

Postdoctoral fellowships at the University of Toronto in electrochemical CO₂ capture, conversion, and/or reactive capture

Area of Research: The collaborating teams of [Prof. David Sinton](#) and [Prof. Ted Sargent](#) at the University of Toronto are electrifying chemical transformations including CO₂ direct air and point source capture and release, CO₂ upgrade into chemicals and fuels, and CO₂ upgrade from post-capture solutions (a.k.a. reactive capture). The team brings together fourteen experimental laboratories that span capabilities in engineering, chemistry, and applied physics, all located on the main downtown (St. George) campus of the University. The mission is to advance knowledge of CO₂ capture, catalysis, electrochemical systems, and chemical transformations and to apply this knowledge to address key challenges in sustainable energy including in next-generation CO₂ technologies. The group culture fosters win-win teamwork, striving for excellence, and communication that clarifies, finds connections, and explores new scientific avenues. The available position will focus on the development of next-generation CO₂ capture, CO₂ conversion, and/or reactive capture systems via fundamental advances in the science and engineering of novel materials and electrochemical systems design.

Description of Duties: Successful candidates will closely work with other post-doctoral fellows and PhD students, as well as partners from industry, government labs, and academic collaborators, to develop new scientific concepts and demonstrate engineering advances. They are expected to publish first-authored papers in high-impact journals and cultivate their mentoring skills by devoting a portion of their time to the supervision of graduate students in the group and the development of new research directions.

Essential Qualifications:

- Applicants must have received, or be close to receiving, their PhD degree in an area of science or engineering.
- Applicants are sought who have backgrounds in a field of engineering or science relevant to CO₂ chemistry and electrochemistry, including:
 - CO₂ catalysis and capture materials design and synthesis e.g. nanoparticles, bi-/tri-metallic alloys, metal organic frameworks, covalent organic frameworks, polymers, organic functionalized materials, redox-active molecules, and supported metal-metal oxides
 - Electrocatalytic mechanistic investigation e.g. rate equation derivations and electrochemical techniques
 - Fundamental electrochemistry e.g. charge transfer models, PCET mechanisms, field effects, and electrolyte engineering
 - The design, fabrication, and investigation of flow systems for electrochemistry, such as electrochemical flow cells and membrane electrode assembly devices
 - Computational chemistry relevant to electrocatalysis
 - Relevant allied fields, including but not limited to transport phenomena, membrane engineering, membrane science, thermocatalysis, photocatalysis, fuel cells, batteries, water electrolyzers, and high-temperature reactors.

Salary: \$65000/year

Expected Start Date: as soon as possible

Schedule: 100% FTE

Appointment: Term - (12 months) with a possible renewal

How to apply:

- The application package should include:
 1. A cover letter describing your interest and qualifications
 2. Your CV
 3. Contact information for 3 referees who have confirmed that they are willing to supply letters of reference upon request.
 4. Two relevant publications authored by the candidate
- Combine items 1-4 above into a single PDF file, named: "Givenname-Familyname-CO2_PDF_Application-YYYY-MM-DD.pdf"
- Email your application to **Jeannie Ing** (jeannie.ing@utoronto.ca), with the subject line, "CO2 PDF Application". Evaluation of candidates will begin immediately and continue until filled.

Posting Date: August 1, 2023

Closing Date: On-going

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.

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.