Supporting Information

A remarkable ratiometric fluorescent chemodosimeter for very rapid detection of hydrogen sulfide in vapor phase and living cells

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CONTENTS

1. Bar Diagram of BHD towards other nucleophiles in UV-vis and fluorescence titration method

(a) (b)

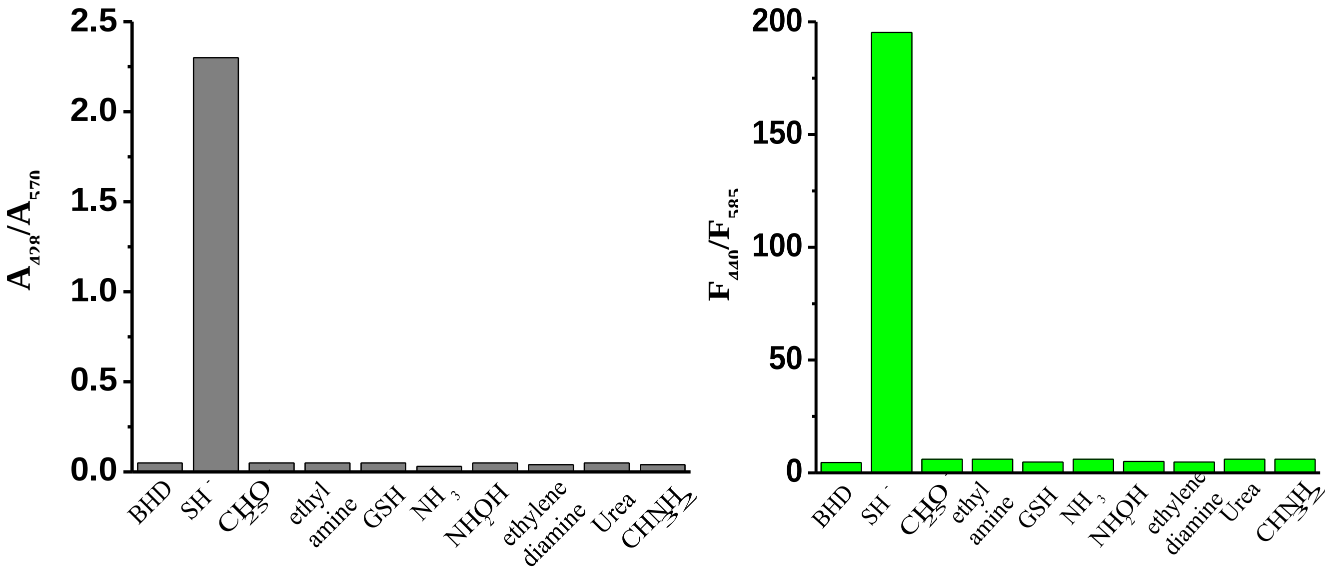


Figure S1: (a) Relative absorbance of the BHD in presence of other nucleophiles (b) Bar chart illustrating fluorescence response of free ligand and one equivalent of other nucleophiles in CH_3CN-H_2O (4:6, v/v, 25 º C) at 413 nm.

2. Calculation of the detection limit:

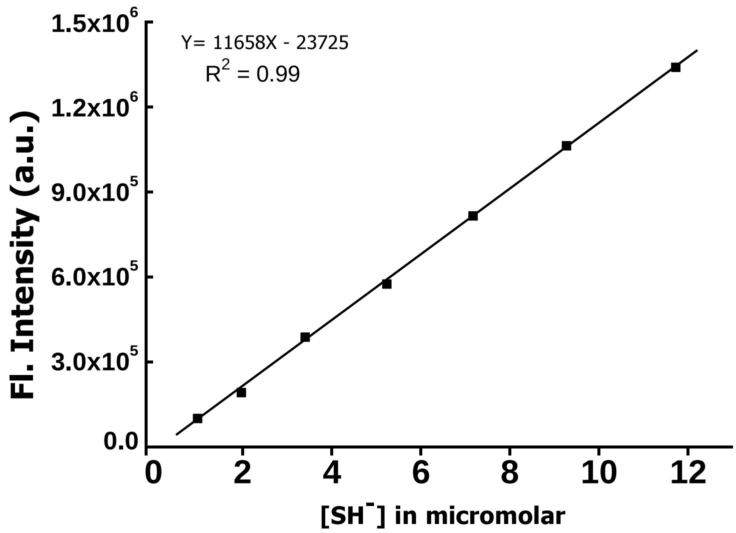


Figure S2: Fluorescence change of BHD upon gradual addition of SH^-.

The detection limit DL of **BHD** for HS^- was determined from the following equation[1]:

DL = K* Sb1/S

Where K = 2 or 3 (we take 2 in this case); Sb1 is the standard deviation of the blank solution; S is the slope of the calibration curve.

