Electronic Supplementary Material (ESI) for RSC Advances.


# ***Supplementary Information***

## Development of low-cost tissue paper-based chemosensor and demonstration for selective detection of $Cu^{2+}$ and $Hg^{2+}$ ions

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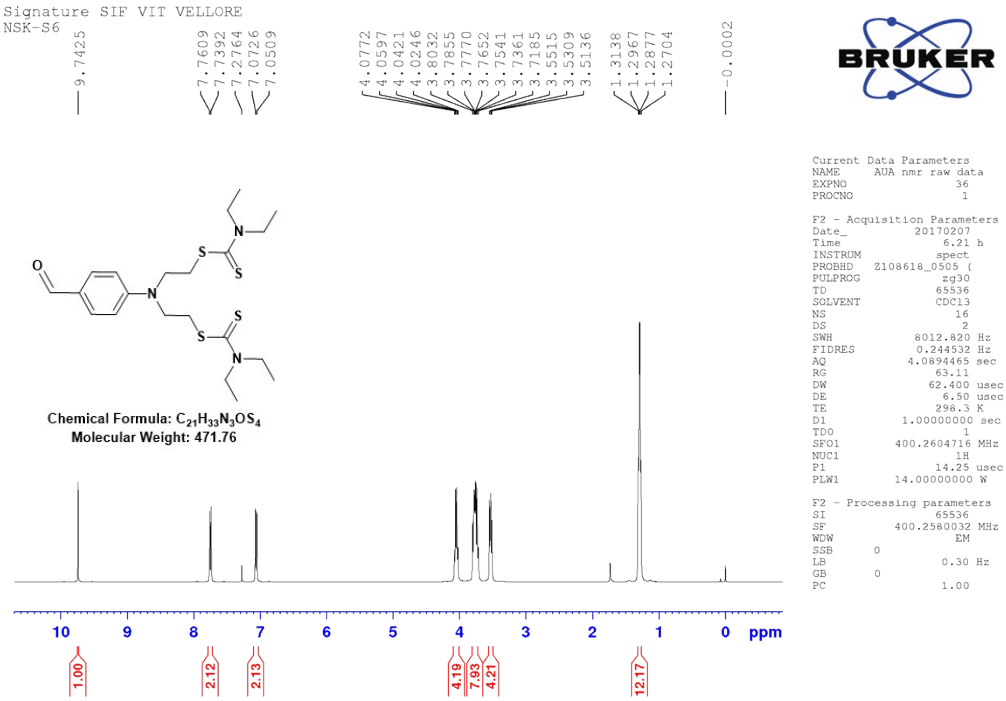


