

Postdoctoral Fellow - Recycling of Mixed Plastic Waste  
Streams  
Ecole de Technologie Superieure

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Posted Feb. 26, 2024, set to expire Oct. 15, 2024

**Job Title** Postdoctoral Fellow - Recycling of Mixed Plastic Waste Streams

**Department** Mechanical Engineering

**Institution** Ecole de Technologie Superieure  
Montreal, Quebec

**Date Posted** Feb. 26, 2024

**Application Deadline** Open until filled

**Position Start Date** As soon as possible

**Job Categories** Post-Doc

**Academic Field(s)** Engineering - Other  
Polymer Science

**Job Website** <https://www.etsmtl.ca/ets/carrieres-ets>

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**Job Description**

## Postdoctoral Fellow - Recycling of Mixed Plastic Waste Streams

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L'École de technologie supérieur (ÉTS) is a rapidly evolving university in engineering and technology located in downtown Montreal. ÉTS offers undergraduate and graduate programs focused on applied engineering as well as state-of-the-art research infrastructure. ÉTS is also home to the Centech, a business incubator, offering support services for researchers wishing to commercialize their research.

Join the research team led by [Nicole R. Demarquette](#) and [Emna Helal](#) !

Working alongside them will enable you to develop your knowledge and skills and provide you with the opportunity to explore novel approaches to compatibilize mixed plastic waste streams and to assess their viability as feedstock materials for additive manufacturing.

### Your Role

What impact will you have as a Postdoctoral Research Fellow at ÉTS?

Packaging plastics, including polyethylene terephthalate (PET), polypropylene (PP), and polyethylene (PE), are among the most common postconsumer plastics in municipal solid waste streams. It's essential to separate these plastics prior to mechanical recycling.

However, separating polyolefins, i.e. PE, PP, and their variants, particularly through methods like density separation, can prove challenging due to their similar density, which leads to large fractions of unsorted plastic waste called mixed plastic streams.

Current attempts to mechanically recycle mixed streams face significant hurdles, notably concerning the inconsistency of melt flow properties and the poor interfacial adhesion between the different plastics in the mixtures.

These factors often result in inferior mechanical properties, limited application possibilities, and ultimately, the downcycling of these materials.

While numerous studies have explored compatibilization methods for immiscible polymer blends, only a few have delved into mixed plastic waste streams or their representative compositions.

This project aims to explore novel approaches to compatibilize mixed plastic waste streams and to assess their viability as feedstock materials for additive manufacturing.

### Requirements

The candidate must have a PhD (obtained within the last 5 years) in a relevant discipline, especially a PhD degree in polymer science or in a related field. Knowledge/experience in polymer blends, their

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processing and their compatibilization are highly recommended. Experience in polymer nanocomposites and plastics recycling is a plus. Shortlisted candidates will be requested to provide at least contact information of two references.

#### Other skills

- Strong publication record in significant journals and conferences in polymer science and related fields.
- Fluency in spoken and written French (intermediate or advanced level) and English (intermediate or advanced level).
- Strong writing and communication skills
- Proficiency in Microsoft Office suite, Teams and SharePoint environment.
- Excellent adaptability, organization, analysis and synthesis skills.
- Ability to work in multidisciplinary research environment.
- Rigorous follow-up and attention to detail.
- Creativity and initiative.
- Positive and collaborative attitude.

#### **Start Date and Fellowship Duration**

This postdoctoral fellowship would start as soon as possible. A contract of 1 year will be offered. Following a performance review and available funds, this fellowship could be renewed for an additional year.

#### **Sending your application**

All applications will be processed in strict confidentiality.

ÉTS will take into account any leaves that may result in career interruptions or delays. Therefore, we encourage you to mention any such leave that may have affected your professional path. We will take this information into consideration when evaluating your application.

In case of a disability, we may offer accommodation measures during the hiring process.

Each application must include the documents indicated below :

- A cover letter;
- Your curriculum vitae;
- A sample of your research achievements (e.g.: recent scientific articles).

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### **Immigration Requirements**

In compliance with the immigration requirements in effect in Canada, ÉTS invites all qualified individuals to apply. However, priority will be given to Canadian citizens and permanent residents. When submitting an application, it is important to indicate whether you are able to work in Canada, so that the applicable immigration procedures can be planned accordingly.

Depending on your authorization to work in Canada, the date of your postdoctoral fellowship could be subject to change. To accommodate administrative delay, the starting date can be automatically postponed until September 2024 without affecting the 1 year's duration. Any additional change would be subject to the professor's approval.

### **EEO/AA Policy**

ÉTS is actively implementing its Equal Opportunity Program, inviting applications from women, Indigenous, visible and ethnic minorities and people with disabilities. Valuing inclusion, we are committed to overcoming the barriers faced by people with disabilities in the workplace. We offer accessibility measures and are ready to provide assistance during the pre-selection and selection process to candidates who so wish. We encourage equity, diversity and inclusion, and consider these values to be fundamental to our working environment. We are taking concrete steps to increase diversity within our work teams. To this end, we ask you to identify yourself so that we can take this into account throughout the selection process. To do so, please complete the Equal Employment Opportunity form and send it to us with your curriculum vitae. The candidate must have the right or permission to work in Canada from the start of the assignment, and for the entire duration of the assignment.

### **Contact Information**

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

### **Contact**

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