

Supporting Information

Tuning Ni-Foam into NiOOH/FeOOH Heterostructures toward Superior Water Oxidation Catalyst via Three-step Strategy

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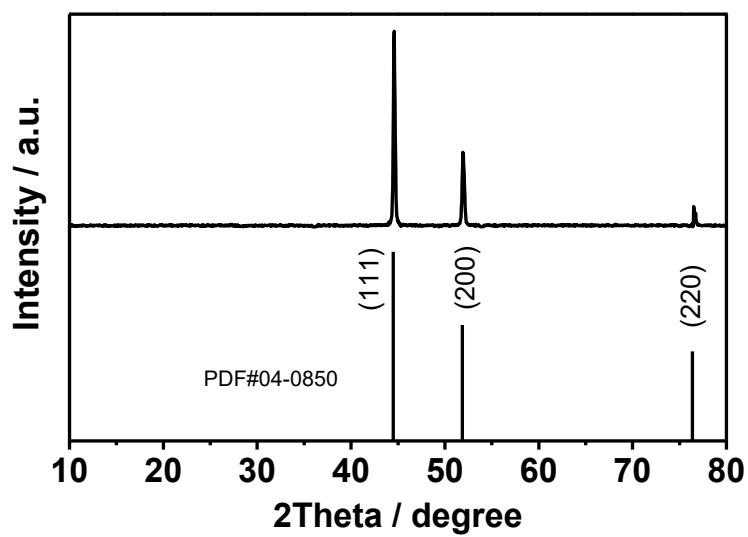


Figure S1 XRD of NiOOH/FeOOH heterostructures on Ni foam

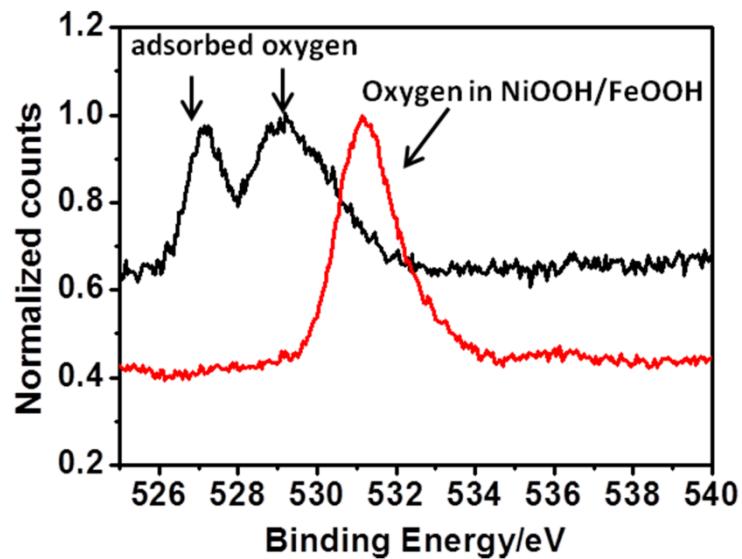


Figure S2 O 1s XPS spectrum of pristine Ni-foam (black line) and NiOOH/FeOOH heterostructures (red line)

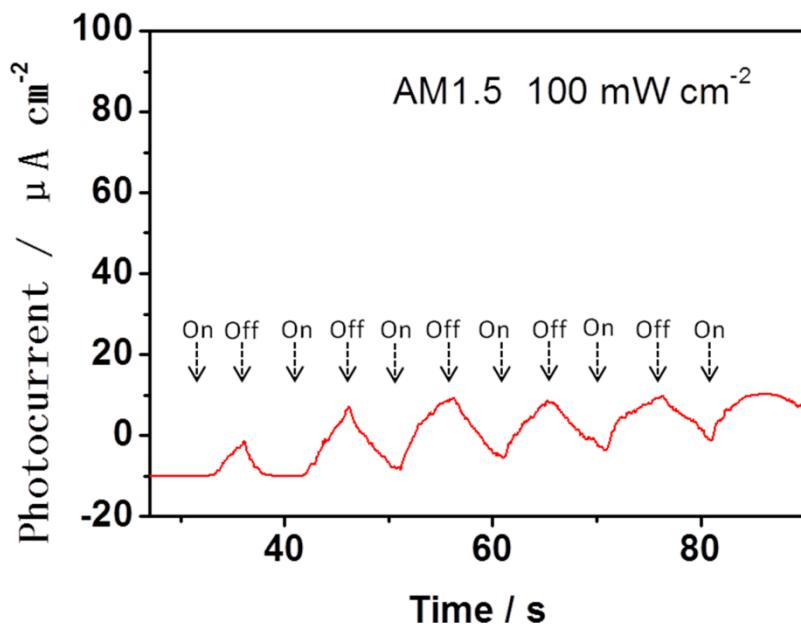


Figure S3 photocurrent response of NiOOH/FeOOH heterostructures under AM 1.5G illumination at an intensity of 100 mW cm^{-2}

