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

INNER FILTER EFFECT BASED SCHIFF BASE CHEMOSENSOR FOR RECOGNITION OF Cr(VI) AND ASCORBIC ACID IN WATER MATRIX

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	50 µM. The concentration of sucrose, citric acid (40 mM), glucose (10 mM), fructose, saccharin, benzoic acid, oxalic acid, malonic acid, maltose mannitol and sorbitol (30 mM), K^+, Na^+, Ca^{2+}, Mg^{2+}, Mn^{2+}, Ni^{2+}, SO_4^{2-}, Cl^- (50 mM), Fe^{2+}, Zn^{2+} (20 mM).	
S13	Time –resolved decay of chemsosensor with different concentrations of Cr(VI) in DMF/water (1:9, v/v) solution at pH 6. Table represents the values of fluorescence lifetime	14
S14	UV-Vis absorption spectrum of chemosensor in presence of different concentrations of Cr(VI) (0-2 mM)	15
S15	UV-Vis absorption spectrum of chemosensor in presence of 2 mM Cr(VI) and different concentrations of ascorbic acid. The inset figure represents the absorption spectrum of Cr(III) at 426 nm and 566 nm in in presence of 2 mM Cr(VI) and different concentrations of ascorbic acid.	16
S16	Variation of fluorescent Intensity of chemosensor in presence of 450 µM of	17

