Electronic Supplementary Material

A highly selective dual-channel chemosensor for mercury ions: utilization of the mechanism of intramolecular charge transfer blocking

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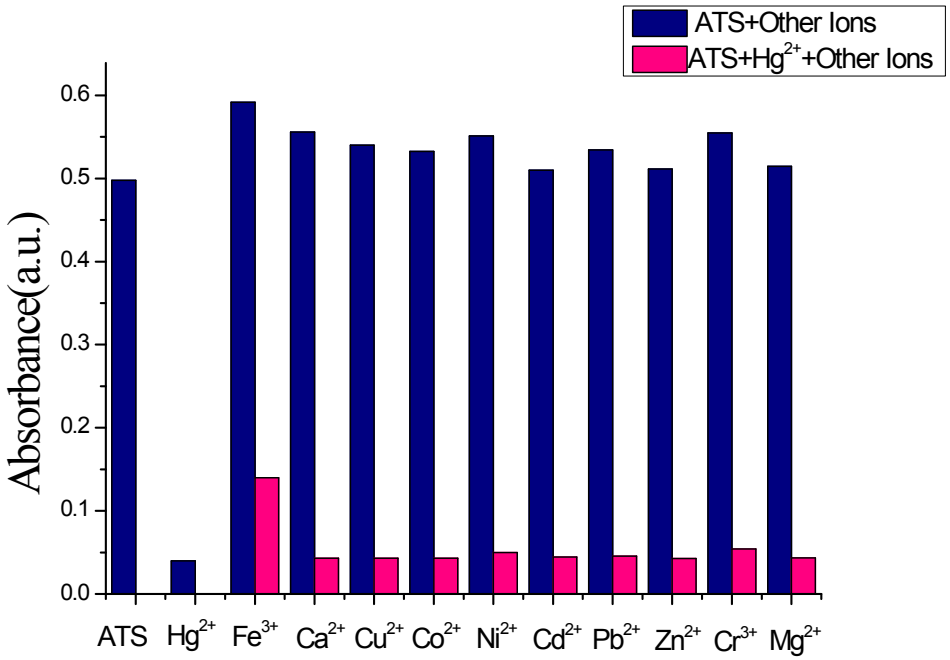


Fig. S1 Absorbance histogram data for a 1:20 mixture of **ATS** (2.0×10^{-5} M) and different metal ions as their perchlorate salts, in DMSO solution, acquired after 120 min.

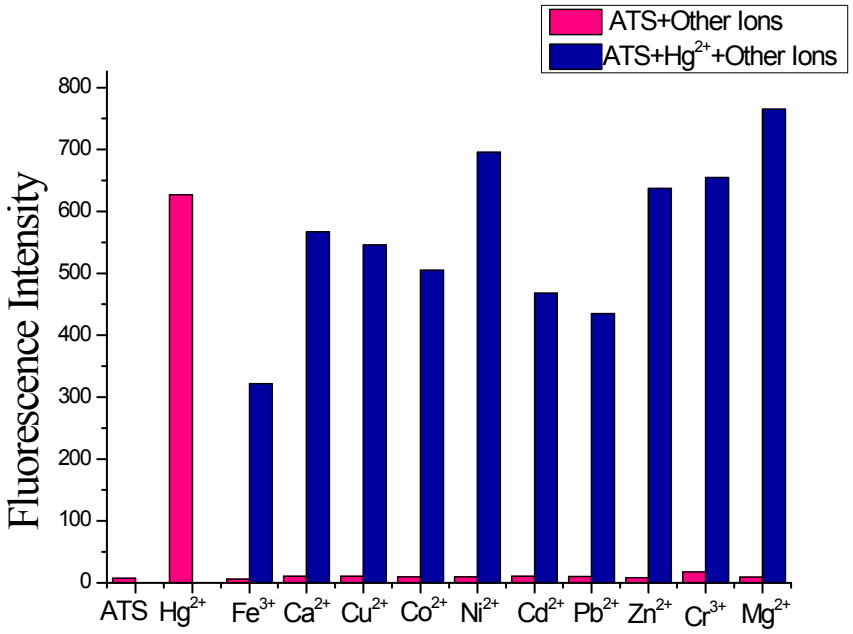


Fig. S2 Fluorescence emission data for a 1:20 mixture of **ATS** (2.0×10^{-5} M) and different metal ions as their perchlorate salts, in DMSO solution, acquired after 120 min. (excitation wavelength = 345 nm).