From the graph we get slope = 11658, and Sb1 value is 11976.67.

Thus using the formula we get the Detection Limit = 2.054 µM i.e. BHD can detect HS^- in this minimum concentration.

3. Cell viability assay:

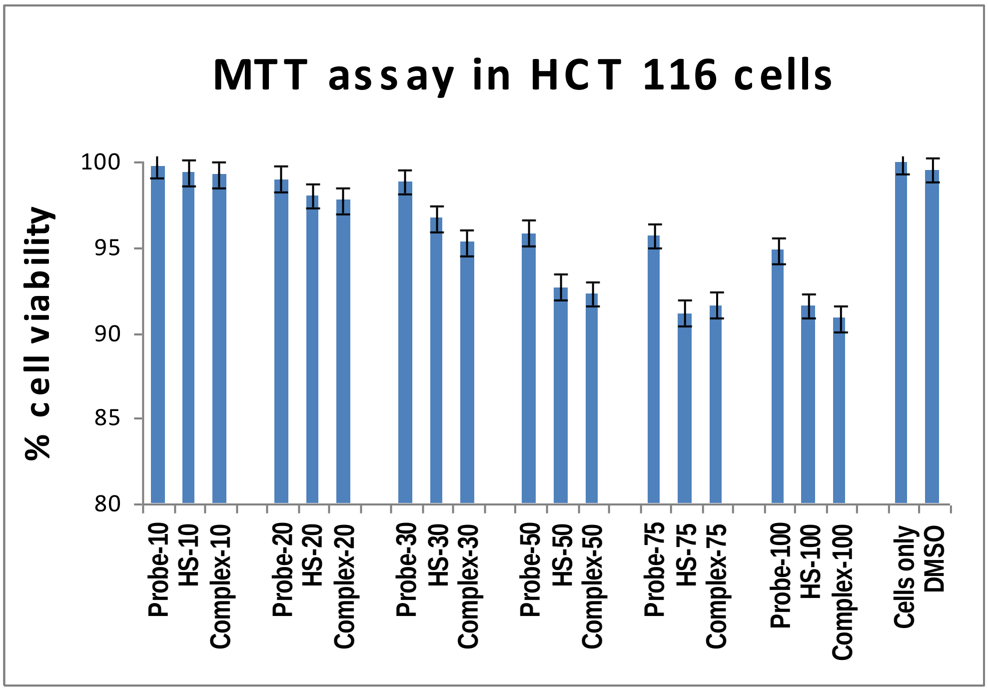


Figure S3: It represents % cell viability of HCT cells treated with various concentrations (10 µM–70 µM) of BHD for 12 h determined by MTT assay. Results are expressed as mean of three independent experiments

