Electronic Supplementary Information

Fluorescent and Visual Detection of Fluoride ion Using Photoluminescent Graphene Oxide Paper Sensor

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Synthesis of Ag nanoparticles (AgNPs) with 30-nm size. Typically, 90 mg of silver nitrate was dissolved in 250 mL of ultrapure water and brought to boiling. To this solution, 10 mL of 1% trisodium citrate was added and kept boiling for 1 h. After cooling to room temperature, the AgNPs colloid was obtained.

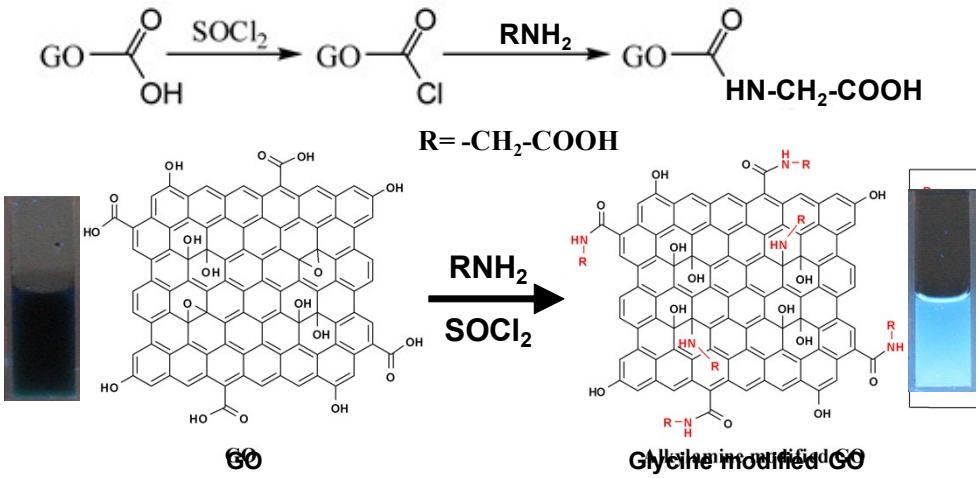

Figure S1. Schematic illustration of synthesis of photoluminescent GO by surface alkylamine functionalization under mild conditions. The photographs of starting GO (left) and glycine modified GO (right) aqueous solutions were taken under 360 nm UV irradiation.

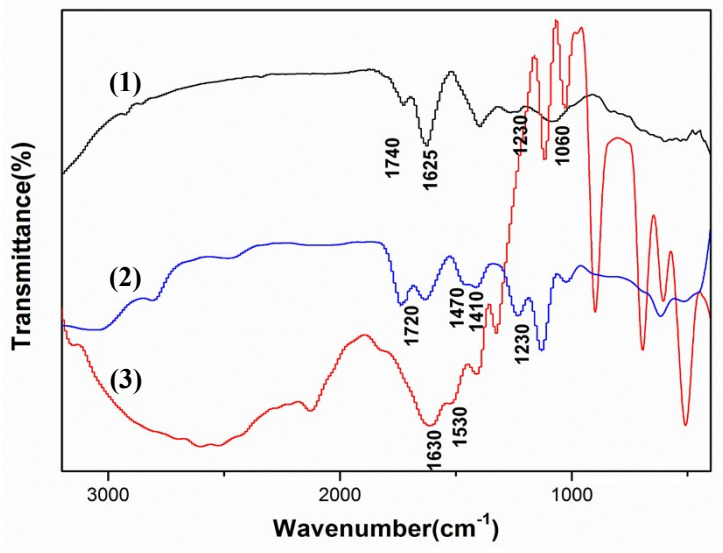

Figure S2. FTIR spectra of GO (1), photoluminescent GO-glycine (2), glycine (3).

