Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Switchable Catalysis and CO_2 Sensing by Reduction Resistant, Luminescent Copper-Thiolate Complexes

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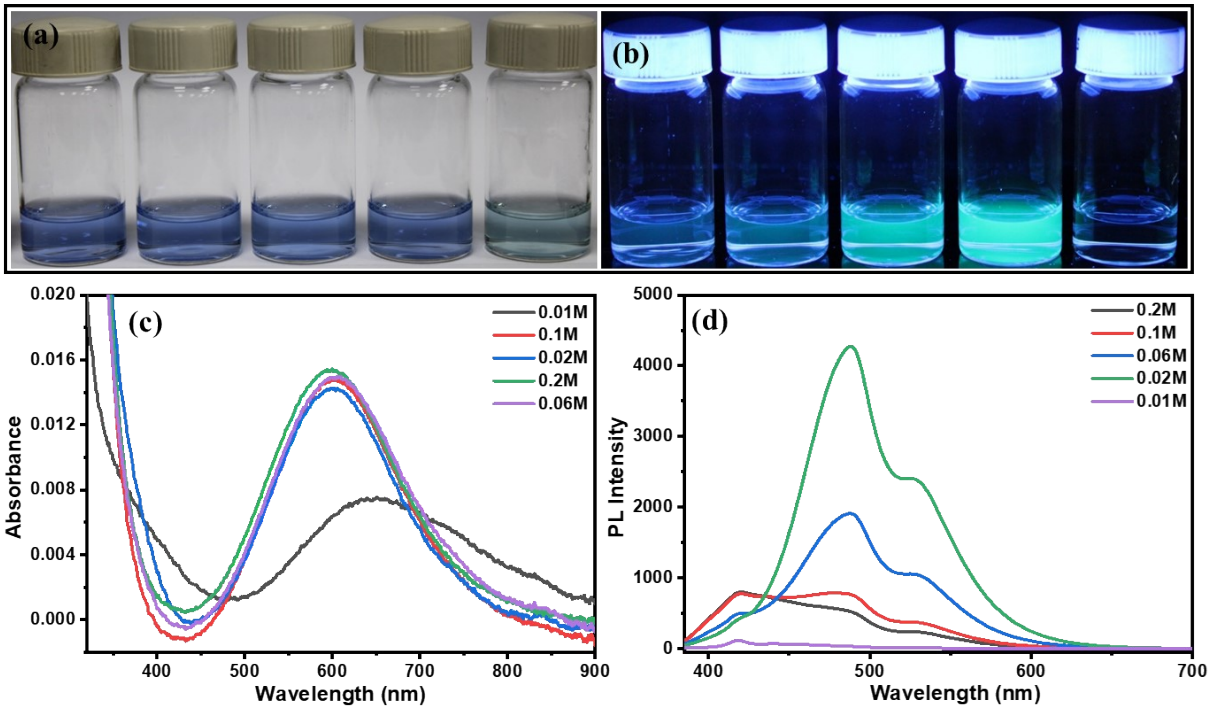

Fig. S1 Photographs of the copper-thiolate complexes under **(a)** visible and **(b)** UV light. These complexes were synthesized at different concentrations of NaOH between 0.2M to 0.01M (from left to right). **(c)** UV-Vis and **(d)** PL spectra of the copper-thiolate complexes were synthesized at different concentrations of NaOH.

