SUPPORTING INFORMATIONS

A novel chemosensor based on rhodamine and azobenzene moieties for selective detection of Al^{3+} ion

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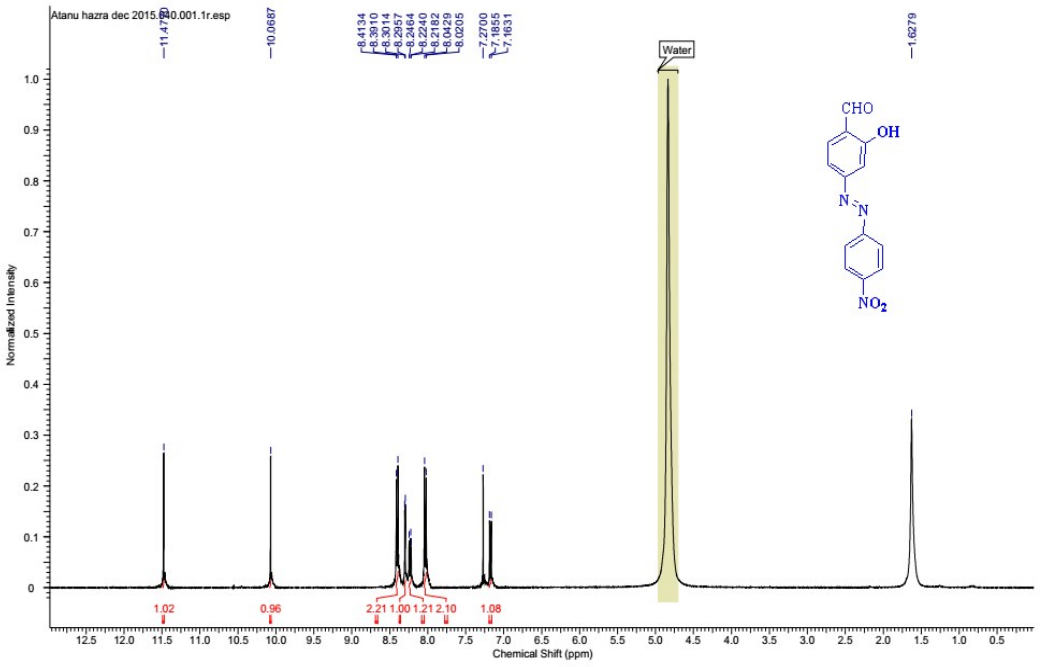

