

Oluwadare A. Badejo

+13027728871 | 4 Winterhaven Drive Newark DE, 19702 | badejo@udel.edu | LinkedIn: oluwadare-badejo | google scholar: [dare-badejo](#)

RESEARCH OBJECTIVE:

Dedicated chemical engineer focused on research and development, aiming to leverage my expertise to drive innovative and sustainable solutions in a research and development environment. Committed to lifelong learning and operational excellence, I aspire to contribute to environmental and efficiency goals, advancing the field of chemical engineering.

EDUCATION:

University of Delaware, Newark DE

Aug. 2019 – Present

Ph.D. Candidate, Chemical and Biomolecular Engineering

Advisor: Prof. Marianthi Ierapetritou

University of Lagos, Lagos, Nigeria

Jan. 2011 – Dec 2015

Bachelor of Chemical Engineering

RESEARCH PUBLICATIONS

- **Badejo, O.**, Ierapetritou, M. 2024. Enhancing Pharmaceutical Supply Chain Resilience: A Multi-Objective Study with Disruption Management , *Under review*
- **Badejo, O.**, Hernandez B., Ierapetritou M., Vlachos D. G. 2023, Design of Sustainable Supply Chains for Managing Plastic Waste: A Case Study for Low Density Polyethylene, *Accepted*.
- **Badejo, O.**, Ierapetritou, M. 2023. Supply Chain Optimization Considering Disruption Demand Uncertainty. *Computer Aided Chemical Engineering*, 52 , 3345-3350
- **Badejo, O.**, Ierapetritou, M. 2023. A mathematical modeling approach for supply chain management under disruption and operational uncertainty. *AIChE Journal*, 69(4), e18037.
- **Badejo, O.**, Ierapetritou, M., 2022. Mathematical Programming Approach to Optimize Tactical and Operational Supply Chain Decisions under Disruptions. *Ind. Eng. Chem. Res.*
- **Badejo, O.**, Ierapetritou, M., 2022. Integrating tactical planning, operational planning and scheduling using data-driven feasibility analysis. *Computers & Chemical Engineering* 161, 107759.
- Bhosekar, A., **Badejo, O.**, Ierapetritou, M., 2021. Modular supply chain optimization considering demand uncertainty to manage risk. *AIChE Journal*, e17367.
- Babalola, F.U., **Badejo, O.A.**, Roy-Layinde, B.A., 2019. Emerging challenges in phase behavior modeling of reservoir fluids at high-pressure high-temperature (HPHT) conditions. *Geomechanics and Geophysics for Geo-Energy and Geo-Resources* 5, 357–370.
- Borja Hernandez, **Oluwadare Badejo**, Marianthi Ierapetritou. "Process Systems Engineering Tools for Assessing Upcycling Technologies of Plastic Waste," Paper#131b Session: Waste Plastic - Recycle, Reuse and Remediation Strategies I, AIChE Annual Meeting, Orlando, FL, November 2023.
- **Oluwadare Badejo**, Borja Hernandez, Marianthi Ierapetritou. "Designing a Sustainable Supply Chain for Polyolefins Waste Management," Paper#15a Session: CAST Director's Student Presentation Award Finalists (Invited Talks), AIChE Annual Meeting, Orlando, FL, November 2023.
- **Oluwadare Badejo**, Borja Hernandez, Marianthi Ierapetritou. "Supply Chain Optimization for Plastic Upcycling Considering Economic and Environmental Indicators," Paper: 9319, Session: Sustainability and the Environment, World Congress of Chemical Engineering (WCCE11), Buenos Aires, Argentina, June 2023.
- **Oluwadare Badejo**, Marianthi Ierapetritou. "Supply Chain Optimization Considering Disruption Demand Uncertainty" ESCAPE 33, Athens, Greece, June 2023.
- **Oluwadare Badejo**, Borja Hernandez, and Marianthi Ierapetritou. "Optimal Design of Supply Chain for Plastic Upcycling Considering Economic and Environmental Indicators" FOCAPO/CPC, San Antonio, TX, January 2023.
- **Oluwadare Badejo**, Marianthi Ierapetritou "A Novel Framework for Supply Chain Optimization Under Major Disruptions", Paper#625d, AIChE Annual Meeting, Phoenix, AZ, November, 2022.
- **Oluwadare Badejo**, Marianthi Ierapetritou "Integration of Planning and Scheduling using Data-Driven Feasibility Analysis ", Paper #476g, AIChE Annual Meeting, Boston, MA, November 2021.
- **Oluwadare Badejo**, Atharv Bhosekar, Marianthi Ierapetritou "Supply Chain Optimization for Modular Manufacturing with Production Feasibility Analysis Under Uncertainty", Paper #612f, AIChE Annual Meeting, Boston, MA, November 2021.

CONFERENCE AND INVITED TALKS

AWARDS AND HONORS

- **Finalist**, CAST Director's Student Presentation Award AIChE
- **Travel Award**, Pan-American Advance studies institute (PASI) on Optimization and Data science for Net-Zero Carbon Sustainability Award 2023
- **Travel Award**, Foundations of Computer Aided Process Operations/Chemical Process Control 2023
- **Best Undergraduate design project**, University of Lagos (2015)
- **Best Undergraduate design project**, Nigerian Society of Chemical Engineering (2015)
- **Best graduating student** department of chemical engineering, University of Lagos (2015)
- **Professor Harmon Ray Award** , best student in process control (2015)
- **National Scholarship** (Top 5%): Chevron Nigeria Limited (2011 – 2015)

SKILLS

GAMS, Python (Pyomo, Pandas, Matplotlib, Scikit learn, Keras, Tensor flow and Pytorch) , GIS, MATLAB, R, SQL, Microsoft Office Suit, LATEX., Process Modeling using Aspen Suite(Aspen Hysys , Aspen Plus and Cost Analyzer), Process Optimization.

