

Supporting Information

ZnIn₂S₄ nanosheet growth on amine-functionalized SiO₂ for the photocatalytic reduction of CO₂

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Figure S1. Reaction under sunlight

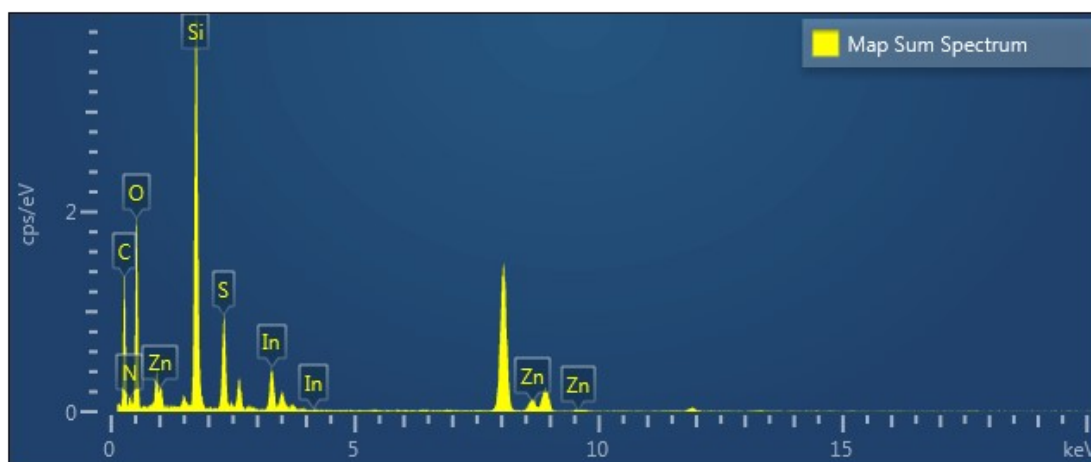


Figure S2. EDX spectrum of $\text{ZnIn}_2\text{S}_4/\text{NH-SiO}_2$

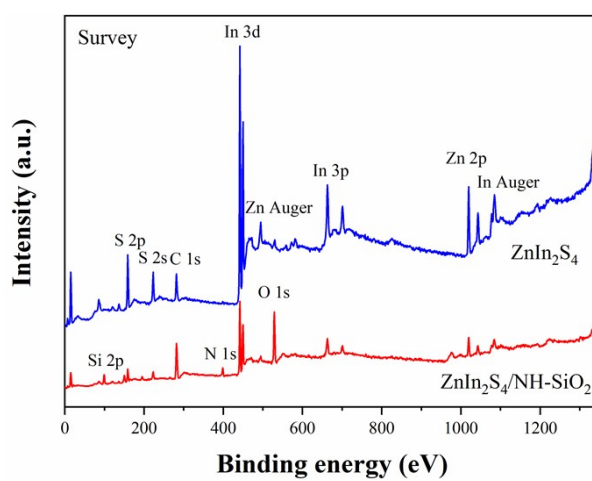


Figure S3. XPS survey spectra of $\text{ZnIn}_2\text{S}_4/\text{NH-SiO}_2$ and ZnIn_2S_4

Table S1. Elemental analysis of the samples

Samples	Atomic ratio of Zn/In/S	Atomic ratio of Zn/In/S	Atomic ratio of Zn/In/S
	by XPS	by ICP	by EDX
ZnIn ₂ S ₄ /NH-SiO ₂	1:2.33:4.22	1:2.36	1:2.72:9.86
ZnIn ₂ S ₄	1:2.04:3.54	1:1.85	-

