Electronic Supplementary Material (ESI) for RSC Advances.

Controlling the cooperative self-assembly of graphene oxide quantum dots in aqueous solutions

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Preparation and characterization of GOQDs

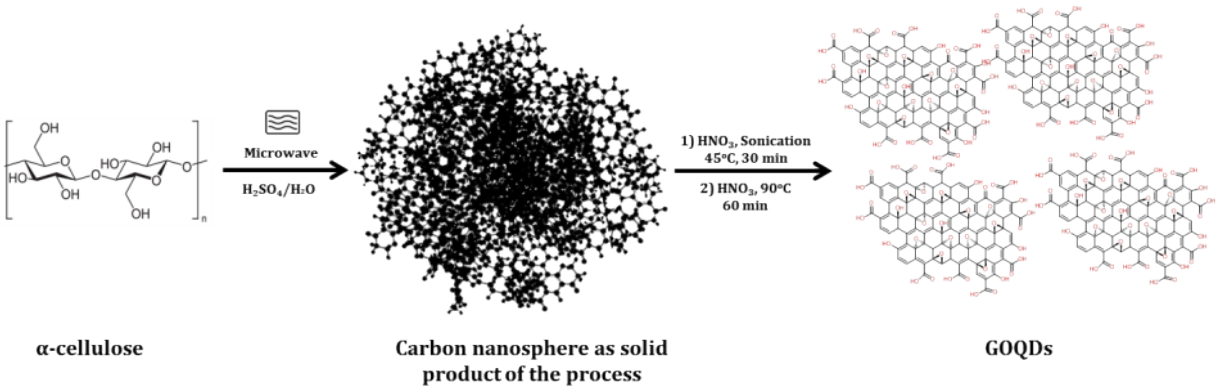

Figure S1. The synthetic scheme for preparation of the GOQDs

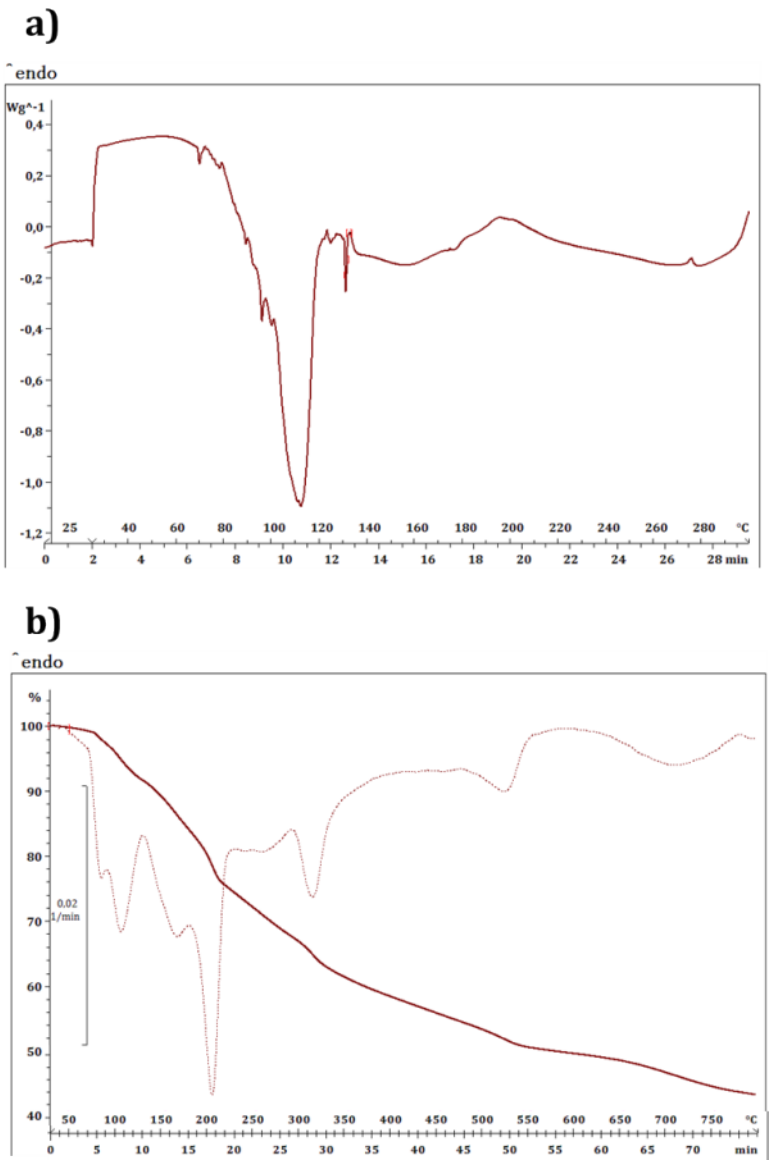

Figure S2. a) DSC analysis of the GOQDs in N_2 atmosphere, b) TGA (solid line) and DTG (dots line) curves in N_2 atmosphere.

