

Supporting Information

In-situ surface-derivation of AgPdMo/MoS₂ nanowires for synergistic hydrogen evolution catalysis in alkaline solution

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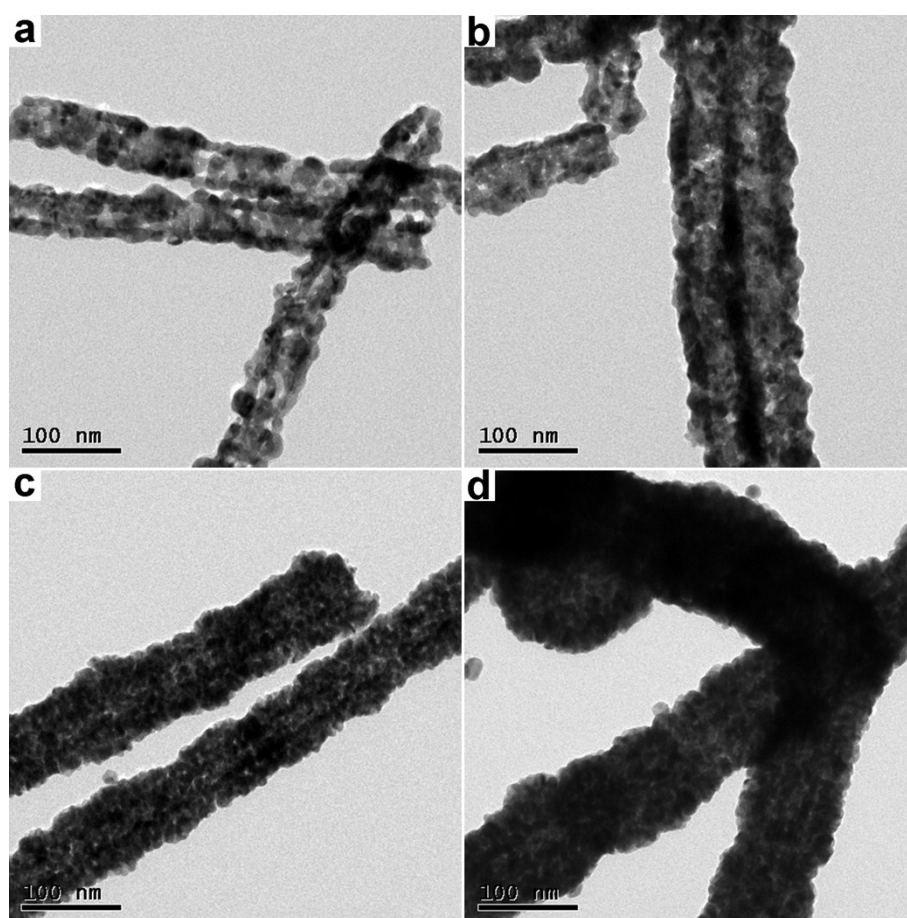


Fig. S1 Additional TEM images of (a) AgPdMo NWs-1, (b) AgPdMo NWs-2, (c) AgPdMo NWs-4, (d) AgPdMo NWs-5.

