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Supporting Information for:

Aluminum Decoration on MoS_2 Ultrathin Nanosheets for Highly Efficient Hydrogen Evolution

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Number of Tables: 4

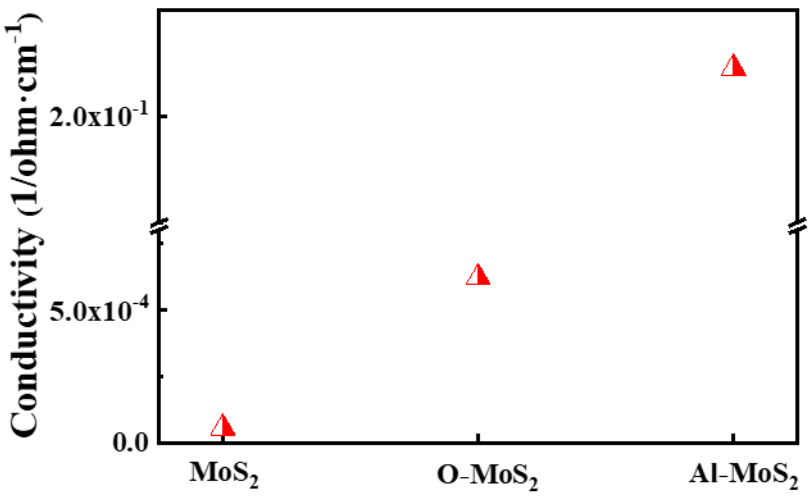

Figure S1: Hall conductivity of MoS_2, O-MoS_2 and Al-MoS_2.

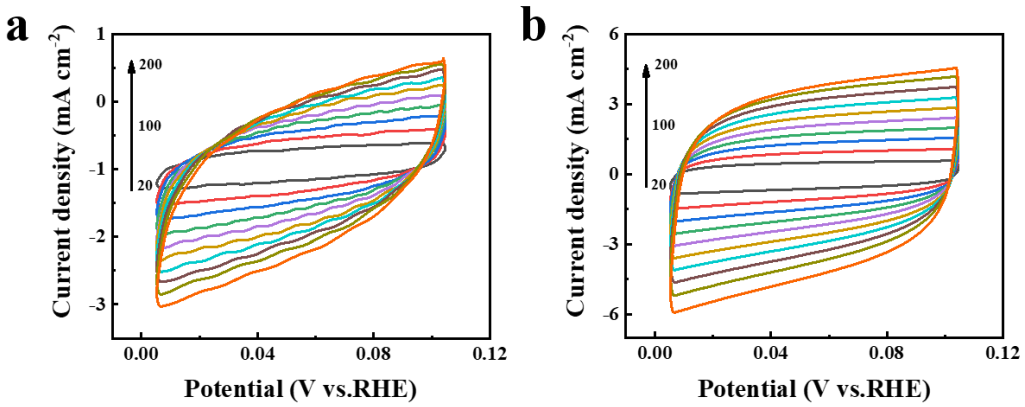

Figure S2: Cyclic Voltammetry curves for (a) O-MoS_2 and (b) Al-MoS_2 at different scan rates (20, 40, 60, 80, 100, 120, 140, 160, 180, 200 mV s^{-1}) in 0.5 M H_2SO_4.

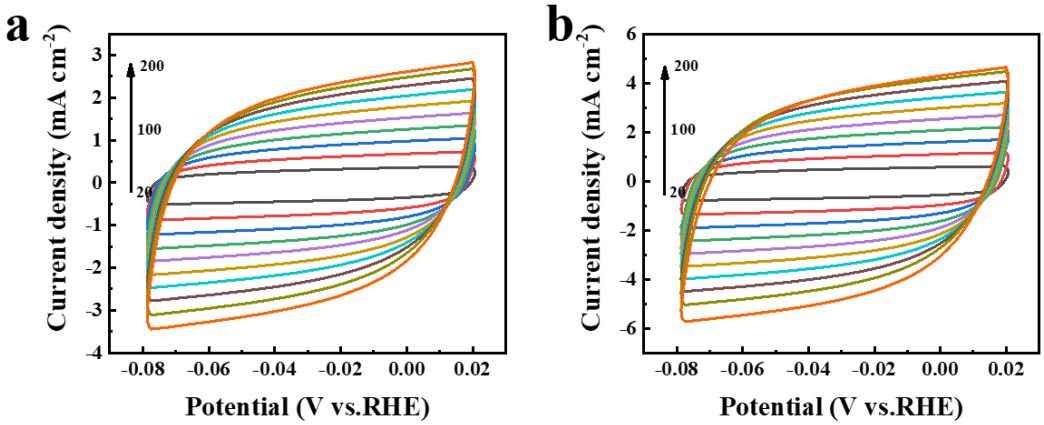

Figure S3: Cyclic Voltammetry curves for (a) O-MoS_2 and (b) Al-MoS_2 at different scan rates (20, 40, 60, 80, 100, 120, 140, 160, 180, 200 mV s^{-1}) in 1 M KOH.

