Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Novel carbon quantum dot fluorescence nanosensor for selective detection of flumioxazin in real samples

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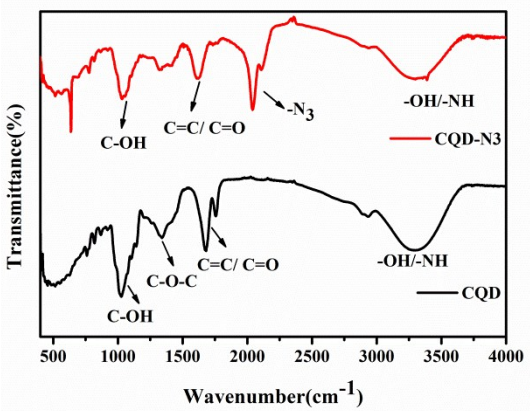


Fig S1 FTIR spectra of CQD, CQD-N_3

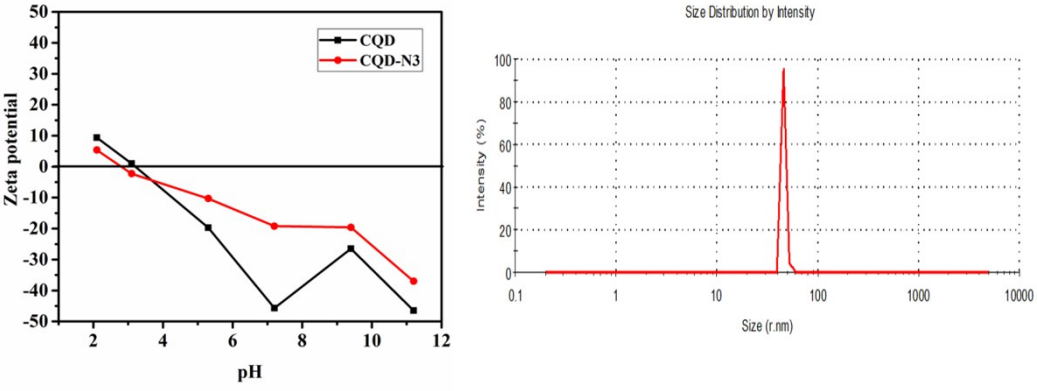


Fig S2 (a) Change in Zeta-potential of CQD and CQD-N3 with pH, (b) Particle size distribution graph of CQD-N3.

