Supplementary Information

Efficient bifunctional vanadium doped Ni_3S_2 nanorod array for overall water splitting

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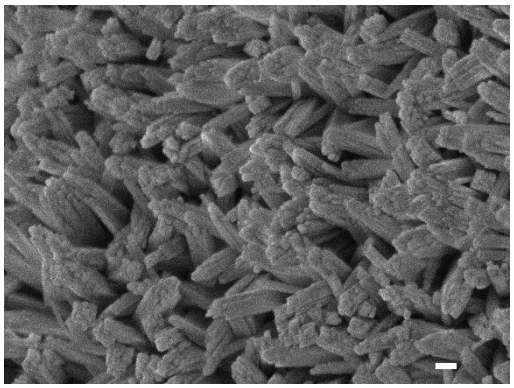

Fig. S1 SEM image of pristine Ni_3S_2/NF, showing morphology of nanorod array. Scale bar: 100 nm.

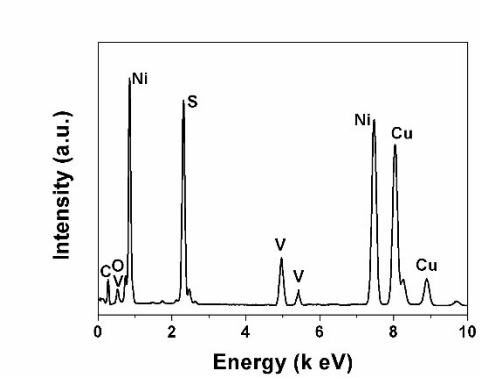

Fig. S2 EDX spectrum of V-Ni_3S_2 nanorod.

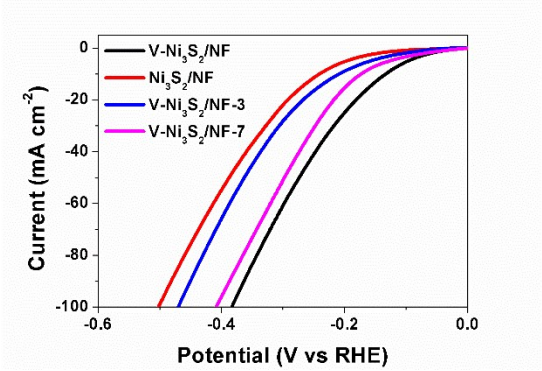

Fig. S3 The HER polarization curves of V-Ni_3S_2/NF, Ni_3S_2/NF, V-Ni_3S_2/NF-3, and V-Ni_3S_2/NF-7 in 1 M KOH.

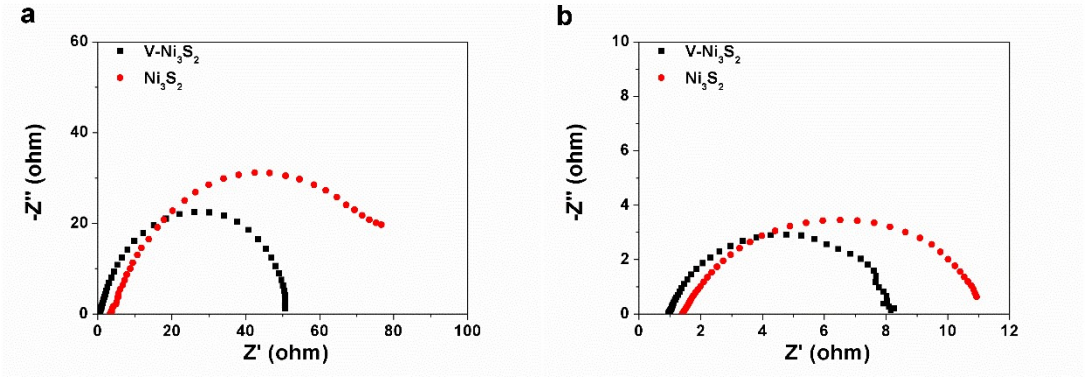

Fig. S4 The Nyquist plots of V-Ni_3S_2 nanorod/NF and Ni_3S_2/NF electrodes obtained at (a) open circuit potential and (b) 40 mV for HER in 1 M KOH.

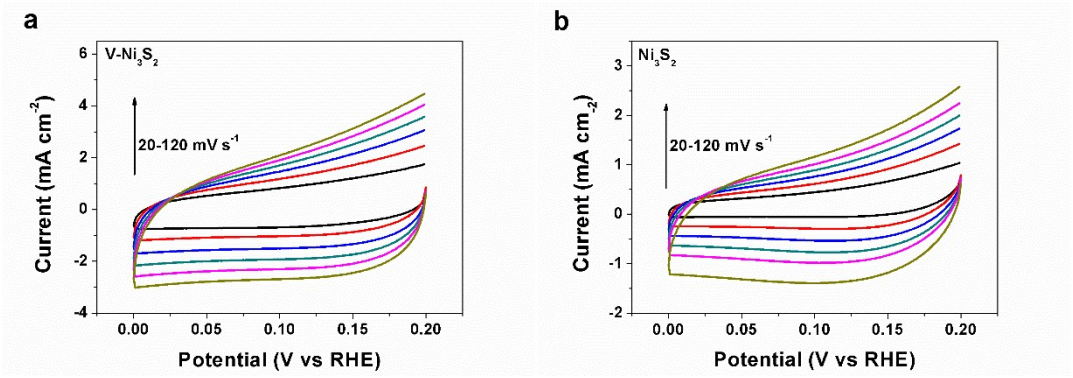

Fig. S5 CV curves of (a) V-Ni_3S_2 nanorod and (b) Ni_3S_2 obtained in 1 M KOH.

Table S1 Electrocatalytic performances of the designed V-Ni_3S_2 nanorod array electrode compared with the reported state-of-the-art bifunctional electrocatalysts for HER, OER, and overall water splitting in alkaline media.

Samples	η_{HER} at 10 mA cm^{-2} (mV)	η_{OER} at 10 mA cm^{-2} (mV)	Cell voltage for overall water splitting at 10 mA cm^{-2} (V)	Ref.
V-Ni_3S_2/NF	133	148	1.421	This work
$(Fe,Co,Ni)_9S_8$-MoS_2 nanotube array	58	184	1.429	[1]
Ni_2P/Ni/NF	98	200	1.49	[2]
MoS_2-Ni_3S_2/NF	98	249	1.5	[3]
$Co_{0.7}Fe_{0.3}P$/CNT	76	243	1.5	[4]
MoS_2/Ni_3S_2@NF	110	218	1.56	[5]
NiCoP/N-rGO	115	310/40	1.57/20	[6]
NiFe LDH@NiCoP/NF	120	220	1.57	[7]
NiCoP/NF	32	280	1.58	[8]
$Ni_{2-x}Co_xP$	138	270	1.59	[9]
Co-Pi/CoP/Ti	68	310	1.6	[10]
$NiCo_2S_4$ nanowire/NF	210	260	1.63	[11]
$(Ni,Co)_{0.85}Se$	169	287/20	1.65	[12]
Cu@CoFe LDH	171	240	1.681	[13]
NiFe LDH	210	240	1.7	[14]
Ni_3S_2 nanosheet	223	260	1.76/13	[15]

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