

PROJECT DETAILS

Project Title:

Development of Copper-Based Catalysts for Ethylene Production in the Electrochemical Reduction of Carbon Dioxide Gas.

Project Summary:

Climate change is one of the greatest threats that the world is currently facing, and it is directly caused by the high emissions of greenhouse gases, such as carbon dioxide gas. In 2025 the concentration of CO₂ gas is now at an alarming 427 ppm. Reducing CO₂ levels is crucial.

This project aims to utilise electrochemical reduction method to convert CO₂ gas into other useful molecules, such as ethylene, and thus reduce the amount of CO₂ in the atmosphere by developing novel catalysts using Radio Frequency magnetron sputtering technique.

Preferred Applicant Skillset:

This project will require a student who has a chemistry degree or equivalent. Students with a chemistry major ideally in analytical and/or physical chemistry field or chemical engineering students would be preferred. Desirable skills and experience for this project include:

- Using gas chromatography and scanning electron microscopy instruments.
- Working with gas bottles.
- Experience using electrochemical cells and measuring thin films.

Additional capabilities that would be beneficial for this project are:

- Understanding of vacuum systems and how vacuum pumps work.
- Self-motivated.
- Strong organisational and computer skills and ability to collaborate with various research groups.

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