Supporting Information for

Dual-emission Fluorescent Silica Nanoparticle-based Probe for Rapid and Ultrasensitive Detection of Cu^{2+}

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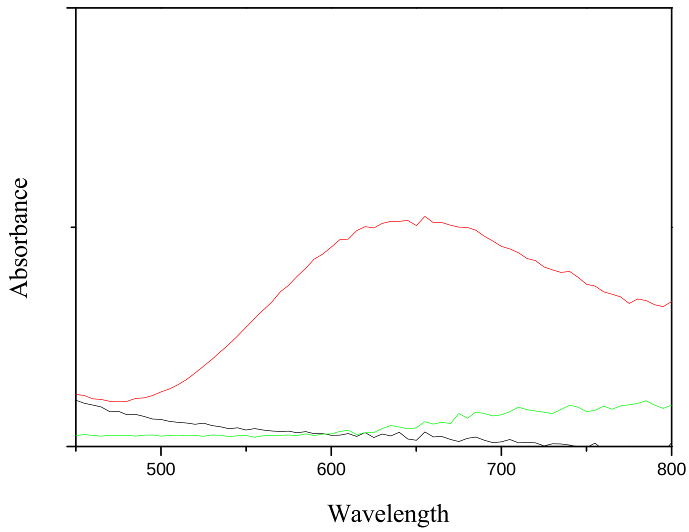

Figure S1. Absorption spectra of Cu^{2+} complex to match with the emission band of RBITC (580 nm). UV-vis spectra of 0.3 mM Cu^{2+} (green line), the polymeric polyethyleneimine (black line), in ethanol/water (V/V = 2:1), and after the complexation of Cu^{2+} with the polymeric polyethyleneimine (red line).

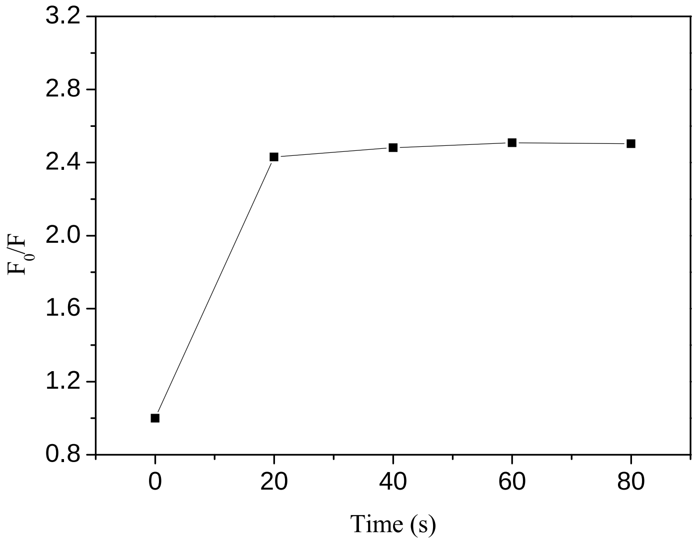

Figure S2. Plot of F_0/F against time in the presence of 3 μM Cu^{2+}.

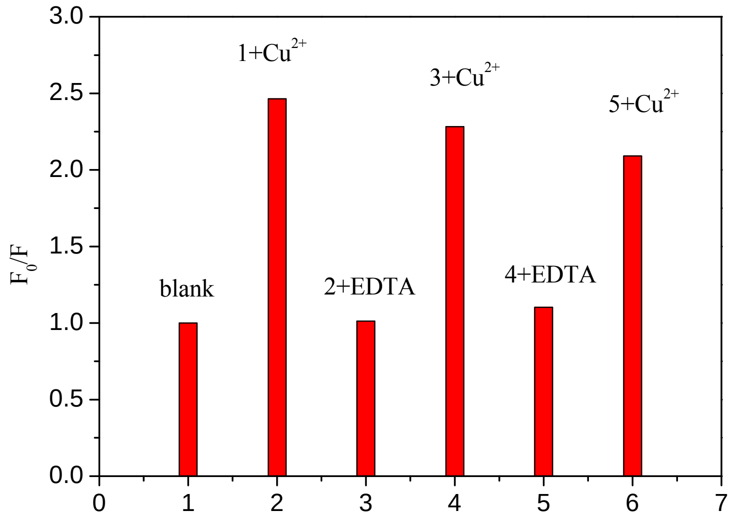

Figure S3. Reversibility of the dual-emission fluorescent silica nanoparticle-based nanoprobe.

