

# Postdoc Positions in Winnipeg, MB, Canada

I am looking for one (or two, depending on funding) postdoctoral fellows to join my research group. I would ask you to please bring this information to the attention of qualified candidates.

## General Background

The research of the Schreckenbach group is entirely computational/ theoretical in nature. Applicants must have or be close to receiving a Ph.D. in computational/ theoretical chemistry, materials science or a closely related field (preferably within the last 3 years), as well as a strong publication record. It is important that the applicant is capable of independent work. The postdoc(s) will be expected to work independently, but in close collaboration with the PI and other group members, as well as potentially with experimental collaborators. They are furthermore expected to provide leadership for more junior members of our research group. There is considerable room for the postdoc(s) to provide vision and give direction to the projects.

## Topics

The following topics are of interest:

### **1. Computational Modelling of Singlet Fission (SF) Materials in the Context of the Dye-Sensitized Solar Cell (DSSC)**

The project aims at exploring the combination of the DSSC paradigm for solar energy conversion with the intriguing effect of SF. It builds on previous work in my group in the area of solar energy conversion.

### **2. Quantum-Chemical Modelling of Two-Dimensional (2D) Materials**

This project will again build on previous work in our group. Of particular interest are (i) chemical modifications and functionalization of 2D materials, (ii) interfaces between 2D materials and polymers, (iii) adsorption of heavy elements.

### **3. Theoretical Actinide Molecular Science**

The project builds on existing strengths within my group in the general area of actinide chemistry. Specific projects and overall direction will be determined at a later date but will be partly driven by the projects of our experimental collaborators in the USA and elsewhere.

It is possible to combine two of these topics in one position.

## Specific Requirements

In addition to the general background outlined above, the following specific skills and background are considered *assets*:

Topic 1: *Experience in:*

- Materials modelling;
- Solar energy conversion;
- Dynamics (classical or AIMD);
- Surface studies;
- Excited state calculations.

Topic 2: *Experience in:*

- Materials modelling;
- 2D materials;
- Surfaces and interfaces.

Topic 3: *Experience in:*

- Relativistic quantum chemistry;
- Actinide chemistry;
- Multireference methods (such as CAS or DMRG);
- Multi-level/ embedding methods.

For topic 3, the postdoc will likely be required to visit our collaborators and attend conferences in the USA, and hence must be able to obtain the necessary visa or travel documents. (Assuming, of course, that we can travel by that time.)

**Salary; Start Date; Duration**

The salary is approximately \$40,000 CAD per year plus benefits. The actual start dates are negotiable but I would like the successful applicant(s) to start as soon as possible. Obviously, start dates also depend on the developments of the current pandemic situation.

The position(s) are initially 1 year in duration, with the possibility of renewal for another year *pending* mutual interest and, *in particular, the availability of funding*.

**Application:**

Interested candidates *should send the following material* directly to Prof. Georg Schreckenbach (electronic submission requested):

- Cover letter explaining your background in relation to your preference of topics (topics 1, 2, 3, or a combination); please mention where you learned about the positions; describe your career goals in connection to the position; for applicants whose native language is not English, please comment on your English-language skills also;
- Curriculum Vitae;
- List of Publications;
- One-page document outlining previous research achievements;
- Names and contact details of at least two referees;
- Any other documents that you deem relevant.

The review of applications will begin May 26, 2020 and will continue until the position(s) is/ are filled.

**Environment:**

The Schreckenbach research group is part of the Department of Chemistry at the University of Manitoba in Winnipeg. The University of Manitoba (<http://www.umanitoba.ca/>) is the largest university in the province of Manitoba and among Canada's major research universities. It has an undergraduate student population of about 25,000, and about 4,000 graduate students. The Chemistry Department (<http://www.umanitoba.ca/chemistry/>) is one of the largest departments in the University of Manitoba, yet it keeps a friendly and collaborative atmosphere. Recently, the department has undergone a period of renewal and growth.

Winnipeg (<http://www.winnipeg.ca/>) is a prairie city with a population of approximately 780,000 (metro area). Its people come from various ethnic backgrounds and are generally friendly and welcoming. Cultural amenities include ballet, theatre, symphony, ethnic festivals, and museums, and professional sports teams (e.g. hockey) are very popular. Winnipeg is a safe city. It is located close to good outdoor recreational activities with a wide variety of lakes, beaches and wilderness areas within an easy drive of the city.

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