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

Supplementary Information

Nano-Molar Level Fluorogenic and Oxidation-State Selective Chromogenic Dual Reversible Chemosensor for Multiple Targets Cu^{2+}/S^{2-} and Fe^{3+}/F^{-} ion

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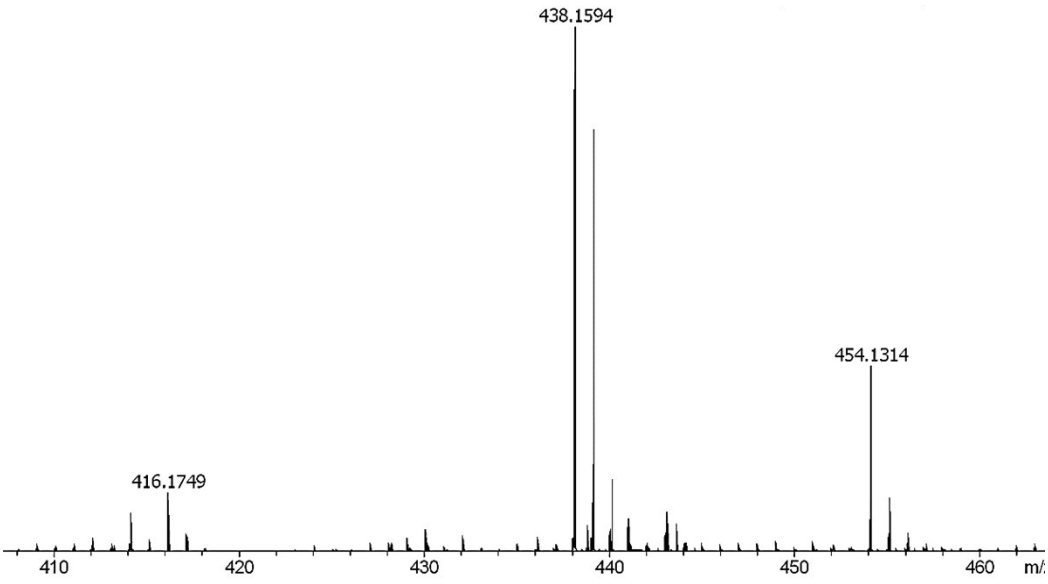

Fig. S1 ESI-MS of **L** in methanol.

