

CURRICULUM VITAE

Jessika Pazol-Ramos

Carolina, Puerto Rico

E-mail: jessikapazol@gmail.com

LinkedIn profile: <https://www.linkedin.com/in/jessika-pazol-462a5787/>

Objectives

My passion for mentoring, teaching, and research compelled me to pursue a career as an **engineering faculty** in order to work as a researcher and educator. I want to be an agent of change and inspire underrepresented Hispanic communities in the academia towards sciences, technology, engineering, and mathematics (STEM). My background in engineering has given me the foundation to undertake an education and research oriented career. I am confident that the integration of multiple disciplines is an effective way to motivate future generations. I yearn to inspire incoming student generations from underrepresented minority groups. I wish to serve as a role model and show them an alternate scientific career journey.

During my time in the Chemistry PhD Program, I aspire to develop innovative technologies to enhance the quality of life of the many millions people around the world with limited access to safe water. This situation has led to more than 840,000 deaths (2014 World Health Organization survey) due to intestinal inflammation and other diseases after exposing to unsafe water. To contribute to this global challenge, I intend to explore new avenues to develop reactive membranes that would eliminate toxic substances.

Areas of Expertise

- Analytical Chemistry
- Research and analysis
- Design of Experiments
- Water Purification Treatment
- Pharmaceutical Industries
- Good manufacturing Practices (GMP)
- Validation
- Quality Systems
- Preventive Maintenance
- Chemical Engineering
- Standard Operational Procedures
- Piping and Instrumentation Diagrams (P&IDs)
- Six Sigma
- Root Cause Analysis (RCA)
- Failure Mode Analysis (FMA)
- Change Control
- Deviation investigations reports
- Mentoring

Education

University of Puerto Rico at Rio Piedras Campus Doctorate of Philosophy, PhD, Analytical Chemistry Cumulative GPA: 3.66	<i>on-going studies</i>
Polytechnic University of Puerto Rico at Hato Rey Campus Civil Engineer, ME, Water Treatment Program Cumulative GPA: 3.77	Graduation date: June 2010
University of Puerto Rico at Mayaguez Campus Chemical Engineer, BS, PE License # 21304 Cumulative GPA: 3.70	Graduation date: June 2004 (Magna Cum Laude)

Professional Experiences

Research Assistant October 2016 - Present
Faculty of Natural Sciences, Department of Chemistry
University of Puerto Rico at Rio Piedras Campus
Molecular Sciences Research Center

Conducted research about membrane technology for water purification applications. Designed strategy to remove toxic contaminants in water.

- Laboratory manager reporting to principal investigator professor
- Samples preparation with polymeric materials
- Samples analysis with vanguard technology such as atomic force microscopy (AFM) and scanning electron microscopy (SEM)
- Generation of grades report to the institution department

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Professional Experiences (Continuation)

Teacher Assistant

August 2015 - December 2015

General Chemistry Laboratory
Faculty of Natural Sciences, Department of Chemistry
University of Puerto Rico at Rio Piedras Campus

Reinforced chemistry lectures presented by professors in a laboratory environment.

- Evaluation of student performance, including grading exams, quizzes, and assignments
 - Maintained weekly office hours to communicate in person with students as needed
 - Plan, schedule, and facilitate laboratory experiments about fundamental chemistry concepts.
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Chemistry Instructor

November 2014 - June 2015

Pharmaceutical Technical Program
National University at Rio Grande Campus

Designed and plan pharmaceutical chemistry lectures. Proposed new chemistry laboratory lessons.

- Student mentoring and tutoring about chemistry and mathematic classes
 - Student outreach activities to provide an in-field perspective about pharmaceutical sciences operations
 - Provided weekly office hours
 - Tracking and recording of student class attendance
 - Posting of assignments, editing, entering grades into electronic systems.
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Process Engineering

March 2006 - April 2014

Lilly del Caribe, Inc
PR05 site, Carolina, Puerto Rico

Worked primarily with highly purified water systems for pharmaceutical process applications. Ensured quality requirements and high standard were continuously met. Conducted investigations, change control process, trending analysis for ongoing monitoring, and annual assessment for the water system equipment to ensure compliance with cGMP practice and operational procedures.

