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Supplementary Information

Trace detection of nitro aromatic explosives by highly fluorescent *g*-C_3N_4 nanosheets

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THF content determination

The influence of THF on emission properties of the nanosheets was investigated with changing the THF content, as shown in Fig.S1. The emission peak was centre at 433.8 nm at an excitation wavelength of 308 nm, and the concentration of THF has a remarkable effect on emission intensity. It was obvious that when the suspension containing 50 vol.% THF, the effect on emission intensity is least, which is only about 2.7% emission intensity decreased. Therefore, 50 vol. % THF was used throughout the experiments for NACs detection.

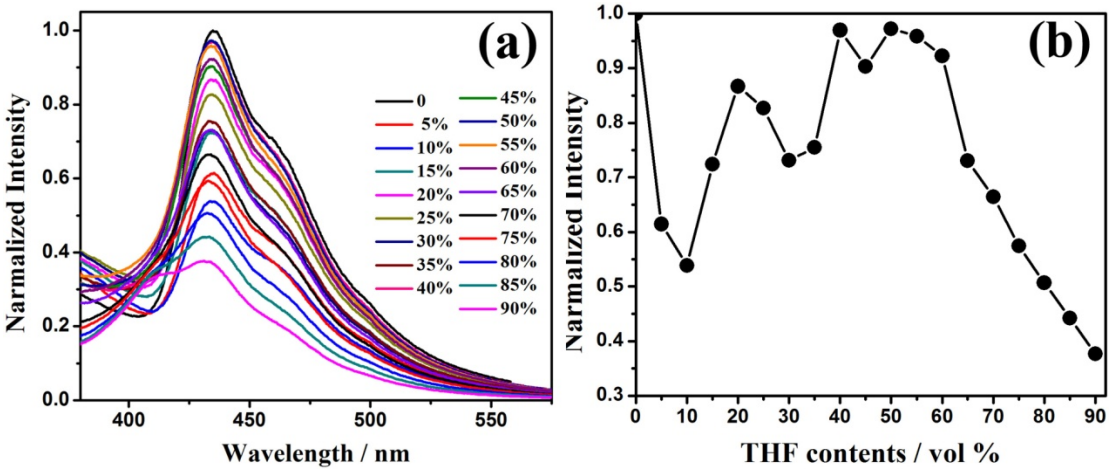

Fig. S1 (a) Emission fluorescence spectra and (b) emission intensity of g-C_3N_4 nanosheets suspension with various amount of THF.

Quantum Yield (QY) Measurements

Rhodamine B in distilled water (literature[S1] quantum yield 0.31) was selected as a control standard. The QY of g-C_3N_4 nanosheet was estimated according to the follow equation 1:

$$\Phi = \Phi_r \times \frac{I}{A} \times \frac{A_r}{I_r} \times \frac{n^2}{n_r^2} \qquad (1)$$

Where Φ is the QY, I is the integrated PL emission intensity (excited at 308 nm for g-C_3N_4 nanosheet and Rhodamine B), n is the refractive index (1.334 for distilled water), and A is the absorbance value at the excitation wavelength of 308 nm (distilled water) (less than 0.1). The subscript "r" refers to the standards.

Table S1. QY of g-C_3N_4 nanosheet dispersed in distilled water.

Sample	Integrated emission intensity (I)	Abs. nm (A)	Refractive index of solvent (n)	QY (Φ)
Rhodamine B	46209	0.0575	1.334 (distilled water)	0.31
g-C_3N_4 nanosheet	59978	0.0713	1.334 (distilled water)	0.32