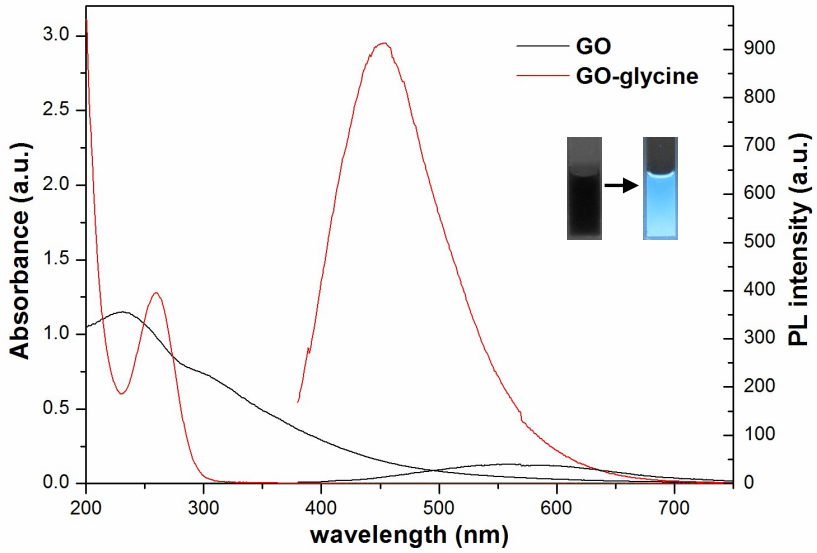

Figure S3. Fluorescence spectra and the UV-vis absorption spectra of GO-glycine and GO, respectively. Inset photographs of starting GO (left) and glycine modified GO (right) aqueous solutions were taken under 360 nm UV irradiation.

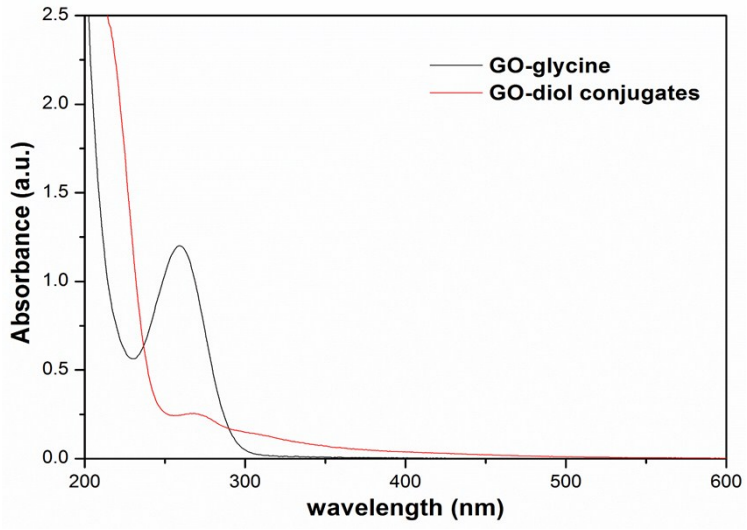

Figure S4. Absorption spectra of GO-glycine and GO-diol conjugates. Solutions were prepared in 10 mM PBS buffer (pH 7.40).

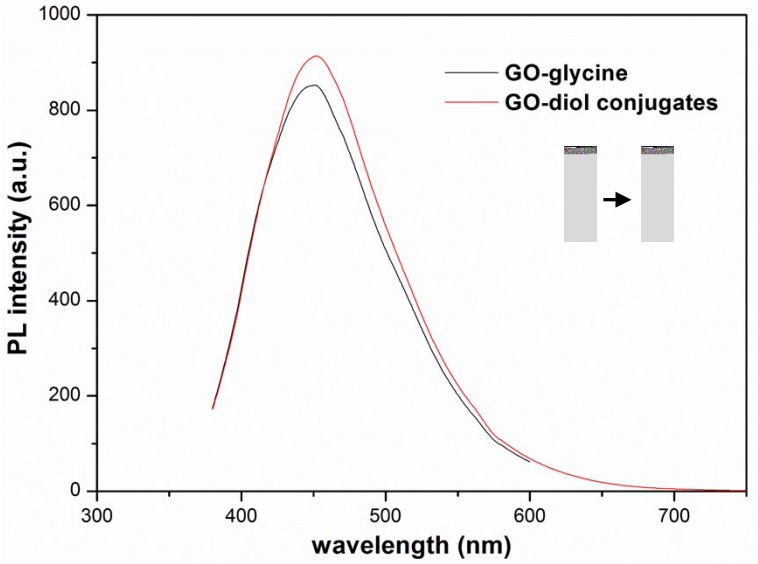

Figure S5. Fluorescence spectra observed from GO-glycine and GO-diol conjugates. Solutions were prepared in 10 mM PBS buffer (pH 7.40).

