



POSTDOCTORAL INTERNSHIP OPPORTUNITY

BIO-SOURCED MATERIALS FOR THE CAPTURE OF GASEOUS AND PARTICULATE CONTAMINANTS

The exploitation of natural resources is an economic driver for many regions in Québec. Specifically, mining and metallurgical activities can cause air pollution through the presence of gaseous and particulate contaminants, thus adversely affecting human health, the environment, buildings, structures, and, consequently, the economy. Conventional materials used in the production of air filters include glass fibers or synthetic polymers but face a considerable challenge when it comes to completely removing fine particulate matter and gaseous pollutants, being highly unstable and diverse. Cellulose is a widely used natural biopolymer and, due to its porous, durable, and surface-modifiable nature, it has shown increasing relevance in many fields. For example, as a high-performance air filtration system, in the manufacture of automotive parts and biocomposites, in food packaging, as a transparent membrane for ballistic protection, for biomedical applications, among others.

Project summary: This project aims to demonstrate the effectiveness of cellulose-based adsorbent filters in various forms (filter paper, film, membrane, foam, or gel) for the capture of gaseous contaminants (CO₂ and SO₂, NO_x) and solids (particulate matter). These air filters will be developed, characterized, recycled, and regenerated by a group of research members, each of whom will have a role to play. It is therefore expected that the person we are looking for will take on the role of mentor to the students involved in this research project. The project also aims to demonstrate the complementarity between the forestry, mining, and metallurgy sectors, with the development of high-value-added, cellulose-based renewable materials for the treatment of residues and emissions generated by the latter. The successful candidate will have a Ph.D. in a related field, experience in the development and characterization of renewable adsorbent materials and processes for the capture of gaseous and particulate contaminants, excellent oral communication skills in French and English, a good publication record, and the ability to work both independently and as part of a team.

Project start date: As soon as possible. One-year contract (renewable over three years) with a salary of \$60,000/year.

Contact information: To express your interest, please send a letter of interest along with copies of transcripts (which may be unofficial) and a recent CV to:

Flavia Braghiroli, Ph. D. ([ResearchGate](#))

Professeure en bioproduits forestiers

Institut de recherche sur les forêts

Université du Québec en Abitibi-Témiscamingue

445 boul. de l'Université, Rouyn-Noranda, Québec, J9X 5E4

Courriel : flavia.braghiroli2@uqat.ca





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