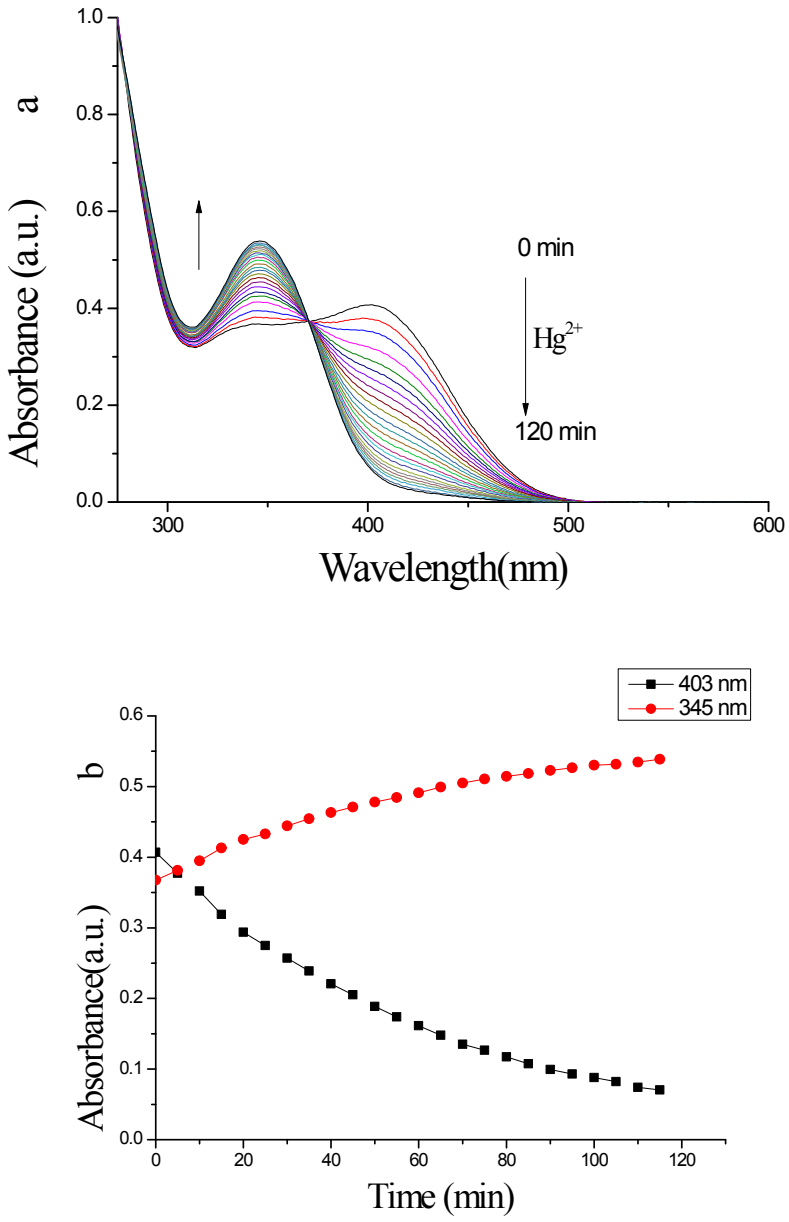


Fig. S3 Time-dependent absorbance spectra of **ATS** (2.0×10^{-5} M) upon addition of Hg^{2+} (20 equiv.) in DMSO. (a) Absorbance emission spectra: from top to bottom spectra were recorded after 120 min. (b) A plot of absorbance as estimated by the peak height at 403 nm and 345 nm.