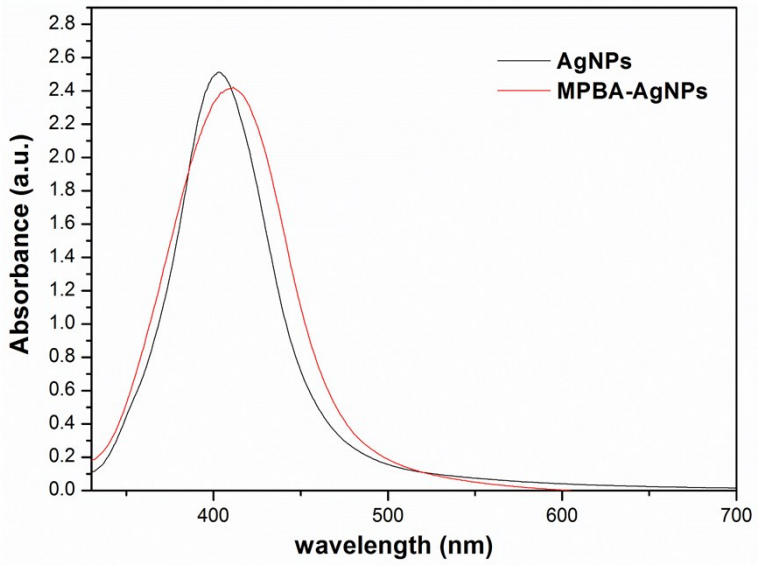

Figure S6. Absorption spectra of MPBA-AgNPs and AgNPs.

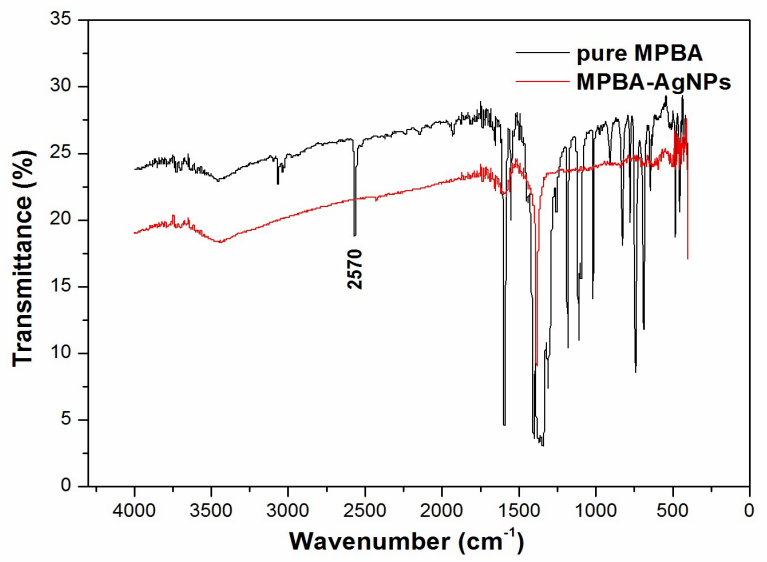

Figure S7. FTIR spectra of pure MPBA and MPBA-AgNPs. The AgNPs were mixed with KBr and dried under vacuum at 60 ℃ for pellet preparation.

