

Postdoctoral fellow recruitment in analytical chemistry



A microfluidic microbial platform to optimize plastic breakdown and valorization using FTIR

Oceans contain 1 kg of plastic for every 5 kg of fish, microplastics are “spiraling” around the globe in the air we breathe—Join a major Canadian initiative to reverse the disastrous effects of plastic pollution.

We are searching for highly qualified and highly *motivated* postdoctoral fellow to coordinate U. Laval’s contribution to a major Canadian initiative targeting depolymerization of plastic using bacteria and their enzymes.

The candidate will be involved in all aspects of development and use “spectrofluidic” bioflow cells (microfluidic assay devices with integrated sensors for infrared spectroscopy) to screen bacteria and enzymes for optimized biodegradation kinetics of major consumer plastics, such as polyethylene (PE), PE terephthalate (PET), polyamide (PA) and polystyrene (PS). The work is being conducted using a pre-commercialized attenuated total reflection (ATR)-spectroscopy assaying accessory developed in partnership between the microfluidic bioanalytical laboratory of [Jesse Greener](#) and the [Bégin-Drolet](#) instrument development lab in mechanical engineering.

The project involves the following aspects:

- Bacteriology: culturing and screening bacteria and enzyme solutions
- Microfluidics: design and microfabrication of spectrofluidic devices
- Spectroscopy: conducting FTIR assay experiments and analyzing spectra

Therefore, candidates should have experience and interest with as many of the following areas as possible: microfluidics, microfabrication, vibrational spectroscopy, bacteriology/enzymology, plastics, programming, as well as mechanical and mechatronics. Applicants should also have excellent skills in collaboration, project management, problem solving, and communication.

The successful candidate will carry out their innovative project in [Québec City](#), one of the most beautiful cities in Canada. Bilingualism is not a requisite, but a commitment to learning French will be an advantage for integration into daily life. The host lab of Jesse Greener is highly interdisciplinary with a distinctly international flavor. The laboratory is new, featuring top-of-the-line instrumentation: FTIR spectrometers, advanced imaging including a live-cell hyperspectral confocal imaging system, bio-electrochemical stations, microbiology preparation and cutting-edge microfabrication tools. Join us in the perfect environment for discovery *and* the advancement of your career!

Department of admission
Chemistry

Research director

Jesse Greener, U. Laval.
Research [website](#).

Profile of candidate

Holds a PhD in analytical chemistry, bioengineering, biophysics or a related field.

Conditions of tenure

2-3 years. \$40k per year.
Health plan included.
Courses in French for the candidate and family members can be arranged free of charge.

Start date

Flexible with preferred date of September 2021.

Equity, diversity and inclusion

U. Laval and the Greener Group invite applications from all qualified individuals. Read [here](#) the university's equity, diversity and inclusion commitment.

For more information

Check [here](#) for updates.

To apply, email

jesse.greener@chm.ulaval.ca
(email title: “Postdoc position in plastic biodegradation”). Please include (1) a CV, (2) a letter outlining qualifications and your motivation for the position, (3) one sample of your research writing, and (4) names of two references.

Doctoral student recruitment in analytical chemistry



A microfluidic microbial platform to optimize plastic breakdown and valorization using FTIR

Oceans contain 1 kg of plastic for every 5 kg of fish, microplastics are “spiralling” around the globe in the air we breathe—Join a major Canadian initiative to reverse the disastrous effects of plastic pollution.

We are searching for highly qualified and highly *motivated* doctoral candidates for a major Canadian initiative targeting depolymerization of plastic using bacteria and their enzymes.

The candidate will develop and use “spectrofluidic” bioflow cells (microfluidic devices with integrated sensors for infrared spectroscopy) to screen bacteria and enzymes for optimized biodegradation kinetics of major consumer plastics, such as polyethylene (PE), PE terephthalate (PET), polyamide (PA) and polystyrene (PS). The work is being conducted using a pre-commercialized attenuated total reflection (ATR)-spectroscopy assaying accessory developed in partnership between the microfluidic bioanalytical laboratory of [Jesse Greener](#) in Chemistry and the instrument development lab of [Bégin-Drolet](#) in Mechanical Engineering.

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Therefore, candidates should have experience and interest with as many of the following areas as possible: microfluidics, microfabrication, vibrational spectroscopy, bacteriology/enzymology, plastics, programming, as well as mechanical and mechatronics. Applicants should also have excellent skills in collaboration, leadership, innovation, problem solving, and communication.

The successful candidate will carry out their innovative project in [Québec City](#), one of the most beautiful cities in Canada. Bilingualism is not a requisite, but a commitment to learning French will be an advantage for integration into daily life. The host lab of Jesse Greener is highly international with most students coming from abroad. The laboratory is new, featuring top-of-the-line instrumentation: FTIR spectrometers, advanced imaging including a live-cell hyperspectral confocal imaging system, bio-electrochemical stations, microbiology preparation and cutting-edge microfabrication tools. This is a multi-disciplinary environment where students can discover *and* play!

Department of admission
Chemistry

Research director

Jesse Greener, U. Laval.
Research [website](#).

Profile of candidate

Holds a Bachelor's of science and a Master's in analytical chemistry, engineering, biophysics or a related field.

Requirements

Meets admission requirements for admission to U. Laval as a chemistry PhD student.

Conditions of tenure

4 years. \$24k per year plus options for \$10.5k in other bonuses. Free courses in French can be arranged. Candidates obtaining an excellence scholarship from NSERC or FRQNT will obtain a supplemental \$5k per year on their bursary.

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