**Fig.S1.** The $^{1}$H NMR spectra of intermediate 1

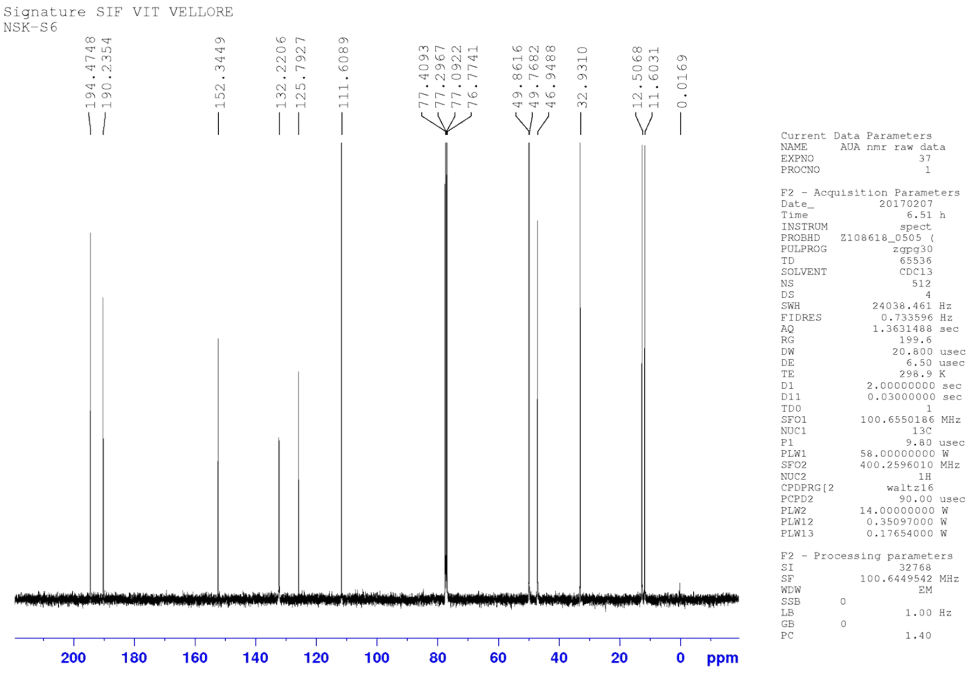


**Fig.S2.** The $^{13}$C NMR spectra of intermediate 1

**Spectra**

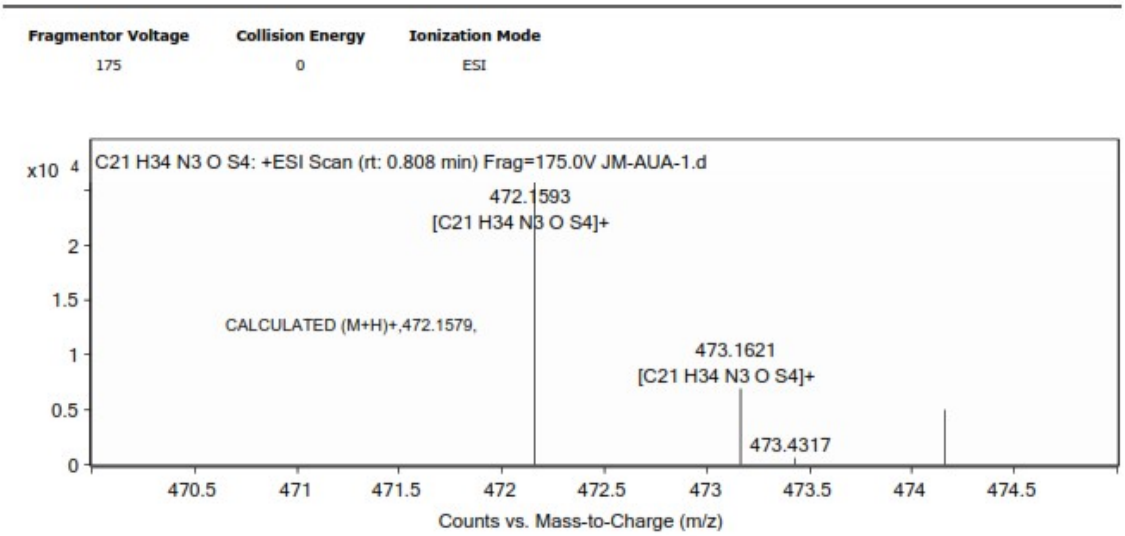


