

Electronic Supplementary Information

Post synthetic modification of Graphene quantum dots bestowing enhanced bio-sensing and anti-biofilm ability: Efficiency Facet

Neha Agrawal,^{*a} Dolly Bhagel^a, Priyanka Mishra^b, Dipti Prasad^a and Ekta Kohli^{*a}

^a Department of Neurobiology, DIPAS, DRDO, Delhi, India

^b Department of Immunology, DIPAS, DRDO, Delhi, India

[*neha87bhu@gmail.com](mailto:neha87bhu@gmail.com), ektakohli@hotmail.com

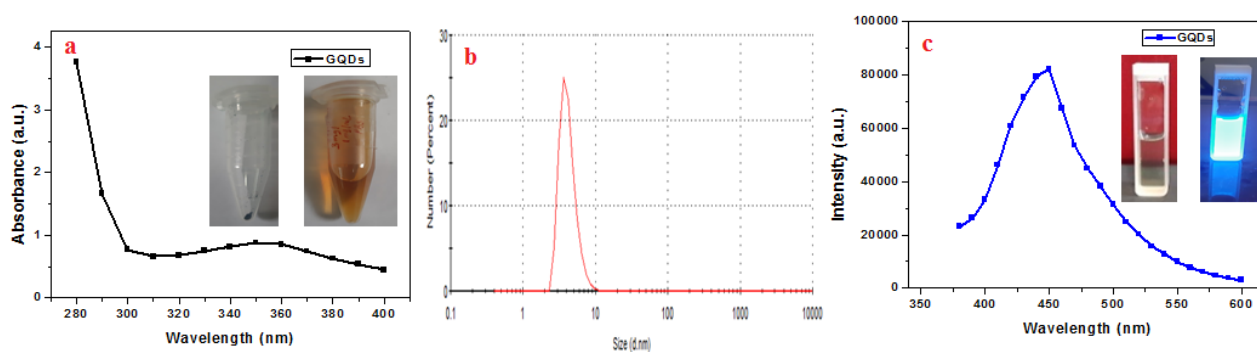


Figure S1: a) Uv-Visible absorption spectra of unmodified GQDs; b) Size determination of GQDs with DLS spectra; c) Fluorescence spectra of unmodified GQDs excited at 350nm (inset shows the GQDs solution in normal light and Uv light)

