Brandi James, B.S.

330-348-7470 – bajames96@gmail.com – Cincinnati, Ohio

Summary

- Onward-thinking physical organic chemist with 5+ years of research experience in photochemistry, and synthesis of minimally studied small organic materials (azides) leading to the discovery of fundamental mechanistic pathways.
- Planned several extracurricular events (outings, multi-departmental picnics, co-sponsored events, etc.) as *REU Liaison* for 25+ visiting scholars all while maintaining a limited budget, promoting safety, and ensuring inclusively of all persons.
- Superb soft skills that enhanced teaching and administrative skills of 8+ years including project management, safety expertise, experimental design, and maintaining collaborations at the University of Cincinnati.

Professional Highlights

- Spearheaded multiple research projects while simultaneously constructing experiments in a retainable way for one student per semester to understand complex laboratory techniques and waste safety.
- Collaboratively implemented a plan of action for the Department of Chemistry NSF-funded research experience for undergraduates (REU) summer program (3+ years) and give structure to insure adequate management development.
- Implemented an efficient method for 8+ lab staff to be well-informed of new contributions to the field by increasing literature discussions by ~10% per month.
- Invited to participate on the planning committee for Ohio Photochemical Society (OoPs) conferences (2022 – 2023).

Relevant Skills[a] and Coursework [b]

Microsoft Office [a] | Chemistry : Physical - Organic - Photo - Analytical [ab] | Project Management [a] | X-Ray Crystallography [ab] | Polymer Chemistry [b] | Separations [ab] | Matrix Isolation [a] | Video Microscopy [a] | Molecular Modeling [a] | Data Analysis [a] | Materials Science [a]

Research Experience

Graduate, University of Cincinnati — Spring 2019 - present

Techniques: matrix isolation, video microscopy, X-ray crystallography, molecular modeling

Keywords: photochemistry, organic azides, solid-state, energetic materials

This research highlights sustainable ways to ignite denitrogenation with the use of low-energy visible light LEDs along with using steady-state and transient spectroscopy to characterize their unique nitrogen radical intermediates. Azides also show fascinating dynamic reactivity in their crystalline state, which gives intriguing new directions for understanding these photo-sensitive substances and their role in smart organic materials.

Techniques: data analysis, formulation of cosmetic gels

Keywords: photochemistry, sun-blockers, ROS

The research focused on the mechanism of β-dicarbonyl derivative, a framework for commonly known sun-blockers. Experience elucidating the excited state tautomerization mechanism using steady-state and transient spectroscopy to detect products and intermediates formed, respectively.

Advisor/PI: Dr. Anna Gudmundsdottir, Illuminating Pathways

Undergraduate, Wilmington College of Ohio — Fall 2017 - Spring 2018

Spectroscopic Determination of the Reversibility of Hair Dye

The research focused on understanding the fundamental components of a single hair strand, and the properties of hair, and testing the efficacy of the hair dye removal main ingredient, sodium hydrosulfite, on different color hair strands.

Advisor: Dr. Dore Meinholtz

Peer-Reviewed Publications

- **James, B.,** Maxwell, K., McVay, B., Krause, J. A., Gudmundsdottir, A. D. Photo-explosive dynamics

Brandi James, B.S.
330-348-7470 – bajames96@gmail.com – Cincinnati, Ohio

of 1-azido-2-nitrobenzene crystals. *In preparation.*

- H. Dushanee M. Sriyarathne, **James, B**. Leon, A. et al. Mechanistic Investigation on Geminal Diazide: Formation of Isocyanates in Cryogenic Matrices. *In preparation.*

Scholarships and Awards

University of Cincinnati:

- H. Brian Halsall Award 2023
- Thomas B. Cameron Prize 2023
- Cassandra McGee Award 2021
- Graduate Dean's Excellence Scholarship 2018

Wilmington College:

- Achievement Awards 2017-2018
- *Dean's List* 2016-2018
- Departmental Scholarship in Chemistry 2014

Presentations (conferences combination of oral and poster)

