

# Chemistry Department Seminar

Friday November 20, 2009

1:00pm-2:00pm

Sequoia 452

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## **"Investigation into the Unique Coordination and Spectroscopic Properties of Lanthanide Ions with Dipyrldylamine and Dipicolylamine Based Ligands "**



The main objective of this project was to develop compounds that could sensitize lanthanide ion luminescence for possible applications as biological sensors and optical amplifiers. Dipyrldylamine and dipicolylamine based starburst compounds were synthesized and characterized. X-ray crystallography of ligands and a lithium complex, as well as photophysical properties were investigated and revealed that the compounds that were developed did not sensitize lanthanide ion luminescence. Isolation of the first metal complexes showed no coordination was present in the solid-state structure, but rather the ligand participated in unprecedented outer-sphere anion-p interactions with lanthanide chloride and lanthanide nitrate moieties. In addition to solid-state structures, extensive solution studies were carried out with the dipicolylamine triazine molecule in order to probe the properties of these unique interactions and confirm that no coordination to lanthanide ions was present in these systems in solution.