Electronic Supplementary Material

A highly selective colorimetric and "Off-On" fluorescent chemosensor for fluoride ion and its application as a molecular-scale logic devices

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Calculation of detection limitation

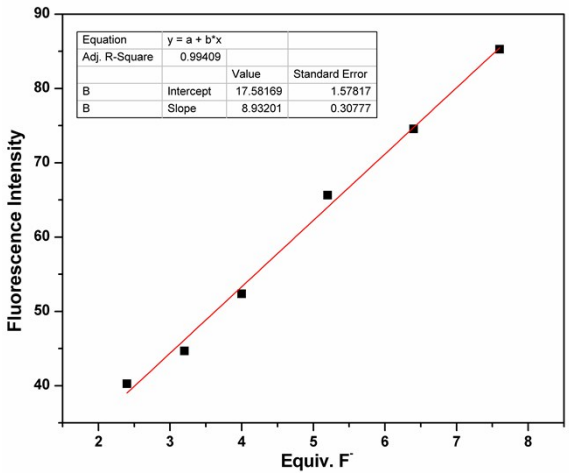

Fig. S1 Plot of the intensity at 550 nm for a mixture of probe **YT** (20 μM) and F^- in DMSO in the range 0-10 equiv. (λ ex = 462 nm).

The result of the analysis as follows:

Linear Equation: Y = 8.932 × X+17.5816 R = 0.99409

$S = 0.8932 \times 10^7$ $\delta = \sqrt{\frac{\sum (F_0 - \overline{F_0})^2}{N-1}}$ = 0.7469 (N = 10) K = 3

$LOD = K \times \delta / S = 2.5 \times 10^{-7}$ M

F_0 is the fluorescence intensity of **YT**

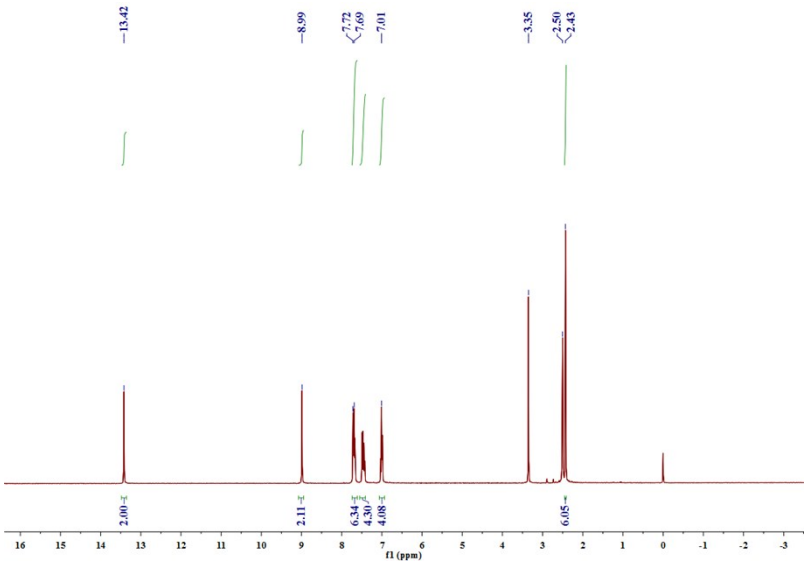

Fig. S2 ^{1}H-NMR spectrum of **YT** in DMSO.

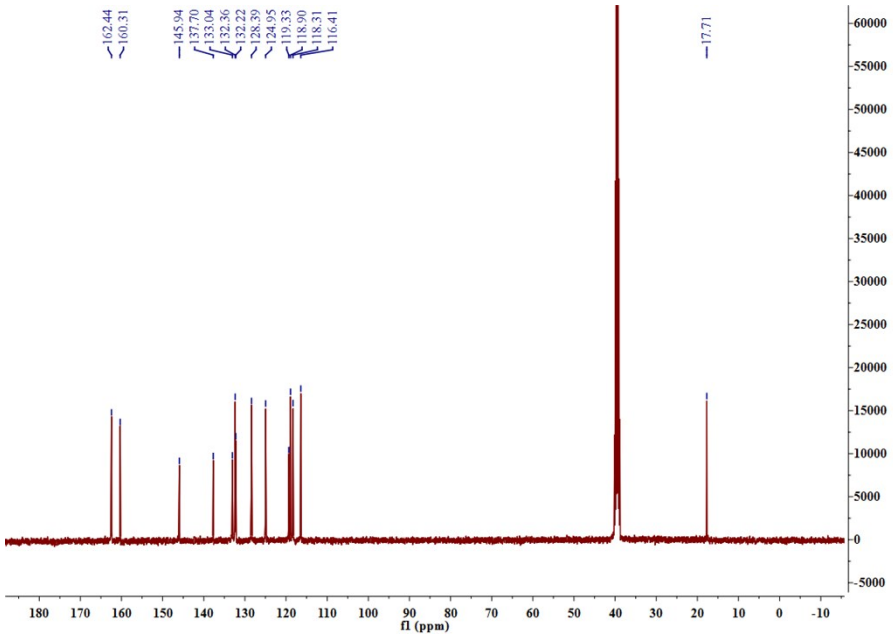

Fig. S3 ^{13}C-NMR spectrum of **YT** in DMSO.

