Supporting Information

g-C_3N_5-dots as fluorescence probes prepared by alkali-assisted hydrothermal method for cell imaging

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Table S1. Comparison of different methods for the preparation of CN quantum dots.

Precursors	methods	synthesized time	references
bulk g-C_3N_4	acid treatment and hydrothermal method	26 h	[1]
g-C_3N_4 sheets	ultrasonication treatment	48 h	[2]
bulk g-C_3N_4	electrochemical “tailoring” method	3 h	[3]
bulk g-C_3N_4	acid treatment and ultrasonication treatment	14 h	[4]
GH and EDAT	hydrothermal method	24 h	[5]
bulk g-C_3N_4	acid treatment and sonication treatment	22 h	[6]
bulk g-C_3N_4	ultrasonic treatment and hydrothermal method	6 h	[7]
bulk g-C_3N_4	NH_3 treatment and liquid exfoliation	20 h	[8]
DAMN and 4-amino-TEMPO	hydrothermal method	6 h	[9]
bulk g-C_3N_5	alkali assisted-hydrothermal method	60 min	present work

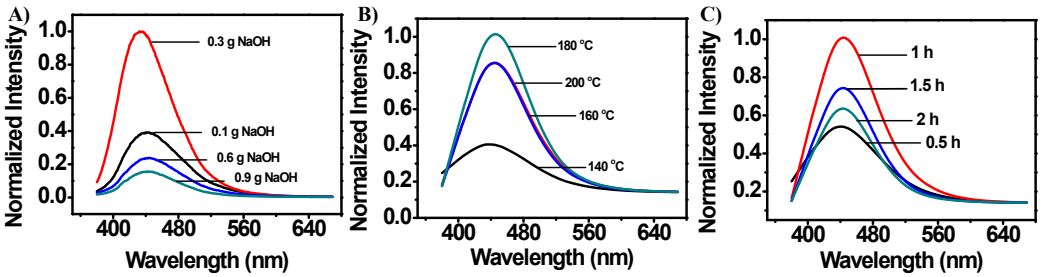

Figure S1. (A) The FL spectra of g-C_3N_5-dots synthesized by hydrothermal method using the different mass ratio of g-C_3N_5 powder and NaOH (0.03:0.1, 0.03:0.3, 0.03:0.6 and 0.03:0.9). (B) The FL spectra of g-C_3N_5-dots synthesized by hydrothermal method under different hydrothermal temperature (140 ^oC, 160 ^oC, 180 ^oC and 200 ^oC). (C) The FL spectra of g-C_3N_5-dots synthesized by hydrothermal method under different hydrothermal time (0.5 h, 1 h, 1.5 h and 2 h). The concentration of the prepared product is 0.05 mg mL^{-1}. The excitation wavelength is 360 nm. The slit widths of emission and excitation are 5 nm.

Table S2. Comparison of g-C_3N_5-dots prepared at different reaction conditions.

Factor	*T* (°C)	t (h)	$r_{g\text{-}C3N5/\ NaOH}$	FLQY (%)
1	180	1	0.03:0.1	5.1
2	180	1	0.03:0.3	12.0
3	180	1	0.03:0.6	3.6
4	180	1	0.03:0.9	2.4
5	140	1	0.03:0.3	4.7
6	160	1	0.03:0.3	10.2
7	200	1	0.03:0.3	10.9
8	180	0.5	0.03:0.3	6.8
9	180	1.5	0.03:0.3	9.4
10	180	2	0.03:0.3	7.7

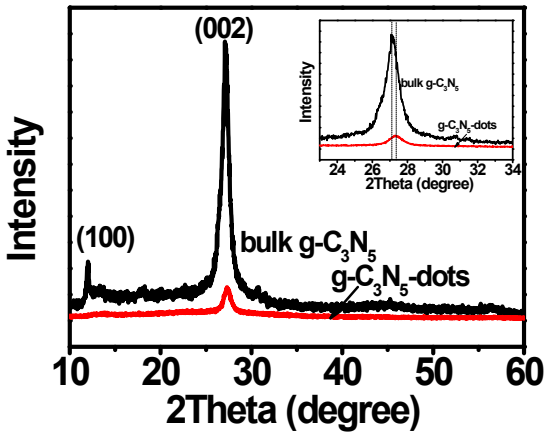

Figure S2. XRD patterns of bulk g-C_3N_5 and g-C_3N_5-dots.

