Electronic Supplementary Information

A highly sensitive fluorescent probe based on simple pyrazoline for Zn^{2+} in living neuron cells

Zhe Zhang [a], Fang-Wu Wang [b], Sheng-Qing Wang [a], Fei Ge [a], Bao-Xiang Zhao [a,*], Jun-Ying Miao [b,*]

[a] *Institute of Organic Chemistry, School of Chemistry and Chemical Engineering, Shandong University, Jinan 250100, P.R. China*

[b] *Institute of Developmental Biology, School of Life Science, Shandong University, Jinan 250100, P.R. China*

Corresponding author: Bao-Xiang Zhao, Jun-Ying Miao

Tel.: +86 531 88366425; fax: +86 531 88564464;

E-mail addresses: bxzhao@sdu.edu.cn (B.X. Zhao); miaojy@sdu.edu.cn (J.Y. Miao)

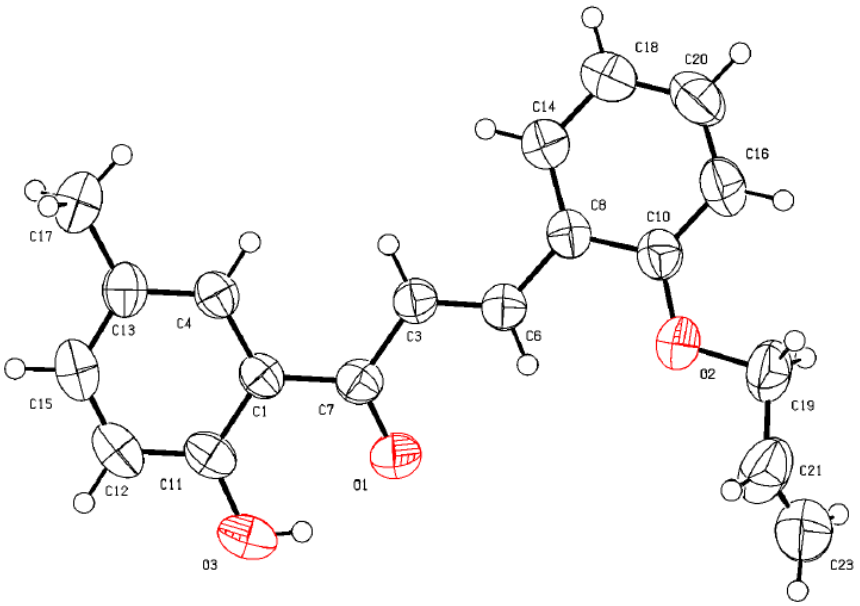

Fig. S1 Structure of compound **3**

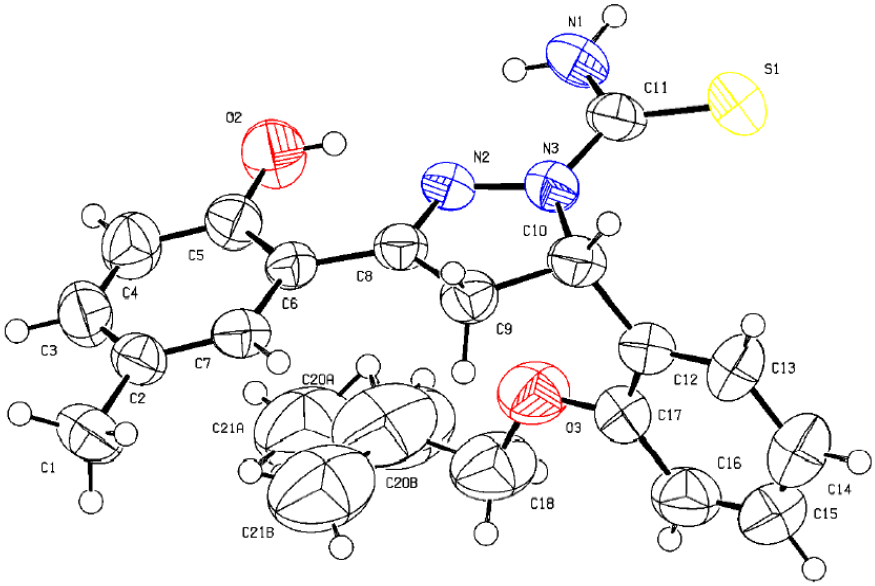

Fig. S2 Structure of compound **4** (**L**)