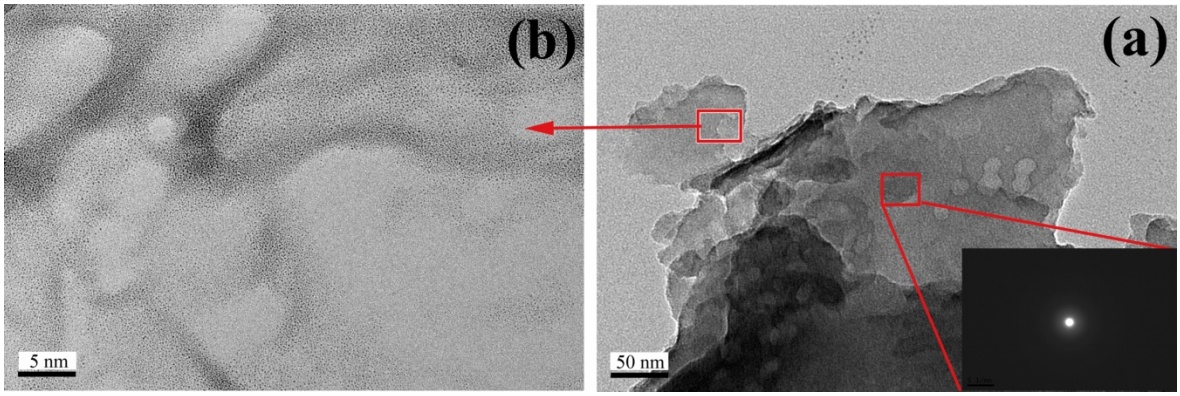

Fig. S2 High-resolution TEM (HRTEM) patterns of the obtained g-C_3N_4 nannosheets, and the inset is the selected-area electron diffraction (SAED).

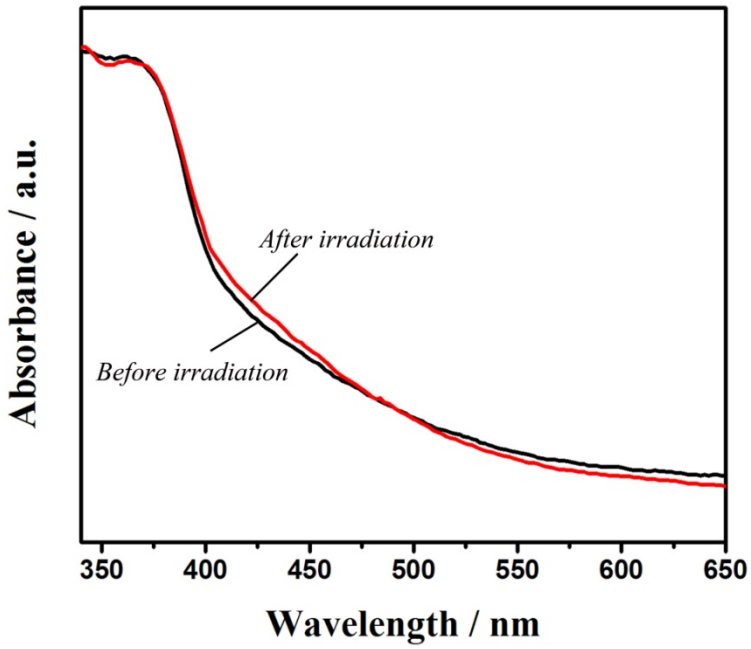

Fig. S3 UV-vis absorption spectra of the obtained nanosheet before and after irradiation. (A light irradiation system containing a Xe-lamp (XQ-500W, Shanghai, China) was used)

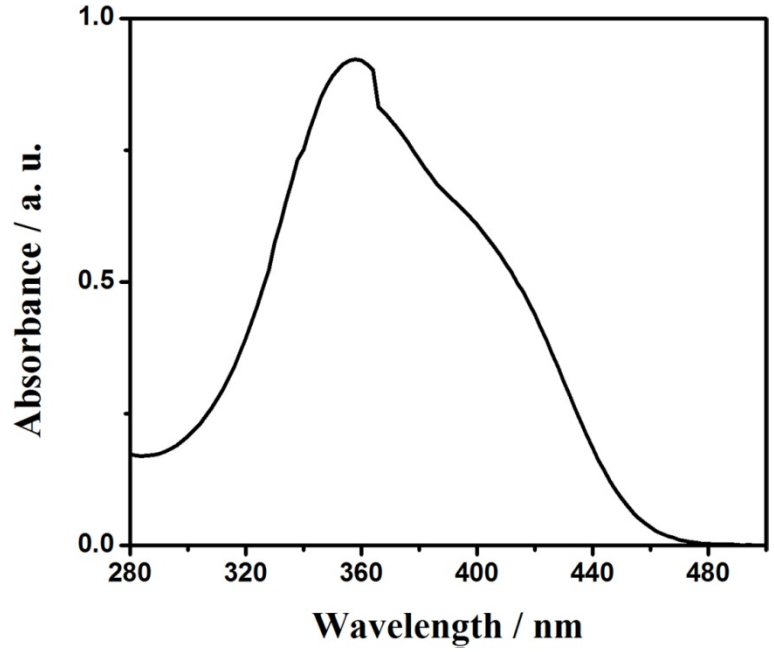

Fig. S4 UV-vis absorption spectrum of 2,4,6-Trinitrophenol (PA).