**Fig.S3.** The HR-MS spectra of intermediate 1.

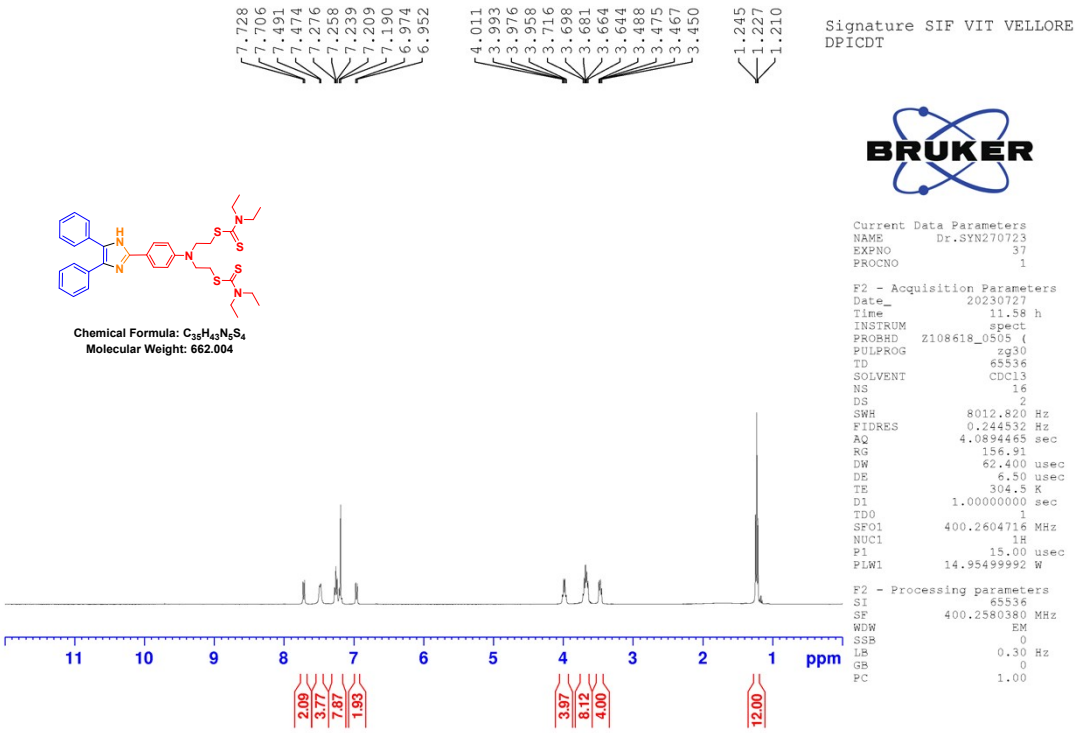


**Fig.S4.** The [1]HNMR spectra of DPICDT.

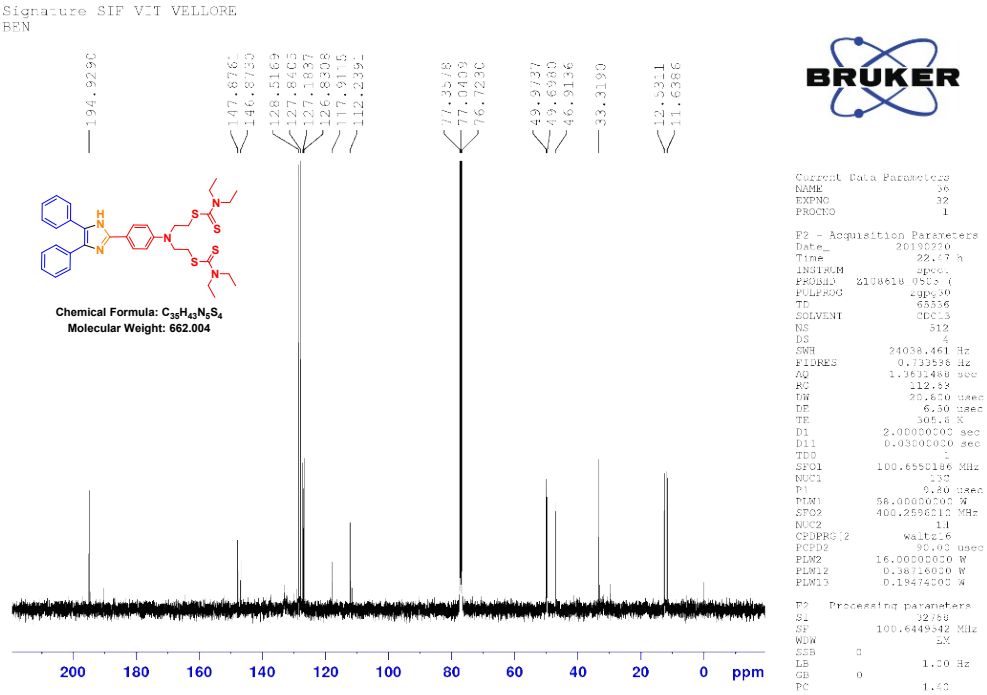


**Fig.S5.** The $^{13}C$ NMR spectra of DPICDT.

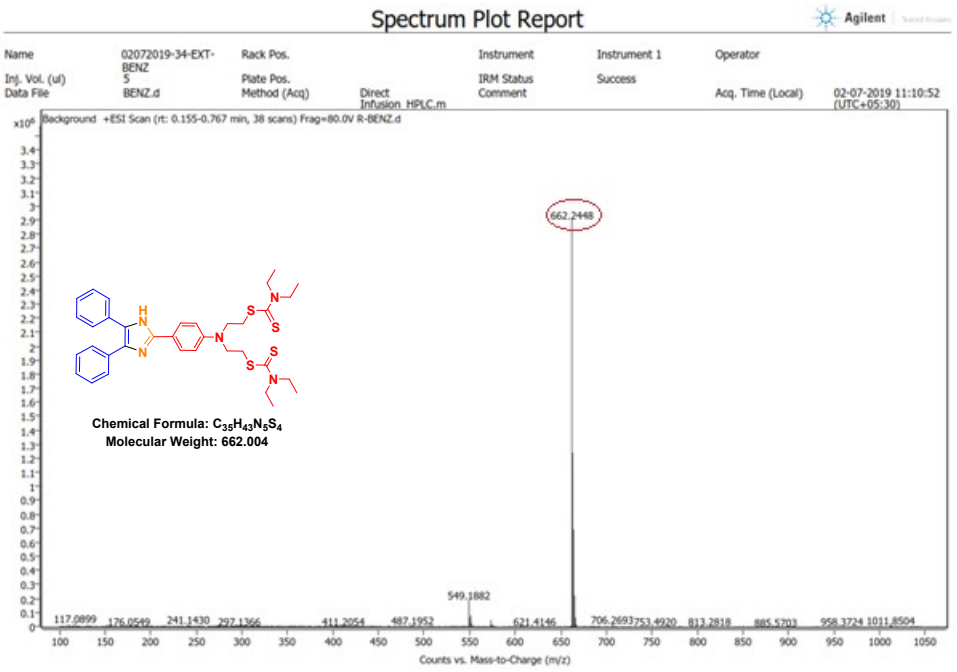