4. Fluorescence titration of BHD in presence of SH^- in 100% aqueous solution :

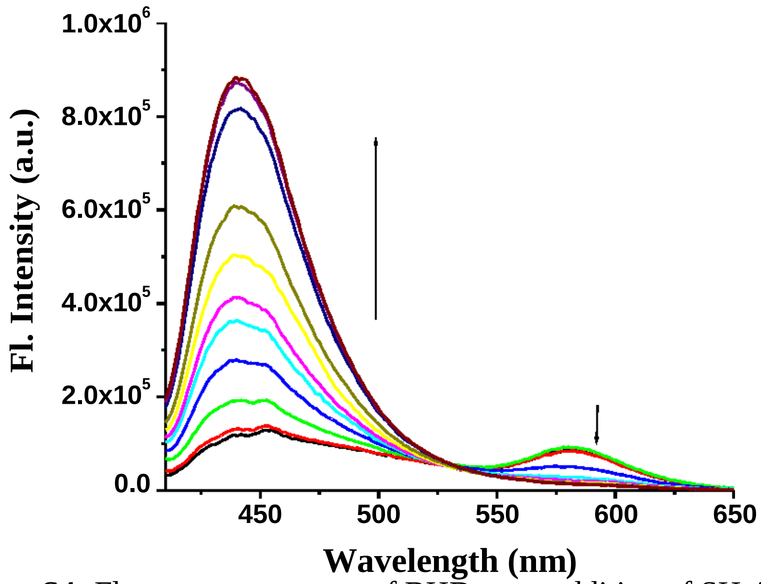
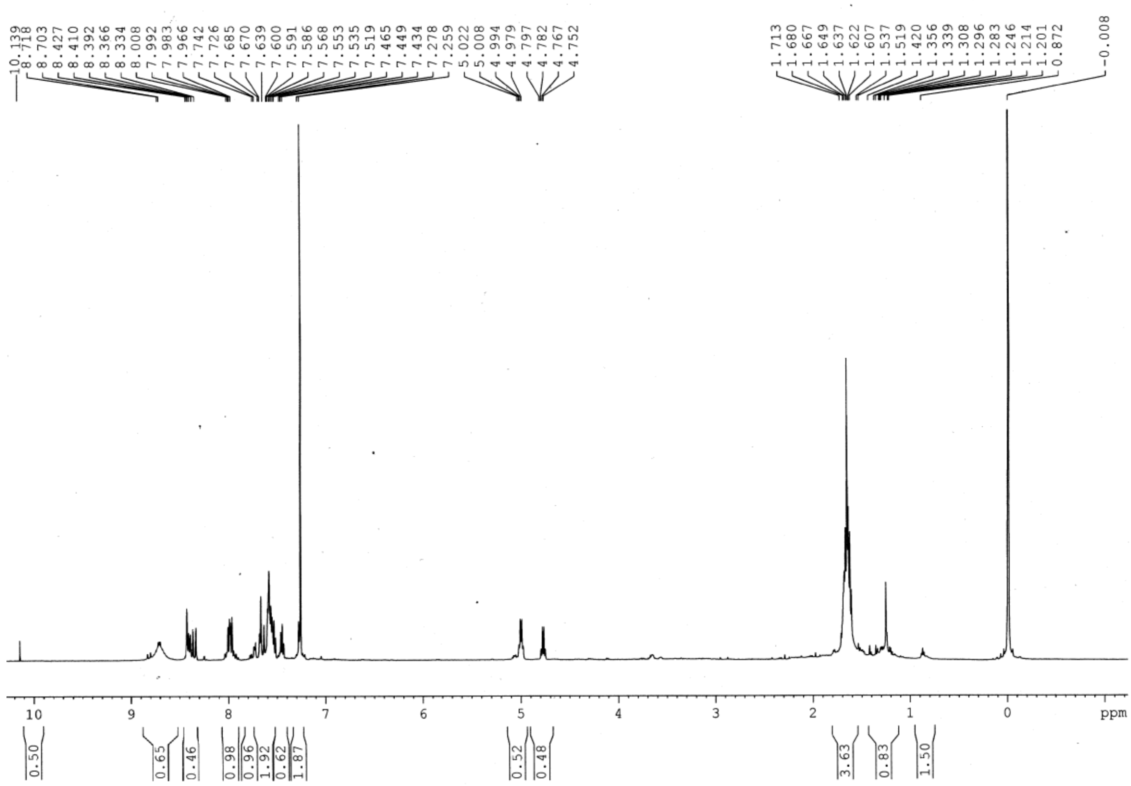


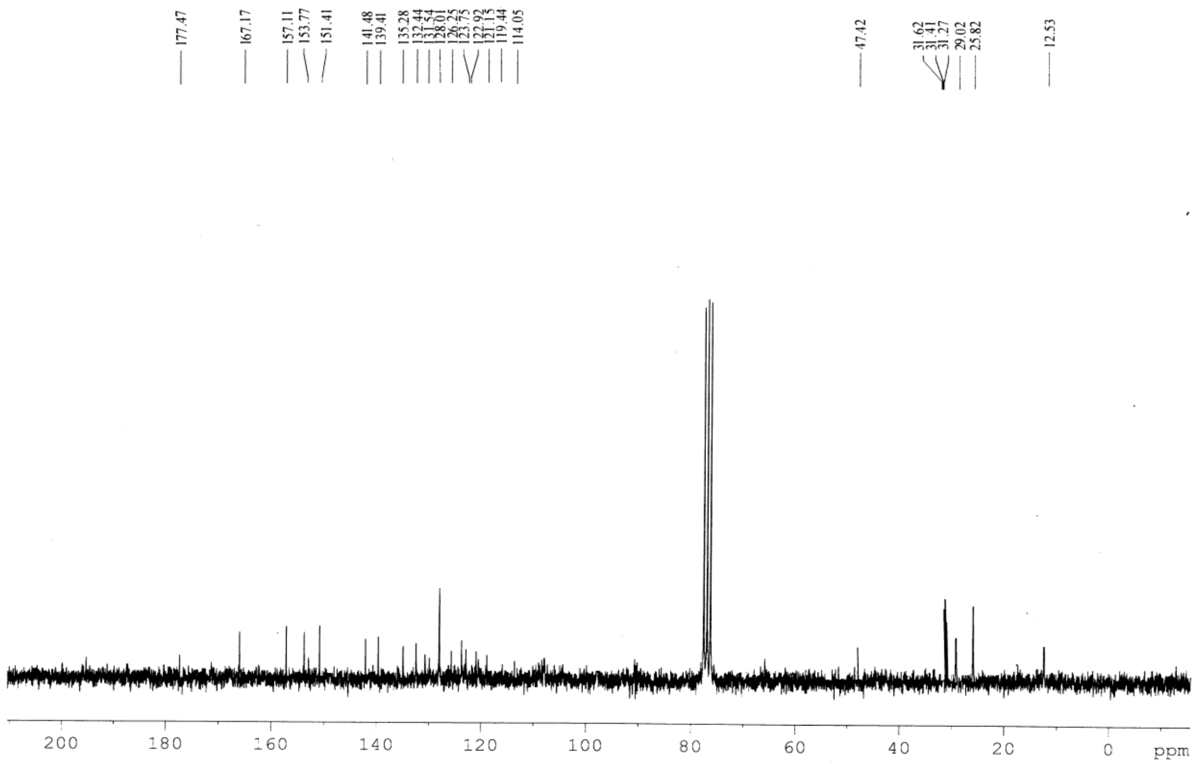
Figure S4: Fluorescence spectra of BHD upon addition of SH^- in water

