Supporting Information

In-site hydrogen bubble template method to prepare Ni coated metal meshes as effective bi-functional electrodes for water splitting

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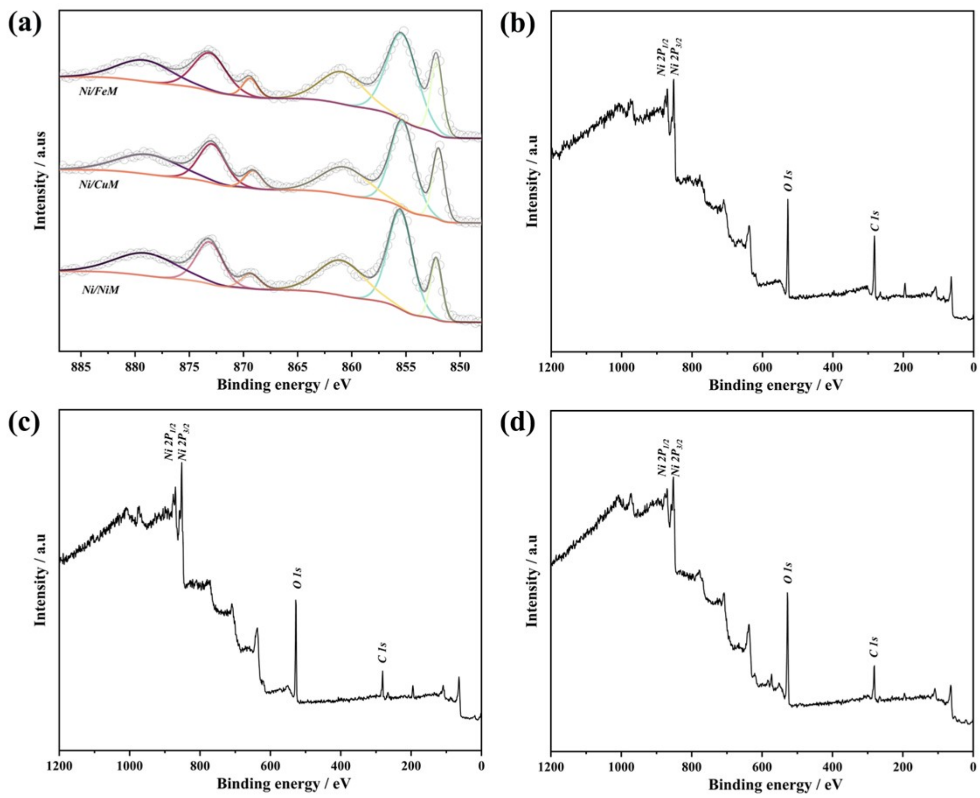

Figure S1. (a) The high resolution XPS spectra of Ni 2p of different materials; XPS survey spectra of (a) Ni/CuM, (b) Ni/NiM, (c) Ni/FeM.

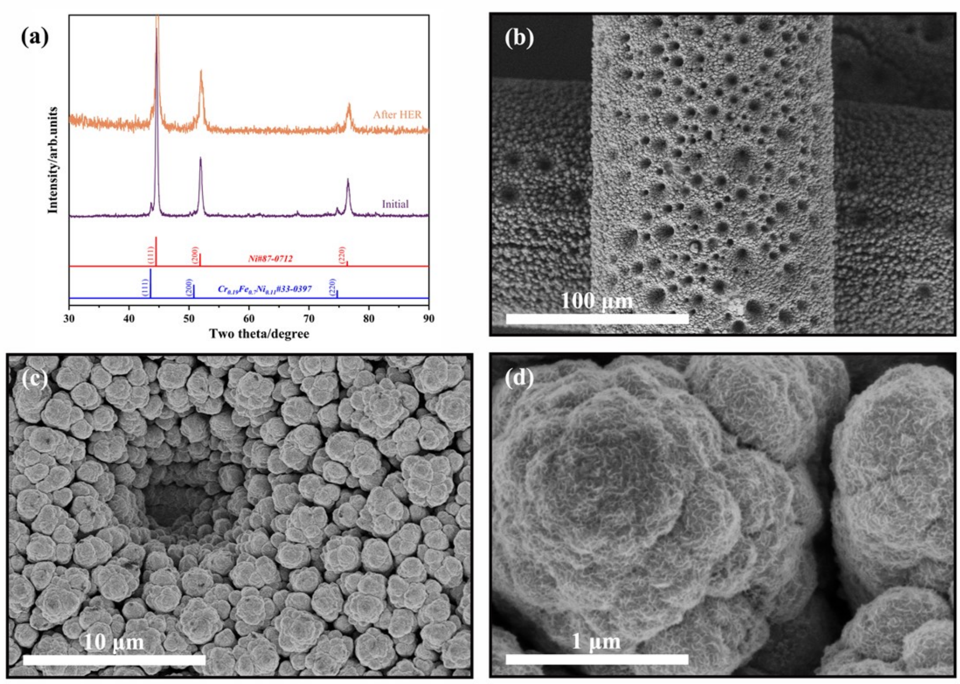

Figure S2. (a) XRD and (b-d) SEM images of after HER stability tests of Ni/FeM at 50 mA cm^{-2} for 10 h.