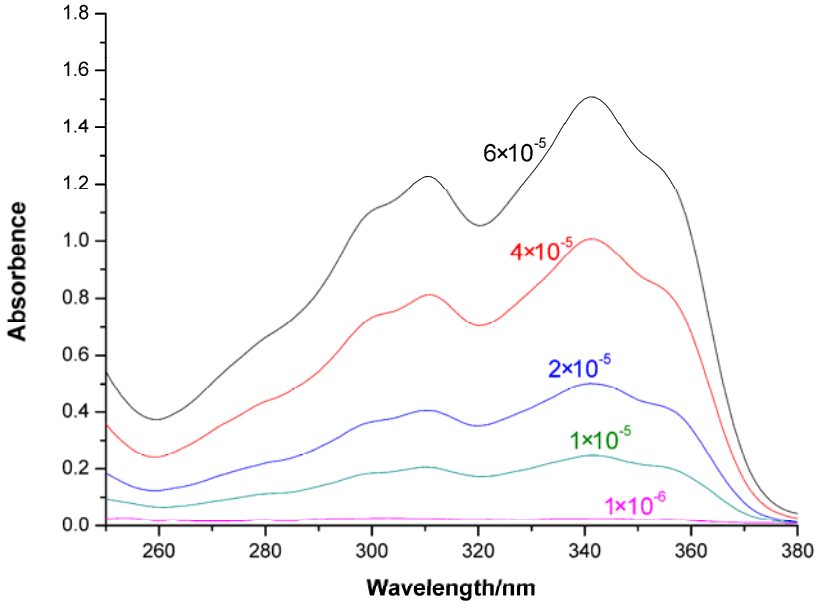

Fig. S3 UV-vis spectrum of **L** in HEPES buffer solution (20 mM HEPES, pH 7.2, EtOH : H_2O = 1 : 1) with different concentration.

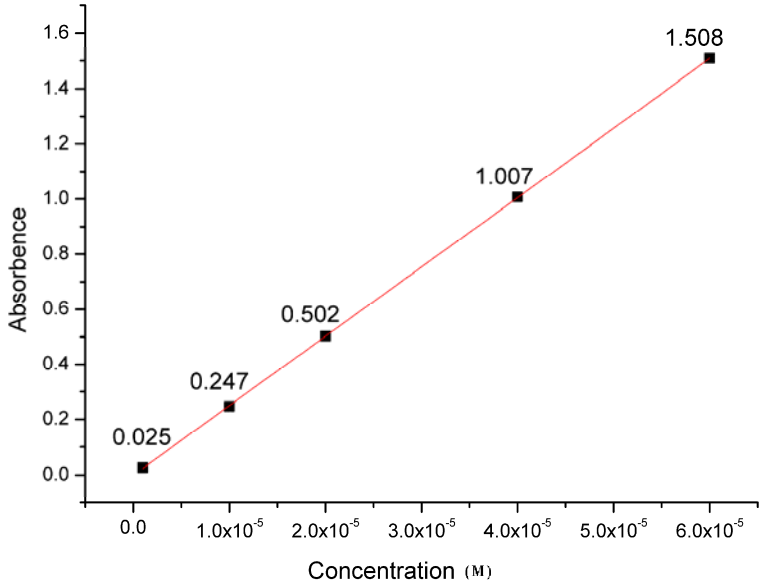

Fig. S4 Linear relation of the absorbance and **L** concentration at 341 nm.