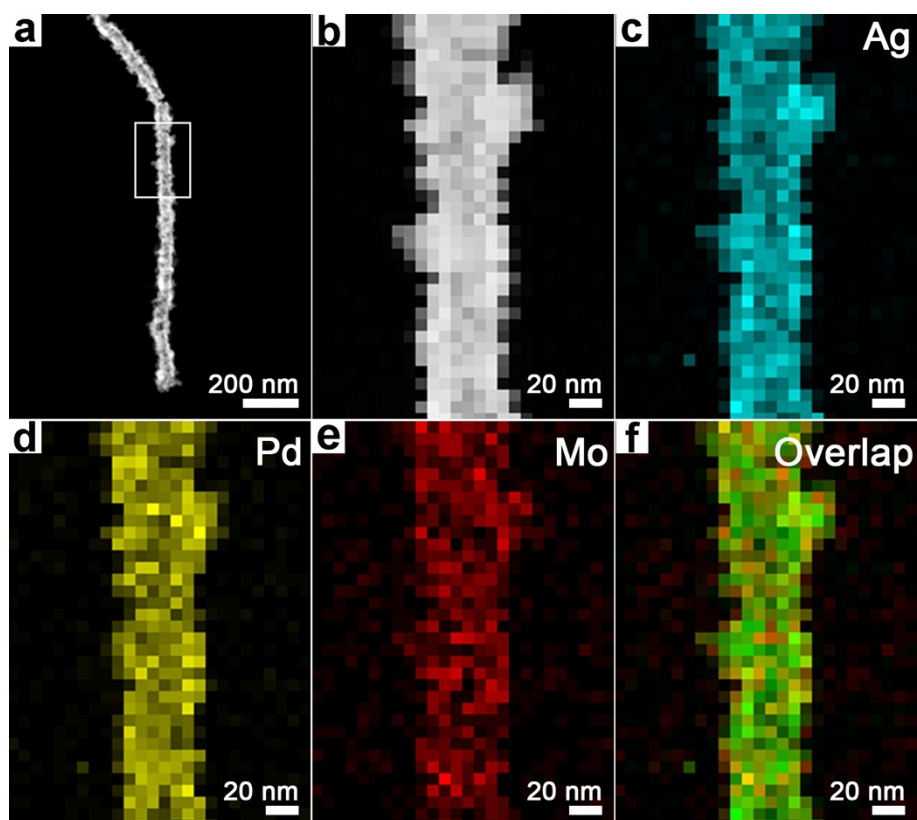


Fig. S2 (a,b) HAADF-STEM and (c-f) EDX elemental mapping images of AgPdMo NWs.

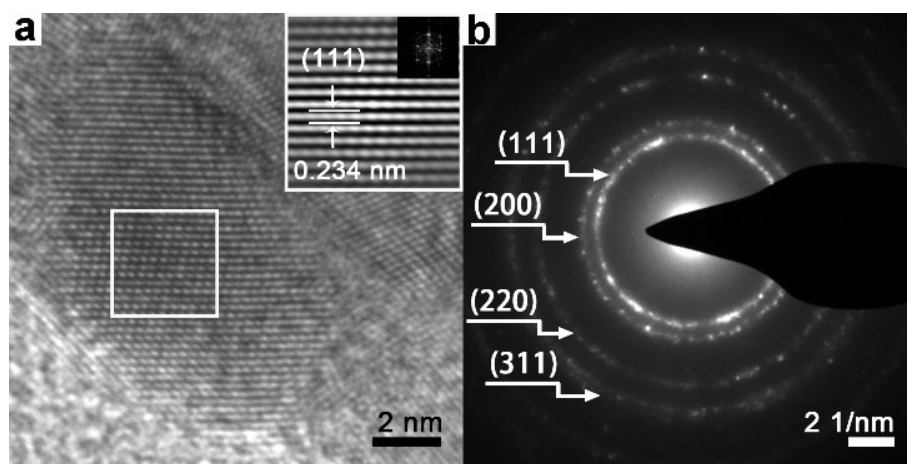


Fig. S3 (a) HRTEM image of AgPdMo NWs, the inset in (a) is the corresponding FFT pattern image of AgPdMo NWs, (b) SAED pattern image of AgPdMo NWs.

