

Lignin fragmentation and solubility in biorefineries

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We are now looking for a **Doctoral Researcher in Chemical Engineering**.

We are seeking a highly motivated and talented PhD student to join our research group in the field of lignin solubility, fragmentation, and their relevance to biorefineries. The project will involve experimental phase equilibria measurements, thermodynamic modeling, and process technology analysis.

Scientific environment

The position is located at Aalto University, Chemical Engineering research group. We have excellent facilities for experimental work on phase equilibria and separation processes, and highly qualified team of experts to support and guide your work. Our research group is doing experimental work on various phase equilibria and separation processes, and chemical engineering related modeling for various industrially relevant processes.

In the first weeks, you will be assigned your own onboarding buddy who will help you get started with your work and studies at Aalto.

Your role and goals

- Conduct experimental phase equilibria measurements to determine the solubility of lignin and its fragments in various solvents.
- Investigate lignin fragmentation pathways and their impact on solubility.
- Develop and apply thermodynamic models to predict lignin and fragment solubility in different solvent systems.
- Analyze the impact of lignin and fragment solubility on biorefinery processes, such as biomass pretreatment and lignin valorization.
- Collaborate with other members of the research group and external partners to achieve project goals.
- Present research findings at conferences and publish results in peer-reviewed journals.

Your experience and ambitions

The candidate is expected to have:

- Keen interest in thermodynamics and phase equilibria.
- Experience with experimental techniques for phase equilibria measurements.
- Proficiency in process simulations (*e.g.*, Aspen plus) and preferably in relevant programming languages (*e.g.*, Python, MATLAB).
- Excellent written and verbal communication skills.
- Ability to work independently and as part of a team.

An applicant must have completed by 31 July 2024 or preferably earlier (to start employment on 1 August 2024) or by 31 December 2024 or preferably earlier (to start employment on 1 January 2025)

- Master's degree in Chemical Engineering, Chemistry, or a related field.