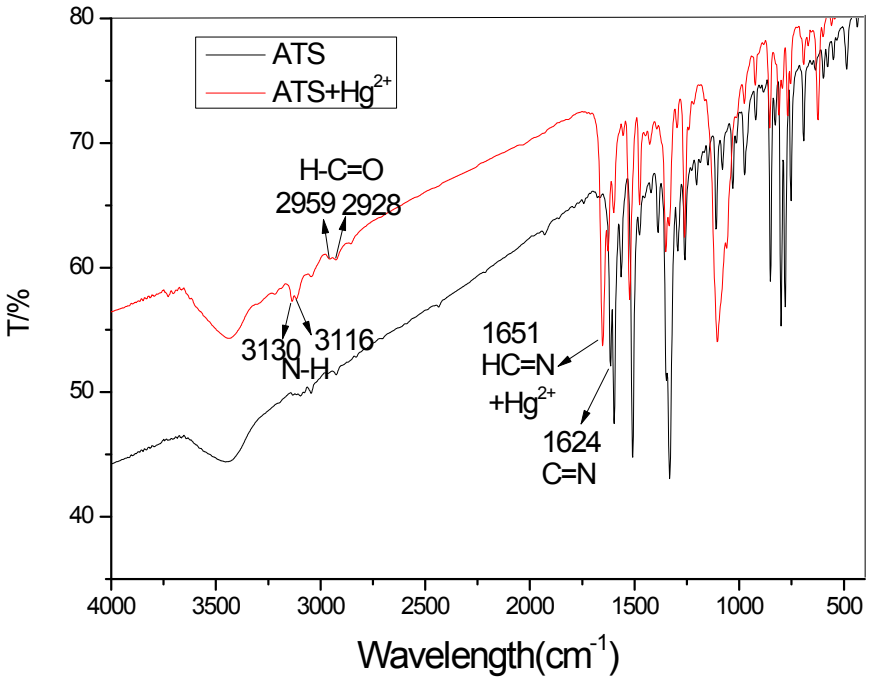


Fig. S4 IR spectra of compound **ATS** and after adding Hg^{2+} in KBr disks.

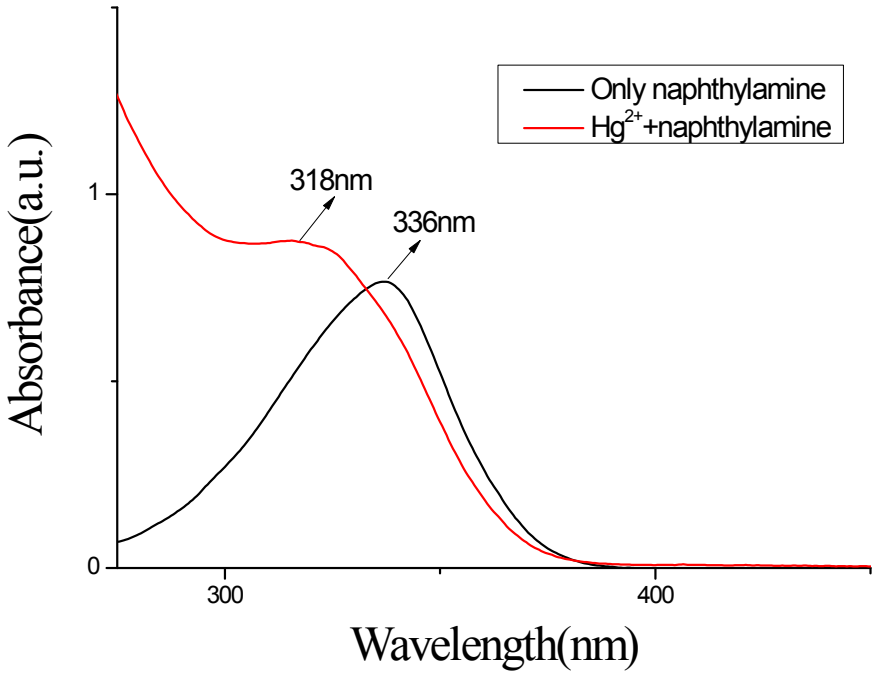


Fig. S5 Absorbance spectra of α-naphthylamine (2.0×10^{-5} M) and after addition Hg^{2+} in DMSO.

