Supplementary Data

New Application of 2-(4-*N*-Phenyl-3-thiosemicarbazone)-8-hydroxyquinoline as a Sensor for Relay Recognition of Cu^{2+} and Sulfide in Aqueous Solution

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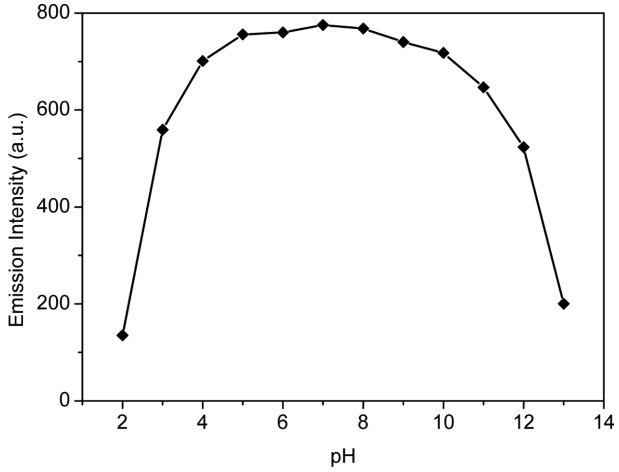

Figure S1. Effects pH on the fluorescence intensity of sensor **1** in water (1 μM, 1% DMSO) solution.

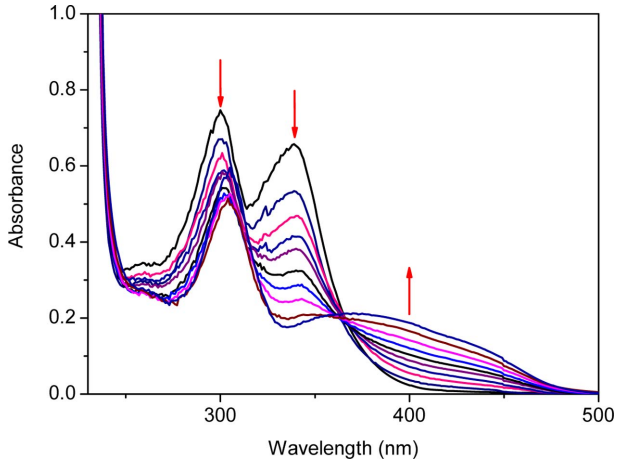

Figure S2. Absorbance spectra of **1** solution (10 μM) in HEPES buffer (1% DMSO, HEPES 20 mM, pH = 7.4) in the presence of Cu^{2+} (0-10 μM).

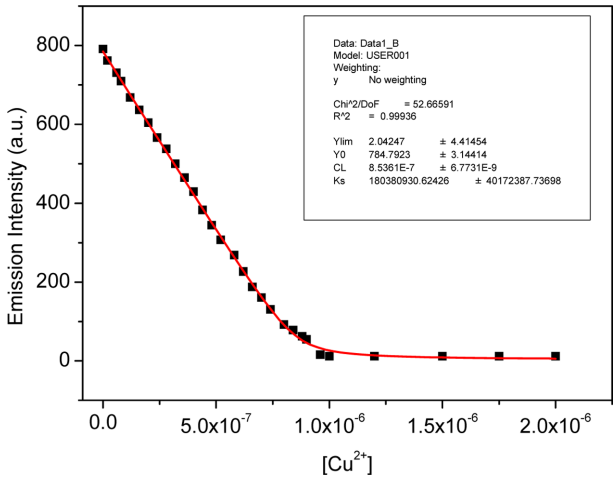

Figure S3. Curve Estimation plot using Eq. (1), assuming 1:1 stoichiometry for association between receptor 1 and Cu^{2+}: fluorescent titration results (512 nm). The binding stoichiometry of receptor **1** with Cu^{2+} was calculated through the equation, which was given as follows:

$y = Y_0 + ((Ylim - Y_0)/2) \times (1 + (x/C_L) + (1/(Ks \times C_L)) - ((1 + (x/C_L) + (1/(Ks \times C_L)))^2 - 4 \times (x/C_L))^{0.5})$

Y_0 is the fluorescence intensity of free **1**, Y_{lim} is the fluorescence intensity measured with excess amount of Cu^{2+}, C_L is the concentration of chemosensor, x is the Cu^{2+} concentration, K_s is the association constant. As shown in Fig. S5, the nonlinear least-squares fitting affords a smooth curve ($R^2 = 0.99936$), indicating that receptor **1** associates with Cu^{2+} in a 1:1 stoichiometry. The association constant, K_s, between **1** and Cu^{2+}, was determined from the ratio of intercept/slope to be 1.8×10^8 M^{-1}.

