



**Skilled inorganic chemist, effective leader, and critical thinker. Passionate about mentoring future scientists and fostering student development. Experienced presenter and scientific writer. Enjoy and encourage effective collaboration.**

## EDUCATION

### Chemistry PhD Candidate

University of Illinois at Urbana-Champaign  
Advisor: Dr. Lisa Olshansky

*Fall 2018- Present*  
Champaign, IL  
*Expected Graduation:*  
*Dec 2023*  
*May 2018*  
Winter Park, FL

### B.A. in Chemistry

Rollins College  
Summa Cum Laude (3.95/4.00 GPA)  
Advisor: Dr. Laurel Goj Habgood

## SKILLS

### Technical

NMR Spectroscopy, including variable temperature  
Stopped-Flow UV-visible Spectroscopy  
FT-IR Spectroscopy  
Electrochemical Methods  
Air-free Schlenk and Glovebox techniques  
General inorganic and organic synthetic methods  
X-ray diffraction

### Non-Technical

Mentorship  
Leadership  
Time Management  
Working Effectively as a Team  
Public Speaking  
Scientific Writing  
Critical Thinking and Problem Solving

## RESEARCH EXPERIENCE

### Doctoral Research

University of Illinois at Urbana-Champaign  
Advisor: Dr. Lisa Olshansky  
*Fall 2018 – Present*

- Synthesis of biomimetic bis( $\mu$ -hydroxo)dicobalt complexes in which substituents on various ligands are modified to control the intramolecular hydrogen bonding network and subsequent proton and electron transfer capabilities
- Characterize complexes with NMR, FT-IR, EPR, and UV-vis spectroscopies and X-ray Crystallography, mass spectrometry and elemental analysis
- Trained in variable temperature NMR, Stopped-flow UV-vis spectroscopies, and electrochemical methods
- As a founding member, mentored fellow graduate students, aided in creation of laboratory policies, and crafted guidelines for manuscripts and general operating protocols

### 3M Research and Development Intern

*Corporate Research Analytical Lab*  
Supervisor: Wayne Maurer  
Mentors: Gereon Yee and Mark McCormick

- Investigated the reaction mechanism of a redox mediated polymerization process found in numerous 3M structural adhesives primarily using NMR techniques
- Collaborated with product developers to transfer the findings of these fundamental studies into potential changes for the formulation of those structural adhesives
- Disseminated findings through internal written report, poster, and presentation



### **Undergraduate Research**

Rollins College  
Advisor: Dr. Laurel Goj Habgood  
Fall 2016 – Spring 2018

- Prepared and presented undergraduate thesis titled “Developing Iron Catalysts for Organic Reactions”
- Synthesized and characterized iron-NHC complexes utilizing air-free techniques
- Screened the complexes for catalytic ability on Kumada, Aza-Michael, and Michael additions
- Analyzed catalytic activity of iron complexes in cross-coupling reactions utilizing gas chromatography and <sup>1</sup>H-NMR for a pedological experiment

### **Georgia Tech REU**

Georgia Institute of Technology  
Advisor: Dr. Joseph Sadighi  
Mentor: Dr. Kevin Omolo  
Summer 2017

- Synthesized PNP pincer ligands and formation of complexes with palladium and cobalt utilizing air-free techniques
- Characterized the complexes with <sup>1</sup>H-NMR, <sup>31</sup>P-NMR and FT-IR spectroscopies

### **Summer Program for the Advancement of Research Knowledge**

Moffitt Cancer Center  
Advisor: Dr. Jin Q. Cheng  
Mentor: Dr. Yajuan Li  
Summer 2016

- Screened modified small molecule inhibitors on lung cancer cell lines using MTT assays, western blots, luciferase assays, and cell migration assays

## **PUBLICATIONS**

**Alyssa A. DeLucia**<sup>++</sup>, Kimberly A. Kelly<sup>++</sup>, Kevin A. Herrera, Danielle L. Gray, and Lisa Olshansky. These <sup>++</sup> authors contributed equally to the work. Intramolecular Hydrogen-Bond Interactions Tune Reactivity in Biomimetic Bis( $\mu$ -hydroxo)dicobalt Complexes. *Inorganic Chemistry*. **2021**, *60*, 15599–15609.



