Supporting Materials

Bio-friendly Maillard reaction fluorescent products from glutathione and ascorbic acid for rapid and label-free detection of Fe^{3+} in living cell

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Calculation of cell viability:

The cell viability was calculated according to the following equation:

$$\text{cell viability (\%)} = [\Sigma (A_i / A_0 \times 100)] / n \quad (1)$$

where A_i is the absorbance at 450 nm in the presence of different concentrations of the MRFPs (0.1, 2.5, 5, 10, 50, 100, 250, 500, and 1000 μg mL^{-1}), A_0 is the average absorbance at 450 nm in the absence of MRFPs in the culture medium, and n (n = 8) is the number of the data point.

The cell viability was calculated to be 100 % in the absence of MRFPs in the culture medium. We can assess the cytotoxicity by comparing the cell viability of the cells in the presence and absence of the MRFPs in the culture medium under experimental conditions. If the cell viability is below 100 % in the presence of the MRFPs, the MRFPs is cytotoxic; otherwise, the MRFPs is non-cytotoxic, indicating that the MRFPs can be used as bioimaging probes in living cells and have no effect on the normal metabolic processes of cells.

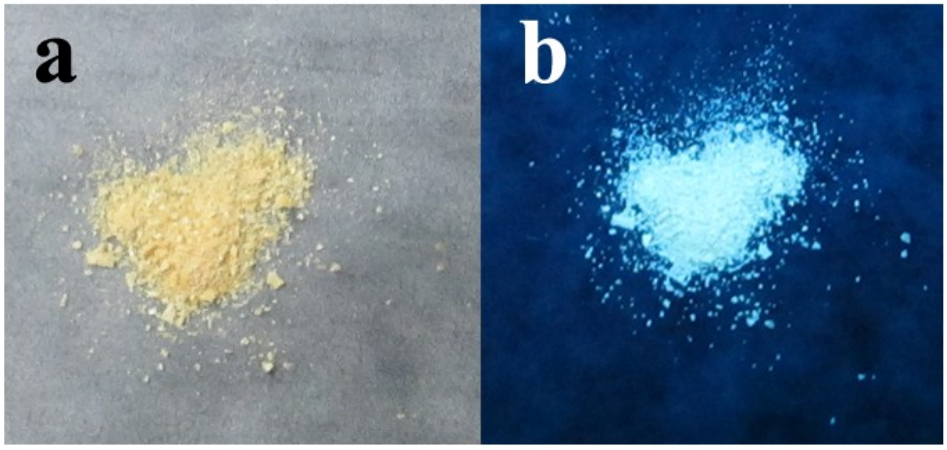

Fig. S1 Photographs of purified MRFPs solids under visible light (a) and UV light (b), respectively.

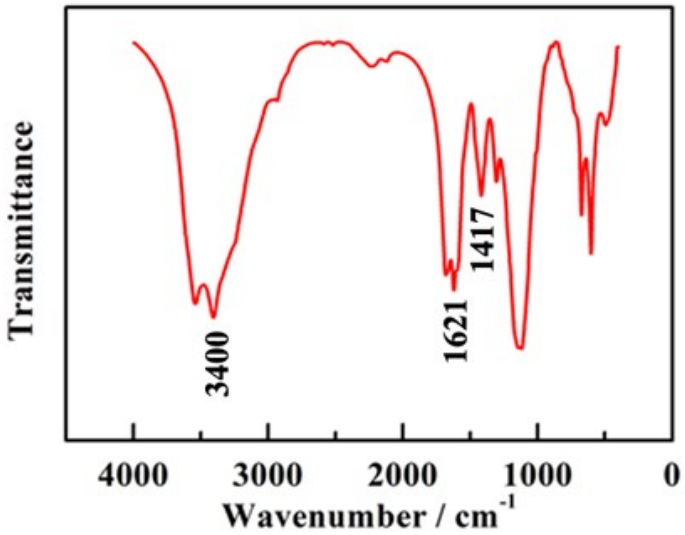

Fig. S2 FT-IR spectrum of the purified MRFPs.

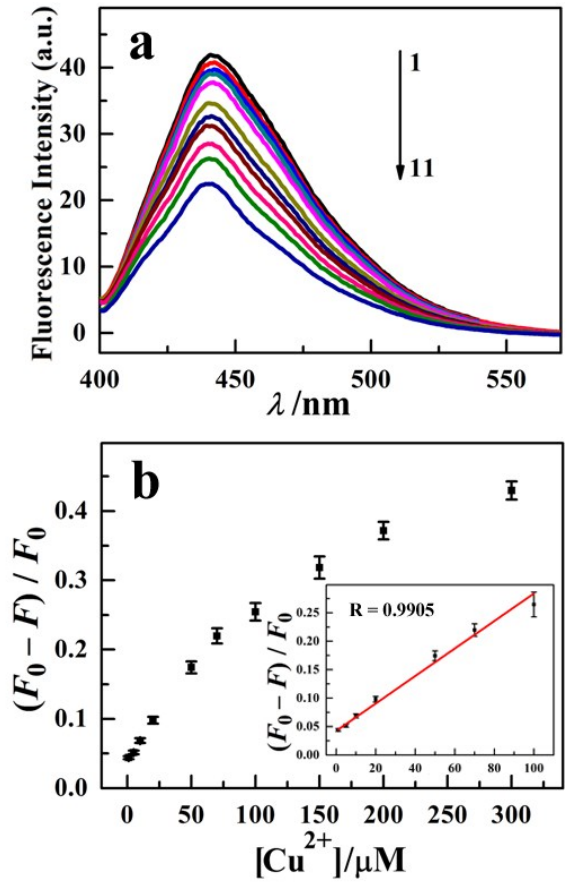

Fig. S3 (a) Fluorescence spectra of the MRFPs in the presence of various concentrations of Cu^{2+} (no.1-11: 0, 1, 5, 10, 20, 50, 70, 100, 150, 200, 300 μM). (b) Corresponding plot of the values of $((F - F_0) / F_0)$ at 450 nm versus the concentrations of Cu^{2+}. Concentration of MRFPs is 0.02 mg mL^{-1}.