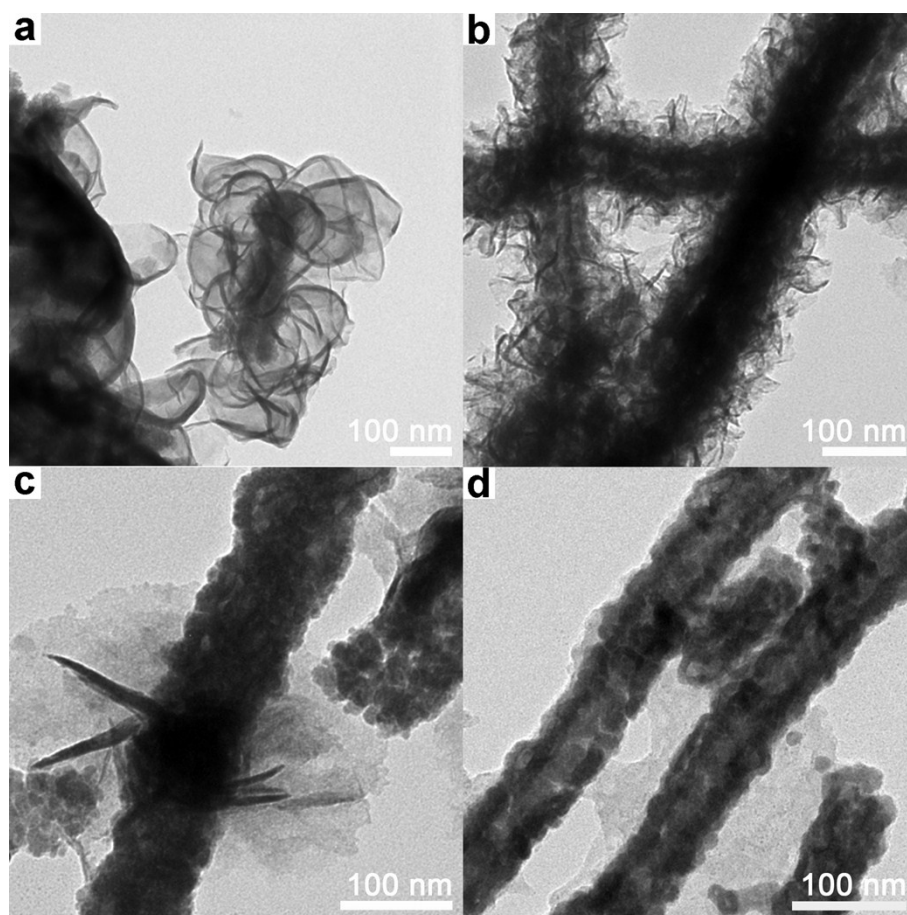


Fig. S4 TEM images of (a) AgPdMo/MoS₂ NWs-1, (b) AgPdMo/MoS₂ NWs-2, (c) AgPdMo/MoS₂ NWs-4, (d) AgPdMo/MoS₂ NWs-5.

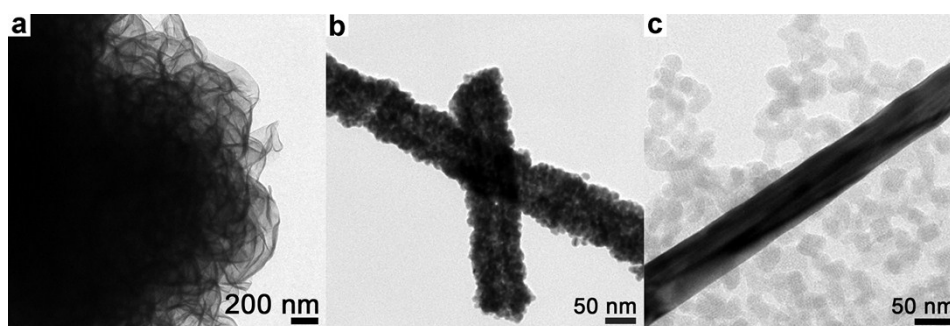


Fig. S5 TEM images of (a) MoS₂ NSs, (b) AgPd NWs and (c) AgMo NWs.

