Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

A "Turn-Off" Red-emitting Fluorophore for Nanomolar Detection of Heparin

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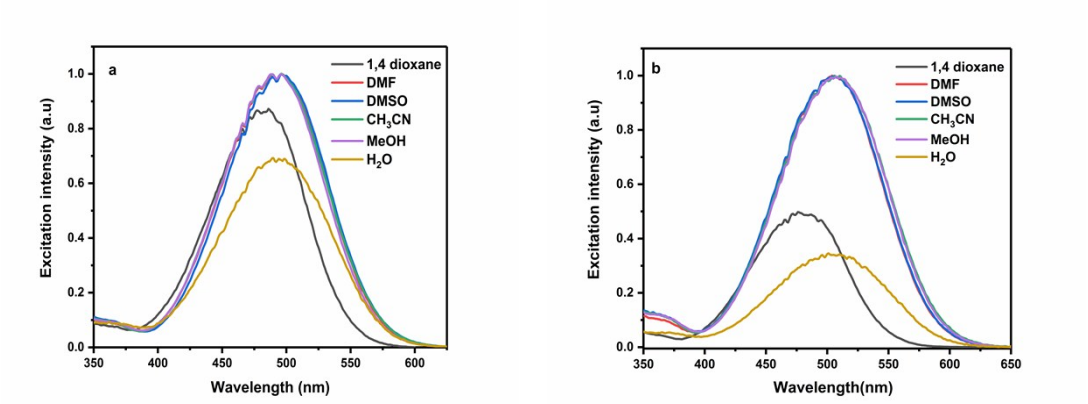

Fig.S1 Excitation spectra of a) monocation (**1**) and b) dication (**2**) in different solvents.

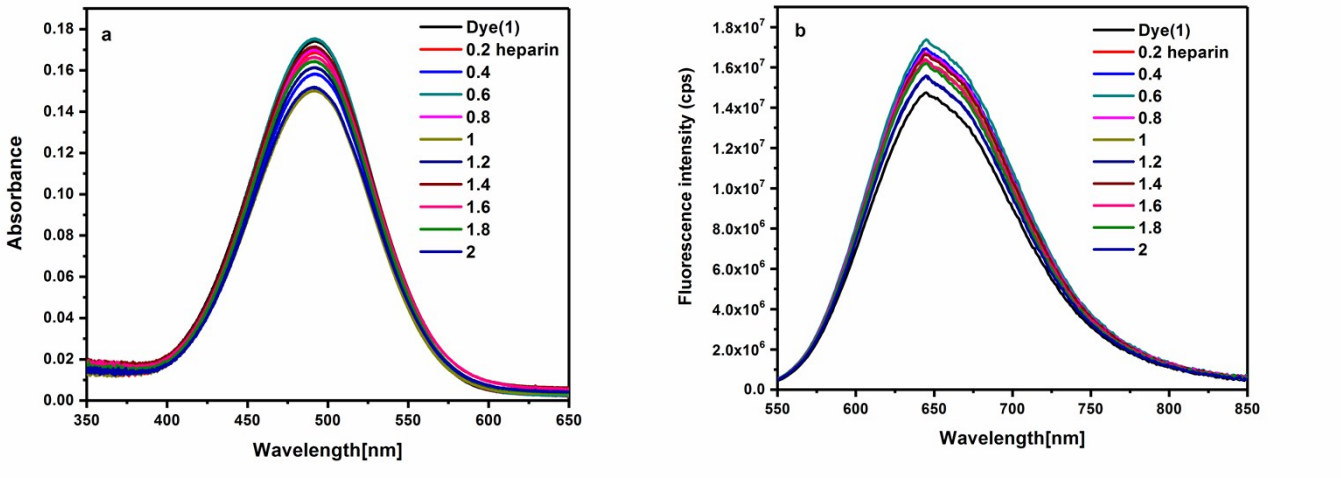

Fig.S2 a) Absorption spectra b) Fluorescence spectra of compound **1** through the addition of heparin solution from 0- 2μg/mL with HEPES buffer solution (5mM pH 7.4).

