

PhD Position - Embodied carbon in Canadian wood construction materials

UNBC Natural Resources and Environmental Studies (NRES)

Research Overview

The project aims to assess the role of wood construction materials in net-zero emissions building strategies. This involves a full life cycle carbon accounting framework, quantifying biogenic carbon of the forestry phase and post-harvest supply chain emissions (inclusive of manufacture, transport, construction, and disposal or disassembly). The study will examine tree species and harvested wood products specific to the forest sectors in British Columbia and Quebec. The research aims to identify the lowest ecosystem and product life-cycle carbon costs for wood construction materials.

The PhD student will undertake an assessment of sequestered carbon contained within select Canadian tree species considering changes in stand type (primary versus secondary forest stands) and climate change; this is designed as a four-year program under the supervision of Dr. Lisa Wood.

This is a funded position: A \$25,000/year stipend to be provided to the student upon acceptance, for a minimum of a 3-year duration provided progress is satisfactory. This project is funded by United Therapeutics Corporation: <https://www.unither.com/home>

Position Duties and Responsibilities

The incumbent of this position will be responsible for the following core activities:

- Complete required coursework and the required candidacy examination.
- Undertake a literature review to identify the current state of knowledge and determine scope and methods of research project.
- Undertake primary and secondary data collation and collection (where appropriate). This may require travel and remote, field-related work.
- Conduct laboratory analysis of wood samples and GIS mapping exercises to determine spatial differences in samples.
- Analyze all data.
- Complete a research proposal and successfully defend a final dissertation.

- Engage in knowledge translation activities such as presenting research at international conferences and other events; writing up research for publication in leading international journals; writing up research for diverse audiences.
- Provide oversight on social media, newsletters, and outreach activities.

Education & Skills Requirements

Prospective students must meet the academic requirements to be admitted to the graduate program in PhD NRES at UNBC, should hold a relevant undergraduate and MSc. degree in wood science, wood chemistry, forestry with emphasis on wood biology, or other degree providing expertise in wood-specific sciences.

Also, evidence of strong research knowledge, skills and attitudes; an interest in the subject matter. The ideal background includes expertise in tree cellular anatomy and/or wood chemistry, wood carbon assessment, familiarized with existing research databases for wood properties measurements for Canadian tree species, and familiarized with lab techniques for wood density and/or wood carbon analysis.

The successful applicant will need to have the ability to work independently, as well as within a team environment, and must be able to work successfully within a specified timeframe. The ability to share information in an effective and collaborative manner is required. Proven capabilities to self-motivate, take initiatives on, and have the ability to be resourceful, energetic, self-directed and creative, while generating ideas and fostering positive outcomes is crucial.

Our Commitment to Diversity and Employment Equity:

The University of Northern British Columbia is fully committed to creating and maintaining an equitable, diverse, and inclusive environment that is accessible to all. We are devoted to ensuring a welcoming, safe, and inclusive campus free from harassment, bullying, and discrimination. This commitment is woven into our motto and mission. In the Dakelh language, UNBC's motto 'En Cha Huná translates to "he/she/they also live" and means respect for all living things. Through the respect for all living things, we are able to grow and learn better together, each bringing our own unique individual differences and contributions to inspire leaders for tomorrow by influencing the world today. Employment equity requires that we remove barriers and overcome both direct and indirect discrimination. In this way, the pool of excellent candidates increases substantially. We encourage applications from members of groups that have been marginalized on any grounds enumerated under the B.C. Human Rights Code, including sex, sexual orientation, gender identity or expression, racialization, disability, political belief, religion, marital or family status, age, and/or status as a First Nation, Metis, Inuit, or Indigenous person

About the University and its Community:

Since its founding in 1990, the University of Northern British Columbia (UNBC) has emerged as one of Canada's best small research-intensive universities, with a passion for teaching, discovery, people, and the North. UNBC's excellence is derived from community-inspired research, hands-on learning, and alumni who are leading change around the world. Since time immemorial, Indigenous peoples have walked gently on the diverse traditional territories where the University of Northern British Columbia community is grateful to live, work, learn, and play. We are committed to building and nurturing relationships with Indigenous peoples, we acknowledge their traditional lands, and we thank them for their hospitality. UNBC's largest campus in Prince George is located on the traditional unceded territory of the Lheidli T'enneh, in the spectacular landscape near the geographic centre of beautiful British Columbia. Explore our website: <https://www.unbc.ca/>.

UNBC consistently ranks in the top three in its category in the annual Maclean's university rankings. UNBC also recently placed among the top five per cent of higher education institutions worldwide by the Times Higher Education World University Rankings. With a diverse student population, the University is friendly, inclusive, and supportive. Prince George is a city of ~74,000 people with impressive cultural, educational, and recreational amenities. For more information about living and working in Prince George, please refer to <http://www.unbc.ca/experience> and <https://moveupprincegeorge.ca>. Make your mark with this leading post-secondary institution.

Candidates that would like to apply for this PhD opportunity are invited to submit:

- A cover letter outlining how your experience matches the requirements;
- A detailed and up-to-date CV;
- Details of two referees, including their email addresses.

All qualified candidates are encouraged to apply. We thank all applicants for their interest, however, only those selected for an interview will be contacted.

Applicants should forward all documents to: Dr. Lisa Wood, Associate Professor, Department of Ecosystem Science and Management at lisa.wood@unbc.ca.

The desired start date for this position is May or September 2025.