Figure S1.[1]H NMR of 2-Hydroxy-5-((4-nitrophenyl) diazenyl) benzaldehyde

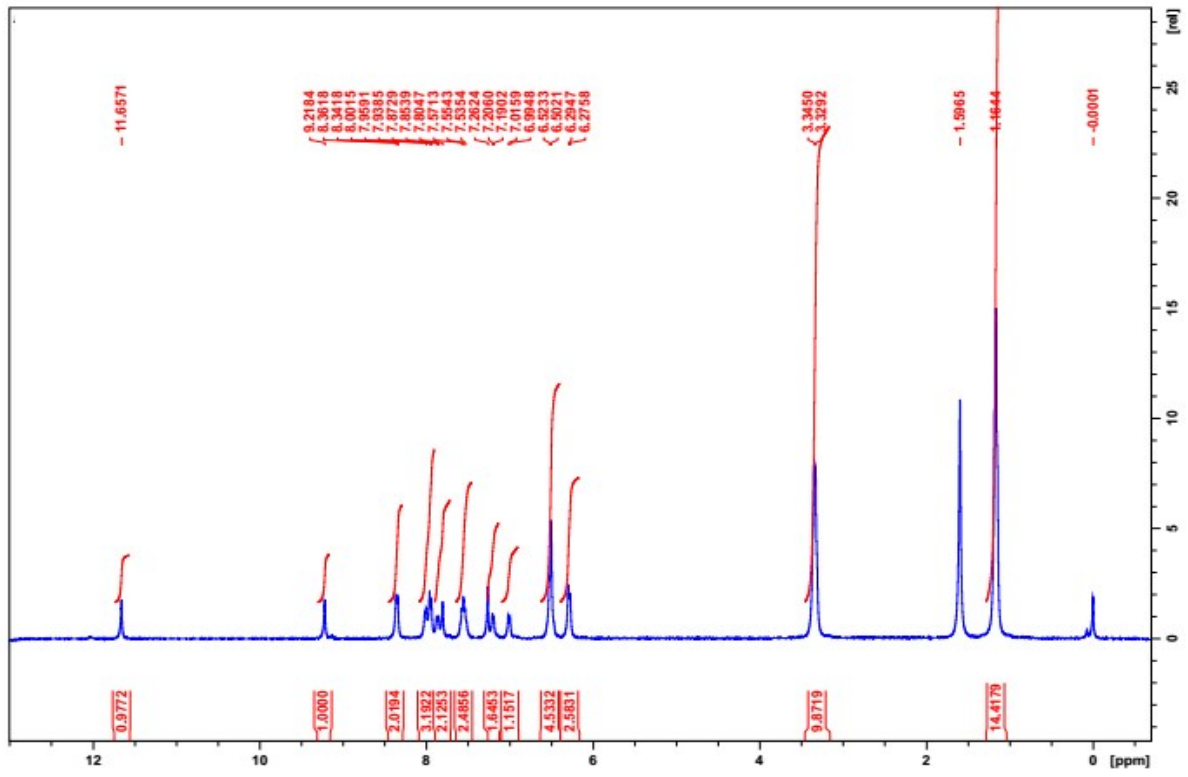

Figure S2. Proton NMR of chemosensor (**L**)

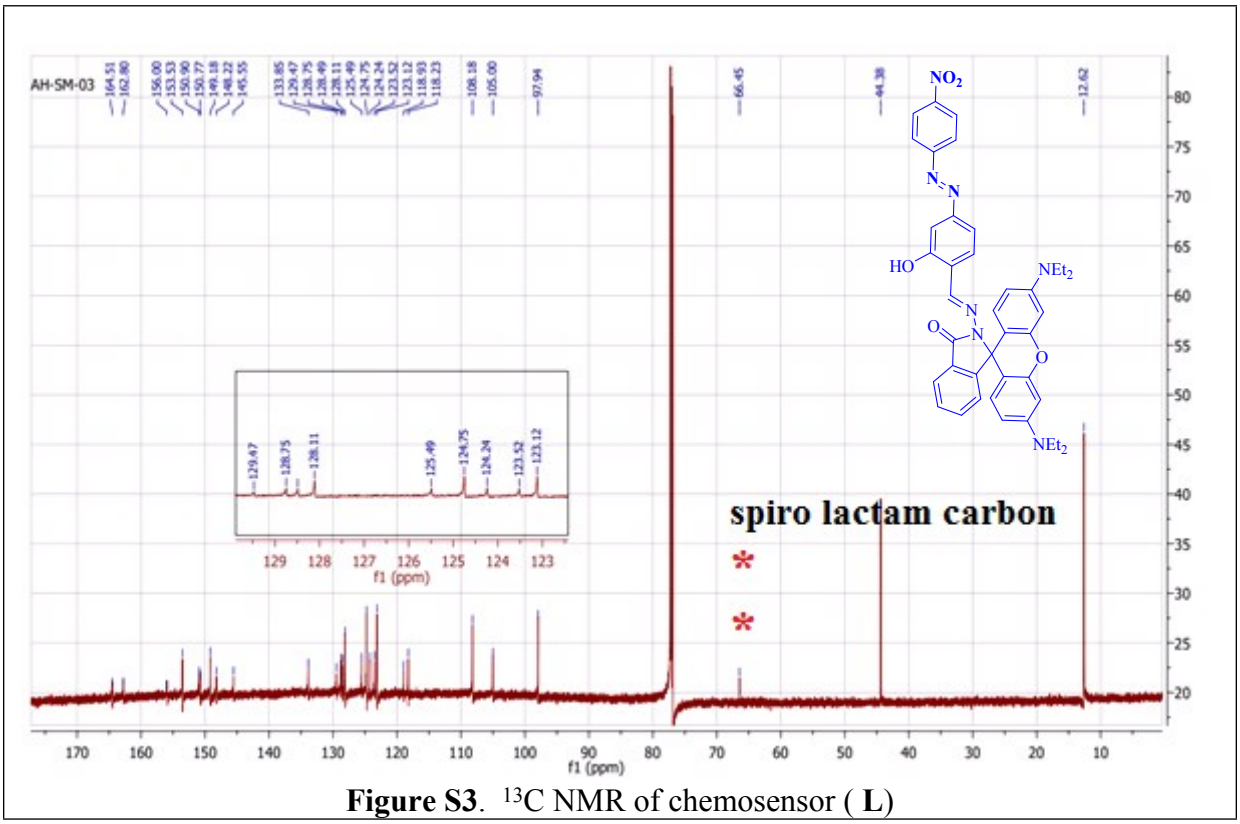

Figure S3. ^{13}C NMR of chemosensor (**L**)

