

Posting: June 10, 2021

University of Toronto
Faculty of Applied Science and Engineering
Mechanical and Industrial Engineering Department

Area of Research: Accelerating CO₂ electrocatalysis via high-throughput system testing

The carbon dioxide (CO₂) reduction reaction (CO₂RR) converts CO₂ into fuels and chemical feedstocks, and can be powered by renewable electricity. It is a promising route to close the carbon cycle. Efficient electrocatalysts play a vital role in realizing this goal. However, testing promising materials under representative conditions is currently a bottleneck.

Description of Duties: The Sinton group at the University of Toronto seek an exceptional PDF to contribute to collaborative projects in the reduction of CO₂ and CO to valued products methane, ethanol, and ethylene, paired with oxidation reactions and systems that upgrade conventional testing systems by means of parallelization and automation. This position is part of the [A3MD](#) consortium — the **Alliance for AI-Accelerated Materials Discovery**. A high throughput testing system for CO₂RR would greatly advance the field, and provide comprehensive datasets that can — via AI — further accelerate catalyst discovery and system development. The principal goal of the PDF will be first-authored publications in high-impact journals, accompanied with an expectation that the PDF will devote a fraction of time to co-mentoring graduate students in the group.

Required Qualifications: Candidates must have a PhD in a relevant field. Excellent communication skills, strong independent research skills, and sensitivity to industry partner direction are also required. The applicant will be expected to work independently, provide leadership to an interdisciplinary team of graduate students, and produce publishable results.

Candidates will bring proven expertise in one or more of the following domains:

- Electrochemical systems, fuel cell systems
- Electrochemistry, electrocatalysis
- Chemical process engineering, process chemistry
- CO₂RR, CORR
- Mechatronic system design
- Instrumentation and instrumentation integration
- Automation
- Robotics
- Control systems

Ideal candidates are leaders that excel at motivating and managing small teams; have excellent organizational and time-management skills; and have excellent communication skills, including the capacity to offer thoughtful and clear technical guidance on research projects.

Salary: \$55,000/year

Expect start date: September 1, 2021

Term: 1 year term with possible renewal

FTE: 100%

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Closing date: July 20, 2021

The normal hours of work are 40 hours per week for a full-time postdoctoral fellow (pro-rated for those holding a partial appointment) recognizing that the needs of the employee's research and training and the needs of the supervisor's research program may require flexibility in the performance of the employee's duties and hours of work.

Application Instructions: Applications should be sent by July 20, 2021, to Dave Sinton (sinton@mie.utoronto.ca). Please use the subject line "PDF- High throughput CO2RR" to reference this opportunity. Evaluation of candidates will begin immediately, and continue until filled.

Employment as a Postdoctoral Fellow at the University of Toronto is covered by the terms of the CUPE 3902 Unit 5 Collective Agreement. This job is posted in accordance with the CUPE 3902 Unit 5 Collective Agreement.

The University of Toronto is strongly committed to diversity within its community and especially welcomes applications from racialized persons/ persons of colour, women, Indigenous/ Aboriginal People of North America, persons with disabilities, LGBTQ persons, and others who may contribute to the further diversification of ideas.