

Development of functional coatings on biodegradable polymer films with a continuous process line

Project type: Master thesis (Spring 2025)

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Collaboration: BioApply SA

This project aims to develop a biobased, photocurable, and biodegradable composite ink tailored for compostable film materials. Our objectives include the development of sustainable alternatives to oil-derived polymers and the incorporation of biobased photocurable precursors, which represents a pioneering approach in this field. Challenges lie in achieving optimal material properties while ensuring compatibility with compostable film substrates. Nevertheless, our achievements hold promise for advancing eco-friendly packaging solutions and reducing reliance on non-renewable resources.

This project will involve the development of suitable parameters for adapting functional coatings onto film substrates through a continuous process line. The research will utilize a UV roll-to-roll pilot process tool, which is designed and operational at LPAC. The project will be structured into three major parts:

Experimental Skill Acquisition:

- Developing expertise in coating application using a lab-scale pilot process
- Achieving continuous or patterned coating layers on film substrates

Mechanical Testing:

- Conducting mechanical tests on the coated films to assess their performance.

Industrial Collaboration:

- Working closely with industry partners to optimize the coating process.
- Ensuring the scalability and commercial viability of the developed coatings.

The detailed tasks within the project will be tailored to the student's skills and interests, providing a customized and focused research experience. This will include hands-on laboratory work, data analysis, and collaboration with industrial partners.

Confidentiality: As this research is part of an industrial project, the student will be required to sign a nondisclosure agreement (NDA) before commencing work on the project.