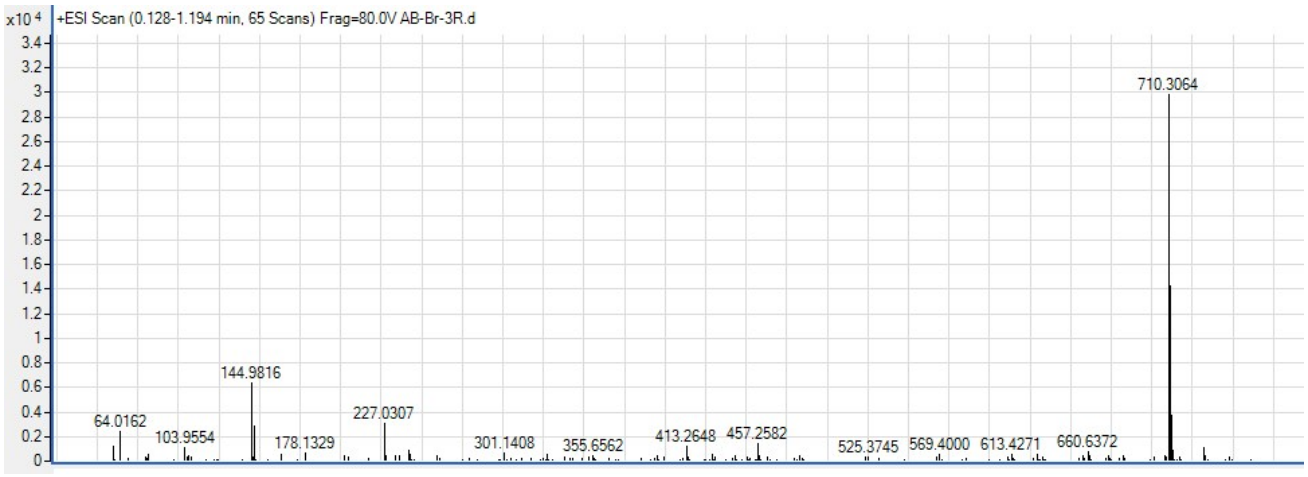

Figure S4. Mass of the chemosensor (L)