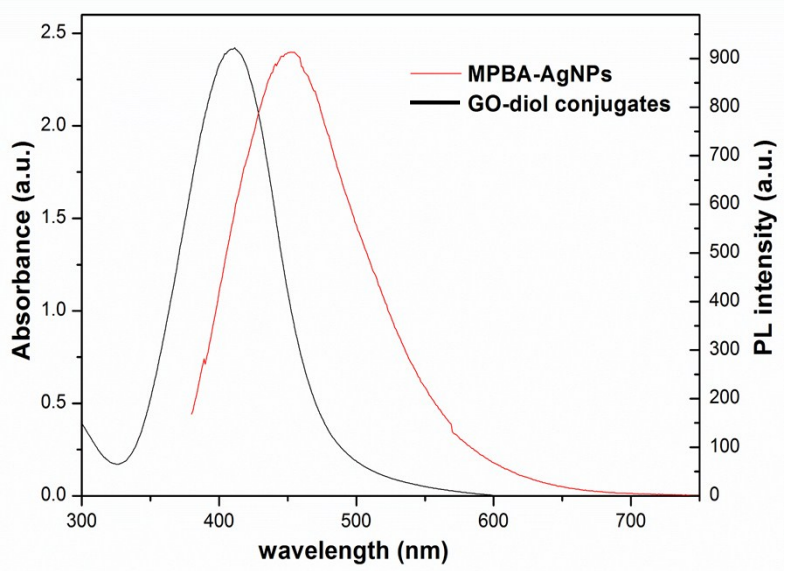

Figure S8. Absorption spectra of MPBA-AgNPs and fluorescence emission spectra of GO-diol conjugates.

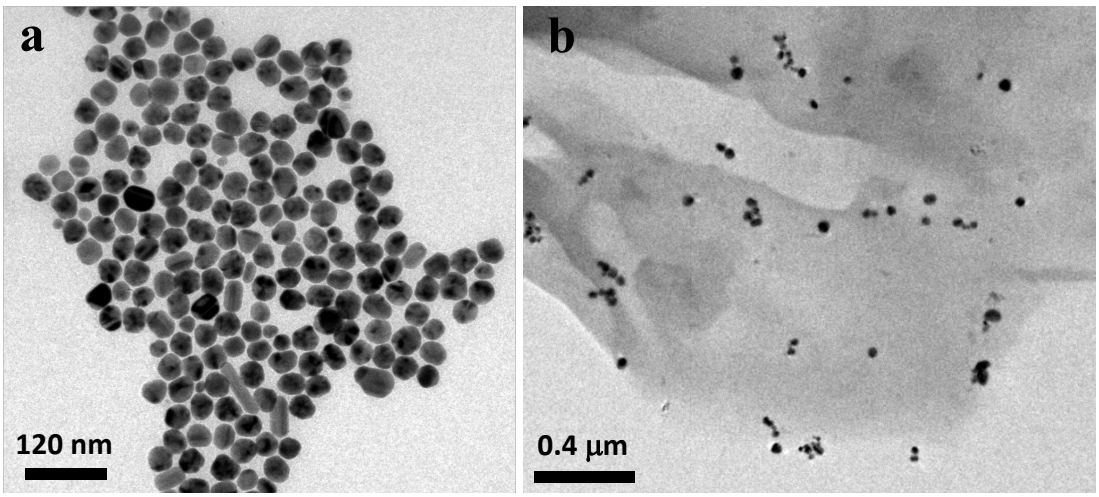

Figure S9. TEM images of (a) AgNPs with 30 nm size and (b) AgNPs linked at the GO nanosheets.

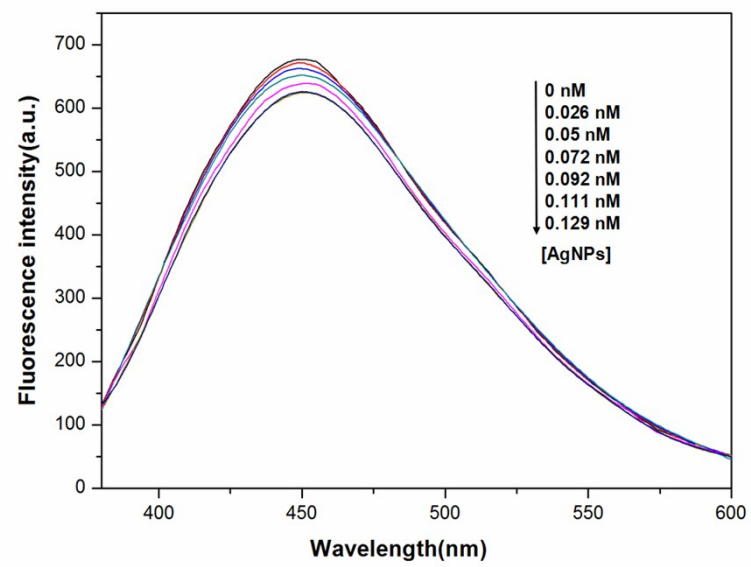

Figure S10. The fluorescence of the GO-glycine probe solution (1.0 mg/mL) with the addition of AgNPs.

