Supporting Information

Chirality transfer from Graphene Quantum Dots

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Experimental Section

Materials. Graphite from TIMCAL (TIMREX SFG15, $\rho = 2.26$ g/cc, particle size = 8.80 µm, specific surface = 9.50 m²/g, ashes $\leq 0.100\%$, interlamelar distance = 3354-3358 nm) was used for the synthesis of graphene quantum dots (GQDs). Organic solvents and reagents used in this work were purchased from commercial suppliers and used as received, unless stated otherwise.

Instruments. TGA analyses were carried out under air and nitrogen in a TA-TGA-Q500 apparatus. The sample (~ 0.5 mg) was introduced inside a platinum crucible and equilibrated at 100 °C followed by a 10 °C min⁻¹ ramp between 100 and 1000 °C followed by an isotherm of 30 minutes. ¹³C-NMR spectra were recorded on a Bruker AVIII 700 MHz (175 MHz), chemical shifts are reported in ppm using deuterated D₂O. FTIR spectra were carried out in a Bruker TENSOR 27 using a spectral range was 4000-400 cm⁻¹, with a resolution of 1 cm⁻¹, and in pellets of dispersed samples of the corresponding materials in dried KBr. Raman spectra were recorded on a NT-MDT in Via Microscope at room temperature using an exciting laser source of 532 nm. X-ray diffraction was performed in a Panalytical X'Pert PRO diffractometer with Cu tube and primary beam monochromator (lambda K = 1.5406 Å) operated at 45 kV, 40 mA, programmable divergence slit working in fixed mode, and fast linear detector (X'Celerator) working in scanning mode. Samples were deposited on "zero background" silicon sample holders and measured in reflection geometry. UV-vis

spectra were recorded in a UV-3600 Shimadzu Spectrophotometer. Fluorescence spectroscopy was performed in a Fluoromax-4 spectrofluorometer (HORIBA). Circular Dichroism spectra were performed in a Jasco J-815 CD spectrometer at room temperature. TEM micrographs were obtained using a JEOL 2100 microscope operating at 200 kV. The samples were dispersed in water and dropped onto a holey carbon copper grid (200 mesh), the solvent was removed in a vacuum oven during 48 h. AFM images of the different GQDs were acquired under ambient conditions using SPM Nanoscope IIIa multimode working on tapping mode with a RTESPSS tip (Veeco) at a working frequency of ~235 kHz. The samples were prepared by spin coating from water solution on a freshly cleaved mica surface and were dried under ambient conditions for 48 hours.

Synthesis of Materials based on Graphene Quantun Dots

GQDs. Graphene Quantum dots were prepared following a slightly modified procedure to the one recently reported by Haino et al.¹ In a 1 L flask where introduced graphite (7.50 g) and a mixture of concentrated sulfuric acid (360 mL) and nitric acid (120 mL). The mixture was subjected to ultrasonic treatment for 3 hours and stirred for 48 hours at 120 °C. Subsequently, it was cooled to room temperature and stirred for another 24 hours and, finally diluted with deionized water (700-800 mL of water for 100 mL of mixture), and neutralized (*ca.* pH \approx 5~6) with a saturated solution of potassium carbonate. The aqueous solution was filtered over a 0.1 µm hydrophilic poly(tetrafluoroethylene) (PTFE) membrane and the solid redissolved in water and subjected to dialysis in dialysis bags (2000 Daltons) for five days to afford 0.54 g of GQDs. TGA: weight loss and temperature desorption (carboxylic acid groups): 38.49 %, 150-650 °C. ¹³C-NMR (175 MHz, D₂O) δ : 182.0; 172.1; 138.6; 136.5; 134.2; 129.9. IRTF (KBr): 3396, 3283, 2857, 1716, 1592, 1418, 1118 cm⁻¹. Raman: 1593 (G band), 1387 (D band) cm⁻¹. I_D/I_G = 0.92.

Chiral GQDs. GQDs (60 mg) were refluxed in a solution of thionyl chloride (5 mL) for 24 hours at 70 °C under argon atmosphere, the excess of thionyl chloride was then evaporated using argon as carrier gas. The GQDs modified with acid chlorides where reacted *in situ* with (*R*) or (*S*)-2-phenyl-1-propanol (0.5 mL) at 120 °C for 24 hours and under argon atmosphere. After this period of time, the solid was suspended in DMF and separated by filtration through a 0.1 μ m hydrophilic poly(tetrafluoroethylene) (PTFE) membrane and subject to consecutive washings with dichloromethane and methanol

until the filtrated solution remained colorless affording **GQD-E** (*R*) (58 mg) or **GQD-E** (*S*) (52 mg). **GQDs-E** (*R*): TGA: weight loss and temperature desorption (ester groups): 46.39 %, 350-600 °C. FTIR (KBr): 3445, 2923, 2853, 1731, 1612, 1403, 1357, 1254 cm⁻¹. Raman: 1598 (G band), 1387 (D band) cm⁻¹. $I_D/I_G = 0.92$. **GQDs-E** (*S*): TGA: weight loss and temperature desorption (ester groups): 46.34 %, 350-600 °C. ¹³C-NMR (175 MHz, D₂O) δ : 181.8; 168.2; 138.9; 134.5; 130.7; 128.4; 67.4; 41.4; 17.3. FTIR (KBr): 3443, 2925, 2855, 1727, 1601, 1404, 1244 cm⁻¹. Raman: 1601 (G band), 1383 (D band) cm⁻¹. $I_D/I_G = 0.88$.

Supplementary Figures



Fig. S1 TEM images of as-prepared GQDs (a), and the F1 (b) and F2 (b) fractions obtained after a Sephadex G-25 gel column separation. The size distributions are obtained from the TEM dots.



Fig. S2 X-Ray diffraction patterns (298 K) plotted against the angle 2 θ of pristine graphite (black), the as-prepared GQDs (red), GQD-E(**R**) (blue) and GQD-E(**S**) (green).



Fig. S3 First derivative curves of the TGA analyses under inert atmosphere of graphite (black), GQDs (red), CGQDs-(R) (blue) and CGQDs-(S) (green).



Fig. S4 ¹³C-NMR spectrum (125 MHz, D_2O , room temperature) of GQD-E(**S**). (*) denotes the signal of the solvent.



Fig. S5 Raman spectra of the as-prepared GQDs (red), $GQD-E(\mathbf{R})$ (blue) and, $GQD-E(\mathbf{S})$ (green) - 532 nm excitation.



Fig. S6 Representative TEM images on holey carbon copper grids with scale bars of 200 nm (left) and 100 nm (right) of GQD-E(\mathbf{R}) (a, b) and, GQD-E(\mathbf{S}) (c, d).



Fig. S7 AFM imagse (topography, tapping mode) and height profiles of selected GQD-E(*S*) (A-C).



Fig. S8 UV-vis absorption and fluorescence ($\lambda_{exc} = 350 \text{ nm}$) spectra of (a) GQD-E(\mathbf{R}) and (b) GQD-E(\mathbf{S}) in H₂O. Inset: photograph of the aqueous solutions taken under 365 nm UV light.



Fig. S9 Top: Circular dichroism spectra in NMP for $GQD-E(\mathbf{R})$. Bottom: UV-vis spectrum of $GQD-E(\mathbf{R})$ in NMP.

¹. R. Sekiya, Y. Uemura, H. Murakami, T. Haino, Angew. Chem. Int. Ed., 2014, 53, 5619