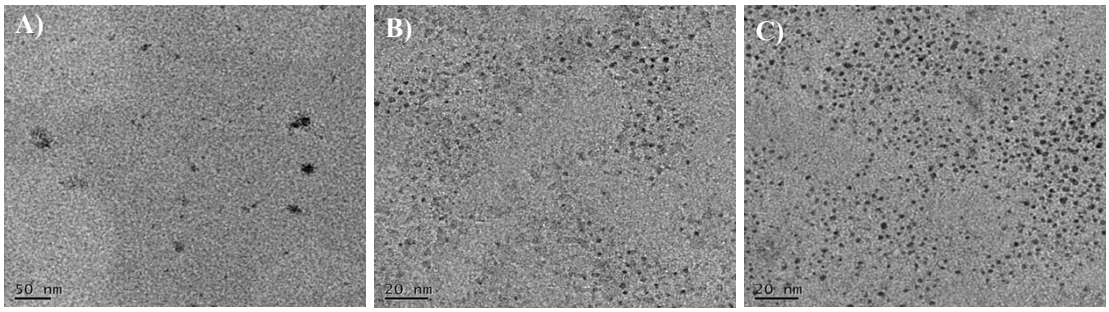

Figure S3. The TEM of as-synthesized g-C_3N_5-dots in the (A) EA, (B) $CHCl_3$ and (C) DMSO.

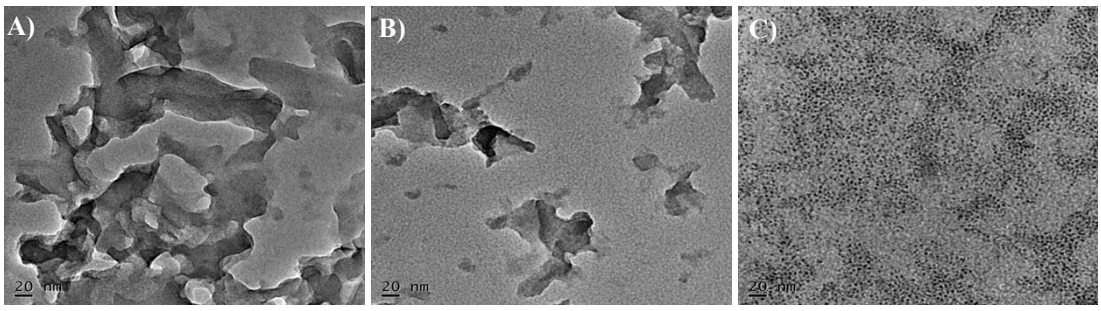

Figure S4. (A) TEM images of synthesized products prepared by hydrothermal method under (A) H_2O, (B) 1.5 M HCl and (C) 1.5 M NaOH conditions, respectively.

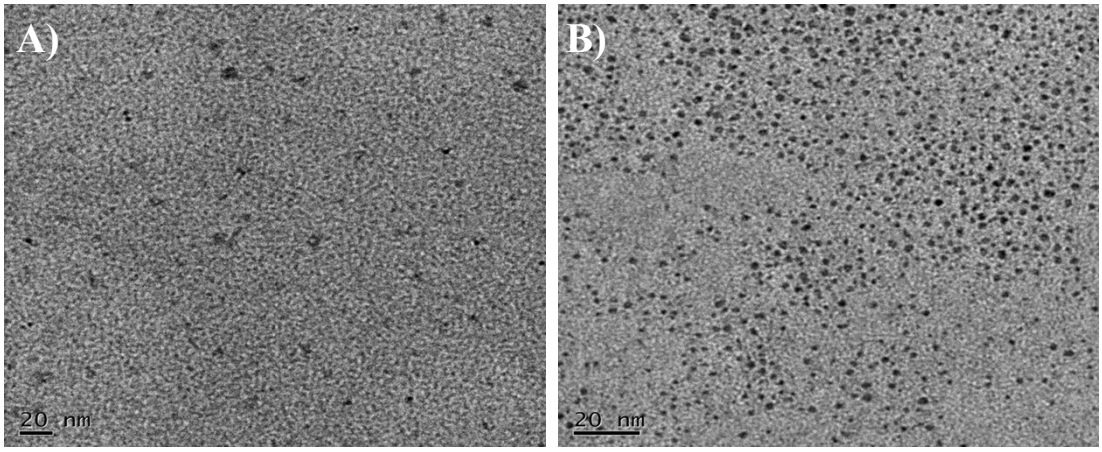

Figure S5 TEM images of the synthesized g-C_3N_5-dots products at reaction time (A) 30 min, (B) 60 min.