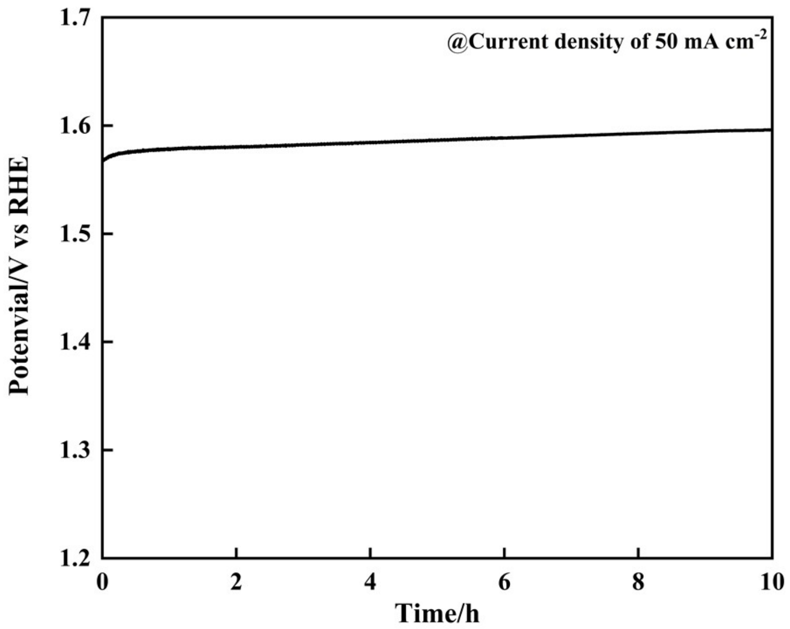

Figure S3. Long-term chronopotentiometry of Ni/FeM at 50 mA cm^{-2} for 10 h.

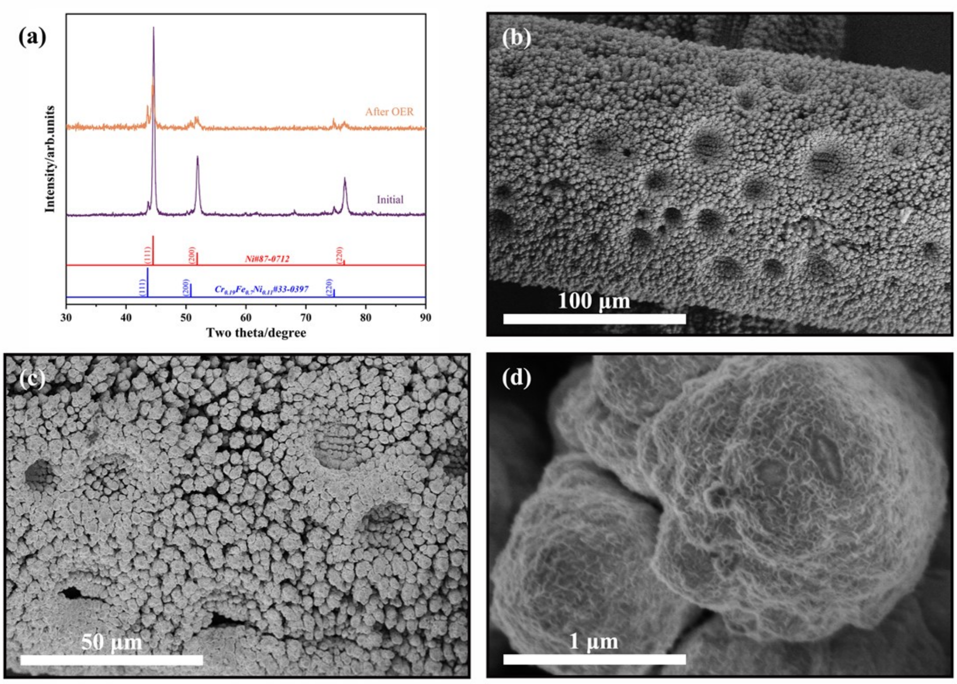

Figure S4. (a) XRD and (b-d) SEM images of after OER stability tests of Ni/FeM at 50 mA cm^{-2} for 10 h.

