

## Supplementary Material

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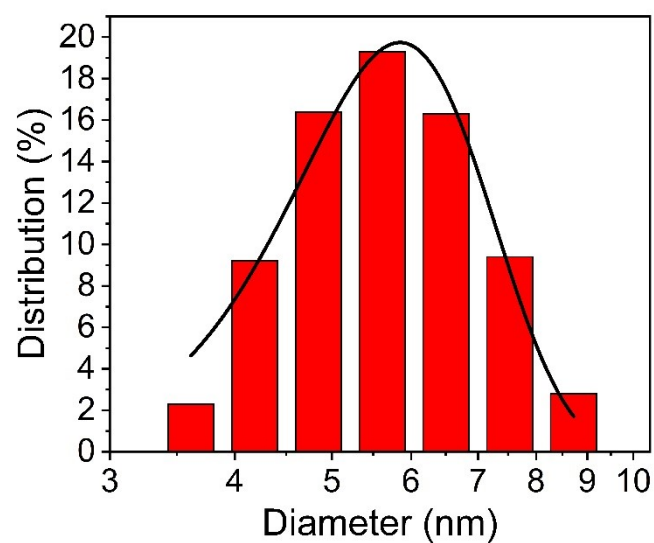
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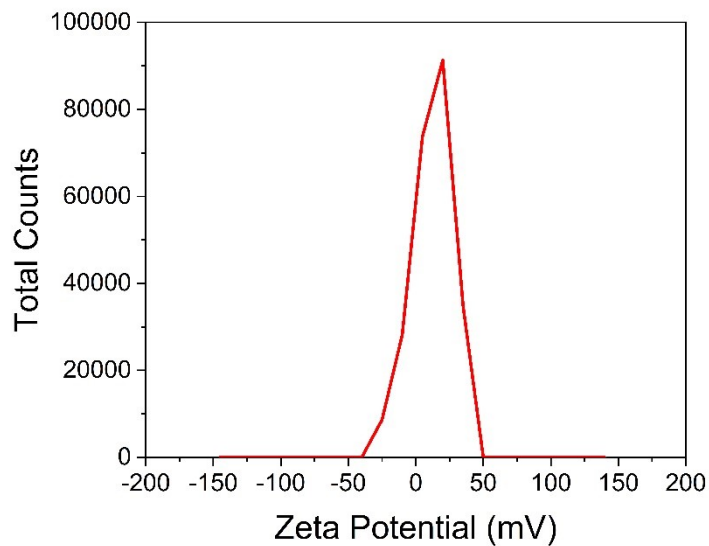
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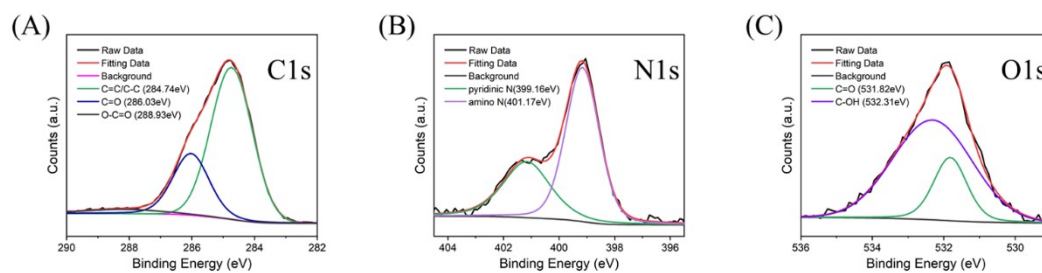
E-mail addresses: gemf@sibet.ac.cn, lil@sibet.ac.cn.



