Electronic Supporting Information

An Anthraquinone-imidazole-based colorimetric and fluorescent sensor for sequential detection of Ag^+ and biothiols in living cells

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Instrumentation

The UV absorption and fluorescence spectra were recorded using a Hitachi U-2910 spectrophotometer (Tokyo, Japan) and a Hitachi F-4600 spectrofluorometer (Tokyo, Japan), respectively. The excitation wavelength was chosen as 470 nm and both the excitation and emission slits were set at 10 nm. Fluorescence lifetimes of FAI and FAI-Ag^+ complex and were measured with a FLS-920 Fluorescence Spectrometer. IR spectra were recorded on a TENSOR Ⅱ infrared spectrometer (Bruker, Germany). NMR spectra were measured on a Bruker instrument. HRMS of FAI and FAI-Ag^+ complex were onbtaibed with a Thermo Scientific Q Exactive. The pH values were measured on a pH-FE20 acidometer.

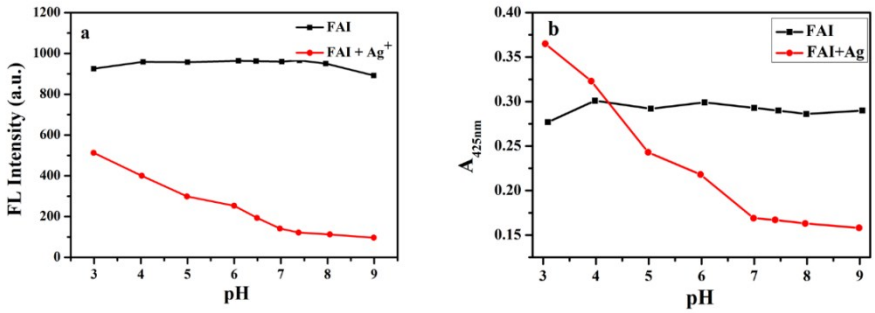

Fig. S1 (a) Effect of pH on the fluorescence intensity of FAI and FAI-Ag^+ at 606 nm. [FAI]=8 μM, [Ag^+]= 80 μM. (b) Effect of pH on the absorbance intensity of FAI and FAI-Ag^+ at 425 nm. [FAI]=20 μM, [Ag+]= 200 μM.

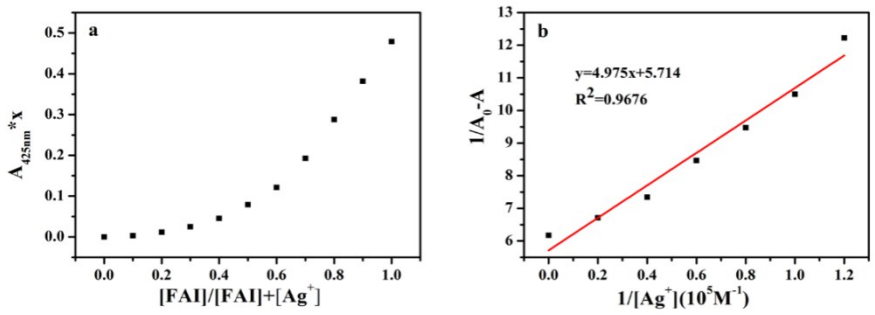

Fig. S2 (a) Job's polt from ultraviolet absorption for FAI and Ag^+ complexation in 1,4-dioxane-H_2O(3:7, v/v; pH 7.4), the total concentration of FAI and Ag^+ 40 μM; (b) Benesi-Hildebrand plot

from UV-vis titration data of FAI with Ag^+.

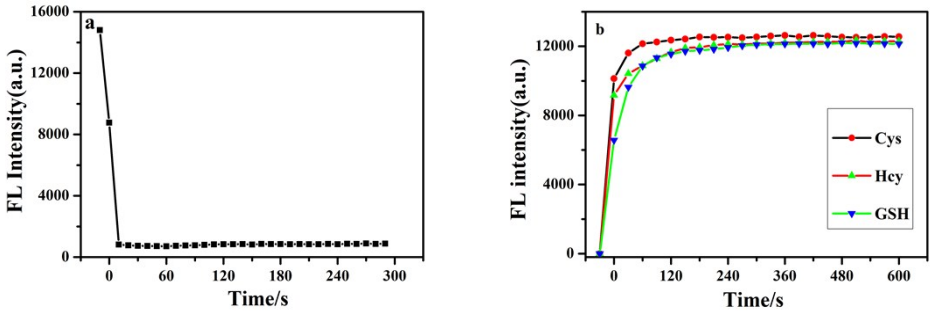

Fig. S3 (a) The fluorescence intensity at 606 nm of FAI as a function of time after adding Ag^+. (b) The fluorescence intensity at 606 nm of FAI-Ag^+ as a function of time after adding Cys, Hcy and GSH.