- Provided engineering support (24/7) for manufacturing operations (process equipment, equipment troubleshooting, technical leadership, and training for personnel)
 - Subject matter expert about water distribution purification systems
 - Provided technical expertise with the analysis of quality deviation investigations and provided a preventive action plan strategy
 - Supported manufacturing technical staff during annual FDA inspection
 - Revision of equipment layouts, control systems, design parameters to assure that design was in accordance to process validation. Engineering drawings (P&IDs) revision.
 - Assisted in the preparation of commissioning, IQ/OQ/PQ documents and participated in the execution of the protocols
 - Collaborated with maintenance personnel to get maintenance plans established for equipment
 - Provided technical assistance to assure issues were addressed quickly and documented correctly
 - Leader in problem solving activities including root cause analysis and countermeasure action plan
 - Active staff member of six sigma projects (water systems sanitation strategy, water system sampling reduction plan, annual performance qualification (PQE) streamline)
 - Streamlined 18 operational procedures by designing a new strategy to consolidate and reduce the amount down to three. This simplified the documentation for the production schedule
 - Developed and provided technical training and qualification to new operators
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Professional Experiences (Continuation)

Environmental Coordinator

August 2005 - March 2006

Merck Sharp & Dohme
Arecibo, Puerto Rico

Maintained compliance with all environmental permits, including air Permits and Natural Resources Department. Assisted in the preparation of required Regulatory Reports (Safety department during internal and external audits). Maintained compliance with quality regulations (GMP), meet validation requirements and maintain process water quality standards.

- Reinforced plant safety practices
- Periodic safety meetings and audits Recommended merit increase and promotions and initiates disciplinary action or termination of employment when required for unsatisfactory performance to subordinates
- Responsible to comply with USP, UIC PRASA and others permits sampling schedule
- Responsible to prepare all the area Process Specifics (Boilers, Chillers, Thermal Oxidizer, etc.)
- Responsible for prepare all the environmental monthly reports
- Coordinate and execute QMS
- Waste management roles and responsibilities

Utilities Supervisor

July 2005 - August 2005

Merck Sharp & Dohme
Arecibo, Puerto Rico

Worked and supervised multiples plant utilities operations such as steam generation and distribution system, potable/process water system, purified water system, compress air, etc. Supervised 16 employees in a four-rotational shift. Staff member of the emergency response brigade for Arecibo plant.

Engineering Student Experience

Jun 2003 - August 2003

IPR Pharmaceuticals, A Part of Astra-Zeneca Group
Guayama, Puerto Rico

Worked in the Environmental and Utilities department developing a computer program for the refrigeration system as part of the management inventory strategy. Calculated the emissions of gases for different equipment to the atmosphere in order to support the compliance of environmental permits.

L.E.R.C.I.P. Program - Research Summer Experience

May 2002 - July 2002

NASA Glenn Research Center, OH

This internship program is part of the Lewis' Educational and Research Collaborative Internship Project (L.E.R.C.I.P.). My interest to apply to this program was driven by the mixed industrial-academic culture that prevails at NASA centers which provides an experience like no other and excels in integrating multiple disciplines collaborators to develop innovative ideas to advance the sciences of space. Under my mentor supervision, I performed a variety of organic reactions to characterize novel disc-shaped liquid crystal molecules. The goal of this interesting project was to develop new heterocyclic disc shaped liquid crystals for commercial optoelectronic applications such as photovoltaic cells, photoconductors, and chemical sensors in order to enhance energy efficiency.