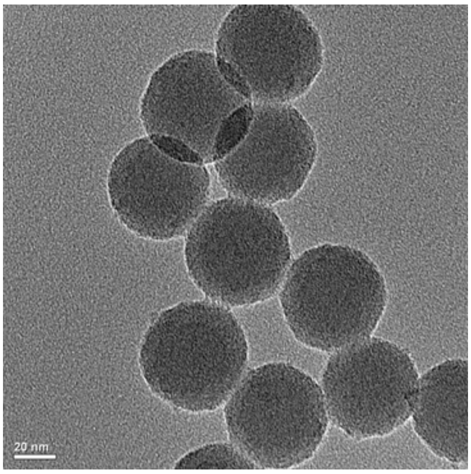

Figure S4. TEM image of the RBITC/PEI/FITC–doped silica nanoparticles after repeated use.

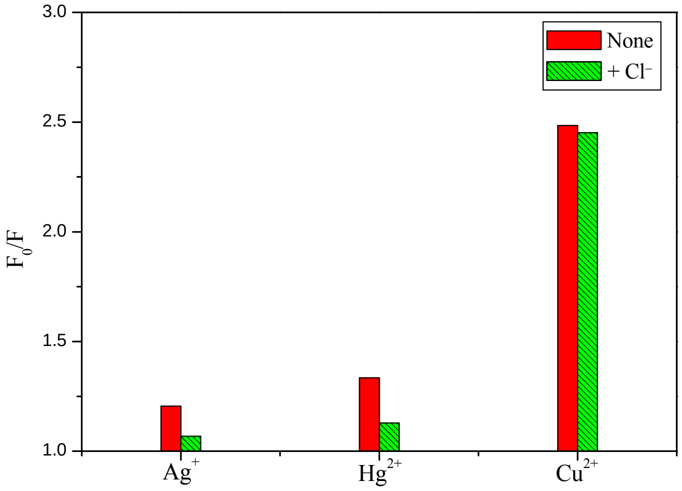

Figure S5. Fluorescence changes upon addition of Ag^{+}, Hg^{2+} and Cu^{2+} (the concentrations of the detected cations were 3 μM).

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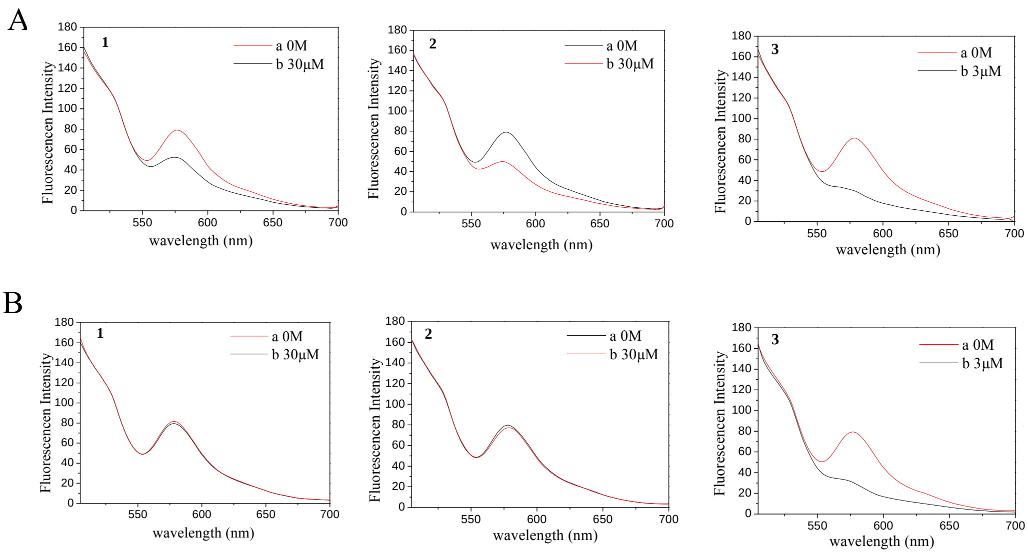

Figure S6. Fluorescence changes upon addition of different concentrations of (1) Co^{2+} (0, 30μM), (2) Ni^{2+} (0, 30μM), (3) Cu^{2+} (0, 3μM), without (A) and with (B) the addition of HNO_3 (0.4 mM).