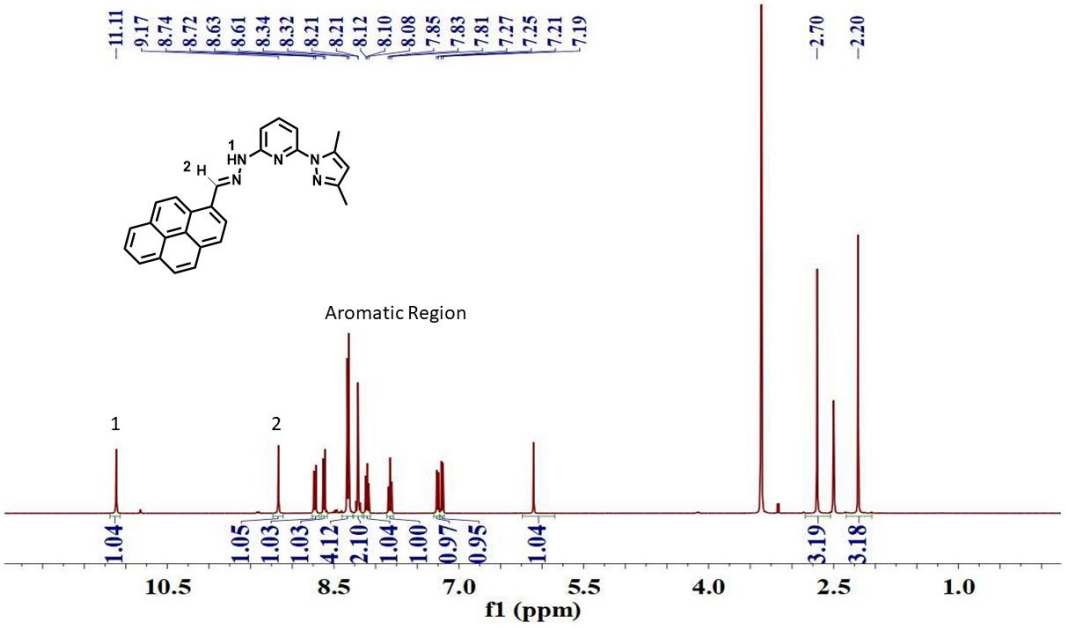

Fig. S2 ^{1}H NMR (400 MHz) of **L** in DMSO-d_6.

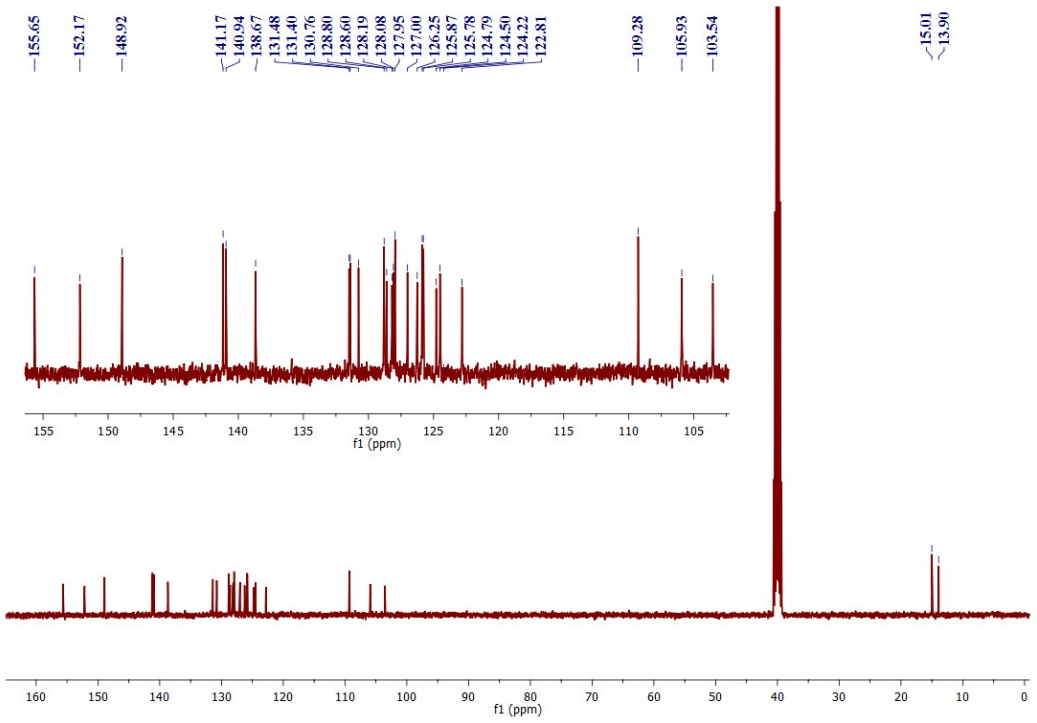

Fig. S3 ^{13}C NMR (100 MHz) of **L** in DMSO-d_6.