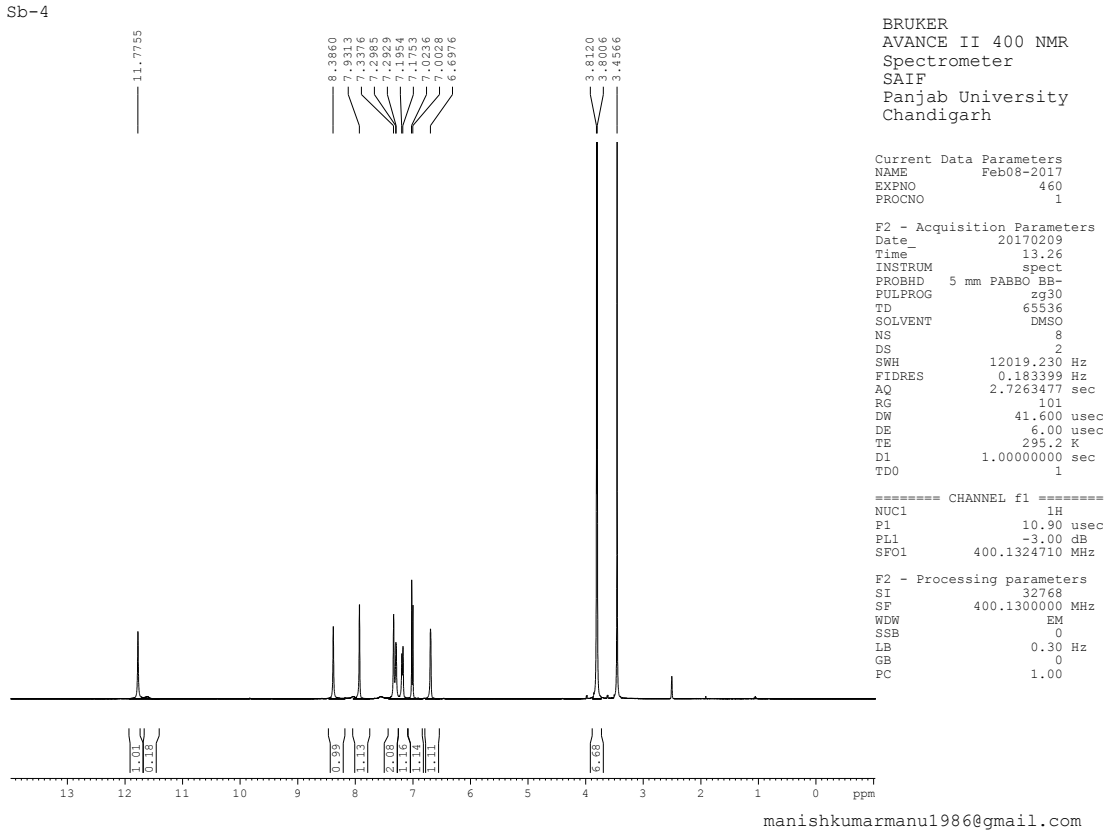


Fig. S1 ^{1}H NMR spectrum of chemosensor

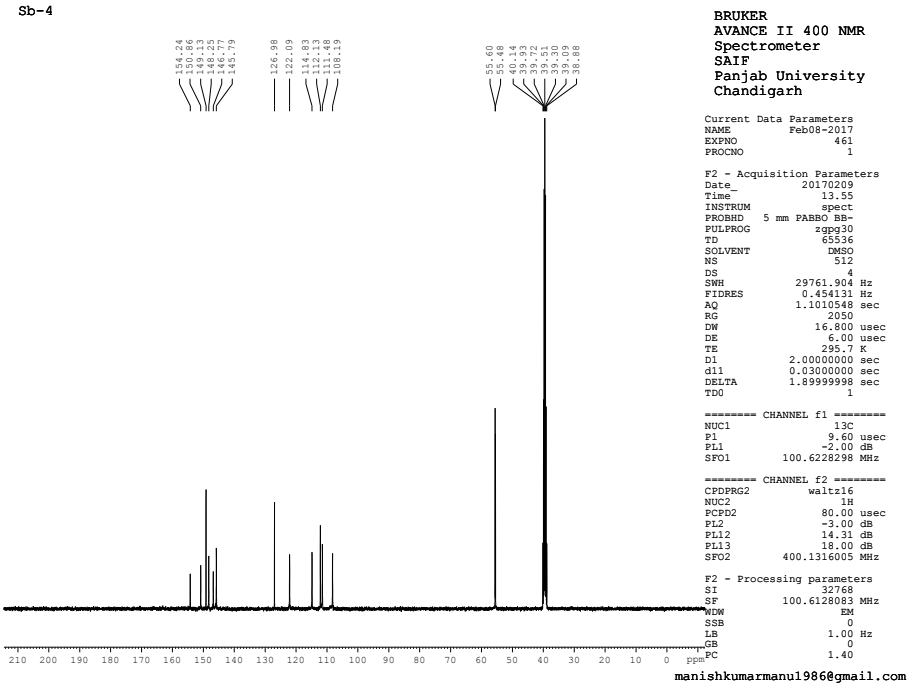


Fig. S2 ^{13}C NMR spectrum of chemosensor

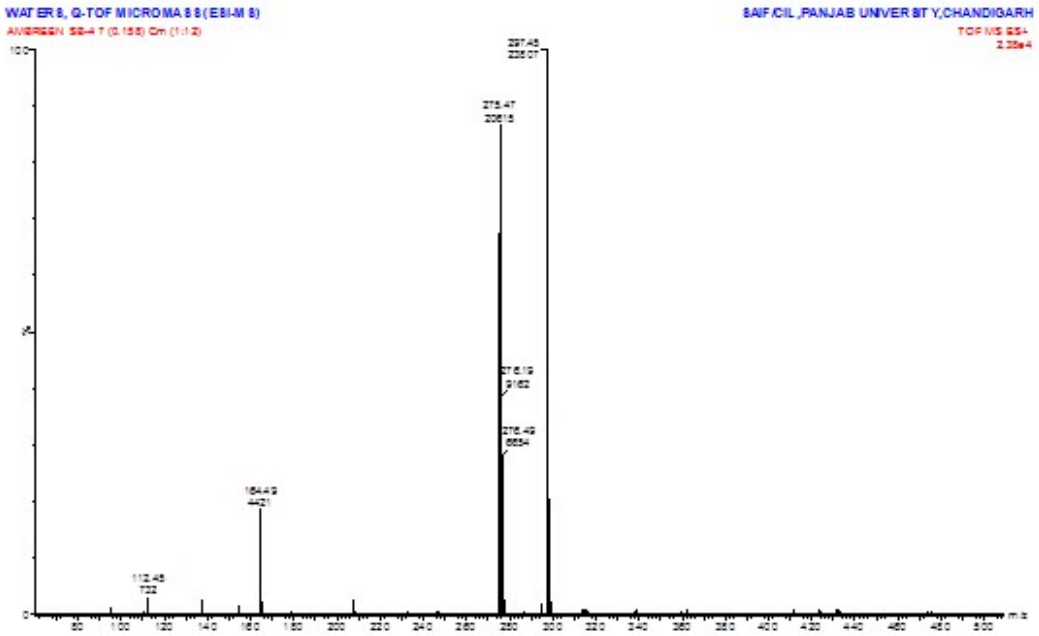


Fig S3 Mass spectrum of chemosensor

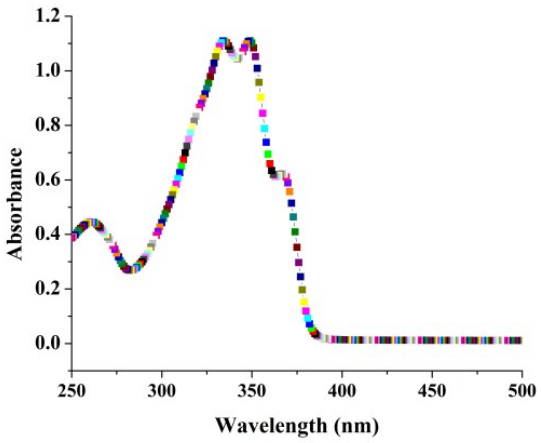


Fig. S4 Absorption spectrum of chemosensor

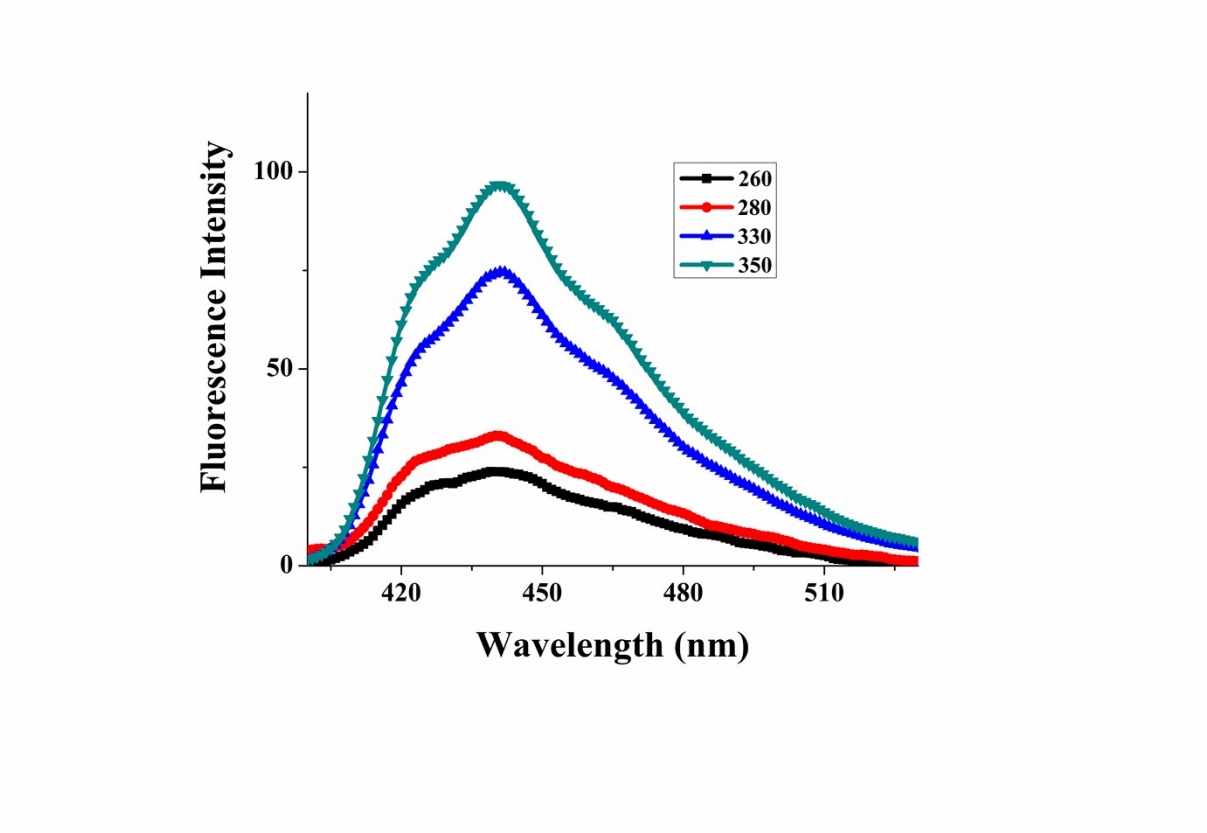


