

CHEMISTRY  
ARTS AND SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: 03/01/2018

PROJECT TITLE: Bio-inspired, light-activated metal complexes

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**Project Description**

Siderophores are molecules that bacteria produce to sequester iron as Fe(III). Siderophores made by some marine bacteria use a photochemical mechanism to reduce and release the iron in the Fe(II) oxidation state. These siderophores get their photochemical activity from an alpha-hydroxyl acid (AHA) group among the iron binding substituents. Inspired by these siderophores we have developed new metal-binding molecules (chelates) that include AHA groups. These chelates form interesting structures with a variety of metals, some of which are photochemically active, including Fe(III), U(VI), and Ti(IV). These molecules can potentially be used for a number of light-triggered applications including catalysis and chemotherapy. A student working on this project will have the opportunity to engage in organic and inorganic synthesis, different methods of determining photochemical quantum yields, and various analytical, structural and physical methods for characterizing the molecules including electrochemistry and various spectroscopic methods.