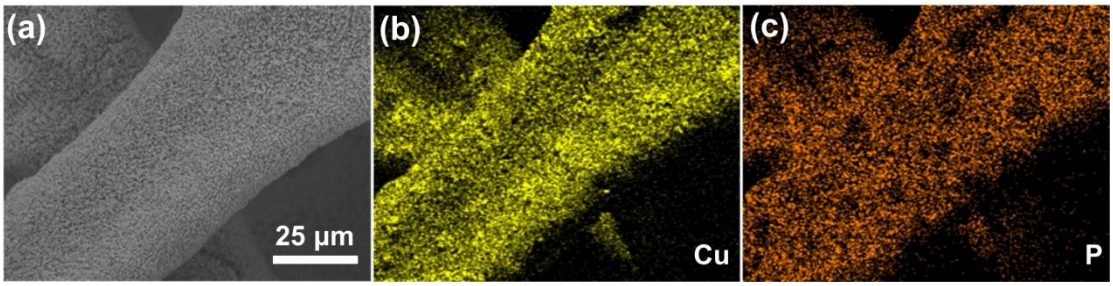

Figure S5. SEM-EDS elemental mapping images of Cu_3P NWs/CF.

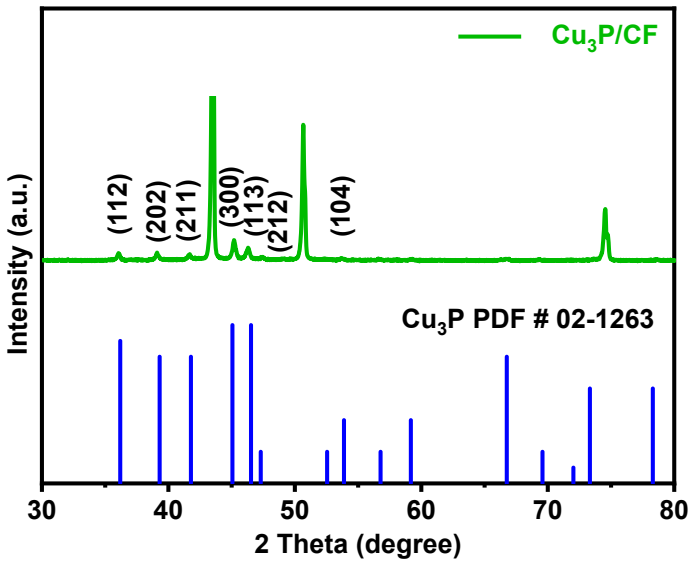

Figure S6. XRD patterns of Cu_3P/CF.

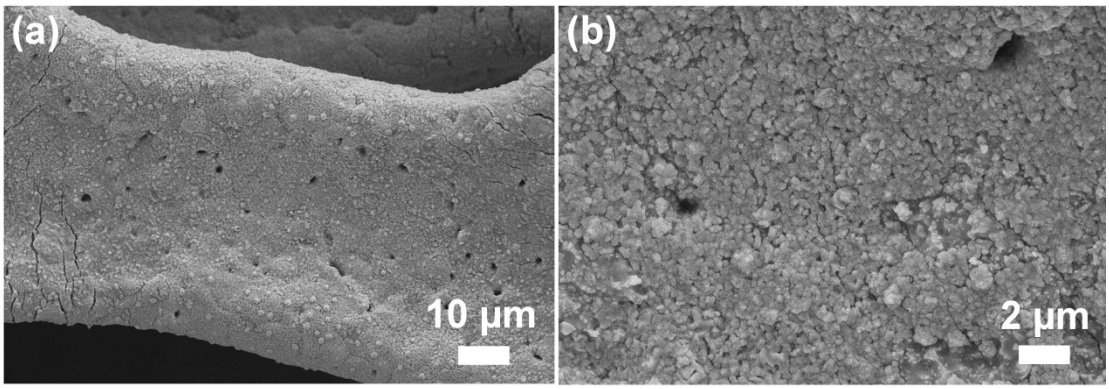

Figure S7. (a) Low-magnification and (b) high-magnification SEM images of Cu_3P/CF.