Fig. S5 Fluorescent emission spectra of chemosensor under different excitation wavelengths ranging from 260 to 350 nm.

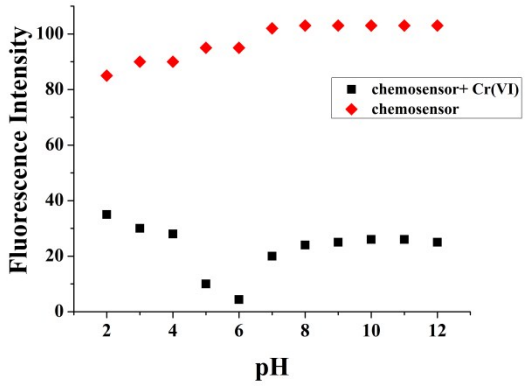


Fig S6 Effect of pH on fluorescence intensity of chemosensor (red) and chemosensor-Cr(VI) solution (black).

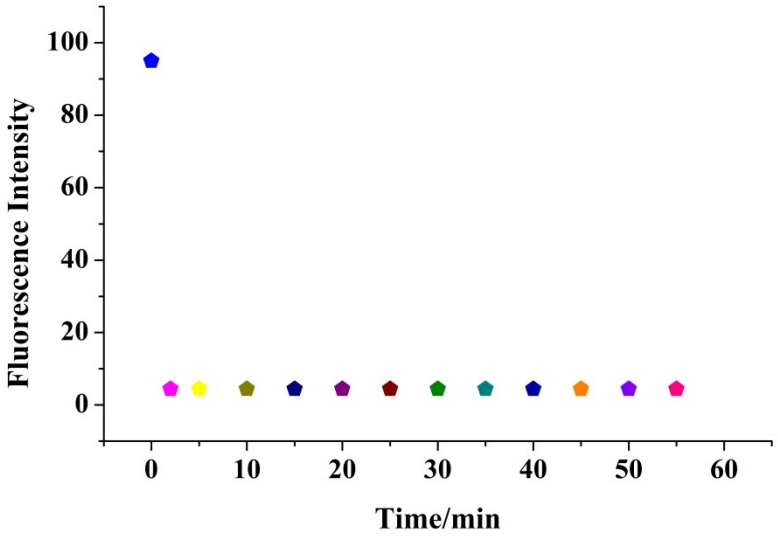


Fig S7 Kinetic characteristics of the florescence intensity of chemosensor with 2 mM Cr(VI) solution

