

Determination of Glucose by Using MoS₂ Nanosheets as Peroxidase Mimetic Enzyme

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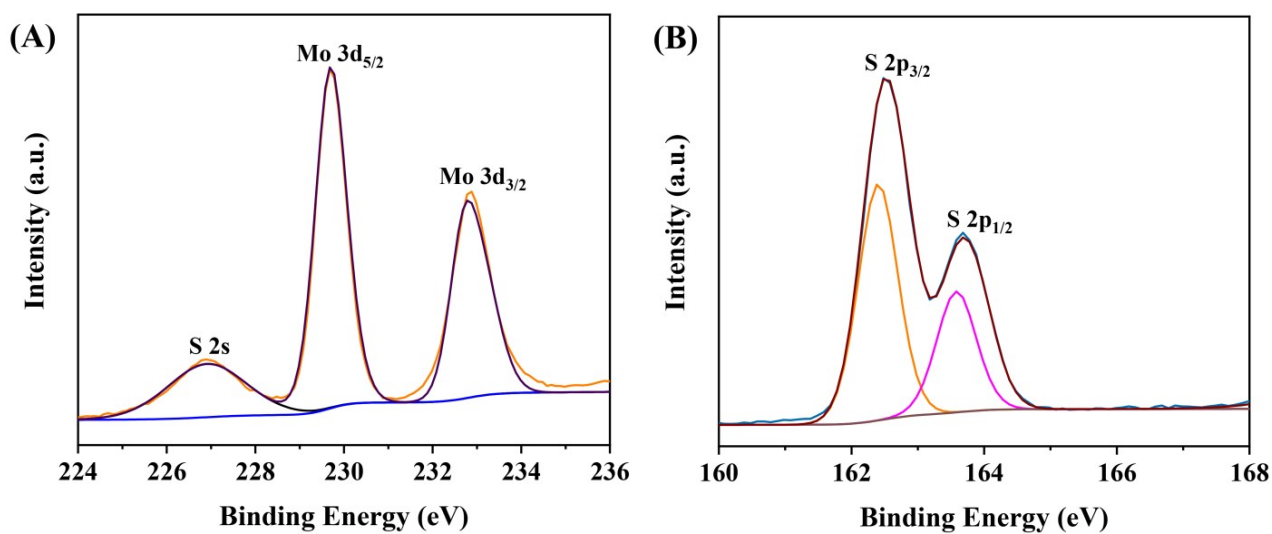


Fig.S1 (A) High resolution XPS spectra of Mo 3d; (B) High resolution XPS spectra of S 2p