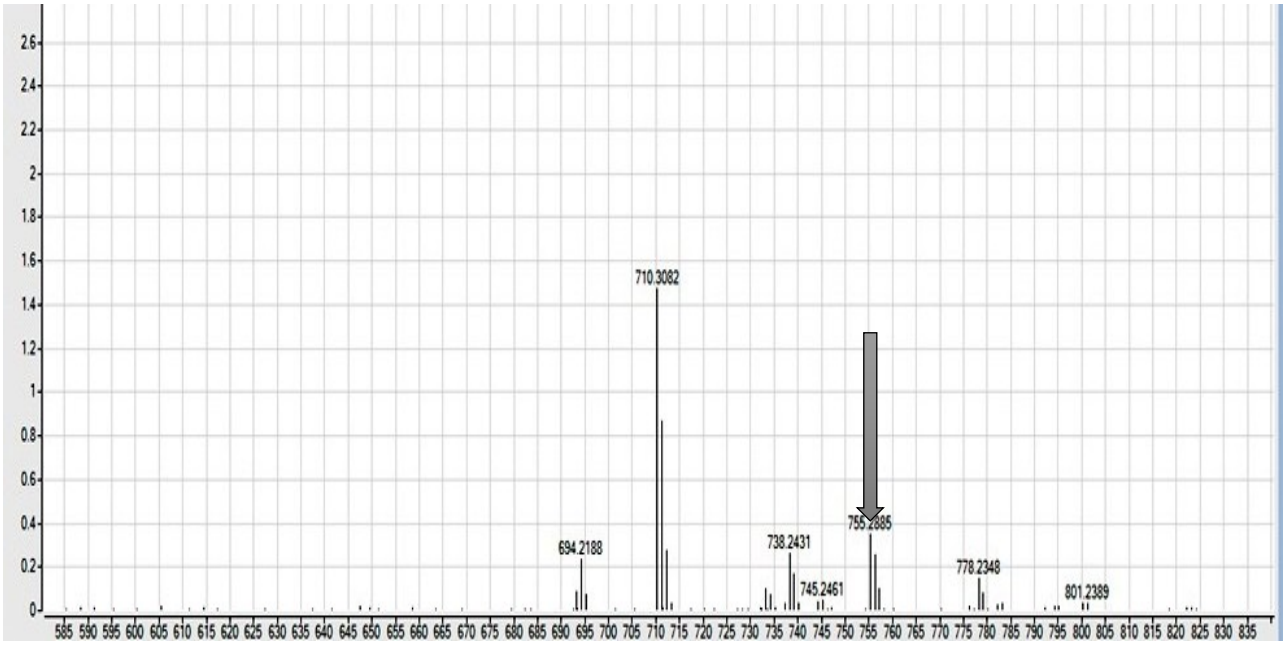

Figure S5. Mass spectrum of L-Al^{3+} complex

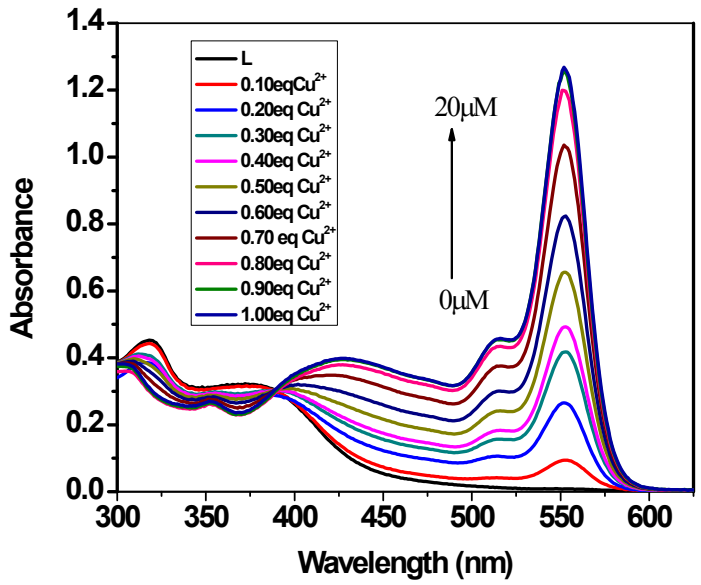

Figure S6. UV-Vis spectral changes of L (20 μM) upon addition of Cu^{2+} ions in a HEPES buffer [50 μM, C_2H_5OH-H_2O (4:1, v/v, pH= 7.2)] at 25 °C. [Cu^{2+}] = 0-20 μM

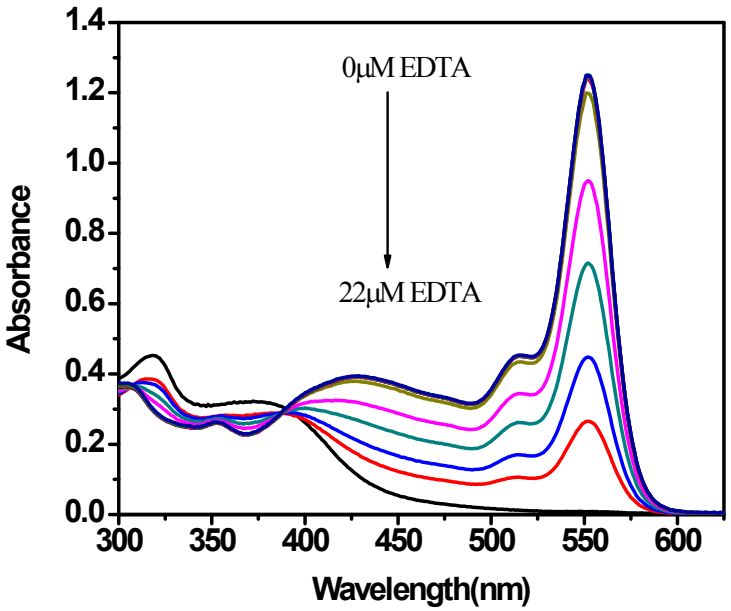

Figure S7. UV-Vis spectral changes of Cu^{2+} complex of **L** (20 μM) upon addition of EDTA in HEPES buffer [50 μM, C_2H_5OH-H_2O (4:1, v/v, pH= 7.2)] at 25 °C. EDTA added = 0-22 μM