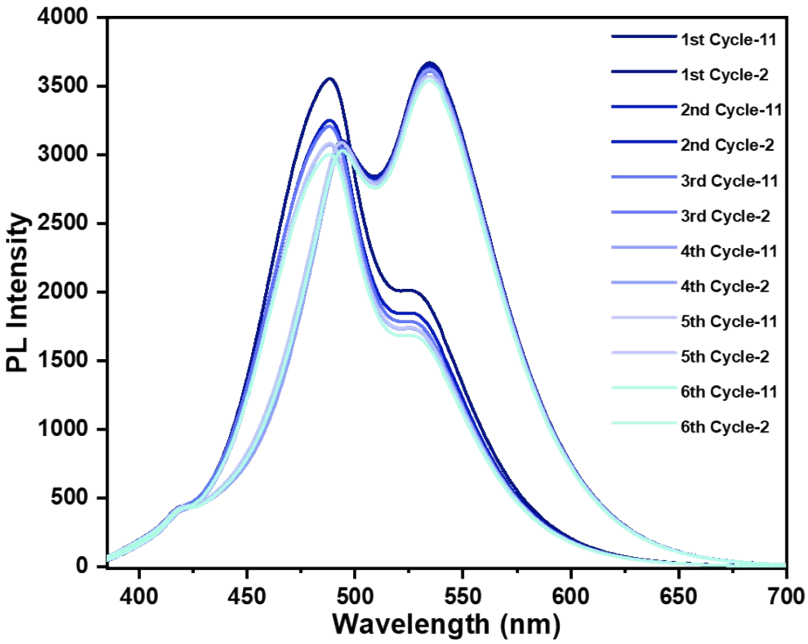

Fig. S2 PL spectra of the Complex upon switching (6 cycles).

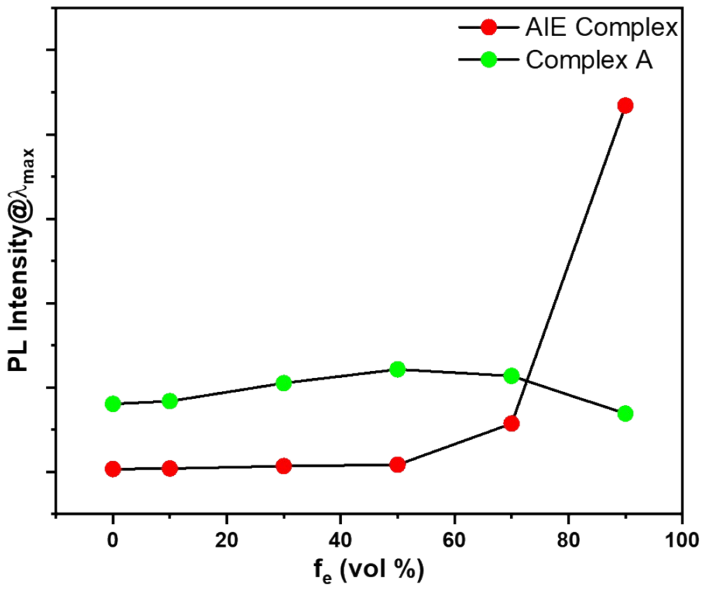

Fig. S3 Relationship between the PL intensity at λ_{max} and f_e (vol.%) [$f_e = vol_{ethanol} / (vol_{ethanol} + vol_{water}$] for **Complex A** ($\lambda_{max}$ = 535 nm) and AIE type Cu-thiolate (GSH) complex (λ_{max} = 603 nm). These AIE-type Cu-thiolate complexes were prepared by dropwise addition of 5 mL $CuSO_4$ (10mM) into 5 mL GSH (50 mM) at room temperature under stirring followed by adjusting the pH to 6 by adding NaOH solution (1 M).