**Fig.S6.** The HR-MS spectra of DPICDT.

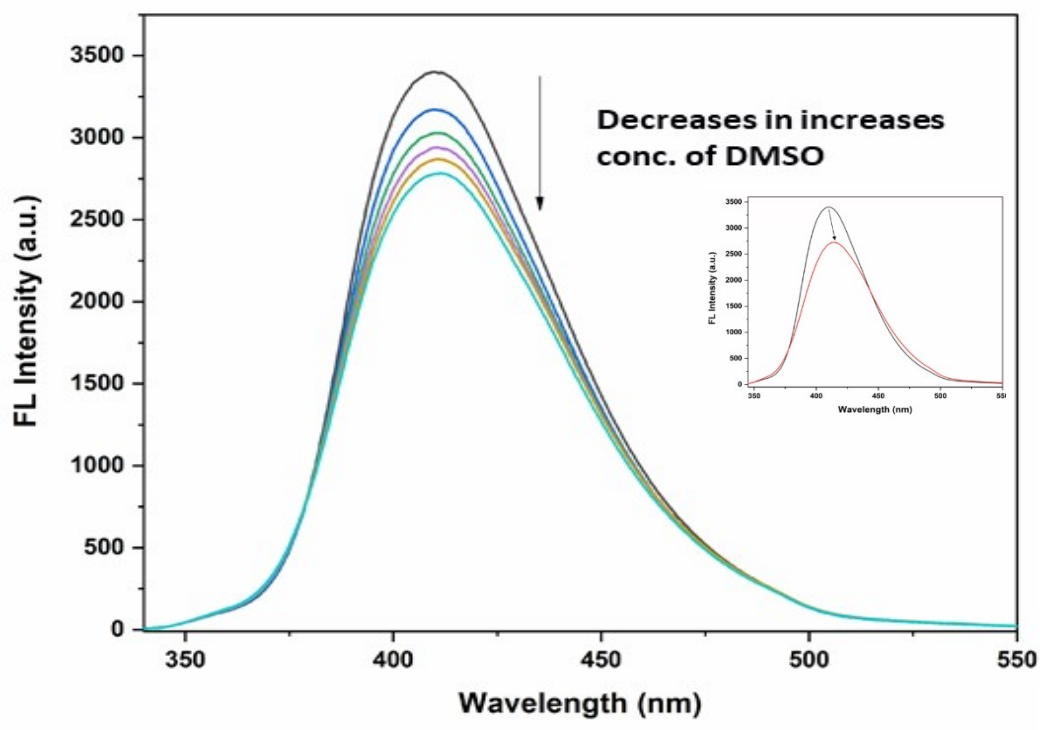


**Fig.S7.** Changes in fluorescence intensity of DPICDT in THF on the addition of DMSO.

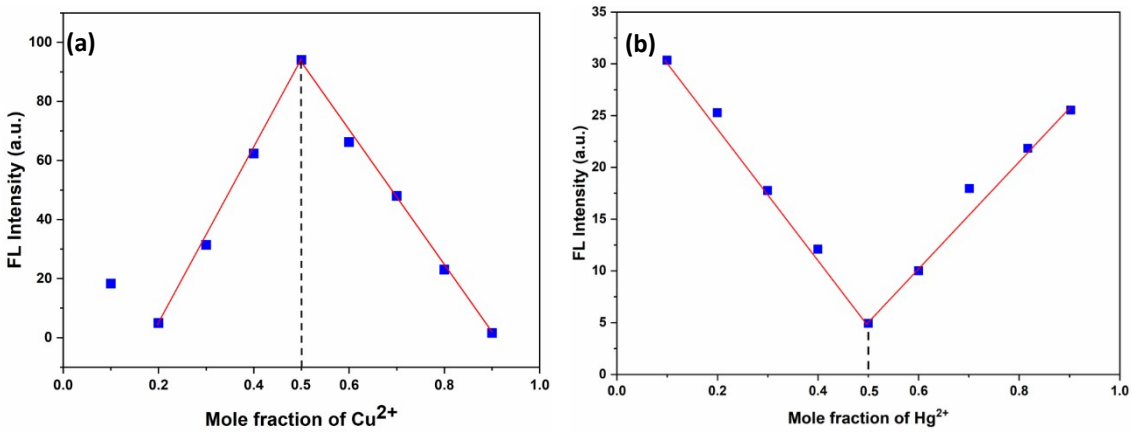


