Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Data

Flower-like CoS_2/MoS_2 Heteronanosheet Array as an Active and Stable Electrocatalyst toward the Hydrogen Evolution Reaction in Alkaline Media

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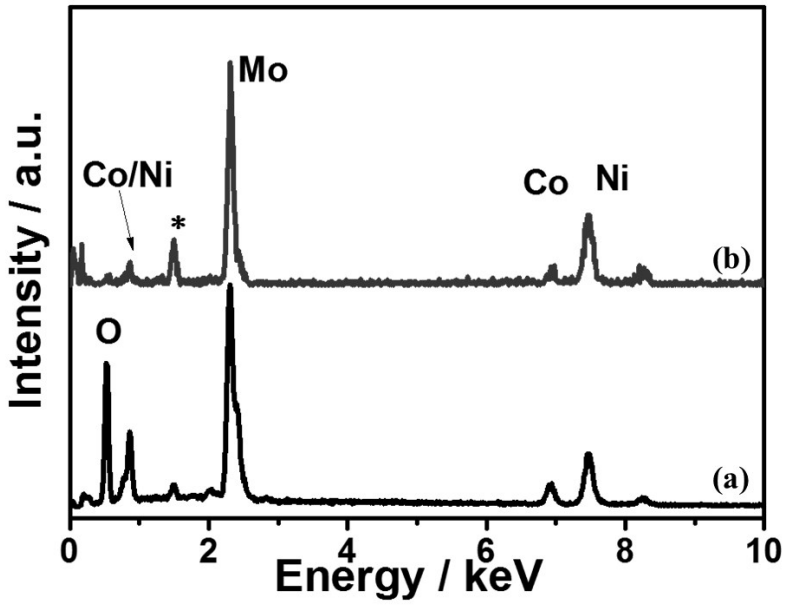

Fig. S1. EDS spectra of (a) $CoMoO_4$ NSAs and (b) CoS_2/MoS_2 HNSAs.

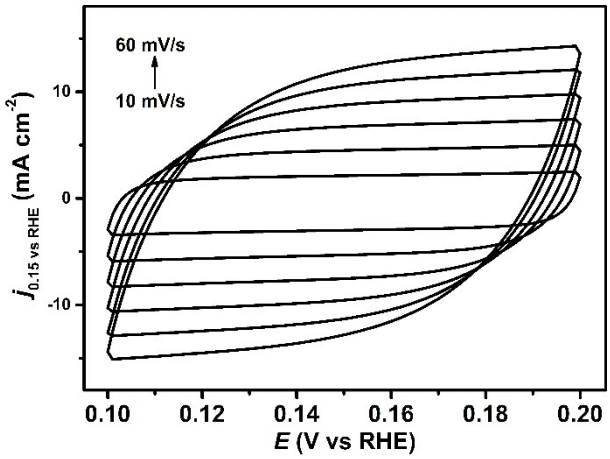

Fig. S2. Cyclic voltammograms (CVs) in the region of 0.1 - 0.2 V (vs. RHE) for 3D flower-like CoS_2/MoS_2 HNSAs.

Table S1. Comparison of HER activity of 3D flower-like CoS_2/MoS_2 HNSAs with recently reported metal sulfide based electrocatalysts. The results with * indicate *iR*-correction.

Electrocatalyst	Electrolyte / 1M	Overpotential η_{10} / mV	Tafel Slope / mV dec^{-1}	Ref.
CoS_2/MoS_2 heteronanosheet arrays	1.0 M KOH	**50**	**76**	**This work**
$Ni_{0.33}Co_{0.67}S_2$ nanowire arrays	1.0 M KOH	88	118	[1]
$NiCo_2S_4$ nanowire Arrays	1.0 M KOH	210	58.9	[2]
Ni-Mo-S nanowire network	1.0 M KOH	210	103	[3]
MoS_2 nanosheet arrays	0.50 M H_2SO_4	200	49	[4]
CoS_2 nanosheet arrays	1.0 M KOH	192	200	[5]
FeS_2 nanoparticles	0.1 M KOH	96*	78	[6]
1T-$MoSe_2$ nanosheets	0.50 M H_2SO_4	152*	52	[7]
Pt-MoS_2 nanosheets	0.1 M H_2SO_4	60	96	[8]
Pt-MoS_2 nanoparticles	0.50 M H_2SO_4	58	38	[9]
Rh-MoS_2 nanosheets	0.50 M H_2SO_4	47	24	[10]
Ni_3S_2 nanorod arrays	1.0 M KOH	200	107	[11]
Ni_3S_2 nanosheet arrays	1.0 M KOH	223	-	[12]
CoS_2/MoS_2 nanosheets	0.50 M H_2SO_4	154*	61	[13]
MoS_2/CoS_2 nanowire array	1.0 M KOH	87	73.4	[14]
NiS_2/CoS_2/C carnation-like nanosheets	1.0 M KOH	165	72	[15]
Co_9S_8/MoS_2 core/shell nanocrystals	0.50 M H_2SO_4	97	71	[16]
Co_9S_8@MoS_2 nanoparticles	0.50 M H_2SO_4	190*	110	[17]
MoS_2/NiS/MoO_3 nanowire arrays	1.0 M KOH	90*	54.5	[18]

NiS_2/MoS_2 nanowires	1.0 M KOH	204*	65	[19]
MoS_2/Ni_3S_2 nanorod arrays	1.0 M KOH	98*	61	[20]
CoS_2@MoS_2/rGO composites	0.50 M H_2SO_4	98*	37.4	[21]
MoS_2/Ni_3S_2 nanosheets/particles	1.0 M KOH	110*	88	[22]
oxygenated-CoS_2/MoS_2 nanosheet arrays	1.0 M KOH	97*	70	[23]
CoS_2/MoS_2 nanowire arrays	1.0 M KOH	97	78.7	[24]
CoS_2-C@MoS_2 nanofibers	0.50 M H_2SO_4	173*	61	[25]

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