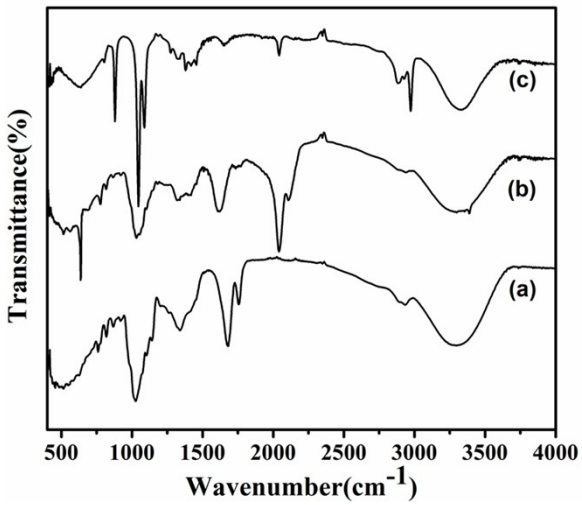


Fig S3 FTIR spectra of (a) CQD, (b) CQD-N_3, (c) CQD-N_3+Cu+AA+Flumioxazin

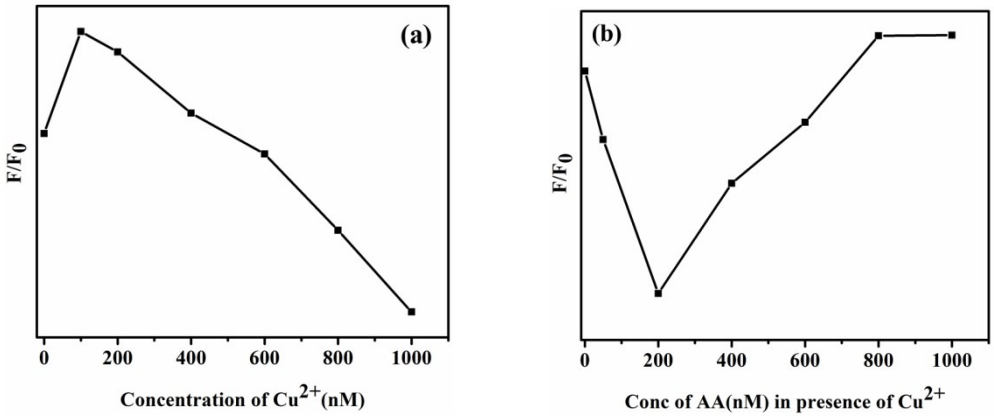


Fig.S4 (a) Quenching effect of Cu^{2+} on CQD-N_3, (b) Regain of quenching in presence of AA

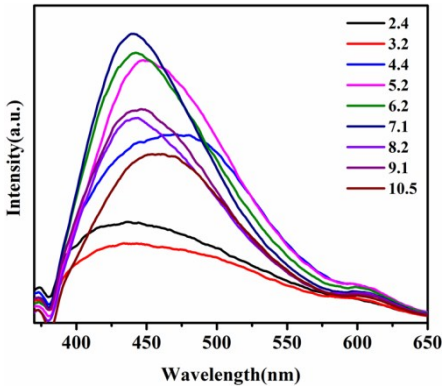


Fig.S5 Change in intensity of the probe w.r.t. pH

Compound 1:

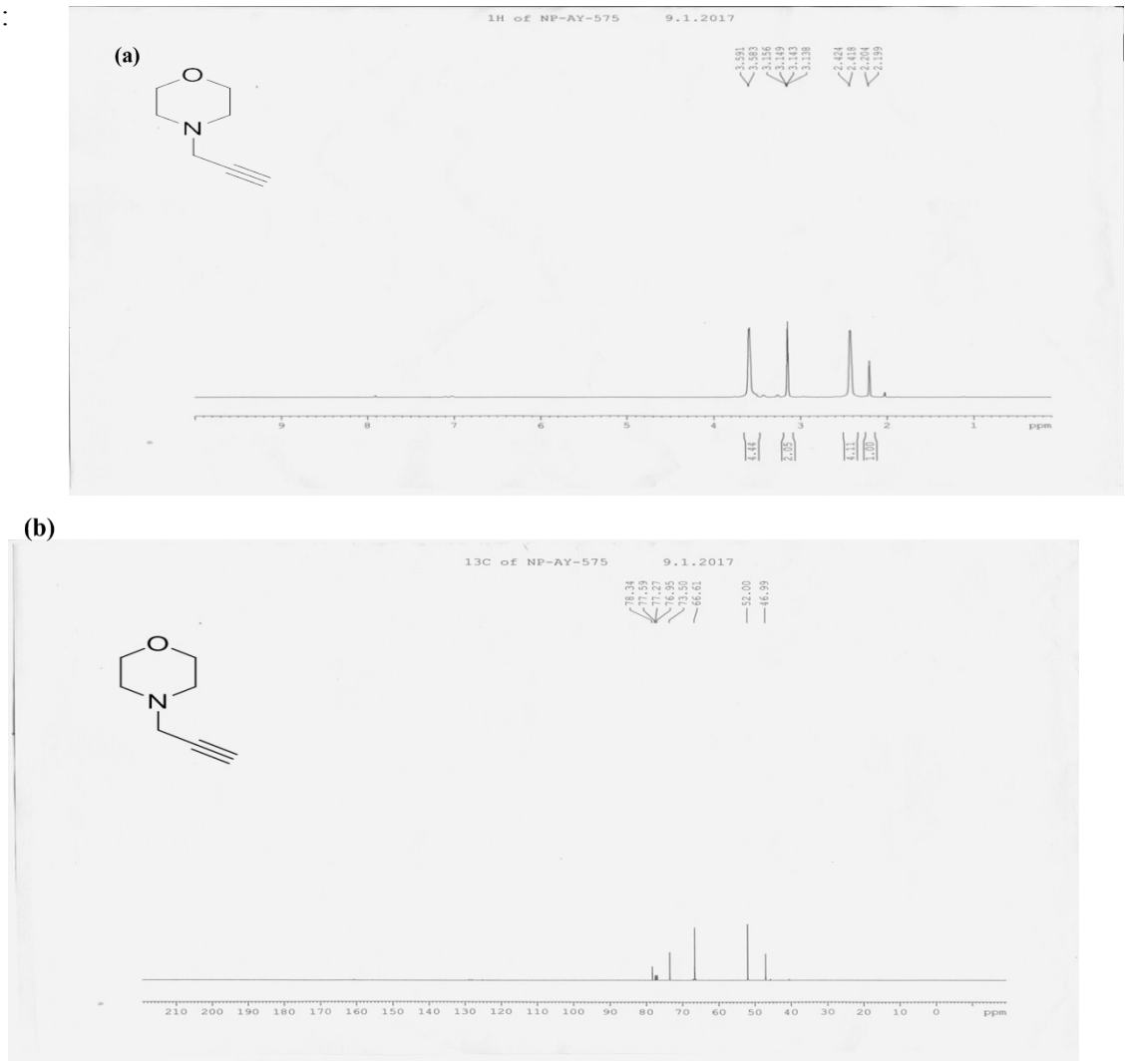


Fig.S6 (a) ^{1}H NMR spectra of compound 1, (b) ^{13}C NMR spectra compound 1

.^{1}H NMR (400 MHz, $CDCl_3$) δ 3.57(d, J = 4 Hz, 4H), 3.17 – 3.11 (m, 2H), 2.40 (d, J = 4 Hz, 4H), 2.18 (d, J = 4 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 78.3, 73.5, 66.6, 52.0, 46.9. IR (ATR): ν = 3278, 2862, 1673, 1456, 1297, 1109 cm^{-1}.

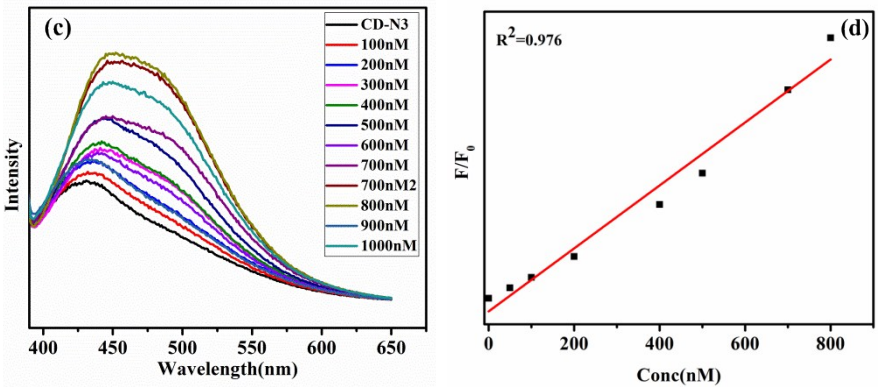
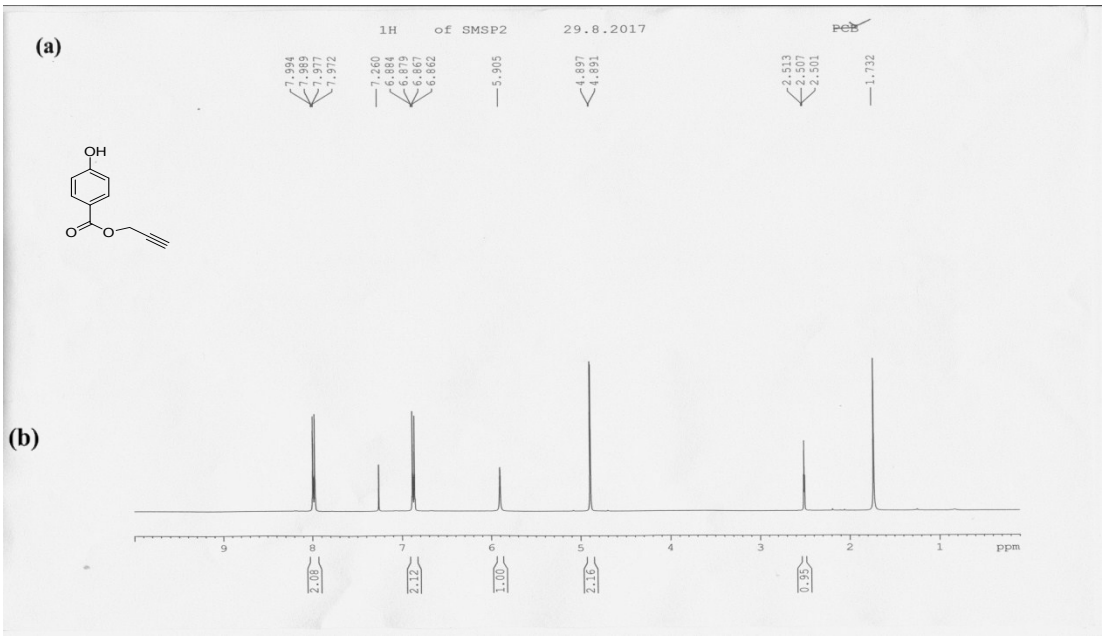


