Electronic Supplementary Material (ESI) for RSC Advances.

A New Fluorescent Chemosensor for Highly Selective and Sensitive Detection of Inorganic Phosphate (Pi) in Aqueous Solution and Living Cells

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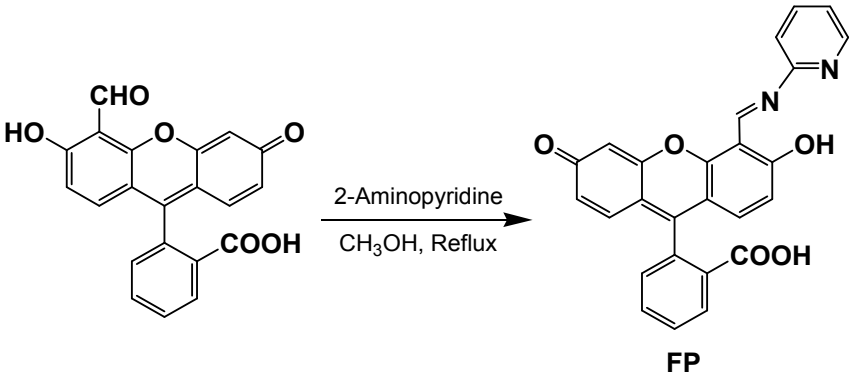

Scheme S1. Synthesis of the fluorescence chemosensor **FP**.

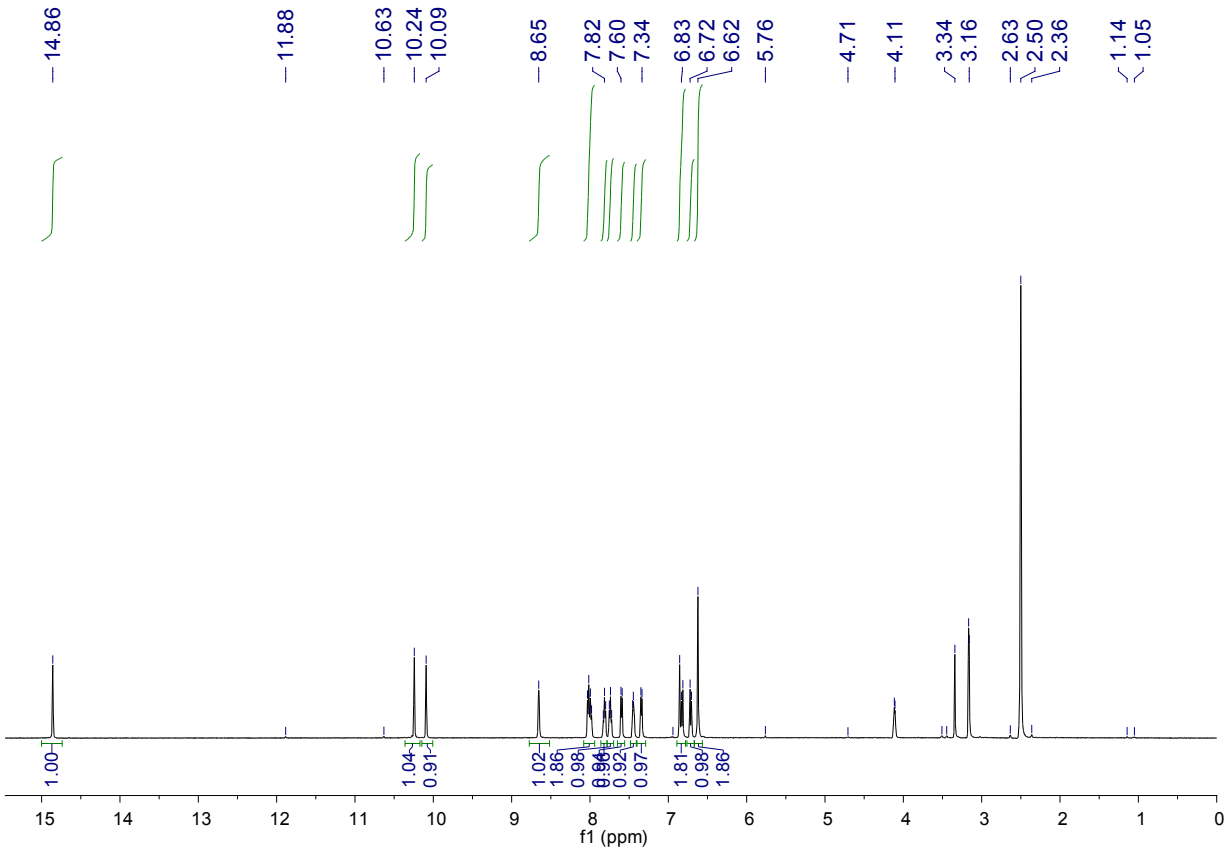

Fig. S1. ^{1}H-NMR of **FP** (DMSO-d_6)