Table S1 Fitting parameter in XPS curve of Ni 2p chemical distribution on Ni-foam

Energy level	Binding energy/eV	Area	Percentage/%
Ni 2p3/2	852.00	54820.88	45.6
Ni 2p3/2,sat	858.60	18067.54	15.0
Ni 2p1/2	870.17	25939.96	21.6
Ni 2p1/2,sat	877.65	21304.16	17.8

Table S2 Fitting parameter in XPS curve of Ni 2p chemical distribution on of NiOOH/FeOOH heterostructures

Energy level	Binding energy/eV	Area	Percentage/%
2p3/2 NiOOH	855.60	19277.23	37.0
2p3/2,sat	861.40	14029.49	26.9
NiOOH			
2p1/2 NiOOH	873.10	8831.88	17.0
2p1/2,sat	879.70	9947.18	19.1
NiOOH			

Table S3 Fitting parameter in XPS curve of Fe 2p chemical distribution on of NiOOH/FeOOH heterostructures

Energy level	Binding energy/eV	Area	Percentage/%
2p3/2 O ₂ /Fe	707.00	345.70	1.3
2p3/2 FeOOH	711.50	13251.41	49.9
2p1/2 FeOOH	724.30	12959.87	48.8

Table S4. the detailed data for the measuring the gas constant

Experiment number	Quality of magnesium strips/g	Room temperature/e/K	Atmospheric pressure/K Pa	Volume of hydrogen/mL	P(H ₂ O)/Pa	P(H ₂ /K Pa	10 ³ *n(H ₂)/mol	R/J mol ⁻¹ K ⁻¹	The relative error/%
1	0.0257	292.15	101.97	25.5	2224.5	99.745	1.06	8.21 ₃	-1.21
2	0.0288	292.15	101.97	29.3	2224.5	99.745	1.18	8.47 ₈	1.97
3	0.0290	285.35	101.54	28.4	1421.0	100.119	1.19	8.37 ₄	0.71

4	0.0288	285.35	101.54	28.4	1421.0	100.119	1.18	8.44 5	1.58
5	0.0289	292.2	101.97	28.6	2224.5	99.745	1.19	8.38 7	0.88
6	0.0287	292.15	101.97	28.2	2224.5	99.745	1.18	8.15 9	-1.86
7	0.0275	285.15	101.54	26.7	1421.0	100.119	1.13	8.29 7	-0.20
8	0.0290	285.20	101.54	28.7	1421.0	100.119	1.19	8.46 6	1.83
9	0.0275	292.20	101.97	26.9	1421.0	100.119	1.13	8.15 7	-1.89
10	0.0282	292.20	101.97	27.8	1421.0	100.119	1.16	8.21 2	-1.23
11	0.0300	292.20	101.97	29.9	2224.5	99.745	1.23	8.29 8	-0.19
12	0.0286	285.15	101.54	27.8	1421.0	100.128	1.18	8.25 8	-0.67
13	0.0297	292.20	101.97	29.5	2224.5	99.745	1.22	8.25 4	-0.72
14	0.0282	292.20	101.97	27.8	1421.0	100.119	1.16	8.36 3	0.59
15	0.0275	292.20	101.97	26.9	1421.0	100.119	1.13	8.15 7	-1.89
16	0.0300	285.15	101.97	29.5	1421.0	100.119	1.23	8.42 1	1.29
17	0.0290	285.2	101.54	28.7	1421.0	100.119	1.19	8.45 8	1.73
18	0.0275	285.15	101.54	26.7	1421.0	100.119	1.13	8.29 6	-0.22
19	0.0297	291.85	101.97	29.3	2224.5	99.745	1.22	8.20 8	-1.27
20	0.0282	292.15	101.97	28.0	2224.5	99.745	1.16	8.24 1	-0.88