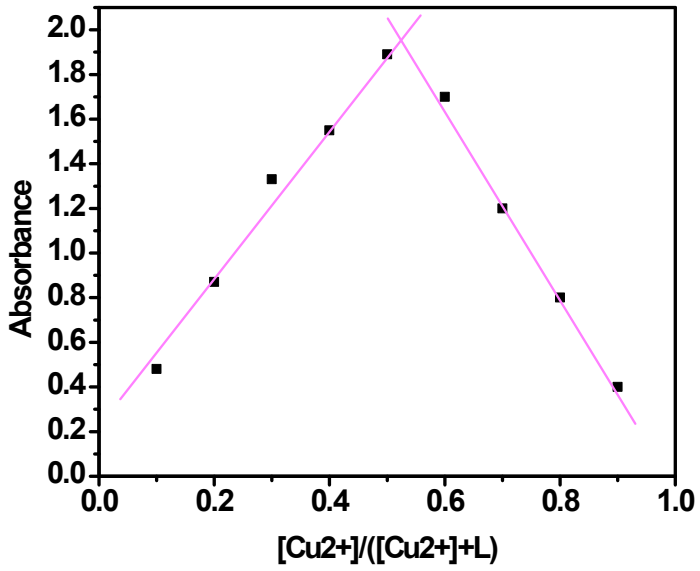

Figure S8. Job's plot from absorbance data of **L** and Cu^{2+} with a total solution volume of 2 ml in HEPES buffer [50 μM, C_2H_5OH-H_2O (4:1, v/v, pH= 7.2)] at 25 °C λ_{abs}^{max} = 550 nm.

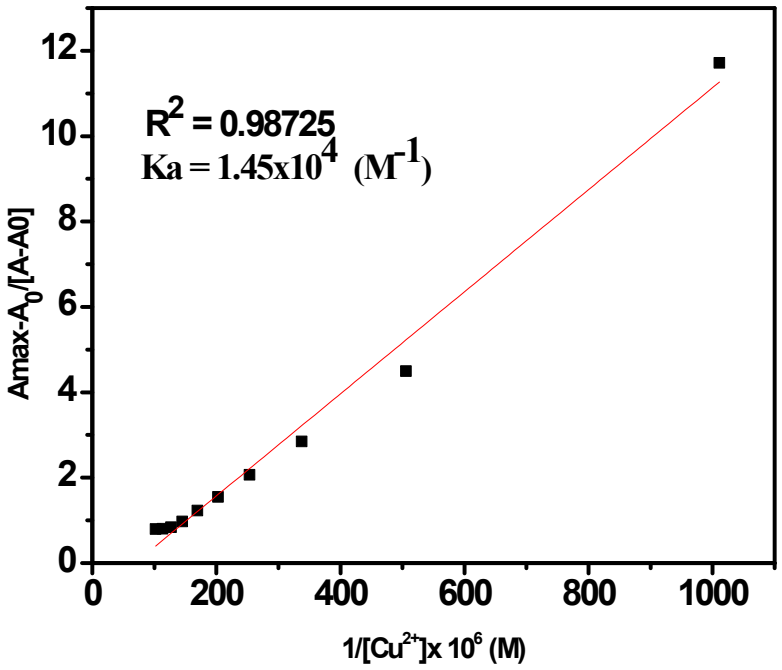

Figure S9. Benesi-Hildebrand plot of **L** (20 μM) for Cu^{2+} determined by absorbance method in HEPES buffer [50 μM, C_2H_5OH-H_2O (4:1, v/v, pH= 7.2)] at 25 °C