Fig.S6 (c) PL turn on of CQD-N_3 with different conc. Of compound 1, (d) Linear response of compound 1 in HEPES buffer.

Comound 2:



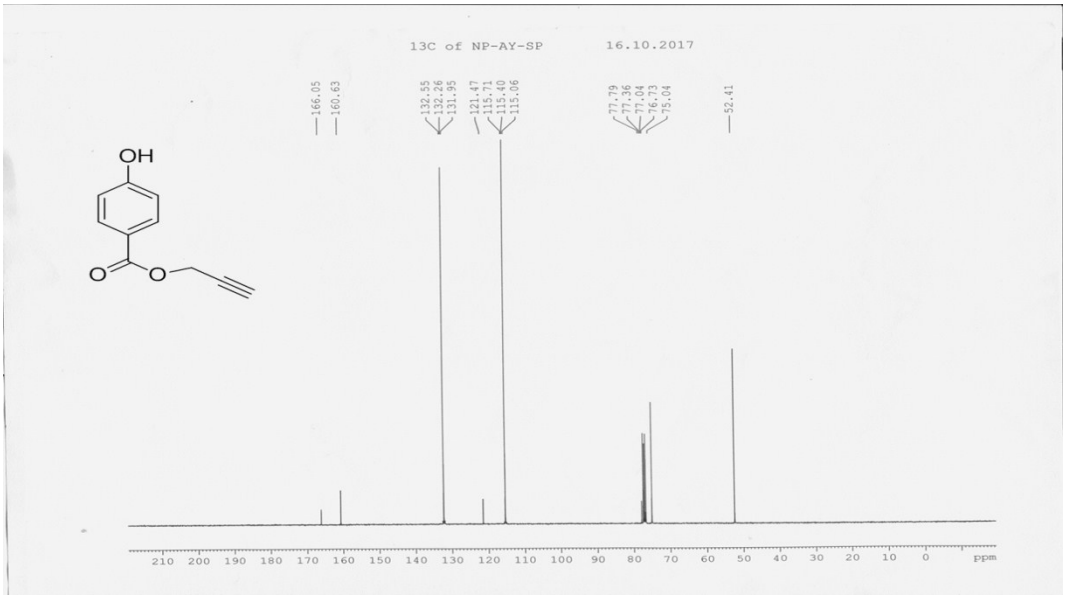


Fig.S7 (a) ^{1}H NMR spectra of compound 2, (b) ^{13}C NMR spectra compound 2.

^{1}H NMR (400 MHz, $CDCl_3$) δ 8.01 -7.95 (m, 2H), 6.90 - 6.84 (m, 2H), 5.90 (s, 1H), 4.89 (d, 2H, J = 2.4 Hz), 2.50 (t, 1H) ; ^{13}C NMR (100 MHz, $CDCl_3$) δ 166.03, 160.63, 132.22, 121.45, 115.38, 77.76, 74.99, 52.37. IR (ATR): ν = 3337, 3268, 2119, 1693, 1604, 1446, 1099 cm^{-1}.

