Electronic Supplementary Information

High quantum yield carbon dot and nitrogen-doped carbon dot as fluorescent probes for spectroscopic dopamine detection in human serum

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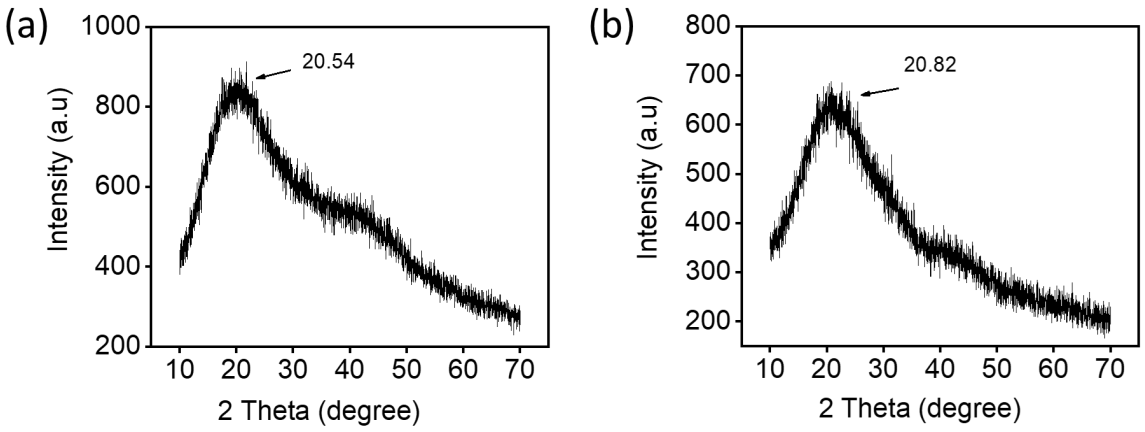

Figure S1. XRD spectra pattern of carbon dots (a) CD and (b) NCD respectively.

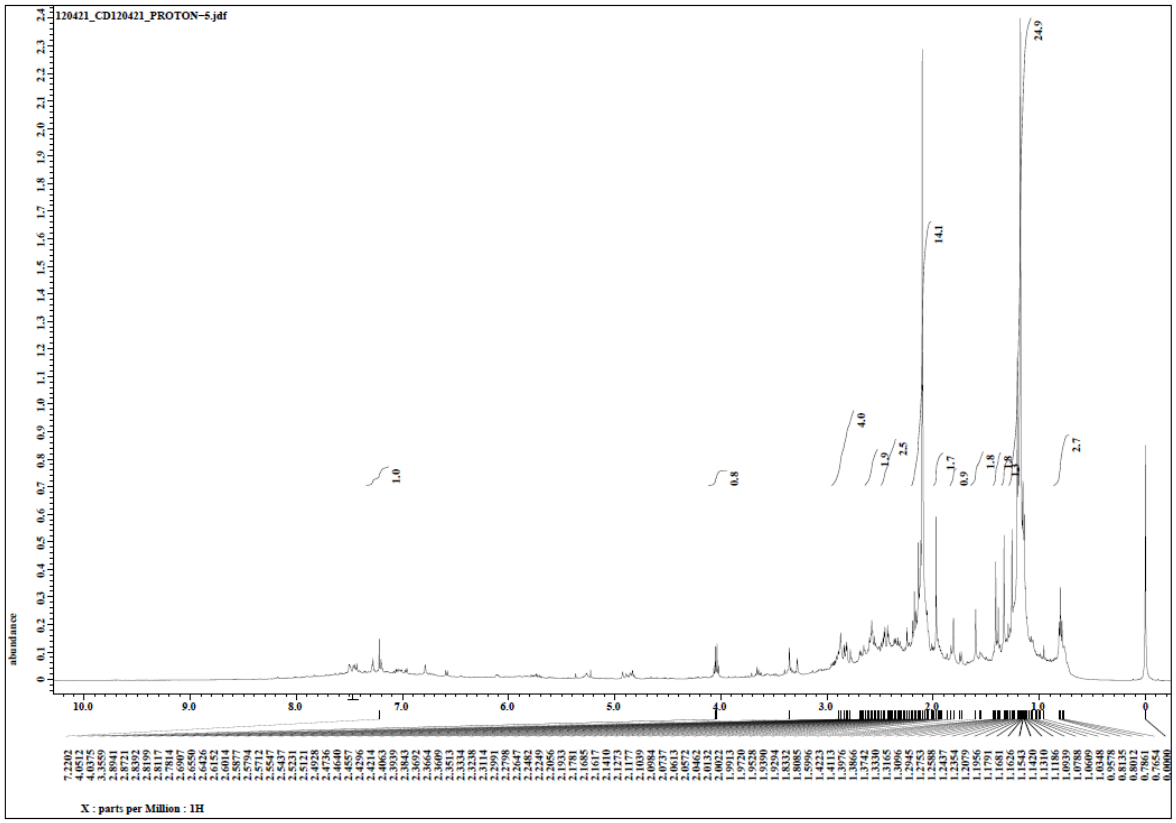

Figure S2. ^{1}H-NMR spectra of CD.