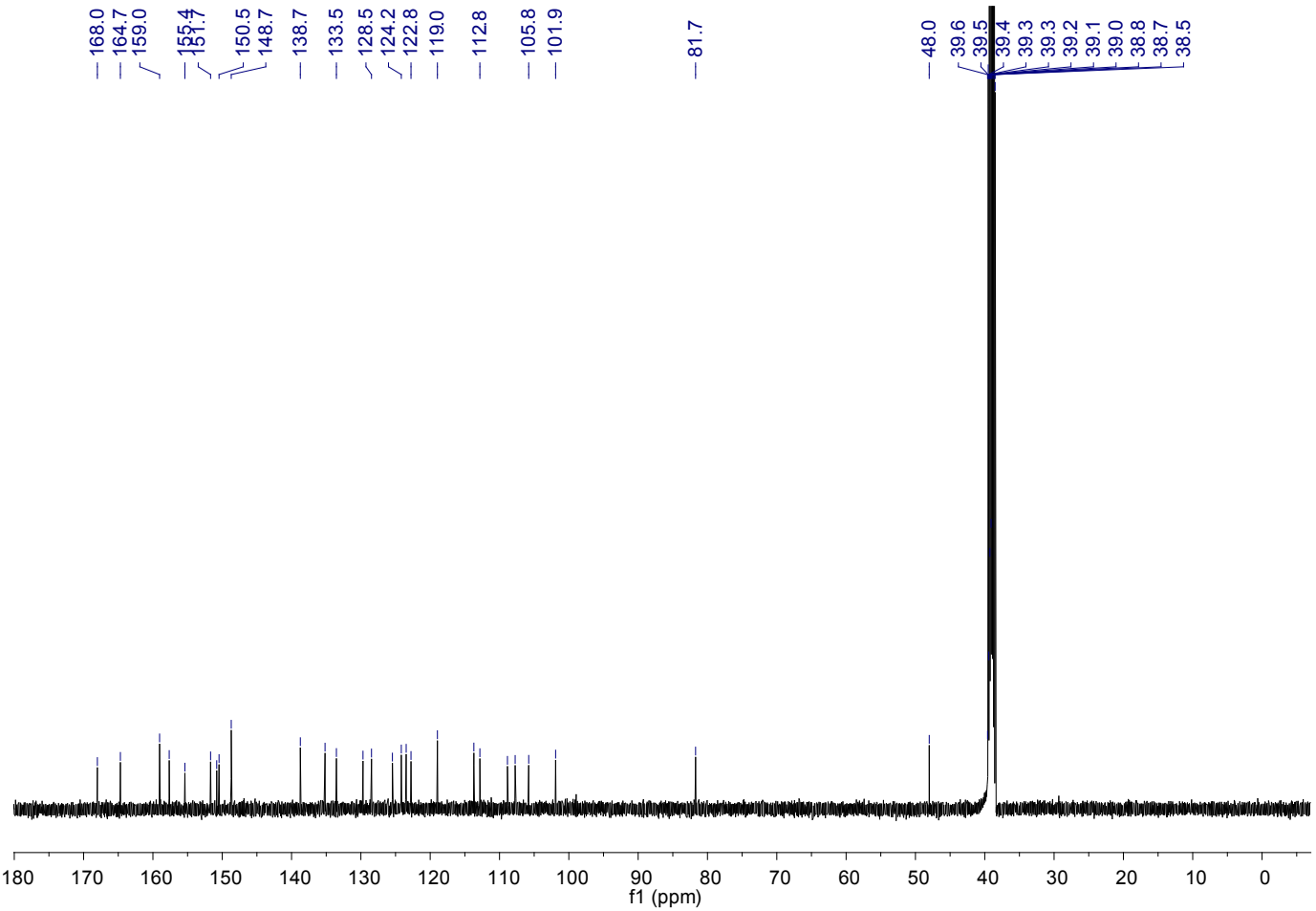

Fig. S2. ^{13}C-NMR of **FP** (DMSO-d_6)

