

SOFIA SHUBERT-ZULETA

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Education

University of Texas at Austin

Graduate Student, Department of Chemistry

Fall 2019 -
Present

University of Texas at Austin

Bachelor of Science, Chemistry
Elements of Computer Programming Certificate

Class of Spring
2019

Research Experience

Milliron Research Group

Dr. Delia Milliron

University of Texas
October 2019 - present

- Plasmon driven photocatalysis using doped metal oxide nanoparticles

Rose Research Group

Dr. Michael Rose

University of Texas
Feb. 2017- May 2019

- Synthesis and design of stibine ligands and subsequent coordination with transition metals to form complexes with tunable luminescent capabilities as well as possible catalytic ability
- Use Density Functionalization Theory (DFT) to simulate theoretical electronic and structural properties
- Senior thesis based on developing a synthetic method for tripodal stibine ligands to be coordinated to light transition metals.

Department of Energy, Science Undergraduate Research Internship

Dr. Ashley Gaulding

National Renewable
Energy Lab; Golden, CO
Summer 2018

- Synthesis and characterization of perovskite thin films doped with colloidal semiconducting quantum dots
- Varying composition of perovskite material in order to observe changes in optics and charge transport capabilities

Functional Materials of Metal Complexes

Dr. Richard Jones, Dr. Lauren De Pue

University of Texas
Jan. 2016 – Dec. 2016

- Focused on the synthesis and classification of novel functional materials with photoluminescent properties
- Utilize X-Ray crystallography to characterize and determine structures of crystals produced
- Design and synthesize luminescent lanthanide complexes
- Study the relationship between photophysical properties and the corresponding coordination structures obtained through X-ray crystallography

Research Methods

Dr. Ruth Shear

Fall 2015

- Preparatory course intended to allow students to independently research topics of interest individually and in groups
- Presented research proposal in front of audience of 100 about identifying anti-venom chemical component in *Acalypha indica* leaf

Publications

- Syntheses, Structures, and Characterization of Nickel(II) Stibines: Steric and Electronic Rationale for Metal Deposition, which was also published in *Inorganic Chemistry (Inorganic Chemistry)* 2018
- Thermoluminescent Antimony-Supported Copper-Iodo Cuboids: Approaching NIR Emission via High Crystallographic Symmetry (*Inorganic Chemistry*) 2019

Industry Experience

Dispersol Technologies

Summer 2019

Supervisor: Dr. Daniel Ellenberger

- Responsible for lab technician duties – day to day upkeep of analytical labs
- Compiled patent data and market research for potential new drug development projects
- HPLC – RI method development

Leadership

- American Chemical Society UT Student Affiliates, President 2017-present
- American Chemical Society UT Student Affiliates, Outreach Officer 2016-2017
- Founding member of Bold Women in Chemistry program at UT Austin, 2017
continuing

Awards, Scholarships, and Presentations

- Accepted into American Chemical Society Scholars Program for 2018-2019
- Poster presentation in Inorganic Chemistry division at 2018 American Chemical Society National Conference
- Poster presentation at 2018 Undergraduate Research Forum, UT Austin
- Oral presentation at 2017 Gulf Coast Research Symposium, Rice University
- Oral presentation at 2017 UT Fall Undergraduate Research Symposium
- Outstanding Senior award from Central Texas ACS chapter
- Graduated with Research Distinction award from UT College of Natural Sciences
- Awarded Chemistry Department Research Fellowship for incoming graduate students

Skills

- Proficient coding abilities in object-oriented Python and Java, basic knowledge of HTML and Javascript.
- Data visualization and computational experience in Mathematica
- Experienced in Density Functionalization Theory (DFT) calculations using Firefly, Spartan and Gaussian computation software
- Trained in air-free chemistry techniques such as Schlenk line and glovebox usage
- Competent with purification techniques such as column chromatography and distillations
- Experienced with common lab techniques such as recrystallization, reflux and extractions
- Knowledgeable of analysis techniques including UV-Vis, GC/MS, IR, HPLC, CV and NMR
- Effectual scientific communication skills that include group collaboration, technical writing skills and scientific literature comprehension
- Experience in the synthesis and design of ligands and coordination complexes
- Proficient in common chemistry software with purposes including chemical illustration, (Chemdraw), NMR analysis (MestReNova) and scientific databases (Reaxys and Scifinder)