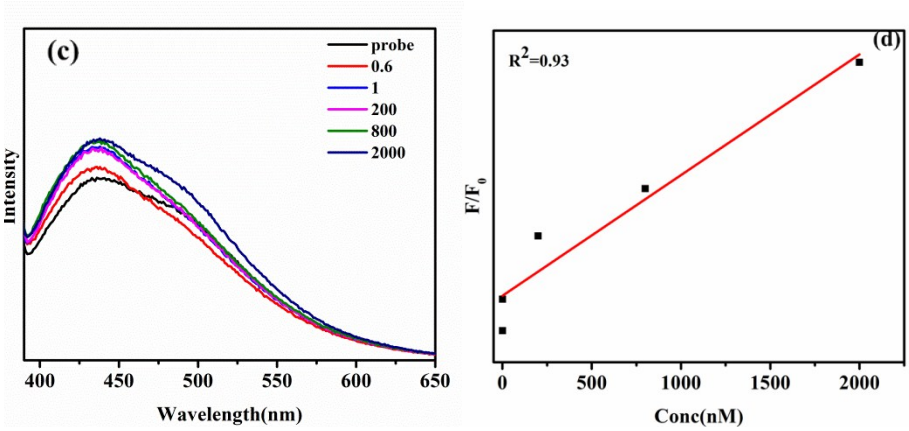
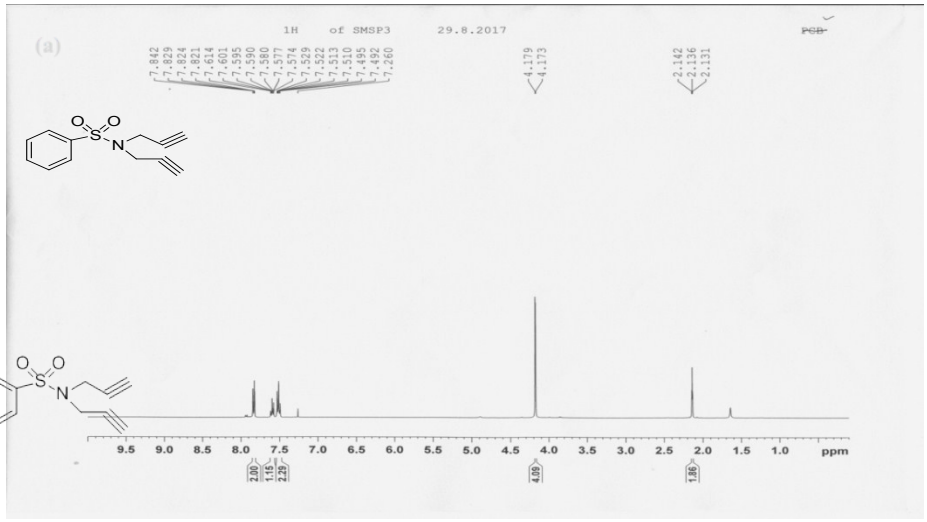


Fig.S7 (c) PL response of CQD-N_3 with different conc. of compound 2, (d) Linear response of compound 2 in HEPES buffer.

Comound 3

(b)



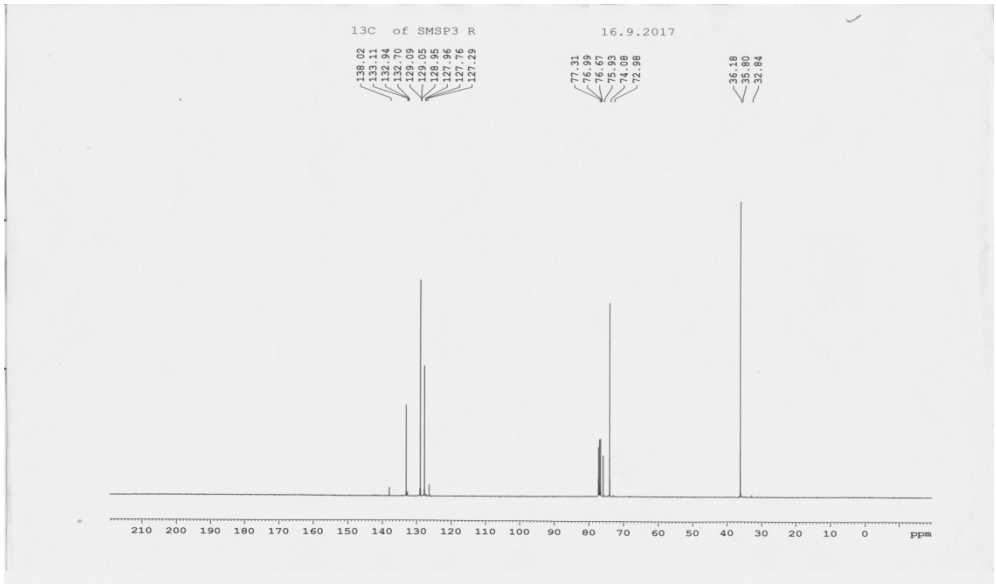


Fig.S8 (a) ^{1}H NMR spectra of compound 3, (b) ^{13}C NMR spectra compound 3.