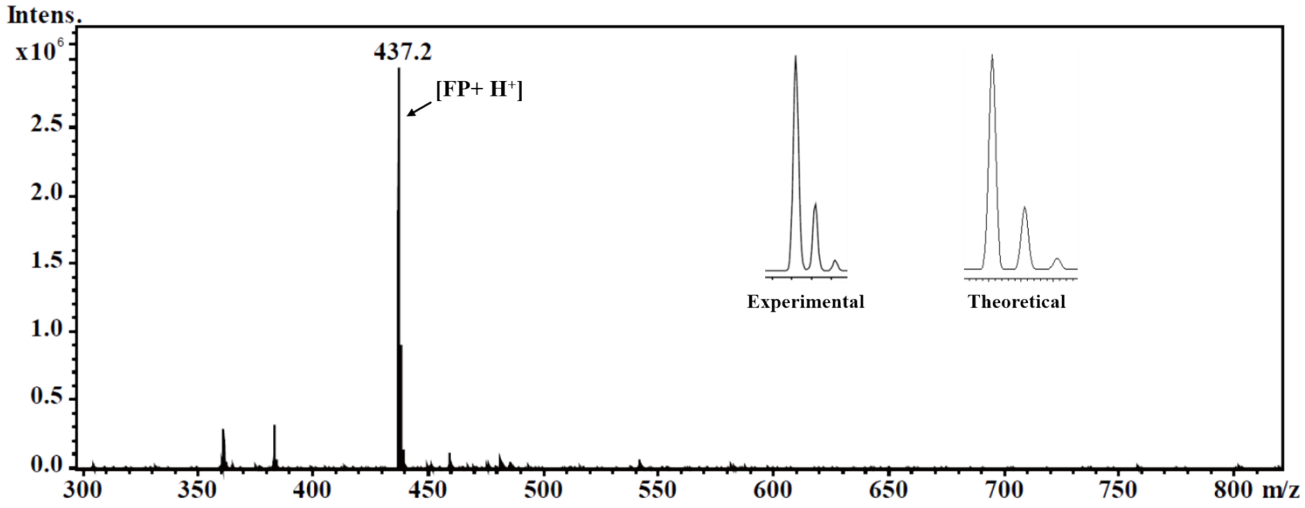

Fig. S3. ESI-mass spectra of **FP**

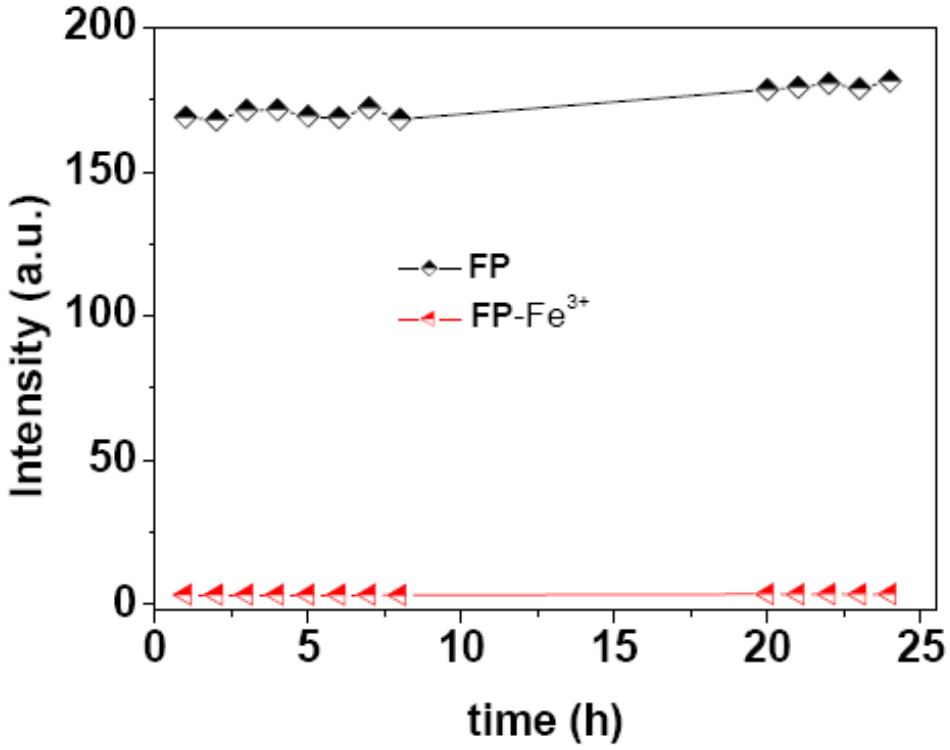

Fig. S4. Time-dependent fluorescence changes of **FP** and **FP**-Fe^{3+} in HEPES aqueous buffer (THF: H_2O = 3:7, 20 mM, pH = 7.4). Excitation at 430 nm.