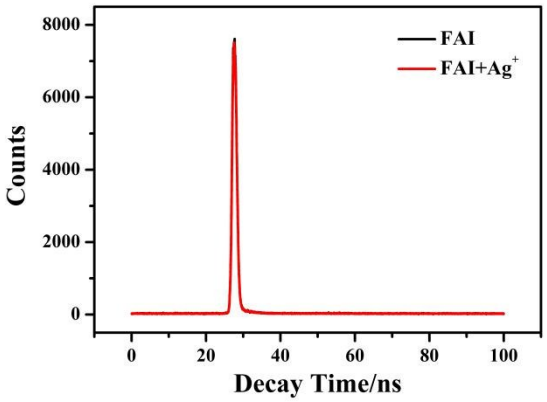

Fig. S4 Lifetime decay profiles of FAI (8 μM) in the absence and presence of Ag^+ (8 μM) in 1,4-dioxane-H_2O(3:7, v/v; pH 7.4).

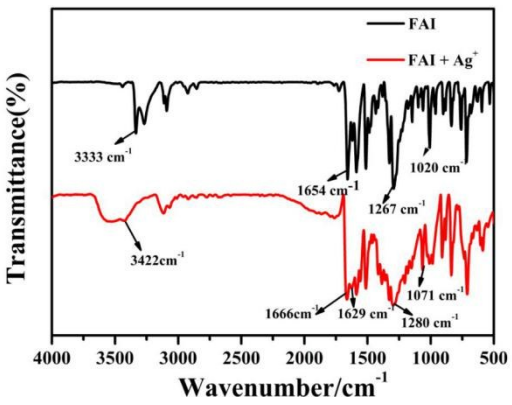

Fig. S5 Partial FTIR spectra of FAI and FAI-Ag^+ complex.

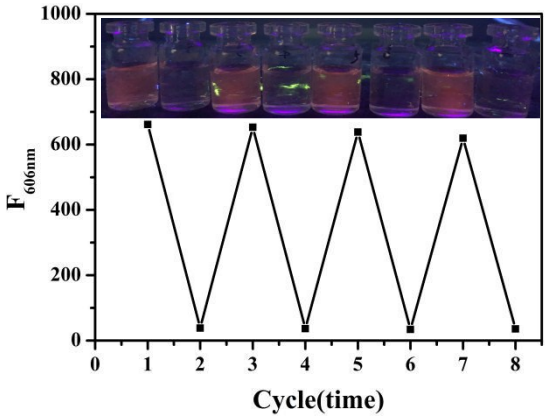

Fig. S6 Fluorescence experiment showing the reversibility and reusability of FAI for sensing Ag^+ and Cys sequentially. Above: Visual fluorescence color changes after each addition of Ag^+ and Cys sequentially.

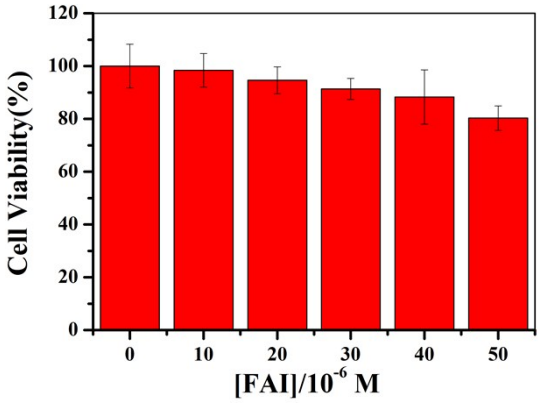

Fig. S7 Cell cytotoxic effect of L on SMMC-7721 cells.

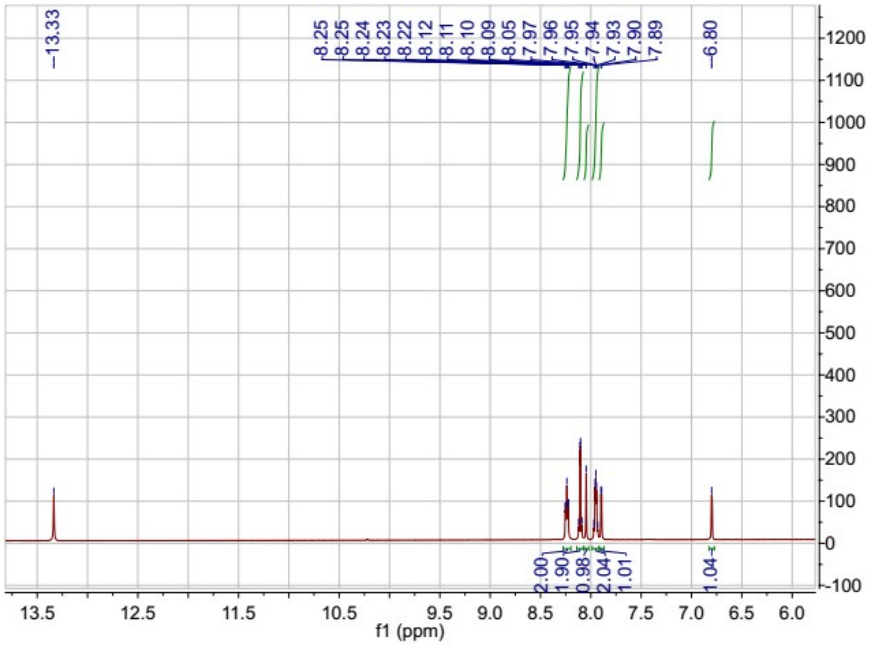

Fig. S8 ^{1}H NMR spectrum of sensor FAI.