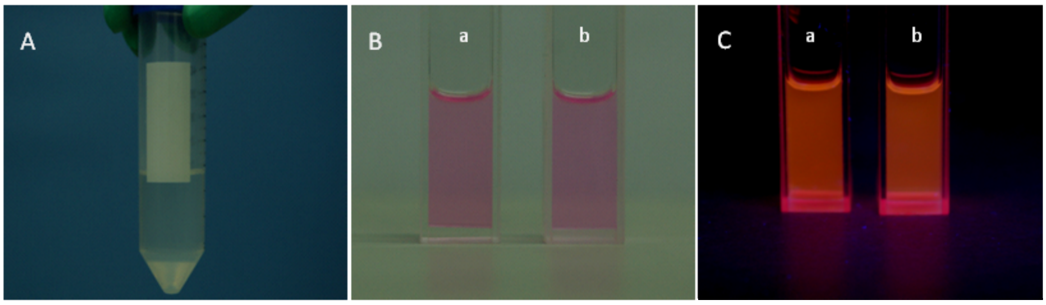

Figure S7. A) Photographs of the industrial waste water, B) visual color of the nanoparticles with addition of a) deionized water b) industrial waste water and C) the corresponding visual fluorescence color.

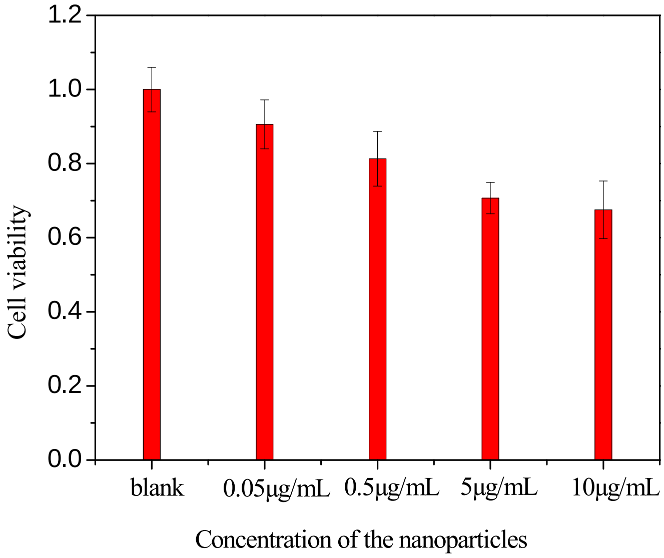

Figure S8. Cell viability of HeLa cells incubated with various concentrations of the dual-emission fluorescent silica nanoparticles.

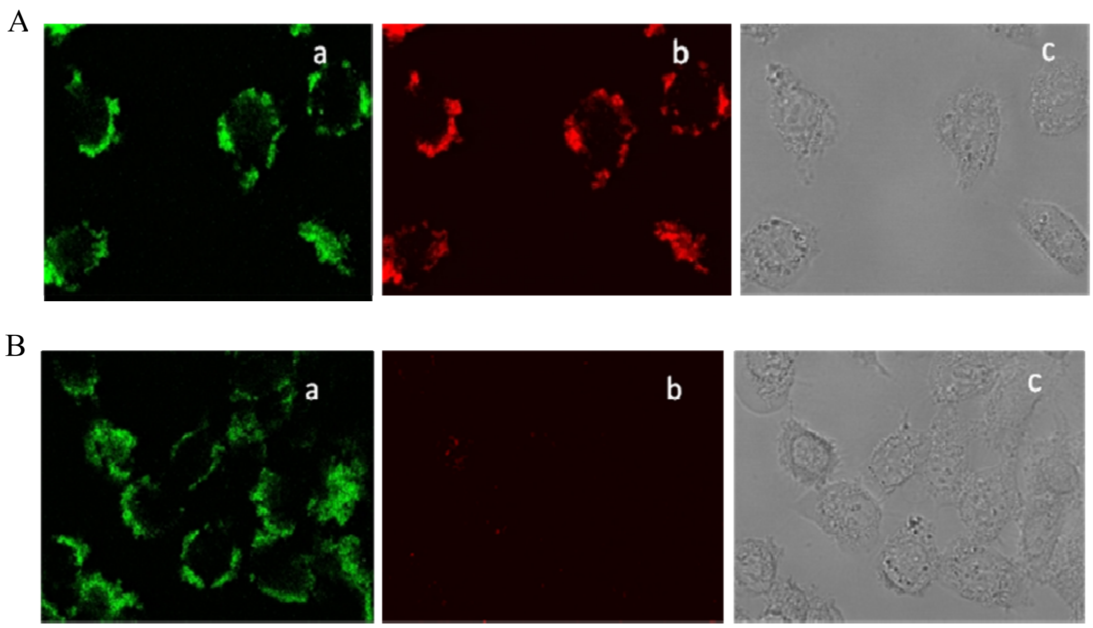

Figure S9. Confocal fluorescence microscopy images of HeLa cells incubated with the dual-emission fluorescent silica nanoprobe (A) before and (B) after the addition of Cu^{2+} (4 μM): (a) reference dye channel, (b) response dye channel, and (c) bright field image.