Electronic Supporting Information (ESI) for

A CuI modified Mg-coordination polymer as a ratiometric fluorescence probe for toxic thiol molecules

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**Fig. S1** Crystal structure of compound 1.

**Fig. S2** Solid state fluorescence spectra of compounds 1 and 1-CuI. Inset shows the photographs of 1 and 1-CuI.

**Fig. S3** Fluorescence intensities of 1 dispersed in varied solvents and the solution with various $10^{-2}$ M metal ions.
**Fig. S4** Fluorescence intensities of compound 1 according to different concentrations of CS$_2$ (a), 10$^{-2}$ M Fe$^{3+}$ ions (b), 10$^{-5}$ M o-nitrophenol (c) and trinitrophenol (d).

**Fig. S5** (a) Fluorescence spectra of complex 1-CuI dispersed in ethanol. (b) Time-dependent fluorescence spectra of complex 1-CuI suspended in ethanol. Inset: the corresponding CIE chromaticity diagram.
Fig. S6 UV-vis absorption spectrum of 1-CuI and FL spectrum of compound 1.

Fig. S7 SV plot for the quenching of compound 1-CuI by $10^{-2}$ M dithioglycol.
**Fig. S8** Solid-state PL spectra of 1-CuI with different mass concentrations of CuI (Excitation at 360 nm).

**Fig. S9** (a) FL spectra of 1-CuI-0.05 upon addition of various amounts of 10^{-2} M dithioglycol. (b) The linear relationship between the fluorescence intensity ratio (I420/I535) and the concentration of dithioglycol. (c) CIE chromaticity diagram for 1-CuI-0.05. (d) SV plot for the quenching of compound 1-CuI-0.05 by 10^{-2} M dithioglycol.
Fig. S10 FL spectra of 1-CuI upon addition of various amounts of $10^{-2}$ M pentane-1,5-dithiol.

Fig. S11 FL spectra of 1-CuI upon addition of various amounts of $10^{-2}$ M benzyl mercaptane.
**Fig. S12** FL spectra of 1-CuI upon addition of various amount of 10^{-2} M 2-amino benzenethiol.

**Fig. S13** FL spectra of 1-CuI upon addition of various amounts of 10^{-2} M 4-amino benzenethiol.
Fig. S14 FL spectra of 1-CuI upon addition of $10^{-2}$ M 1-methyltetrazole-5-thiol.

Fig. S15 Energy dispersive spectroscopy (EDS) of the dithioglycol treated 1-CuI sample. Inset is the elemental mapping images of Mg, Cu, S and I in the 1-CuI sample. Scale bar: 300 mm.
**Fig. S16** Energy dispersive spectroscopy (EDS) of the 2-propanethiol treated 1-CuI sample. Inset is the elemental mapping images of Mg, Cu, S and I in the 1-CuI sample. Scale bar: 300 mm.

**Fig. S17** Energy dispersive spectroscopy (EDS) of the 2-butanethiol treated 1-CuI sample. Inset is the elemental mapping images of Mg, Cu, S and I in the 1-CuI sample. Scale bar: 300 mm.

**Fig. S18** Energy dispersive spectroscopy (EDS) of the Cys treated 1-CuI sample. Inset is the elemental mapping images of Mg, Cu, S and I in the 1-CuI sample. Scale bar: 300 mm.
Fig. S19 Fluorescence decay profiles for 1-Cul and the thiols treated samples monitored at 420 nm (a) and 535 nm (b), respectively.