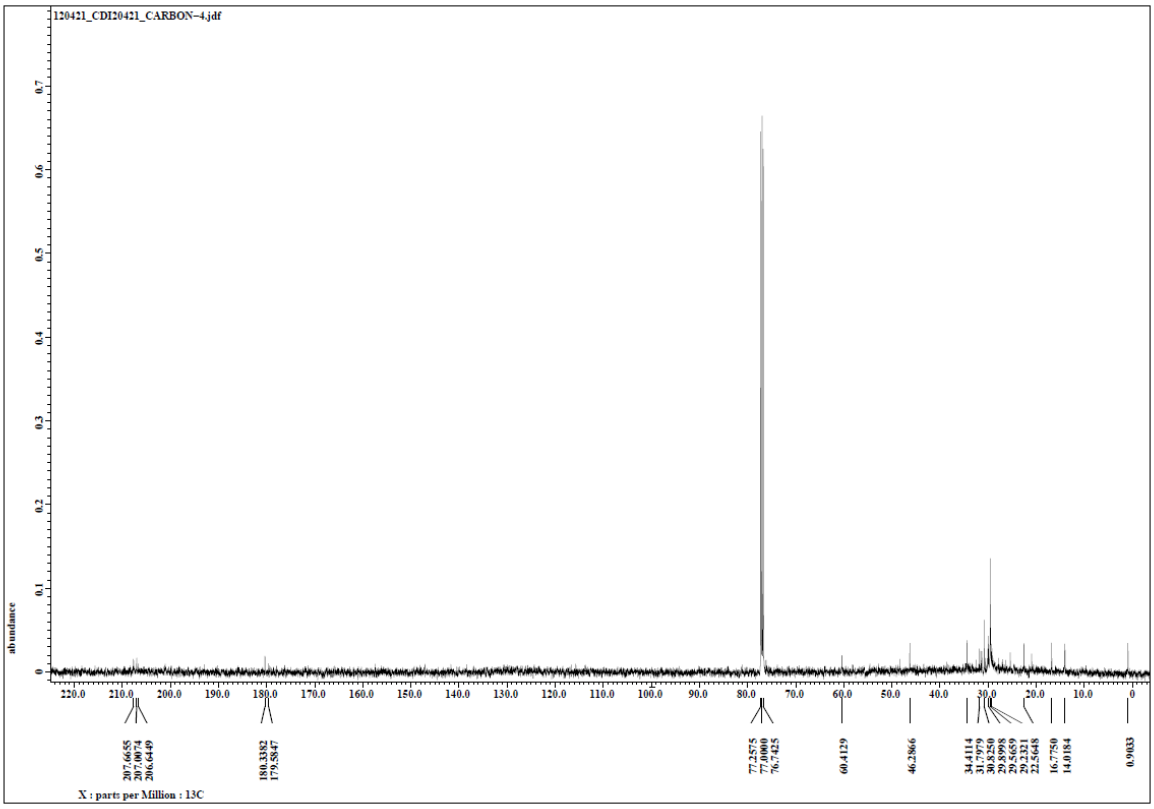

Figure S3. ^{13}C-NMR spectra of CD.

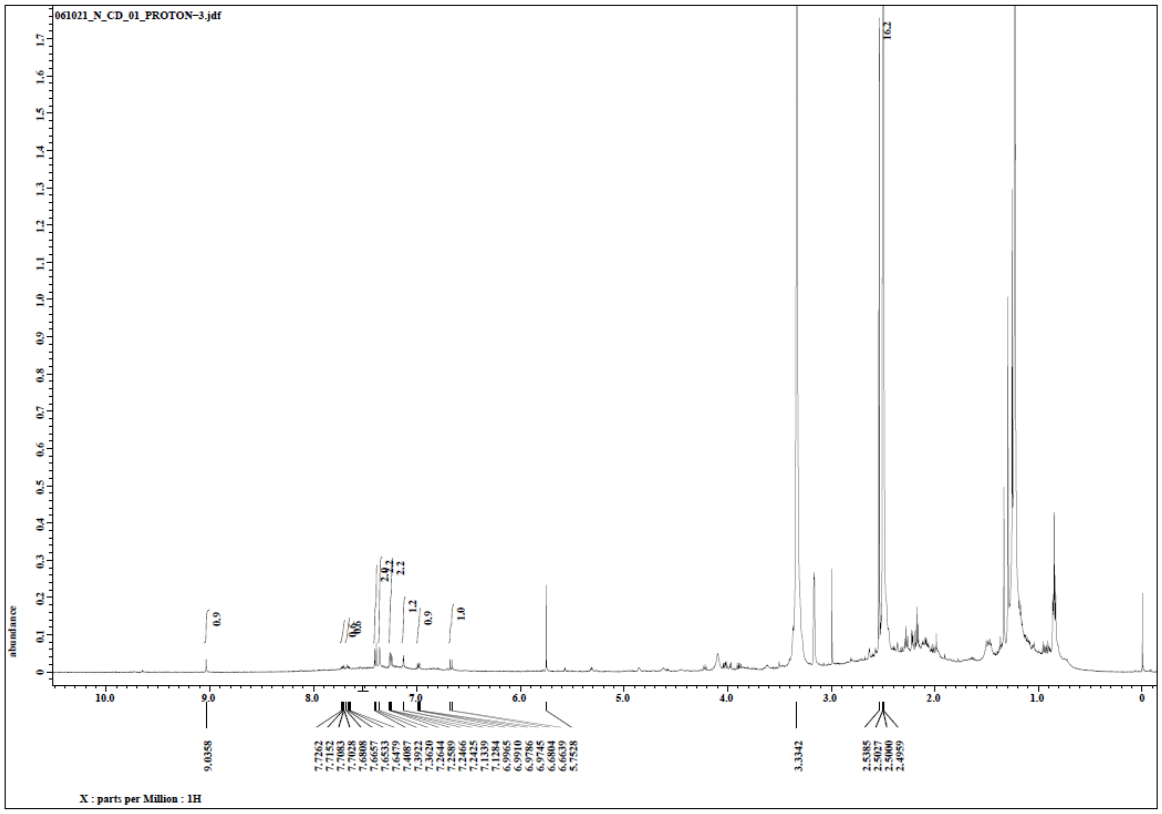

Figure S4. ^{1}H-NMR of NCD.