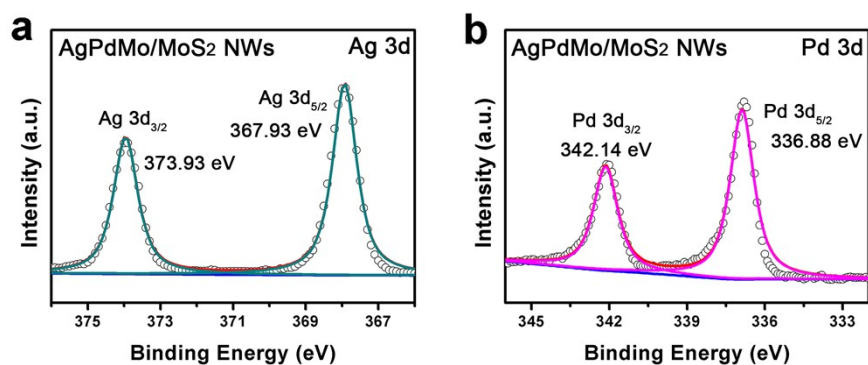


Fig. S6 XPS spectrum for (a) Ag 3d, (b) Pd 3d of AgPdMo/MoS₂ NWs.

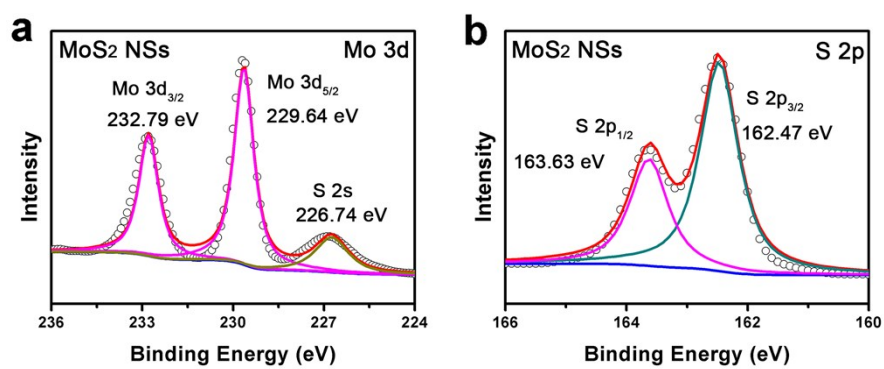


Fig. S7 XPS spectrum for (a) Mo 3d and (b) S 2p of pure MoS₂ NSs.

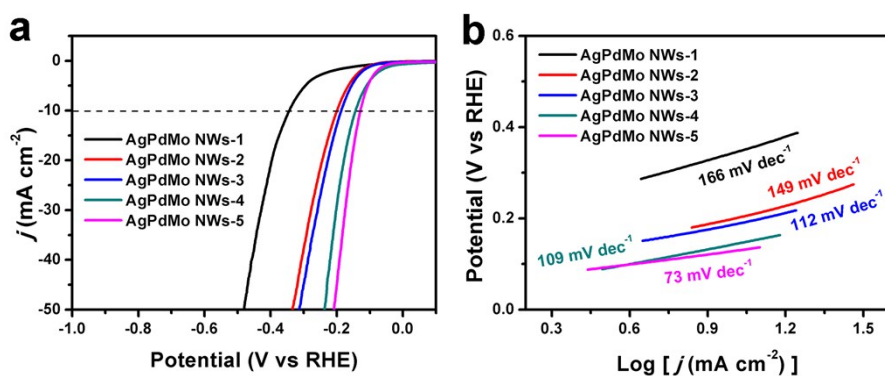


Fig. S8 Polarization curves and Tafel plots of AgPdMo NWs-1, AgPdMo NWs-2, AgPdMo NWs-3, AgPdMo NWs-4, and AgPdMo NWs-5.