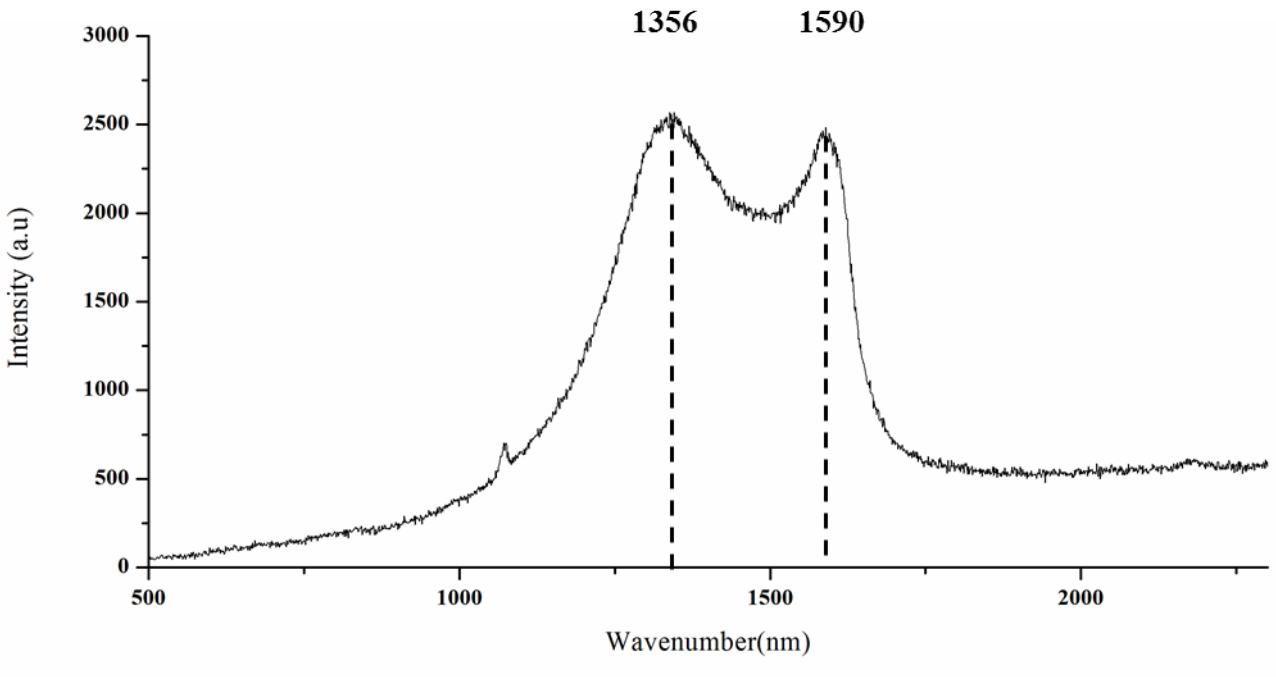

Figure S3. Raman spectra of Synthesized GOQD

Particle sizes for GOQD solutions

Table S1. Average sizes of the GOQD and GOQD assemblies at different concentrations in deionized H_2O as determined by DLS at 25 °C.

GOQD [mg/ml]	Average size in diameter [nm]
0.01	0.7 +/- 0.2
0.02	0.9 +/- 0.1
0.05	1.2 +/- 0.7
0.067	66.7 +/- 4.1
0.1	66.7 +/- 9.4
1.0	78.3 +/- 19

Table S2. Average sizes of the GOQDs and GOQD assemblies at a concentration of 0.05 mg/ml after addition of HNO_3 (pH 2.15), only deionized H_2O (pH 6.93) and after addition of NaOH (pH 11.9) as determined by DLS at 25 °C.