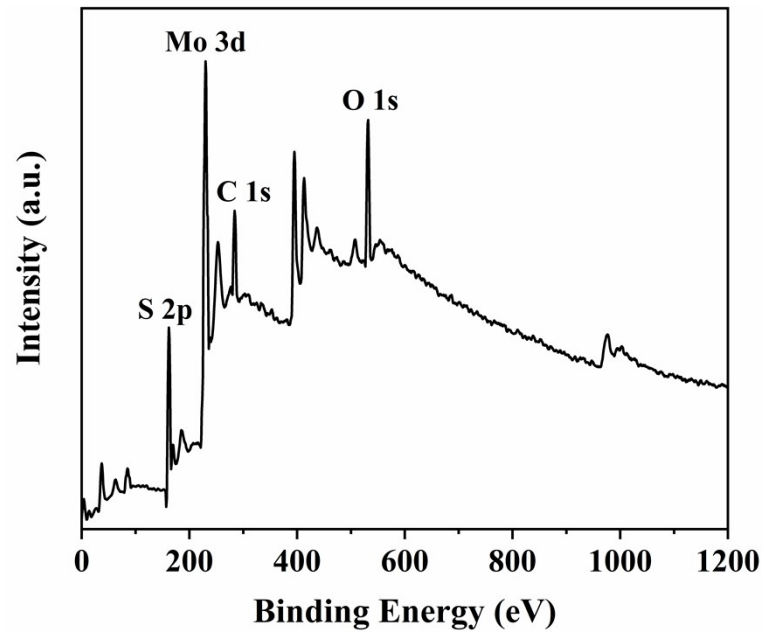


Fig.S2 XPS survey spectrum of MoS₂ NS after the catalytic effect on TMB

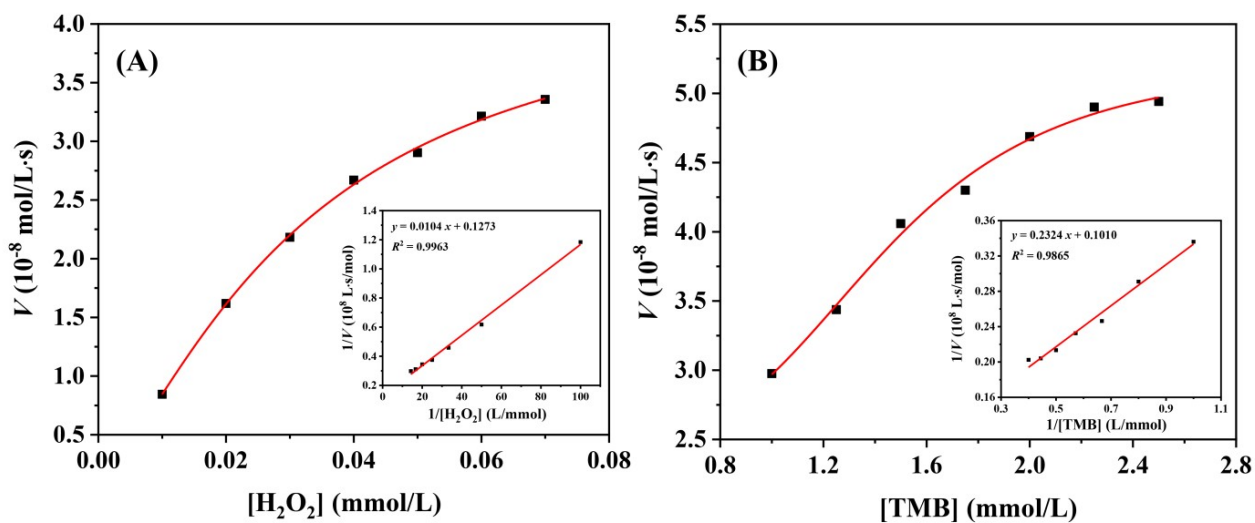


Fig.S3 Steady-state kinetic analysis for MoS₂: (A) The concentration of TMB was 1 mmol/L and H₂O₂ concentration was varied. (B) The concentration of H₂O₂ was 0.05 mmol/L and TMB concentration was varied. Insets are the corresponding Lineweaver–Burk plots

