**UV-Vis Titration Procedures**

Batch titrations were set up for all samples. Stock solutions of **L1**, **L2**, **L3**, and **L4** were made to 0.001 M solution in 40 mL of dimethylformamide (DMF). Metal stock solution of both Cu(II) acetate or $UO_2^{2+}$ acetate were made to 0.001 M in 25 mL of DI $H_2O$. For each ligand batch contained a ligand blank with no metal followed by 14 other samples of 1 equivalent of ligand and introducing 0.1 equivalents of metal stock solution all the way up to 1 equivalents of metal, after reaching 1 equivalent of metal, separate equivalents were added until reaching 5 equivalents of metal. All samples were made and allowed to sit for 24 hours then UV-vis spectra were taken. After the first spectra was taken, 1 µL of 0.1 M TEA in DMF was added to the samples to help facilitate deprotonation. The samples were allowed to sit for 1 hour after addition of TEA then UV-Vis spectra were taken of the samples. All samples were 5 mL in volume and contained 10% $H_2O$.

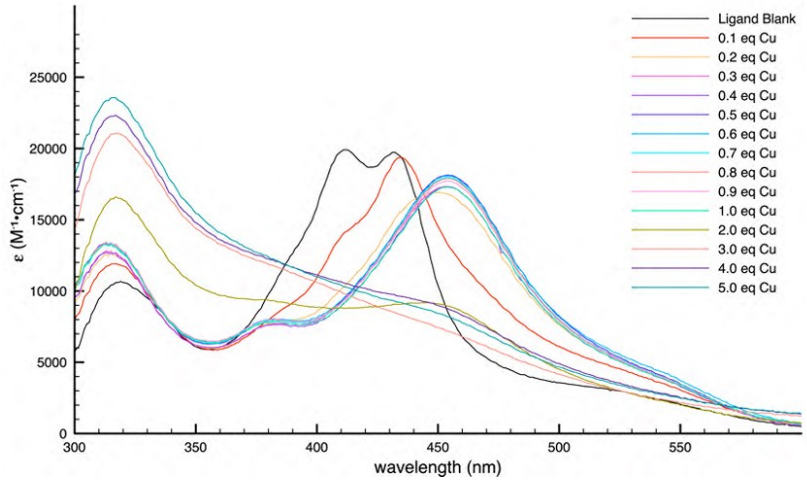


*Figure S9. Salimidizine (**L1**) titration with Cu(II)*

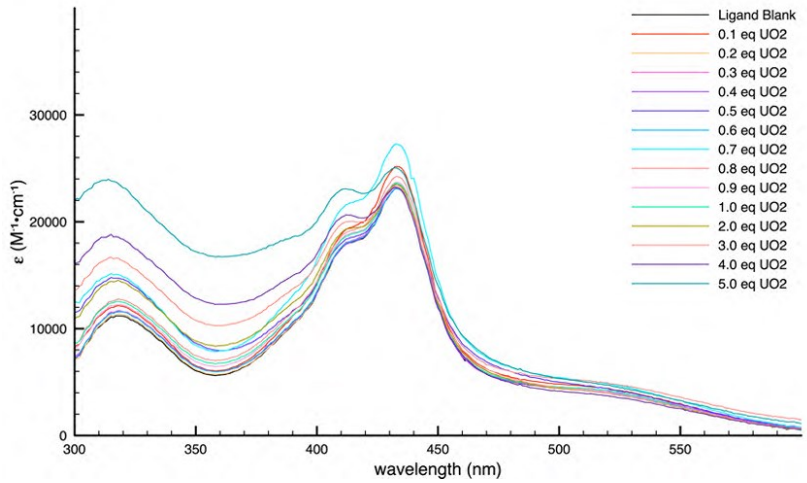


*Figure S10. Salimidizine (**L1**) titration with $UO_2$*

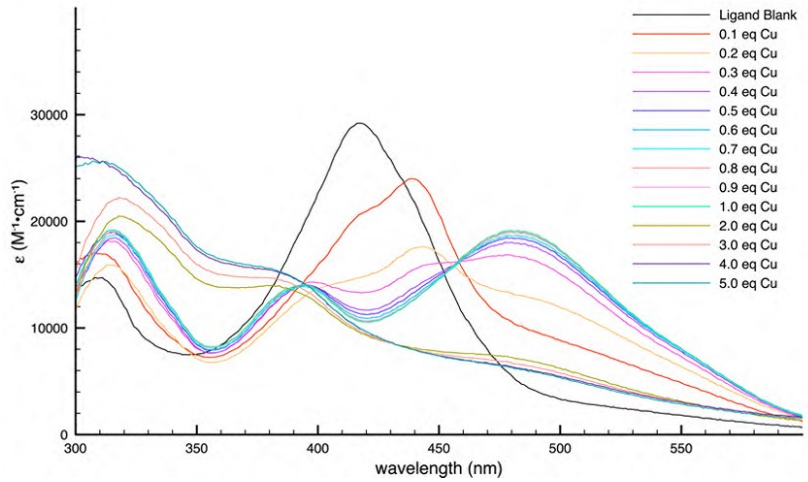


*Figure S11. DTB salimidizine (**L2**) titration with Cu (II)*

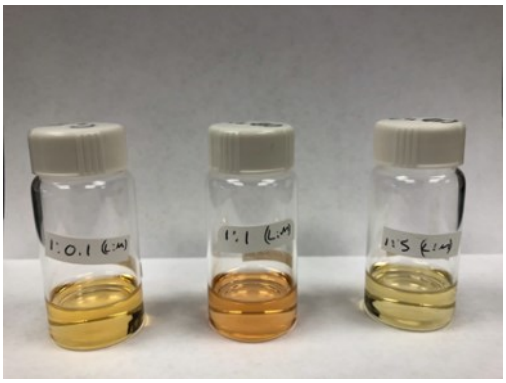