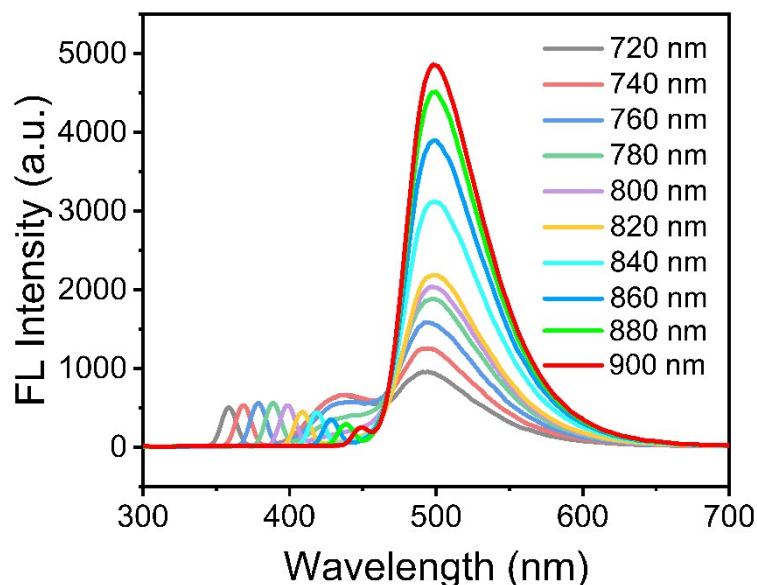
**Figure S1.** The size distribution of G CDs. It can be seen that the particle size distribution of G-CDs is roughly around 5 nm, which is consistent with the TEM image.



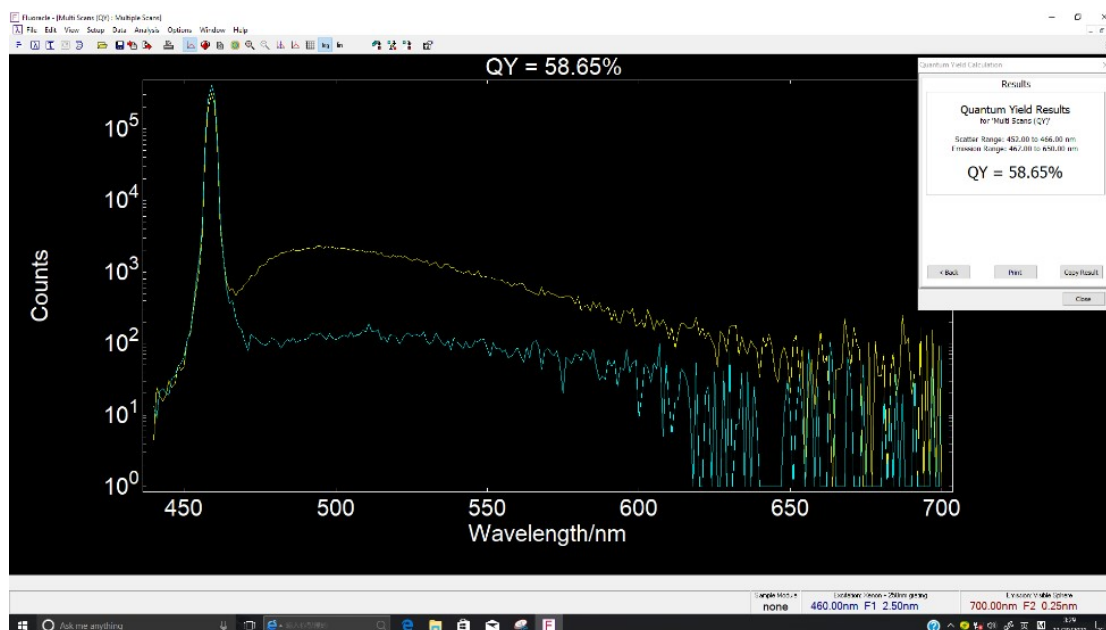
**Figure S2.** The zeta potential distribution of G CDs. The zeta potential of G-CDs was evaluated and found to be +12.3 mV, which provided support for target nuclear characterization.



