



New Graduate Student Positions

Department of Chemical Engineering

Polytechnique Montréal

Polytechnique Montréal is a leading Canadian Engineering University with an exceptional Chemical Engineering Department located on the Campus of the University of Montréal. Montréal is a diverse, high quality of life city, and an important hub in Canada for commerce, arts, culture and architecture. For a number of years, Montréal has ranked as North America's top city for students considering safety, affordability, accessibility for international students, student population and the quality of the city's universities.

Our research team at Polytechnique specializes in process systems engineering, process integration, as well as product and process design. We have completed projects employing the gamut of business and engineering analytics for decision-making, collaborating closely with industry. We have a professional, nurturing and inclusive research environment where we seek to attract and train tomorrow's leaders. Our current areas of research emphasis include technology assessment in the bioeconomy, biofuels production, energy analytics and strategies for deep decarbonization, techno-economic assessment, industrial symbiosis, life cycle assessment, and multi-criteria decision-making.

We have recently been part of a successful grant proposal to the Horizon 2020 program (H2020), involving a network of European and Canadian partners – including Université Laval and CanmetENERGY. The Canadian participation is supported financially by the New Frontiers in Research Fund (NFRF), and more specifically the 2020 Horizon Global Platform Competition. Further support for the program has been awarded from the Fonds de Recherche du Québec (FRQ).

The mission of the H2020 project is to develop a flexible and cost-effective gasification-based process (called FlexSNG) for the production of pipeline-quality biomethane, high-value biochar and renewable heat from a variety of low-quality lignocellulosic biomass residues and biogenic waste feedstocks. The combination of gasification process development and feedstock supply chain optimization are expected to lead to cost reductions that allow lowering biomethane production costs. The FlexSNG concept is based on our European partners advanced technologies in the fields of oxygen production, gasification and syngas clean-up, and catalytic methanation. The Canadian partners will bring expertise in technology assessment, process design, techno-economics, life cycle assessment, and industrial symbiosis.

We are currently recruiting graduate students to join our research team at the PhD level and MSc levels, starting either 1 May 2021 or 1 September 2021. Students who join the project will have the opportunity to work closely with our industry partners – developing new systems analysis methodologies employing design and process integration tools to address critical industry needs. More specifically, we have two graduate student opportunities:

1. MSc Project: Techno-Economic and Life Cycle Assessments of the FlexSNG process
2. MSc-PhD Project: Low-cost feedstock supply: Emerging technologies for lignocellulosic biomass procurement, pre-processing and feeding



You are seeking a challenging design-oriented MSc or PhD project. You like to solve open-ended problems, enjoy collaboration and the team environment, and would like to work directly with our industry partners. You are a chemical, process, or energy engineer who is comfortable in a multidisciplinary learning environment, balancing economic, environmental and societal needs in a systems engineering project scope. You are practical, and might have some previous process design experience - perhaps in a consulting or other industry setting. You listen, consider yourself to be sensitive to stakeholder needs, and have developed strong professional relationships during your past project experiences.

If this opportunity interests you, please email (1) your CV and ranking in your undergraduate program, (2) your university transcript, and (3) a statement of interest describing your passion related to this opportunity, and including an elaboration of related design and techno-economics project experience you may have. If you are selected following this process, you will be invited to apply for graduate studies related to this research program at Polytechnique.

We welcome all qualified applicants regardless of their identity factors or sociocultural, political, and economic backgrounds.

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