ENE MICHELLE IGOMU

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SUMMARY

PhD Candidate in Chemical Engineering and Materials Science specializing in catalysis and energy materials with a robust focus on electrochemical systems. Demonstrated expertise in electrocatalyst optimization, advanced 3D-structure design, and in situ testing techniques to enhance catalytic reactions. **Strong ability to collaborate and work in a team environment on inter-disciplinary projects.**

EDUCATION

Dartmouth College Hanover, NH
Engineering Science – Chemical and Materials Engineering 2023
PhD Innovation Fellow

Research Focus: Design and optimization of 3D electrocatalytic micro lattices as advanced materials for hydrogen generation, energy conversion, and catalysis, aimed at enhancing reaction performance and stability under operational conditions.

Coursework: Electrochemical Energy Materials, Corrosion and Degradation of Materials, Molecular and Materials Design using DFT, Thermodynamics and Kinetics of Condensed Phases, Nanotechnology

Afe Babalola University Ado-Ekiti, Nigeria
B.Eng. Chemical Engineering 2017 - 2022
GPA: 4.94/5.00 Summa cum laude

Coursework: Science of Materials, Fluid Dynamics, Thermodynamics, Chemical Reaction Engineering, Mass and Heat Transfer, Process Control & Dynamics, Plant Design & Process Economics, Process Optimization.

SKILLS

Technical: MATLAB, ASPEN HYSYS, CHEMCAD, 3D Printing, Modelling and Simulation
Analytical: X-ray Diffraction, Scanning Electron Microscopy, Transmission Electron Microscopy, Raman Spectroscopy, UV-Visible Spectroscopy, Thermogravimetric Analysis, Differential Scanning Calorimetry, Cyclic and Linear Voltammetry.
Interests: Effective Communication, Teamwork and Collaboration, Problem Solving

EXPERIENCE

Energy Materials Engineering Division, Thayer School of Engineering, Dartmouth, NH, USA Sept. 2023 – current
Doctoral Researcher

- **Leading research on 3D micro lattice electrocatalyst optimization**, refining structure design to enhance catalytic efficiency and stability.
- **Conducting detailed analysis of material properties and electrochemical behavior** to drive iterative improvements.
- **Collaborating with interdisciplinary teams** to integrate innovative methodologies, advancing electrocatalyst performance and durability.

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Department of Chemical Engineering, ABUAD, Ado-Ekiti, Nigeria Sept. 2021 – June 2022
Research Assistant

- **Led optimization of a Reverse Osmosis desalination process** via Artificial Neural Network, achieving a 24% reduction in operational costs and 20% increase in product recovery.
- **Developed and managed project timelines and methodologies** for efficient resource utilization and project advancement.
- **Utilized advanced computational tools** for data analysis and experiment design, enabling data-driven insights.
- **Published a lead-author research paper** with impactful contributions to the field of Chemical Engineering.
- **Led a multidisciplinary team** in designing and simulating a Syn-gas production process, achieving a 20% increase in efficiency and a projected 15% reduction in start-up costs.
- **Assessed economic feasibility**, identifying cost-saving measures estimated to save $50,000 annually in operational expenses.
- **Performed detailed analysis of Energy and Mass Balances**, leading to a 25% improvement in process optimization and a 30% reduction in waste production.

MRS Oil & Gas Limited, Nigeria Oct. 2022 – Aug. 2023

Quality Assurance and Control Engineer

- **Drafted and maintained quality control documentation** such as inspection reports, control plans, and test plans.
- **Worked in a collaborative team environment** to develop and maintain quality assurance processes that improved product quality and customer satisfaction by 35%.

Nigerian Independent Petroleum Company, Nigeria June 2019 – Aug. 2019
Process Engineer Intern

- **Managed oil terminal operations**, optimizing product lineups for a 20% reduction in loading times.
- **Implemented stock management strategies**, reducing losses by 15%.
- **Provided administrative support to management**, resulting in improved efficiency in daily operations.

HONOURS & AWARDS

Thesis Pitch Competition Winner (2024) by IVY Collective for Inclusion in Engineering Doctoral Symposium. **PhD Innovation Fellow** (2023) by Dartmouth College. **Best Engineering Graduate in Nigeria** by Nigerian Society of Engineers. **Valedictorian – Best Graduating Student in School of Engineering (**2022) by Afe Babalola University. **Best Student Chancellor Award** (2018)(2019)(2020)(2021)(2022) by School of Engineering, Afe Babalola University.

JOURNAL PUBLICATION

Coupled Modeling and Process Optimization in a Genetic Algorithm Paradigm for Reverse Osmosis Dialysate Production Plant

Authors: Ene Michelle Igomu, Ebenezer Olubunmi Ige, Olusola Adedayo Adesina 2022 South African Journal of Chemical Engineering ISSN 1026-9185

LEADERSHIP & ACTIVITIES

Engineering Graduate Student Council – Secretary 2024 –present
Graduate Women in Science and Engineering – Executive 2024 - present
Dartmouth Energy Club – Executive 2025 - present
Dartmouth Society of Engineers – Member 2023 - present