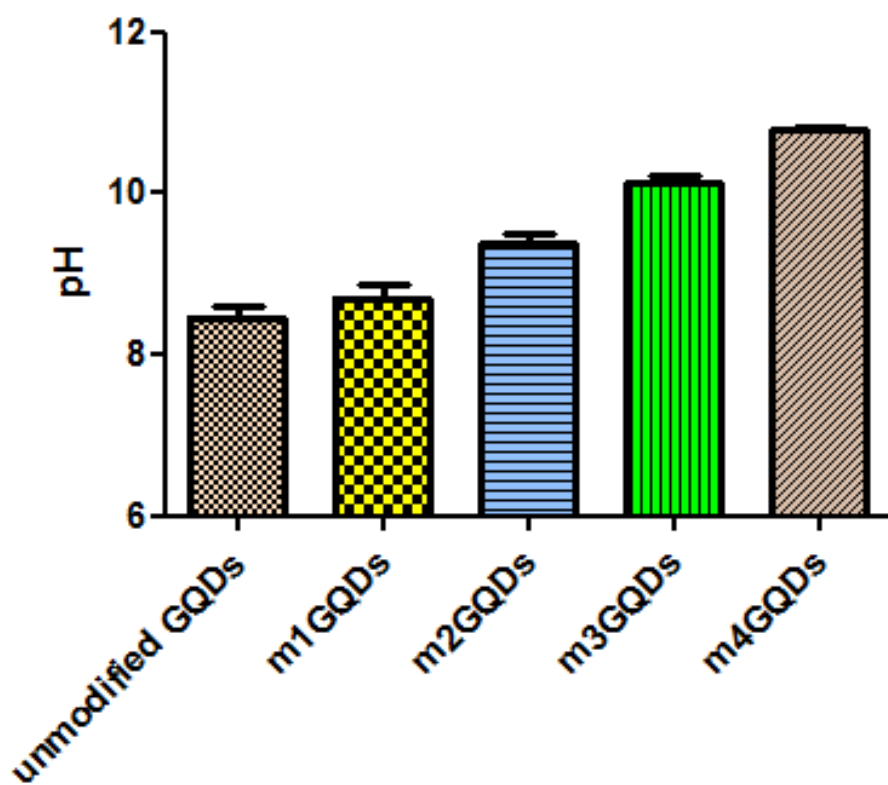


Figure S2: pH variation of unmodified and modified GQDs

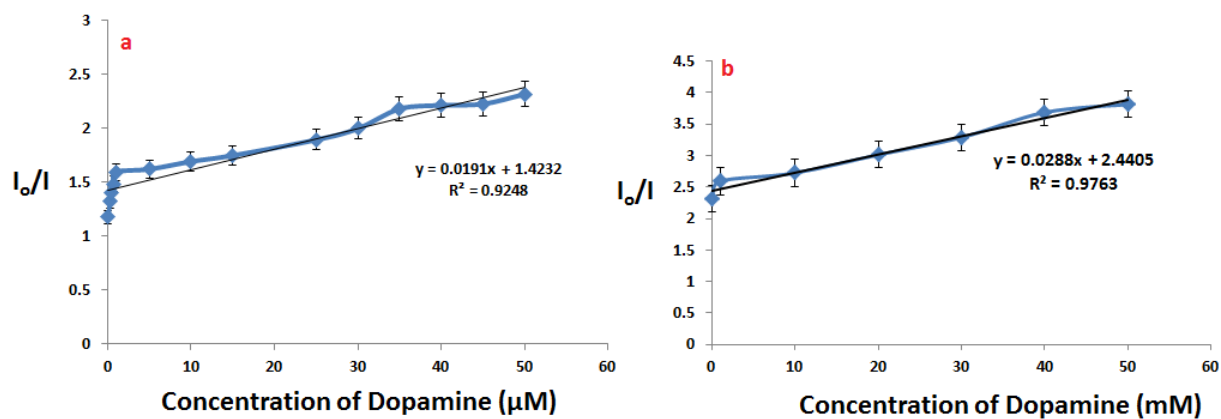


Figure S3: Intensity ratio graph (I_0/I) with respect to dopamine concentration a) lower concentration from 0.0625 μM to 50 μM and b) higher concentration from 50 μM to 50mM

