Tuning the Wettability and Photoluminescence of Graphene Quantum Dots via Covalent Modification

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(Electronic Supplementary Information)

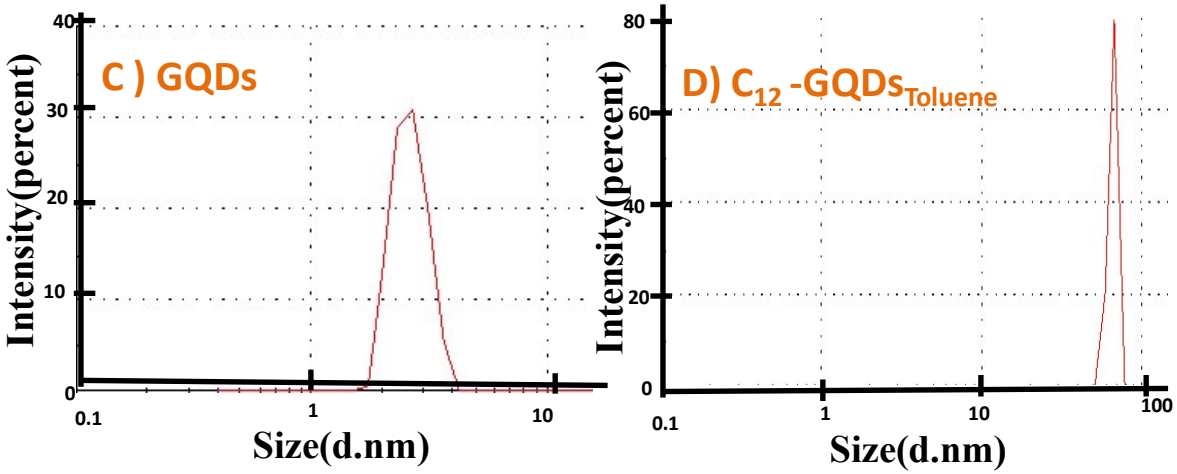

Figure ESI 1 Dls size of GQDs and C_{12}-GQDs $_{Toluene}$

Determination of quantum yield of GQDs, C_{12}-GQDs$_{Hexane,}$ and C_{12}-GQDs $_{Toluene}$

The quantum yield (φ) of GQDs, C_{12}-GQDs$_{Hexane,}$ and C_{12}-GQDs $_{Toluene}$ are calculated using the equation(1)

$$\varphi = \varphi_R \times I/I_R \times A_R/A \times \eta^2/\eta^2_R \quad \text{..... (1)}$$

Where I is the measured integrated emission intensity, A is the optical density, η is the refractive index of the solvent, and the subscript R refers to the reference standard. Here we use quinine sulfate (φ_R = 0.54) in 0.1M H_2SO_4(η =1.33) as standard while the GQDs are

dispersed in water(η =1.33) hexane(η =1.37) and toluene(η =1.49) .The absorbance of all the samples is maintained less than 0.1 to minimize the inner-filter effects at their excitation wavelength (360nm).

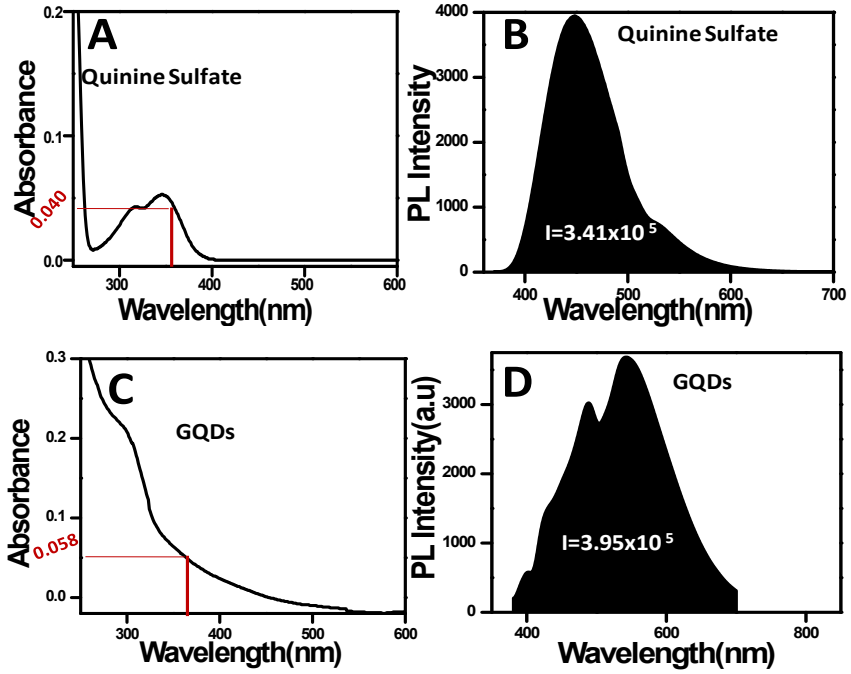

Figure ESI2 A) UV-Vis spectra of quinine sulfate B) Integrated photoluminescence intensity of quinine sulfate C) UV-Vis spectra of GQDs and D) integrated photoluminescence intensity of GQDs