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.86 - 7.80 (m, 2H), 7.64 - 7.56 (m, 1H), 7.55 - 7.47 (m, 2H), 4.17 (d, 4H, *J* = 4 Hz), 2.15 (t, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 137.9, 133.2, 129.1, 127.8, 75.9, 74.2, 36.2. IR (ATR): ν = 3268, 2119, 1446, 1337, 1159, 1089 cm^{-1}.

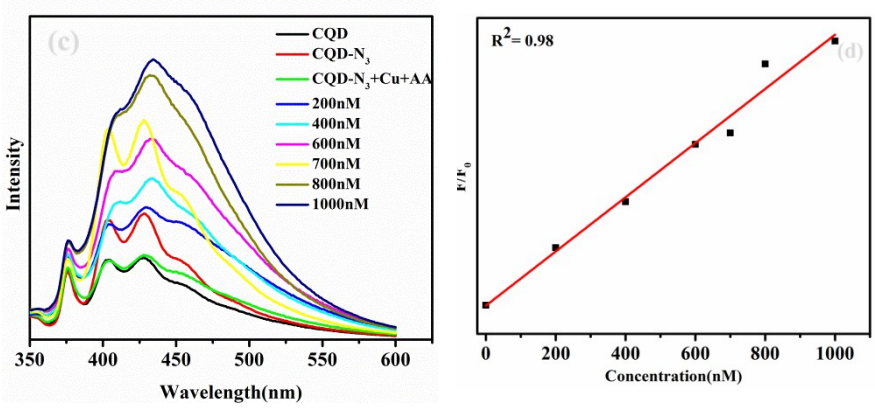
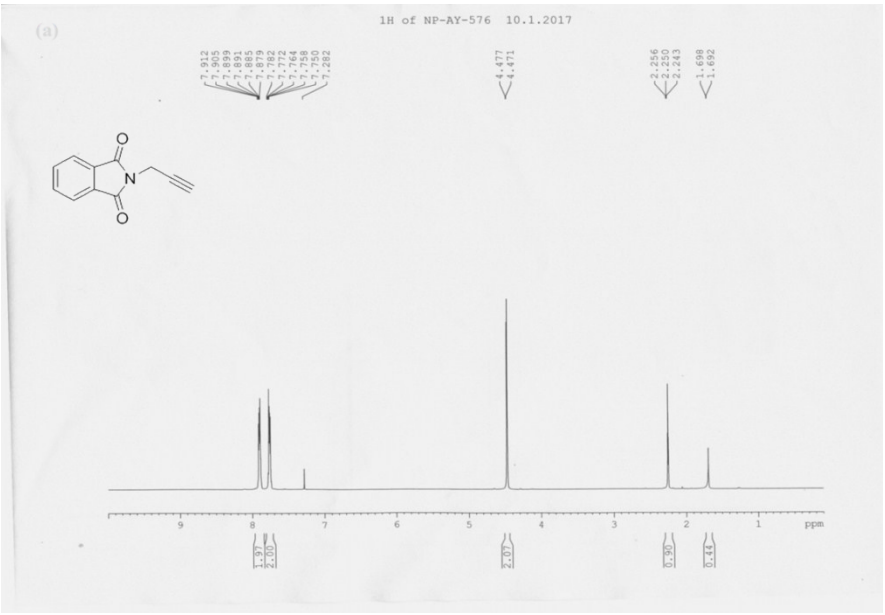


Fig.S8 (c) PL turn on of CQD-N_3 with different conc. Of compound 3, (d) Linear response of compound 3 in ethanol solvent.

