TERERAIISHE L CHIWEYA

B.tech Chemical Engineering Student, Aspiring Researcher

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My portfolio

Coimbatore, India

EDUCATION

B.Tech Chemical Engineering
KPR Institute of Engineering and Technology
2024-2028

High School Diploma
Hilbright Science College
2021-2021

SKILLS

- MATLAB
- DWSIM
- Material and energy balance calculations
- Reaction engineering fundamentals
- Research Skills
- Separation processes
- Electrode Fabrication and Testing
- Nanoparticle synthesis

LANGUAGE

English

Shona

About Me

Undergraduate Chemical Engineering student pursuing a B.Tech at KPR Institute of Engineering and Technology, with strong interests in sustainability battery recycling and circular hydrometallurgy. Actively engaged in research-oriented learning, technical writing and science communication.

PROFFESIONAL EXPERIENCE

Dec 2025 - present
KPR Institute of Engineering and TEchnology-ANFR Research Project
Research Internship

- I am doing research on the synthesis and characterisation of Metal Oxide/Mxene nanoparticles for supercapacitor applications

Nov 2025 - present
Lithiophile (Technical Blog)
Founder & Research Writer

- Author and editor of a technical blog covering chemical engineering concepts, lithium-ion battery research, recycling technologies, and energy systems news.

Aug 2025- present
American Chemical Society
Executive Committee Member

- Visited corporate client offices to offer latest products
- Built relationships with clients to maintain sales goals and create new opportunities

Aug 2014 - Jul 2015
AIChE (American Institute of Chemical Engineers)
Executive Committee Member

- Visited corporate client offices to offer latest products

July 2025 – Present
KPR Institute of Engineering and Technology
Class Representative

- Visited corporate client offices to offer latest products

RESEARCH PROJECTS

Dynamic Modeling of Electrochemical pH-Swing Extraction of Co/Ni

- Attempted dynamic modeling of electrochemical pH-swing-assisted solvent extraction for selective separation of cobalt and nickel.
- Focused on understanding how electrolysis control influences metal speciation and extraction efficiency.

Development of a laboratory-scale setup for indoor direct air capture using locally available materials (On-going)

- Designed and assembled a laboratory-scale setup for indoor direct air capture using low-cost, locally available materials.
- Performed CO2 adsorption and desorption studies to evaluate capture performance under indoor conditions.

Process Flowsheet Development Hydrogen Generation from Waste Aluminum

- Studied hydrogen production via reaction of waste aluminum with alkaline solutions.
- Analyzed reaction mechanisms, hydrogen yield, safety considerations, and sustainability aspects.
- Developed a conceptual process flowsheet for hydrogen generation using DWSIM.
- Evaluated material and energy flows to assess process viability.

Process Design for Recovery of valuable metals from spent lithium-ion batteries using Aspen Plus simulation. (On-going)

- Developed a battery recycling process flowsheet using Aspen Plus simulation.
- Modeled unit operations including leaching, separation, and purification steps.
- Performed material and energy balance calculations.
- Incorporated circular economy principles and zero liquid discharge (ZLD) considerations into process design.

E-Waste Management Application (EVS Project)

- Designed a conceptual app connecting institutional e-waste streams with student technical clubs.
- Proposed workflows for tracking, reuse, and responsible recycling of e-waste.

VOLUNTEERING & ACADEMIC SERVICE

Industrial Visit Coordinator – VVDN Technologies

- Coordinated and organized an industrial visit to VVDN Technologies, an electronics manufacturing and technology services company.
- Coordinated student participation, travel arrangements, and on-site discipline to ensure smooth execution of the visit.

CERTIFICATIONS & LICENSES

Hydrogen Energy: Production, Storage, Transportation and Safety
SWAYAM–NPTEL (IIT Kanpur)
Credential ID: NPTEL25CH93S454305965

- Completed an advanced course covering hydrogen production technologies, storage methods, transportation infrastructure, and safety frameworks.
- Developed technical understanding of hydrogen handling, industrial safety protocols, and risk mitigation strategies.
- Skills: Safety in Hydrogen Handling and Processing, Hydrogen Production Technologies.

Computational Fluid Mechanics – Airflow Around a Spoiler
Coursera
Credential ID: K5MZLOH7RXIM

- Applied computational fluid dynamics (CFD) principles to study airflow behavior around aerodynamic components.

REFERENCES

Mr. K Murugesan
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