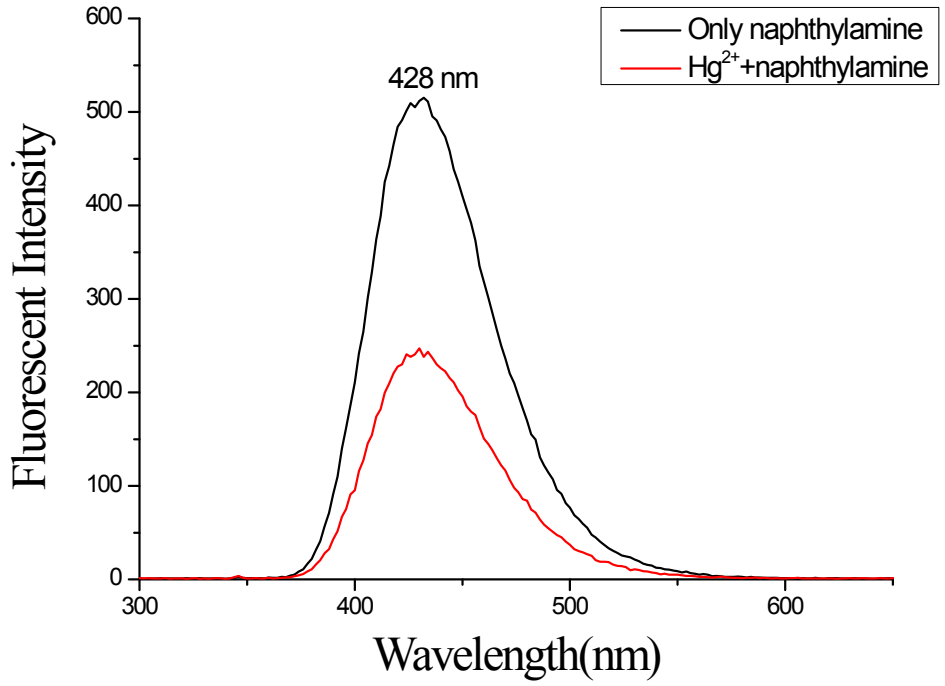


Fig. S6 Fluorescence spectra upon excitation at 345 nm in DMSO of α-naphthylamine (2.0×10^{-5} M) and after addition of Hg^{2+}.