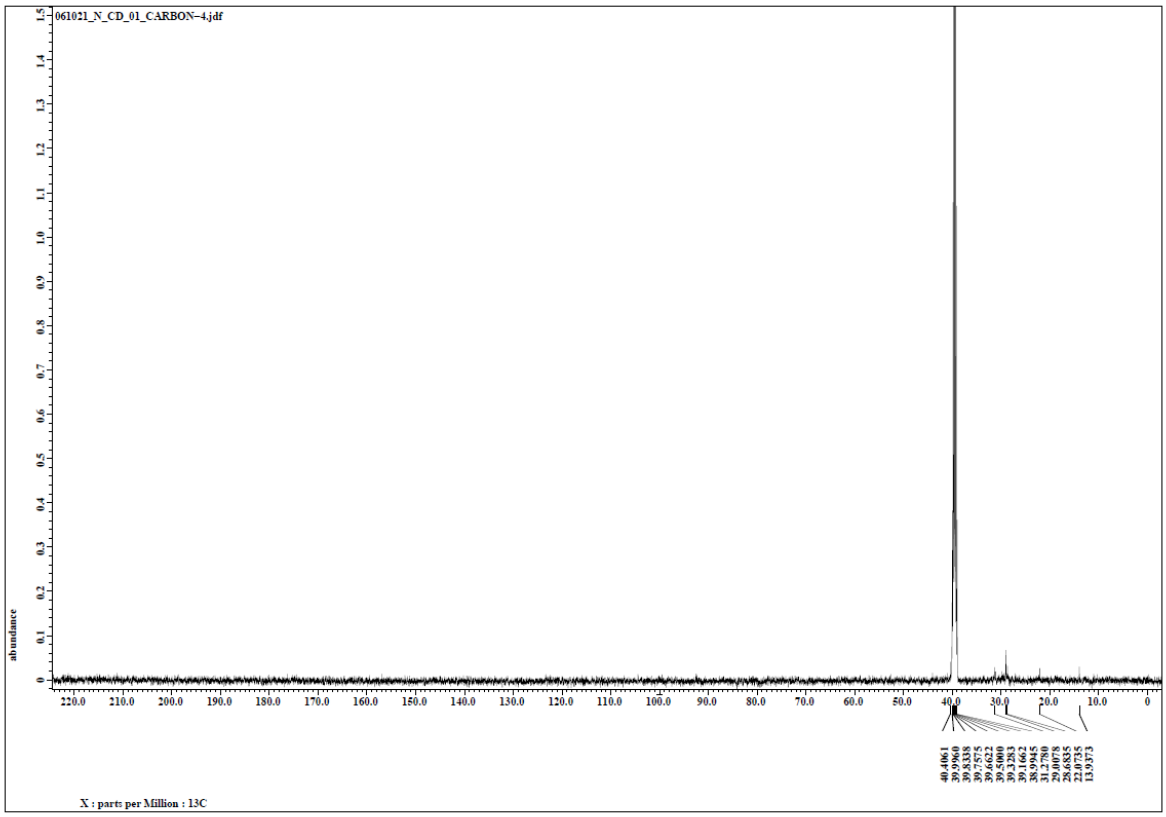

Figure S5. ^{13}C-NMR spectra of NCD.

Table S1. Chemical shift values for all the peaks in NMR data of CD and NCD.

Functional Groups	Respective peaks
C-H	1-3 ppm ^{1}H-NMR
C=C and other sp^2 carbon	6-8 ppm ^{1}H-NMR
C=O	8-10 ppm ^{1}H-NMR
C-OH and other sp3 carbon	20-80 ppm ^{13}C-NMR
C=C and other sp^2 carbon	100-120 ppm ^{13}C-NMR
C=O	175-190 ppm ^{13}C-NMR

Functional Groups	Respective peaks
C-H	1-3 ppm ^{1}H-NMR
C=C and other sp^2 carbon	6-8 ppm ^{1}H-NMR
C=O	8-10 ppm ^{1}H-NMR
C-OH and other sp3 carbon	20-50 ppm ^{13}C-NMR
C-N and other aliphatic nitrogen	50-80 ppm ^{13}C-NMR
C=C and other sp^2 carbon	100-120 ppm ^{13}C-NMR
C=O	175-190 ppm ^{13}C-NMR

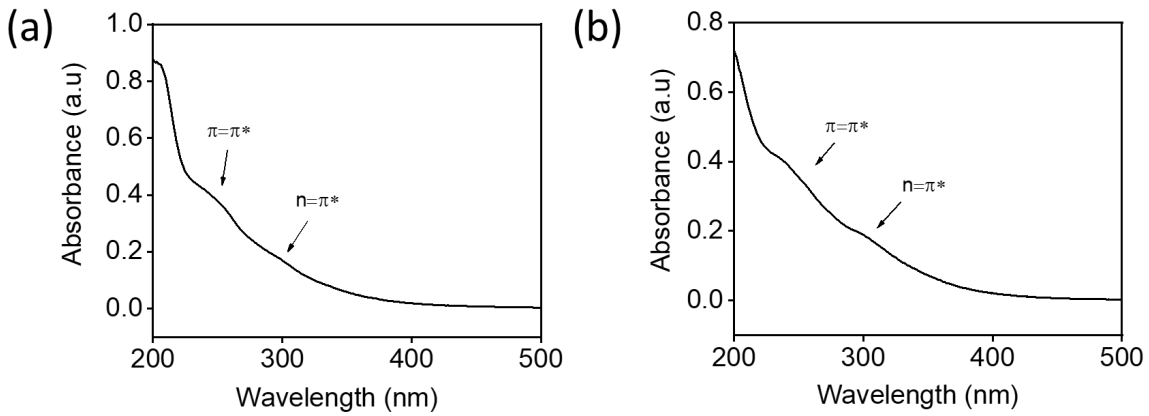

Figure S6. UV-Vis absorption spectra of (a) CD and (b) NCD, respectively.