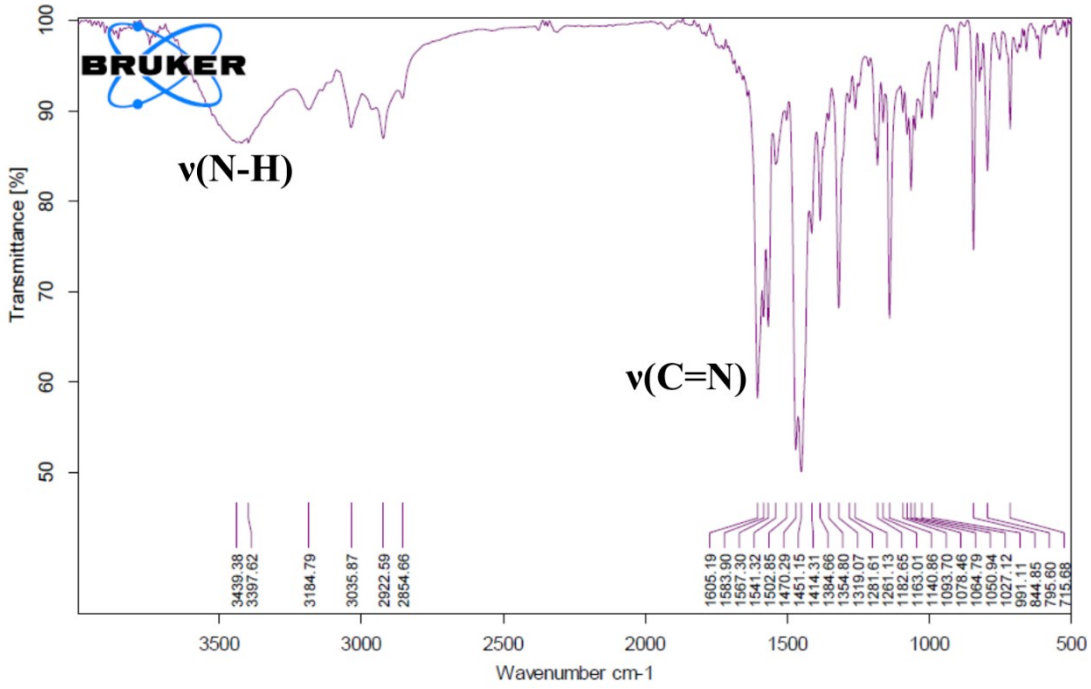

Fig. S4 FT-IR spectra of **L** in KBr pellet.

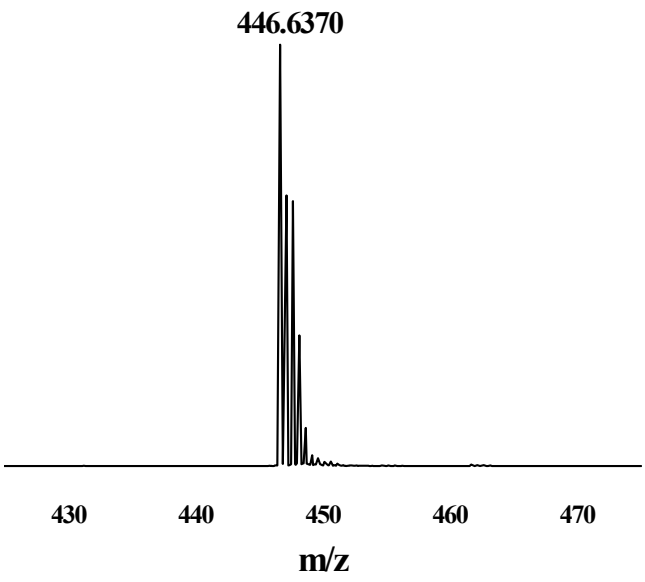

Fig. S5 ESI-MS of $Cu^{II}L_2$ complex in MeOH.