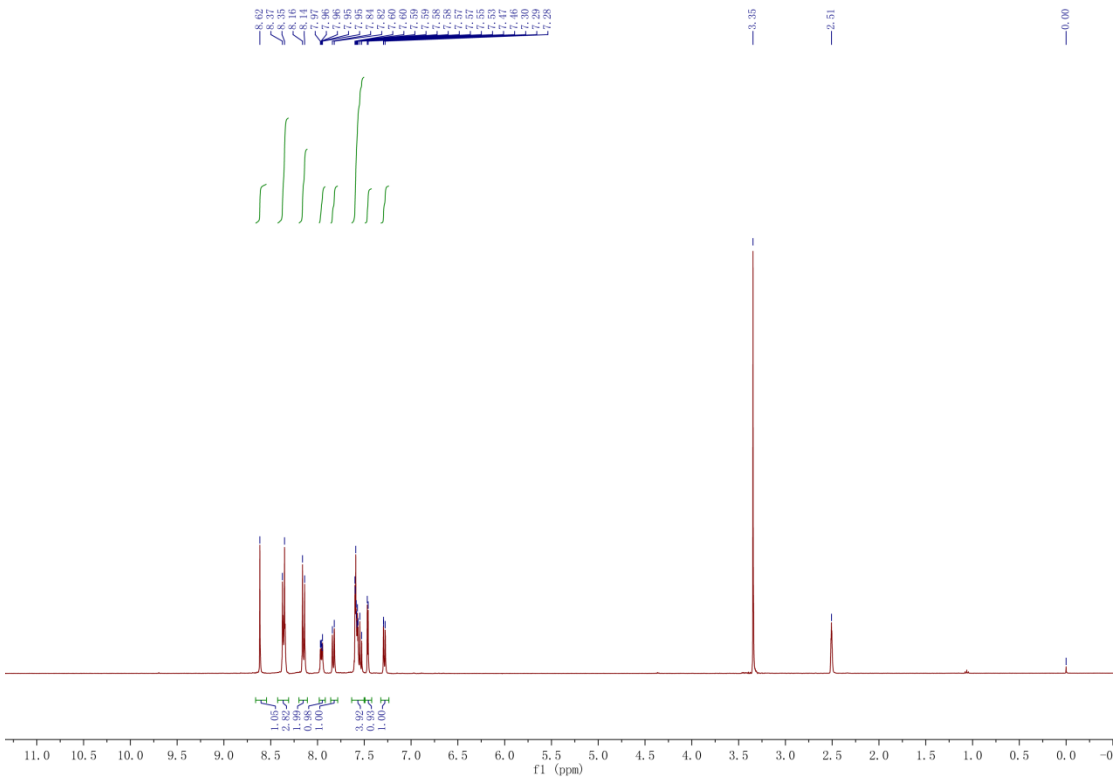


Fig. S7 ^{1}H-NMR spectrum of **ATS** in DMSO.

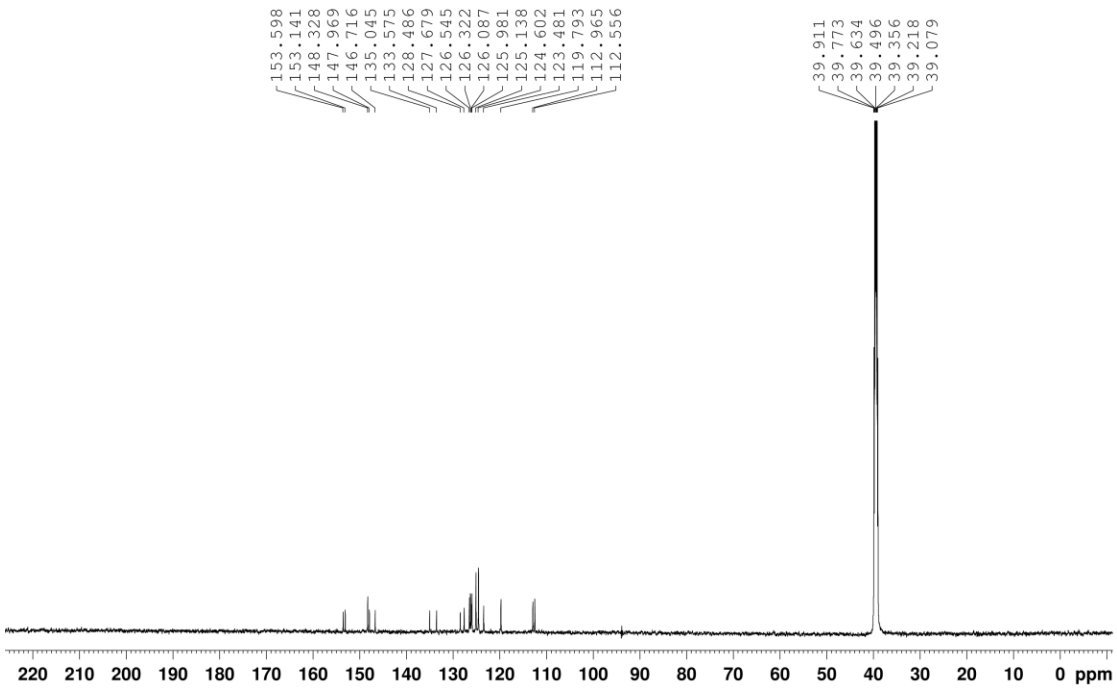


Fig. S8 ^{13}C-NMR spectrum of **ATS** in DMSO.

