Electronic Supplementary Material (ESI) for Nanoscale.

Enhanced electrocatalytic activity of FeNi alloy quantum dots decorated cobalt carbonate hydroxide nanosword arrays for effective overall water splitting

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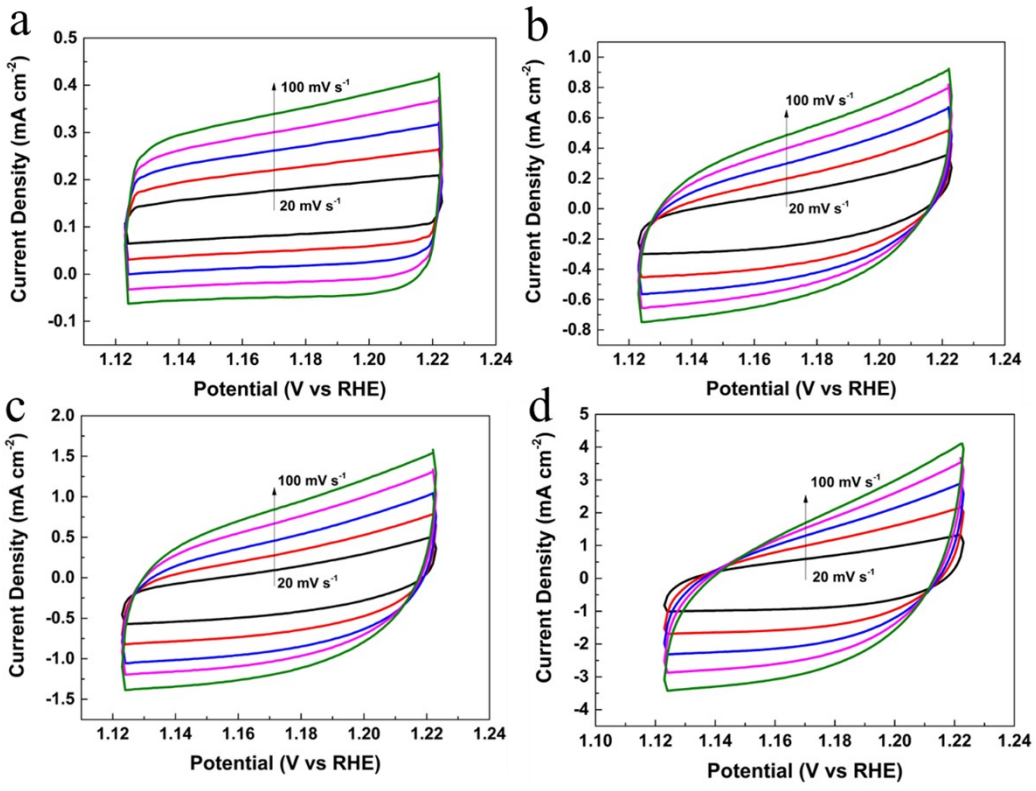

Fig. S1. CV curves of (a) CoCH/Ni foam, (b) Ni/CoCH/Ni foam, (c) Fe/CoCH/Ni foam and (d) FeNi/CoCH/Ni foam are taken at various scan rates of 20, 40, 60, 80 and 100 mV/s.

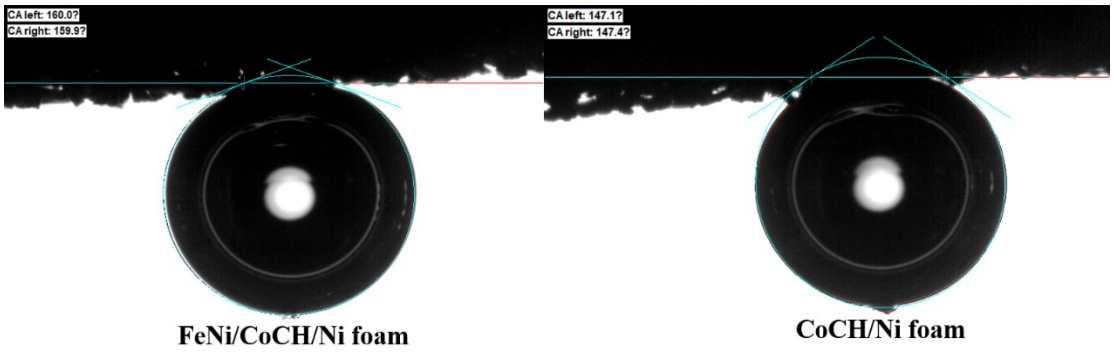

Fig. S2. Air-bubble contact angles under water for FeNi/CoCH/Ni foam and CoCH/Ni foam.

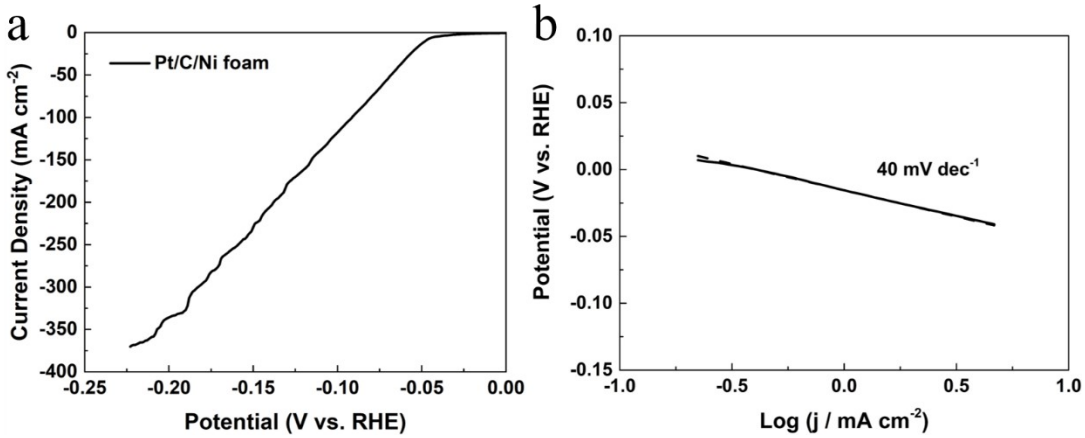

Fig. S3. (a) LSV curves and (b) corresponding Tafel plots of Pt/C/Ni foam.