5. ^1H NMR, ^{13}C NMR and HRMS spectra of BHD and BHD-SH adduct:

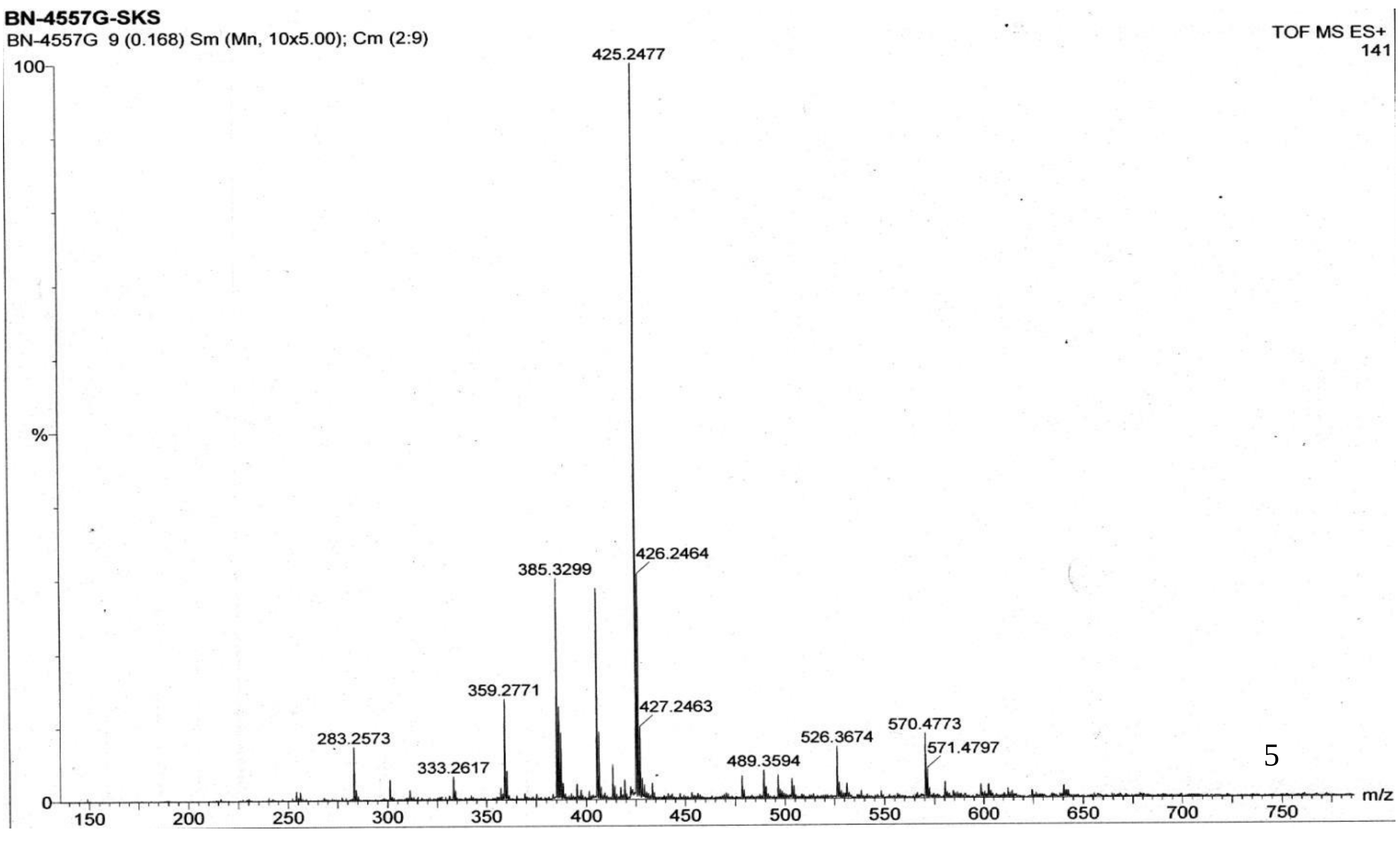
^1H NMR spectrum of Receptor i.e. BHD:



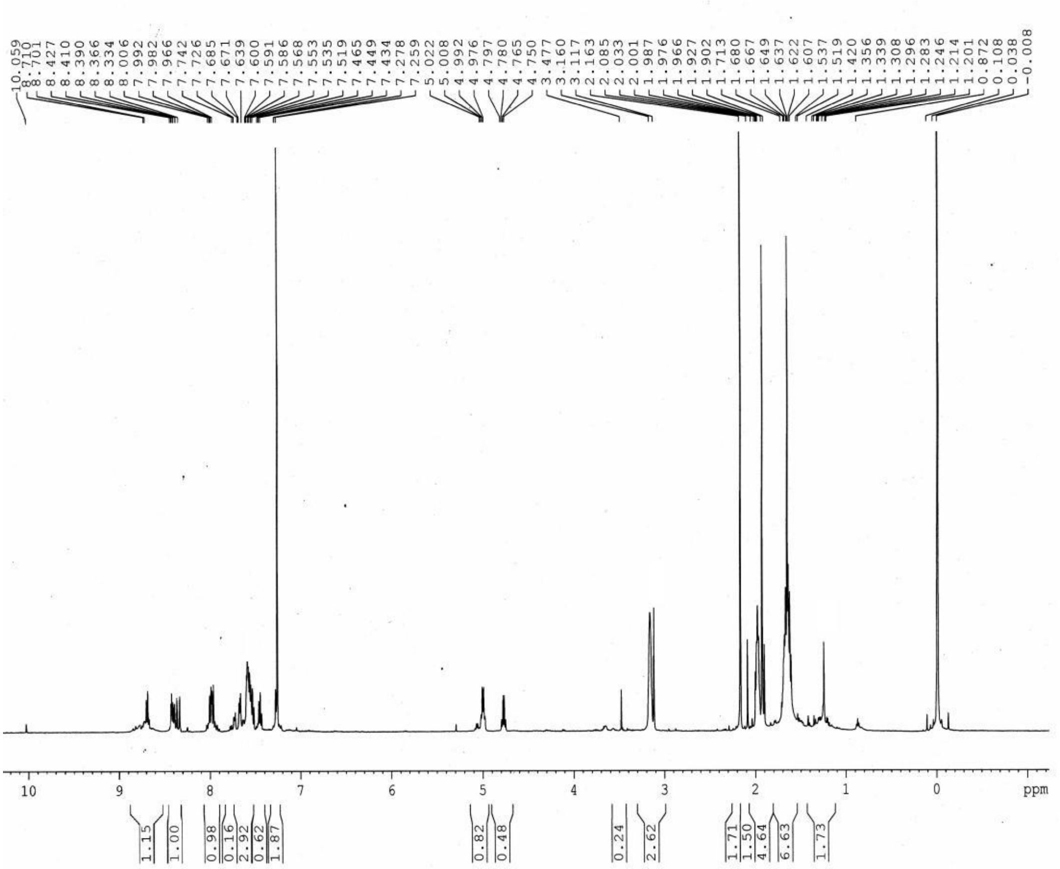
[13]CNMR spectrum of BHD:



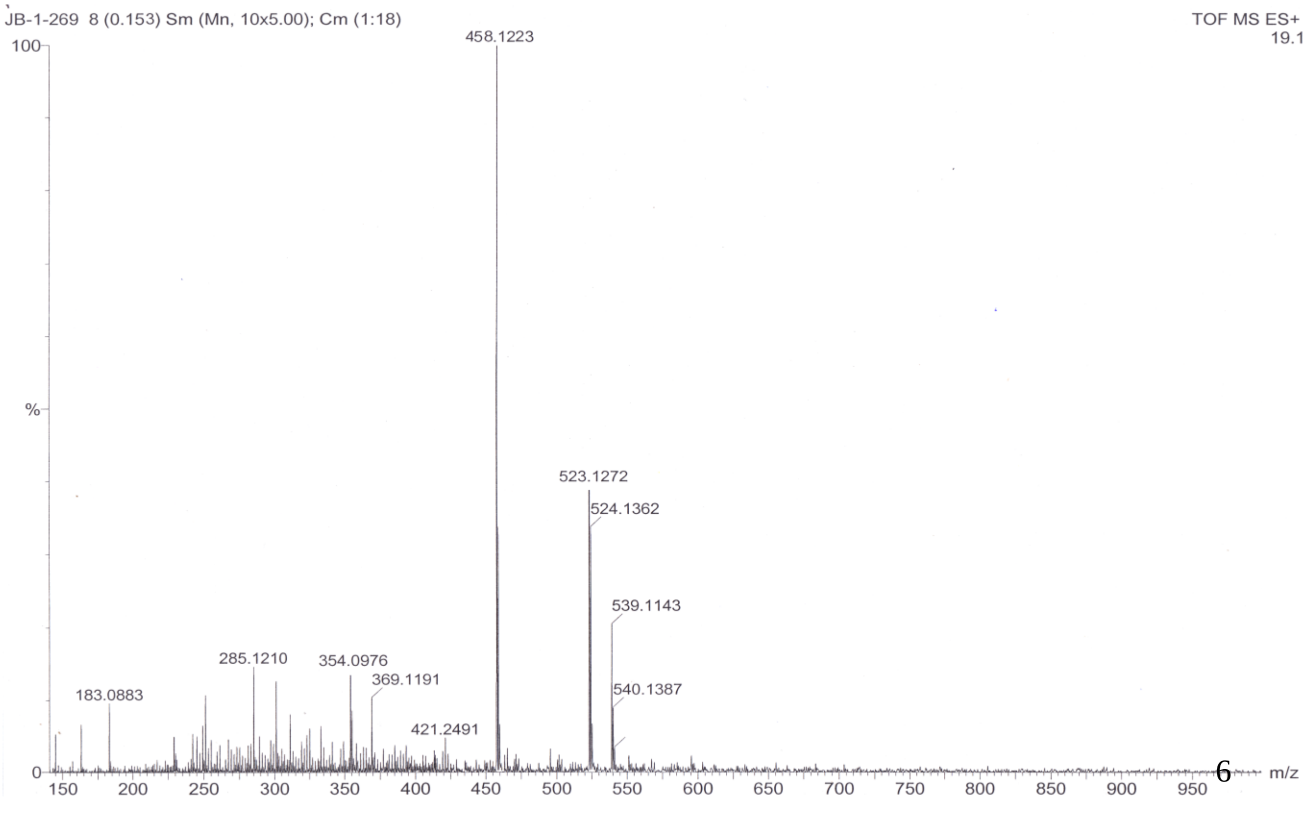
HR MS Mass Spectra of BHD:



^{1}H NMR spectrum of BHD-SH adduct:

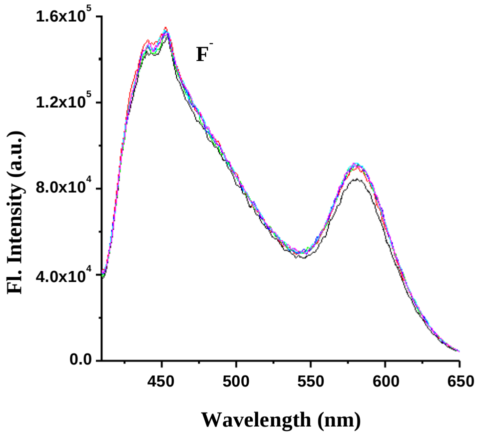


HR MS Spectra of BHD-SH adduct:

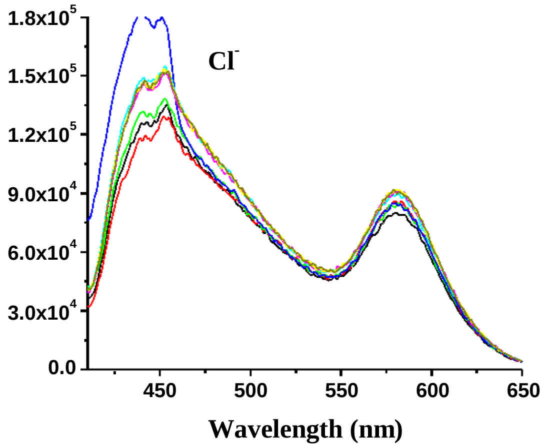


6. Fluorescence emission spectra of BHD with different anions and thiols F^-, Cl^-, Br^-, CN^-, HSO_3^-, OCl^-, S_2O3^{2-}, $S_2O_4^{2-}$, SO_3^{2-}, NO_3^-, H_2O_2, Cys, HCy. The solutions of anions and thiols were prepared F^-, Cl^-, Br^- as their tetra butyl salt, KCN, $NaHSO_3$, NaOCl, NaS_2O_3, NaS_2O_4, Na_2SO_3, and KNO_3 respectively in CH_3CN-H_2O)

(a)



(b)



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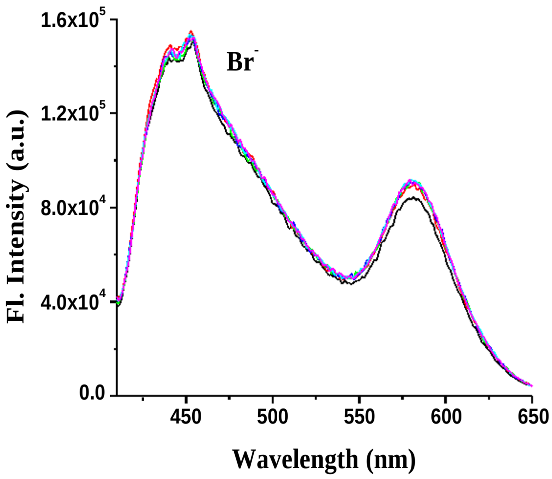

