An investigation on WO_3/MoO_{3-x} heterojunction photocatalyst for excellent photocatalytic performance and enhanced molecular oxygen activation ability

Yuxuan Shao,[a] Dan You,[a*] Yuqi Wan,[a,b] Qingrong Cheng,[a*] and Zhiquan Pan[a]

[a] Engineering Research Center of Phosphorous Development and Utilization of Ministry of Education, Wuhan Institute of Technology, Wuhan, 430205, PR China.

[b] The Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, 999077, PR China.

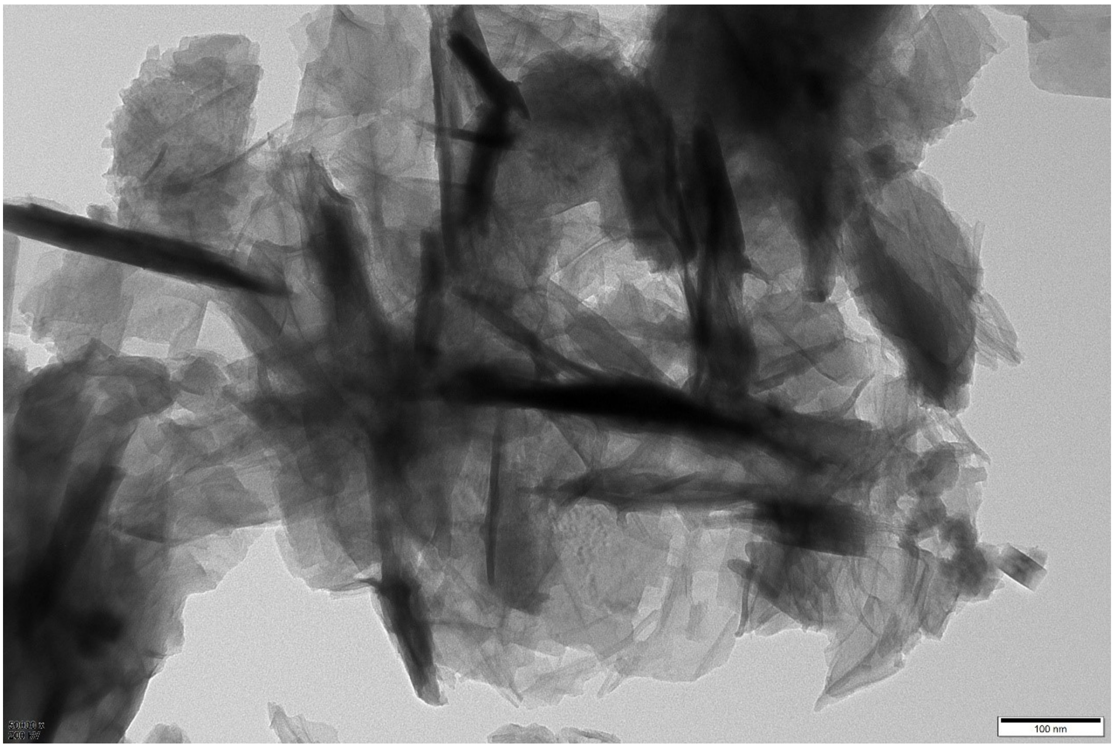
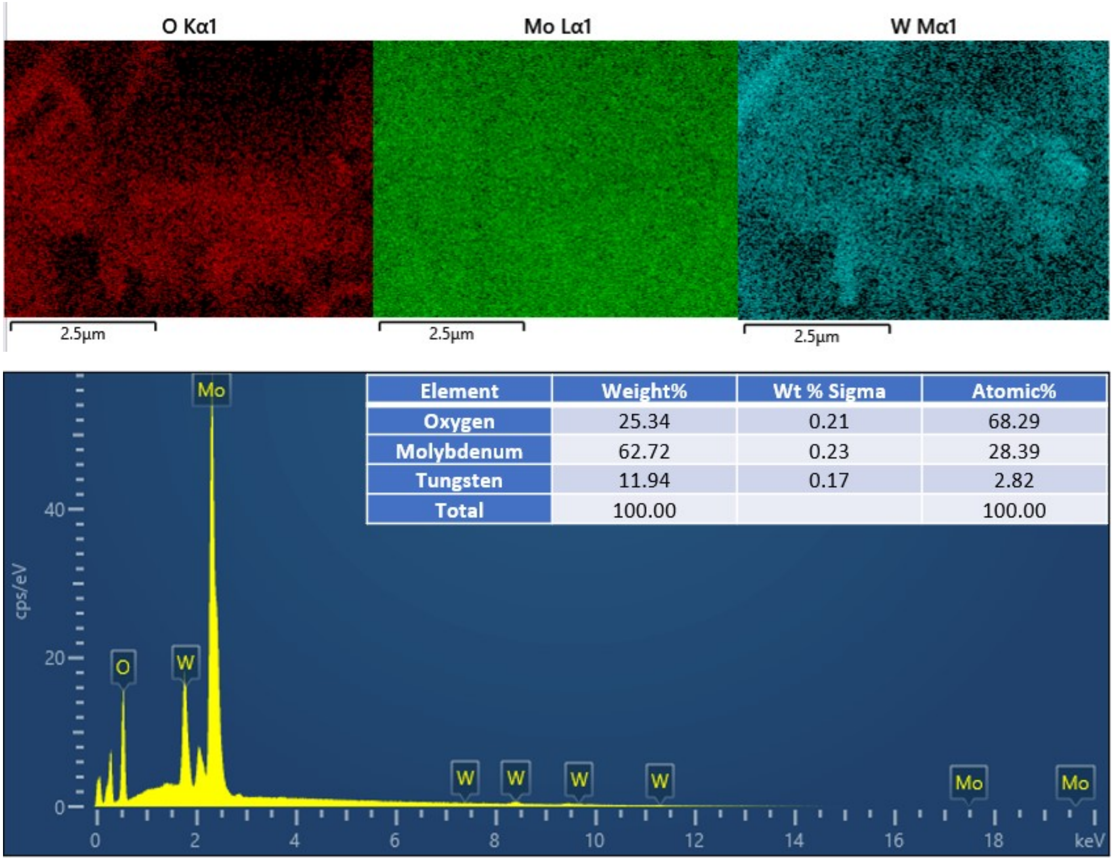