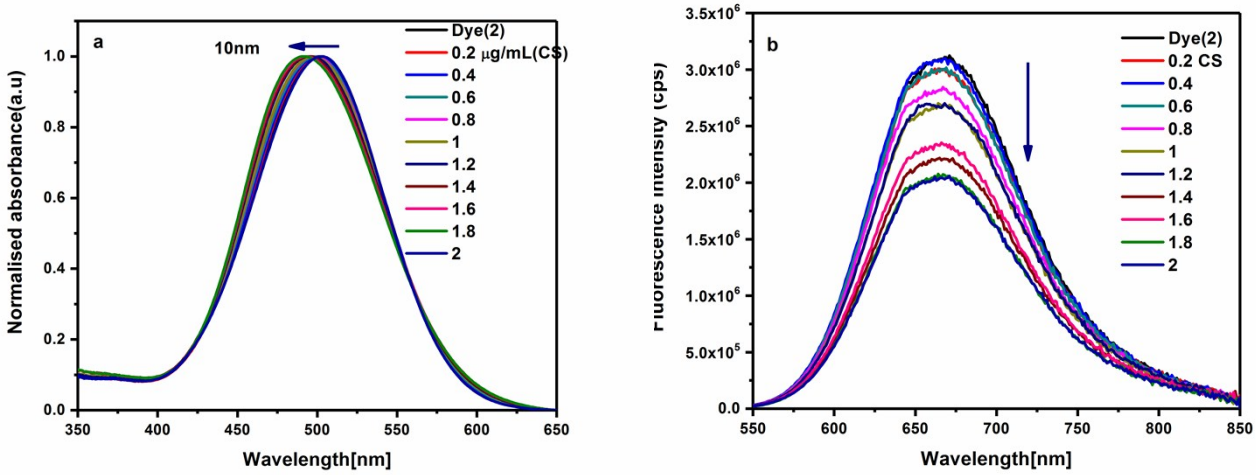

Fig.S3 a)Absorption spectra b) Fluorescence spectra of compound **2** through the addition of Chondroitin sulfate solution from 0 – 2μg/mL in HEPES buffer solution (5mM, pH 7.4).