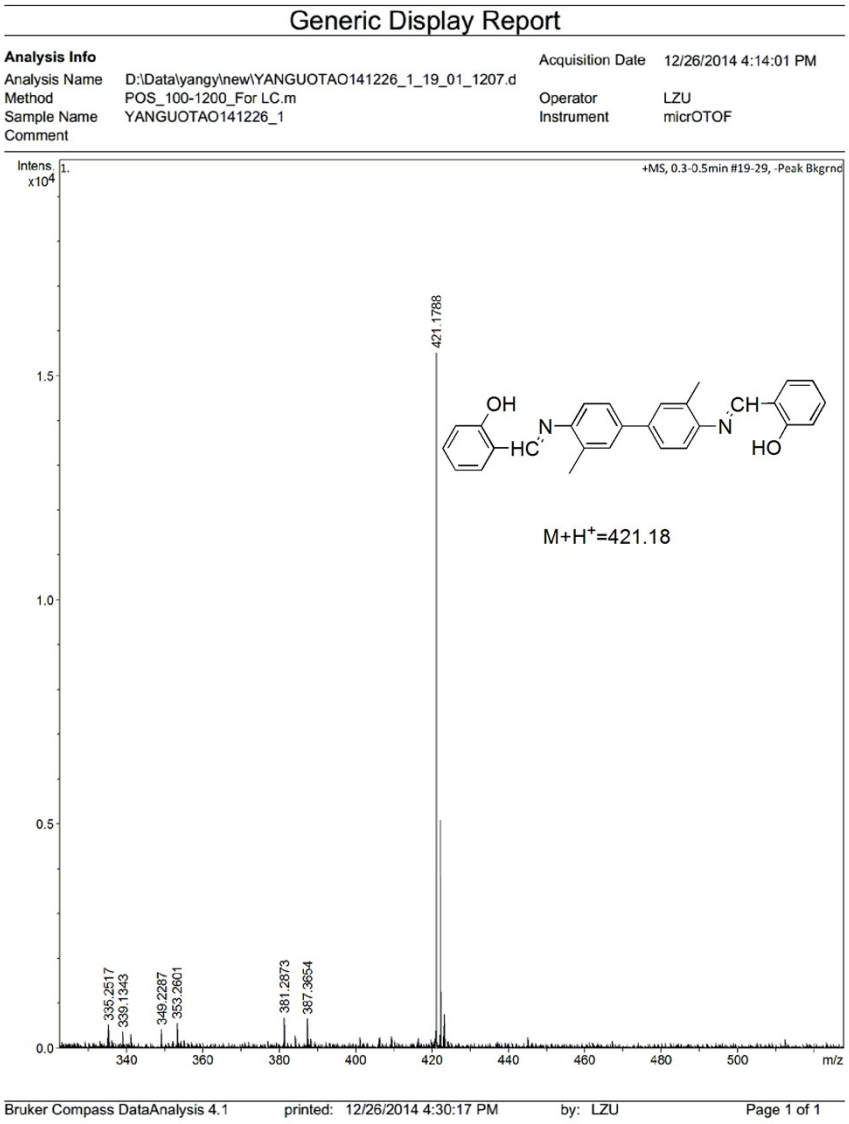

Fig. S4 ESI-MS spectrum of **YT** in DMSO.

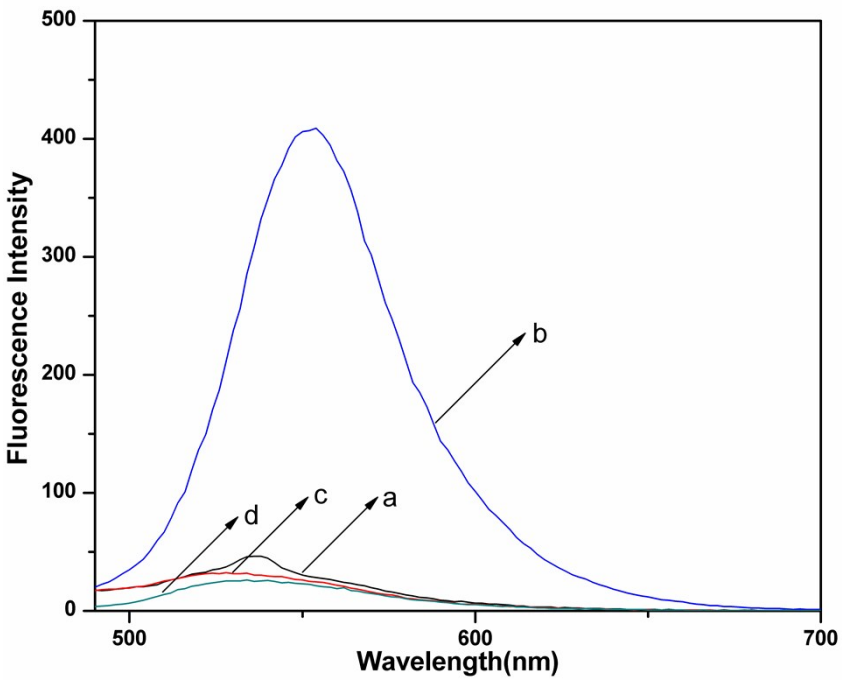

Fig. S5. Fluorescence spectra of a) YT (20 μM), b) YT + F^- (50 equiv) in DMSO, c) YT + F^- (50 equiv) in DMSO/H_2O, (9:1, v/v). d) YT + F^- (50 equiv) in DMSO/H_2O (9:1, v/v, containing 0.01 M HEPES buffer, pH = 7.20).