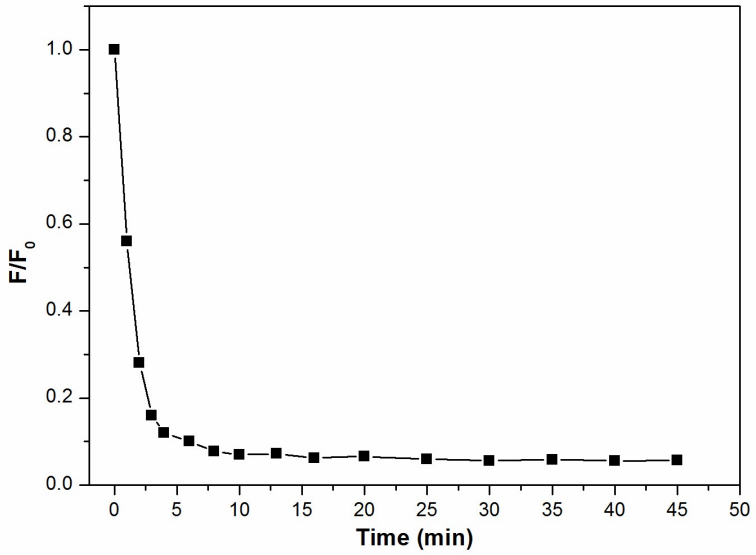

Figure S11. The kinetics of fluorescence quenching of the GO-glycine probe solution (1.0 mg/mL). The fluorescence quenching efficiency (F/F_0) of GO-glycine via time with addition of 0.129 nM MPBA-AgNPs (Relative fluorescence intensities are represented as F/F_0, where F_0 and F correspond to the fluorescence intensity before and after the addition of MPBA-AgNPs, respectively).

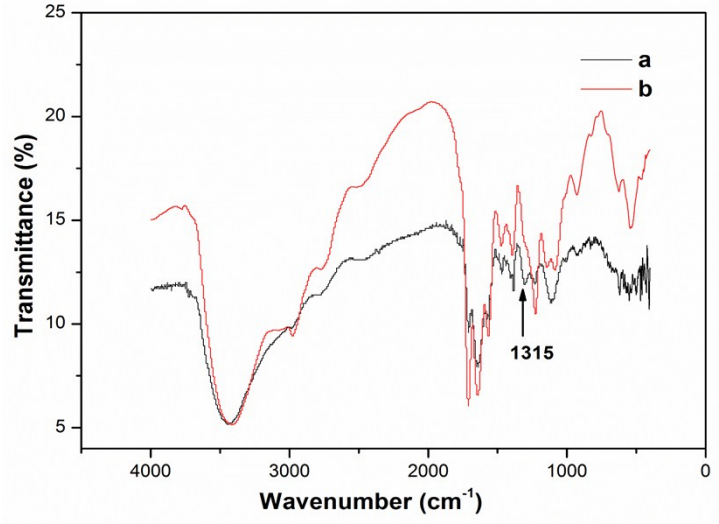

Figure S12. FTIR spectra of Go-diol-MPBA-AgNPs (a) and Go-diol-MPBA-AgNPs (b) in the presence of F^-.