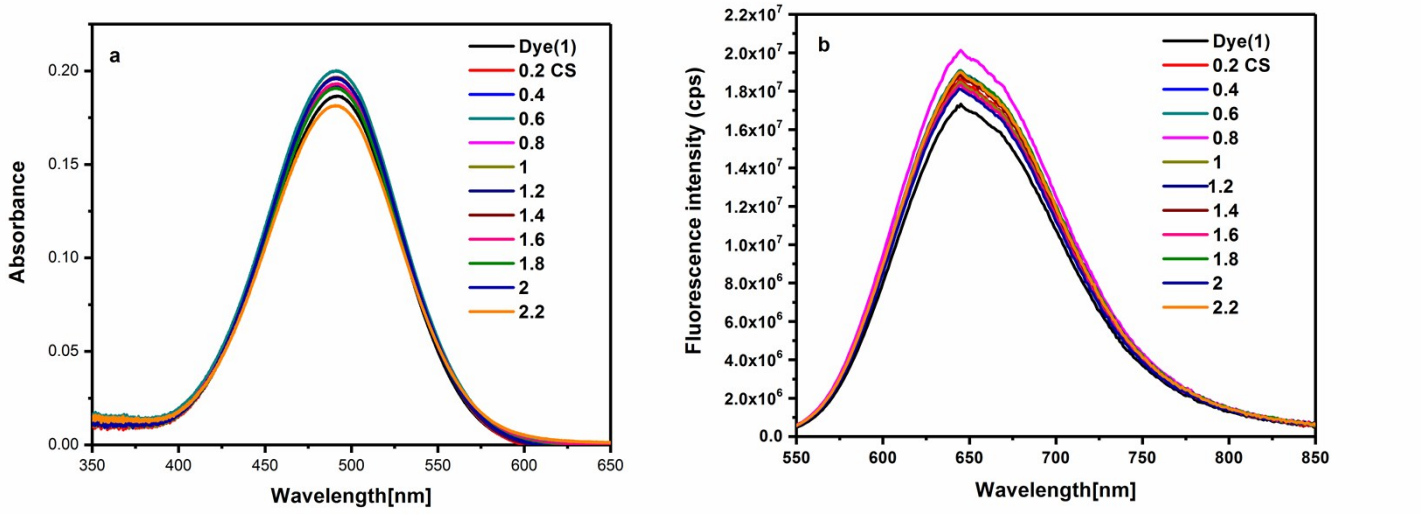

Fig.S4 a) Absorption spectra b) Fluorescence spectra of compound **1** through the addition of chondroitin sulfate solution from 0- 2μg/mL with HEPES buffer solution (5mM, pH 7.4).

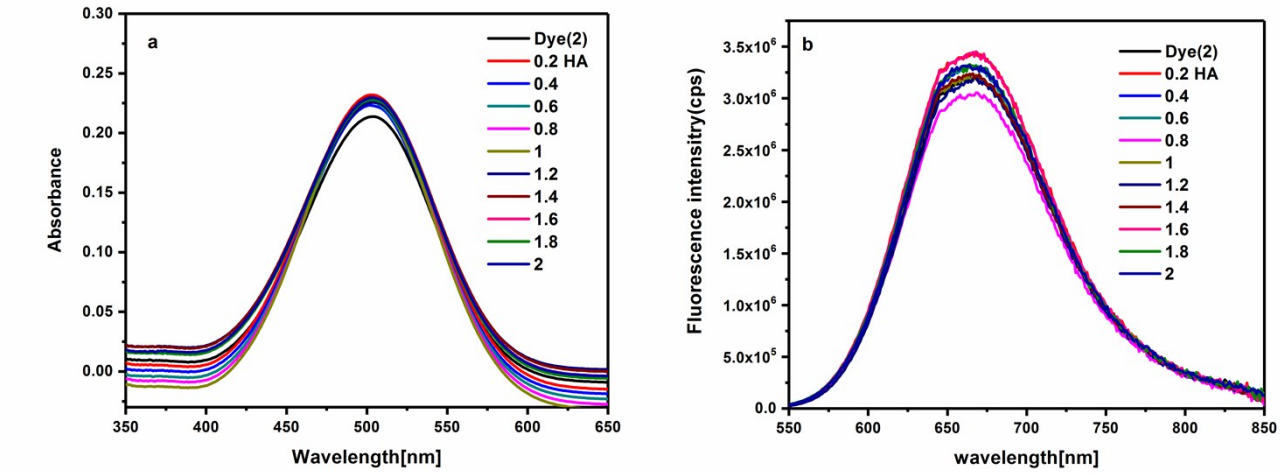

Fig.S5 a) Absorption spectra b) Fluorescence spectra of compound (**2**) through the addition of hyaluronic acid solution from 0 – 2μg/mL in HEPES buffer solution.

