Corepan Bois

Consortium de recherche sur les panneaux composites à base de bois

MASTER'S DEGREE RECRUITMENT

Development of a High-Solids Latex-Based Adhesive for Wood Composite Panels

The wood-based composite panel industry is a constantly evolving sector that must adapt to consumer needs and regulations on volatile organic compound (VOC) emissions. The adhesives used in the production of these panels are made from synthetic resins and fossil-based compounds, some of which, such as formaldehyde, are classified by the World Health Organization as carcinogenic to humans and animals.

This project aims to explore the potential of latex-based adhesives, which are colloidal dispersions of polymer particles, such as polyvinyl acetate (PVAc) and polyacrylics, for use in composite panels. PVAc, widely used in the materials industry, provides good adhesion to various substrates while being relatively safe and environmentally friendly. However, its performance is limited under humid conditions or at elevated temperatures (above 70 °C). Polyacrylate dispersions, on the other hand, stand out for their excellent resistance to water, alkalis, and corrosion, as well as their transparency.

Initially, work will focus on selecting the most suitable latex formulations (e.g., solids content, glass transition temperature, etc.). Subsequently, the integration of biosourced polymers will be considered to enhance the durability and performance of these adhesives (e.g., water resistance and adhesive strength) while minimizing their environmental impact.

The project aligns with efforts to reduce dependence on petrochemical-based materials and limit the emissions of compounds such as formaldehyde, thereby meeting the growing demands for sustainability and safety in the composite materials industry.

The consortium is a joint initiative of a research team from Université Laval, Université de Québec en Abitibi Témiscamingue, SEREX and with industrial and government partners: FPInnovations, Produits forestiers Arbec, Sacopan, Tafisa, Uniboard, Conseil de l'industrie forestière du Québec, ministère des Ressources naturelles et des Forêts du Québec. The mission of the wood-based composite panel consortium is to contribute to the research and training of highly qualified personnel in three research areas: (1) raw materials, (2) innovative processes and adhesives and (3) products and markets.bThis project is part of the "products and markets" theme of the consortium. The candidate will work in collaboration with the partners of the research consortium and will be part of the Center for Research on Renewable Materials (CRMR). The members of the CRMR form a multidisciplinary and dynamic team, working for the development of new solid wood products, wood-based composites, wood fiber or lignocellulosic fiber and value-added co-products.

Graduate program
Master's degree in Wood and Bio-based Materials Engineering, Département des sciences du bois et de la forêt, Université Laval.

Research director
Véronic Landry, Univesité Laval.

Candidate profile
Bachelor's degree (or equivalent) in chemistry, chemical, wood or material engineering, or other related fields.

Requirements
Eligibility for the master's degree program in Wood and Bio-based Materials Engineering at Université Laval.

Conditions
21 000$ per year, paid as a salary. Duration of 2 years.

Starting date
May 2025 or according to the candidate's availability

To apply
Send your resume, cover letter, and transcript to: veronic.landry@sbf.ulaval.ca and ingrid.calvez@sbf.ulaval.ca

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