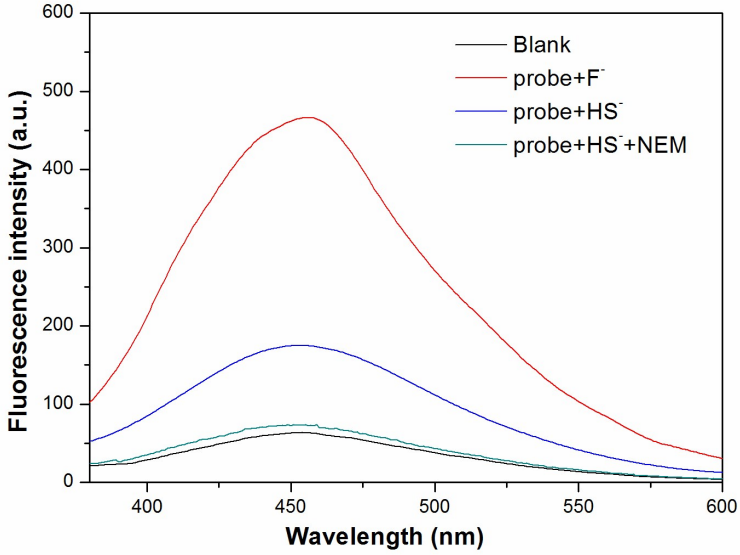

Figure S13. Fluorescent responses of Go-diol-MPBA-AgNPs probe to F^-, HS^- and HS^-+NEM (F^-: 0.55 nM; HS^-: 0.55 nM; NEM: 5.5 nM). The addition of NEM can effectively eliminate the interference of HS^-.

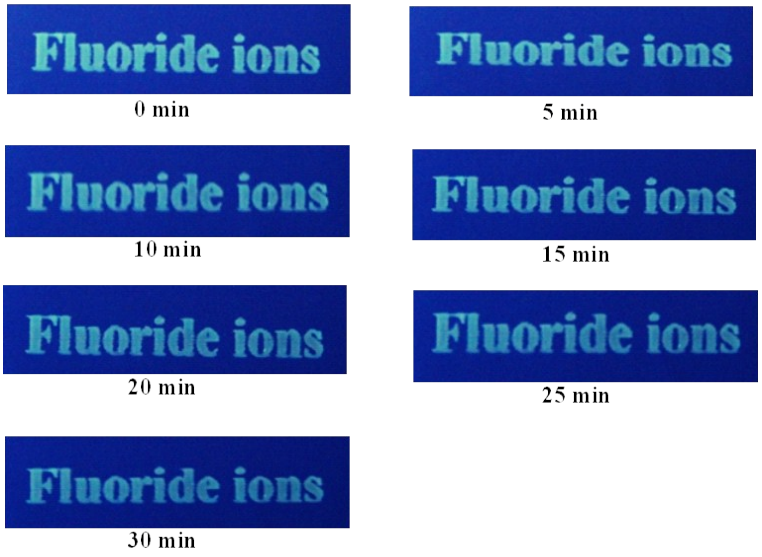

Figure S14. The stability of fluorescence of photoluminescent graphene oxide "Fluoride ions".

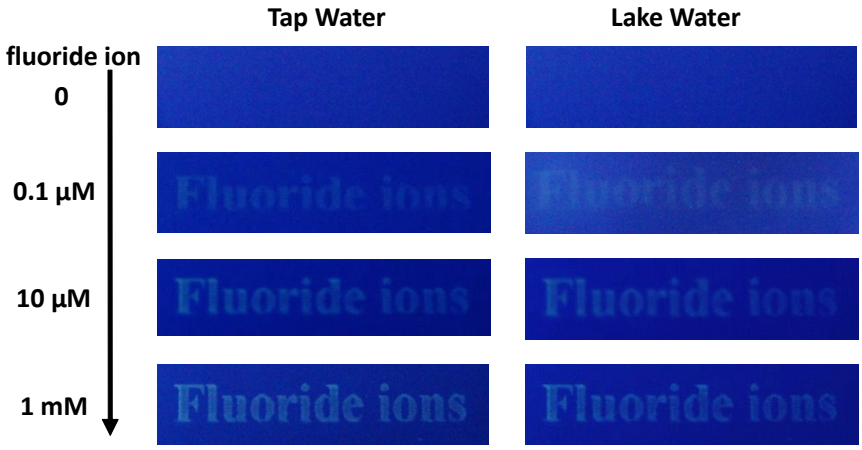

Figure S15. The visual detections of F^- in tap water and lake water, respectively. The photos were taken under a 365 nm UV lamp.