Supporting Information

Electrodeposition of $Ni_3Se_2/MoSe_x$ as a bifunctional electrocatalyst towards highly-efficient overall water splitting

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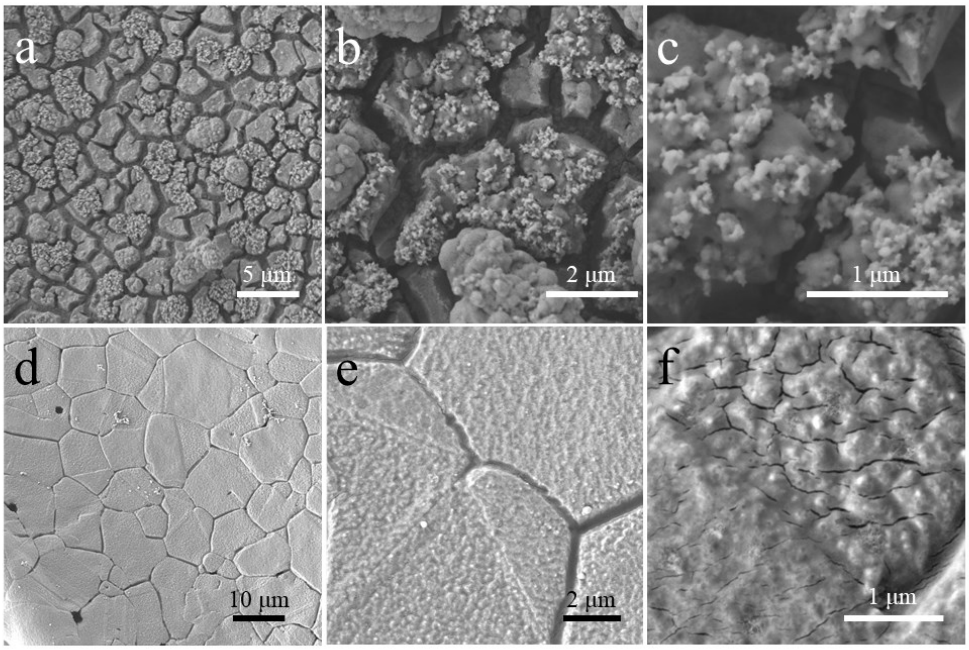

Fig. S1. SEM images of Ni_3Se_2(a-c) and $MoSe_x$ (d-f).

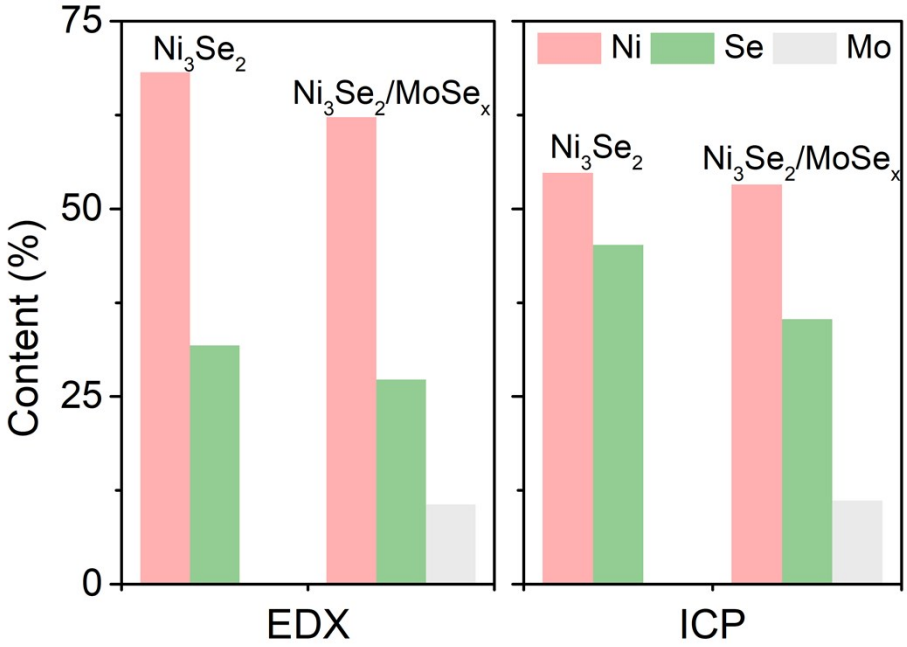

Fig. S2. EDX and ICP results of Ni_3Se_2 and $Ni_3Se_2/MoSe_x$.