Princeton University REU - Research Experience for Undergraduate

May 2001 - July 2001

Princeton, New Jersey

This Summer Research Experience for Undergraduates (REU) program at Princeton University was the first research opportunity I had. I worked in a material sciences and engineering research laboratory. In this NSF-REU experience, I was able to develop a phase map for surfactants gels that could serve as a reference to form homogeneous single-phase microemulsions of oil in water. These microemulsion systems have potential applications in environmentally friendly cleaning formulations, drug delivery, and polymerization media for wax fabrication.

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Skills

Leadership, teamwork, cooperation, awareness, dedication, and goal accomplishment. Outstanding written and oral communications. Proficiency in MS Office (using programs like Word, Excel, Access, and Power Point and PRO/II design simulator). Emergency Response Team (ERT) member. Five (5) day RCRA training. General Awareness Course of DOT (2005).

Glider course at the Royal Air Force, U.K. Master of ceremony during PR Wing Conference 2005 (Military activity) annual banquet.

Fully bilingual: Spanish and English (proficient in reading, writing, and speaking)

Professional Associations

- Professional College of Engineers and Land Surveyors of Puerto Rico (CIAPR)
- American Institute of Chemical Engineers (AIChE)
- American Chemical Society (ACS)
- Civil Air Patrol, Auxiliary of the U.S. Air Force (CAP-USAF)

Interest and Activities

Voluntarily collaborated with the Carolina Municipal Water Filtration Plant to provide insights about the analysis of water quality in the raw water treatment in 2010. Participation as a counselor student organization (UPR RUM). Ranked as a CAP cadet Colonel (award #1475), and volunteered as a senior member. Written article published at *Inside Inqu* (a chemical engineering student magazine).

Honors

- Meritorious search and rescue service award, Civil Air Patrol (CAP), 2007
- 3,000,000 hours with zero accident company award Safety Award, Merck Sharp & Dohme, 2004
- BP Award, British Petroleum, 2003
- Gen. Carl A. Spaatz Award #1475, Civil Air Patrol, 2003 (*fourth woman in Puerto Rico history to achieve Spaatz Award (cadet full colonel) in CAP*)
- Eaker Award, Civil Air Patrol, 2002
- Amelia Earheart Award, Civil Air Patrol, 2001
- Gen. Billy Mitchell Award, Civil Air Patrol, 2000
- Outstanding Students Scholarship Award, IPR-Astra-Zeneca, 2000
- Gates Millennium Scholars, Bill and Melinda Gates Foundation, 2000

Publications

- Pazol, J., Malaver, R. Turbidity Removal Assessment and Recommendations for Iron and Manganese Removal at Carolina Filtration Potable Water Treatment Plant, PUPR Institution Database, 2010.
- Pazol, J.; Vázquez, A.; Nicolau, E., Characterization of non-covalent immobilized *Candida antarctica* lipase B over PS-b-P4VP as a model bio-reactive porous interface. *Colloids and Surfaces B: Biointerfaces*, 2019, 183, 110418.

Presentations

- 3/Nov/2019 - De-acylation of *Escherichia coli* Lipopolysaccharides to Produce Detoxified Water Quality, WQTC AWWA National Conference, Dallas, Texas.
- 2/Apr/2019 - Fabrication of a bio-functional porous nano active layer using the self-assembling characteristic of di-block copolymer and lipase B, ACS National Conference, Orlando, Florida.
- 10/Nov/2018 - Fabrication of a bio-functional porous nano active layer using the self-assembling characteristic of di-block copolymer PS-P4VP and CALB, PR Senior Tech Meeting, Guayanilla, PR.
- 20/Mar/2018 - Di-block copolymer and enzyme conjugated nano layers: a packing density study to design bio-reactive membranes for water purification, ACS Nat Meeting, New Orleans, LO.
- 28/Abr/2018 - Understanding Polymeric Thin Films Complexes via Electrospray Deposition (ESD), PR Jr. Technical Meeting, Gurabo, PR.
- 16/Mar/2018 - BioXfel Protein Workshop, Rio Piedras, Puerto Rico.

References

Available upon request