Compound 4



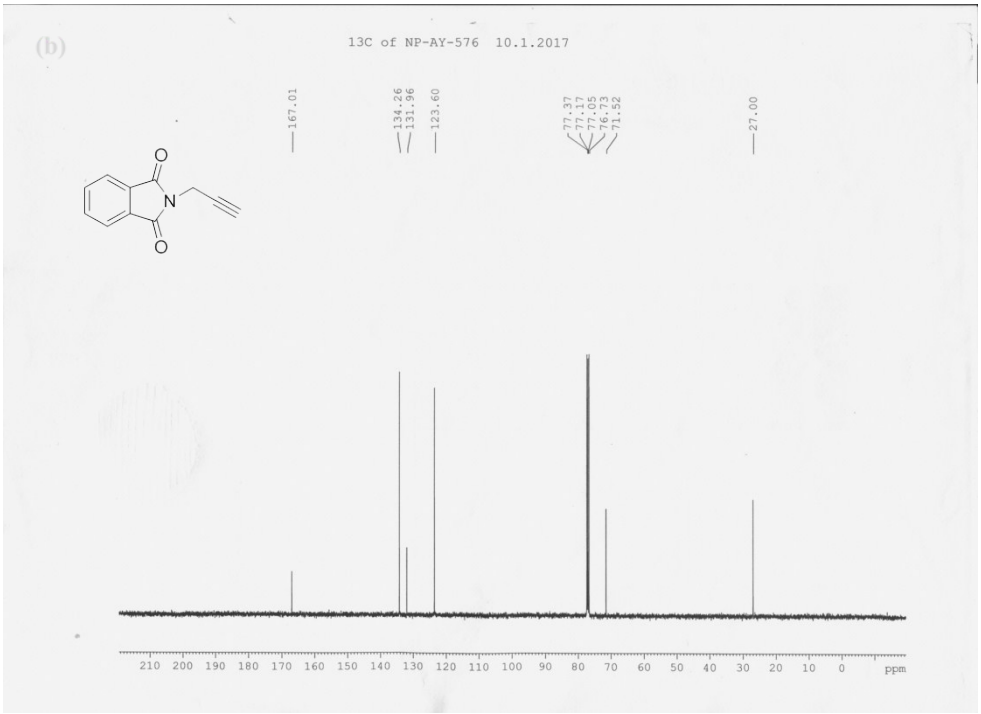


Fig.S9 (a) ^{1}H NMR spectra of compound 4, (b) ^{13}C NMR spectra compound 4.

^{1}H NMR(400 MHz, $CDCl_3$) δ 7.93-7.85 (m, 2H), 7.80 -7.73 (m, 2H), 4.47 (s, 2H), 2.25 - 2.24 (t, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 167.0, 134.2, 131.9, 123.6, 71.5, 27.0. IR (ATR): ν = 3298, 2981, 1703, 1406, 1128, 940 cm^{-1}.

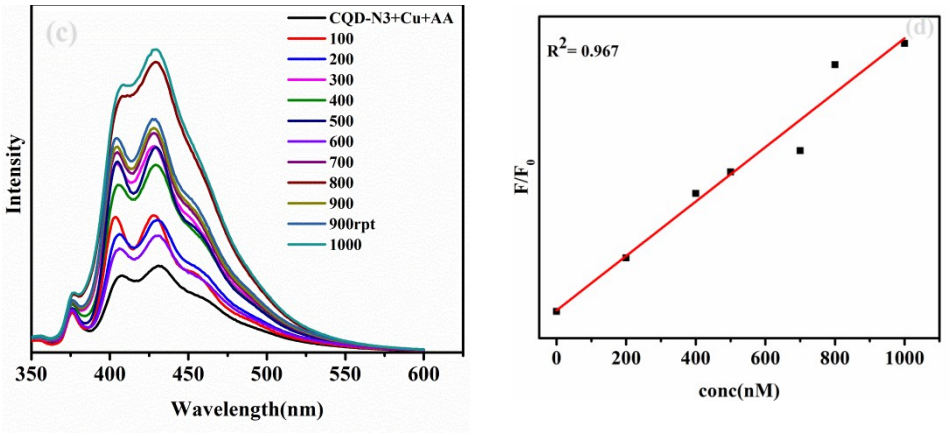


Fig.S9 (c) PL turn on of CQD-N_3 with different conc. Of compound 4, (d) Linear response of compound 4 in ethanol solvent.