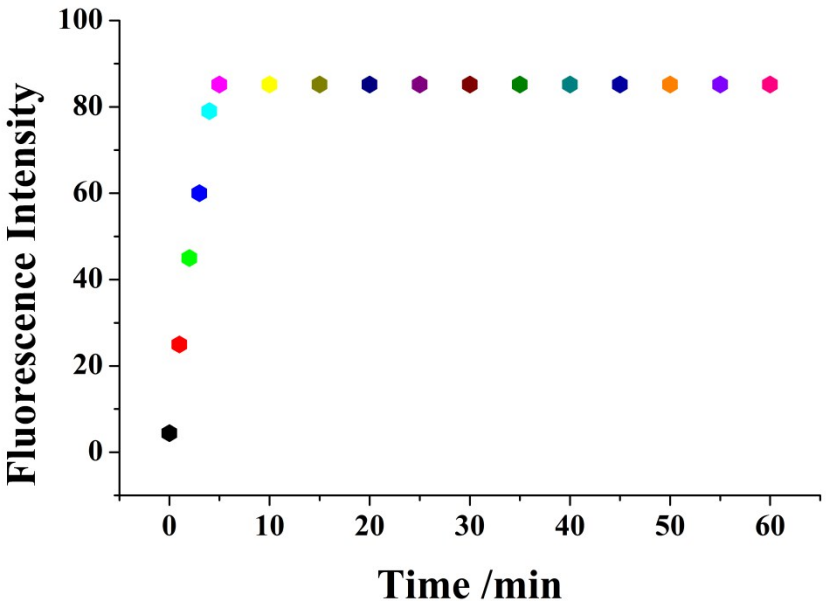


Fig S8 Kinetic characteristics of the florescence intensity of chemosensor with 500 μM Cr(VI) and 3 mM ascorbic acid solution

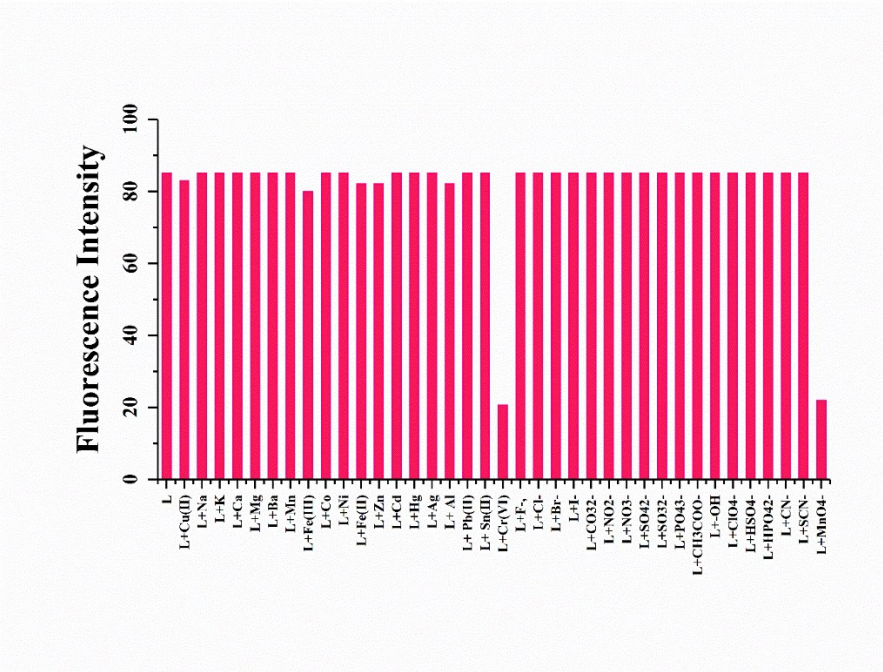


Fig S9 Effect of other metal ions and anions on fluorescent intensity of L (20μM).The concentrations of various metal ions and anions are 500 μM