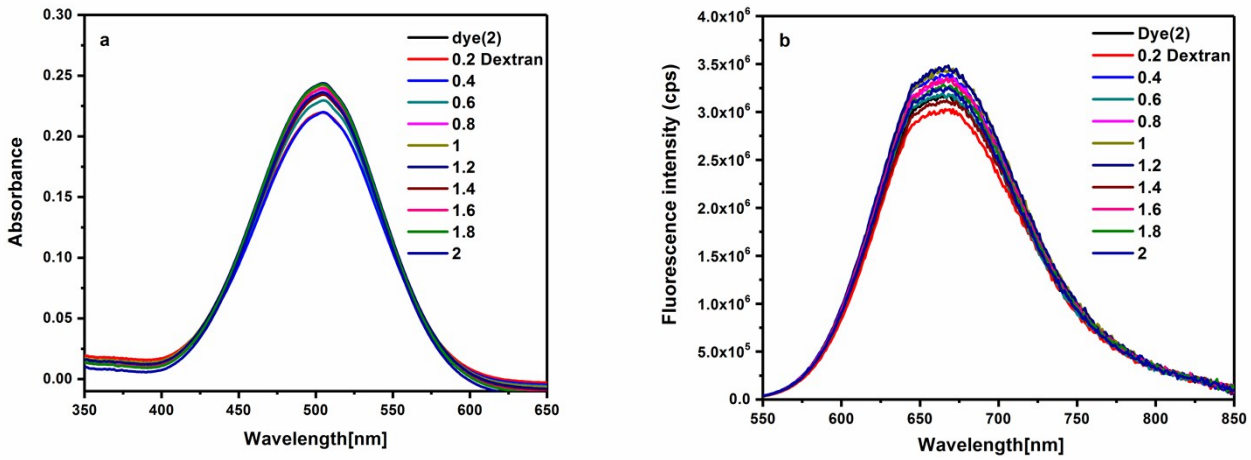

Fig.S6 a) Absorption spectra b) Fluorescence spectra of compound **2** through the addition of Dextran solution from 0 – 2µg/mL in HEPES buffer solution.

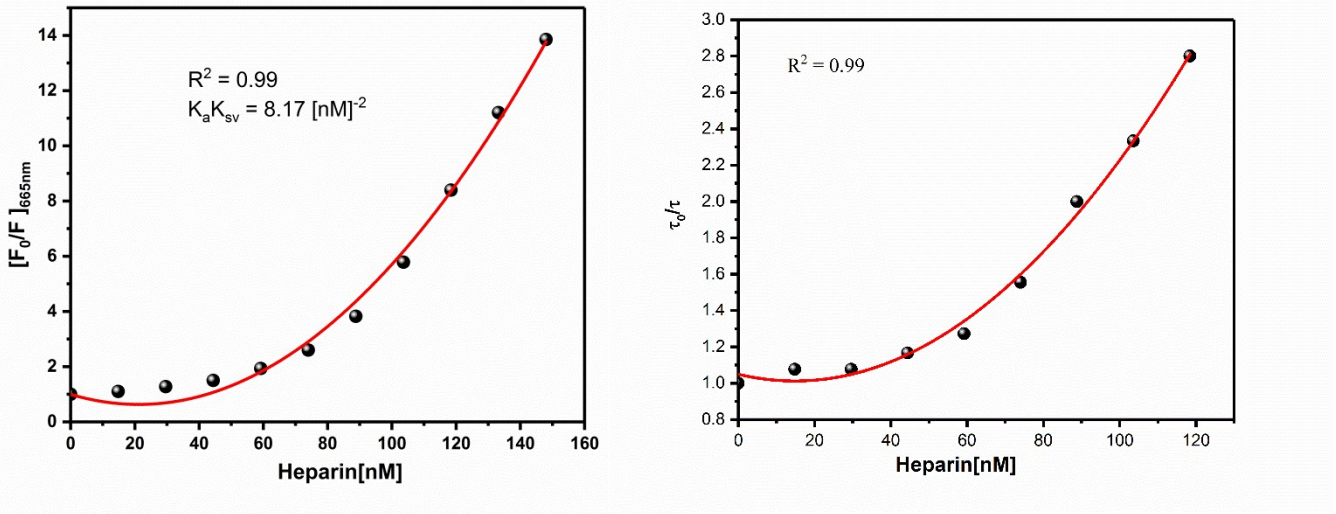

Fig S7: Stern-Volmer quenching plot of emission response of dication (**2**) with increasing concentration of Heparin.

