

Development of lignin-based bio-sourced construction materials

Context

Over the past few years, lignin has attracted growing interest in the field of petroleum-based products, particularly as a partial substitute for bitumen in construction applications.

This internship is part of a research and innovation initiative dedicated to the development of bio-based binders with properties comparable to those of conventional ones. The aim is to investigate and enhance the role of lignin as a key component by deepening the understanding of its physicochemical behaviour and its influence on bio-based formulations. The work will focus mainly on lignin fractionation, physicochemical characterisations (DSC, TGA, solubility parameters, chromatography, NMR, etc.), and the study of structure–property relationships within the resulting binders. These investigations will help guide formulation choices and optimise the performance of the developed bio-based binder.

This work will directly contribute to an ongoing PhD project, conducted in collaboration with two industrial partners committed to developing sustainable solutions for the outdoor infrastructure sector.

Missions

The main objectives of the internship are as follows:

- Conduct a literature review
- Carry out R&D activities: lignin fractionation in the laboratory; physicochemical characterization of lignins before and after fractionation; study of the structure-property relationship within the obtained binders
- Critically analyse the results
- Communicate findings through written and oral presentations
- Work and progress in a highly collaborative research environment

Profile

Master's student (M2) in Chemistry, Materials Science, or Process Engineering, looking for an internship focused on applied research addressing industrial challenges. Prior knowledge in analytical chemistry and lignocellulosic biomass would be advantageous; however, a general background in chemistry and physical chemistry is also suitable.

The selected candidate will be able to demonstrate scientific curiosity, rigor, autonomy and dynamism, as well as team spirit and personal skills. Candidates should be fluent in French or English

The gratification will be equal to that required by the legislation. The internship will be supervised by the PhD student on the project.

Location: LGP2 (Grenoble, France, <https://lgp2.grenoble-inp.fr/en>)

Duration: 5 to 6 months from January-February 2026

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Send your CV and a motivation letter before November 28th, 2025.