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Calcein Blue as a Fluorescent Probe for Metal

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This project was designed to determine if a linear relationship exists between the concentration of various divalent metal ions and a fluorescing agent called Calcein Blue. This was tested with fluorescent lifetimes because they are independent of the fluorescing agent's concentration. We tested the metal ions Mg, Ca, Sr, Ba, Zn, Cd, Ni, and Cu.

We found no statistically significant shift in Calcein Blue's lifetimes when Mg and Ca were added. Small shifts did occur when Sr, Ba, Zn or Cd were added, but these shifts did not show a linear dependence on metal concentration as we had hoped. When Ni and Cu were added to Calcein Blue fluorescence was quenched and no lifetime could be measured.