DARKEY SILVANUS JUNIOR

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EDUCATION

Virginia Tech | 2023 – Present

Ph.D Chemical Engineering

Kwame Nkrumah University of Science and Technology | 2018 – 2022

B.Sc. Chemical Engineering

RESEARCH EXPERIENCE

Virginia Tech

Research Assistant, Prof. Luke Achenie's Lab | Nov. 2022 – Aug. 2023

Gained hands-on experience in atomic-level and coarse-grained (CG) molecular dynamics simulations while studying the MD of Doxorubicin in lipid bilayers.

Kwame Nkrumah University of Science and Technology

- **Lead Student Researcher** | 2022

Thesis Title: Plant Design for the Production of Biolubricant from Waste Vegetable Oils
Advisor: Dr. Ohemeng-Boahen, PhD
Synopsis: Aims to find an alternative to petroleum-based lubricants due to the depletion of crude oil reserves and its effect on the climate. To achieve this, I designed a process plant to convert waste vegetable oils to biolubricants by simulating the process plant using ASPEN hysys.
Duties: Reviewed literature on biolubricants, designed process flowsheet using MS Visio, performed economic analysis using excel, and performed material and energy balances using ASPEN hysys.

- **Lead Student Researcher** | 2021

Project Title: Scaling-up Cyanide Degradation Process
Advisor: Dr. Lawrence Darkwah, PhD, Senior Lecturer
Synopsis: The purpose of this study is to see how well microorganisms breakdown cyanide compounds in tailing fluid produced during gold ore cyanidation. The findings revealed that increased microbial populations, a moderate level of dissolved oxygen, and a pH in the alkaline area facilitated a faster rate of cyanide compound detoxification.
Duties: Reviewed literature, performed laboratory bench-scale experiments including titration, pH checking, and measurement of dissolved oxygen concentration in cyanide-bacterial solution.

INDUSTRIAL EXPEREICNE

Quality Control Intern, Aspee Pharmaceutical Company Limited | 2021

- Performed qualitative tests on raw materials
- Determined assay concentration using high-performance liquid chromatography (HPLC)
- Analysed laboratory results

AWARDS & SCHOLARSHIPS

- Tullow Ghana Scholarship | 2018 -2022
- Best Project of the Year , Department of Chemical Engineering | 2021

LEADERSHIP & SERVICE

Head of Trade, Technology & Innovations (TRATECH) | 2021

- Responsible for the day-to-day innovation activities of the department
- Organized skill training in MATLAB, ASPEN Plus, Hysys and Chemcad

CONFERENCES ATTENDED

- Best Practices in Selecting Pollution Control Equipment | 2022
- Micro Reaction Calorimetry Application for the Chemical Industry | 2022
- 6th Bioengineering and Translational Medicine Conference | 2021
- 11th International Conference on Biomolecular Engineering | 2021

VOLUTEERING

EUvsVirus Hackathon Participant, trustinscience.org | 2020

- Collaborated with 11 individuals from Europe to develop the *"Trust In Science" app* which educates individuals on research integrity during Covid-19 pandemic
- Provided individuals with information on how to mitigate fake news during Covid-19 pandemic

AfricavsVirus Hackathon Participant | 2020

- Worked with 4 members from various African countries to develop a system that reduced post-harvest losses and safely transported farm products to homes and markets during the Covid-19 pandemic

National Science and Maths Quiz Tutor, Chemu High School | 2019 -2021

- Assisted in high school Mathematics, Chemistry and Physics
- Assessed and graded 15 students
- Achieved 2 consecutive quarter-finals qualification in quiz competition

ENACTUS, KNUST | 2019 -2022

- Led brainstorming sessions to find solutions to detrimental problems in rural communities in Ghana.
- Community engagement to find solutions to some of their pressing issues.
- Developing business models to solve problems in rural areas in Ghana.

RELEVANT SKILLS

- Python and Jupter notebook
- Matlab
- ASPEN plus and ASPEN hysys
- Microsoft Suite (MS Word, MS Excel and MS Visio)
- AutoCAD
- COPASI (Simulation of molecules, modeling of chemical and biological systems)
- Large-scale Atomic/Molecular Massively Passive Simulator (LAMMPS)
- GROMACS

AFFILIATIONS

- Chemical Engineering Graduate Student Association ChEGSA, Virginia Tech
- National Society of Black Engineers (NSBE)
- American Institute Of Chemical Engineers (AIChE)
- Afrisnet: Africa STEM Network
- College of Engineering Innovation Centre, KNUST
- Ghana Engineering Student' Association (GESA)
- Chemical Engineering Student' Association (CHEESA)
- ENACTUS-KNUST