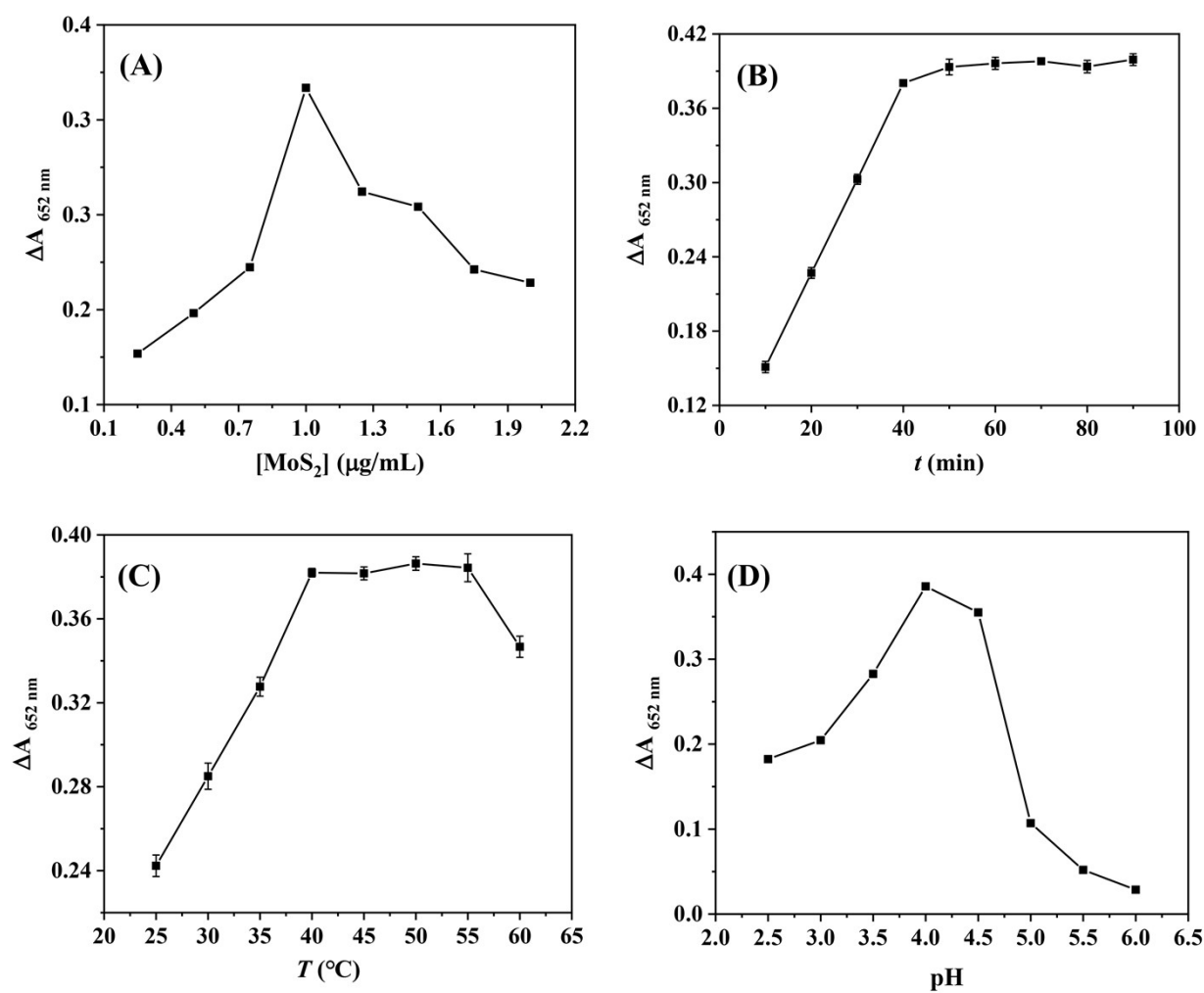


Fig.S4 Dependency of MoS₂ catalytic activity on (A) MoS₂ concentration, (B) time, (C) temperature and (D) pH value