*Figure S12. Colorimetric sensing of $Cu^{2+}$ in solution.*

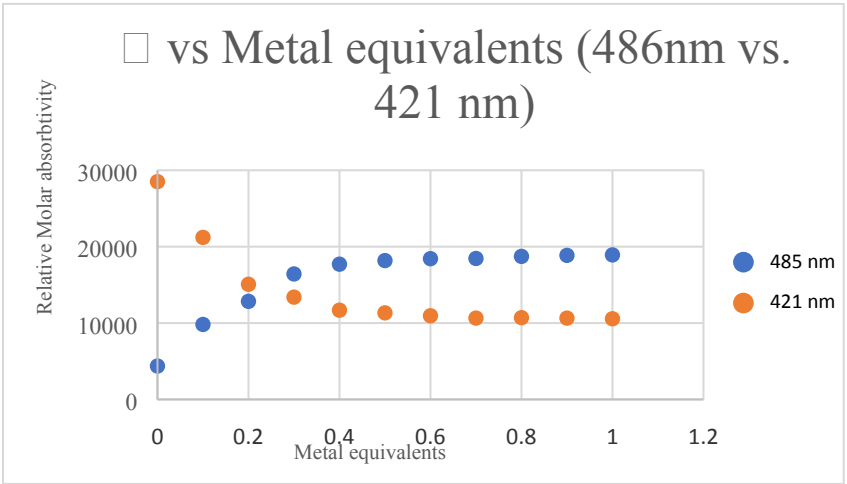


*Figure S13. ε vs Metal equivalents at 486 nm vs. 421 nm*

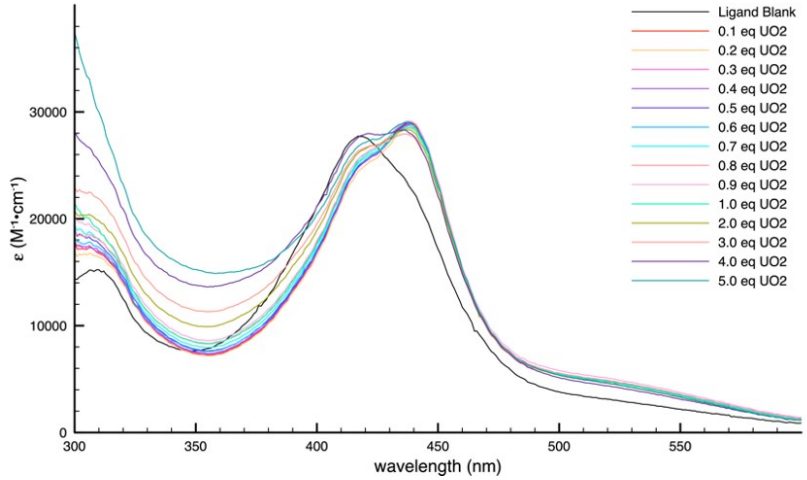


*Figure S14. DTB salimidizine (**L2**) titration with $UO_2$*

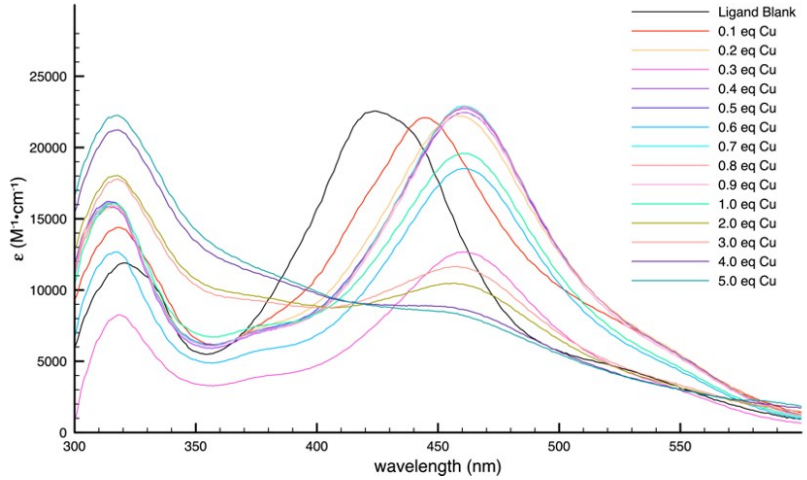


*Figure S15. OMe salimidizine (**L3**) titration with Cu (II)*

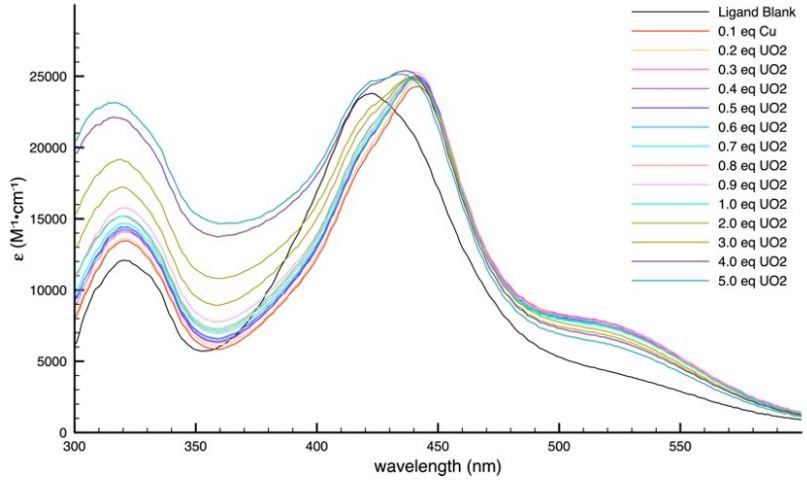


*Figure S16. OMe salimidizine (**L3**) titration with $UO_2$*

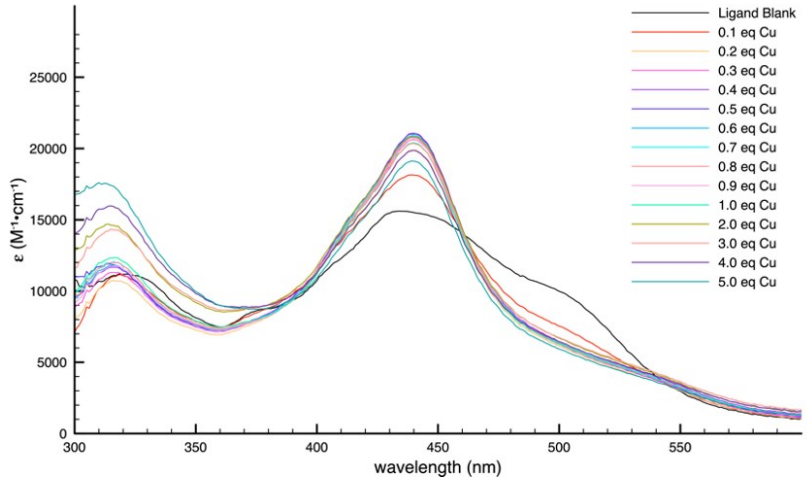


*Figure S17. CN salimidizine (**L4**) titration with Cu (II)*

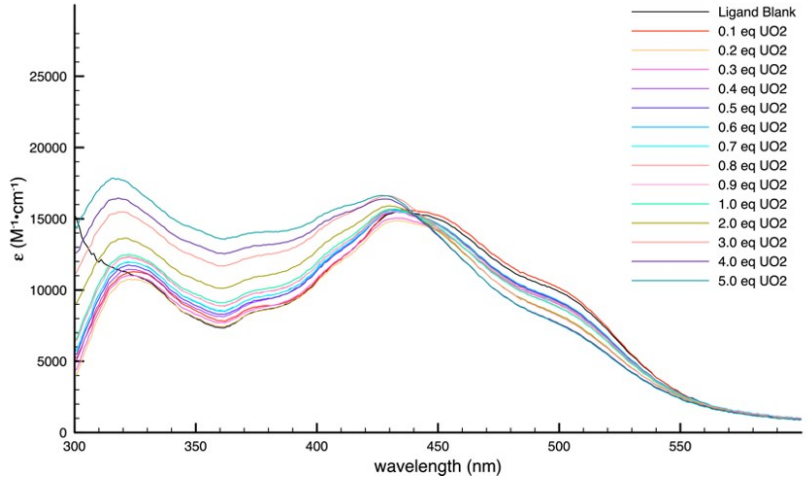


*Figure S18. CN salimidizine (**L4**) titration with $UO_2$*