Verónica A. Segarra, Alexandra A. DeLucia<sup>++</sup>, **Alyssa A. DeLucia**<sup>++</sup>, Renee Fonseca<sup>++</sup>, Michael P. Penfold<sup>++</sup>, Katlyn M. Sawyer<sup>++</sup>, Cecelia M. Harold, Courtney Reddig, Ashima Singh, Ibrahim Musri, Jacqueline C. Wright, J. J. Leissing, Samantha Dennis, Mary Catherine Pflug, Niki Fogle, Monique Moore, Sade Sims, Kelsey Matteson, Meredith Hein. These <sup>++</sup> authors contributed equally to the work. Self-Driven Service Learning: Community-Student-Faculty Collaboratives Outside of the Classroom. *Journal of Microbiology & Biology Education*. **2015**, *16*, 260-262.



## **POSTERS AND PRESENTATIONS**

**A. DeLucia**, G. Yee, M. McCormick. “Redox Mediated Polymerization of Structural Adhesives”. 3M, St Paul, MN. **2022**. 3M Internal Poster, Presentation, and Report.

**A. DeLucia**, K. Kelly, K.C. Khanadand, L. Olshansky. “Modeling Oxidase Metalloenzymes with dicobalt bis( $\mu$ -hydroxo) complexes” *Gordon Research Conference Bioinorganic Active Sites that Drive Challenging Chemical Conversions*, Newport, RI, **2022**. Poster.



K. Herrera, **A. DeLucia**, L. Olshansky. "Synthesizing Biomimetic Bis( $\mu$ -hydroxo)dicobalt Complexes" *3M Scholars Symposium*, Champaign, IL, 2021.

**A. DeLucia**, K. Omolo, J. Sadighi, L. Habgood. "Synthesis of Transition-Metal Catalysts with Diverse Potential Reactivity" *American Chemical Society National Meeting and Exposition*, New Orleans, LA, 2018. ABS # 2867652. Poster.

**A. DeLucia**, K. Omolo, J. Sadighi. "Synthesis of Unconstrained PNP Pincer Complexes for Potential use in Nitrogen Fixation" *Georgia Tech Research Experience for Undergraduates Symposium*, Atlanta, GA, 2017. Poster and Presentation.

**A. DeLucia**, Y. Li., J. Q. Cheng. "Analysis of Small Molecule Inhibitor of MicroRNA-155" *Moffit Cancer Center Research Day*, Tampa, FL, 2016. Presentation.

## TEACHING ASSISTANT

---

### **Inorganic Laboratory**

University of Illinois at Urbana-Champaign  
Spring 2019 and 2020

- Taught multiple sections consisting of 10-12 students fundamental inorganic synthetic techniques and instrumentation
- Graded laboratory reports and provided detailed feedback

### **Inorganic Lecture**

University of Illinois at Urbana-Champaign  
Fall 2019

- Held office hours and graded homework and exams
- Lectured when professor was unavailable
- Provided review sessions for students prior to exams

### **General Chemistry Lecture**

University of Illinois at Urbana-Champaign  
Fall 2018

- Ranked as Excellent by Students
- Led multiple discussion sections consisting of 22 students
- Reviewed concepts taught in the main lecture
- Graded quizzes and homework
- Provided review sessions for students prior to exams

## TUTOR

---

*Selected as a tutor by professors at Rollins College for one-on-one tutoring in the listed subjects*

Physical Chemistry  
Organic Chemistry

Principles of Physics  
General Chemistry

## SCIENCE EDUCATION OUTREACH

---

### **St. Elmo Brady Academy Volunteer**

Fall 2021–Spring 2022

- Worked closely with program leaders to plan, adapt, and lead hands-on science activities for third grade students at Booker T. Washington Elementary School



**Women's Chemist Committee  
Day Camp for Girls Station  
Leader**

University of Illinois at Urbana-  
Champaign  
*Summer 2019, December 2020,  
June 2021*

- Led interactive liquid nitrogen demonstration
- Planned, prepared notebook pages, and instructed an experimental station over Zoom for middle schoolers. Ordered and prepared supplies for individual packaging

**University of Illinois Virtual  
Undergraduate Research  
Symposium Judge**

University of Illinois at Urbana-  
Champaign  
*April 2020*

- Assessed undergraduate virtual research presentations for whether they should be recommended for awards and provided detailed feedback