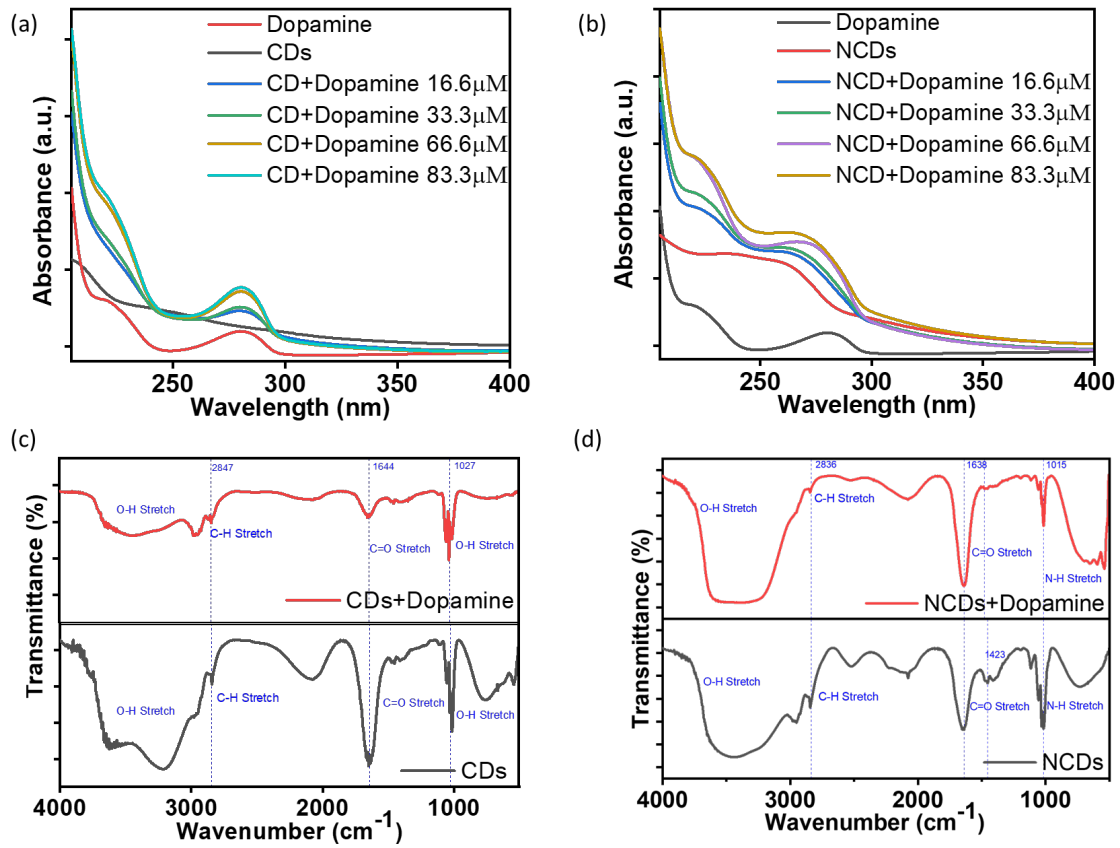

Figure S7. UV-Vis absorption spectra of (a) CD and (b) NCD with the increasing concentration of dopamine and FTIR spectra of pristine (c) CD and (d) NCD and with dopamine respectively.

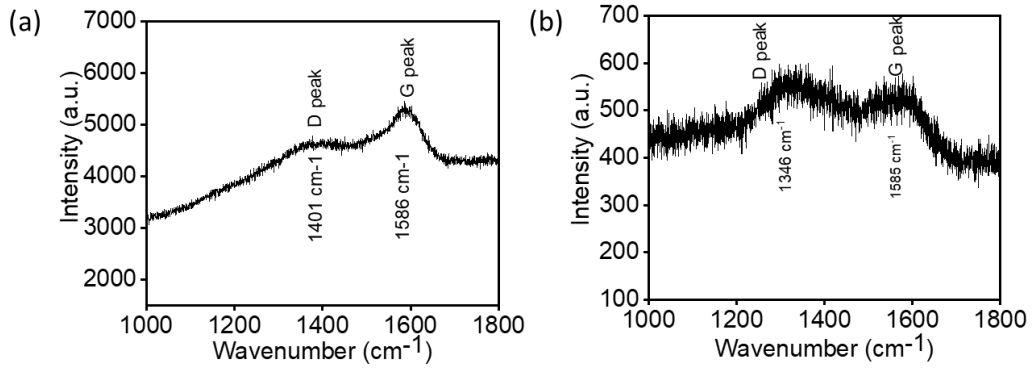

Figure S8. Raman spectra of (a) CD and (b) NCD, respectively.

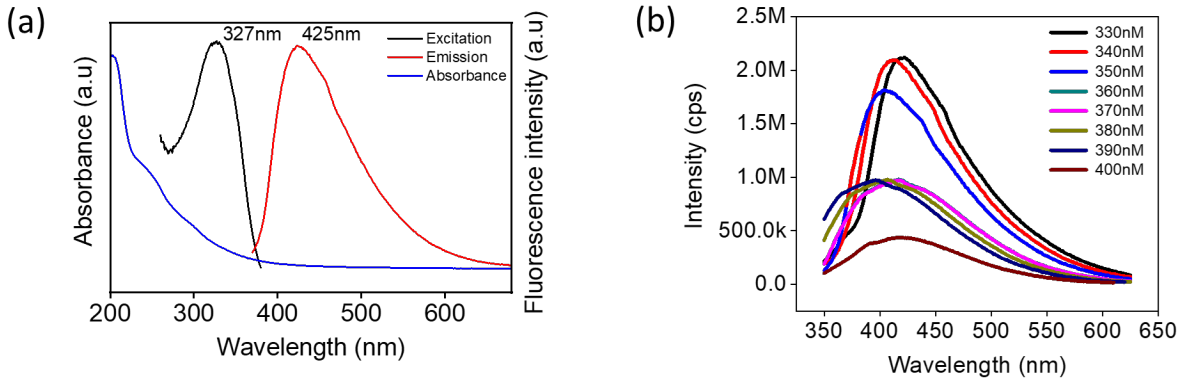

Figure S9. (a) Absorbance, excitation, and emission spectra for CD and (b) Fluorescence spectra at different excitation wavelengths for CD, respectively.

