

# Hybrids based on graphene oxide and porphyrin as a tool for detection and stabilization of DNA G-quadruplexes

## Supporting Information

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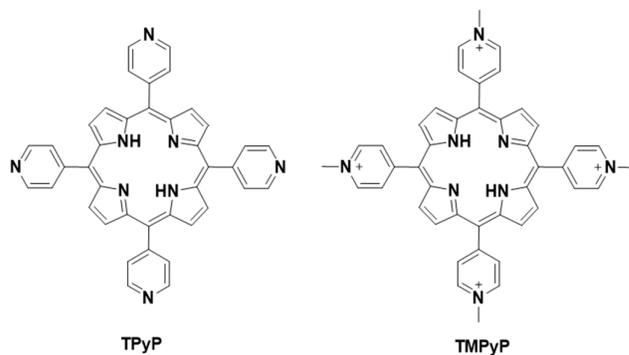


Figure S1. Structures of TPyP and TMPyP.

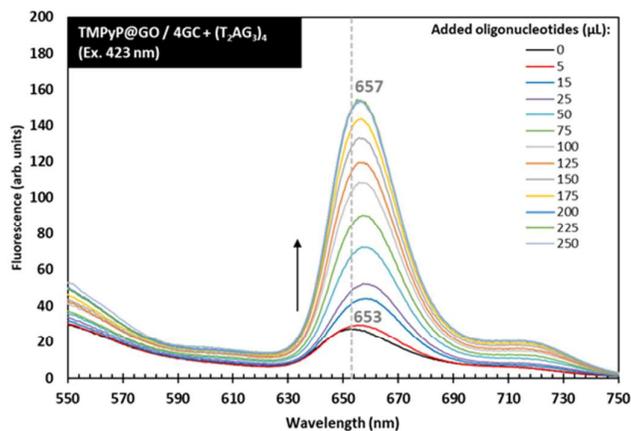


Figure S2. Spectrofluorimetric titration (550-750 nm, excitation at 423 nm) of TMPyP@GO (1 mL, 2  $\mu$ M) by adding volume increments of a solution containing both 4GC and G-Q ( $T_2AG_3$ )<sub>4</sub>.

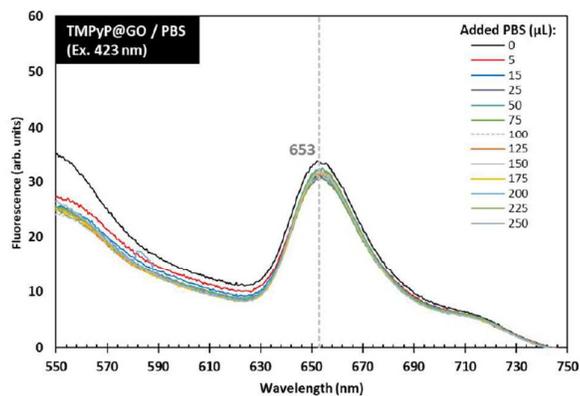
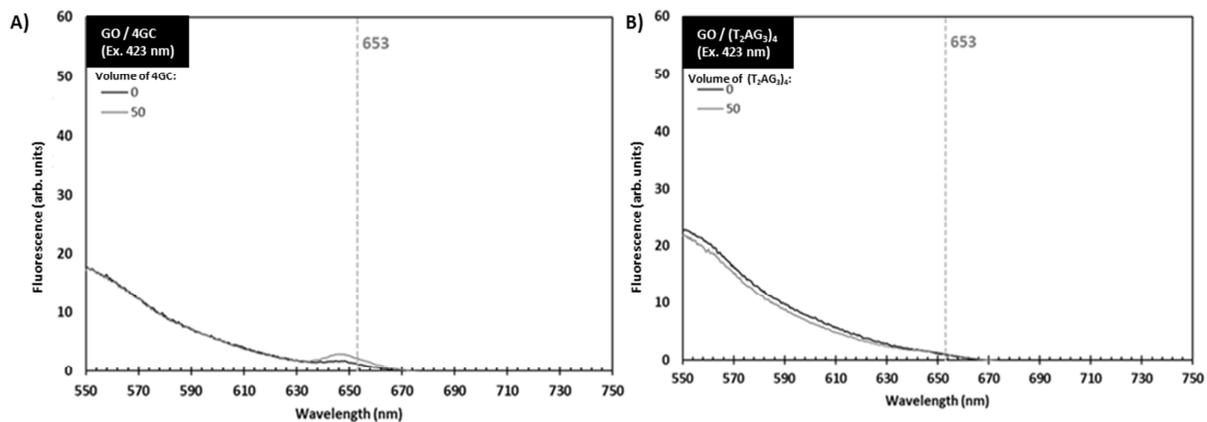
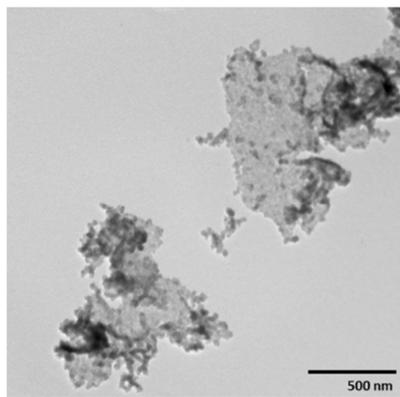