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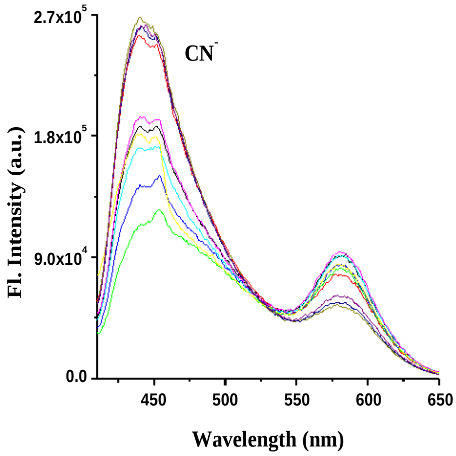

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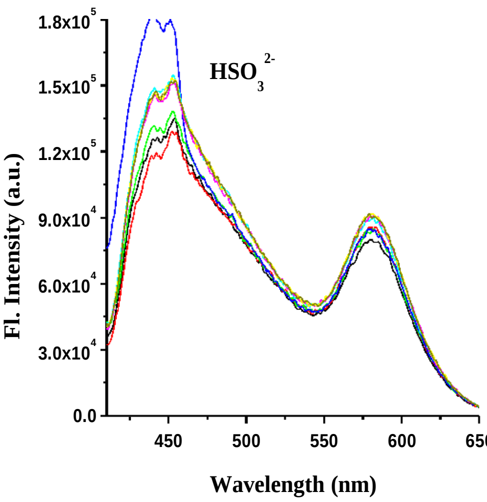
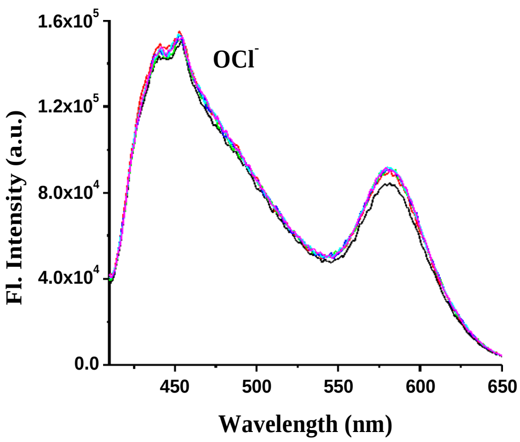
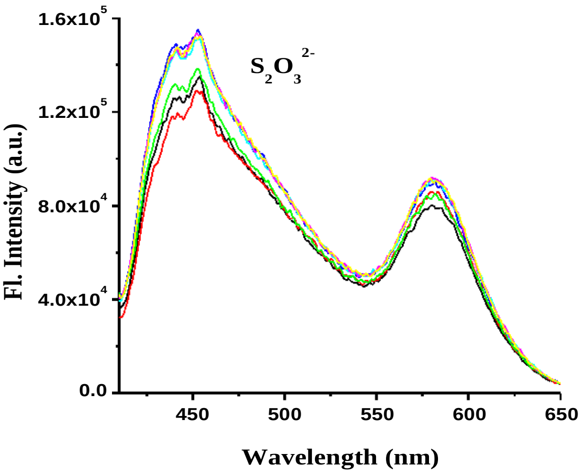


(f)

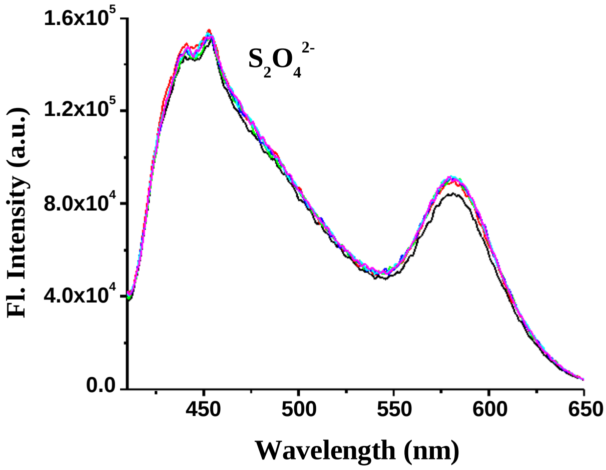


(g)