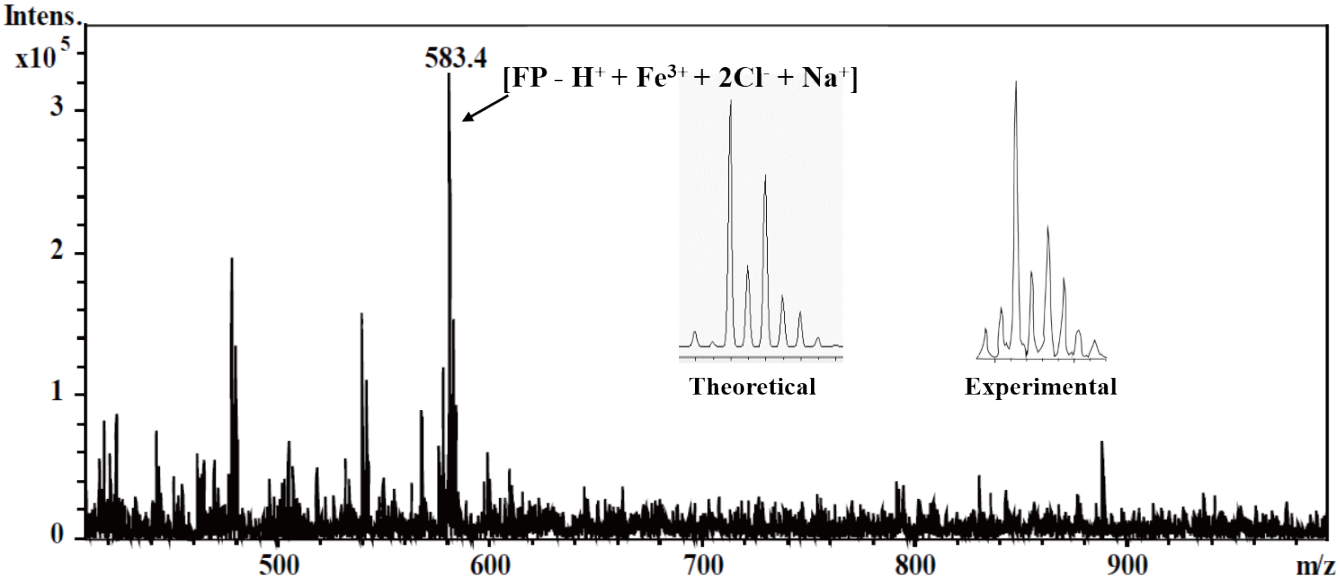

Fig. S5. ESI-mass spectra of **FP**-Fe^{3+}

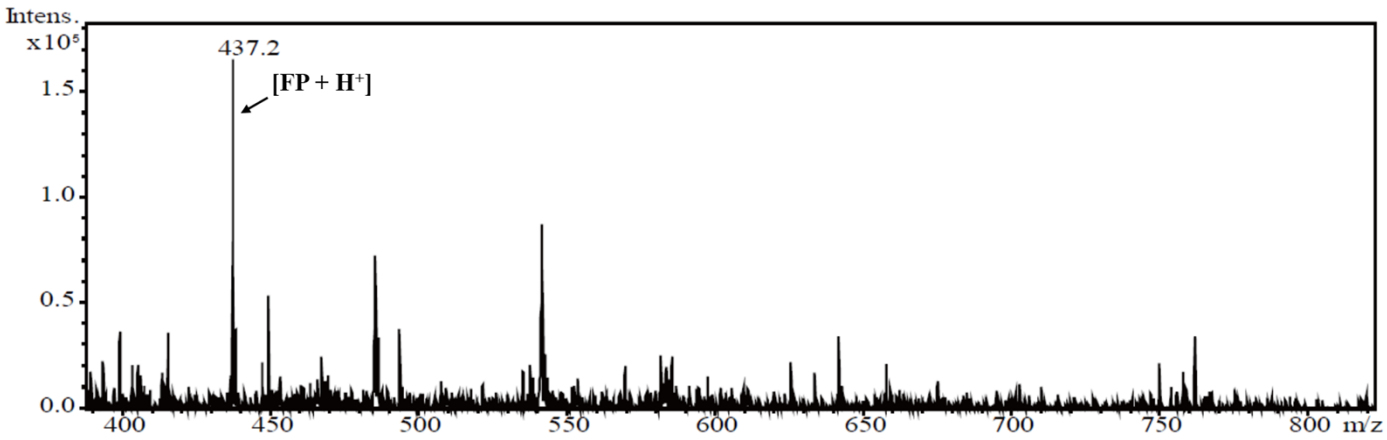

Fig. S6. ESI-mass spectra of **FP**-Fe^{3+} in the presence of Pi

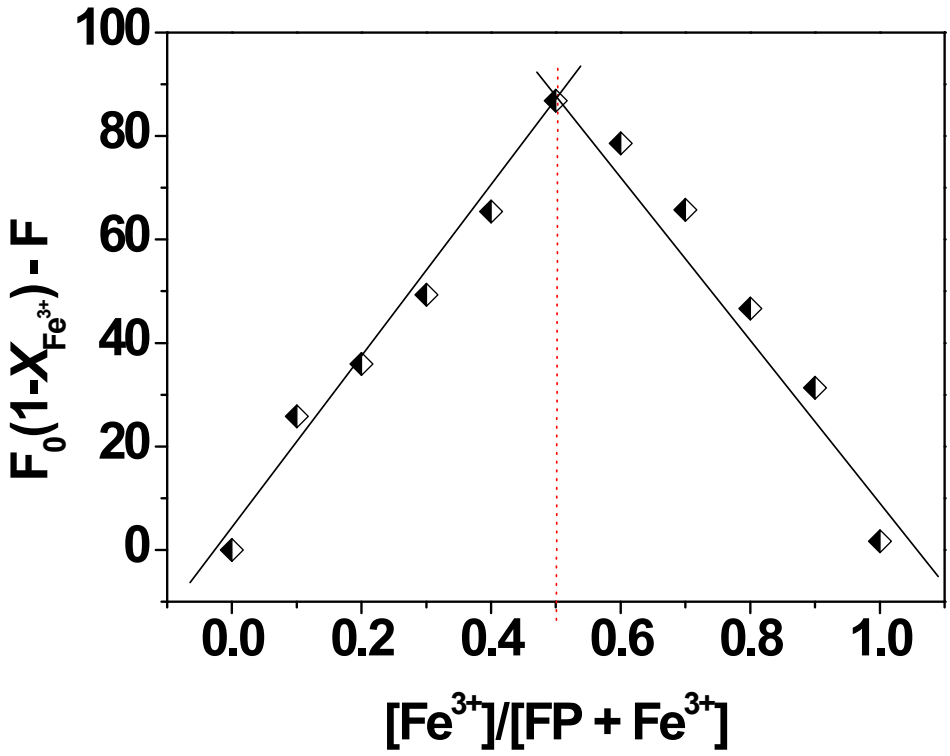

Fig. S7. Job's plot of **FP** toward Fe^{3+} in HEPES