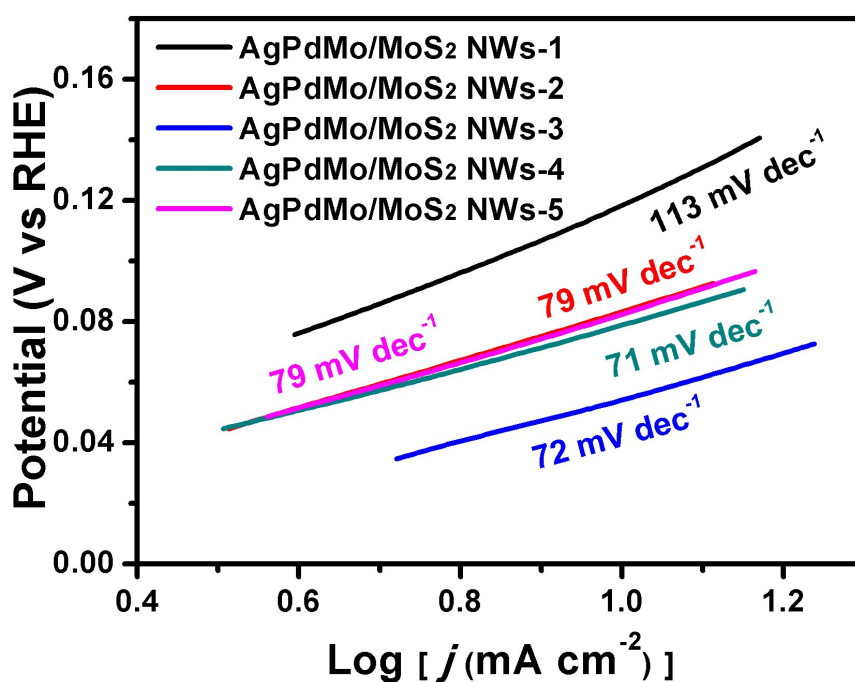


Fig. S9 Tafel plots of AgPdMo/MoS₂ NWs-1, AgPdMo/MoS₂ NWs-2, AgPdMo/MoS₂ NWs-3, AgPdMo/MoS₂ NWs-4, and AgPdMo/MoS₂ NWs-5.

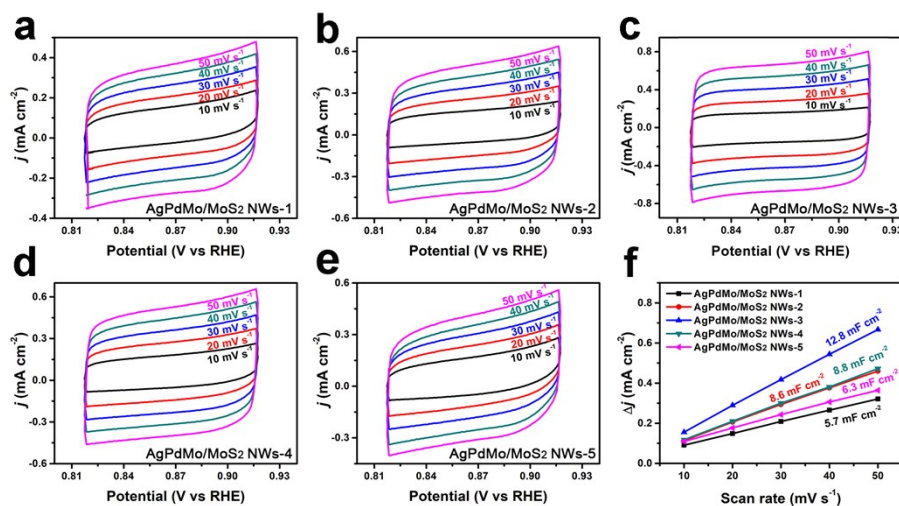


Fig. S10 CV curves of (a-f) AgPdMo/MoS₂ NWs-x (x= 1, 2,3, 4, and 5) with different scan rates

from 10 to 50 mV s⁻¹. (f) Current density differences plots at 0.8674 V against scan rate in a non-Faradaic range for AgPdMo/MoS₂ NWs-x (x= 1, 2,3, 4, and 5).