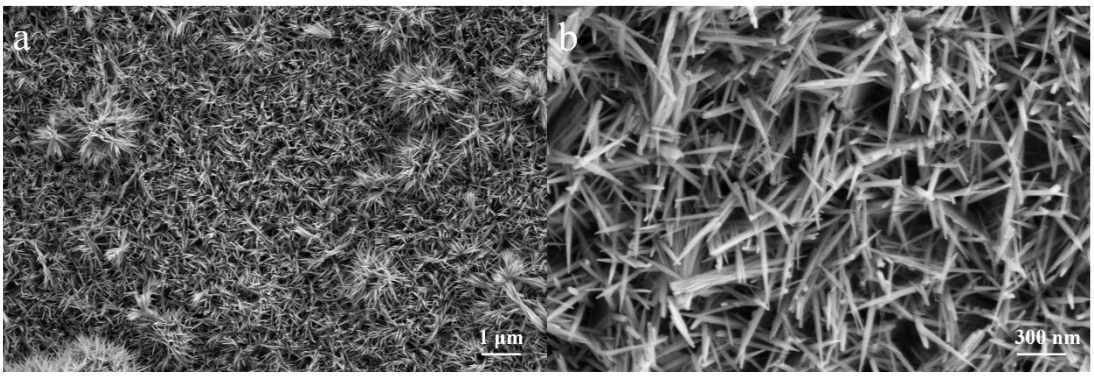

Fig. S4. SEM image of FeNi/CoCH/Ni foam after stability test.

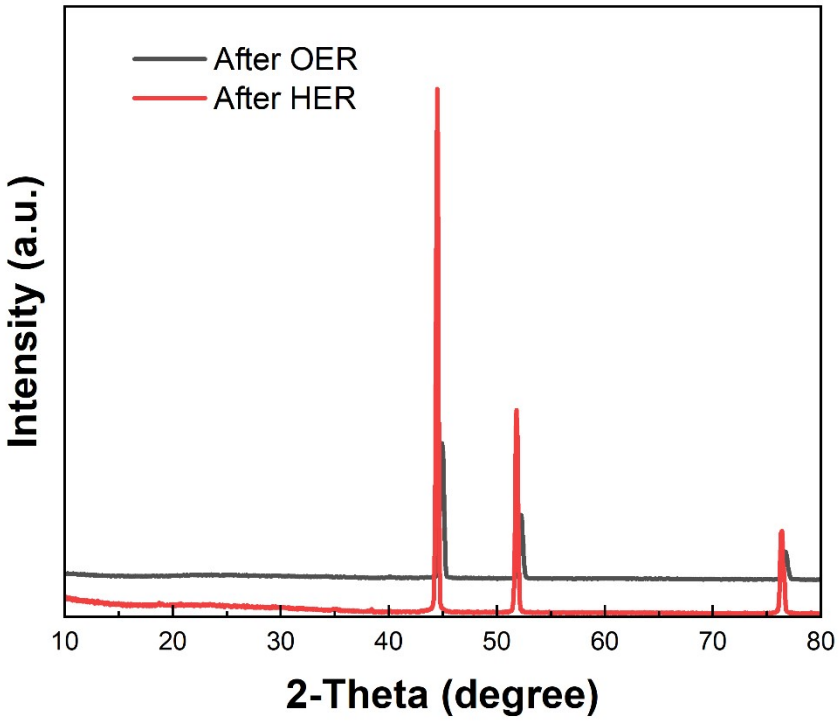

Fig. S5. XRD pattern of FeNi/CoCH/Ni foam after overall water splitting test.

Table S1 Comparison of water-splitting performance of the as-obtained FeNi/CoCH/Ni foam in this work with other recently well-developed electrocatalysts in 1 M KOH (V_{10}-cell voltage at 10 mA cm^{-2}, V_{100}-cell voltage at 100 mA cm^{-2}).

Catalysts	Support	V_{10} (V)	V_{100} (V)	Reference
FeNi/CoCH/Ni foam	Ni foam	1.49	1.54	This work
Ni_3FeN/r-GO	Ni foam	1.6	1.96	[1]
Ni_2P-Ni_3S_2 HNAs	Ni foam	1.5	1.62	[2]
V-CoP@a-CeO_2	carbon cloth	1.56	1.71	[3]
Cu-doped Co_9S_8	Ni foam	1.49	/	[4]

Co–Fe oxyphosphide MTs	/	1.63	1.84	[5]
$CoMoS_x$/NF	Ni foam	/	1.74	[6]
NiCoFe-LDH/Ti	Ti mesh	1.51	1.72	[7]
$CoFeN_x$ HNAs/NF	Ni foam	1.592	/	[8]
CoP/NF	Ni foam	1.54	1.85	[9]
$Co(OH)_2$/NiMo CA	carbon cloth	1.52	1.62	[10]
AQS/S	Ni foam	1.43	1.85	[11]
Ru_1/D-NiFe LDH	Ni foam	1.44	1.54	[12]
CoP@FeCoP	carbon paper	1.68	/	[13]
$NiP_2/NiSe_2$	carbon fibers	1.56	1.80	[14]
$CoMoN_x$-500 NSAs	Ni foam	1.55	1.90	[15]

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