Fig.S1 The TEM image of $WOM_{83\%}$.



Element	Weight%	Wt % Sigma	Atomic%
Oxygen	25.34	0.21	68.29
Molybdenum	62.72	0.23	28.39
Tungsten	11.94	0.17	2.82
Total	100.00		100.00

Fig.S2 O, Mo and W SEM EDX mapping of $WOM_{83\%}$.

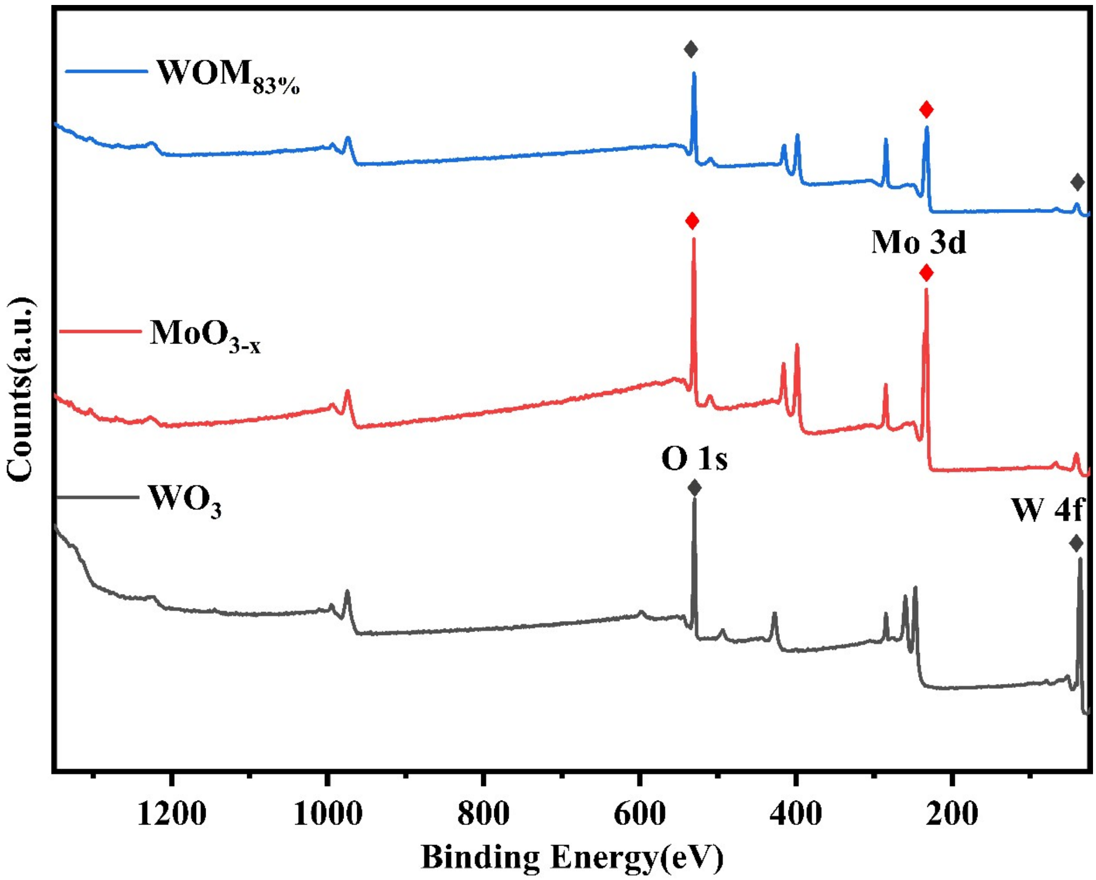


Fig. S3 XPS spectra of WO_3, MoO_{3-x} and $WOM_{83\%}$.

