

Internship Offer: Master 2 / Final-Year Engineering Student

Topic: Synthesis and Characterization of Bio-Based Oligoesters for High-Performance Unsaturated Polyester Resins

Context: This internship is part of the **RESINNOV project** (*Développement d'une RESine polyester insaturée INNOVante haute performance, sans styrène et sans cobalt*). This collaborative project is carried out by the LG2A laboratory at Université de Picardie Jules Verne, URD ABI - AgroParisTech, and the industrial partner Nord Composites. The aim of the project is to develop a high-performance unsaturated polyester resin made from more sustainable raw materials and without styrene or cobalt.

Internship Objectives: The main goal of the internship is to prepare bio-based polyester oligomers and study their properties. The student will also use these oligomers to prepare and test unsaturated polyester resin formulations. The main tasks will be:

- Study the literature related to bio-based polyesters and unsaturated polyester resins.
- Synthesize polyester oligomers by polycondensation.
- Work with bio-based diols and unsaturated dicarboxylic acids or anhydrides.
- Study the effect of the monomers and reaction conditions on the properties of the oligomers.
- Formulate and process the synthesized polyesters.
- Characterize the materials using techniques such as NMR, GPC, FTIR, DSC, and TGA.
- Present the results during project meetings.
- Write a final internship report and give a final presentation.

Profile of the Candidate: We are looking for a motivated and careful student who is:

- Currently enrolled in a Master 2 program or the final year of an engineering degree.
- Studying polymer chemistry, organic chemistry, green chemistry, or a related subject.
- Familiar with basic laboratory and analytical techniques.
- Interested in sustainable chemistry and environmental topics.

Previous experience in polymer synthesis is highly desirable, but not essential.

Host Laboratory: The internship will take place at **URD ABI - AgroParisTech**, located within the Pomacle-Bazancourt biorefinery. URD ABI works on the use of agricultural resources and biorefinery by-products. Its research activities include industrial biotechnology, green chemistry, and process engineering. The laboratory develops new processes to transform renewable resources into useful products, including polymers, materials, fine chemicals, additives, and cosmetic ingredients.

This internship will give the student the opportunity to:

- Gain practical experience in polymer synthesis, formulation, and material characterization.
- Work on a research project that brings together academic and industrial partners.
- Learn more about bio-based polymers and sustainable composite materials.
- Work in a multidisciplinary research environment.
- Develop skills in scientific analysis, communication, and project work.

Starting Date: February 2027 (6 months)

How to Apply: To apply, please send:

- A CV
- A short cover letter explaining your interest in the internship
- Your Master's or engineering-school transcripts

Applications should be sent to:

Dr. Sami Fadlallah (URD ABI - AgroParisTech): sami.fadlallah@agroparistech.fr

Saryana Soutenare (PhD Student): saryana.soutenare@u-picardie.fr

Please use the following email subject: **Application – RESINNOV M2 Internship – First name Last name**

Candidates are encouraged to apply by 31 October 2026.