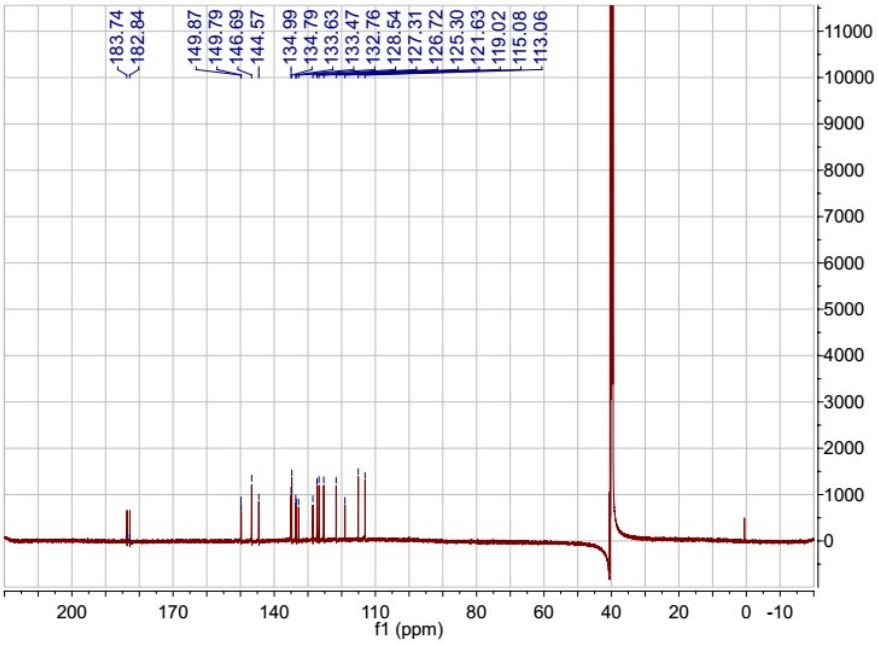

Fig. S9 ^{13}C NMR spectrum of sensor FAI.

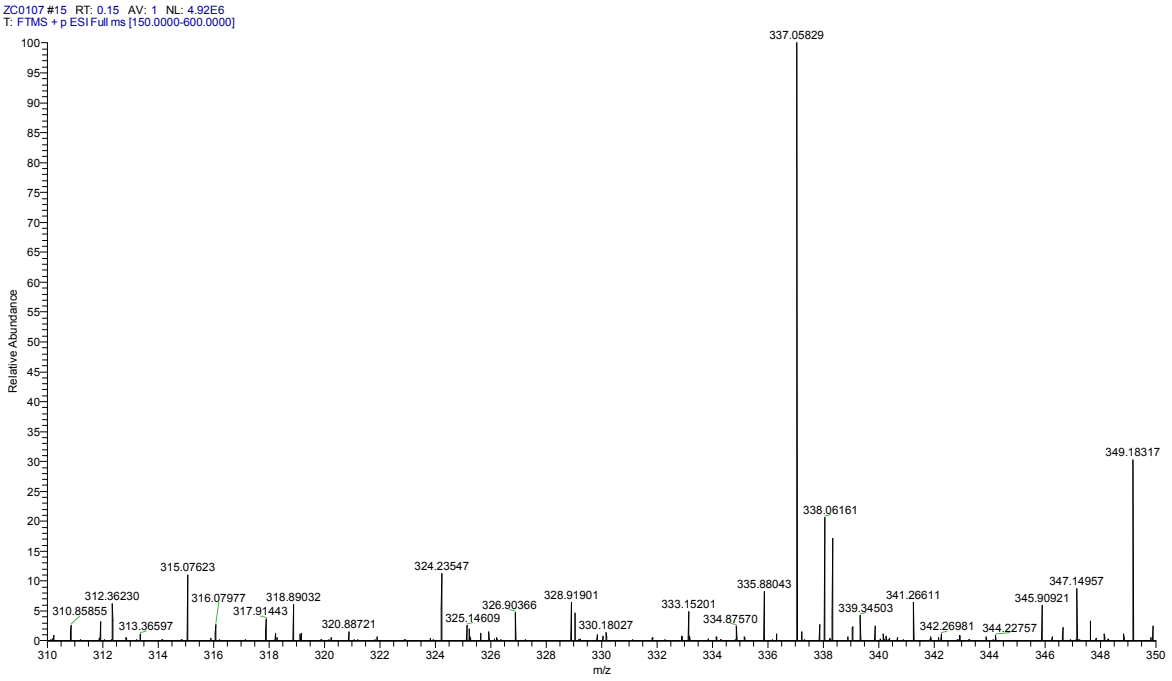

Fig.S10 Mass spectrum (ESI) of sensor FAI