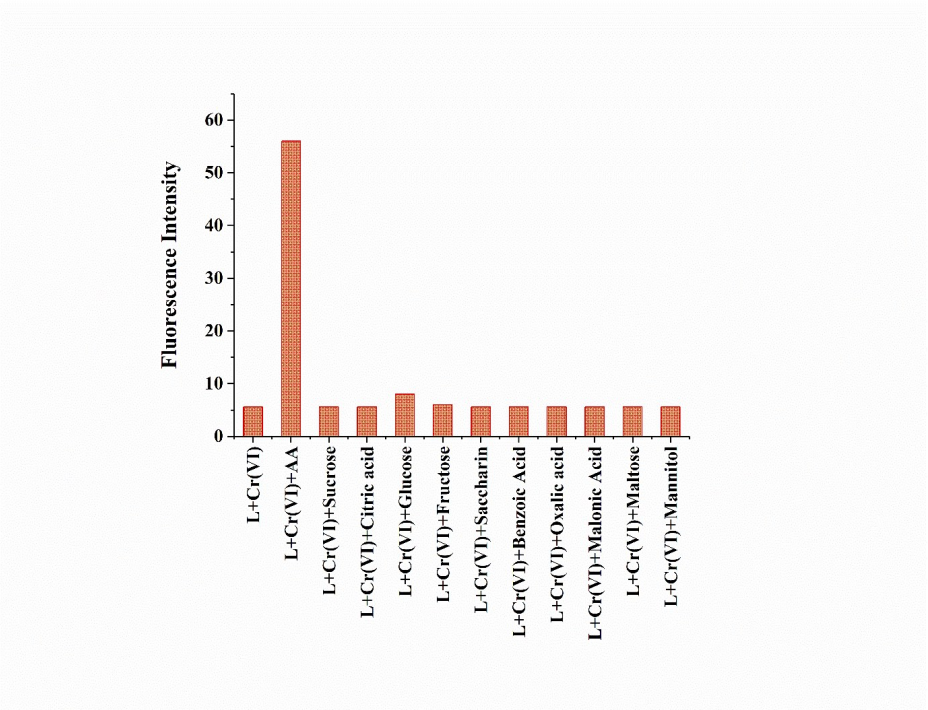


Fig S10 Effect of other chemical species on fluorescent intensity of L+Cr(VI) ensemble (L 20μM+ Cr(VI) 2mM). The concentrations of various chemical species are 400 μM

