

Supplementary Information for Catalysis Science & Technology

Effect of graphitic carbon nitride microstructures on the activity and selectivity of photocatalytic CO₂ reduction under visible light

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According to the XPS spectra shown in Fig. 4, the FWHM of the feature peak and the fitted parameters are listed in Table S1. As can be seen, there are difference in the FWHM and area of the each feature between the two materials. After exact calculation, the element abundance ratios of C:N:O were 0.744:1:0.047 for u-g-C₃N₄ and 0.745:1:0.069 for m-g-C₃N₄, respectively. The C1s spectra in Fig. 2b show three peaks at 288.4, 286.4 and 284.8 eV with peak area ratio of 0.32:0.12:1 for u-g-C₃N₄ and 0.29:0.15:1 for m-g-C₃N₄, respectively. And N1s spectra in Fig. 2c show three peaks at 398.7, 399.6, 401.2 and 404.2 eV with peak area ratio of 1:0.89:0.18:0.02 for u-g-C₃N₄ and 1:0.54:0.28:0.018 for m-g-C₃N₄, respectively.

Table S1. The fitted XPS parameters of u-g-C₃N₄ and m-g-C₃N₄

Binding Energy (eV)		284.8	286.4	288.4	398.7	399.6	401.2	404.2	532.8
u-g-C ₃ N ₄	FWHM	1.57	3.29	1.61	1.37	1.77	1.38	1.08	2.55
	Area	4956.2	1882.5	15476.9	14343.5	12760.5	2613.9	287.8	1403.2
m-g-C ₃ N ₄	FWHM	1.65	3.01	1.75	1.68	1.52	1.9	1.2	2.39
	Area	2566.8	1356.9	8842.8	9260.4	5092.3	2602.8	172.6	1187.1

Fig. S1 showed the GC-MS data of the products derived from the present CO₂ photoreduction system containing g-C₃N₄ suspension under visible-light ($\lambda \geq 420$ nm) irradiation. As can be seen, the GC-MS spectrum of the products is consistent with standard GC-MS spectrum of methanol and ethanol, indicating that the products were methanol and ethanol rather than dimethyl ether and other C1 compounds.

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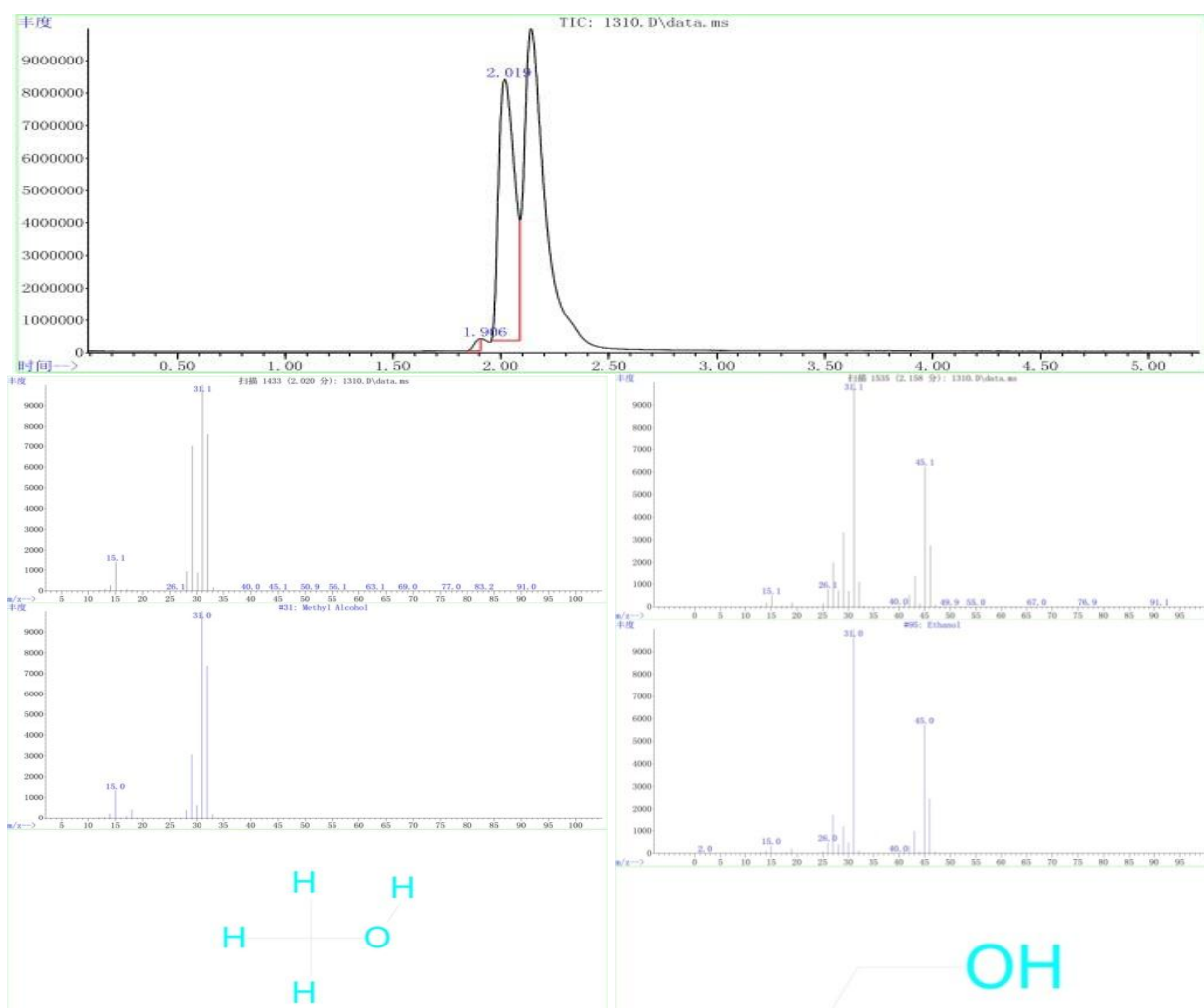


Fig. S1 GC-MS spectrum of the products derived from the CO₂ photoreduction system containing g-C₃N₄ suspension under visible-light ($\lambda \geq 420$ nm) irradiation.