aqueous buffer (THF: H_2O = 3:7, 20 mM, pH = 7.4).

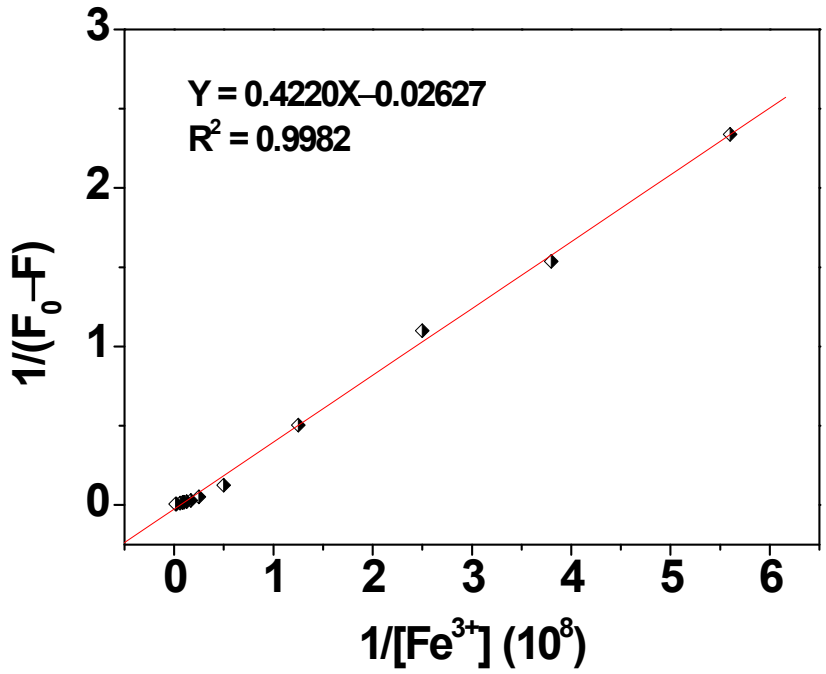

Fig. S8. Benesi-Hildebrand plot (emission at 515 nm) of **FP** (10 μM) based on 1:1 binding stoichiometry with Fe^{3+} in HEPES aqueous buffer (THF: H_2O = 3:7, 20 mM, pH = 7.4). Excitation at 430 nm.

