Master of Science Position in Polymer Science

Subject: Polyethylene Blends with the Aim of Improving their Circularity

Context :
PolymerÉTS the polymers engineering laboratory of Ecole de Technologie Supérieure de Montreal is looking for a candidate for a Master of Science in the field of polymer blends. This thesis work will be carried out as part of a collaboration involving the multinational NOVA Chemicals, Calgary, the leading producer of polyethylene in Canada, and École de Technologie Supérieure de Montréal (Department of Mechanical Engineering), Canada. Half of the research will be carried out at the company site and the other half at the University. It will be also carried out within the framework of the Tier 1 Canadian Research Chair held by Professor Nicole R. Demarquette

Research Objectives:
As part of a circular economy, it is essential to recycle plastic waste. Often, recycled polymers, once sorted and decontaminated, are mixed with polymers of the same chemical nature, aiming at generating blends of miscible polymers, with adequate properties. However, in the case of polyethylene, which contributes to more than 30% of plastic waste, the use of polymer blends to reclaim the properties of the recycled material is far from an easy task. Indeed, recycled polyethylene contains different grades (high-density, linear low-density, and low-density polyethylene among others) that are difficult to separate and are not miscible with one another. The understanding and control of the properties of blends of polyethylene of different types is, therefore, essential if one wants to reclaim recycled polyethylene. This project aims at carrying out a study on the functional properties of different polyethylene blends. The results will then be used as a tool to formulate blends based on recycled polyethylene. This project will be co-funded by Nova Chemicals and Canadian granting agencies. The chosen candidate will work closely with a PhD student and a Post-doctoral fellow as well as Nova Chemical Research team.

Required qualifications:
Bachelor in chemical engineering or materials engineering with a good background in polymers.
Full proficiency in English

Conditions:

Compensation :	Scholarship to be discussed
Starting date :	January 2025
Laboratory :	PolymerÉTS : https://polymerets.etsmtl.ca/
Thesis supervisor	Pr. N.R. Demarquette

How to apply:
Interested applicants should send a C.V., contact information of two referees, transcripts, and a cover letter outlining their research experience to Pr Nicole R. Demarquette nicoler.demarquette@etsmtl.ca