WORK EXPERIENCE:

University of Delaware, Department of Chemical and Biomolecular Engineering

Graduate Research Assistant

Aug. 2019 – Present

- Optimized Supply Chain for Modular Plants: Spearheaded the development of a scalable stochastic optimization-based model in GAMS, utilizing CPLEX algorithms for robust problem-solving. Leveraged MATLAB and Python to craft a data-driven predictive

model, assessing modular compartment feasibility and devising a production strategy that balanced demand satisfaction against environmental, economic, and social objectives.

- **Advanced Data Analytics for Supply Chain Network:** Orchestrated an extensive data collection and analysis initiative, employing database management tool and Python for feature engineering and dimensionality reduction. Created an integrated supply chain model that addressed scheduling, operational, and strategic concerns, using GAMS (CPLEX and BARON) with Python for superior computational efficiency.
- **Supply Chain Resilience Modeling:** Developed a cutting-edge model in GAMS to bolster decision-making resilience amid disruptions, ensuring operational robustness and effective uncertainty management.
- **Efficient Algorithm Development for large scale Optimization:** Implemented a novel, computationally efficient algorithm using a rolling horizon approach, decomposition techniques to improve speed of solution, and integrating GAMS and Python. Demonstrated through rigorous testing, this approach effectively meets demand while minimizing costs, showcasing real-world applicability.
- **Interdisciplinary Collaboration on Plastic Waste Management:** Worked alongside a cross-functional team to create a comprehensive tool for plastic waste management, integrating life cycle assessment, techno-economic analysis, and supply chain optimization into a cohesive software solution.
- **Stakeholder Engagement and Model Refinement:** Engaged with a diverse group of researchers and stakeholders, including the Center for Plastic Innovation, School of Policy, and Environmental Engineering, to refine optimization models. Honed communication skills to convey complex mathematical concepts clearly and effectively.

University of Lagos, Department of Chemical and Petroleum Engineering

Graduate Research Assistant,

July 2018 – Aug. 2019

- **Enhanced Mentorship Program:** Pioneered a comprehensive mentorship structure, resulting in a notable 40% improvement in student performance metrics. Designed and executed strategic mentoring initiatives that significantly bolstered academic achievements and personal growth among participants.
- **Expertise in Technical Tutoring:** Delivered specialized instruction in numerical computations, utilizing a broad array of programming languages including MATLAB, VBA, Python, and Spreadsheets. Empowered students with the skills necessary for advanced analytical tasks, contributing to their success in complex problem-solving scenarios.

Eunisell Limited Lagos/Rivers State

Oilfield Engineer,

Jan. 2018 – June 2018

- **Production Chemical Optimization in Oil and Gas:** Collaboratively engineered chemical optimization strategies for Nigerian exploration and production firms, targeting both brown and green field operations. Led onshore and offshore testing efforts, directly contributing to a remarkable 20% boost in production efficiency.
- **Operational Process Improvement:** Played a pivotal role in a cross-functional team to overhaul Standard Operating Procedures (SOPs) for chemical handling in-house operations. This strategic initiative drove a 40% reduction in process redundancy, markedly improving operational efficiency and cutting costs.

Landmark University, Omu-Aran, Kwara State

Research Assistant,

April 2016 – March 2017

- Research, teaching, and student management experience. aided in the development of experiments with the objective of increasing students' scientific literacy. Coordinated lectures and tutorials to improve student learning. Developed a feedback method for students' strengths and weaknesses, resulting in improved performance.

Shell Petroleum Development Company of Nigeria, Rivers state

Process Engineering Intern

Aug. 2014 – Dec. 2014

- **Dynamic Process Simulation and Cost Savings:** Developed and validated a dynamic process simulation model using Aspen Hysys in sync with real-time data analysis. Proposed optimal adjustments to mitigate hydrate formation, achieving substantial cost savings estimated at around \$350,000 through enhanced operational efficiencies.
- **Cross-Functional Collaboration for Gas Quality Enhancement:** Actively engaged with multidisciplinary teams, including production technologists, asset optimization specialists, and engineering teams, to evaluate the impact of flow parameters on non-associated gas quality in brown field operations. This collaborative effort led to significant enhancements in gas processing efficiency.

LEADERSHIP POSITION:

President/founding members

African Graduate Student Organization (University of Delaware)

Jan. 2023 – Till Date

Public Relations Officer (volunteer position)

Drug Free Community Development Group

April 2016 – March 2017

Acted as the public relations officer, Organized sensitization for community members & schools educating them about the effects of drugs.

President/founding members

Academic Resource Team (University of Lagos)

Jan. 2012 – Dec.2015

Organized the first design paper competition and championed the fund-raising campaign.

Electoral Committee's General Secretary (University of Lagos)

July 2013

Organized a departmental election and served as a liaison between the Electoral Committee, the Office of Student Affairs, and the students.