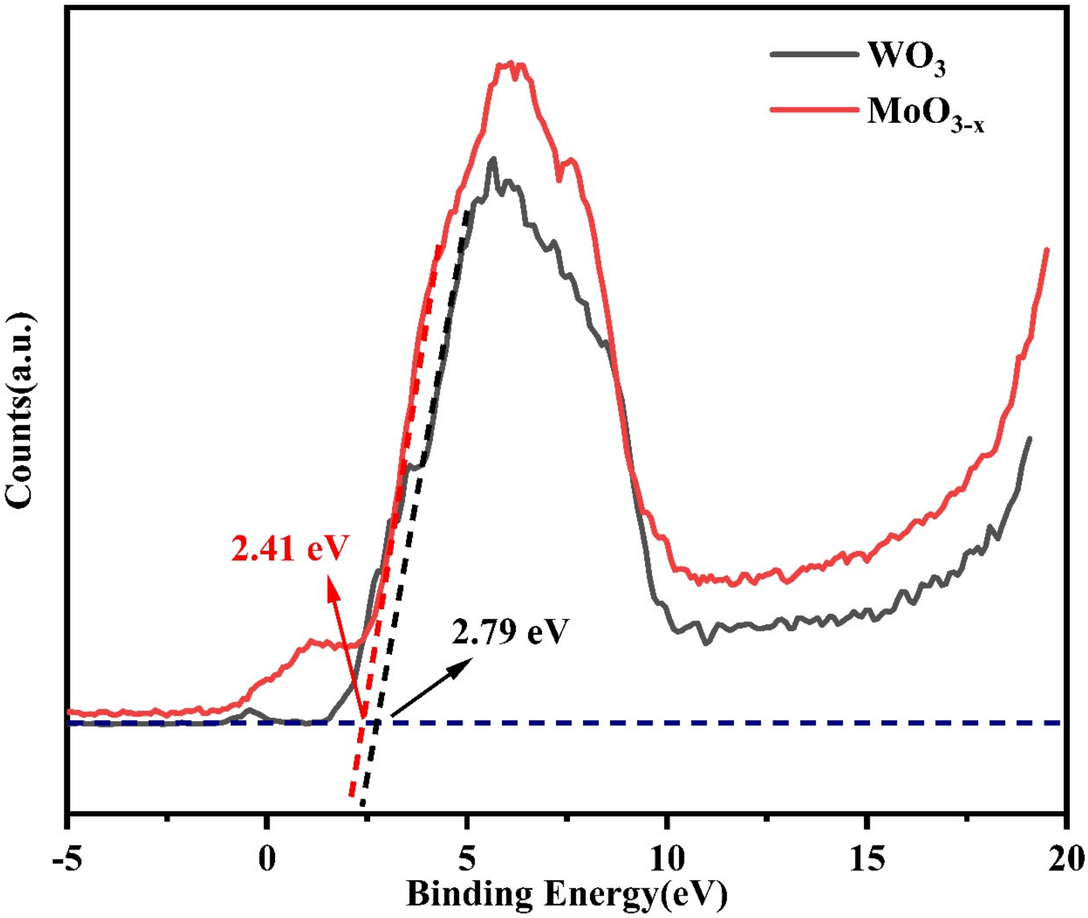


Fig.S4 VB-XPS spectra of WO_3 and MoO_{3-x}.

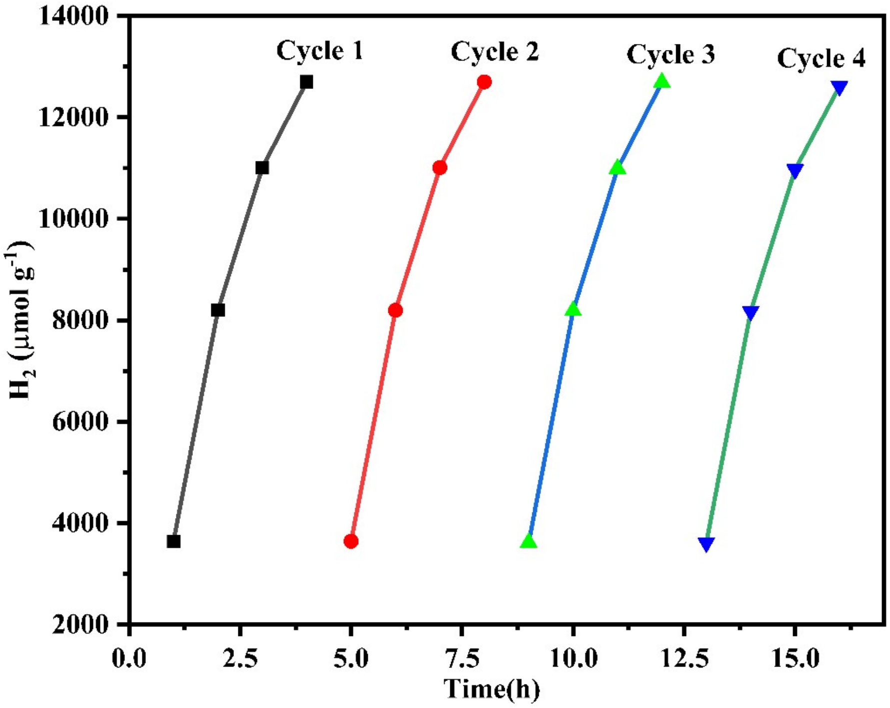


Fig. S5 Photocatalytic H_2 production activity over $WOM_{83\%}$ for 4 consecutive cycles in every 4h time interval.