**East Central Illinois ACS  
Undergraduate Research  
Conference Judge**

University of Illinois at Urbana-  
Champaign  
*November 2019 and 2021*

- Interacted with undergraduate presenters from various universities and asked probing questions about their research
- Assessed their poster presentations for whether they should be recommended for awards

**Encouraging Tomorrow's  
Chemists**

University of Illinois at Urbana-  
Champaign  
*Spring 2018 and Fall 2019*

- Led interactive science demonstrations for middle school students in a classroom setting

**Teague Middle School Science  
Fair Judge**

Rollins College  
*Spring 2018*

- Through Rollins College SAACS, assessed Science Fair posters against the given criteria and provided help feedback

**Halloween Howl Station Leader**

Rollins College  
*Fall 2016 and 2017*

- Organized volunteers and planned a station at Rollins College's community Halloween festival with SAACs. Led children in simple chemistry demonstrations like making slime and coffee filter butterflies

**Orlando Science Center Cell Day  
Station Leader**

Rollins College  
*Spring 2015*

- Prepared a presentation and materials for a station geared toward elementary and middle school children focused on fundamental cell functions in celebration of Cell Day
- Experience was reflected in a journal article

---

**MENTORSHIP**

*Certified Mentor by University of Illinois at Urbana-Champaign Graduate College*

**Goldwater Ambassador Program  
Mentor**

- Form connections with schools that are underrepresented in the Goldwater Scholarship



**ADJUST Mentoring Program**

University of Illinois at Urbana-Champaign  
Fall 2021

- Mentor undergraduates from those schools in one-on-one meetings that focus on applying for scholarships, internships, and graduate school
- One-on-one bimonthly meetings with an assigned first-year Chemistry PhD student
- Aided in their adjustment from undergraduate to graduate school by discussing a range of topics from living situations to choosing a laboratory group

**Undergraduate Mentoring**

University of Illinois at Urbana-Champaign  
Fall 2020 – Spring 2022

- Trained an undergraduate student on laboratory techniques relevant to my research and nontechnical skills involved with research such as maintaining a laboratory notebook, reading scientific literature, writing manuscripts, making presentations, and presenting

**Women's Chemist Committee Mentor**

University of Illinois at Urbana-Champaign  
Fall 2019

- Met with younger women in the chemistry PhD program in a group setting to support one another

**AWARDS**

---

Phillip W. Rhymer Graduate Fellowship for Outstanding Inorganic Preliminary Exam and Research	2021
NSF GRFP Honorable Mention	2020
Department of Chemistry Robert J. Morris Travel Award	2020
R. C. Fuson University of Illinois Graduate Fellowship	2019
Roger Adams University of Illinois Graduate Fellowship	2018
American Institute of Chemists Outstanding Senior Chemistry Major Award, <i>Rollins College</i>	2018
ACS Undergraduate Award in Analytical Chemistry, <i>Rollins College</i>	2018
Goldwater Scholar	2017
George Allen Award for Outstanding Undergraduate Research, <i>Rollins College</i>	2017
Thomas R. Baker Memorial Prize for Most Promising Junior in Chemistry, <i>Rollins College</i>	2017
ACS Undergraduate Award in Inorganic Chemistry, <i>Rollins College</i>	2017

**EXTRA-CURRICULAR**

**Science Policy Group Member**

University of Illinois at Urbana-Champaign  
Fall 2021 – Present

- Aided in planning professional development events for members
- Co-led an investigation with fellow members on University of Illinois's handling of electronic waste

**Women in Chemistry Conference Planning Committee**

University of Illinois at Urbana-Champaign  
Summer 2021

- Designed the conference goodie bags and worked closely with vendors in ordering the promotional items
- Worked with SCS graphic design in modifying the conference logo



**Student Affiliates of American  
Chemical Society Chapter  
(SAACS)**

**President**

Rollins College

*2016-2018*

- Selected potential speakers for panels
- Co-planned and hosted the career speed dating panel
- Founding member in reviving the club from its decade hiatus
- Led and planned interactive demonstrations for National Chemistry Week at Rollins College
- Planned professional development events for members
- Engaged in science education outreach