

## **Mitacs industrial post-doctoral fellowship on novel uses for pulp and paper mill residuals**

**Context:** The pulp and paper sector represents a key industry and employer in Canada, particularly in northern and rural communities. The efficiency and environmental footprint of the sector has improved immensely in the past four decades. There have been major breakthroughs in process technology that have eliminated challenging atmospheric and effluent emissions. Modern mills also recycle nearly all of their industrial process chemicals, and they can exceed energy needs through the combustion of bark and waste wood in biomass boilers and lignin in chemical recovery boilers. Beyond the provisions of essential products, pulp and paper mills are poised to play an increasingly important role in Canada's green economy. However, a few key research and operational challenges exist, including the reduction and valorization of waste residual streams from biomass boilers, chemical recovery cycles, and wastewater treatment plants. Many of these residual streams, which are derived from forest ecosystems, are at present sent to landfills.

A large university-industry research partnership funded by the Natural Resources and Engineering Research Council of Canada (NSERC) and a large industrial consortium led from the Pulp and Paper Research Centre in the Department of Chemical Engineering and Applied Chemistry at the University of Toronto has focused on improving the energy efficiency and reducing the environmental footprint of the pulp and paper sector in Canada and abroad. This has led to more efficient, economical, and safe operations of this important primary industry, as well as many fundamental discoveries in process chemistry, chemical engineering, mechanical engineering, and environmental science. Canadian Kraft Paper in The Pas, Manitoba has been an important, ongoing partner in this research consortium. Information about the consortium may be found here: <https://bit.ly/3tCy1sd>

**The position:** We are searching for an environmental (or related) scientist to lead applied research on the use of pulp mill residuals as soil and land reclamation substrates locally to the industrial partner, Canadian Kraft Paper. The mill has begun trials on brownfield reclamation, and is well connected to the local agricultural community and nearby metal mining operations in Northern Manitoba. Of key importance is the ability to work in a dynamic professional industrial environment, and to build and leverage relationships with other stakeholders in the local industrial and agricultural community, as well as government regulators in order to support existing trials and to bring new applications into practice..

The post-doctoral fellow is expected to spend the majority of their time on-site (residing mainly in The Pas), and will work periodically at the University of Toronto and Laurentian University for associated analyses and experiments, and to interact with graduate students working on complementary and collaborative research projects.

The lead academic supervisor is Dr. Nikolai DiMartini, Industrial Research Chair in the Department of Chemical Engineering at the University of Toronto <https://chem-eng.utoronto.ca/people/niko-demartini/> and co-supervisor is Dr. Nathan Basiliko, Canada Research Chair at the Living with Lakes Centre at Laurentian University <https://www3.laurentian.ca/livingwithlakes/about/staff/nathan-basiliko/> On site, the main industry supervisor is Tamsin Patience, Technical Manager at CKP. There will also be important interactions with CKP's Environmental Coordinator and with academic and industry partners in the research consortium at large.

The salary for this position is supported by Mitacs and CKP for 2 years at a rate of 50k/y, and includes benefits through the University of Toronto. Travel between the academic institutions and CKP, and

associated research expenses will be supported by NSERC grants and industry support from the consortium at large

**Qualifications:** Applicants must have a PhD from a recognized university in a relevant field, and must hold or be able to gain employment eligibility in Canada. The candidate must be able to drive legally in Canada. We are searching generally for expertise in aspects of soil science, land reclamation, ecosystem ecology, and/or agronomy, however we encourage all potential applicants who see themselves as a fit to apply. Experience interfacing with industry and/or regulatory agencies is desirable.

**Venues:** The Pas Manitoba in central-western Manitoba is located 630km from Winnipeg, and has many amenities as an important regional northern hub in the north, and extensive opportunities for outdoor enthusiasts. <https://discoverthepasocn.ca/>

The University of Toronto is Canada's largest and consistently top ranked university both nationally and internationally. The Faculty of Engineering and Applied Science is also consistently ranked as the top engineering school in Canada.

**How to apply:** Applications should consist of a cover letter outlining interest and fit with the position, a C.V. and contact information for at least two potential referees. Materials should be addressed to Dr. Niko DeMartini at [nikolai.demartini@utoronto.ca](mailto:nikolai.demartini@utoronto.ca) Applications received by September 17 will be given full consideration. The anticipated start date is Jan 2022; however, this also can be flexible.