**Fig. S8.** Job's plot for DPICDT Vs $Cu^{2+}$ (a) and DPICDT Vs $Hg^{2+}$ (b) in $CH_3CN$: $H_2O$ (8:2, v/v).

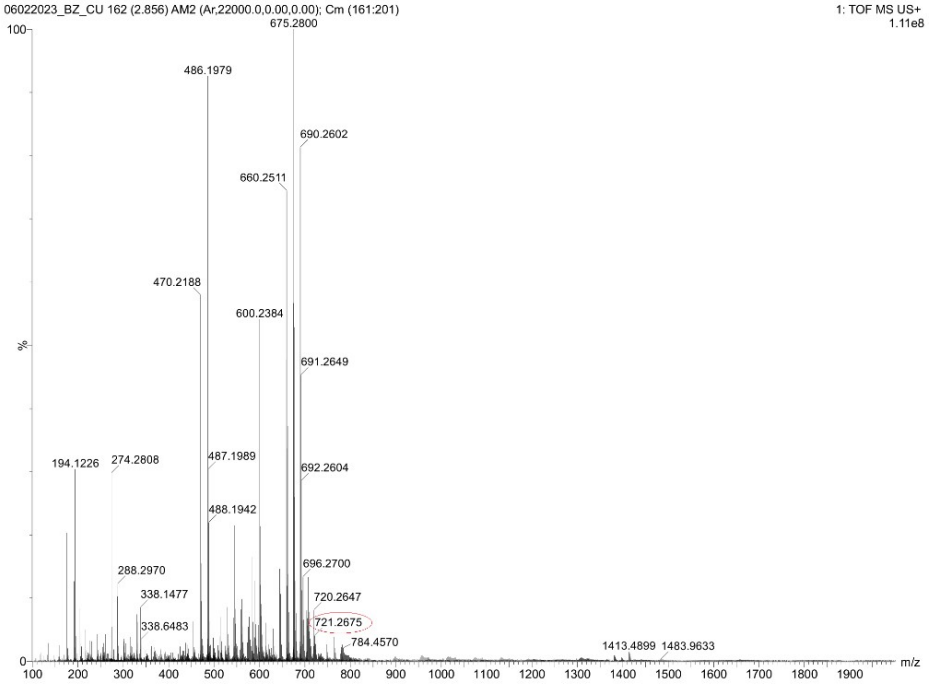


**Fig.S9.** The HR-MS spectra of DPICDT-$Cu^{2+}$

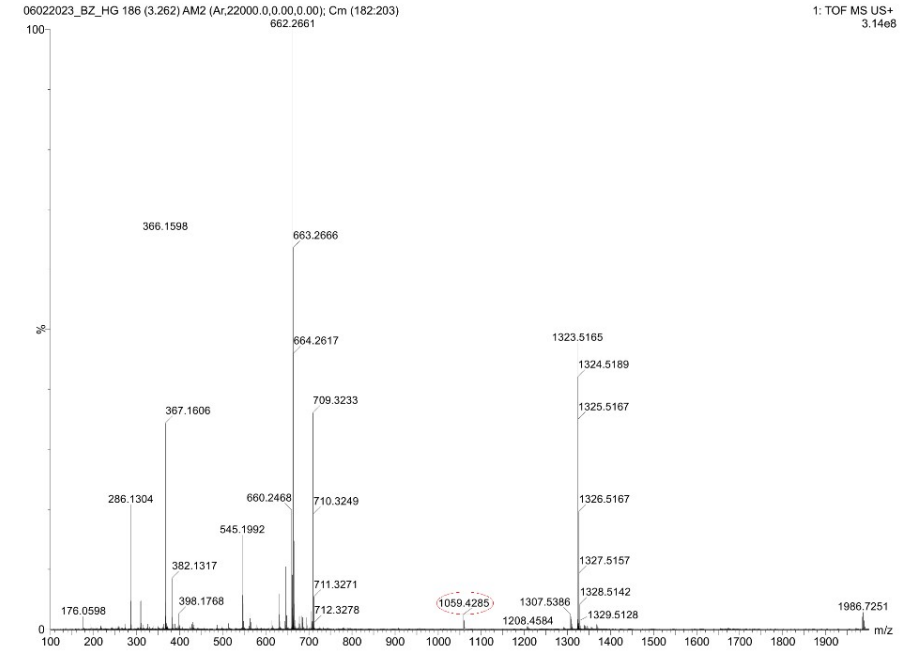