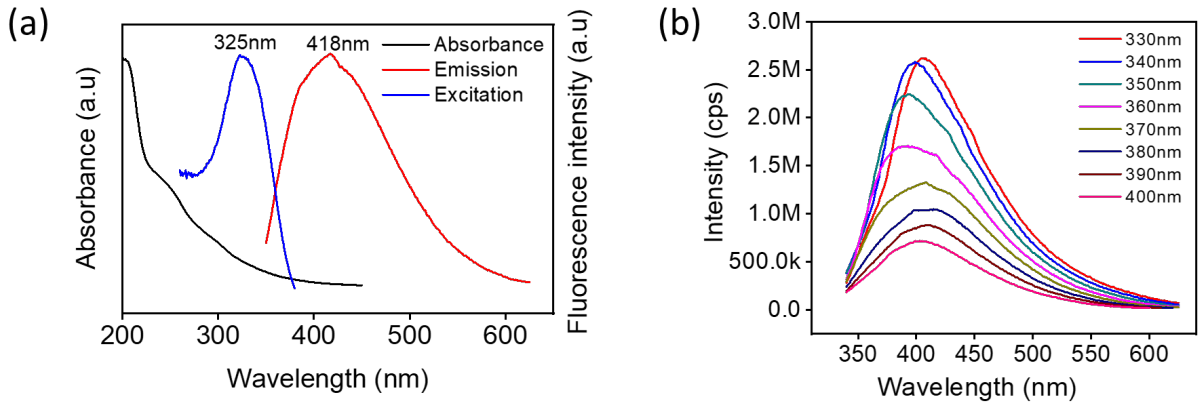

Figure S10. (a) Absorbance, excitation, and emission spectra for NCD and (b) Fluorescence spectra at different excitation wavelengths for NCD, respectively.

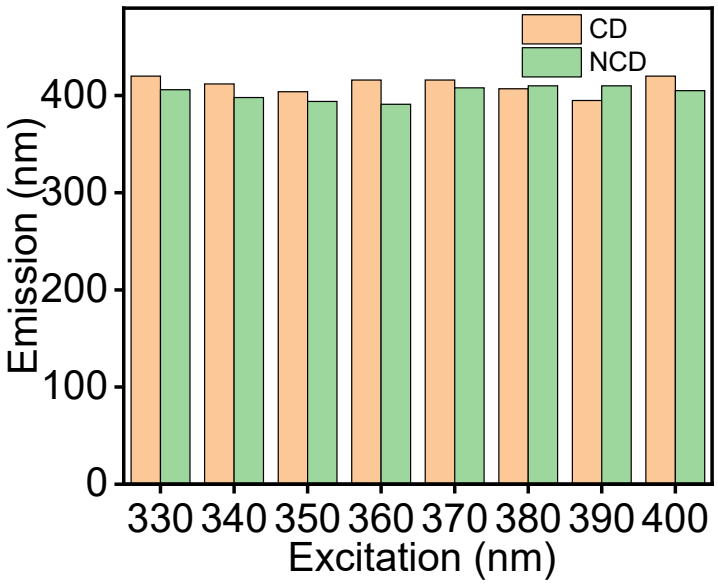

Figure S11. Comparison of excitation maxima of CD and NCD at different wavelength.

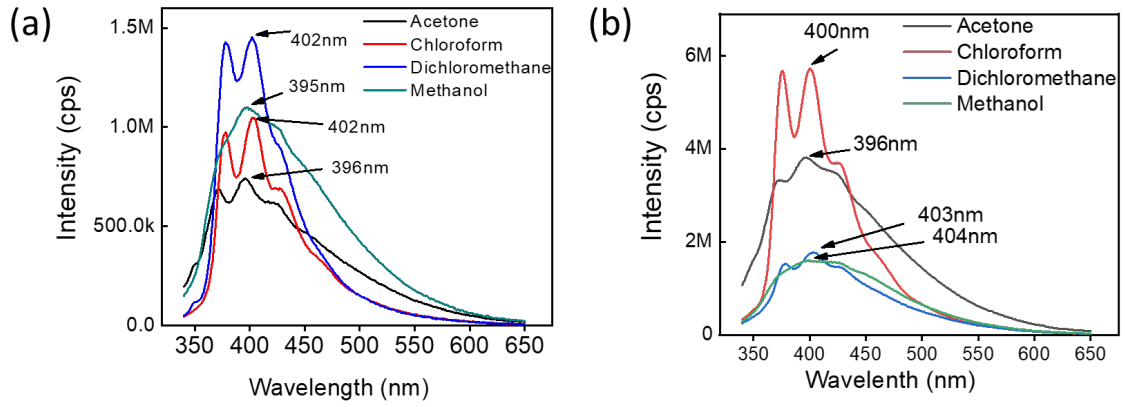

Figure S12. Fluorescence spectra at excitation wavelength of 350 nm. (a) CD and (b) NCD in different solvents i.e., acetone, chloroform, dichloromethane, and methanol, respectively.