Table S1 Lifetime decay of dye (**2**) with heparin in HEPES buffer at 470 nm excitation

Sr.No.	Heparin (μg/mL)	τ1(ns)	τ2(ns)	S1(%)	S2(%)	χ^2
1	0	0.20		100	0	0.95
2	0.2	0.14	0.34	51.86	48.14	0.94
3	0.4	0.13	0.36	56.86	43.14	1.10
4	0.6	0.11	0.37	58.04	41.96	1.2
5	0.8	0.09	0.43	59.87	40.13	1.06
6	1	0.08	0.45	61.24	38.76	1.29
7	1.2	0.07	0.48	64.82	35.18	1.32
8	1.4	0.06	0.51	65.12	34.88	1.43
9	1.6	0.06	0.56	68.11	31.89	1.33

Table S2 Fluorescence Lifetime data of (**2**) with different concentration of heparin at 515nm excitation.

Sr. No.	Heparin (μg/mL)	τ1(ns)	τ2(ns)	S1(%)	S2(%)	χ^2
1	0	0.14	-	100		1.02
2	0.2	0.13	-	100		1.09
3	0.4	0.13	-	100		1.05
4	0.6	0.12	-	100		1.05
5	0.8	0.11	-	100		1.38
6	1	0.09	0.53	85.30	14.70	0.91
7	1.2	0.07	0.57	84.44	15.56	0.96
8	1.4	0.06	0.64	84.80	15.20	0.98
9	1.6	0.05	0.76	83.51	16.49	1.09
10	1.8	0.05	0.95	80.67	19.33	1.2
11	2.0	0.05	0.91	77.65	22.35	1.19

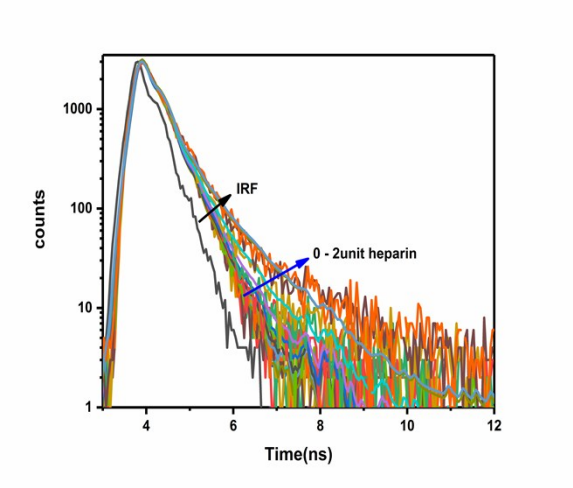

Fig.S8 Lifetime decay of dye (2) with heparin in HEPES buffer at 515 nm excitation

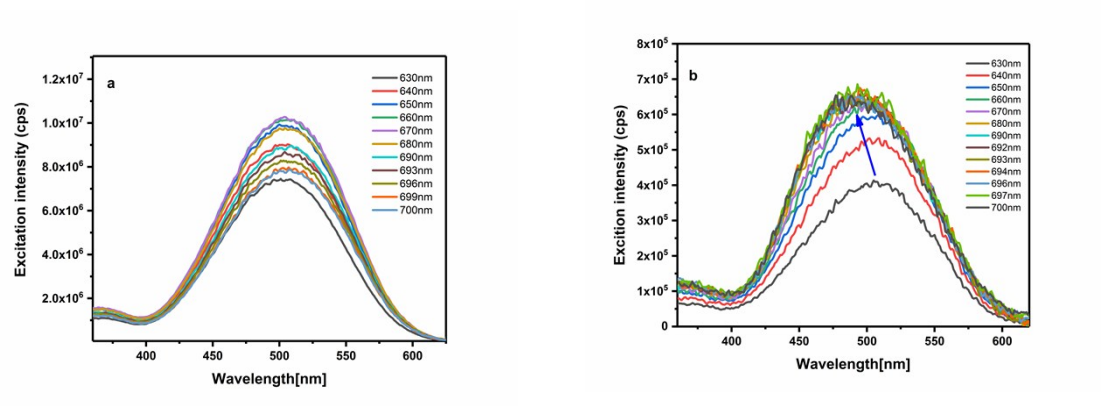

Fig.S9: The excitation spectra of dye (**2**) in the a) absence and b) presence of heparin at different emission wavelengths.