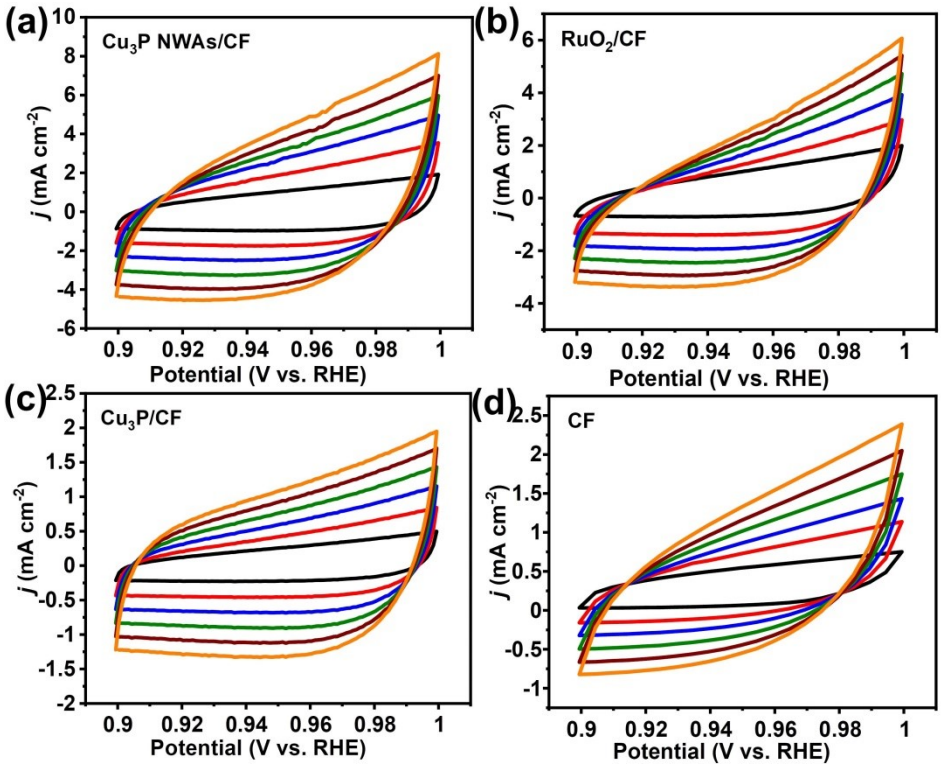

Figure S8. Cyclic voltammograms of (a) Cu_3P NWs/CF, (b) RuO_2/CF, (c) Cu_3P/CF, and (d) Cu foam.

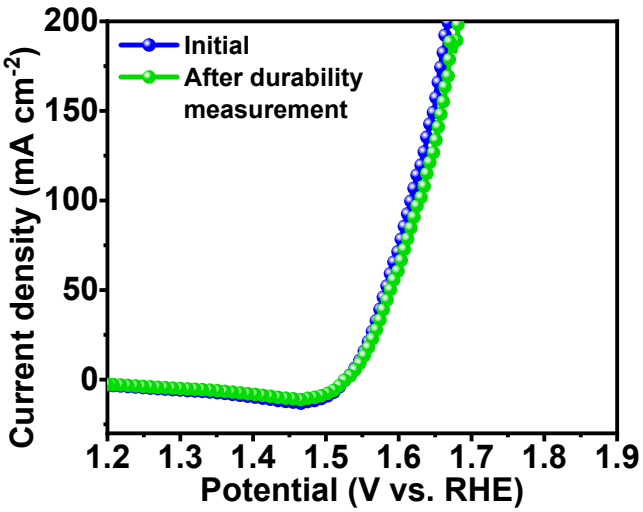

Figure S9. LSV curves of Cu_3P NWs/CF before and after long-term durability measurment.

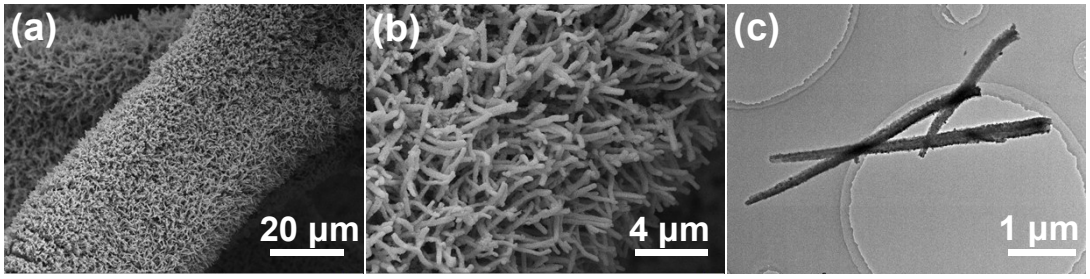

Figure S10. (a-b) SEM images and (c) TEM image of Cu_3P NWs/CF after long-term durability measurement.