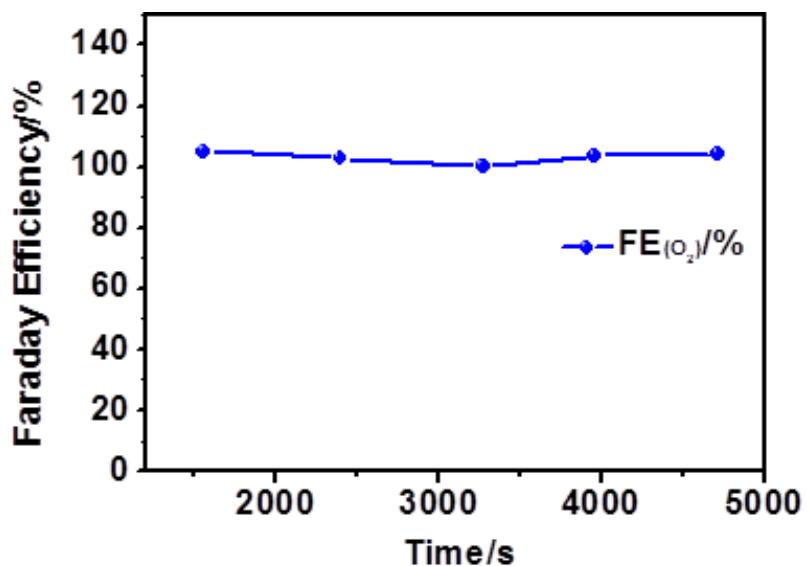


Figure S4 Faraday efficiency of evolved O₂ at 10 mA cm⁻² based on NiOOH/FeOOH heterostructures

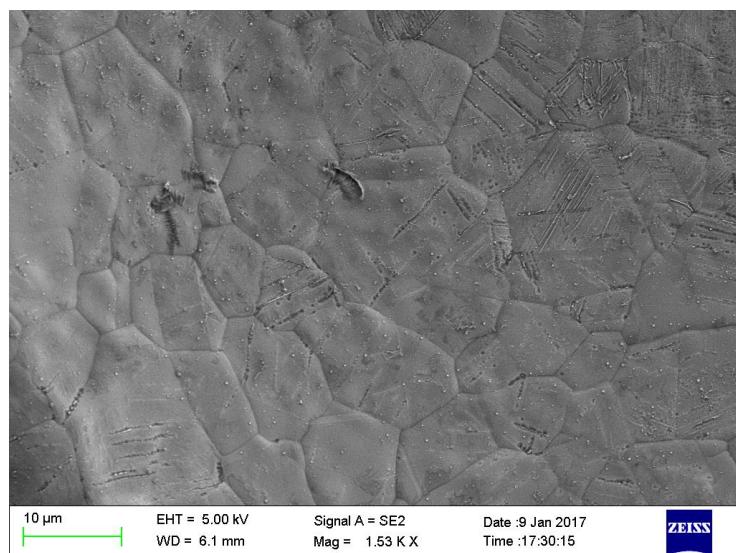


Figure S5 SEM of Pt/Ni-foam

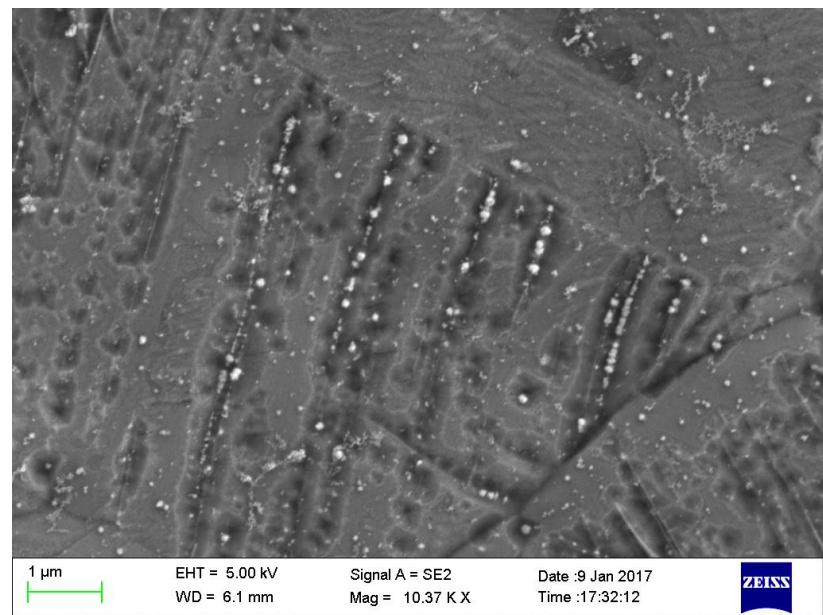


Figure S6 Amplifying SEM of Pt/Ni-foam