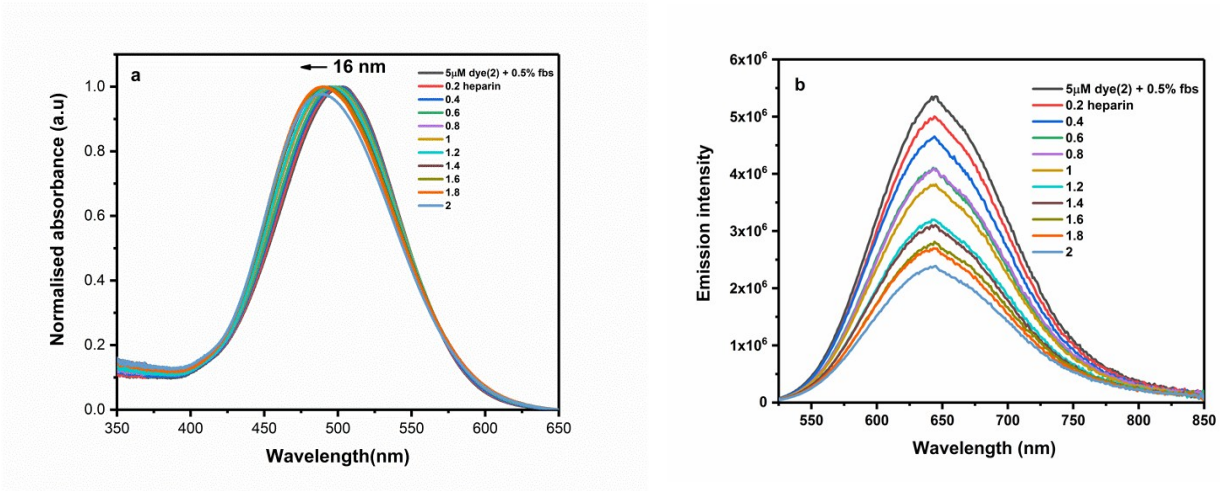

Fig.S10 a) Absorption spectra b) fluorescence spectra of compound (**2**) through the addition of a solution of heparin from 0 – 2μg/mL in 0.5% FBS serum in HEPES buffer solution.