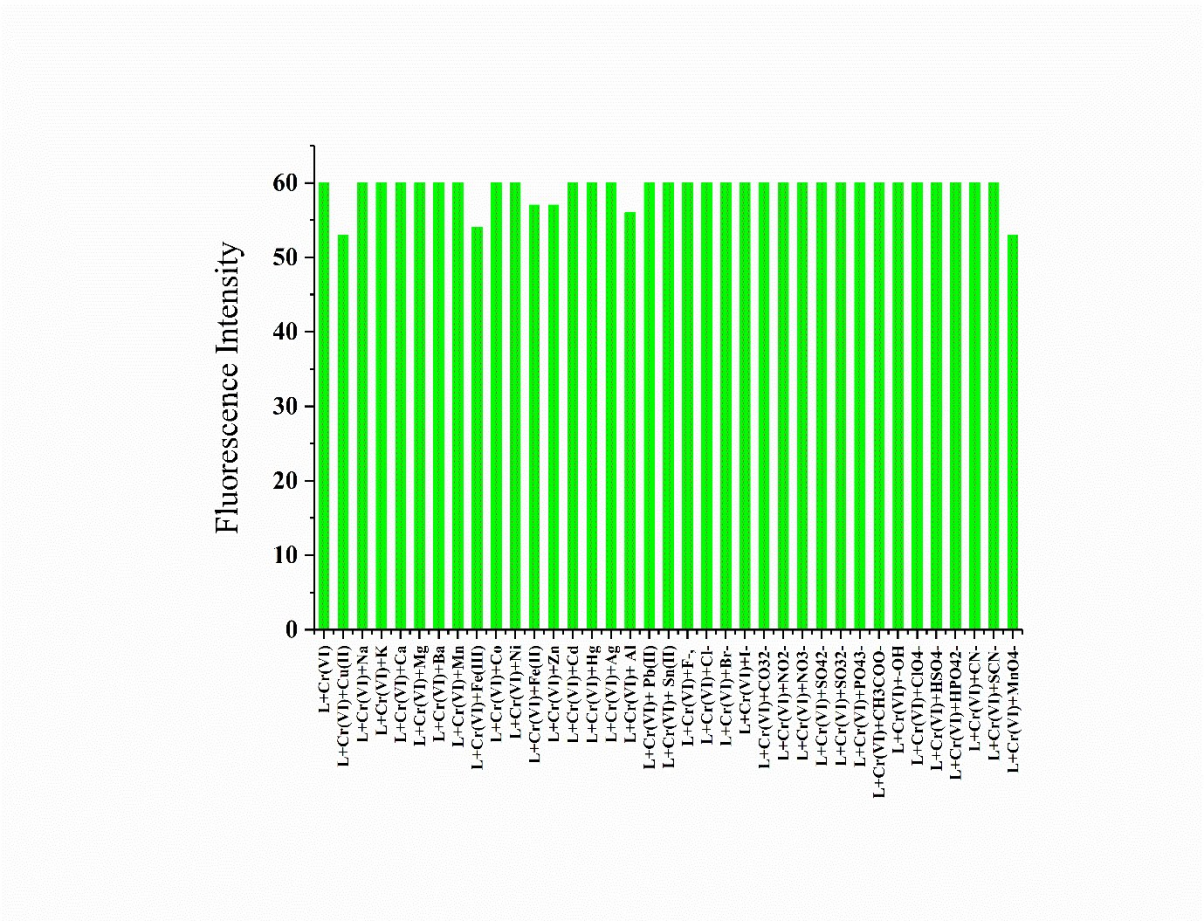


Fig S11 Interference spectrogram of L-Cr(VI). The concentration of L is 20 μM, Cr(VI) is 100 μM. The concentration of F^-, Cl^-, Br^-I^-, CO_3^{2-}, NO_2^-, NO_3^-, SO_4^{2-}, SO_3^{2-}, PO_4^{3-}, CH_3COO^-, ^-OH, ClO_4^-, HSO_4^-, HPO_4^{2-}, CN^-, SCN^-, K^+, Na^+, Ca^{2+}, Mg^{2+}, Cr^{3+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Hg^{2+}, Cd^{2+} (30 Mm) Fe^{2+}, Zn^{2+} , Al^{3+} (10 mM) Cu^{2+}, Fe^{3+} (5 mM) MnO_4^-(30 μM).

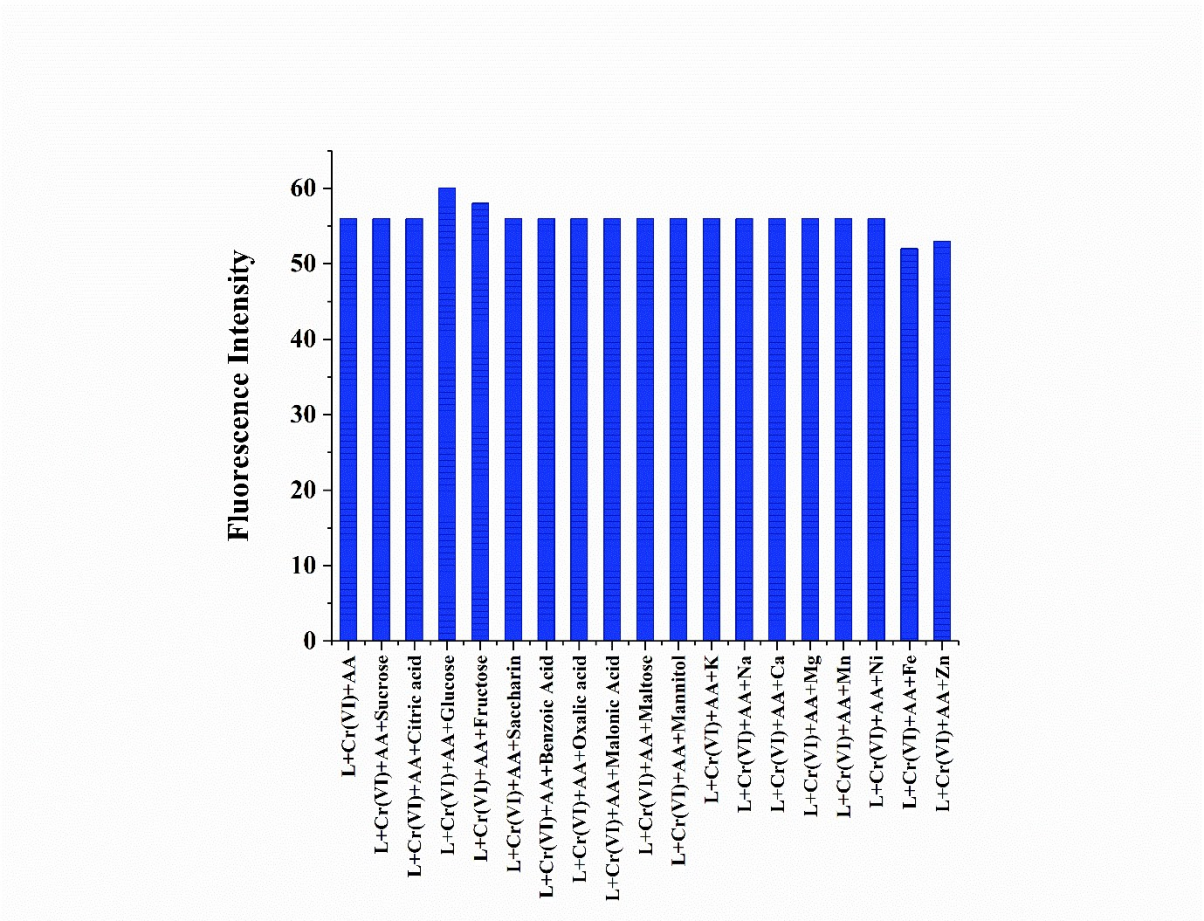
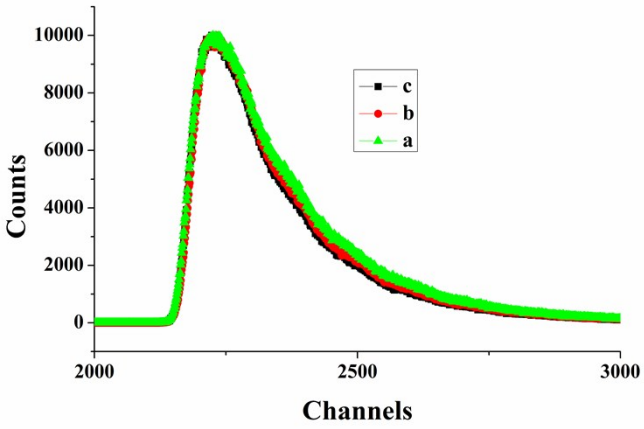