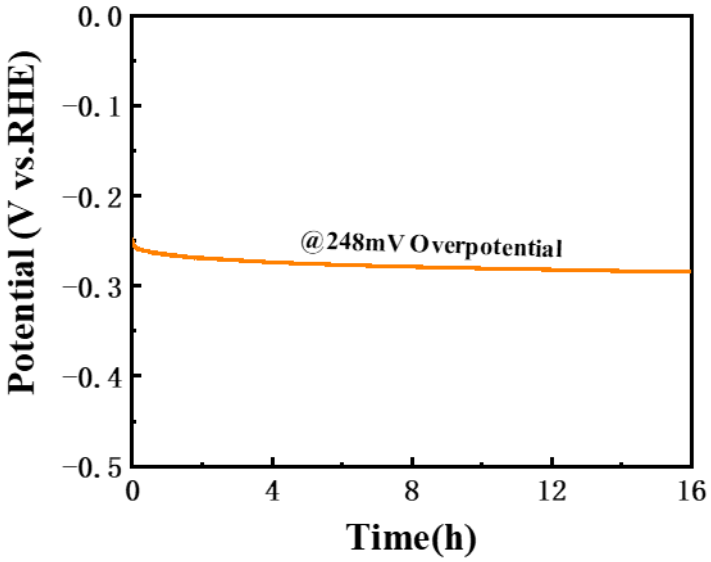

Figure S4: Chronoamperometric curve of Al-MoS_2 at an overpotential of 248 mV for 16 h in 0.5 M H_2SO_4 solution.

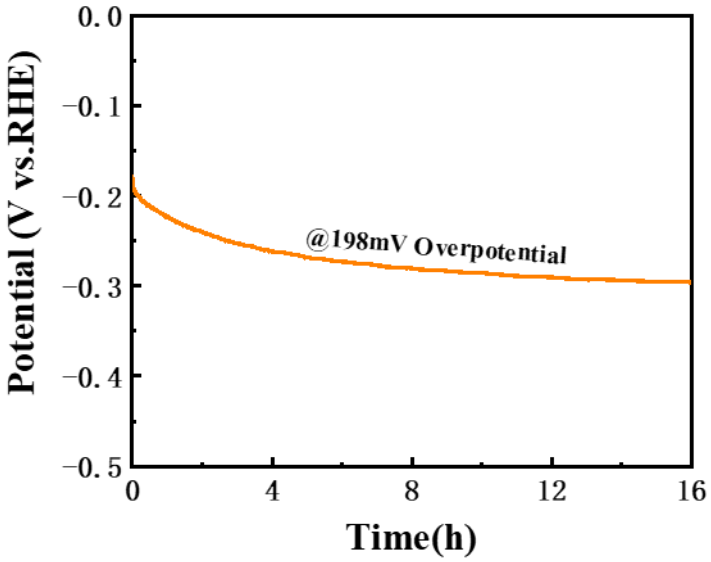

Figure S5: Chronoamperometric curve of Al-MoS_2 at an overpotential of 198 mV for 16 h in 1 M KOH solution.

Table S1. Nyquist plot fitted data (0.5 M H_2SO_4):

Catalyst	R_s (Ω)	R_{ct} (Ω)
Al-MoS_2	7.4	46.2
O-MoS_2	7.1	249.6

Table S2. Calculated double layer capacitance (C_{dl}), electrochemically active Surface area (ECSA) values in 0.5 M H_2SO_4 solution:

Catalyst	C_{dl} (mF cm^{-2})	ECSA (cm^2)
Al-MoS_2	19.11	546
O-MoS_2	5.12	146.6

Table S3.Nyquist plot fitted data (1 M KOH):

Catalyst	R_s (Ω)	R_{ct} (Ω)
Al-MoS_2	10.9	44.2
O-MoS_2	12.2	130.9

Table S4. Calculated double layer capacitance (C_{dl}), electrochemically active Surface area (ECSA) values in 1 M KOH solution:

Catalyst	C_{dl} (mF cm^{-2})	ECSA (cm^2)
Al-MoS_2	20.02	500.5
O-MoS_2	11.95	298.8