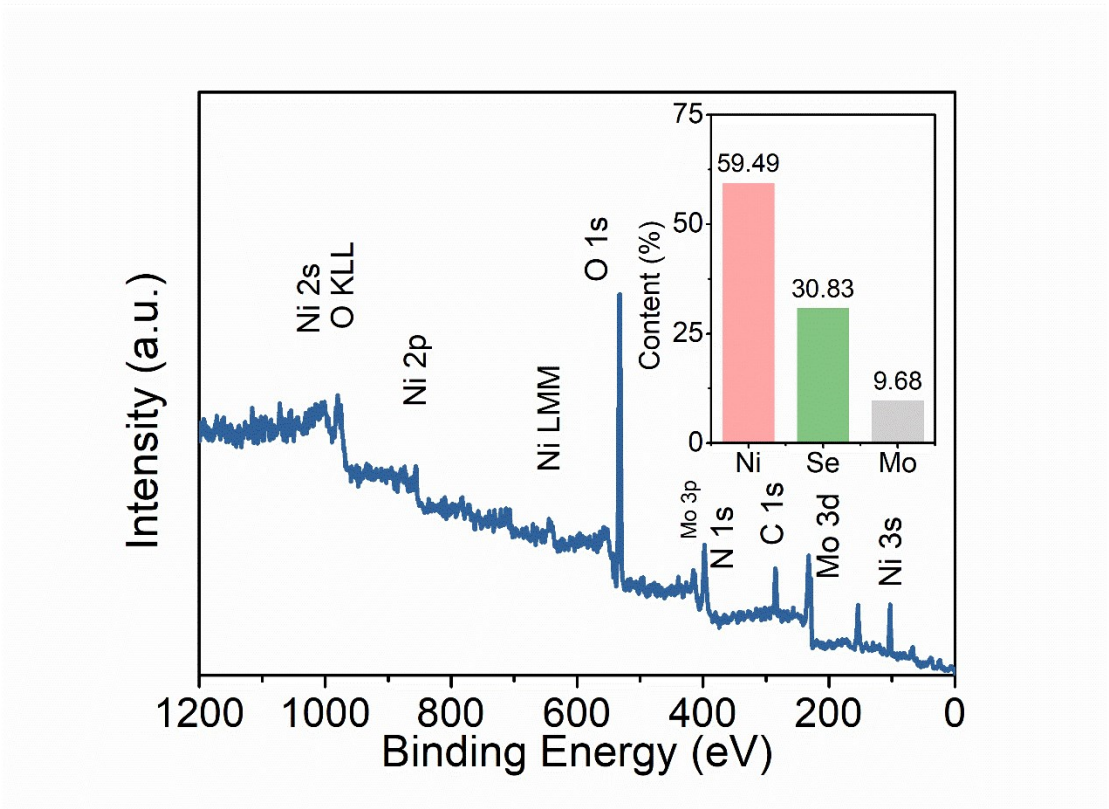

Fig. S3. XPS survey spectrum of $Ni_3Se_2/MoSe_x$. The inset shows the determined Ni, Mo and Se content in Ni3Se2/MoSe.

