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 C12-GQDs

Determination of quantum yield of GQDs, C12-GQDsHexane, and C12-GQDs Toluene

The quantum yield (φ) of GQDs, C12-GQDsHexane, and C12-GQDs Toluene are calculated using the equation (1)

\[ \phi = \phi_R \times \frac{I}{I_R} \times \frac{A}{A_R} \times \frac{\eta^2}{\eta_R^2} \]  \hspace{1cm} (1)

Where I is the measured integrated emission intensity, A is the optical density, \( \eta \) is the refractive index of the solvent, and the subscript R refers to the reference standard. Here we use quinine sulfate (\( \phi_R = 0.54 \)) in 0.1M H2 SO4(\( \eta =1.33 \)) 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 (360 nm).

**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$_{\text{Toluene}}$ and D) integrated photoluminescence intensity of $C_{12}$-GQDs$_{\text{Toluene}}$

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