pH	Average size in diameter [nm]
2.1	73.1 +/- 9.42

6.9	1.2 +/- 0.7
11.9	93.3 +/- 9.42

Zeta potentials (ζ) of GOQD solutions

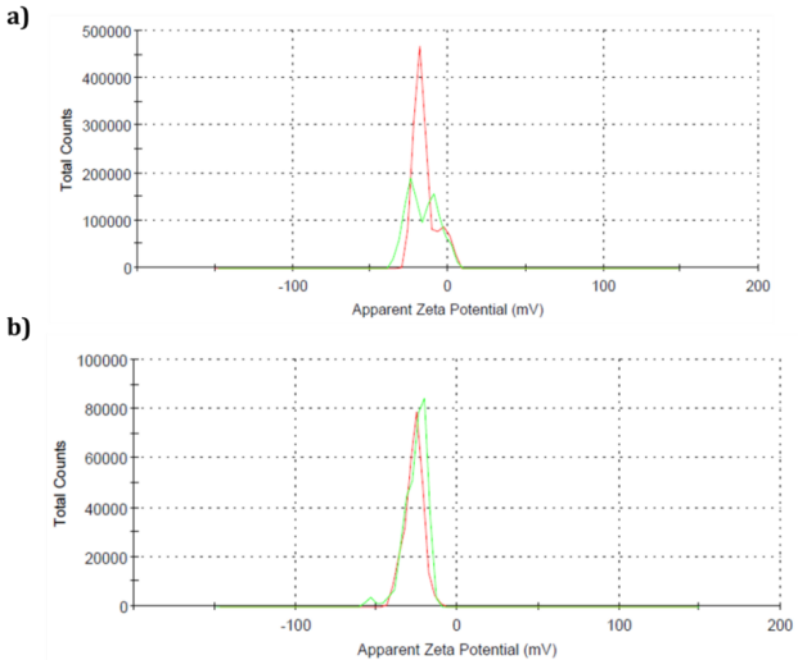

Figure S4. Zeta potential (ζ) measurements of the GOQD solution in the 0.05 mg/ml (a) and 0.1 mg/ml (b) concentrations at deionized water.

TEM images

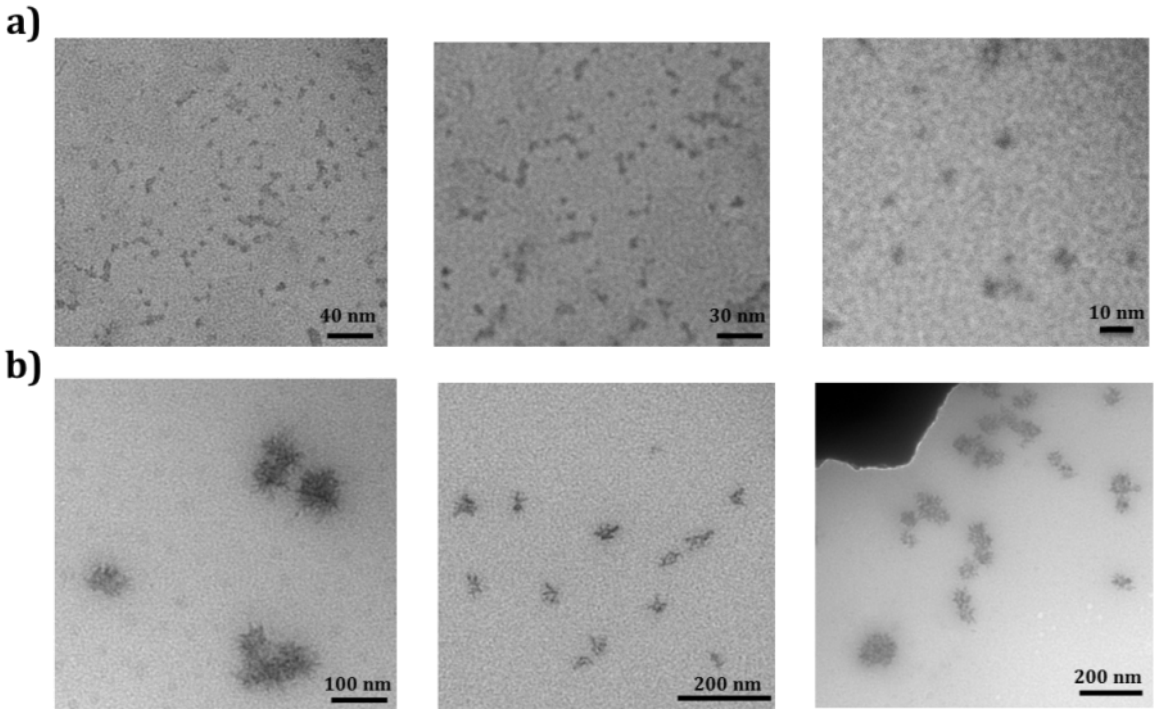

Figure S5. HR-TEM images of the GOQDs at concentration a) under CAC (0.05 mg/ml) and b) above CAC (1 mg/ml).