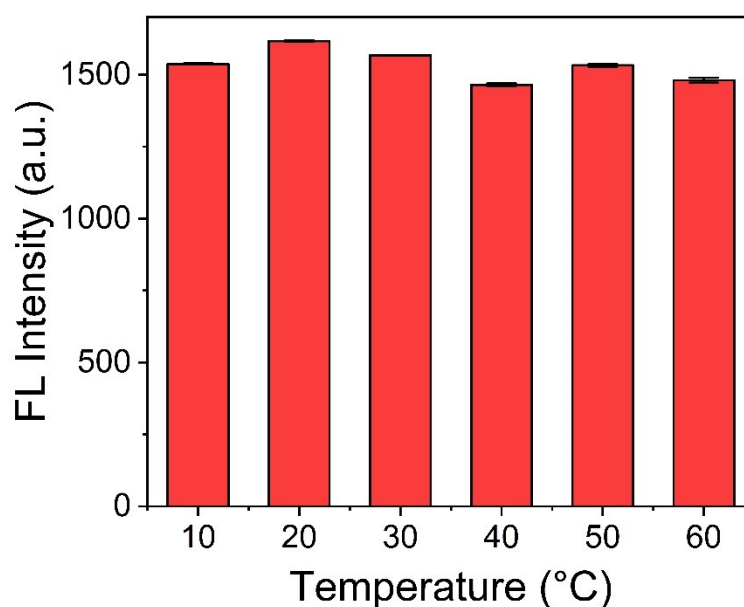
**Figure S3.** C 1s(A), N 1s(B), O 1s(C) XPS spectrum of G-CDs. The high-resolution C 1s spectrum (A) can be deconvoluted into three peaks at 284.74, 286.03, and 288.93 eV, corresponding to the C=C/C–C, C=O, and O–C=O bonds, respectively. The high-resolution N 1 s spectrum (B) shows two peaks at 399.16 and 401.17 eV, which represented the presence of pyridinic N and amino N, respectively. The two main bands at 531.82 eV and 532.31 eV in the high-resolution O 1s spectrum (C) could be identified as C=O and C–OH.



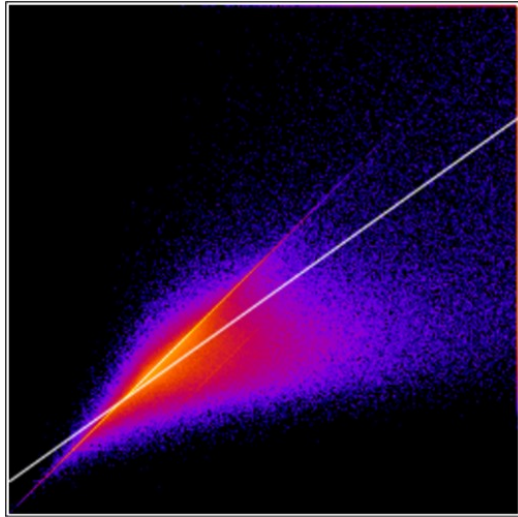
**Figure S4.** Fluorescence emission spectra of G-CDs under different excitation wavelengths (720 - 900 nm). The G-CDs have two-photon excitation properties and can remain excitation-independent.



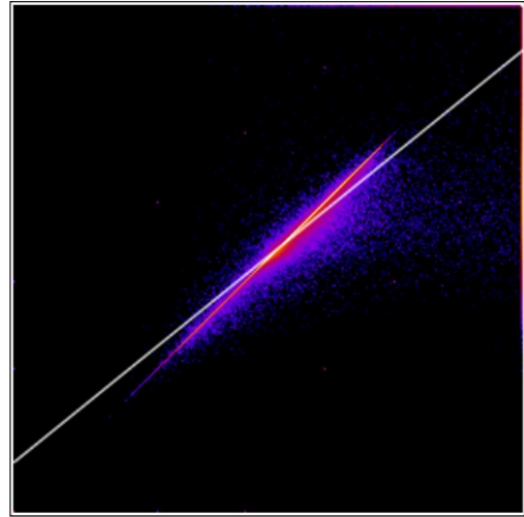
**Figure S5.** The absolute quantum yield of G-CDs is as high as 58.65%, which provides strong support for the excellent luminescence properties and good imaging effects of G-CDs.



**Figure S6.** The fluorescence intensity of G-CDs under different temperatures. In the range of 10-60°C, the fluorescence intensity of G-CDs changed little, showing good stability.



(A)



(B)

**Figure S7.** The scatter plots of HeLa (A) and 4T1 (B) by using Color2 software. The scatter in both figures is more evenly located on both sides of the diagonal line, showing good target nucleus properties in both HeLa and 4T1 cells.