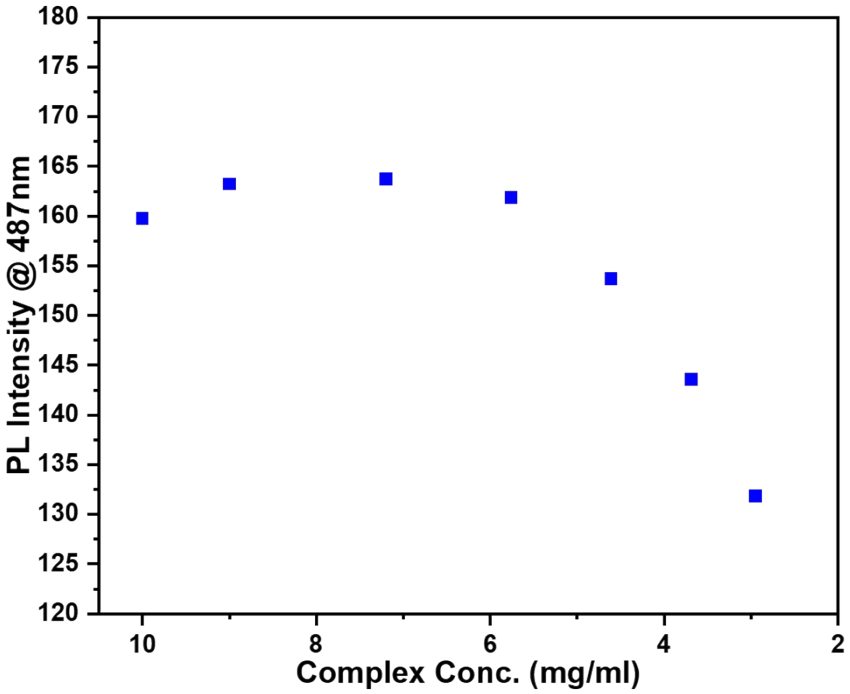

Fig. S4 Concentration dependent PL intensity of **Complex B** monitored at 487 nm.

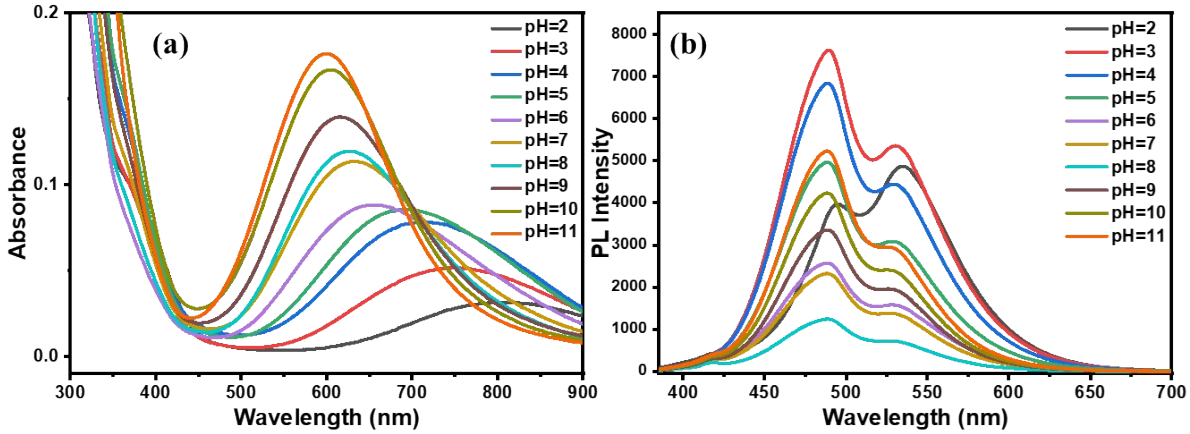

Fig. S5 (a) UV-Vis absorbance spectra and **(b)** PL spectra of the Complex A after changing its pH from 2 to 11.