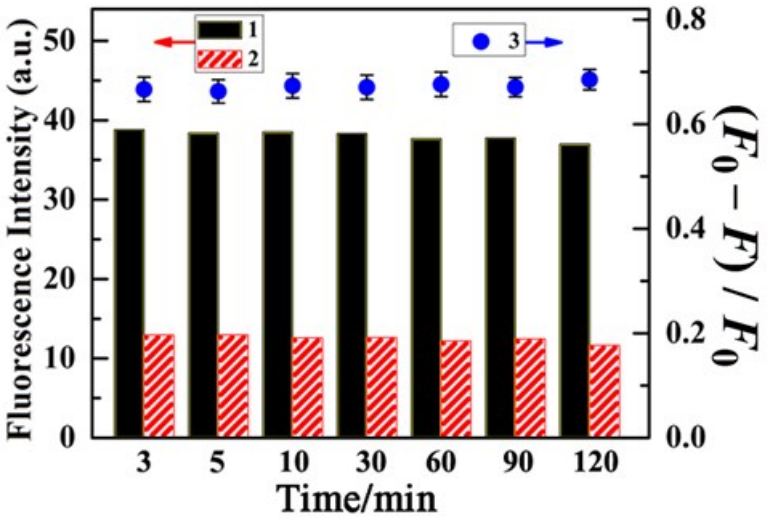

Fig. S4 Effect of reaction time of the system for detecting Fe^{3+}. Histogram represents the fluorescence intensity of reaction solutions in the absence (black, no. 1) and presence (red, no. 2) of Fe^{3+}. Scatter plot is the $((F - F_0) / F_0)$ (no. 3). Concentration of MRFPs is 0.02 mg mL^{-1}.

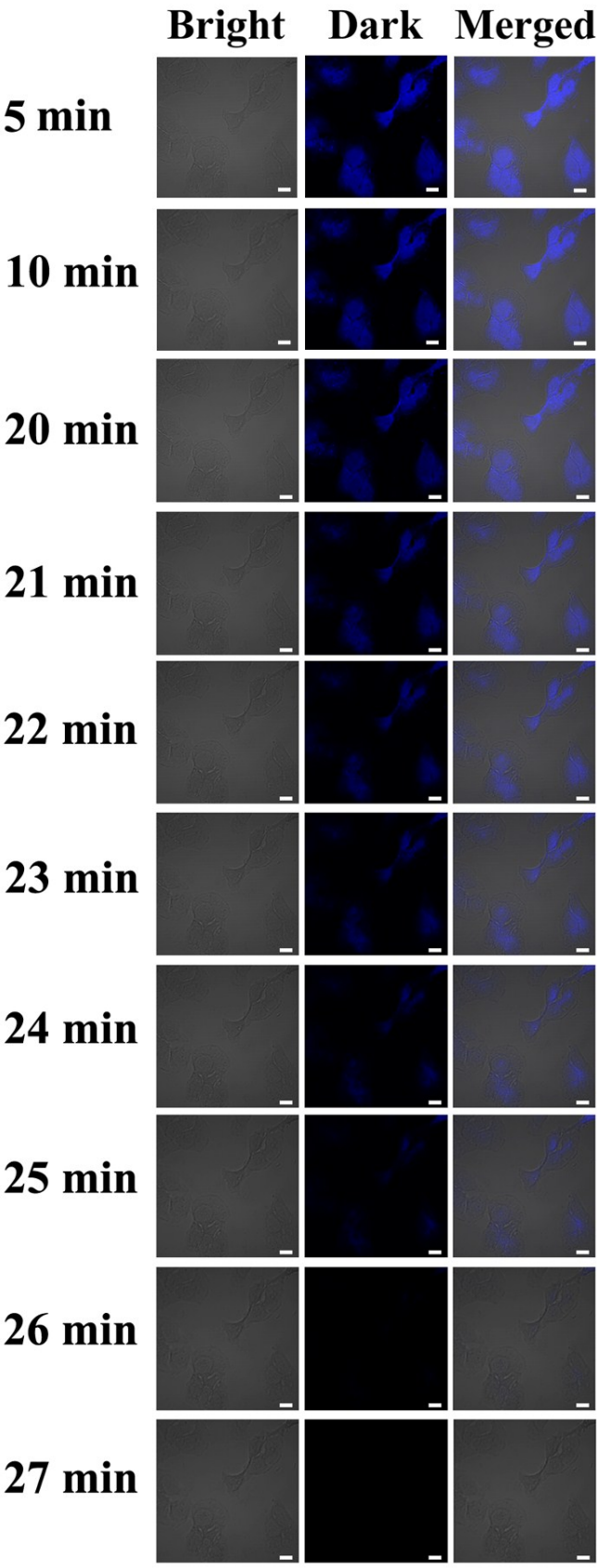

Fig. S5 Change of intracellular fluorescence emission over time after addition of Fe^{3+} to the culture medium. Concentrations of MRFPs and Fe^{3+} are 1 mg mL^{-1} and 10 mM, respectively. Scale bar is 10 μm.

Video legend

The process of the fluorescence quenching of MRFPs by Fe^{3+}