Fig S12 Interference spectrogram of L-Cr(VI). The concentration of L is 20μM, Cr(VI) 500 μM and ascorbic acid (AA) 50 μM. The concentration of sucrose, citric acid (40 mM), glucose (10 mM), fructose, saccharin, benzoic acid, oxalic acid, malonic acid, maltose mannitol and sorbitol (30 mM), K^+, Na^+, Ca^{2+}, Mg^{2+}, Mn^{2+}, Ni^{2+}, SO_4^{2-}, Cl^- (50 mM), Fe^{2+}, Zn^{2+} (20 mM).



Concentration of Cr(VI) (μM)	τ_1 (nm)	B_1	τ_2 (nm)	B_2	τ_3 (nm)	B_3	τ (nm)	CHISQ
(a) 0	6.09	0.5468	2.19	0.1886	6.12	0.2646	5.36	1.04
(b) 100	5.85	0.5688	2.28	0.1776	6.19	0.2536	5.31	1.06
(c) 500	5.98	0.5548	2.25	0.1886	6.15	0.2606	5.35	1.05
$\tau = \tau_1 \times B_1 + \tau_2 \times B_2 + \tau_3 \times B_3$ ($\Sigma B_i = 1$, for good fit , CHISQ should be less than 1.2								

Fig. S13 Time –resolved decay of chemsosensor with different concentrations of Cr(VI) in DMF/water (1:9, v/v) solution at pH 6. Table represents the values of fluorescence lifetime

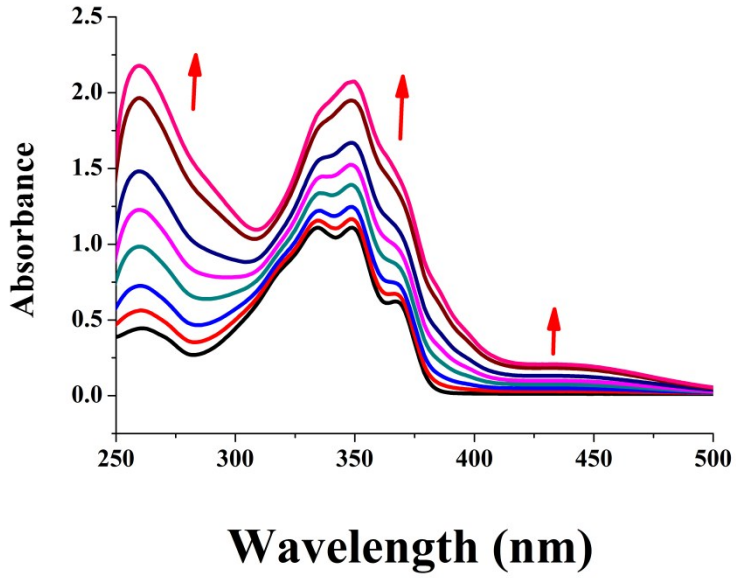


Fig S14 UV-Vis absorption spectrum of chemosensor in presence of different concentrations of Cr(VI) (0-2 mM)

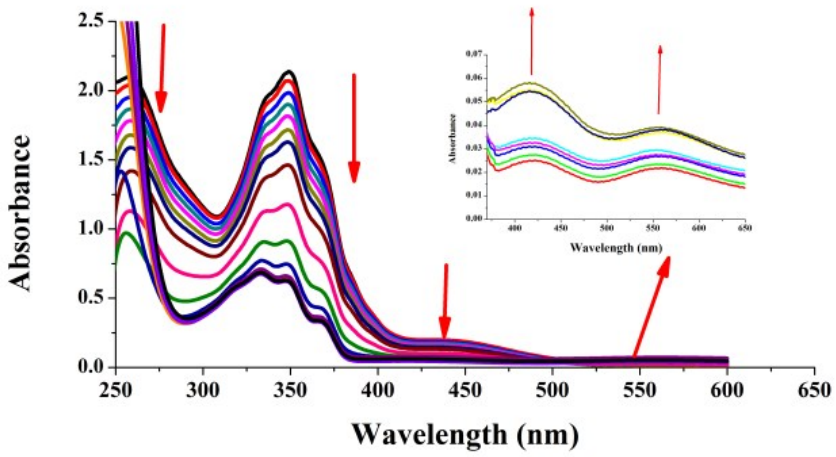


Fig S15 UV-Vis absorption spectrum of chemosensor in presence of 2 mM Cr(VI) and different concentrations of ascorbic acid. The inset figure represents the absorption spectrum of Cr(III) at 426 nm and 566 nm in in presence of 2 mM Cr(VI) and different concentrations of ascorbic acid.