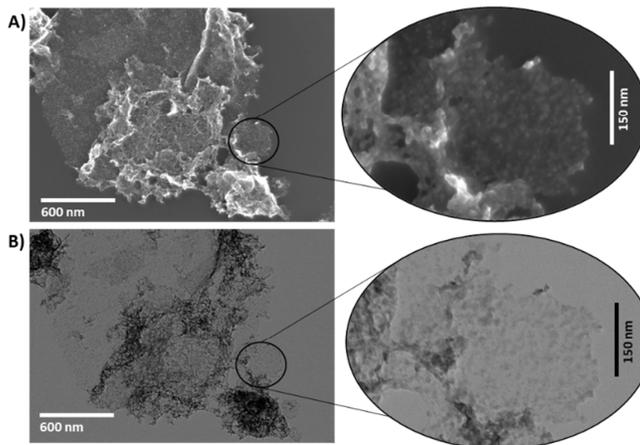
Figure S3. Titration of TMPyP@GO (porphyrin concentration of 2  $\mu$ M) just with PBS buffer



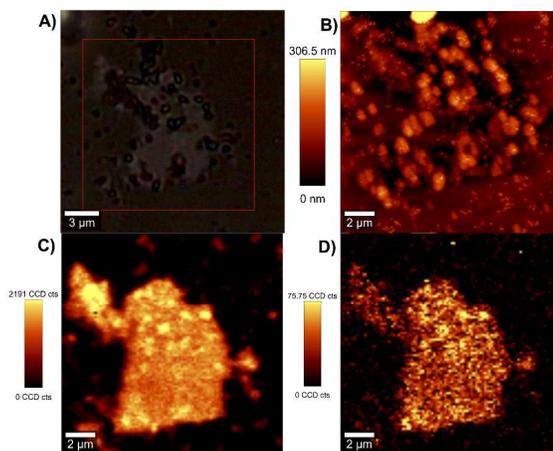
**Figure S4.** Titration of GO with the duplex 4GC (A) and with G-Q (T<sub>2</sub>AG<sub>3</sub>)<sub>4</sub> (B). A physiological solution of GO (50 μg/mL) was excited at 423 nm (to resemble the conditions used in the excitation TMPyP and TMPyP@GO) and the used oligonucleotides have a concentration of *ca* 15 μM. Only 50 μL of each oligonucleotide were added to each experiment, since no significant changes occurred and no fluorescence was recorded at the wavelengths of interest.



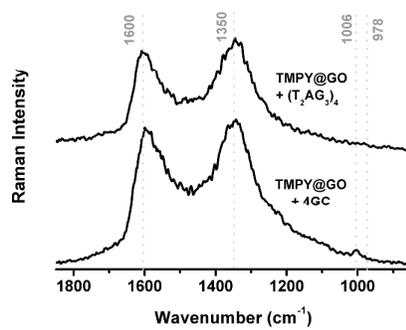
**Figure S5.** TEM images of TMPyP@GO hybrids.



**Figure S6.** SEM (A) and STEM (B) images of TMPyP@GO that show a detail of more transparent regions but still with assembled porphyrin molecules.



**Figure S7.** A) Optical microscope image; B) Topography AFM image (15  $\mu\text{m}$  x 15  $\mu\text{m}$ ) and Raman imaging of the TMPyP@GO hybrid composite obtained by the integration of the intensity of the Raman bands of GO at 1350  $\text{cm}^{-1}$  (C) and the Raman bands of TMPyP at 1006  $\text{cm}^{-1}$ .



**Figure S8.** Average Raman spectrum obtained from seven Raman spectra acquired on different regions of TMPyP@GO with 4GC and with G-Q ( $\text{T}_2\text{AG}_3$ )<sub>4</sub> (532nm, 1mW, 10 acquisitions with 2s each).