**Fig.S10.** The HR-MS spectra of DPICDT-$Hg^{2+}$

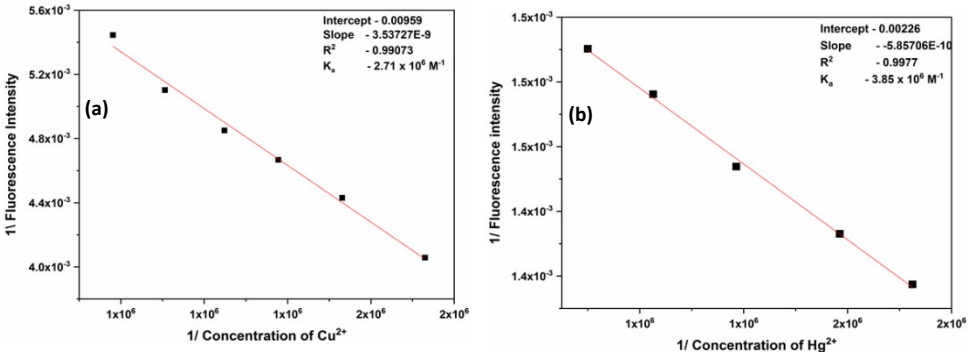


**Fig. S11.** (a) B–H plot of the 1: 1 complex of probe DPICDT and $Cu^{2+}$ ions (b) B–H plot of the 1: 1 complex of probe DPICDT and $Hg^{2+}$ ions.