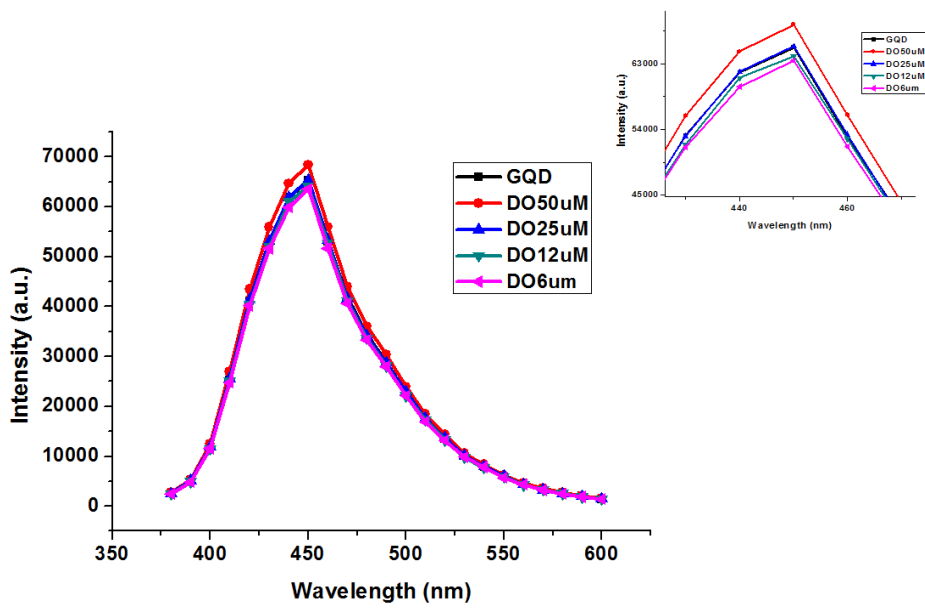


Figure S4a: Control experiment with unmodified GQDs showing no significant change at lower concentration of dopamine

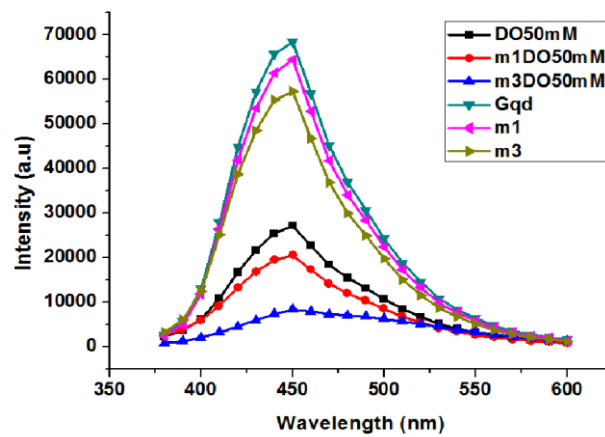


Figure S4b: Comparison of unmodified (denoted as GQDs) and modified GQDs (m1 for 1:1 modified GQDs, m3 for 1:100 modified GQDs) sensing ability for highest concentration of dopamine at 50mM

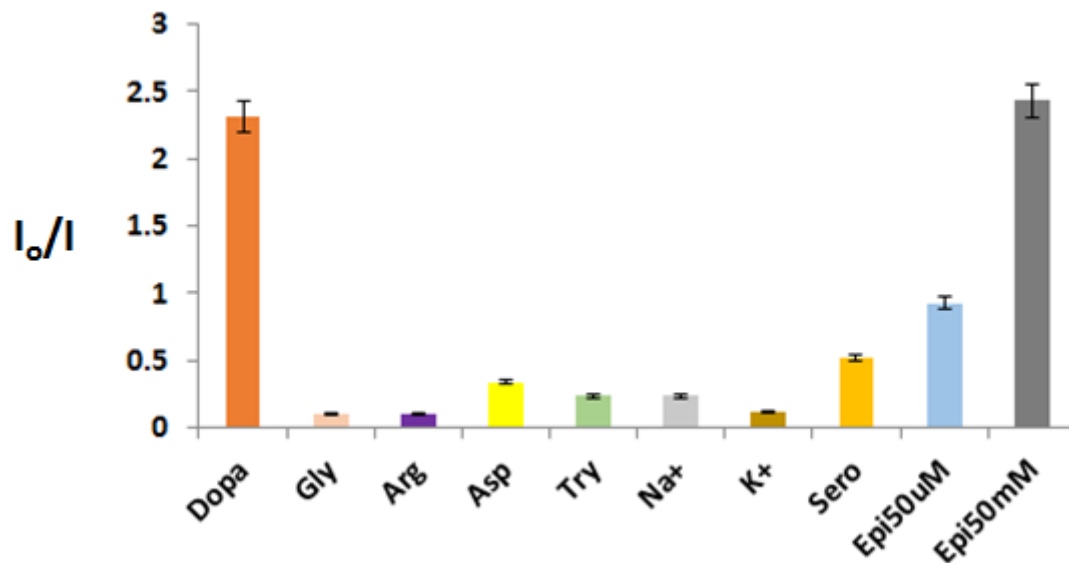


Figure S5: Selectivity of m3GQDs system for amino acid , metal ions and neurotransmitters all at 50uM ; only dark green last epinephrine is 50mM (where Dopamine (Dopa), Glycine (Gly), Arginine (Arg), Aspartic acid (Asp), Tyrosine (Try), Sodium ion(Na+), Potassium ion (K+), Serotonin (Sero), Epinephrine (Epi)