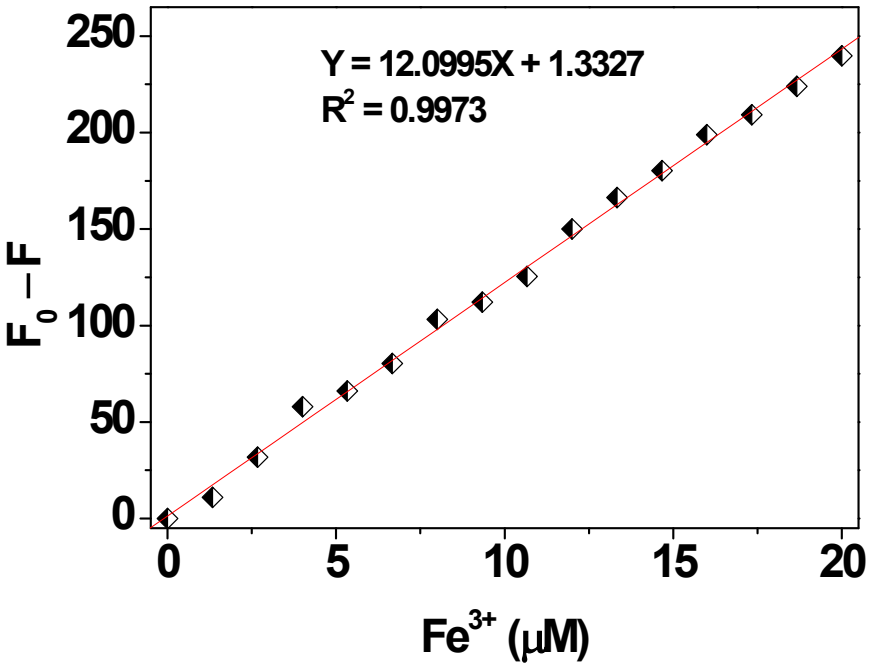

Fig. S9. The fluorescence intensity changes of **FP** (1 μM) versus low concentration Fe^{3+} (0–20 μM) at 515 nm in HEPES aqueous buffer (THF: H_2O = 3:7, 20 mM, pH = 7.4). Excitation was performed at 430 nm.

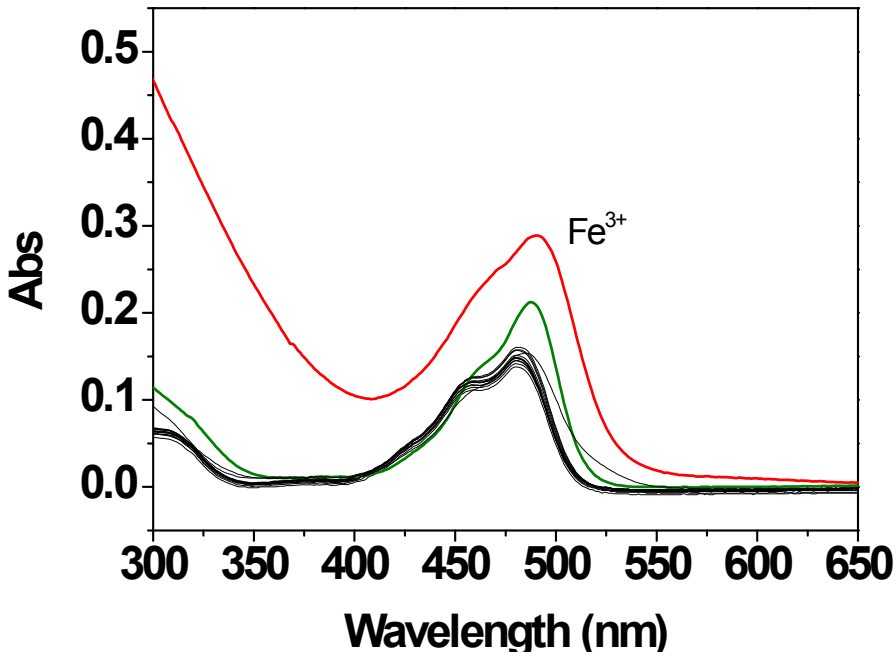

Fig. S10. Absorption spectra of **FP** (10 μM) in HEPES aqueous buffer (THF: H_2O = 3:7, 20 mM, pH = 7.4) upon addition of various metal ions (3×10^{-4} M).