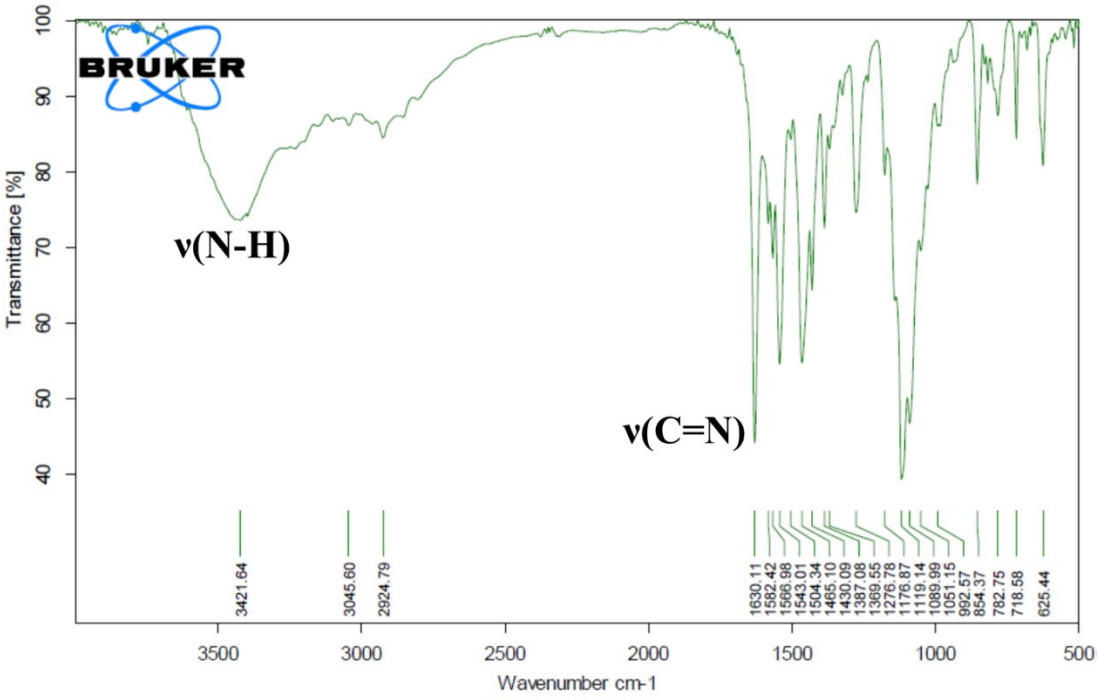

Fig. S6 FT-IR spectra of $Cu^{II}L_2$ complex in KBr pellet.

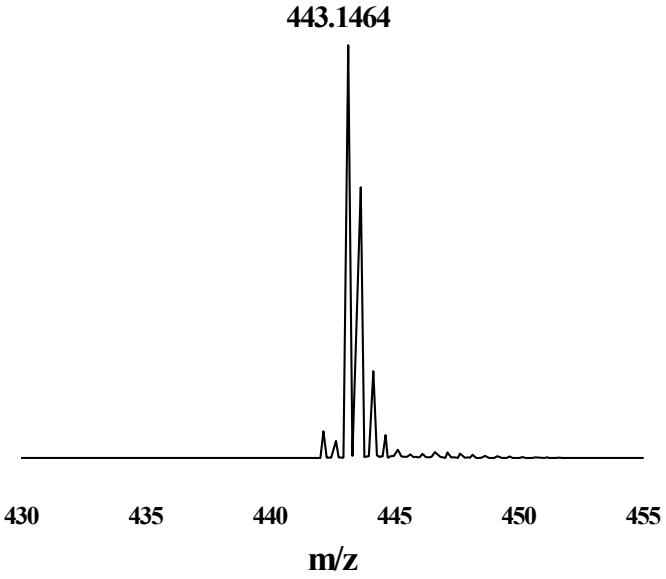

Fig. S7 ESI-MS of $Fe^{III}L_2$ complex in MeOH.