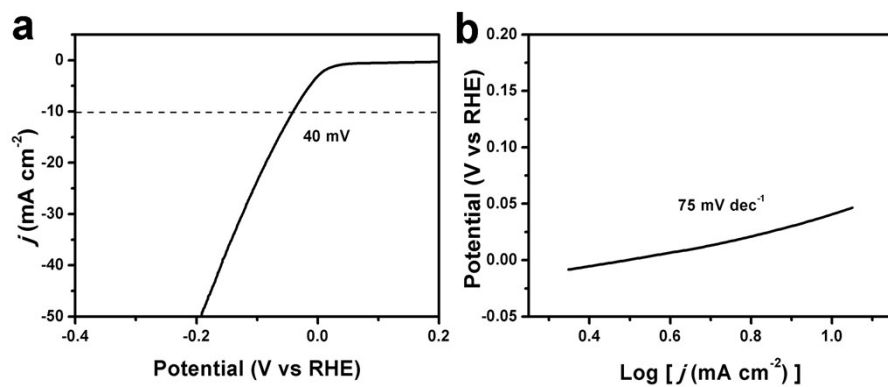


Fig. S11 (a) Polarization curves, (b) Tafel plots of Pt/C (20%).

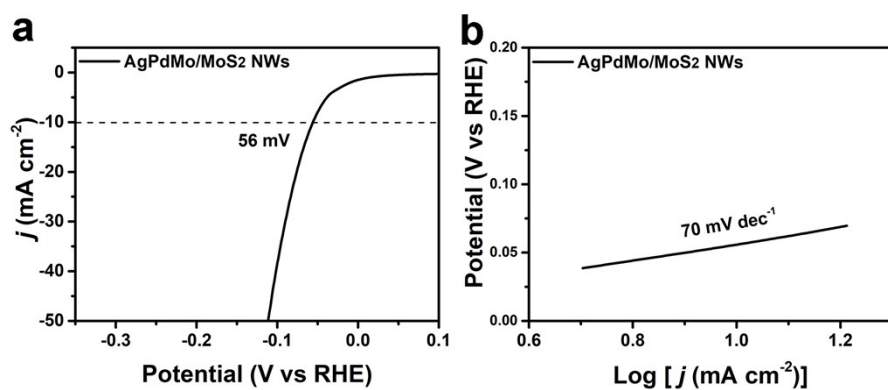


Fig. S12 (a) Polarization curve, (b) Tafel plots of AgPdMo/MoS₂ NWs at the scan rate of 5 mV s⁻¹.