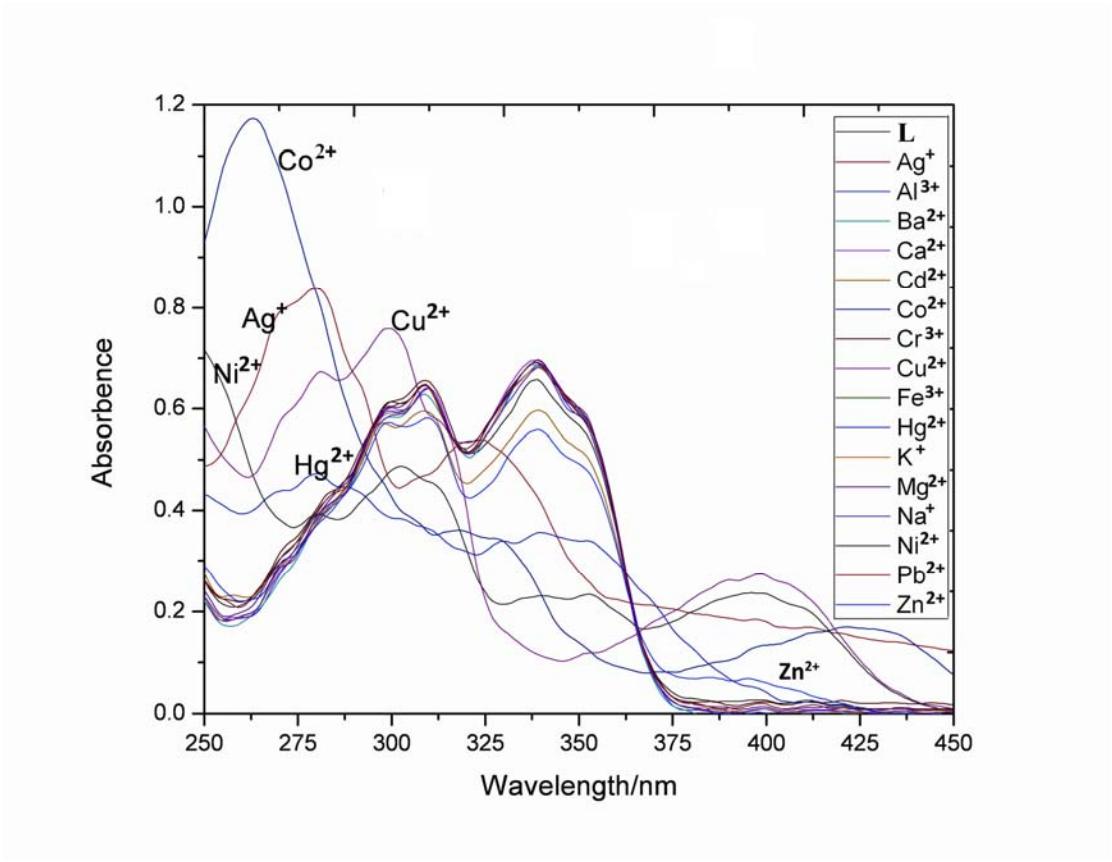

Fig. S5 UV-vis spectral changes of compound **L** (5×10^{-5} M) in the HEPES buffer solution (pH = 7.2, 50% CH_3CH_2OH, v/v) upon additions of various metal ions (5×10^{-5} M).

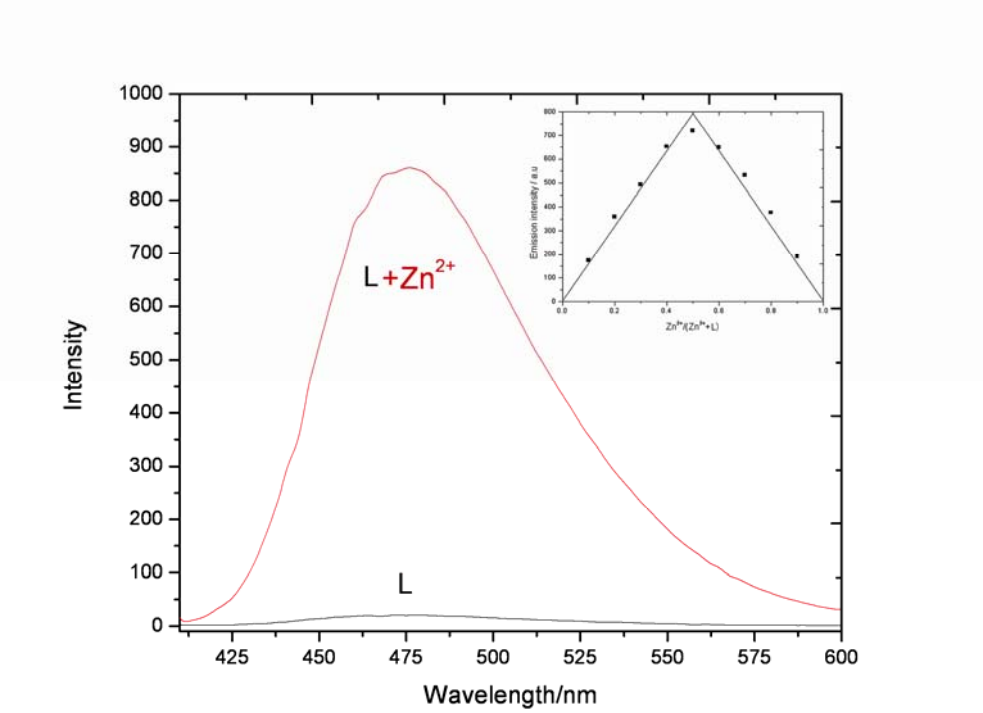

Fig. S6 The fluorescence emission spectra of **L** (1.0×10^{-5} M) and **L** upon addition of 1.0 equiv of Zn^{2+} in HEPES buffer solution (20 mM HEPES, pH 7.2, EtOH : H_2O = 1 : 1). Inset: Job's plots according to the method for continuous variations, indicating the 1:1 stoichiometry for **L**-Zn^{2+} (the total concentration of **L** and Zn^{2+} is 1.0×10^{-5} M).

