One-Pot Hydrothermal Synthesis of Graphene Quantum Dots Surface-Passivated by Polyethylene Glycol and Their Photoelectric Conversion under Near-Infrared Light

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One-pot hydrothermal synthesis of graphene quantum dots surface-passivated by polyethylene glycol and its photoelectric conversion of near-infrared light

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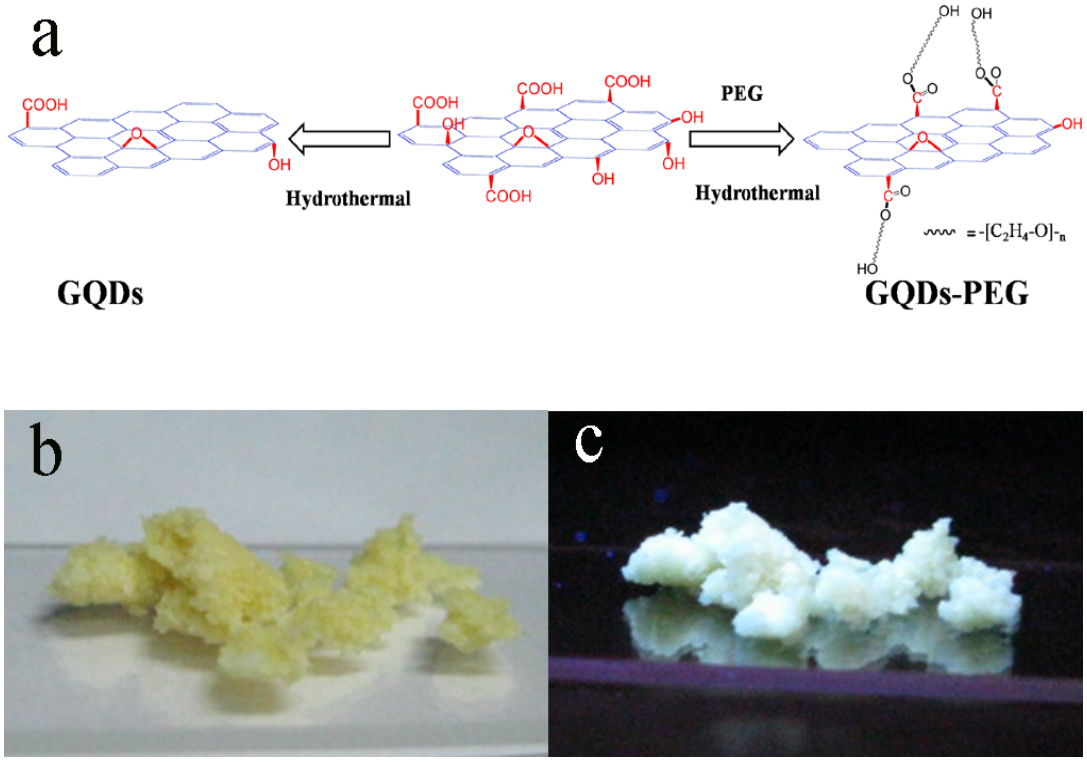

Fig. S1. (a) Representation of the GQDs and GQDs-PEG by one-pot hydrothermal reduction. (b, c) The images of the dry GQDs-PEG under sunlight (left) and 365 nm UV lamp (right).

Quantum Yield (QY) Measurements

Rhodamine B in water (literature[S1] quantum yield 0.31) was chosen as a standard. The quantum yield of CDs in water was calculated according to:

$$\phi = \phi_r \times \frac{A_r}{I_r} \times \frac{I}{A} \times \frac{n^2}{n_r^2}$$

Where Φ is the quantum yield, I is the measured integrated emission intensity, n is the refractive index (1.33 for water), and A is the optical density. The subscript "r" refers to the reference fluorophore of known quantum yield. In order to minimize re-absorption effects, absorbencies in the 10 mm fluorescence cuvette were kept under 0.1 at the excitation wavelength of 360 nm.

Table S1 quantum yield of the as-prepared CDs

Sample	Integrated emission intensity (I)	Abs. at 360 nm (A)	Refractive index of solvent (n)	Quantum Yield (Φ)
Rhodamine B	330881926	0.04676	1.33	0.31
GQDs	78843106.5	0.0357	1.33	0.1306
GQDs-PEG	106455569	0.01234	1.33	0.2799

References

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