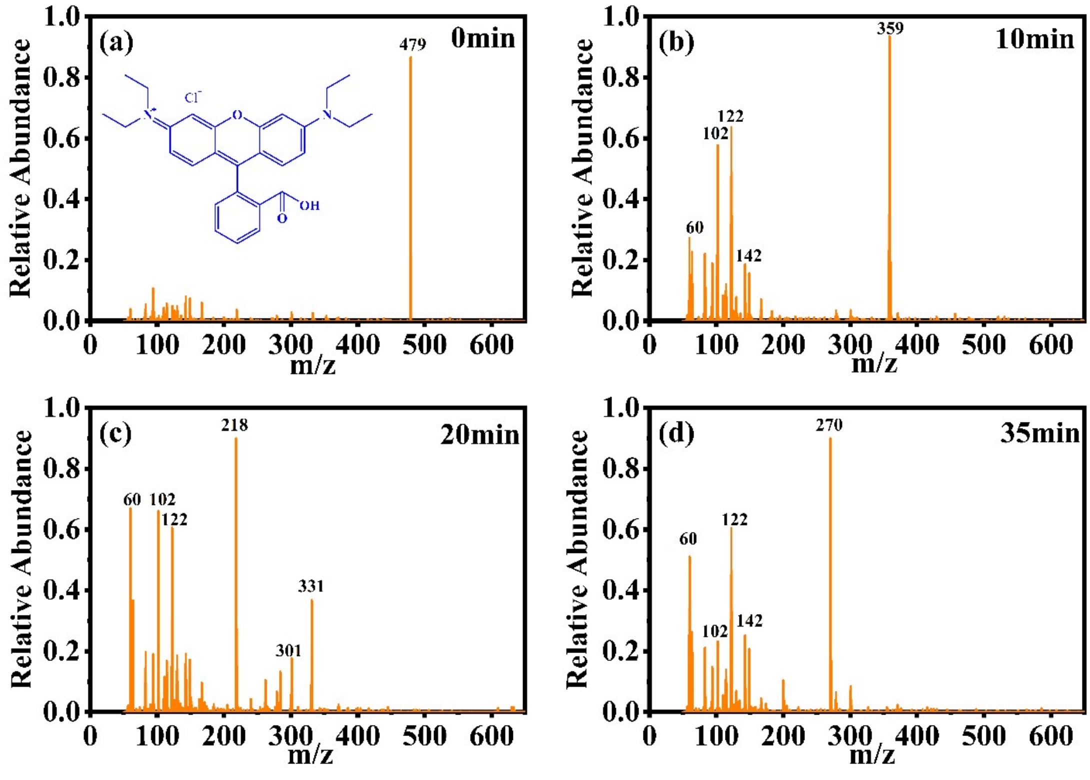


Fig.S6 Variations in the relative intensity of intermediate products of RhB with different reaction time, as obtained in the LC-MS spectra.

Table.S1 Comparison of WO_3 based heterojunction for photocatalytic RhB degradation.

Catalyst / mg	***V (mL) / C_{-30} ($mg \cdot L^{-1}$)***	***Light source***	***Time (min)***	***Result (%)***	***TOF***	***Ref***
WO_3/MoO_{3-x}/10	50/30	Sun light	40	98%	3.675	This work
WO_3 /g-C_3N_4/100	100/10	Sun light	50	95.5%	0.191	[1]
WO_3/ UiO-66 /30	100/20	Sun light	100	96.6%	0.644	[2]
AC/WO_3/10	100/10	Sun light	120	70%	0.583	[3]
WO_3/Bi_5O_7I/10	50/10	Sun light	80	99.6%	0.6225	[4]
MWCNT/WO_3/10	50/5	Sun light	150	92%	0.153	[5]

$$TOF = \frac{C_{-30} \times V_{RhB} \times Degradation\ rate}{m_{photocatalyst} \times t}$$

Table.S2 Comparison of WO_3 Based heterojunction for photocatalytic H_2 evolution.

Photocatalysts/mg	***Light source***	***H_2 generation rate $\mu mol \cdot g^{-1} h^{-1}$***	***Ref***
WO_3/MoO_{3-x}/30	Sun light	4214.2	This work
WO_3/rGO/Pt/50	Sun light	825.8	[6]
Au/WO_3/100	Sun light	472.71	[7]

References

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