UV-Vis transmittance

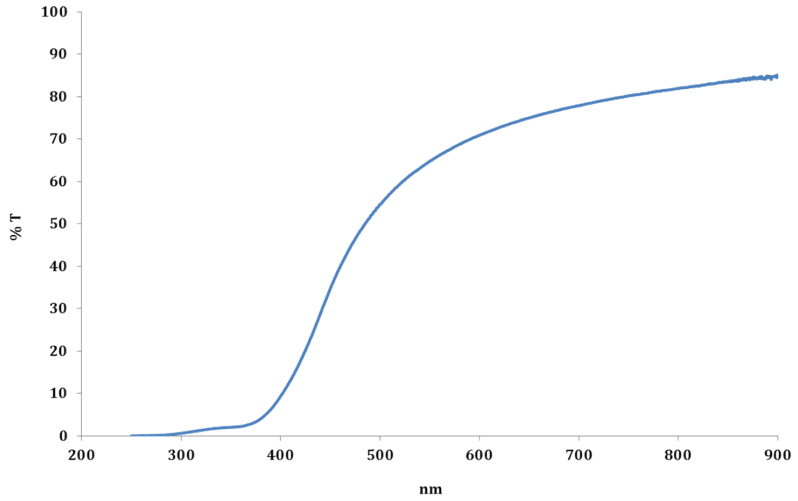

Figure S6. Typical representation of the UV-Vis transmittance of 1 mg/ml GOQDs solution

