

# BRITNEY M. HOPGOOD BERDECÍA

Cond. Malaga Park, 14 Cl Juan Martinez Apt. 32, Guaynabo, PR 00971  
(787) 236-6981 ◊ hopgoodbritney@gmail.com ◊ bhopgoo1@umbc.edu

## EDUCATION

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<b>University of Maryland Baltimore County</b> Graduated: May 2022, Master of Science, Chemistry Department of Chemistry and Biochemistry	<i>August 2020—May 2022</i>
<b>Ana G Mendez University, Gurabo, Puerto Rico</b> Graduated: May 2020, Bachelor of Science, Chemistry School of Natural Sciences and Technology	<i>August 2019—May 2020</i>
<b>Polytechnic University, San Juan, Puerto Rico</b> Department of Chemical Engineering, Major in Chemical Engineering	<i>August 2018—May 2019</i>
<b>Ana G Mendez University, San Juan, Puerto Rico</b> School of Sciences and Technology, Major in Chemistry	<i>August 2014—Dec 2017</i>

## RESEARCH PROJECTS & PROFESSIONAL EXPERIENCE

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### Chemistry Instructor

Teaching chemistry courses at an undergraduate level at Universidad Ana G. Mendez Cupey. Courses taught over the Fall 2022 term include General Chemistry I, Chemistry for the Life Sciences, and Organic Chemistry.

### Graduate Research

As a graduate student at UMBC I worked in a Photochemistry laboratory under the mentorship of Dr. Lisa Kelly. I helped with two different projects. The first one was for the Army Research Lab and was funded by Army MSRDC. The second project I worked on was supported by NSF, working with a series of carboxylated naphthalene diimides as precursors for the photoinitiation of carbon-centered radicals. To study these compounds, our group is taking a fundamental approach to determine the elementary rate constants for each step in the production of and the reaction with the carbon-centered radical.

### Inertial Sensors Development for Space Weather and Planetary Research

As an Undergraduate Student Researcher for the Puerto Rico Photonics Institute (PRPI) working with Principal Investigators: Dr. Jonathan Friedman and Dr. Andrés Díaz since August 2016. With applications in laser alignment, atom trapping or cooling, data analysis, programming in MATLAB, and theoretical research. The purpose of this project is to develop an inertial sensor for a satellite through the use of atom cooling technology to be able to sense space weather activity.

### Structural Properties of $\text{YbCo}_2\text{Zn}_{20}$

Working in the Lehigh Physics REU during the summer of 2019 under the mentorship of Dr. Chinedu Ekuma. The project was based on computational physics applications through Density Functional Theory (DFT), running first-principles calculations on the Yb-based 1-2-20 system that was assigned to me. All analyses were run using Quantum Espresso at the High-Performance Computing Center (HPC) at Lehigh University. As part of the requirements for the REU we had to write a two-page summary and work on a final oral presentation; both were done promptly. This research is now pending publication as an article in Physical Review B.

### Development of Dry Seeding Device for Polystyrene Micro-spheres in a Subsonic Wind Tunnel

Working under the mentorship of Dr. Christopher Wohl and Patsy Tiemsin in NASA LaRC for the

semester starting in January of 2018 and an extension to keep working in the summer of 2018. This project consisted in the development of a fluidizing bed that would inject polystyrene micro-spheres into the 14 by 22 feet wind tunnel in NASA Langley Research Center.

### **An An Object-Oriented Approach for Analyzing CALIPSO's Profile Observations**

Working under the mentorship of the principal investigator for the CALIPSO Satellite in NASA LaRC Dr. Charles Trepte, for the semester starting in January of 2017 and an extension to keep working in the summer of 2017. This project involved developing a MATLAB program to analyze CALIPSO's profile observations. To separate objects by height and physical characteristics to differentiate between cloud types and aerosols. I traveled to Pasadena, CA, to present at the A-Train Symposium held every four years.

### **Student Researcher in Nanomaterials Science Laboratory (NSL-UMET)**

Working under the mentorship of Dr. Oliva Primera Pedrozo in the Nano-Materials Research Laboratory, I learned how to use different wet lab techniques like Quantum Dot Synthesis, Nanoparticle Synthesis, DLS Instrumentation, Sonication, UV- VIS/ NIR Spectroscopy, Raman Spectroscopy, and data analysis.

### **Quantum Dot Lasers**

Working under the mentorship of Dr. Devin Pugh-Thomas at NASA Langley Research Center during the summer of 2015. This project was titled Quantum Dot Lasers, and we worked on the characterization of different quantum dots to verify the better options for developing a quantum dot laser satellite. I learned applications in UV-VIS Spectroscopy, IR Spectroscopy, and data analysis for this type of spectroscopy.

