Electronic Supplementary Information for

# A novel dinuclear ruthenium(II)-copper(II) complex-based luminescence probe for hydrogen sulfide

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## Luminescence imaging of intracellular $H_2S$ in living cells using $[Ru(bpy)_2(phen\text{-}cyc)Cu](PF_6)_4$ as a probe

The probe $[Ru(bpy)_2(phen\text{-}cyc)Cu](PF_6)_4$ was used for the luminescence imaging of intracellular $H_2S$ in living HepG2 cells. After the cells were incubated with $[Ru(bpy)_2(phen\text{-}cyc)Cu](PF_6)_4$ (100 μM) in Dulbecco's modified Eagle's medium (DMEM) containing 0.5% DMSO as a cosolvent for 3 h at 37 °C in a 5% $CO_2$/95% air incubator and then washed with an isotonic saline solution consisting of 140 mM NaCl, 10 mM glucose and 3.5 mM KCl, and further incubated with the isotonic saline solution containing NaHS (100 μM) for another 15 min. The cells were subjected to the luminescence imaging measurement on a Nikon TE2000-E

luminescence microscope.

Fig. S1 shows the bright-field and luminescence images of the cells in the absence and presence of $H_2S$. In the presence of $H_2S$, the clear red luminescence from the cells was observed, while no luminescence could be observed in the absence of $H_2S$. This results indicate that $[Ru(bpy)_2(phen\text{-}cyc)Cu](PF_6)_4$ can permeate through the cell membrane into the cells for imaging the intracellular $H_2S$ molecules with red luminescence as a signal.

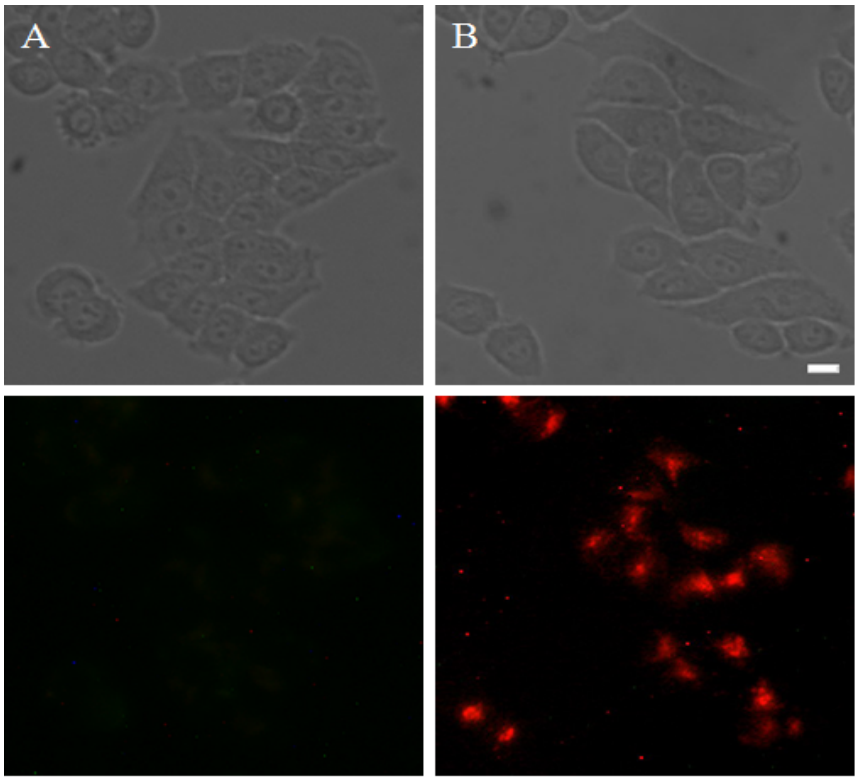


**Fig. S1.** Bright-field (top) and luminescence (bottom) images of the $[Ru(bpy)_2(phen\text{-}cyc)Cu](PF_6)_4$ -loaded HepG2 cells in the absence (A) and presence (B) of $H_2S$. The scale bar represents 10 μm.