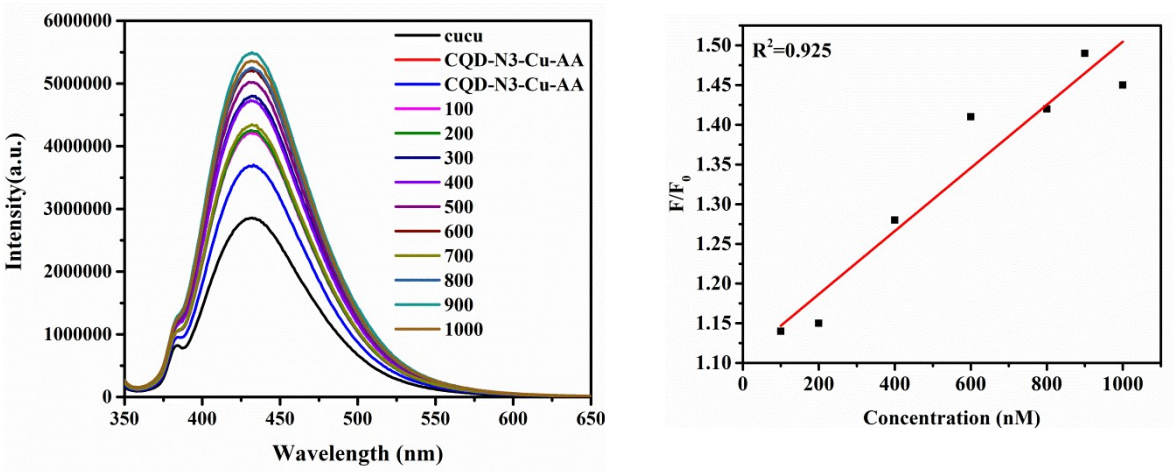


Fig. S10 PL turn on of CQD-N3 in cucumber with different conc. of FXN

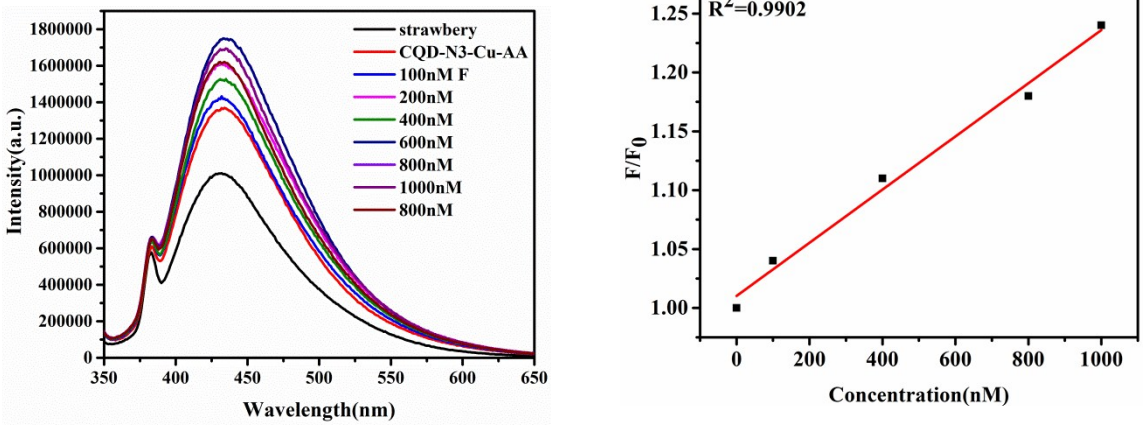


Fig.S11 PL turn on of CQD-N3 in strawberry with different conc. of FXN

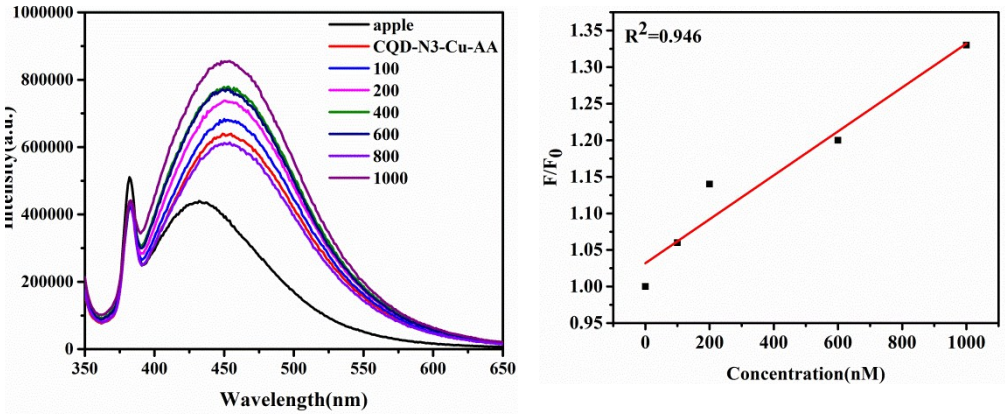


Fig. S12 PL turn on of CQD-N3 in apple with different conc. of FXN