NMR spectra

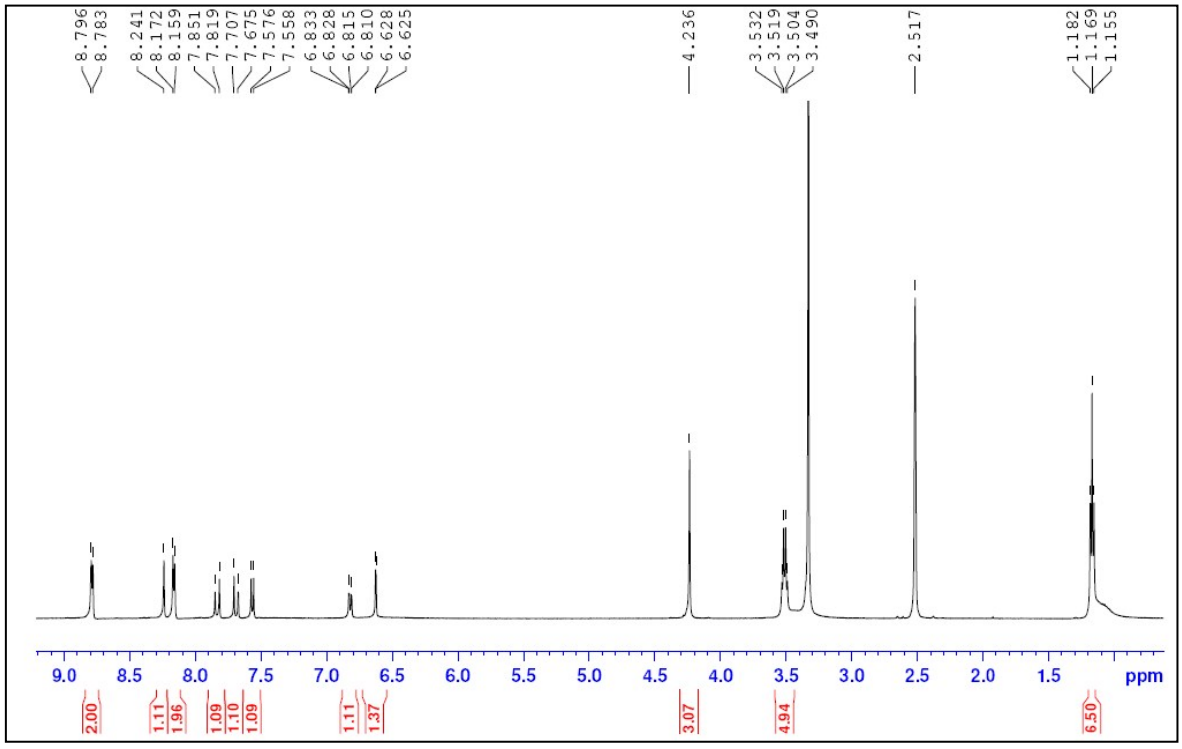

Fig.S11 ^{1}H-NMR spectra of compound 1

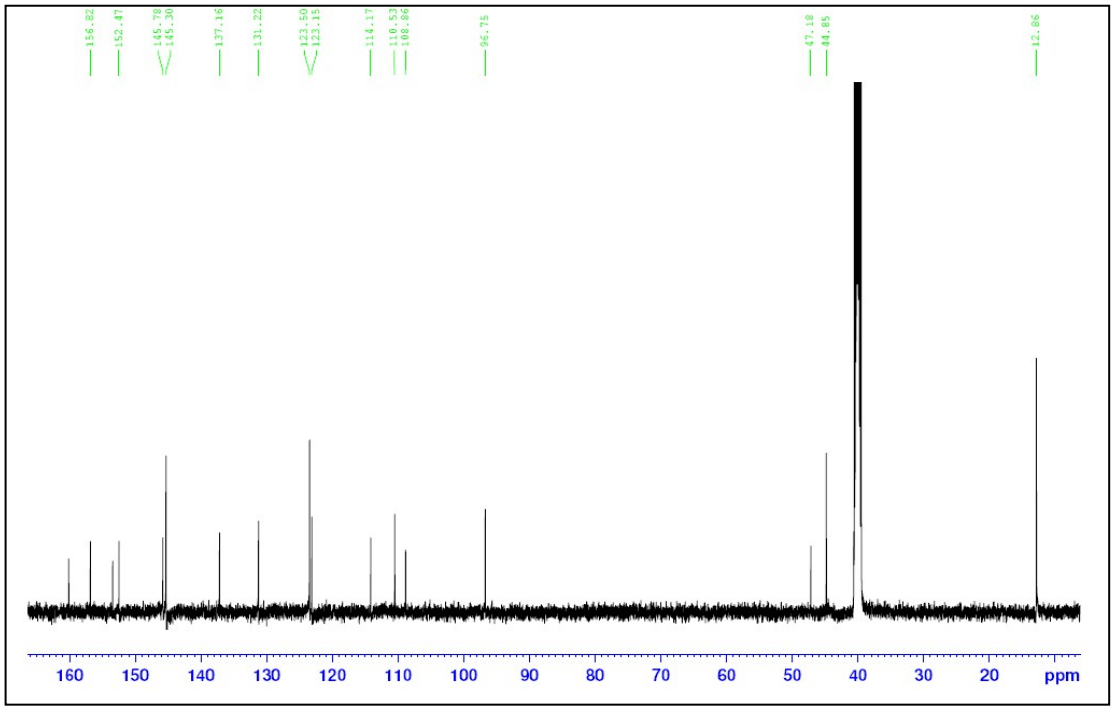