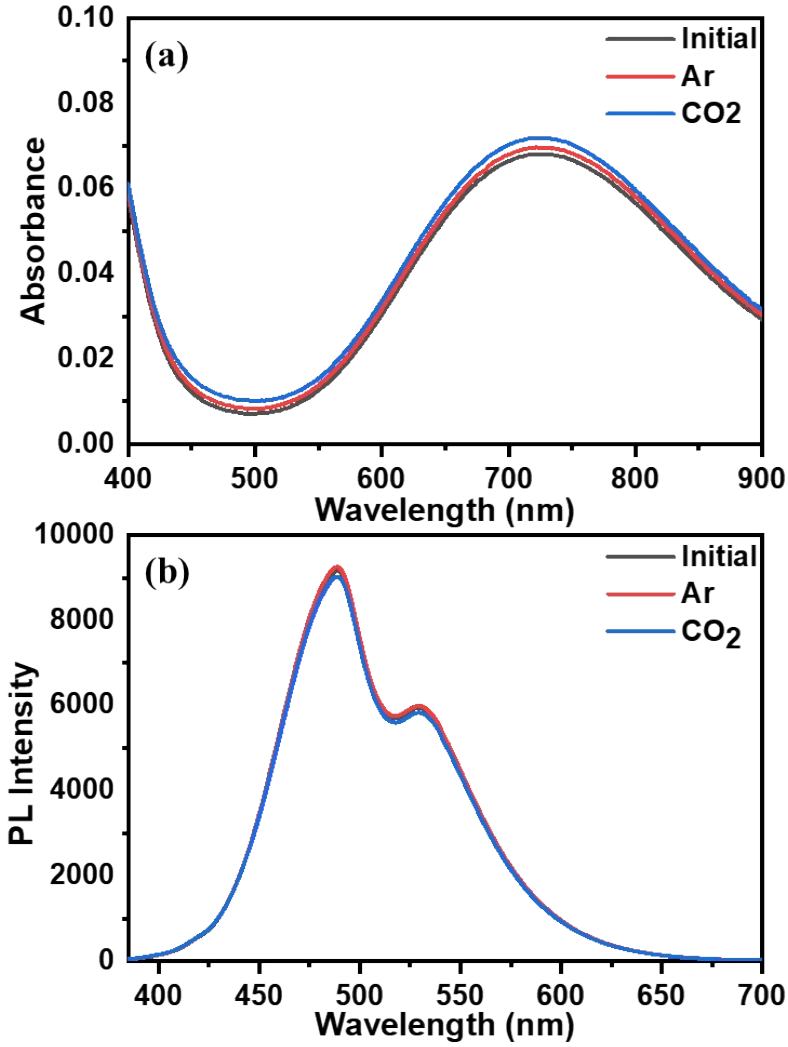

Fig. S6 (a) UV-Vis absorbance and **(b)** PL spectra of Complex B at pH = 4 after purging with Argon and CO_2 gas.

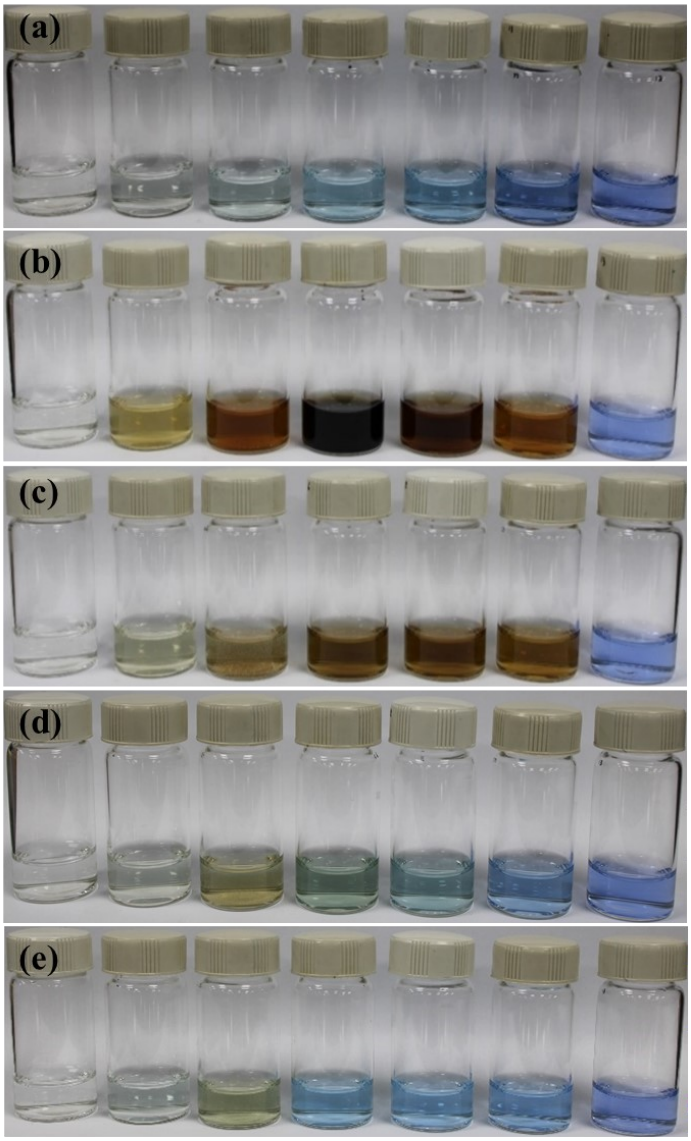

Fig. S7 Photographs of the Complex at different pH (=2 ,3 ,4 ,6 ,8 ,10 & 11 from left to right) **(a)** without $NaBH_4$ and after incubating it with 30µL of 100mM $NaBH_4$ solution with incubation time, **(b)** 15min, **(c)** 1hr, **(d)** 10hr, and **(e)** 24hr.