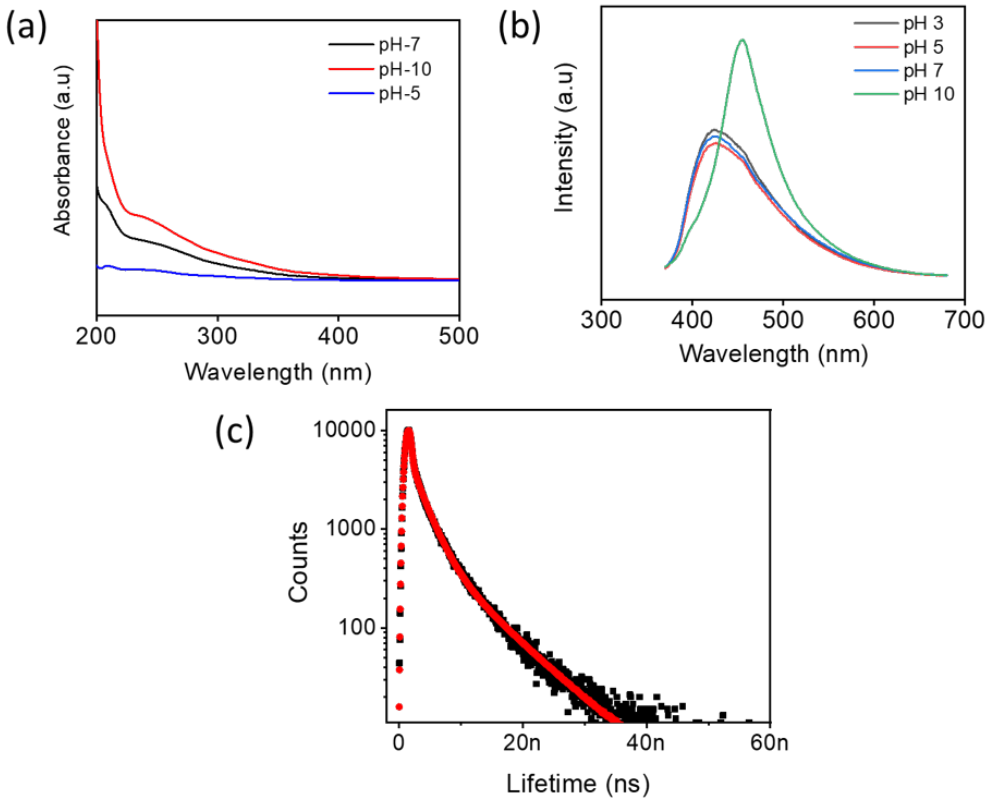

Figure S13. (a) UV-Vis absorption spectra of CD at different pH, (b) Fluorescence spectra of CD at different pH and (c) Fluorescence lifetime decay profile of CD, in water methanol (1:1)respectively.

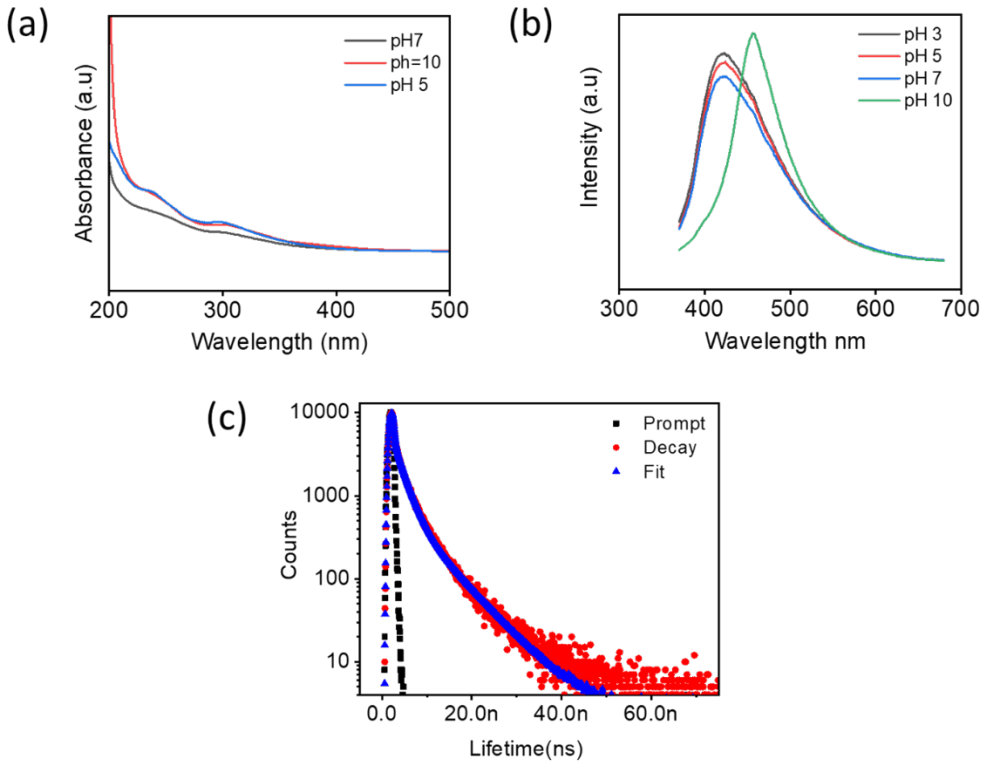

Figure S14. (a) UV-Vis absorption spectra of NCD at different pH, (b) Fluorescence spectra of NCD at different pH and (c) Fluorescence lifetime decay profile of NCD, in water methanol (1:1) respectively.