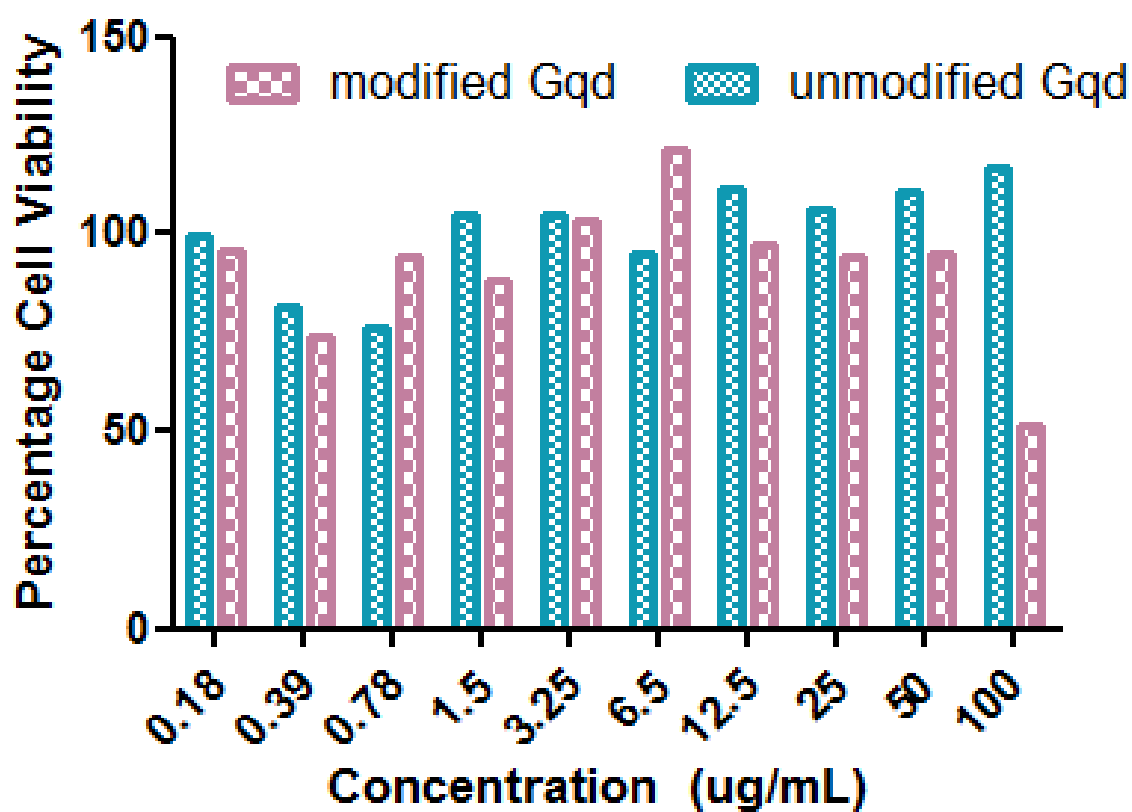


Figure S6: Cell viability assay on C6 (Glioma) cell lines for 24 hour exposure of nanomaterials unmodified GQDs and modified (m3GQDs) GQDs

Table TS1: D and G band intensity ratio from Raman Spectra

S.No.	Sample	D band Wavenumber (cm ⁻¹)	G band Wavenumber (cm ⁻¹)	I _D /I _G
1	Unmodified GQDs	1308	1545	1.03
2	Modified GQDs 1:100	1316	1557	1.08