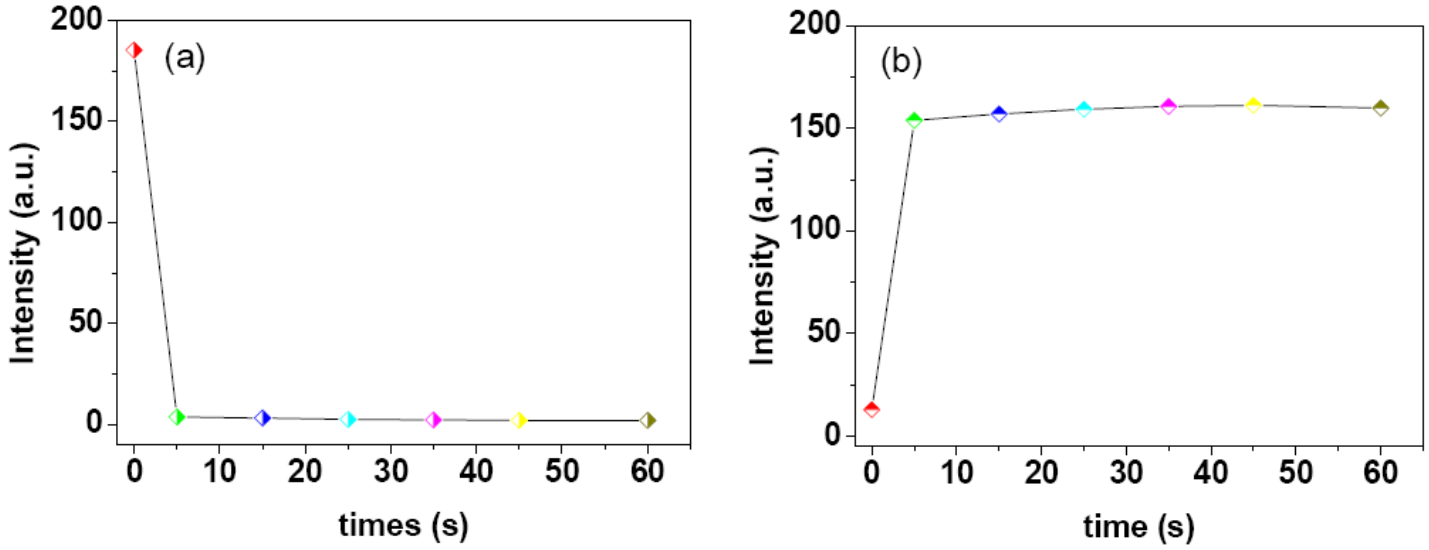

Fig. S11. The time courses fluorescence intensities at 515 nm of **FP** (10 μM) towards 3×10^{-4} M Fe^{3+} (a) and **FP**-Fe^{3+} (10 μM) in the presence of 3×10^{-4} M Pi (b) in HEPES aqueous buffer (THF: H_2O = 3:7, 20 mM, pH = 7.4). Excitation was performed at 430 nm.

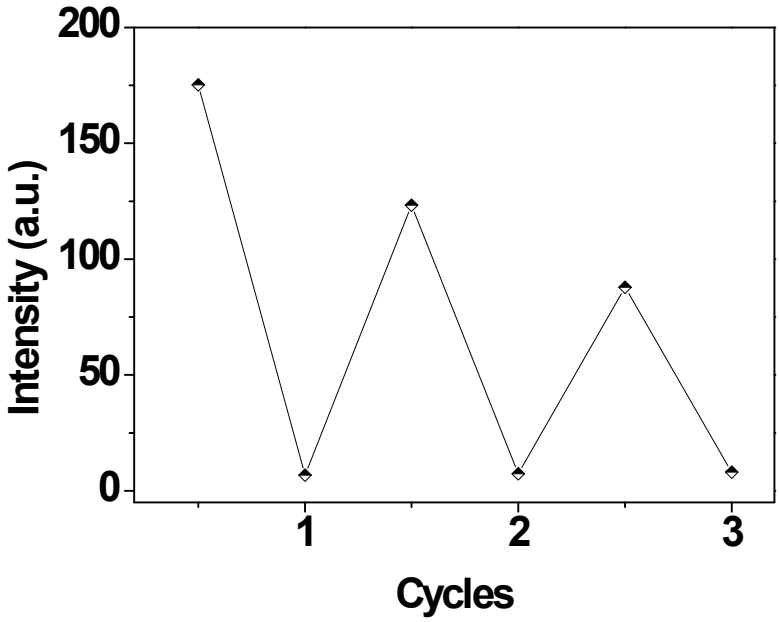

Fig. S12. Fluorescent emission intensity changes of **FP** (10 μM) at 515 nm in HEPES aqueous buffer (THF: H_2O = 3:7, 20 mM, pH = 7.4) upon the alternate addition of Fe^{3+}–Pi with several concentrations ratio (0 : 0, 10 : 0, 10 :20, 20 : 10, 20 : 40, 40 : 20, respectively). Excitation at 430 nm.