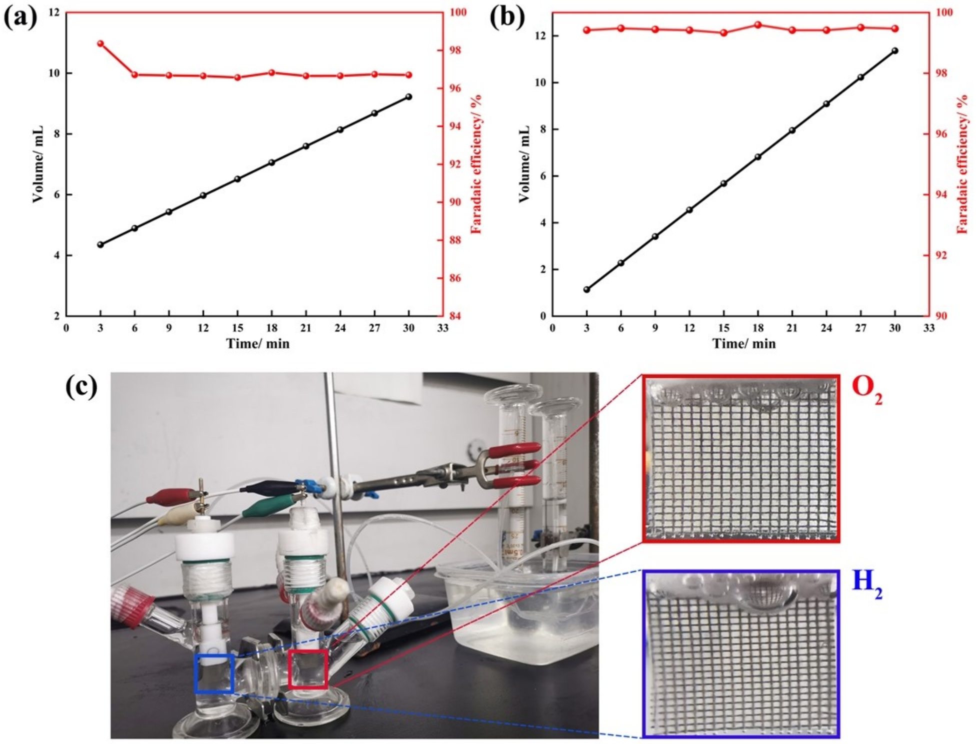

Figure S5. Gas volume versus time and corresponding Faradaic efficiency (a) O_2, (b) H_2; (c) Two-electrode configuration for water splitting and gases generated on the cathode.

Table S1. Comparison of alkaline HER activities of different Ni-Based electrocatalysts.

HER catalysts	Electrolytes	η,HER (mV)	Ref.
Ni/FeM	1M KOH	38 (10 mA/cm^{-2}) 113 (100 mA/cm^{-2})	This work
Ru-NiO/Co_3O_4	1M KOH	138 mV (100 mA/cm^{-2})	[1][1]
Ni-Mo2C-0.67	1M KOH	151 (10 mA/cm^{-2}) 194 (100 mA/cm^{-2})	[2][2]
Ni NWs/Ni/CM	1M KOH	160 (100 mA/cm^{-2})	[3][3]
$NiCo_2O_4$/NF	1M KOH	53 (10 mA/cm^{-2})	[4][4]
FeNi3@FeNi LDH/NF	1M KOH	106 (10 mA/cm^{-2})	[5][5]
Ni-$Ni(OH)_2$	1M KOH	72 (10 mA/cm^{-2}) 233 (100 mA/cm^{-2})	[6][6]
Ni-GF/VC	1M KOH	128 (10 mA/cm^{-2})	[7][7]
WN-$Ni(OH)_2$	1M KOH	245 (100 mA/cm^{-2})	[8][8]
Ni-Fe-Se/NF	1M KOH	85 (10 mA/cm^{-2})	[9][9]
Mo-Ni-NSs-3	1M KOH	91 (10 mA/cm^{-2})	[10][10]

Table S2. Comparison of alkaline OER activities of different electrocatalysts.

OER catalysts	Electrolytes	η,OER (mV)	Ref.
Ni/FeM	1M KOH	220 (10 mA/cm^{-2})	This work
CNCP	1M KOH	224 (10 mA/cm^{-2})	[1][11]
1T-MoS_2	1M KOH	224 (10 mA/cm^{-2})	[2][12]
NiCo-H2/NF	1M KOH	331 (10 mA/cm^{-2})	[3][13]

$CoNiP_x$-CNF	1M KOH	269 (10 mA/cm^{-2})	[4][14]
RuO_2-Fe_2O_3	1M KOH	292 (10 mA/cm^{-2})	[5][15]
Ni/MoO_2	1M KOH	287 (10 mA/cm^{-2})	[6][16]
$FeNiO_x(OH)_y$-2	1M KOH	250 (10 mA/cm^{-2})	[7][17]
Ni SAs/Fe-NiOOH	1M KOH	269 (10 mA/cm^{-2})	[8][18]
NiFe-MOF/IF	1M KOH	230 (10 mA/cm^{-2})	[9][19]
Ir-Ni$(OH)_2$	1M KOH	248 (10 mA/cm^{-2})	[10][20]

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