

# Postdoctoral Fellowship in Quantum Simulations



Department of Chemistry  
The University of British Columbia  
Vancouver, BC



**Principal Investigator:** Prof. Zachary Hudson

**Keywords:** Quantum computing, optoelectronics, quantum simulations, density functional theory, organic light-emitting diodes

**Job Description:** The Hudson Lab at the University of British Columbia is seeking a postdoctoral fellow for a collaboration with OTI Lumionics Inc. (Toronto, ON) under the 2021 [MITACS Elevate Thematic Call for Proposals in Quantum Science](#). The candidate will use quantum simulations to design advanced materials for optoelectronics, applying quantum algorithms to complex electronic structure problems.

The candidate will join a multidisciplinary research group at UBC studying problems spanning the field of optoelectronic materials. Current research areas in the group include i) new materials for organic electronics and solid-state lighting; ii) luminescent nanoprobe for bioanalysis; iii) the synthesis of nanomaterials from semiconducting polymers, and iv) quantum computing for optoelectronic materials discovery. For more information, visit [hudsonlab.ca](http://hudsonlab.ca).

The ideal candidate will have a Ph.D. in Theoretical Chemistry, or in Materials Chemistry with a strong theory component. Strong knowledge of density functional theory is essential, and while some knowledge of the principles of quantum computing would be beneficial, this position is suitable for candidates hoping to learn more about the quantum computing field. The candidate will also be involved in mentoring undergraduate and graduate students, as well as assisting with the day-to-day operation of the laboratory.

The successful applicant will prepare an application to the MITACS Elevate Thematic Call in Quantum Science, supported by Prof. Hudson and OTI Lumionics. The deadline for proposal submissions to this call is **January 19, 2022**, with results to be announced in June 2022.

## Requirements:

- A Ph.D. in theoretical chemistry or materials chemistry with a strong theory component;
- Expertise with density functional theory.
- **Applicants must be citizens or permanent residents of Canada, or currently hold a valid Canadian work visa.**

## Desirable skills include any of the following:

- Familiarity with the principles of quantum computing.
- Proficiency in the following programming languages: Python, Julia, C, C++, and/or FORTRAN.

- Familiarity with quantum chemistry software packages such as GAMESS, Gaussian, PSI4, and/or Terachem
- Expertise with the properties of optoelectronic materials (e.g. bandgap, excited states, applications);

Candidates must be highly motivated and self-driven, capable of independently designing and performing experiments. Excellent verbal and written communication skills, the ability to work well as part of a team, and a strong track record of publications as lead author are also required.

**Salary:** \$70,000 CAD/year + benefits.

**Start Date:** Summer 2022 (flexible).

**Location:** This position offers flexibility between Vancouver, BC and/or Toronto, ON.

Interested candidates should e-mail their complete application in PDF format by **Nov. 30, 2021** to [zhudson@chem.ubc.ca](mailto:zhudson@chem.ubc.ca), including:

- A cover letter describing your background, experience, motivation for seeking the position and contact information for three references;
- A CV including complete publication list;
- ‘PDF in Quantum Simulations’ in the subject line.

The evaluation of candidates will begin immediately and continue until filled. Only candidates selected for further evaluation will be contacted for an interview.

The normal hours of work are 40 hours per week for a full-time postdoctoral fellow, recognizing that the needs of the employee’s research and training may require flexibility in both duties and hours of work.

*Equity and diversity are essential to academic excellence. An open and diverse community fosters the inclusion of voices that have been underrepresented or discouraged. We encourage applications from members of groups that have been marginalized on any grounds enumerated under the B.C. Human Rights Code, including sex, sexual orientation, gender identity or expression, racialization, disability, political belief, religion, marital or family status, age, and/or status as a First Nation, Metis, Inuit, or Indigenous person.*

For more information, please visit:

MITACS Thematic Call: <https://www.mitacs.ca/en/programs/elevate/program-details/thematic-call>

Hudson Group: [hudsonlab.ca](http://hudsonlab.ca)

UBC Department of Chemistry: [www.chem.ubc.ca](http://www.chem.ubc.ca)