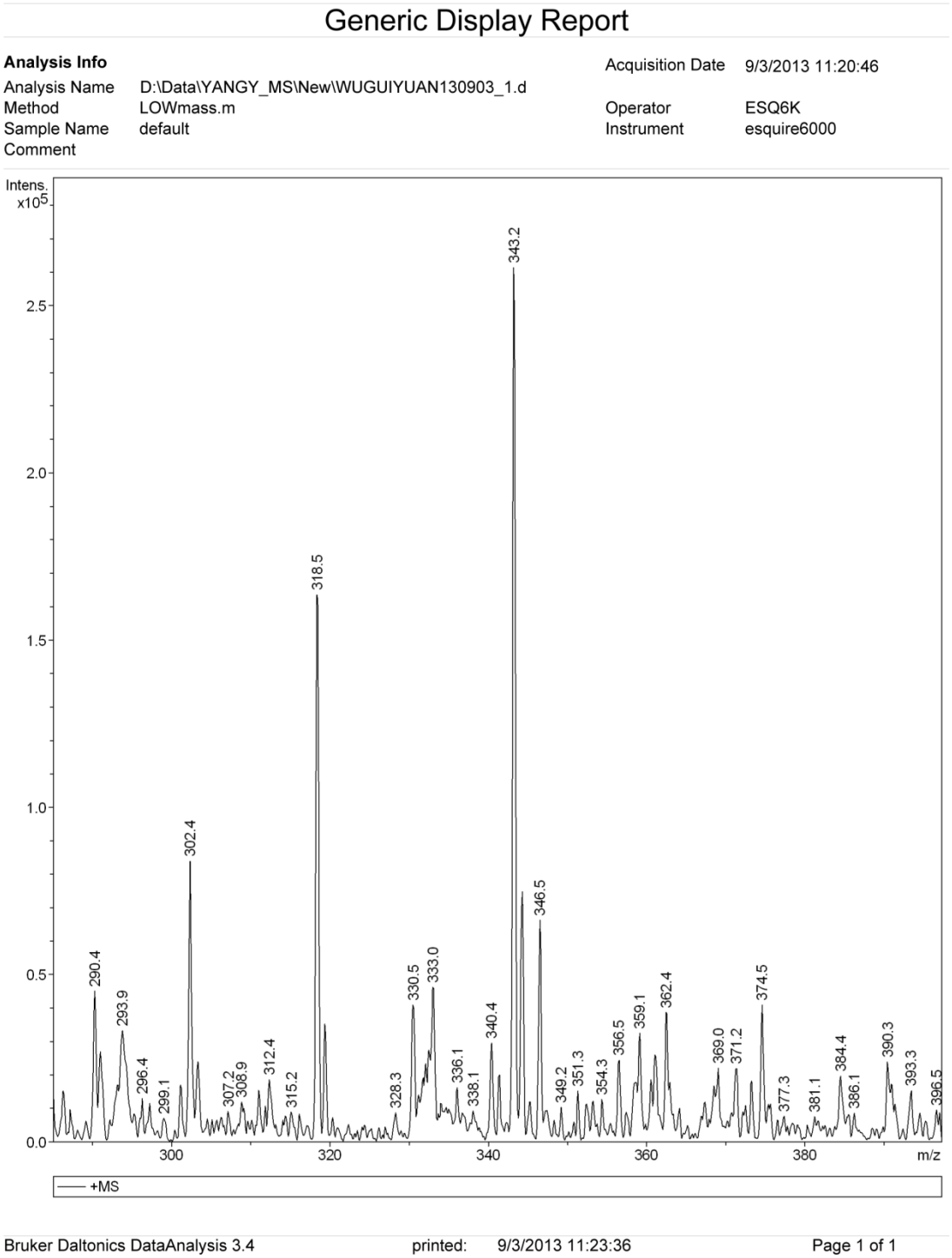


Fig. S9 ESI-MS spectrum of **ATS** in DMSO.