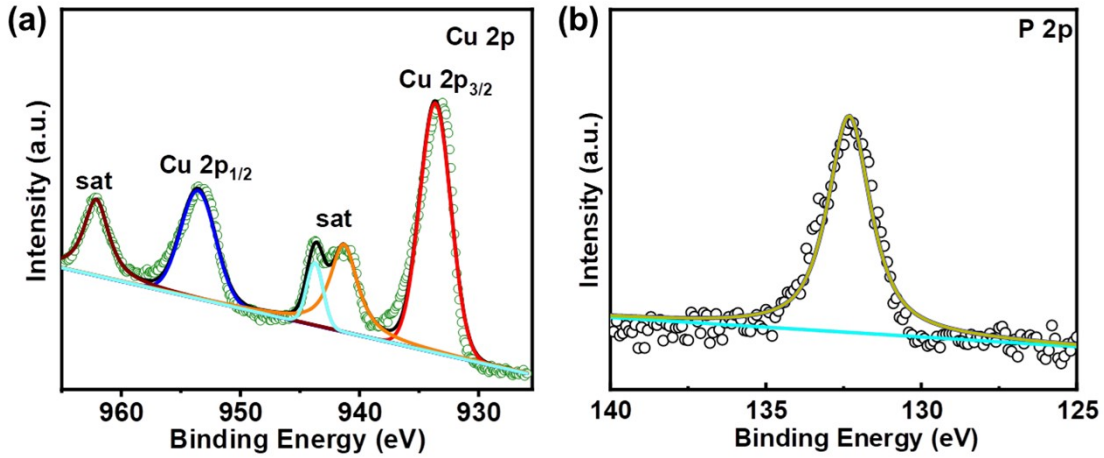

Figure S11. High-resolution XPS spectra of (a) Cu 2p and (b) P 2p for Cu_3P NWs/CF after long-term durability measurement.

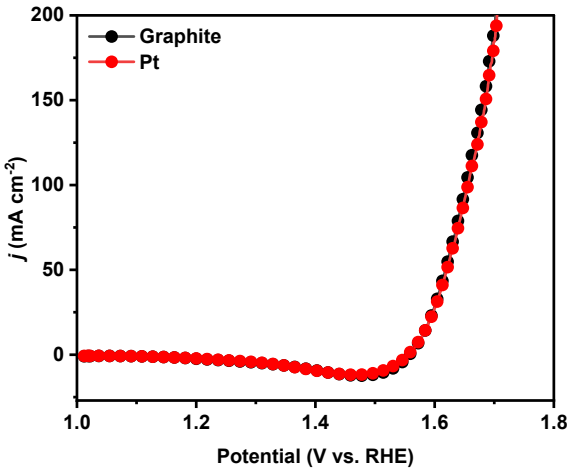

Figure S12. The comparison of LSV curves with platinum and graphite rods as counter electrodes for Cu_3P NWs/CF.

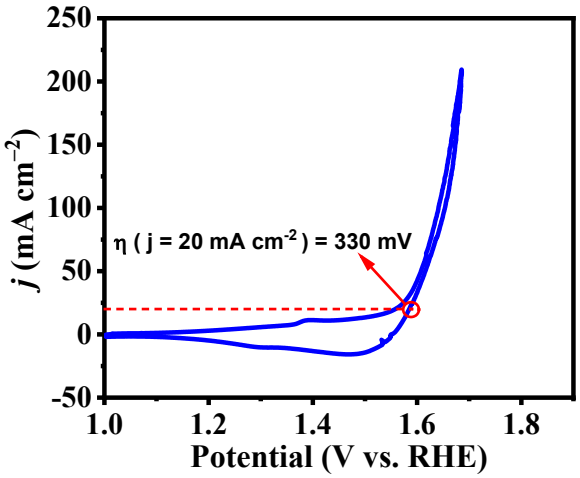

Figure S13. CV curve at a scan rate of 1 mV s^{-1} for Cu_3P NWs/CF.

Table S1. Comparison of OER performances of Cu_3P NWs/CF and other reported electrocatalysts.

Catalyst	Substrate	Eectrolyte	j (mA cm^{-2})	Onerpotential (mV)	Reference
Cu_3P NWs/CF	Cu foam	1.0 M KOH	10	316	**This work**
			20	327	
			50	352	
Cu_3P NB/Cu	Cu mesh	1.0 M KOH	10	380	1
			20	390	
NiCoP@Cu_3 P	Cu foam	1.0 M KOH	10	309	2
Cu_3P nanosheets	Ni foam	1.0 M KOH	10	320	3
Ni_3S_4 nanosheets	Ni foam	1.0 M KOH	20	310	4
$NiMoP_2$ nanowire	Carbon cloth	1.0 M KOH	10	330	5
NiCo-LDH nanosheets	Carbon paper	1.0 M KOH	20	390	6
$NiO/NiFe_2O_4$	Carbon paper	1.0 M KOH	10	303	7
NiCo-Mixed Oxide	GCE	1.0 M KOH	10	380	8
CoMnP nanoparticles	GCE	1.0 M KOH	10	330	9
IrO_2	GCE	1.0 M KOH	10	320	10

Note: GCE stands for glassy carbon electrode.

Table S2. The electrolyte resistance (R_s) and charge transfer resistance (R_{ct}) of various samples.

Catalyst	Rs (ohm)	Rct (ohm)
Cu_3P NWs/CF	1.6	3.5
RuO_2/CF	1.6	4.5
Cu_3P/CF	1.6	9.5
Cu foam	1.7	14.5

References

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