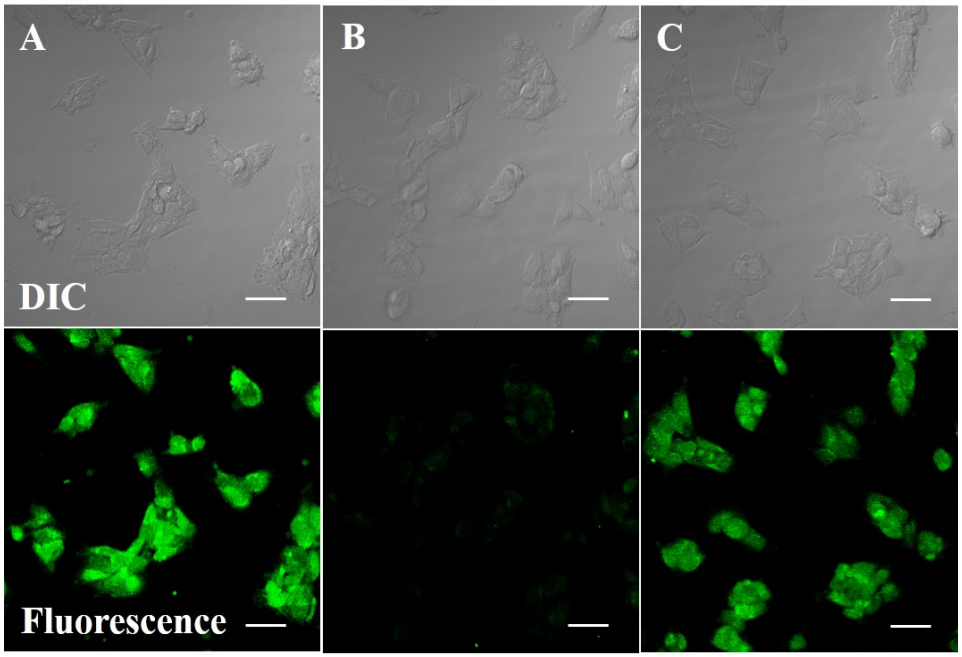

Fig. S13. Confocal bright-field (top), and fluorescence (bottom) imaging of Fe^{3+} and Pi in living U-343 MGa cells. (A) Cells stained with **FP** (1 μM) at 37 °C in a 5% CO_2 incubator for 30 min, (B) and treated with Fe^{3+} (10 μM) for 20 min, (C) then the cells incubated with Pi (30 μM) for another 20 min. Scale bar = 40 μm.

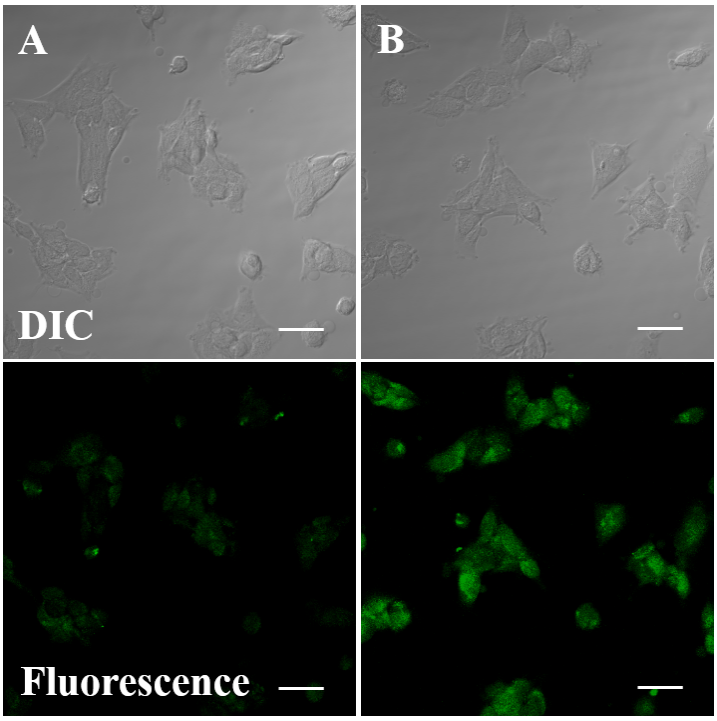

Fig. S14. Confocal bright-field (top), and fluorescence (bottom) imaging of Pi in living U-343 MGa cells. (A) Cells stained with **FP**-Fe^{3+} (1 μM) at 37 °C in a 5% CO_2 incubator for 30 min, (B) U-343 MGa cells treated with 100 μM Pi and then incubated with **FP**-Fe^{3+} (1 μM) for 30 min. Scale bar = 40 μm.