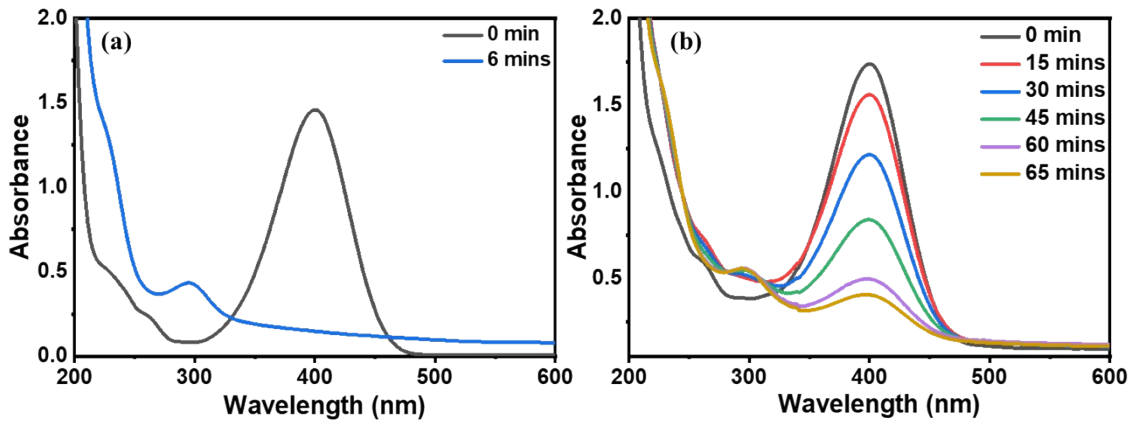

Fig. S8 UV-Vis absorbance spectra showing the time-dependent 4-NP reduction by **(a) Complex A** and **(b) Complex B** after 1st cycle of switching.

Fig. S9 Photograph of **Complex B** after adding H_2O_2.

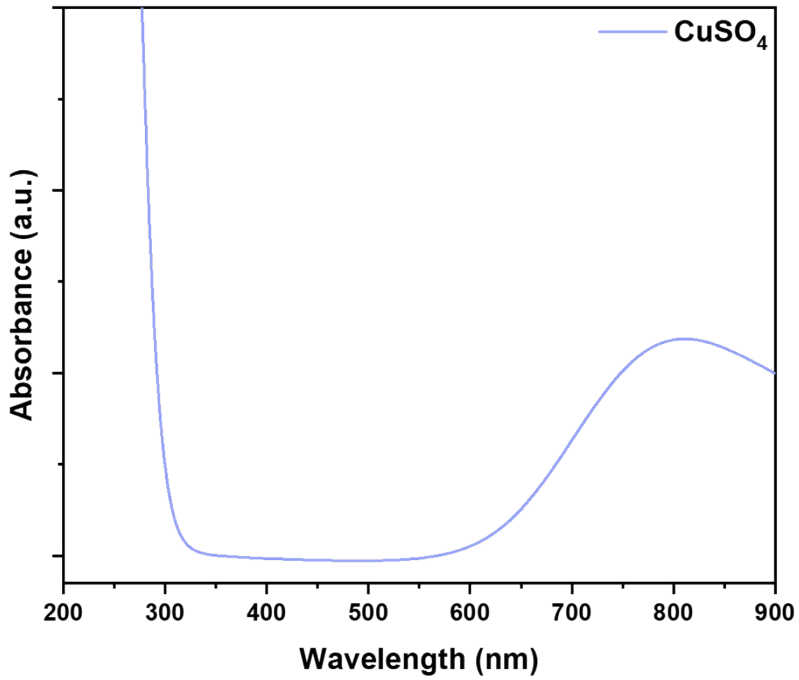

Fig. S10 UV-Vis absorbance spectra of the aqueous solution of $CuSO_4$.