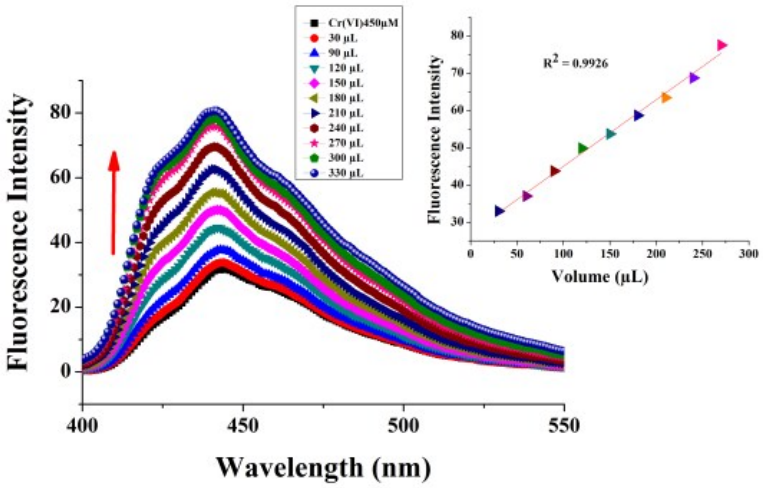


Fig S16 Variation of fluorescent Intensity of chemosensor in presence of 450 µM of Cr(VI) and different aliquots of Limcee tablet solution. Inset shows linear relation of fluorescent intensity and different aliquots of Limcee tablet solution.

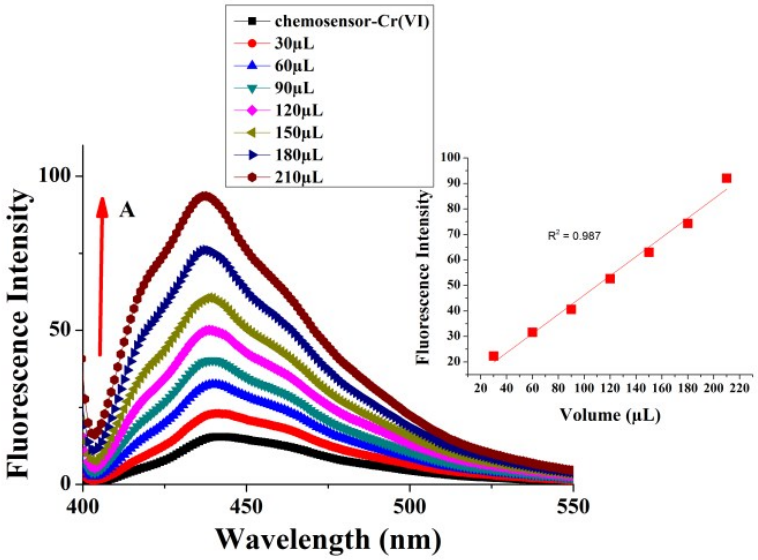


Fig. S17 Variation of fluorescent Intensity of chemosensor in presence of 450 µM of Cr(VI) and different aliquots of Celin tablet solution. Inset shows linear relation of fluorescent intensity and different aliquots of Celin tablet solution.

Table S1. Comparison between some previously reported methods for the determination of Cr(VI) and the present method.

Reagents	Linear range (μM)	LOD (μM)	Reference
Silicon nanoparticles	0.1-200	.028	1
1,8- naphthalimide	0-90	0.36	2
Graphitic carbon nitride nanosheets	0.6-300	0.15	3
CTAB stabilized perylene nanoparticles	0.5-50	0.008	4
Hydrophilic ionic chemosensor	5-1400	0.89	5
Rhodamine B-hydrazide	0.05-2	0.0055	6
Salicylaldehyde rhodamine B hydrazone	0.01-0.3	0.0015	7
Present work	1-500	0.175	

Table S2. Comparison between some previously reported methods for the determination of ascorbic acid and the present method.

Reagents	Linear Range (μM)	LOD (μM)	Reference
Thiamine-Potassium ferrocyanide	0.086-1.5	0.026	8
Carbon quantum dots-MnO_2 probes	0.18-90	0.42	9
Iroan(III) and TPTZ	5.4-540	0.77	10
Silver nanoparticles	4.1-100	0.1	11
Cerium (IV)	0.1-8	0.016	12
o-phenylenediamine	0.28-230	0.034	13
Ti(III)	1-10	0.8	14
Methylene Blue	0.3-6	0.25	15
L-methionine	0.11-14.1	0.11	16
Present work	10-390	2.46	

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