Dynamic MFA of large-scale adoption of bio-sourced epoxies for novel microelectronics packaging solutions

Record number : OPR-1260

Overview

RESEARCH DIRECTION

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INFORMATION

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ADMINISTRATIVE UNIT(S)

Faculté de génie
Département de génie civil et de génie du bâtiment

LEVEL(S)

3e cycle

LOCATION(S)

Campus de Sherbrooke
LIRIDE

Project Description

About us - Interdisciplinary Research Laboratory on Sustainable Engineering and Ecodesign (LIRIDE):
Our research focus on Life Cycle Assessment (LCA) and Industrial Ecology. We support the industry, governments, and organizations in their path towards a truly sustainable development supported by LCA. We offer a friendly and professional working environment.

Description:
This PhD project is part of a larger consortium initiative covering the full bio-sourced epoxy value chain. It spans from forestry-derived raw materials to epoxy production, application in commercial products, and end-of-life treatment. Nine industry and public-sector partners working on this value chain are actively involved. Training is provided by a multidisciplinary team of ten faculty members, scientists, and professionals. LIRIDE will provide expertise on the life cycle environmental benefits of bio-based epoxy innovative solutions.

This project focuses on the potential of novel microelectronics packaging solutions to transform the technology of whole sectors of the economy. It aims to assess how their large-scale adoption could reshape the resources–energy trade-offs and affect environmental performance. Using a dynamic material flow analysis (MFA) approach, the project will model the flows of materials over time, capturing production, use, and end-of-life stages, while tracking changes in resource demand, energy use, and material purity. LCA will complement this by evaluating broader environmental impacts and trade-offs. The framework will be applied to two case studies, offering insight into practical opportunities and constraints.

Daily work:
The work will be carried out within an interdisciplinary team of LIRIDE, in close collaboration with the various stakeholders in the initiative. The team will consist of two PhD students and researchers. In addition, an integral part of your work is to publish your results in peer-reviewed journals and present them at international conferences.

Qualifications:
Your qualifications should include a master's level university degree in civil, chemical, mechanical or environmental engineering, or similar studies with excellent grades. A strong interest in modelling would be an important advantage. Your admission will be subject to the standard rules of the University of Sherbrooke (funding assured for the entire duration of the PhD project). The project will start as soon as

possible or upon mutual agreement. You are expected to contribute to teaching and research activities of the laboratory up to a maximum of 20% of your working time.

Application:
We look forward to receiving your online application including 1) cover letter, 2) resume, 3) credentials and 4) contact information for two references. We will begin interviewing candidates as soon as a sufficient number of applications are received. Applications will be accepted until the position is filled.

Further information:
Questions regarding the position should be directed to info@liride.info. Please also visit our website www.liride.info. For applications: info@liride.info

Discipline(s) by sector

Sciences naturelles et génie

Génie civil

Funding offered

Yes

The last update was on 22 June 2026. The University reserves the right to modify its projects without notice.