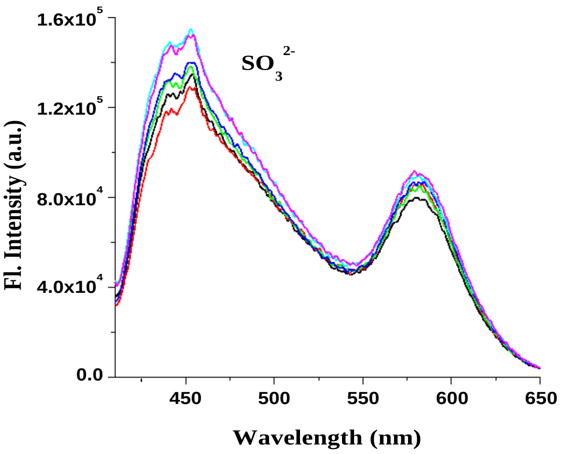
$S_2O_3^{2-}$
Fl. Intensity (a.u.)
1.6x10^5
1.2x10^5
8.0x10^4
4.0x10^4
0.0
450
500
550
600
650
Wavelength (nm)

(h)



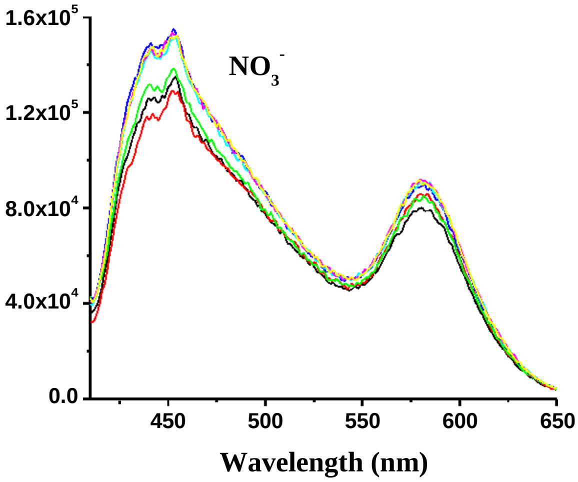
$S_2O_4^{2-}$
Fl. Intensity (a.u.)
1.6x10^5
1.2x10^5
8.0x10^4
4.0x10^4
0.0
450
500
550
600
650
Wavelength (nm)

(i)



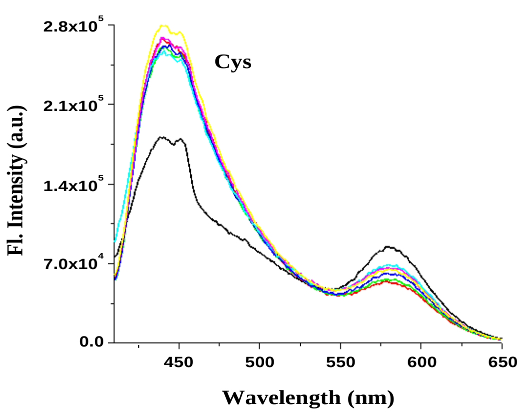
SO_3^{2-}
Fl. Intensity (a.u.)
1.6x10^5
1.2x10^5
8.0x10^4
4.0x10^4
0.0
450
500
550
600
650
Wavelength (nm)

(j)



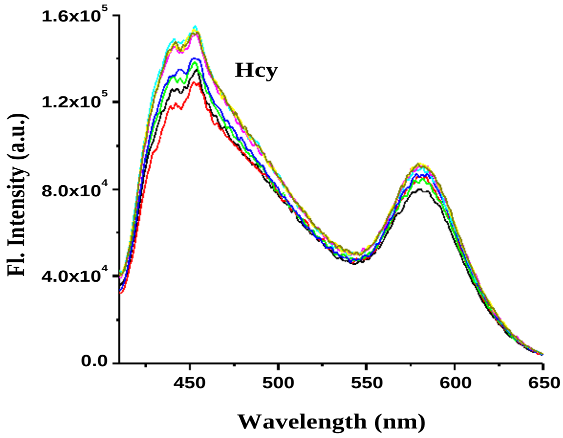
NO_3^-
1.6x10^5
1.2x10^5
8.0x10^4
4.0x10^4
0.0
450
500
550
600
650
Wavelength (nm)

(k)



Cys
Fl. Intensity (a.u.)
2.8x10^5
2.1x10^5
1.4x10^5
7.0x10^4
0.0
450
500
550
600
650
Wavelength (nm)

(l)



Hcy
Fl. Intensity (a.u.)
1.6x10^5
1.2x10^5
8.0x10^4
4.0x10^4
0.0
450
500
550
600
650
Wavelength (nm)

7. References :

1. M. Zhu, M. Yuan, X. Liu, J. Xu, J. Lv, C. Huang, H. Liu, Y. Li, S. Wang, D. Zhu, *Org. Lett.* 2008**, 10**, 1481-1484