

Electronic Supplementary Information (ESI) for

MXene-derived $\text{TiO}_2@\text{C}/\text{g-C}_3\text{N}_4$ heterojunctions for highly efficient nitrogen photofixation

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Table S1 Experimental conditions for the preparation of samples

Samples	Melamine (mmol)	Ti_3C_2 (mmol)
$\text{TiO}_2@\text{C}$	0	1
$\text{TiO}_2@\text{C}/\text{g-C}_3\text{N}_4$: 10%	10	1
$\text{TiO}_2@\text{C}/\text{g-C}_3\text{N}_4$: 5%	20	1
$\text{TiO}_2@\text{C}/\text{g-C}_3\text{N}_4$: 2%	50	1
$\text{g-C}_3\text{N}_4$	50	0

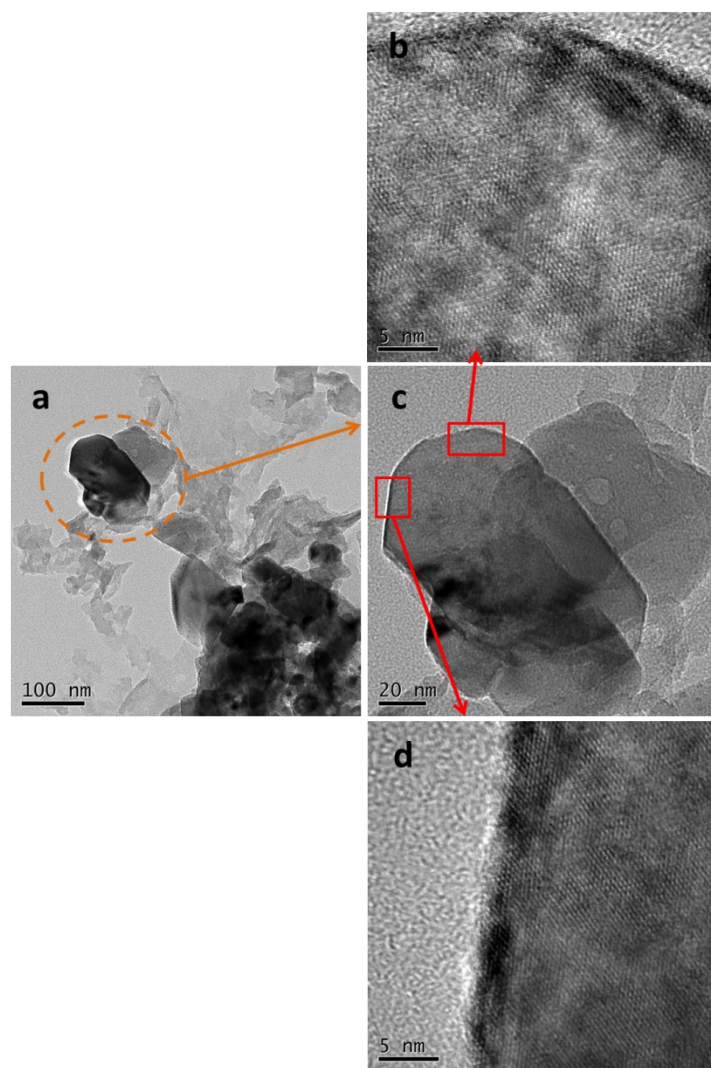


Fig. S1 TEM (a,c) and HRTEM (b,d) images of $\text{TiO}_2@/\text{g-C}_3\text{N}_4$

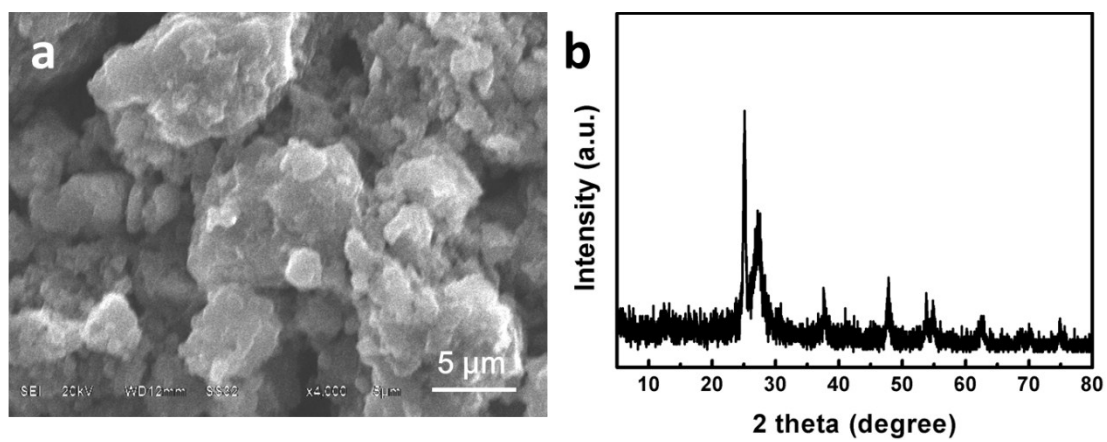


Fig. S2 SEM image (a) and XRD pattern (b) of $\text{TiO}_2@/\text{g-C}_3\text{N}_4$ after photocatalytic reaction.

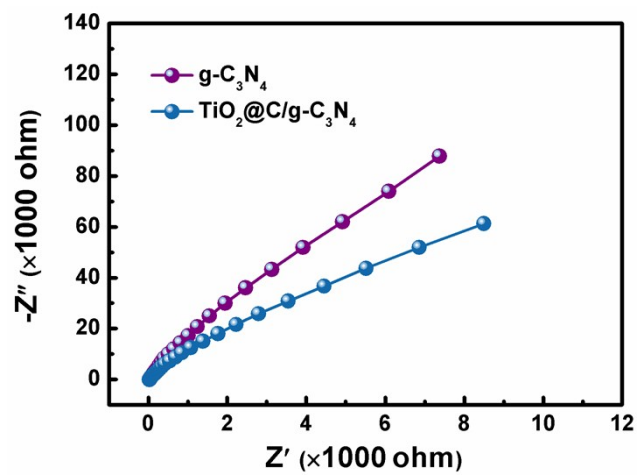


Fig. S3 EIS Nyquist plots of g-C₃N₄ and TiO₂@C/g-C₃N₄ in 0.5 M Na₂SO₄ solution under dark condition.