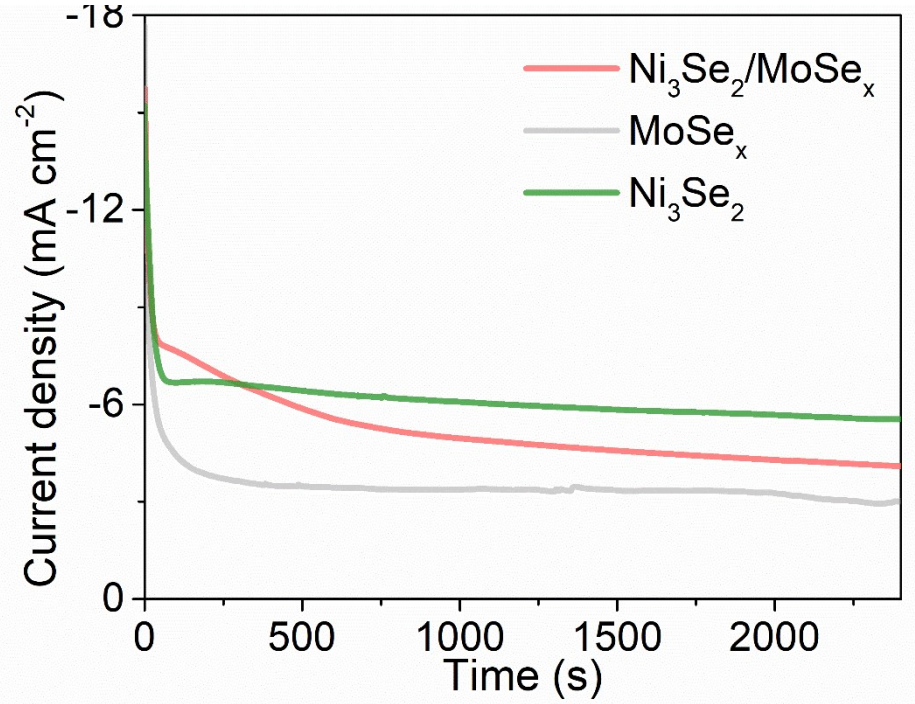

Fig. S4. CTTs curves of Ni_3Se_2, $MoSe_x$ and $Ni_3Se_2/MoSe_x$ at -0.8V versus Ag/AgCl.

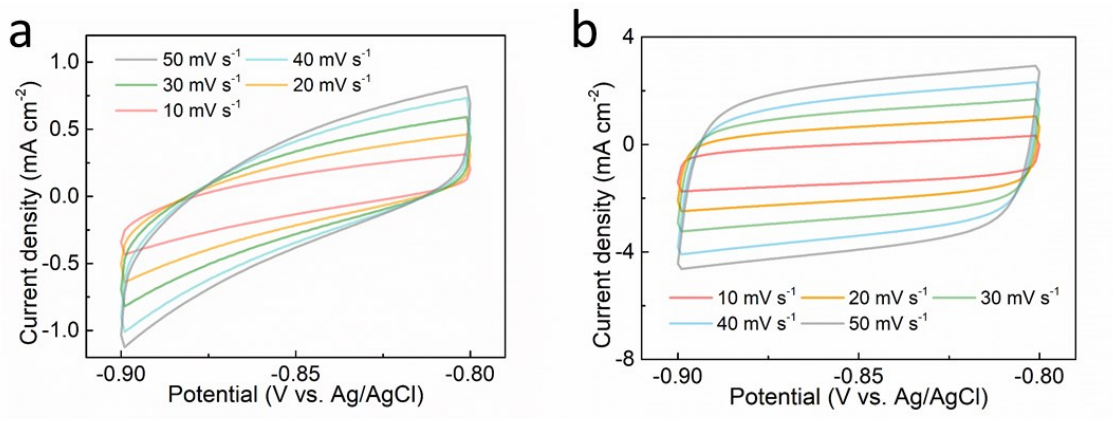

Fig. S5. The cyclic voltammetry (CV) curves of Ni_3Se_2 and $Ni_3Se_2/MoSe_x$ in the range of -0.8 and -0.9 V (vs. Ag/AgCl) at different scan rates.