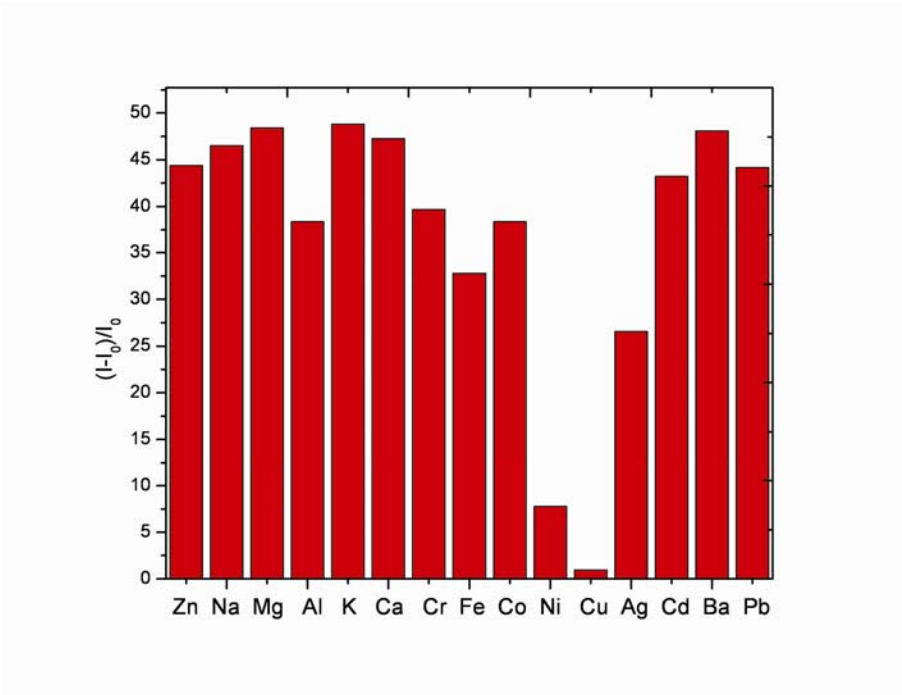

Fig. S7 Fluorescence emission spectra of **L**-Zn(Ⅱ) (1.0×10^{-5} M) in the presence of Al^{3+}, Cr^{3+}, Fe^{3+}, Co^{2+}, Ni^{2+}, Cu^{2+}, Ag^{+}, Cd^{2+}, Ba^{2+} and Pb^{2+} (10×10^{-5} M) and Na^{+}, Mg^{2+}, K^{+} and Ca^{2+} (40×10^{-5} M) in the HEPES buffer solution (20 mM HEPES, pH = 7.2, EtOH : H_2O = 1 : 1).

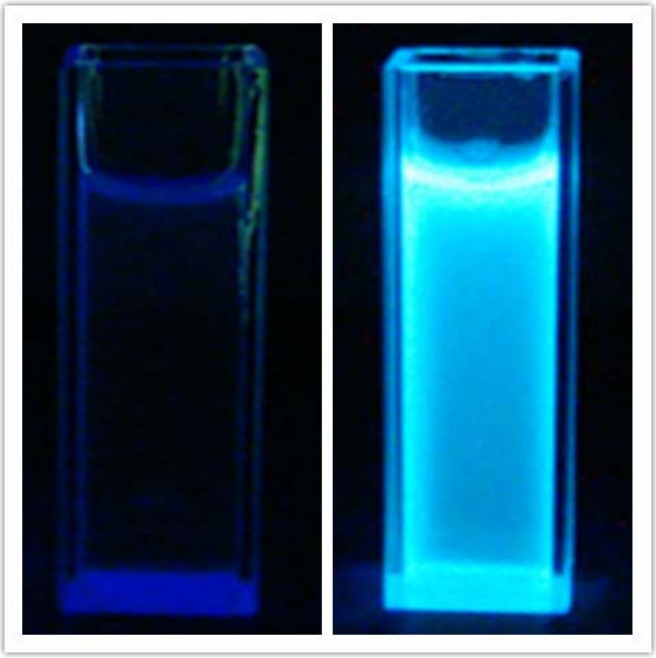

Fig. S8 Fluorescent changes of **L** (10 μM) upon addition of 1 equiv. of Zn^{2+} in buffered solution (20 mM HEPES, pH 7.2, EtOH : H_2O = 1 : 1). Left: only **L**; right: **L**+ Zn^{2+}.