- **Inter-American Photochemical Society (I-APS), *Sandestin, FL***
  Photo-explosive dynamics of 1-azido-2-nitrobenzene crystals January 2023
- **ACS Regional Meeting, Oesper Symposium, *Cincinnati, OH***
  Elucidating the Mechanism for Forming Isocyanate from a Geminal Alkyl Azide October 2022
- **SciX Conference, Cincinnati, OH**
  Photofracking of 2-nitrophenyl azide crystals: External pressure affects macroscopic motion October 2022
- **2nd Confinement-Controlled Chemistry Symposium**, *international*, ***Bochum Germany***
  Photofracking of 1-azido-2-nitrobenzene crystals: Effects of external pressure on macroscopic motion September 2022
- **Ohio Photochemical Society (OoPS) Conference, *Bowling Green, OH***
  Temperature Dependent Mechanistic Pathways of a Geminal Alkyl Diazide July 2022
- **NOBCChE Southwest Regional Meeting**, oral, ***Oxford, MS***
  Metal-free C-N bond formation using Geminal Diazides April 2022
- **ACS Regional Meeting, Oesper Symposium, *Cincinnati, OH***
  Can Geminal Azides be useful in Sustainable Synthesis? September 2021
- **Ohio Valley chapter of the Society of Cosmetic Chemists (OVSCC) Conference, *Sharonville, OH***
  Examining the Photoreactivity of Ethyl Benzoylacetate (EBA) in Various Environments as a Potential Chemical Filter in Sunscreens November 2019
- **ACS Regional Meeting, Oesper Symposium, *Cincinnati, OH***
  Investigating Sunscreens: Determining the Photoreactivity of Ethyl Benzoylacetate in Varying Environments September 2019
- **Ohio Photochemical Society (OoPS) Conference, *Maumee Bay, OH***
  The Photoreactivity of Chemical Filters in Sunscreen May 2019

Other Relevant Experience: Teaching (T), Mentoring (M), Administrative (A)

Lab Management [M, A] | TRIO Upward Bound Instructor [T, M, A] | ACS Cabin Leader [T, M, A] | Safety Officer [T, A] | College Prep Tutor [T, M]

Graduate Research Mentor (*-won best poster award) [(T, M, A)] May 2021 – present

- Brianna McVay (Fall 2022) Working at Medpace as a researcher.
- Kristine Maxwell* (REU 2022 – Summer – 10 weeks) Accepted to 3+ REU the following summer.
- Javeria Tariq (Fall 2021 - Spring 2022) Working toward Ph.D. in Pharmacology.
- Aliz Leon* (REU 2021 – Summer – 10 weeks) Graduated from California State University with B.S. in Chemistry, 2022

Mentoring Liasion, Consortium for Cultural Diversity in Chemistry (CCDC), Department of Chemistry [T, M, A] May 2020 - present

Summer Liaison / Program Manager, *Summer* [T, M, A] May 2019 - present

NSF - Research Experience for Undergraduates, Department of Chemistry

ACS Project SEED Students

Brandi James, B.S.

330-348-7470 – bajames96@gmail.com – Cincinnati, Ohio

Graduate Teaching Assistant, Cincinnati, Ohio 45221, (T, M, A) August 2018-present

- Organic Chemistry | CHEM *2040 / 2041 / 2041L* | Spring 2019 - Spring 2021
- General Chemistry | CHEM *1040* | Fall 2018, Fall 2022
- Introduction to Spectroscopy (*Grader*) | CHEM *7071* | Fall 2021 – Spring 2022

Departmental Service

- Transportation for Invited Speakers for Selected Occasions – *seminars, conferences, Oesper, etc.*
- ACS SEED Recruitment at nearby high schools
- Graduate Recruitment Weekend – Volunteer
- Poster Board Setup

Professional Affiliations

- Member, Inter-American Photochemical Society, I-APS June 2022 - present
- Member, American Chemical Society, ACS May 2021 - present
- Member, National Organization for Black Chemists and Chemical Engineers, NOBCChE November 2019 - present

Special Opportunities

- Enhancement of Freshman Chemistry Lab Curriculum, *UC West Campus* August 2022 – April 2023
- iRiS Working Group Conference, Book Chapter, *Cincinnati, OH* April 2023
- ACS Career Kickstart Workshop, *Washington, D.C.* November 2022

Education *expected graduation date: 12/2023*

University of Cincinnati, Ph.D. Candidate: *Chemistry***;** August 2018 - present; GPA: 3.6

Dissertation Topic:

Using Photochemistry as a Tool to Conduct Fundamental Mechanistic Studies of Various Organic Materials

Wilmington College of Ohio (WC); August 2014-May 2018.

Majors: *Chemistry, Mathematics***. Minor:** *Music.*

References

Dr. Anna Gudmundsdottir
Principal Investigator, Professor (UC)
513-556-3380
gudmunad@ucmail.uc.edu

Dr. Dore Meinholtz
Professor of Chemistry, Former Advisor (WC)
937-481-2258
dore_meinholtz@wilmington.edu

Millette Tucker
Program Manager, TRIO Upward Bound Program (Tri-C)
216-987-4097
Millette.Tucker@Tri-C.edu

Scan code for LinkedIn and Twitter