

PhD in Electrochemical Battery Material Recycling

Montreal, Canada

The [Sustainable Electrochemical Technologies \(SET\) Lab](#) at Concordia University in Montreal, Canada has an open PhD position for a highly motivated individual to help us accelerate the global renewable energy transition by developing new methods for recycling of battery materials.

More specifically, this research is part of a larger interdisciplinary collaboration funded by the Volt-Age program on electrification and involves multiple Canadian universities and companies working towards the development of new battery chemistries and manufacturing processes to overcome the supply chain limitations of current battery technology. The position in the SET Lab focuses on developing electrochemical techniques for recovering precious battery materials to avoid unnecessary waste and recycle these into the manufacturing process. As such, the successful candidate will gain considerable experience with battery materials and electrochemical methods. The position will also involve design and optimization of the recovery process with computational methods.

This position is funded for 4 years through the Volt-Age program, with highly competitive financial support meant to attract top candidates. The successful candidate will be expected to deliver results according to the timeline of the project. Concordia University and the SET Lab are strongly committed to employment equity within its community. We encourage applications from all qualified candidates, including women, members of visible minorities, Indigenous persons, members of sexual minorities, persons with disabilities, and others who may contribute to diversification.

Project Name: Sodium-ion batteries for electrification of society: cradle to grave

Project Description:

This project focuses on advancing sodium-ion battery technology to support electrification and decarbonization in Canada. Sodium-ion batteries offer a safer, more affordable alternative to lithium-ion batteries, utilizing abundant materials and reducing environmental impact. However, challenges remain, including lower energy density, unique system design needs, and recycling concerns. The project is composed of four main research areas: 1) material science to enhance battery performance and adaptability in Canada's diverse climate, 2) battery pack engineering for optimized capacity and efficiency, 3) recycling to establish sustainable processes for regenerating materials, and 4) social science to assess economic and social factors for public acceptance. The project aims to create a comprehensive, sustainable, and socially acceptable sodium-ion battery solution for various Canadian applications, including remote and Indigenous communities.

Keywords:

battery, renewables, community, decarbonization, life-cycle

Minimum Qualifications:

Candidates are expected to have the ability to work independently as well as build collaborative relationships to solve challenging problems as part of a team. In addition, evidence of the following is required for applications to be considered:

- Master's degree in physics, chemistry; or chemical, electrical, or materials engineering.
- Research experience with electrochemical systems and methods.
- Excellent organizational, analytical, and problem-solving skills.
- Persistence to overcome research challenges.

Useful Skills:

The following experience and skills would also be an asset to the project:

- Experience with peer-reviewed scientific publishing.
- Working knowledge of computational modeling for reactor design.
- Experience with Python programming language for data analysis.

Financial Support: The financial compensation for this position is highly competitive.

Position Start Date: September 2025

Deadline to Apply: May 15th, 2025

Application Instructions:

Please email Prof. Marc-Antoni Goulet (marcantoni.goulet@concordia.ca) with a pdf copy of your CV and transcripts. In your email, please explain why you would like to work on this project and highlight your relevant qualifications and experience.

[More information on the Volt-Age research program](#)

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