Fig.S12 ^{13}C-NMR spectra of compound 1

Fig.S 13 ^{1}H-NMR spectra of compound 2

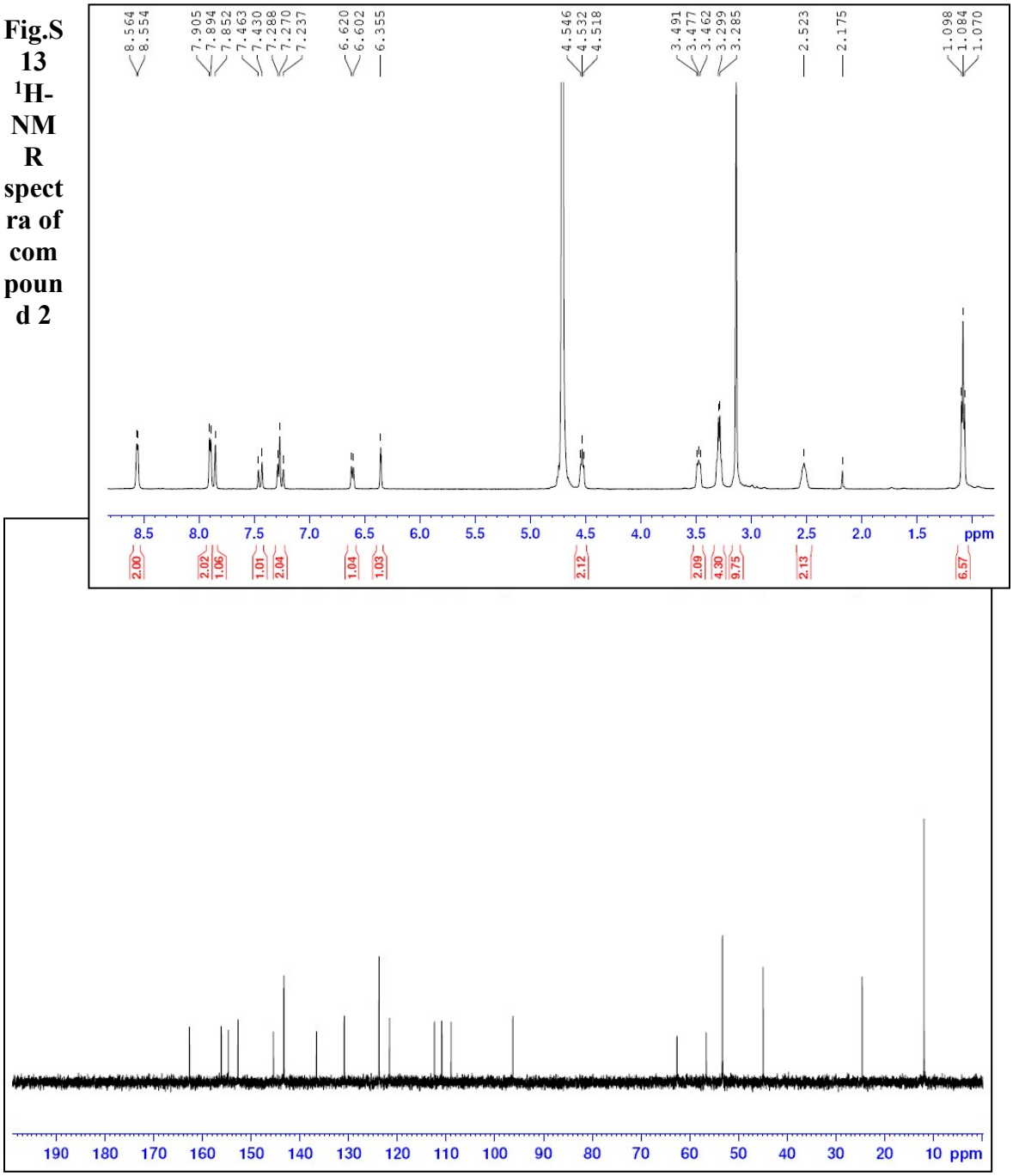

Fig.S14 ^{13}C-NMR spectra of compound 2