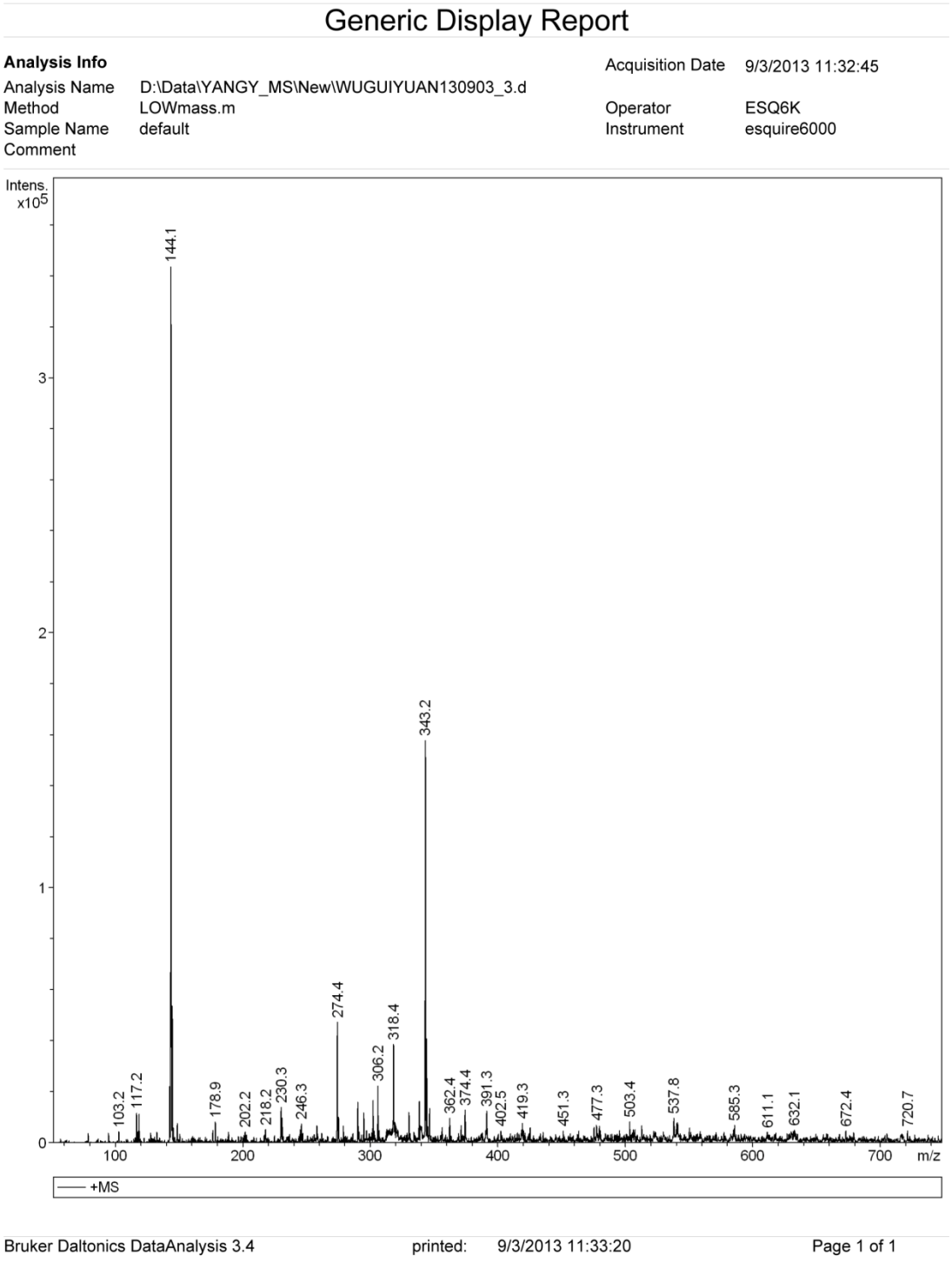


Fig. S10 ESI-MS spectrum in the presence of Hg^{2+} in DMSO.