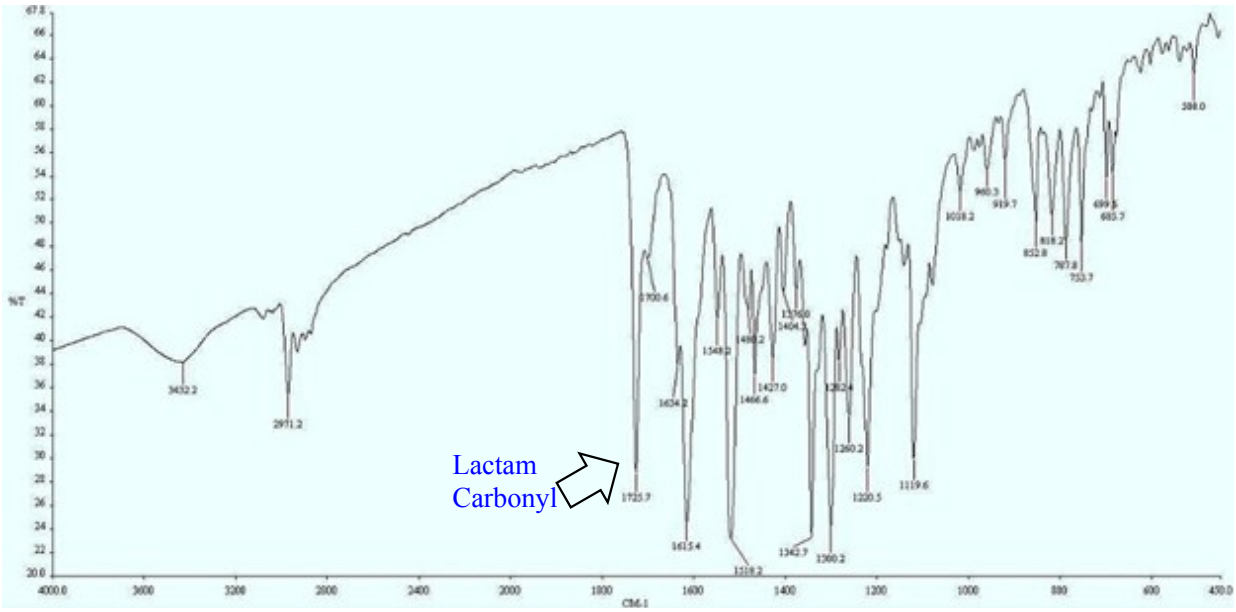

Figure S10. IR Spectrum of chemosensor (**L**)