AFM images and size analysis in the dried state

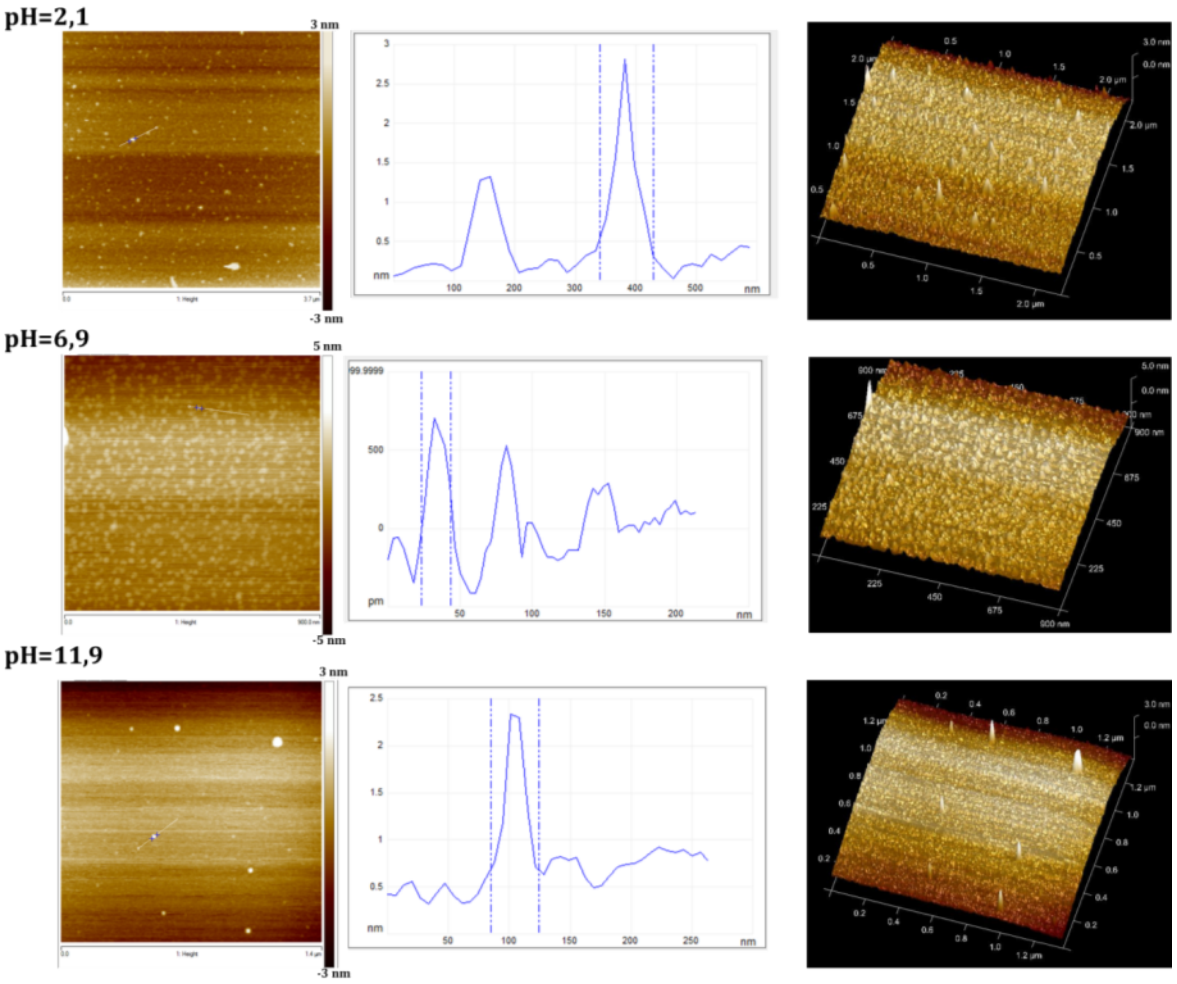

Figure S7. Approximate size and thickness of the single layer and self-assembled GOQDs through AFM images as a function of pH determined by DLS at 25 °C. With HNO_3 addition (pH=2.1), no addition (pH=6.9) and with NaOH (pH=11.9) at a concentration of 0.05 mg/ml in deionized H_2O.

Fluorescence spectroscopy

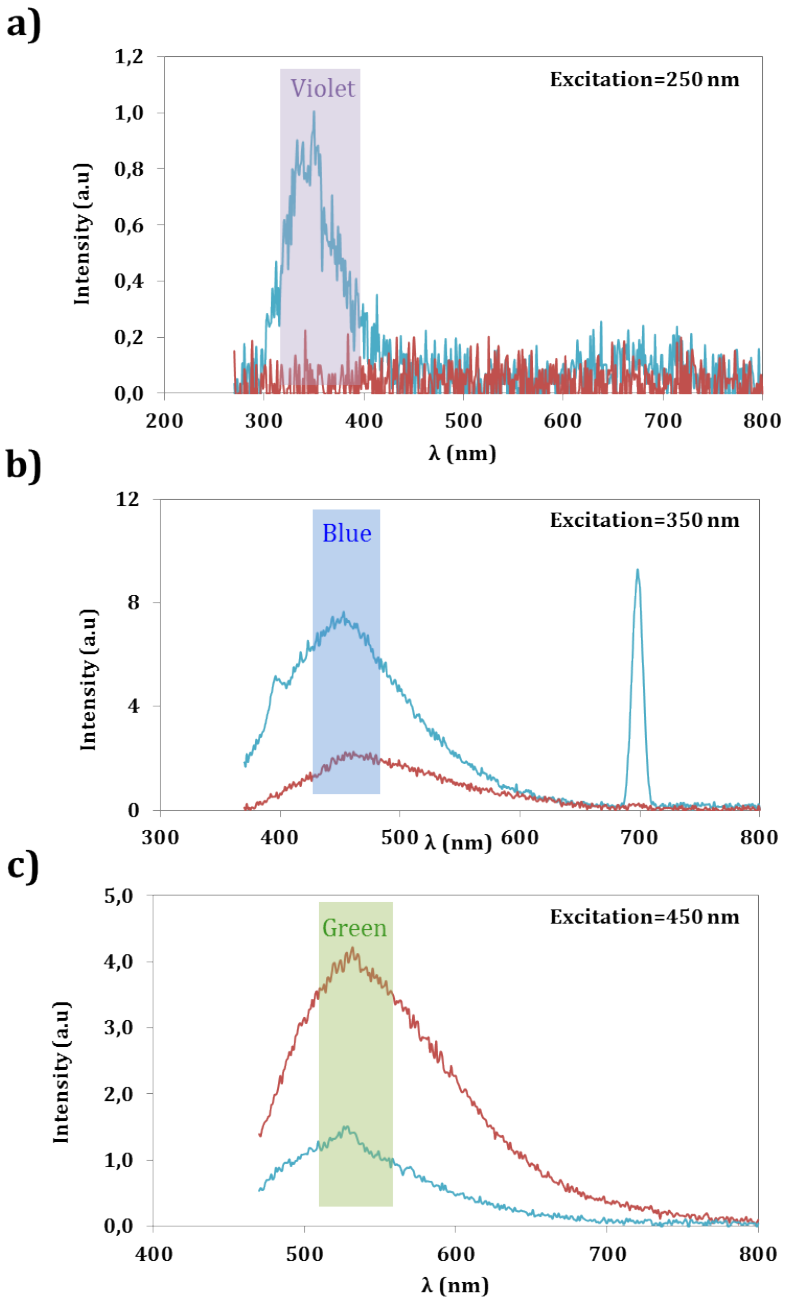

Figure S8. Fluorescence of 0.05 mg/ml (blue) and 1 mg/ml (red) solutions of GOQDs in deionized H_2O at different excitations and emissions.