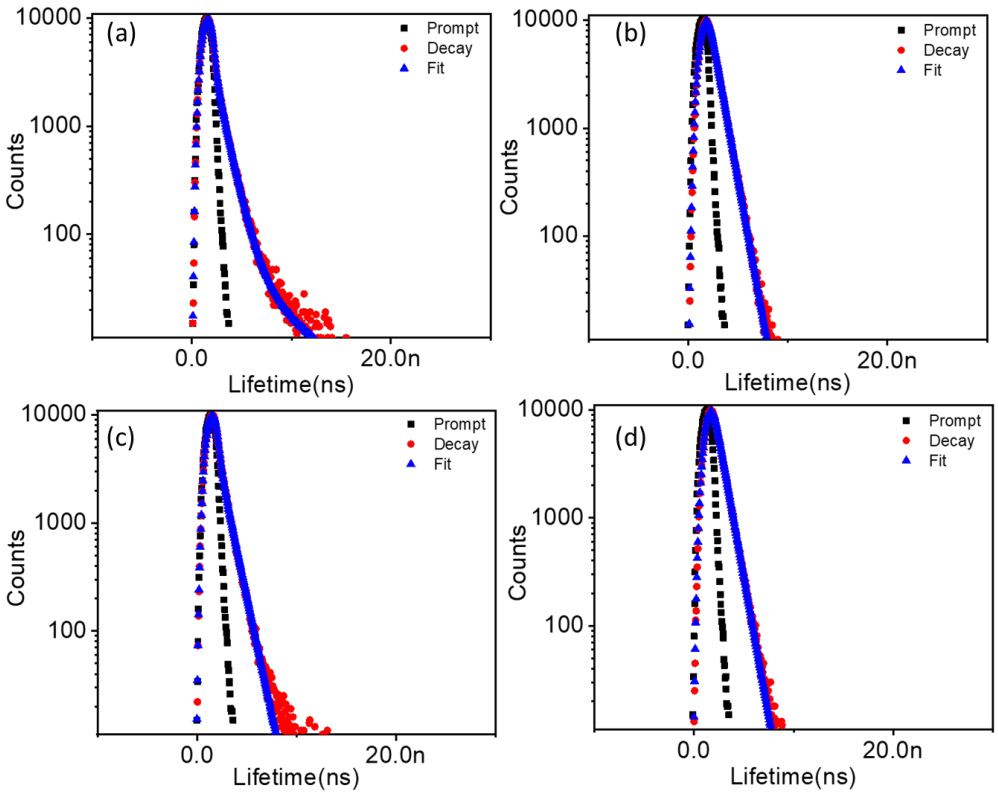

Figure S15. Fluorescence lifetime decay profile of CD in (a) methanol, (b) dichloromethane, (c) acetone and (d) chloroform respectively.

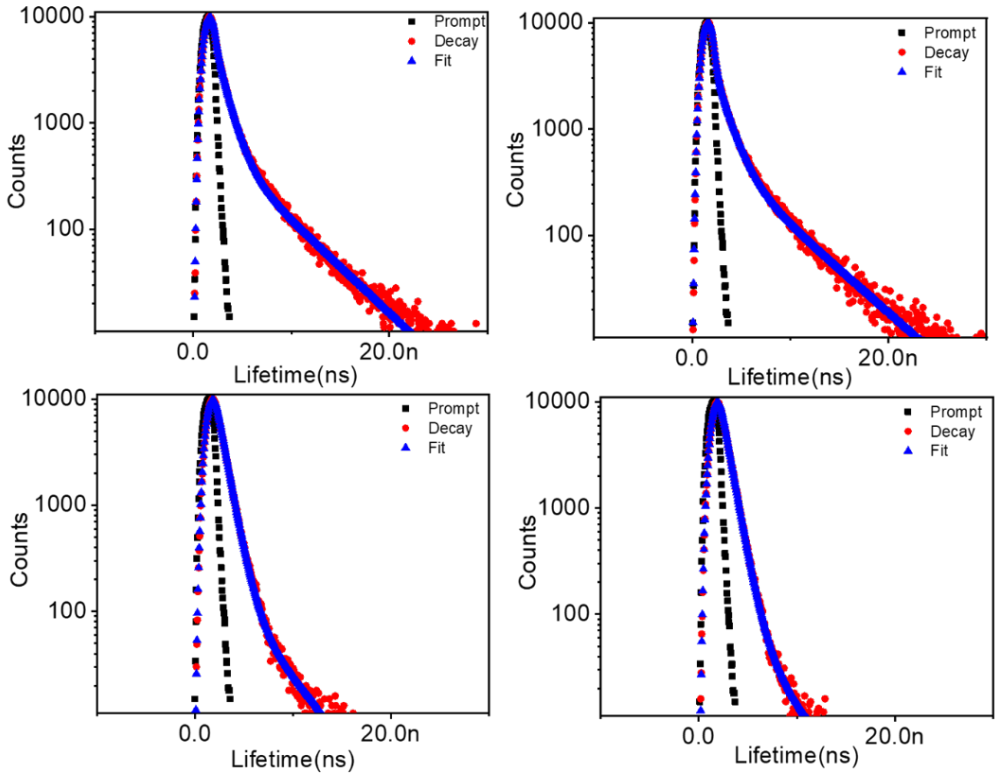

Figure S16. Fluorescence lifetime decay profile of NCD in (a) acetone, (b) methanol, (c) dichloromethane and (d) chloroform respectively.

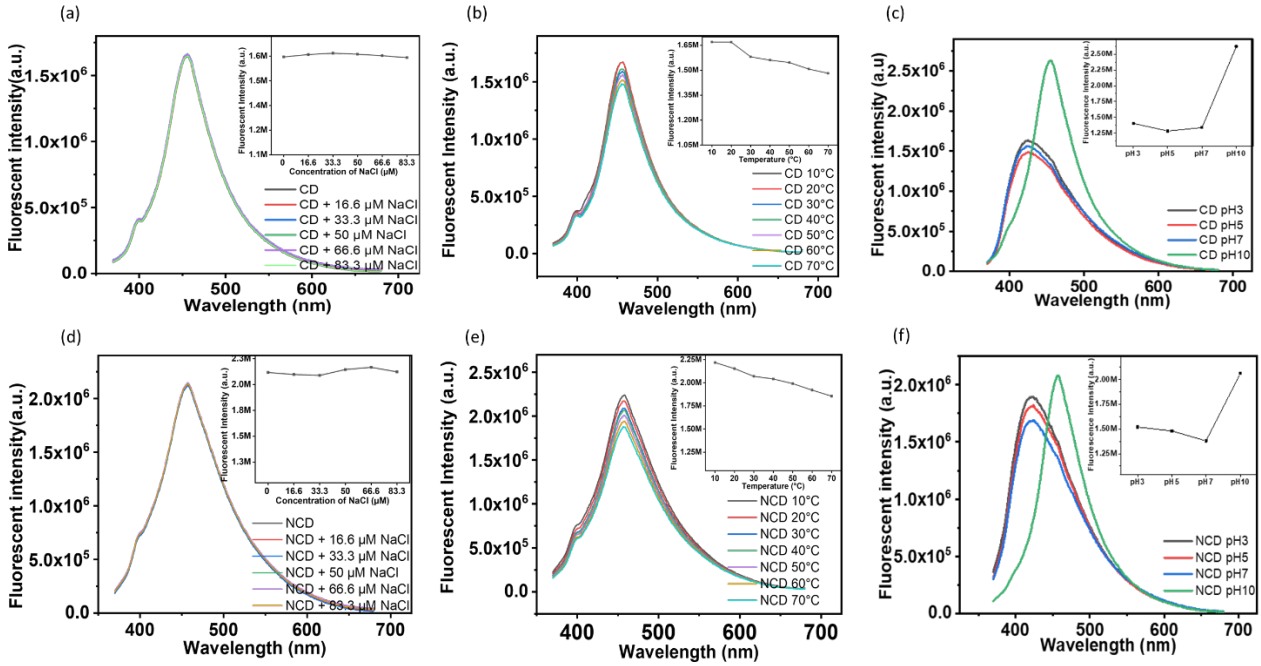

Figure S17. Effect of the ionic strength on fluorescence properties of (a) CD and (d) NCD respectively, effect of the temperature on fluorescence properties of (b) CD and (e) NCD respectively, and effect of pH on fluorescence properties of (c) CD and (f) NCD respectively.