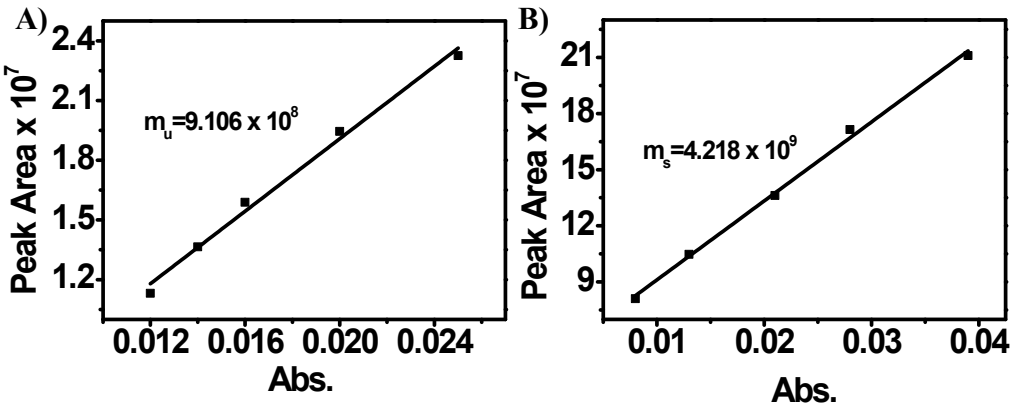

Figure S6. (A) The area of FL spectra of g-C_3N_5-dots under different absorbance. The excitation is 360 nm. Distilled water is served as solvent. (B) The area of the FL spectra of quinine sulfate under different absorbance. The excitation is 350 nm. 0.1 M H_2SO_4 is served as solvent.