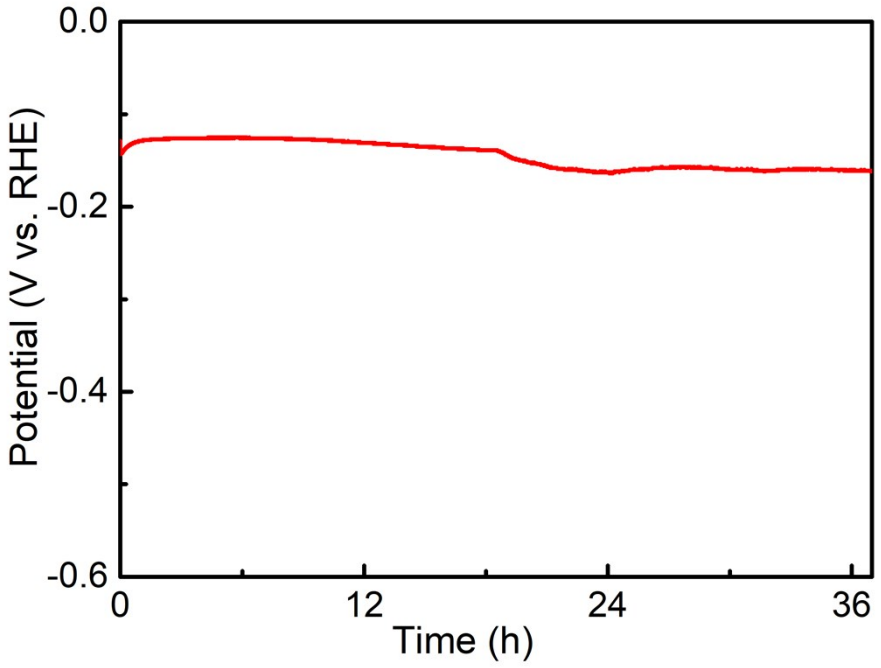

Fig. S6. The Chronopotentiometry measurement (potential vs time) of $Ni_3Se_2/MoSe_x$ at -10 mA cm^{-2}.

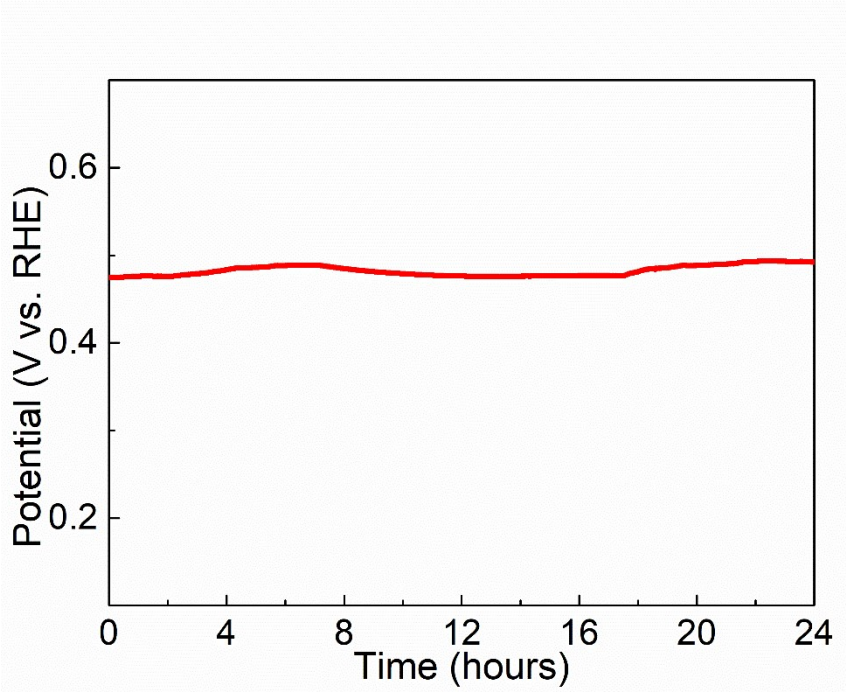

Fig. S7. The Chronopotentiometry measurement (potential vs time) of $Ni_3Se_2/MoSe_x$ at 10 mA cm^{-2}.

Table S1. The HER activities of Ni-/Mo-involved electrocatalysts.

Electrocatalyst	Overpotential (mV) at 10 mA/cm^2	Tafel slope (mV/dec)	Electrolyte	References
$Ni_3Se_2/MoSe_x$	**82**	**86.6**	**1.0 M KOH**	**Present work**
Co–MoS_2/rGO[1]	147	49.5	1.0 M KOH	Ref. 1
$ZnMoO_4$/3D-AWC[2]	124	54	1.0 M KOH	Ref. 2
Ni_5P_4-Ru[3]	123	56.7	1.0 M KOH	Ref. 3
$NiFeO_x$/CFP[4]	88	150.2	1.0 M KOH	Ref. 4
Mo_xC-Ni@NCV[5]	126	93	1.0 M KOH	Ref. 5
NiSe[6]	96	120	1.0 M KOH	Ref. 6
NiMoN[7]	109	95	1.0 M KOH	Ref. 7
NiSe[8]	177	58.2	1.0 M KOH	Ref. 8
Ag_2S/MoS_2/RGO[9]	190	56	1.0 M KOH	Ref. 9
$Co(OH)_2$@Ni[10]	96	104.2	1.0 M KOH	Ref. 10

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