## **RESEARCH PRESENTATIONS**

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### **Structural Properties of $\text{YbCo}_2\text{Zn}_{20}$**

Lehigh Physics REU Symposium on August 2019 in Lehigh University, Bethlehem, PA

### **Generating Cooled Atom Clouds of Rubidium-85 for Inertial Sensing Applications**

Junior Technical Meeting 2019 on May 2019 in Universidad de Mayaguez (RUM), Mayaguez, PR

### **Generating Cooled Atom Clouds of Rubidium-85 for Inertial Sensing Applications**

Forward Research and Innovation Summit 2018 on November 2018 in Sheraton Hotel Convention Center, San Juan, PR

### **Development of Dry Seeding Device for Polystyrene Microspheres in a Subsonic Wind Tunnel**

NIFS Research Symposium on May 2018 and August 2018 in NASA Langley Research Center, Hampton, VA

### **An An Object-Oriented Approach for Analyzing CALIPSO's Profile Observations**

NIFS Research Symposium on May 2017 and August 2017 in NASA Langley Research Center, Hampton, VA.

A Train 2017 Symposium on April 2017 in Pasadena Convention Center in Pasadena, CA

### **Quantum Dot Lasers**

AUPH Symposium on November 2015 in Universidad Ana G Mendez Recinto de Gurabo, Gurabo, PR.  
Paladar Científico on September 2015 in Universidad Ana G Mendez Recinto de Cupey, San Juan, PR  
AGMUS Fall Undergraduate Research Symposium on August 2015 in Hotel Sheraton San Juan, P.R.  
NIFS Research Symposium on August 2015 in NASA Langley Research Center, Hampton, VA

### **Journey to NASA and Quantum Dot Lasers Project**

Special invitation from the PRAS (Puerto Rico Astronomy Society) on August 2015 at Caribbean University, Bayamon, PR

## TECHNICAL STRENGTHS

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<b>Languages</b>	English, Spanish, Basic French
<b>Software &amp; Tools</b>	Quantum Espresso, Origins, Bash, Python, MATLAB, R
<b>Certifications</b>	Certified by American Red Cross in First Aid

## ACADEMIC ACHIEVEMENTS

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- Fulbright Scholarship Semi-finalist 2023-2024 cycle.
- Meyerhoff Fellowship awardee in 2020 at the University of Maryland Baltimore County.
- Dean's Merit awardee in 2020 at the University of Maryland Baltimore County.
- Chemical Engineering Honor Student PUPR in April of 2019.
- Optics and Photonics Winter School and Workshop 2017 in the University of Arizona in January of 2017.
- NCAR Undergraduate Leadership Workshop (ULW) in Boulder, CO, during the Summer of 2016. We trained in project management, challenged to problem solve, work in teams, developed materials for profiling careers in atmospheric sciences for educational outreach, prepared to communicate professionally and how to communicate science, interviewed scientists and engineers, designed and executed the project, leadership and networking, worked on time management.
- Mathematical Modeling and Statistics Workshop in the Universidad Metropolitana in January 2016.
- Universidad Metropolitana Science Scholarship for August 2014 to December 2017.
- Honor Scholarship for Science Students of Metropolitan University, San Juan, P.R. for August 2014 to December 2017.

## EXTRA-CIRRICULAR

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- Program facilitator for the STEM Boxed Kits Program run by the Puerto Rico Science Trust to help teach children from grades 5-8 about engineering and the scientific method.
- Mentor to an undergraduate student in the Saturday Research Academy 2022.
- Invited by UPR Cayey to offer a talk to students in the accounting, chemistry, biology, psychology, and education departments about leadership, motivation, and overcoming hardships in the year 2022.
- Invited to speak to undergraduate students at the 15th annual CPA convention in Puerto Rico in 2022.
- Meyerhoff Fellowship advisory board member during the year 2022.
- August 2018 founded Britney Hopgood Tutoring, to help middle, high school, and college students with STEM Courses. Also, visiting schools for STEAM Outreach and Topical Presentations.
- August 2018 joined the Chemical Engineering Chapter of the Polytechnic University of Puerto Rico
- August 2017 elected president of American Chemical Society Student Chapter UAGM-Cupey
- August 2016 elected secretary of the Honors Program Association
- August 2014 Elected secretary of the UAGM-Cupey ACS Student Chapter
- April 2016 and October 2016 coordinated different activities for the National Chemistry Week with the ACS Student Chapter (UAGM-Cupey)

- October 2015 participated in the UAGM-Cupey Science Day with the ACS Student Chapter
- August 2014 to September 2015: Mathematics Tutor in UAGM-Cupey
- November 2015 Participant of the Mathematics Olympics in the University of Puerto Rico Mayaguez in Mayaguez, P.R.
- October 2015 wrote a column directed to students in COLAO Magazine
- August 2015 to August 2016 Elected Vice President of the MED-Life Chapter in UAGM-Cupey
- August 2015 to November 2015 Elected Vice President of “AFECTU” in UAGM0-Cupey
- August 2014 Student member of the Seeds “ATABEY” UAGM-Cupey Chapter
- May 2015 Judge in Bio- Mathematics and Applied Mathematics in Summer Pre-College Research Symposium
- December 2014 Judge in Biogenetics and Bioinformatics in the Winter Pre-College Research Symposium

## **PERSONAL TRAITS**

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Highly motivated and eager to learn new things.

Strong motivational and leadership skills.

Ability to work as an individual and in a group.