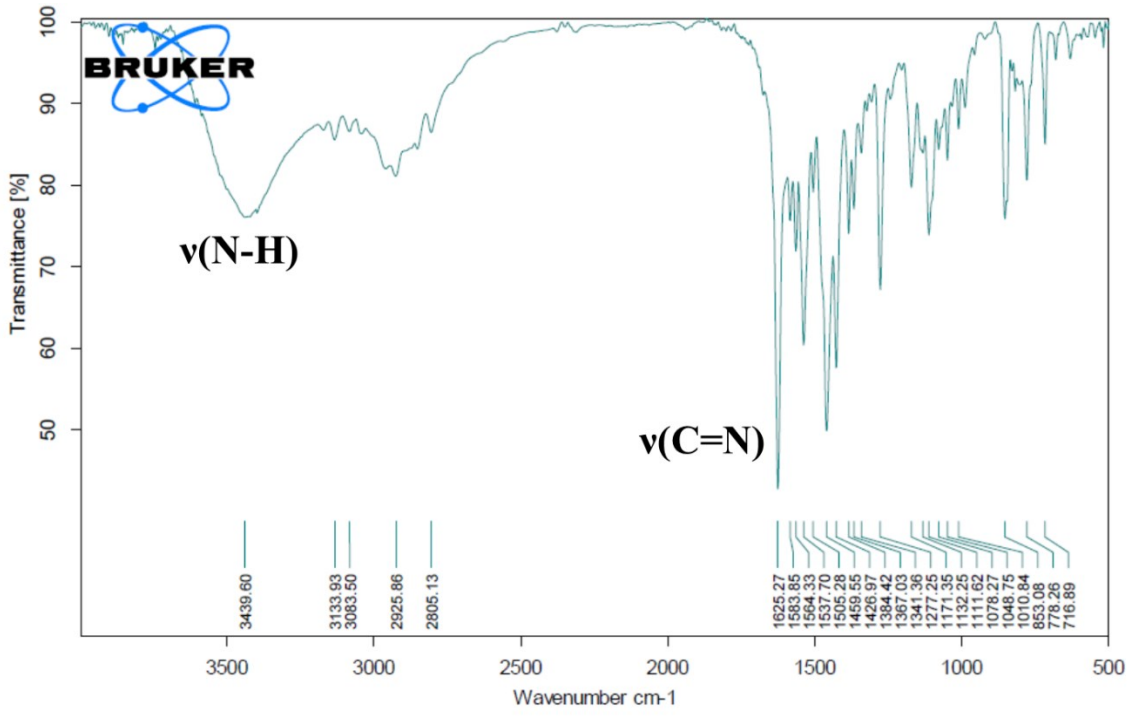

Fig. S8 FT-IR spectra of $Fe^{III}L_2$ complex in KBr pellet.

Table S1 Bond lengths [Å] and angles [°] for CuL_2 Complex $[CuL_2](ClO_4)_2$.

Cu(1)-N(8)	1.9511(18)
Cu(1)-N(3)	1.9660(17)
Cu(1)-N(6)	2.1147(18)
Cu(1)-N(1)	2.157(2)
Cu(1)-N(10)	2.258(2)
Cu(1)-N(5)	2.3022(19)
N(8)-Cu(1)-N(3)	179.30(8)
N(8)-Cu(1)-N(6)	78.10(7)
N(3)-Cu(1)-N(6)	101.43(7)
N(8)-Cu(1)-N(1)	103.32(8)
N(3)-Cu(1)-N(1)	77.28(7)
N(6)-Cu(1)-N(1)	102.92(8)
N(8)-Cu(1)-N(10)	76.18(7)
N(3)-Cu(1)-N(10)	104.23(7)
N(6)-Cu(1)-N(10)	153.77(7)
N(1)-Cu(1)-N(10)	88.00(8)
N(8)-Cu(1)-N(5)	103.31(7)
N(3)-Cu(1)-N(5)	76.12(7)
N(6)-Cu(1)-N(5)	86.47(7)
N(1)-Cu(1)-N(5)	153.06(7)
N(10)-Cu(1)-N(5)	94.46(8)