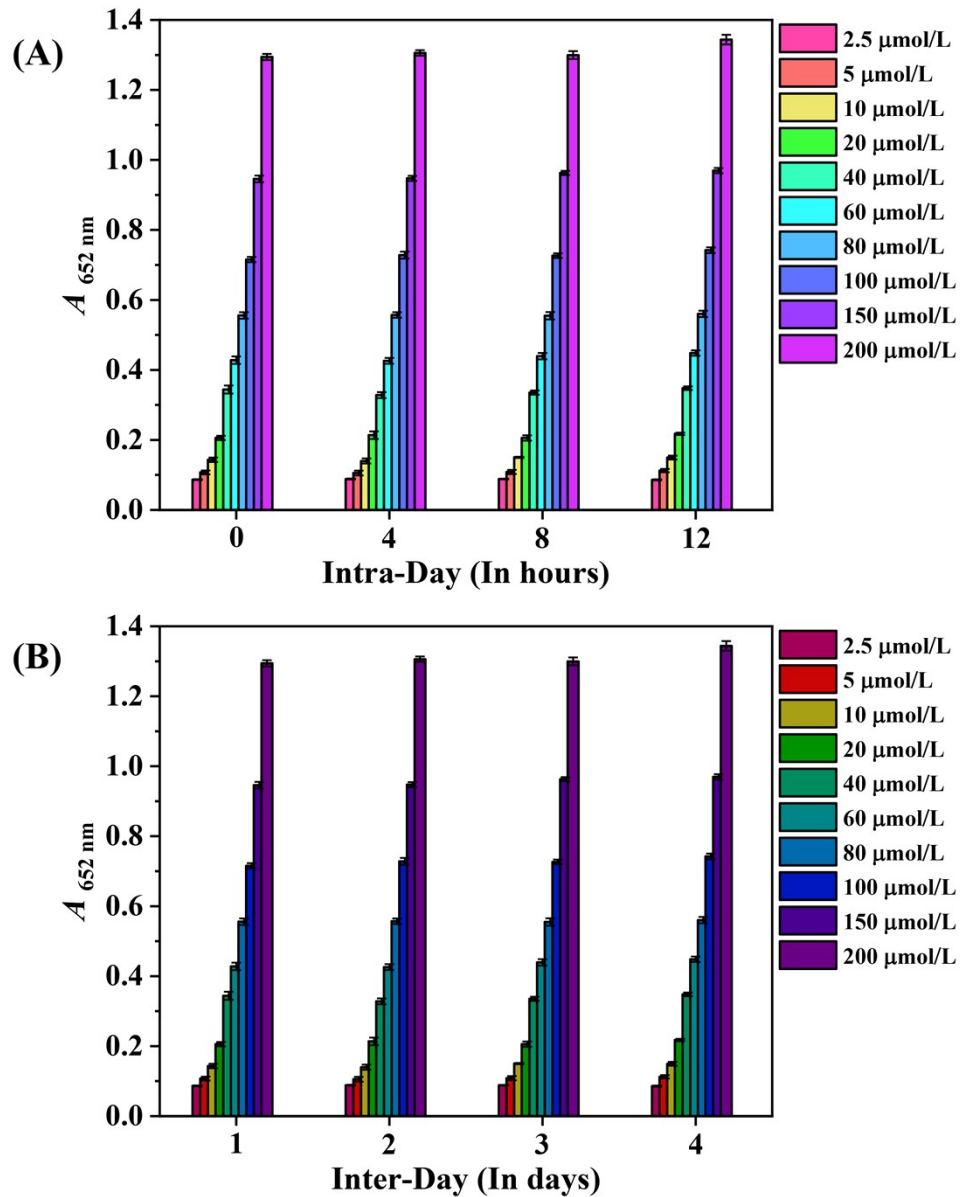


Fig.S5 The reproducibility test of developed sensing method (A) Intra-Day and (B) Inter-Day repeatability for the same set of condition for glucose (2.5 µmol/L to 200µmol/L) detection

Table S1 Comparison of the kinetic parameters of different peroxidase mimics

Catalyst	Substrate	K_m /(mmol/L)	V_{max} /(mol/(L s))	References
M-CQDs	TMB	0.219	8.82×10^{-7}	[1]
	H ₂ O ₂	0.431	4.61×10^{-6}	
VS ₂ NSs	TMB	0.280	4.16×10^{-7}	[2]
	H ₂ O ₂	3.49	5.57×10^{-7}	
GSF@AuNPs	TMB	0.00500	1.57×10^{-6}	[3]
	H ₂ O ₂	5.98	2.77×10^{-6}	
Fe ₃ O ₄ @MIL-100(Fe)	TMB	0.112	1.14×10^{-7}	[4]
	H ₂ O ₂	0.0770	1.79×10^{-7}	
GQDs	TMB	8.00	1.17×10^{-7}	[5]
	H ₂ O ₂	0.0100	7.30×10^{-8}	
PPy NPs	TMB	0.293	2.99×10^{-8}	[6]
	H ₂ O ₂	0.184	3.65×10^{-8}	
HRP	TMB	0.434	10.0×10^{-8}	[7]
	H ₂ O ₂	3.70	8.71×10^{-8}	
MoS ₂	TMB	0.0820	7.86×10^{-8}	This work
	H ₂ O ₂	2.30	9.90×10^{-8}	

Table S2 Comparison of colorimetric detection of H₂O₂ and glucose with different nanomaterial as peroxidase mimics

Peroxidase mimics	Linear range/(μ mol/L)		Detection limit/(μ mol/L)		References
	H ₂ O ₂ detection	Glucose detection	H ₂ O ₂ detection	Glucose detection	
GO-Fe ₃ O ₄	1 ~ 50	2 ~ 200	0.32	0.74	[8]
Pt NCs	0 ~ 200	0 ~ 200	0.46	0.28	[9]
Fe ₃ O ₄ @C YSNs	1 ~ 20	1 ~ 10	0.39	1.1	[10]
Por-CeO ₂ NPs	10 ~ 100	40 ~ 150	1.8	19	[11]
H ₂ TCPP-CdS	4 ~ 14	18 ~ 100	0.40	7.0	[12]
CQDs	5 ~ 60	10 ~ 200	0.86	2.9	[13]
MoS ₂	2.5 ~ 300	2.5 ~ 200	1.6	2.1	This work

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