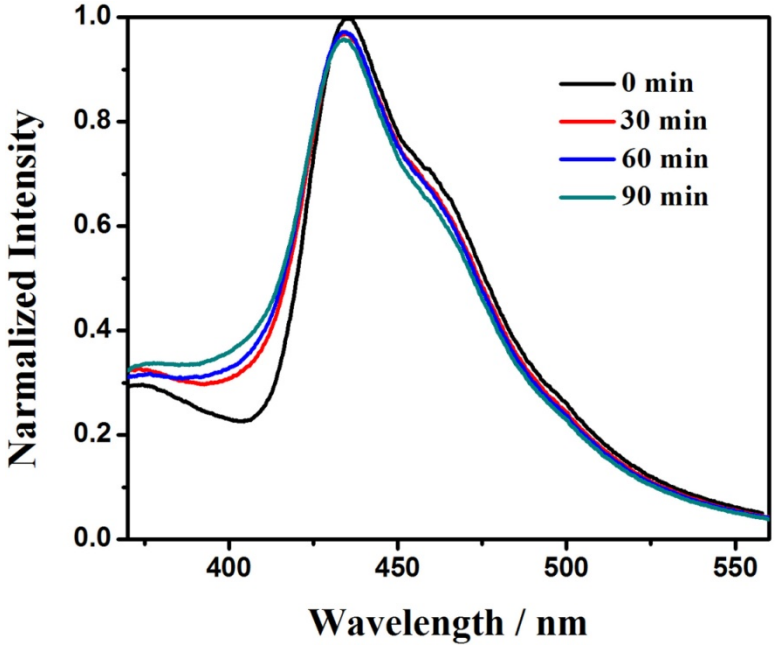

Fig. S5. Time resolved fluorescence of the g-C_3N_4 nanosheet (excitated at 308 nm).

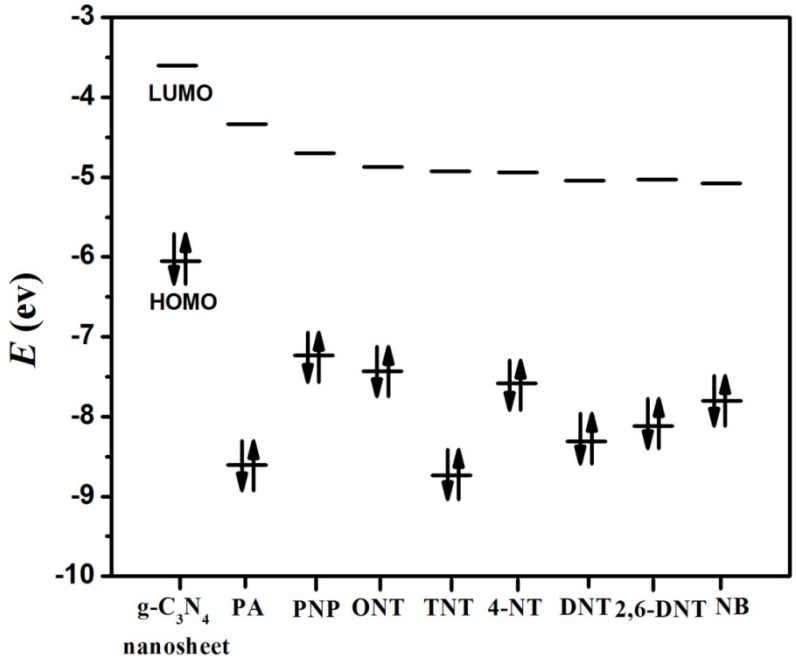

Fig. S6 HOMO and LUMO energy of the detected nitro aromatic explosives.

References in Supporting Information:

[S1] D. Magde, G. E. Rojas and P. G. Seybold, *Photochem. Photobiol.* 1999, **70**, 737-744.