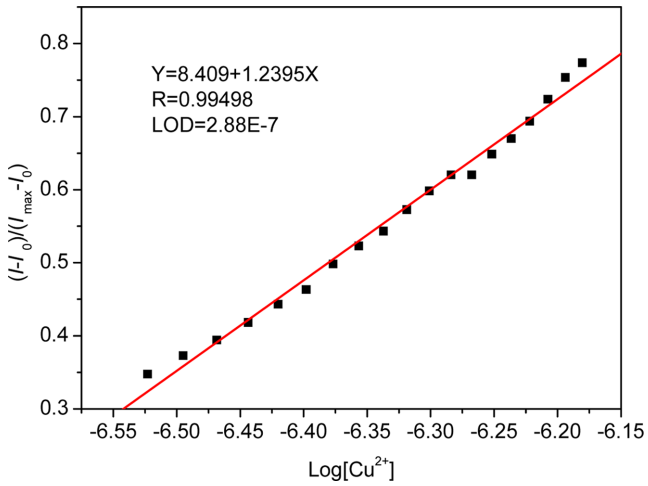

Figure S4. Normalized response of fluorescence intensity of **1** to log[Cu^{2+}] in HEPES buffer (1% DMSO, HEPES 20 mM, pH = 7.4). [**1**] = 1 μM, λ_{em} = 512 nm.

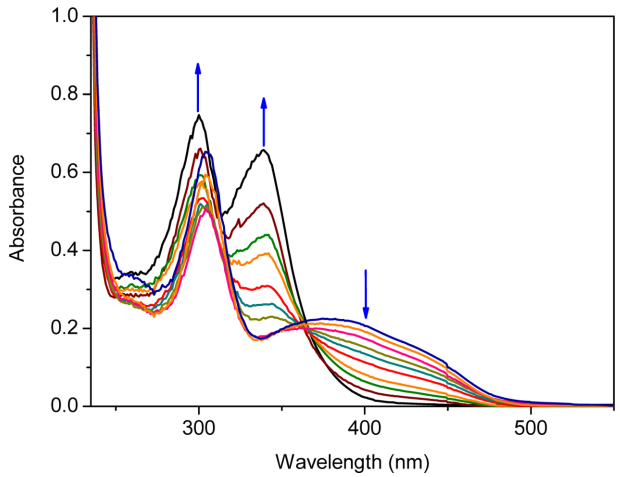

Figure S5. Absorbance spectra of **1**-Cu^{2+} (10 μM) in HEPES buffered (1% DMSO, HEPES 20 mM, pH = 7.4) solution in the presence of S^{2-} (0-20 μM).

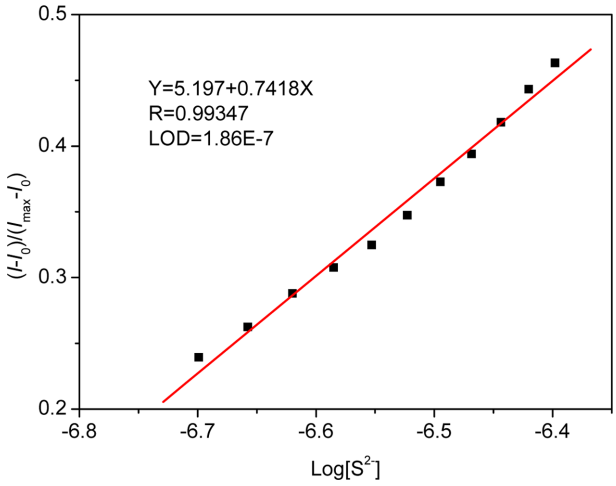

Figure S6. Normalized response of fluorescence intensity of **1**-Cu^{2+} to log[S^{2-}] in HEPES buffer (1% DMSO, HEPES 20 mM, pH = 7.4). [**1**-Cu^{2+}] =1 μM, λ_{em} = 512 nm.

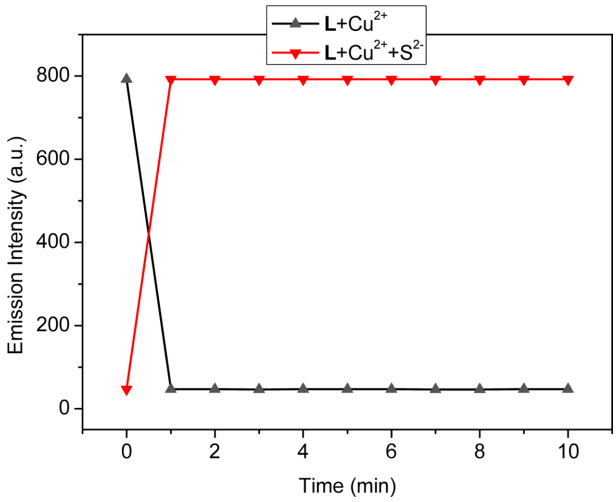

Figure S7. Time dependence of fluorescence response of **1** solution (1 μM) to Cu^{2+} (1 μM) and **1**-Cu^{2+} solution (1 μM) to S^{2-} (2 μM). λ_{em} = 512 nm.