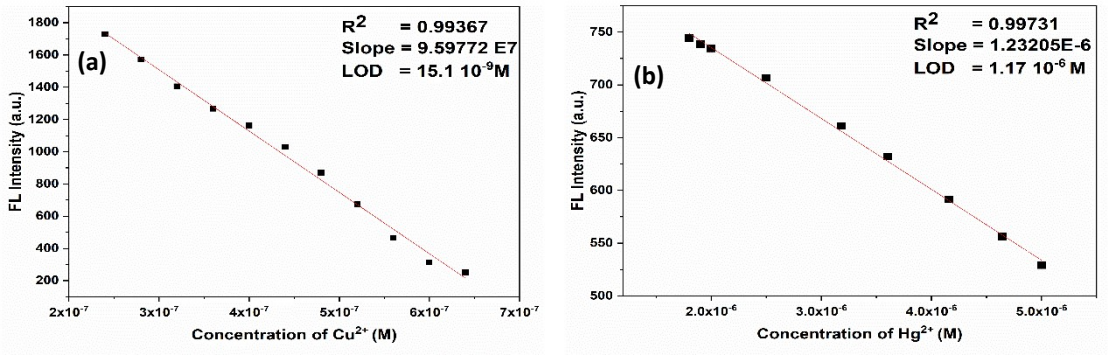


**Fig. S12.** (a) Linear plot of fluorescence intensity versus concentration of Cu2+ ions (b) Linear plot of fluorescence intensity versus concentration of Hg2+ions