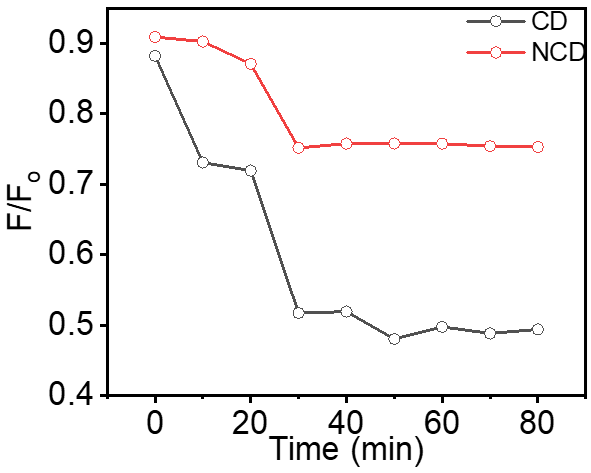

Figure S18. Time dependent fluorescence response of CD and NCD upon addition of 100 uM Dopamine.

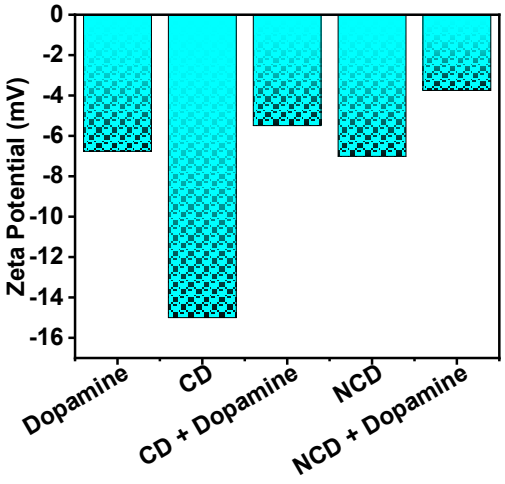

Figure S19. Zeta potential of CD and NCD along with Dopamine.

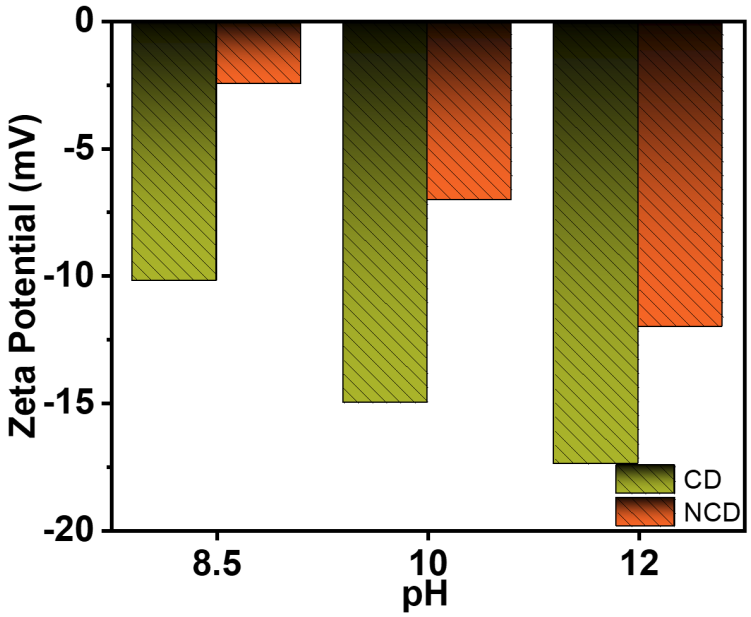

Figure S20. Zeta potential of CD and NCD at different pH.

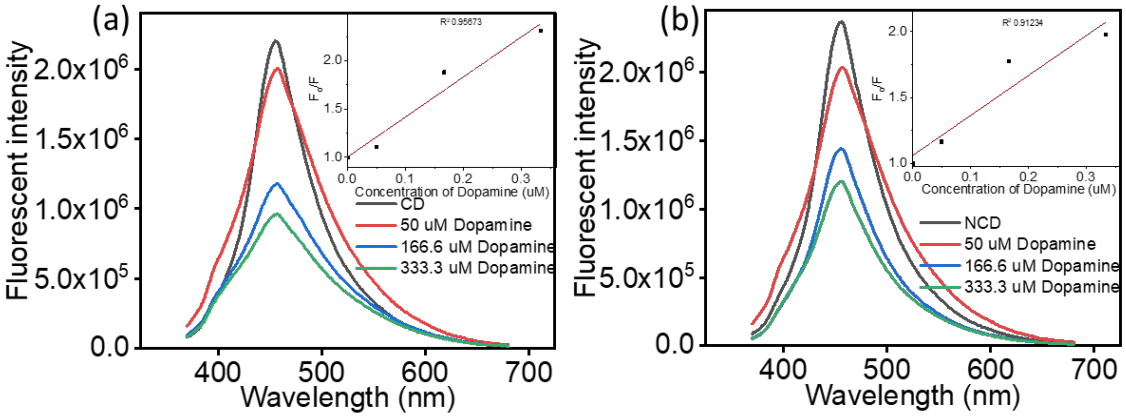

Figure S21. Human blood serum and dopamine sensing studies with CD and NCD respectively.