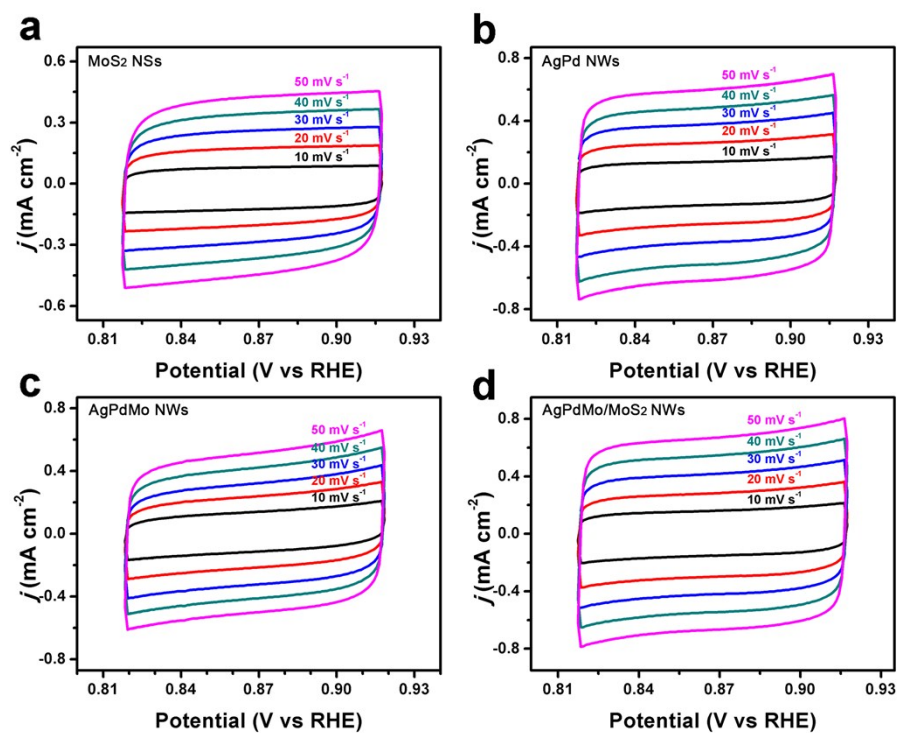


Fig. S13 CV curves of (a) MoS₂ NSs, (b) AgPd NWs, (c) AgPdMo NWs, and (d) AgPdMo/MoS₂ NWs with different scan rates from 10 to 50 mV s⁻¹.

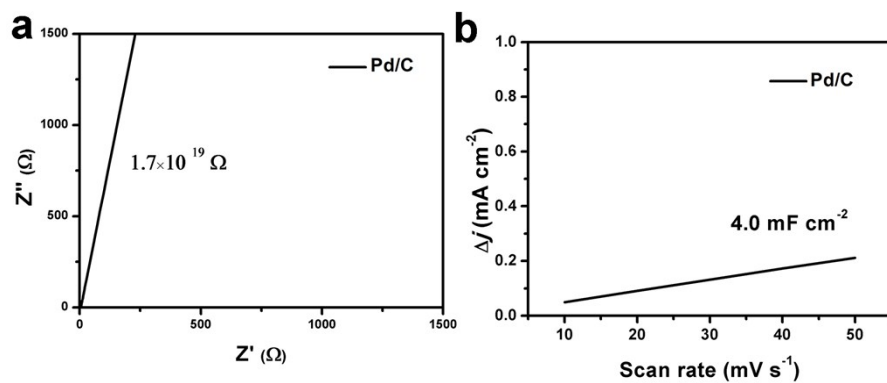


Fig. S14 (a) Electrochemical impedance spectroscopy (EIS) Nyquist plots, (b) current density differences plots against scan rate in a non-Faradaic range of Pd/C (10%).

Table S1. ICP-MS of AgPdMo NWs-x (x=1, 2, 3, 4, and 5) with different ratio of Pd and Mo

Sample	Ag (Wt %)	Pd (Wt %)	Mo (Wt%)
AgPdMo NWs-1	6.02	43.71	50.27
AgPdMo NWs-2	3.56	81.68	14.76
AgPdMo NWs-3	2.80	85.80	11.40
AgPdMo NWs-4	2.91	90.53	6.56
AgPdMo NWs-5	2.46	92.07	5.47

Table S2. SEM-EDS of AgPdMo/MoS₂ NWs-x (x=1, 2, 3, 4, and 5) with different ratio of Pd and Mo

Sample	Ag (At %)	Pd (At %)	Mo (At%)	S (At%)
AgPdMo/MoS ₂ NWs-1	14.02	31.50	15.63	38.86
AgPdMo/MoS ₂ NWs -2	14.20	34.44	13.96	37.40
AgPdMo/MoS ₂ NWs -3	24.01	39.18	10.48	26.33
AgPdMo/MoS ₂ NWs -4	22.71	40.50	12.39	24.39
AgPdMo/MoS ₂ NWs -5	22.51	41.72	17.49	18.28