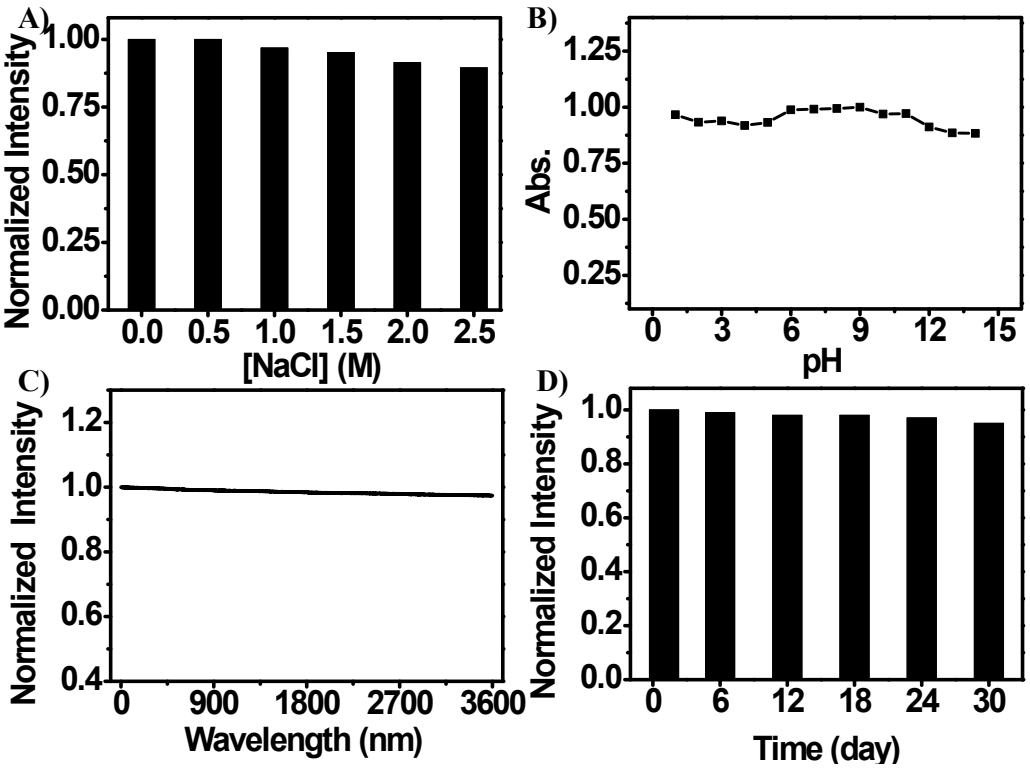

Figure S7. (A) The effect of NaCl and (B) the effect of pH value for the normalized FL intensity of the as-prepared g-C_3N_5-dots. The pH value was adjusted by 0.1 M HCl and 0.1 M NaOH. The g-C_3N_5-dots solution was kept at room temperature. (C) Time-course plot of FL intensity from g-C_3N_5-dots during continuous irradiation by a Xe lamp at 360 nm. (D) The changes of normalized FL intensity of g-C_3N_5-dots solution within 30 days.

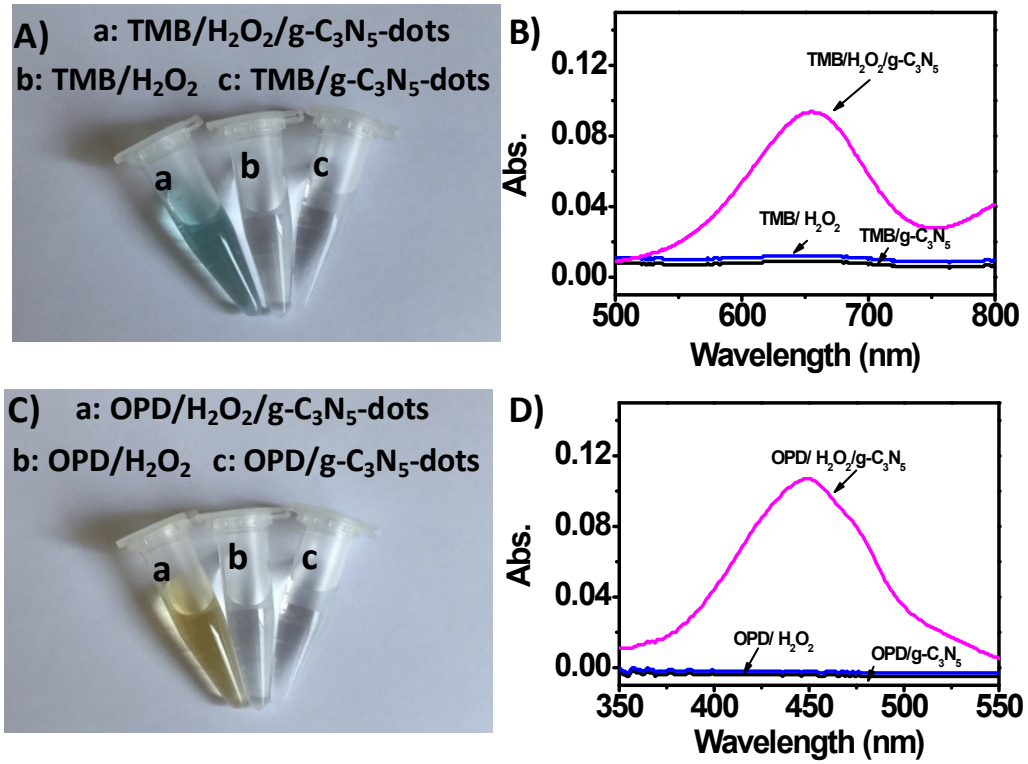

Figure S8. (A, C) the optical photographs and (B, D) the UV-vis spectra of (a) TMB (OPD)/H_2O_2/ g-C_3N_5-dots, aqueous (b) OPD/H_2O_2 aqueous and (c) TMB (OPD)/g-C_3N_5-dots aqueous, respectively. (B) Size distribution histograms of g-C_3N_5-dots. [g-C_3N_5-dots]=0.05 mg mL^{-1}. [H_2O_2]=0.01 mM. [TMB]=0.5 mM and [OPD]=0.5 mM. The incubation temperature is 37 °C. The incubation time is 30 min.

Reference

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