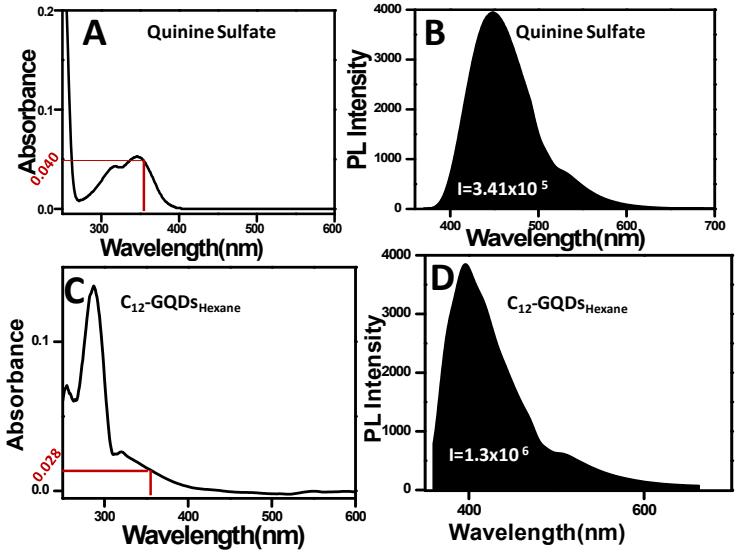

Figure ESI3 A) UV-Vis spectra of quinine Sulfate B) integrated photoluminescence intensity of quinine sulfate C) UV-Vis spectra of C_{12}-$GQDs_{Hexane}$ and D) integrated photoluminescence intensity of C_{12}-$GQDs_{Hexane}$

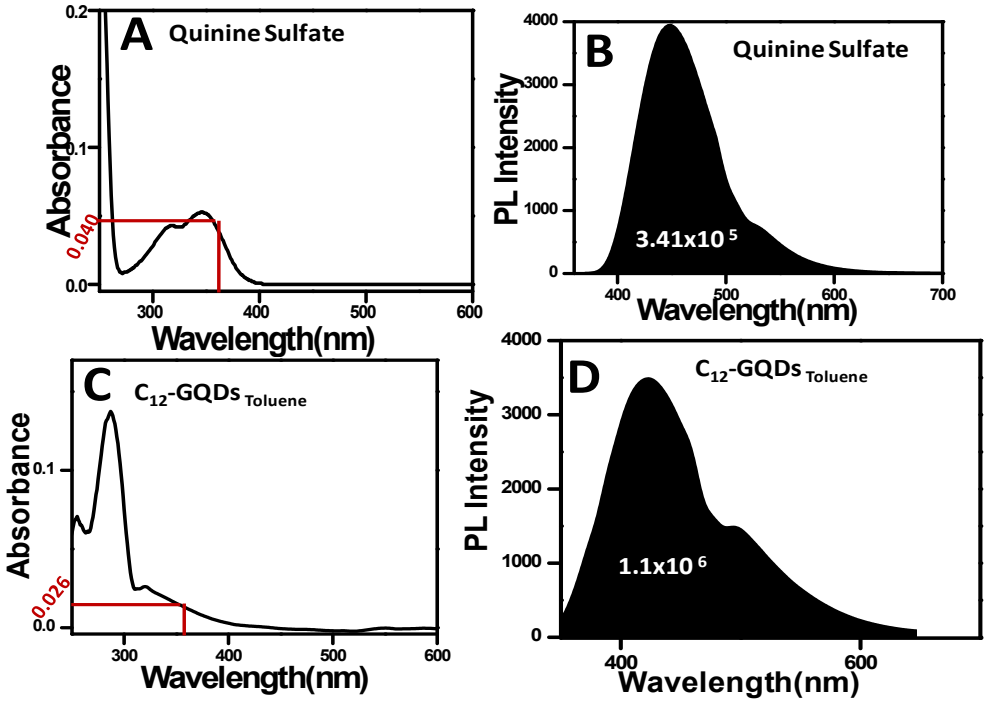

Figure ESI4 A) UV-Vis spectra of quinine sulfate B) integrated photoluminescence intensity of quinine sulfate C) UV-Vis spectra of C_{12}-GQDs $_{Toluene}$ and D) integrated photoluminescence intensity of C_{12}-GQDs $_{Toluene}$

The quantum yield (φ) of GQDs, C_{12}-GQDs$_{Hexane,}$ and C_{12}-GQDs $_{Toluene}$ are found to be 11.76 % 16.17% and 18.10% respectively.