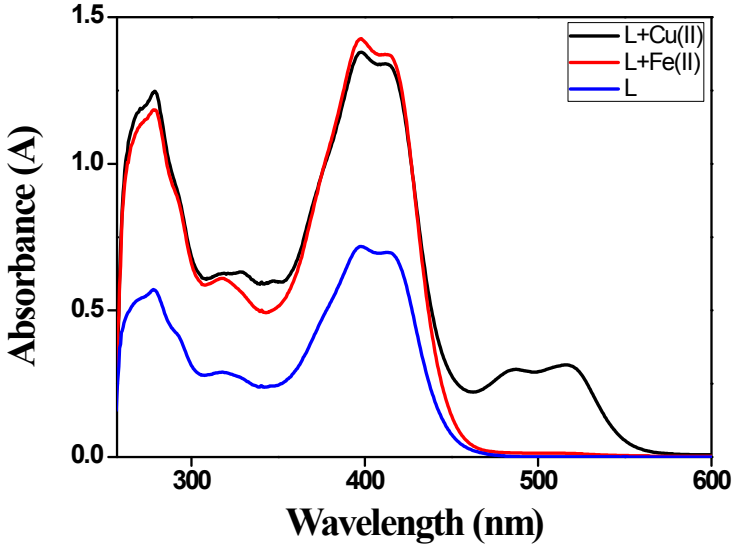

Fig. S9 UV-Vis spectra of L, $Cu^{II}L_2$ and $Fe^{III}L_2$ complex (20 µM each individually) in DMSO solvent.

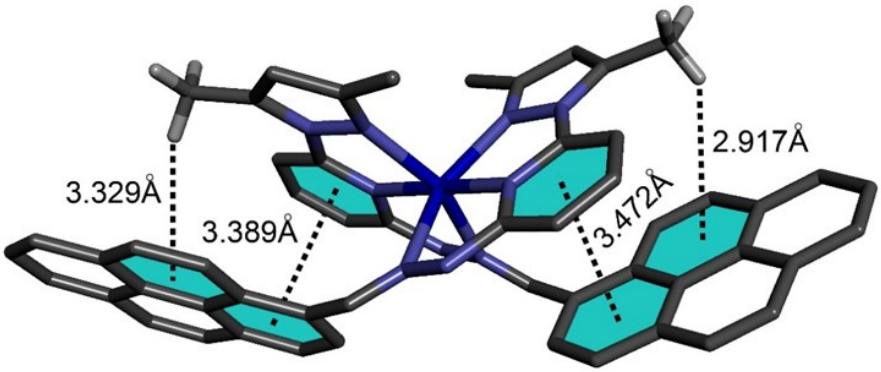

Fig. S10 Intra-molecular non-covalent interactions (C-H···π and π···π) present in $Cu^{II}L_2$ complex.

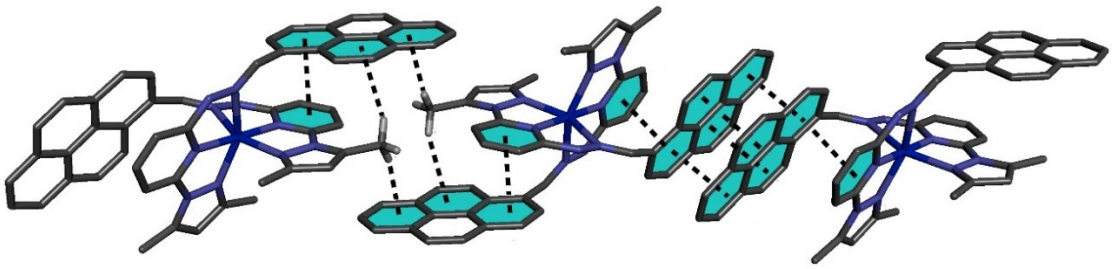

Fig. S11 Inter-molecular non-covalent interactions (C-H…π and π…π) present in $Cu^{II}L_2$ complex.