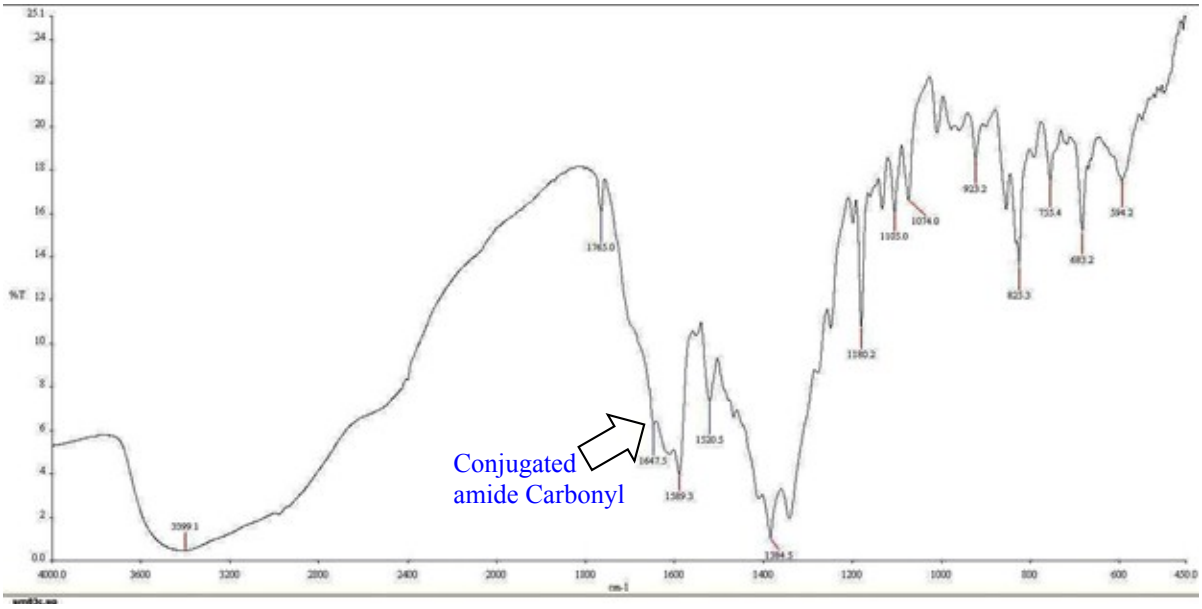

Figure S11. IR Spectrum of L-Al^{3+} complex

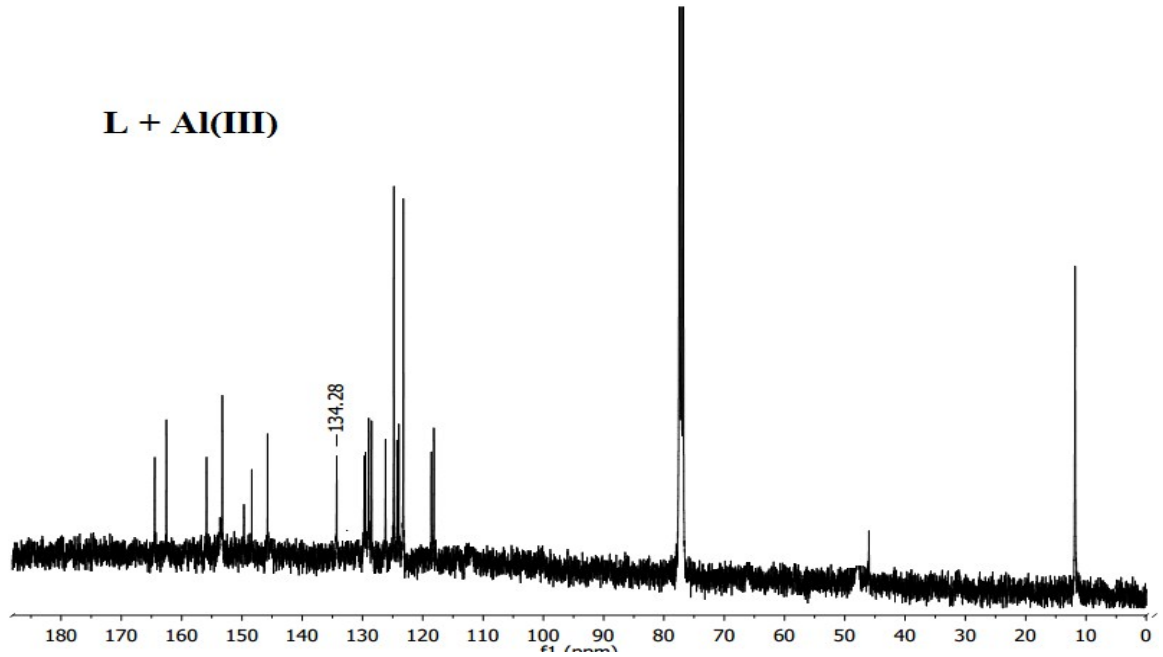

Figure S12: ^{13}C NMR of ligand + Al^{3+}

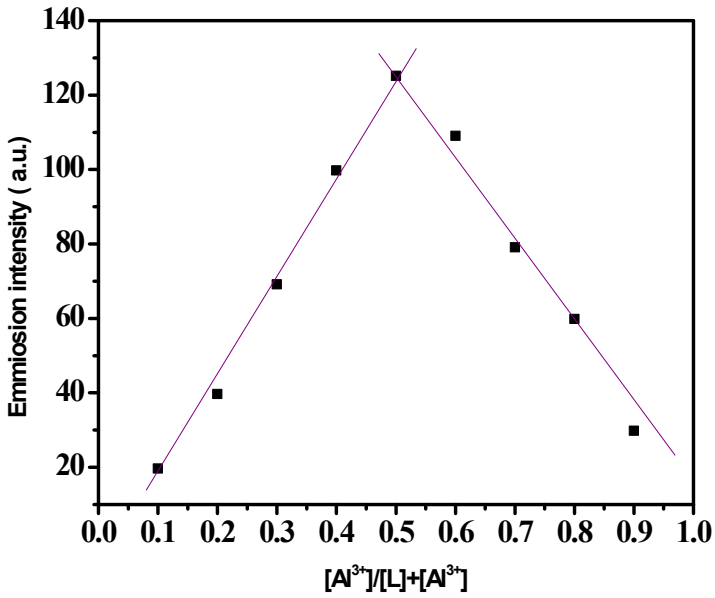

Figure S13. Job's plot of Fluorescence intensity at 554 nm of **L** and Al^{3+} with a total concentration of 20 μM cations in HEPES buffer [50 μM, C_2H_5OH-H_2O (4:1, v/v, pH= 7.2)] at 25 °C

