

Decarbonation of industrial effluents: electrochemical conversion of carbon dioxide and glycerol into value-added products

Study project: Master's student or Ph.D. student.

Project description

The decarbonization of the economy is a key issue in the fight against climate change. Decarbonization aims to reduce the industry's carbon footprint by using renewable energy sources, cleaner technologies and making efficient and responsible use of resources. Electrochemical processes, which use renewable electrical energy to produce high-value-added products, are a promising technology for decarbonization.

The project aims to develop new electrodes and use them in an electrolyzer to produce high-value-added carbon molecules from two abundant residues with no commercial value, such as CO₂ and glycerol.

The PhD student will be responsible for producing selective electrocatalysts and electrodes to the electroreduction of CO₂ and the electrooxidation of glycerol, the physico-chemical and electrochemical characterization of the catalysts and electrodes, and the evaluation of their activity and performance in electrochemical cells and reactors.

Starting date

Fall 2024 / Winter 2025

Research direction

- Ana Tavares, Professor, INRS
- Antonio Avalos Ramirez, Researcher, CNETE
- Beatriz Delgado Cano, Researcher, CNETE

Study program

[MsC in Energy and Material Science](#)

[PhD in Energy and Material Science](#)

Profile required

Bachelor's or Master's degree in chemistry, electrochemistry, materials science, chemical engineering or other relevant discipline.

Scholarships

The applicant will be funded for the duration of his/her [graduate studies](#). However, the candidate will be encouraged to apply for scholarships from funding agencies (FRQNT, NSERC, etc.).

Localisation

[Centre Énergie Matériaux Télécommunications](#)

1650, boul. Lionel-Boulet

Varenes (Québec), J3X 1P7, Canada

[Centre National en Électrochimie et en Technologies Environnementales Inc.](#)

2263 Av. du Collège porte 7,
Shawinigan (Québec), G9N 6V8, Canada

How to apply

Interested candidates can submit their application to the project managers by e-mail: Prof. Ana Tavares (ana.tavares@inrs.ca), Dr. Antonio Avalos Ramirez (aaramirez@cnete.qc.ca) and Dr. Beatriz Delgado Cano (bdcano@cnete.qc.ca). The application must include the following documents:

1. Full CV
2. University transcripts
3. Letter of motivation
4. Contact information for two or three references.

Candidates from the underrepresented groups are encouraged to apply.

Applicants are also encouraged to explain choices made in terms of academic and career opportunities, and any other circumstances such as interruptions or delays. These circumstances will be considered in a way that does not interfere with the evaluation of the candidate's accomplishments or qualifications.