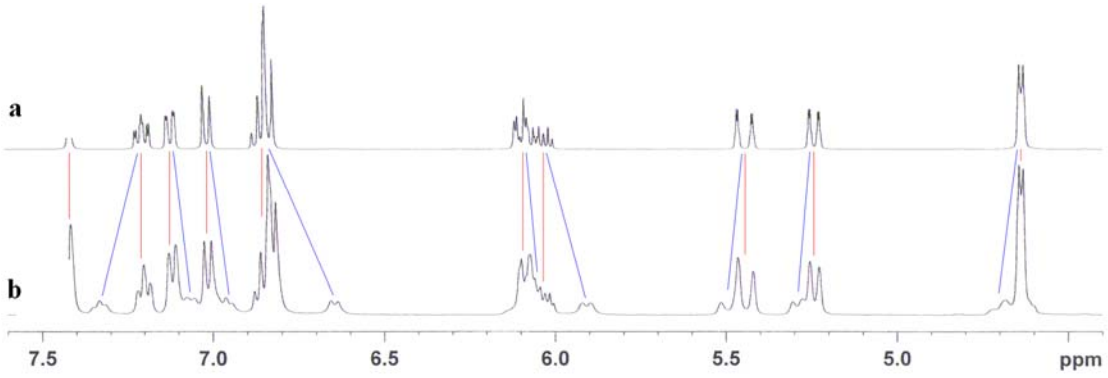

Fig. S9 ^{1}H NMR spectra of **L** with 0, 0.2 equiv. Zn^{2+} in d-DMSO. (a) Free sensor **L**. (b) [Zn^{2+}]/[**L**] equals 0.2:1. The red line and blue line are shifts for the protons of free sensor and zinc-bound sensor, respectively.

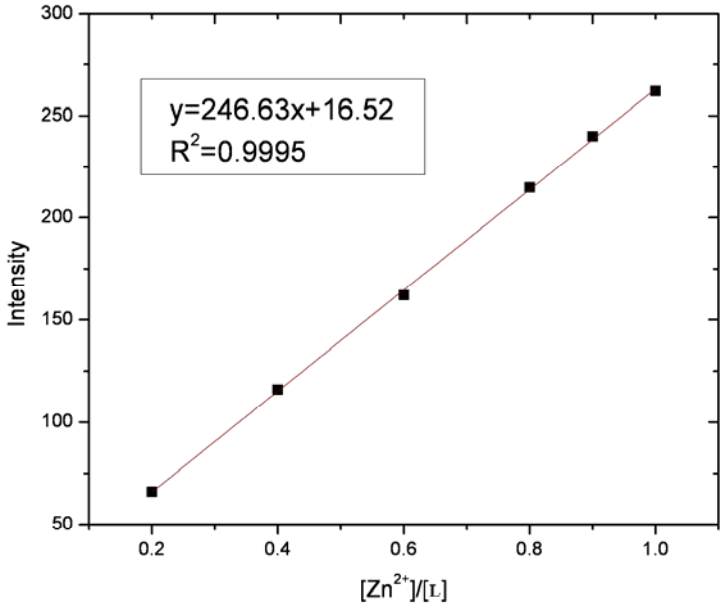

Fig. S10 Fluorescence intensity of **L** (1.0×10^{-5} M) with 0-1 equiv. of Zn^{2+} at 476 nm.

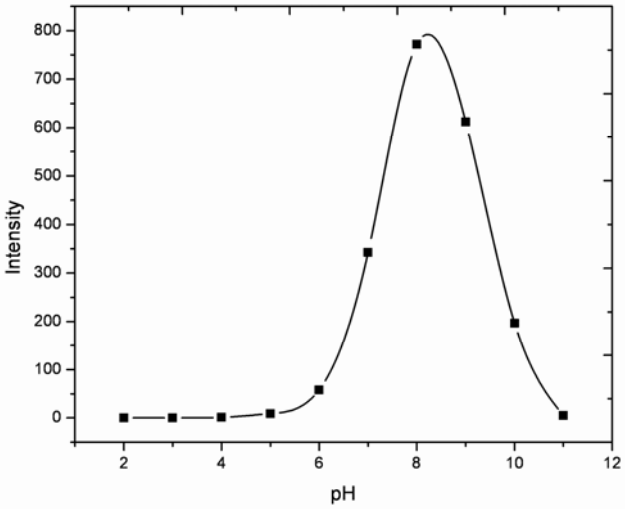

Fig. S11. Effect of the pH on the fluorescence intensity of **L**-Zn(Ⅱ) (10 μM) at 476 nm. (Excitation wavelength: 395 nm).