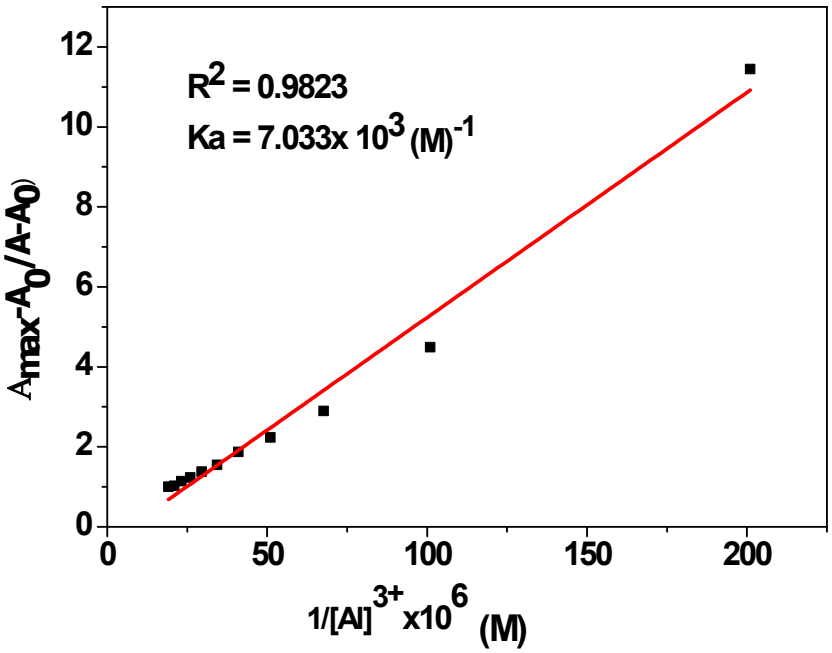

Figure S14. Benesi-Hildebrand plot of **L** (40 μM) for Al^{3+} determined by absorbance method in HEPES buffer [50 μM, C_2H_5OH-H_2O (4:1, v/v, pH= 7.2)] at 25 °C

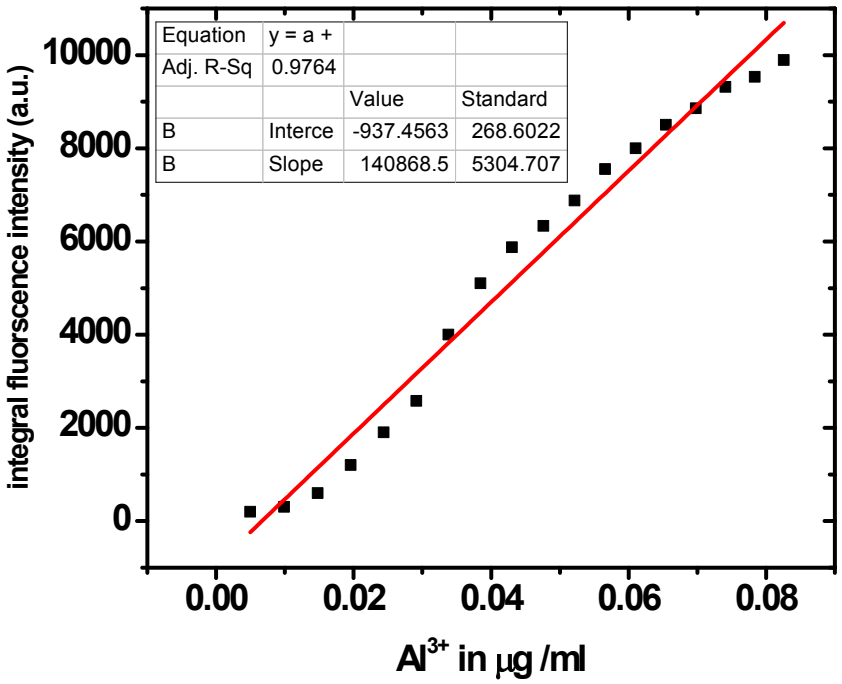

Figure S15. The limit of detection (LOD) and limit of quantification (LOQ) were calculated using 3σ/S and 10σ/S methods, respectively. σ = the standard deviation of y-intercept of regression line, S = the slope of the calibration curve

Table S1 The comparison of this probe with some other fluorescent probes for Al^{3+}

Probe	λem (nm)	LOD (μM)	Total metal ions	Stokes shift (nm)	Solvent (V/V)	Detection method
Ref. [1]	582	3.98	19	20	CH_3CN/H_2O (95:5)	CHEF , Fluorescence quenching
Ref. [2]	582	0.196	21	22	EtOH-H_2O (1:1)	---
Ref. [3]	550	0.183	17	16	CH_3CN/H_2O (9:1)	CHEF,PET FRET
Ref. [4]	556	3.26	17	17	H_2O-EtOH (4:1)	CHEF
Ref. [5]	560	38.9	12	40	EtOH	FRET
Ref. [6]	558	4.17	16	28	DMF	CHEF
Ref. [7]	555	0.34	12	26	MeOH-H_2O (1:1)	CHEF
Ref. [8]	490	0.42	18	25	CH_3CN-H_2O(50:50)	ICT,CHEF
Ref. [9]	513	2.40	13	139	DMSO	ESIPT
Ref. [10]	503	1.04	17	57	EtOH-H_2O (9:1)	--
Ref. [11]	538	0.29	13	58	DMSO	ICT
Ref. [12]	450	1.54	20	45	CH_3CN–HEPES buffer	ICT
Our work	**582**	**0.11**	**17**	**28**	**EtOH-H_2O (4:1)**	**CHEF, PET**

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