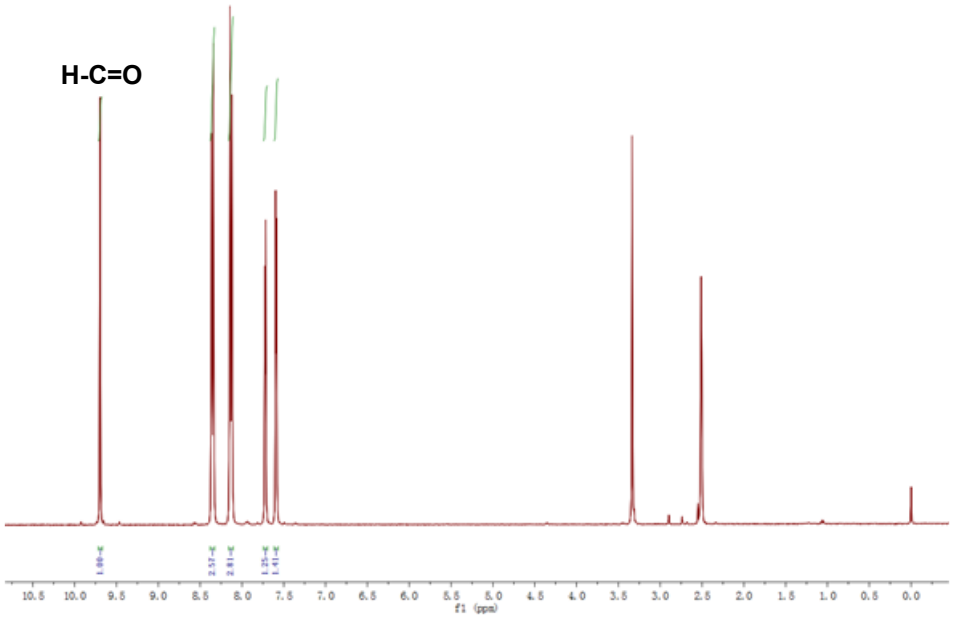
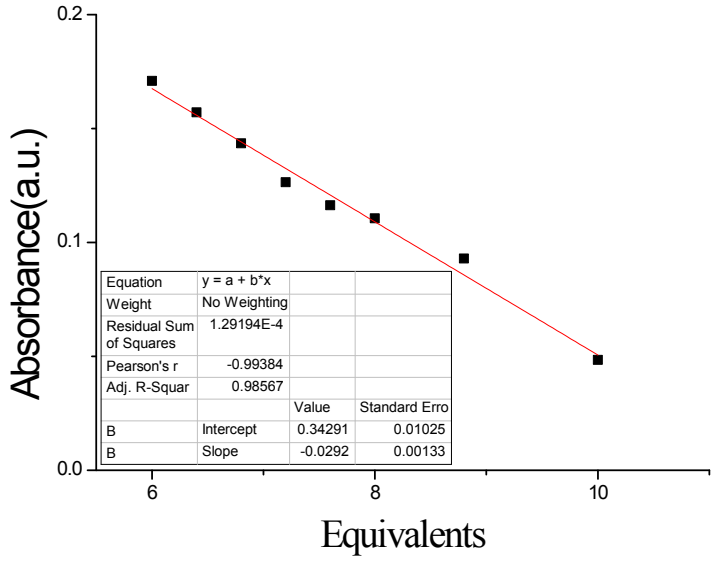


Fig. S11 The ^{1}H NMR spectrum of the 5-(4-Nitrophenyl)-2-furan formaldehyde.

Determination of the detection limit

We use the 3δ way to figure out the detection limit. The process of the analysis as follows.

The photograph of the linear range



Linear Equation: Y=0.3429×X—0.0292 R=0.986

S=3.429×10^5 $\delta=\sqrt{\frac{\Sigma(F-\bar{F})2}{(N-1)}}=$ 0.060266 (N=16) K=3

LOD=K ×δ/S=5.27×10^{-7} M