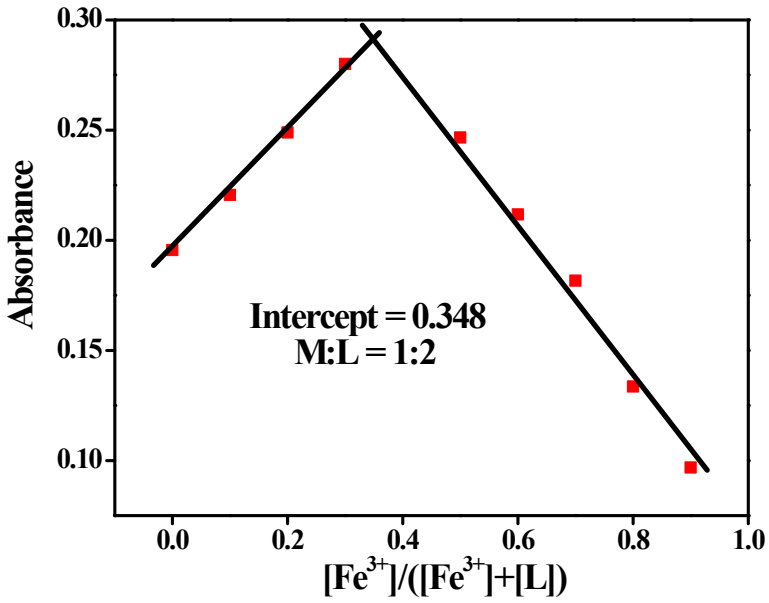

Fig. S12 Job's plot for the binding of **L** with Fe^{3+} absorption intensity at 340 nm in MeOH was plotted as a function of the molar ratio $[Fe^{3+}] / ([L] + [Fe^{3+}])$.

Detection limit. The detection limit was calculated on the basis of the fluorescence titration. The fluorescence emission intensity of **L** was plotted as a function of concentration of Cu^{2+} at 407 nm and the slope and intercept of plot was calculated. Then the detection limit was calculated with the following equation which was found to be very-very low 73 nM (Fig. S13).

$$Detection\ limit = 10^{-[\frac{slope}{intercept}]} \qquad eqn\ (2)$$

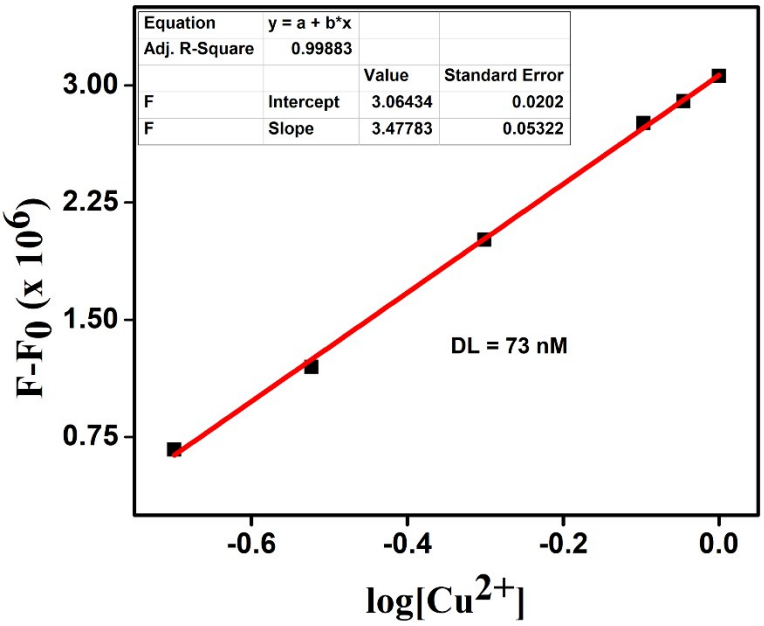

Fig. S13 Detection limit of L for the recognition of Cu2+ (λex = 340 nm and λem = 407 nm).