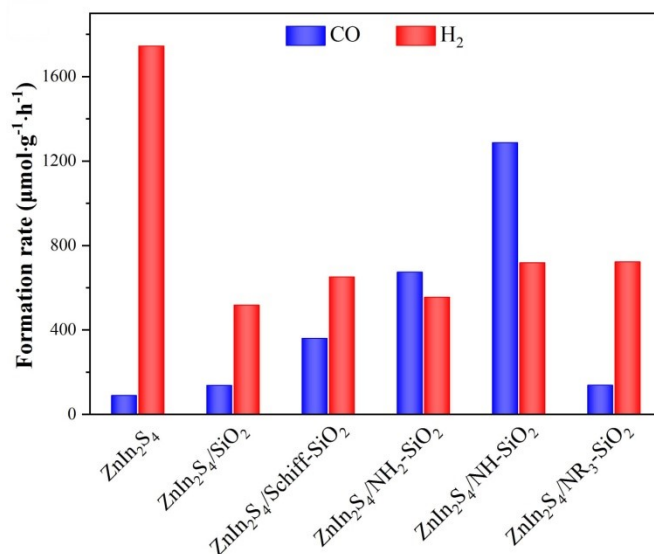


Figure S4. Photocatalytic activities of different amine-functionalized catalysts

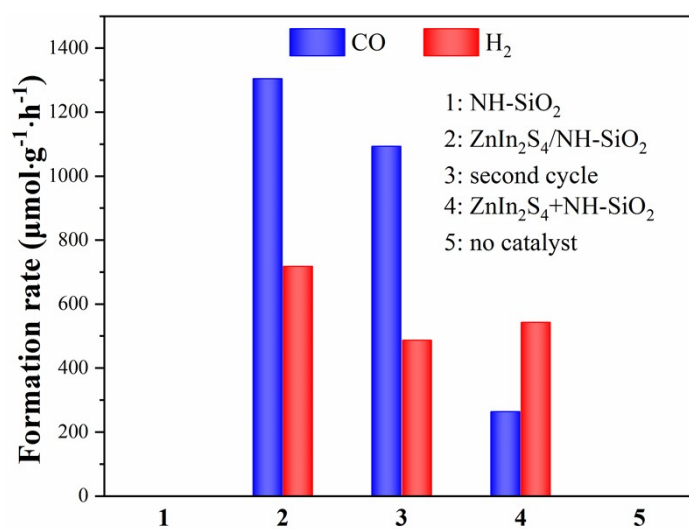


Figure S5. Control experiments data

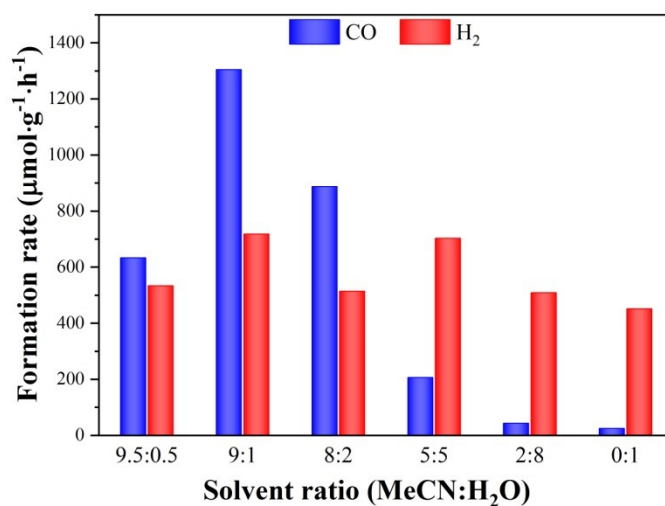


Figure S6. Effect of solvent ratio on the formation rate of CO and H₂

Table S2. Comparison of catalytic performance for CO₂ photoreduction

Photocatalyst	Reaction medium	Sacrificial agent	Light Source	P/W	<i>R</i> ^[a]		H ₂ /CO ratio	Ref.
					CO	H ₂		
ZnIn ₂ S ₄ /NH-SiO ₂	MeCN:H ₂ O (9:1)	TEA,	LEDs (455 nm)	9	1304.8	718.4	0.55	This work
ZnIn ₂ S ₄ -ZnAlO _x	MeCN:H ₂ O (9:1)	TEA	LEDs (455 nm)	9	1100.5	706.1	0.64	1
g-C ₃ N ₄ /ZnIn ₂ S ₄	MeCN:H ₂ O (3:2)	TEOA	Xe-arc lamp (λ>420 nm)	300	1453	863	0.59	2
CeO _x -S/ZnIn ₂ S ₄	MeCN:H ₂ O (1:1)	TEA	LEDs (455 nm)	9	180	500	2.78	3
One-unit-cell ZnIn ₂ S ₄	H ₂ O	-	Xe-arc lamp	300	33.2	-	-	4
ZnAl-LDH	H ₂ O	-	Xe-arc lamp	300	7.6	-	-	5
g-C ₃ N ₄ /Bi ₂ WO ₆	H ₂ O	-	Xe-arc lamp	300	5.19	-	-	6
Cu/CeO _{2-x}	H ₂ O	-	Xe-arc lamp	300	1.65	-	-	7

[a] Formation rate of the products, in μmol·g⁻¹·h⁻¹.

Supplementary Reference

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