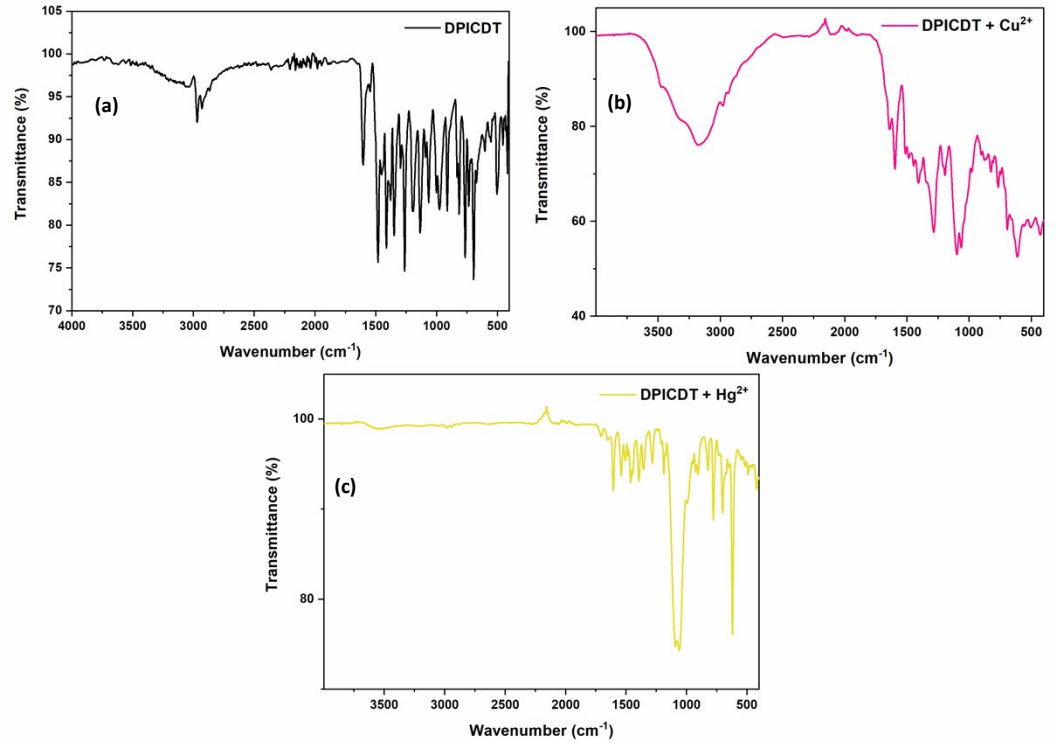


**Fig. S13.** (a) FT-IR spectra of probe DPICDT (b) DPICDT + $Cu^{2+}$ (c) DPICDT + $Hg2^{+}$

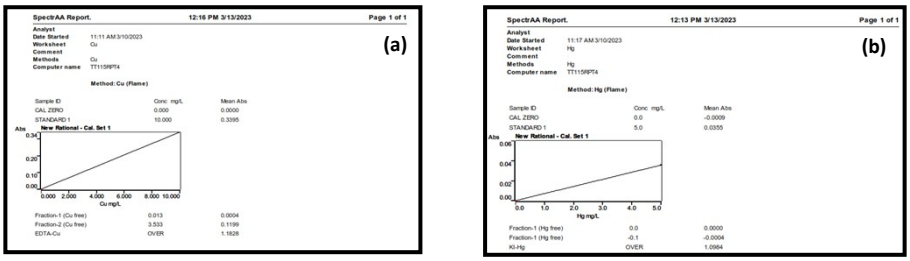


**Fig. S14.** (a) AAS spectrum calibration plot of the DPICDT with $Cu^{2+}$ (b) DPICDT with $Hg^{2+}$

## Table-S1

## Recent literature reports on copper.

| S.No | Various substituted core | LOD | Solvent system used | Reversibility | Paper strip studies | Metal extraction | Ref. |
|---|---|---|---|---|---|---|---|
| **1** | Schiff-base-based sensor | 0.62 µM | 50% ethanol/tris-HCl buffer solution (pH = 7.40) | Done | Done | - | 1 |
| **2** | Naphthaldehyde-pyridoxal based sensor | 32.9 nM | DMSO/ HEPES (pH = 7.40) | Done | Done | - | 2 |
| **3** | Pyridine-2,6-dicarboxamide-based sensor | 1.49 µM | Pure $CH_3CN$ | Done | - | - | 3 |
| **4** | Diaminebenzene-based sensor | 15 nM | Pure $CH_3CN$ | - | - | - | 4 |
| **5** | 1,5-Dihydroxyanthraquinone-based sensor | 10 nM | Ethanol | Done | - | - | 5 |
| **6** | Schiffbase-based sensor | 1.8 µM | Methanol - tris-HCl buffer | Done | - | - | 6 |
| **7** | 1,8-naphthalimide sensor | 17 nM | ($CH_3CN$: $H_2O$) (9.7:0.3) (v\v) | - | - | - | 7 |
| **8** | Triphenylamine benzothiazole-based sensor | 0.45 µM | Pure $CH_3CN$ | - | Done | - | 8 |
| **9** | **DPICDT (Present work)** | **15.1 nM** | **($CH_3CN$: $H_2O$) (8:2) (v\v)** | **Done** | **Done** | **Done** | |

**Table-S2**

**Recent literature reports of mercury.**

| S.No | Various substituted core | LOD | Solvent system used | Reversibility | Paper strip studies | Extraction of metals | Ref. |
|---|---|---|---|---|---|---|---|
| **1** | Naphthalene based sensor | 4.92 µM | DMSO/buffer (99/1, v/v) | - | - | - | 9 |
| **2** | Chitosan-BODIPY-based sensor | 1.51 µM | Aqueous acetic acid | - | - | - | 10 |
| **3** | Rhodamine-based sensor | 3.36 µM | $CH_3CN/H_2O$ (v/v:9/1 with HEPES buffer) | - | - | - | 11 |
| **4** | Dipicolylaminoquinoline based sensor | 1.01 µM | NaOAc-AcOH buffer pH = 5.9 | Done | - | - | 12 |
| **5** | Squaraine-bis(Rhodamine-B)-based sensor | 6.48 µM | $CH_3CN$ | Done | - | - | 13 |
| **6** | Naphthalimide based sensor | 2.0 µM | Tris–HCl buffer (ethanol/water = 1:1, v/v, pH 7.01) | Done | - | - | 14 |
| **7** | **DPICDT (Present work)** | **1.17 µM** | **($CH_3CN$: $H_2O$) (8:2) (v\v)** | **Done** | **Done** | **Done** | |

## References


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