

Completely bio-degradable earplugs/moldable sound absorbent solutions

Supervisors: Prof. Jaana Vapaavuori and Prof. Tapio Lokki

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We are now looking for a **Doctoral Researcher in an interdisciplinary project combining biomass sidestream valorization and acoustics.**

Are you passionate to do research that can help with climate change mitigation? Do you want to challenge yourself in a thoroughly interdisciplinary project where we aim to convert fundamental understanding of sound-biomaterial interactions into everyday impact?

We are now looking for a doctoral researcher to do a dissertation of finding routes of non-wood biomass valorization into highly porous acoustic absorbents. In this project, emphasis is on developing porous biomaterials that are both easily moldable and which can recover completely upon compression. Such materials could be used as earplugs but also, for instance, inside loudspeakers and machinery to damp the resonances. Currently, such applications use foams made from common fossil-fuel based engineering polymers – thus embarking on this research will open a new way to valorize lignocellulosic biomaterials. The team working on the topic combines unique expertise from both materials' science as well as acoustics and signal processing, so you will have an opportunity to learn from the key players of the field.

More information of our ongoing work can be found on our project page: [MMD FinnCERES: Acoustics | Aalto University](#)

Scientific environment

This interdisciplinary research project combines the expertise of the research groups of Prof. Lokki, [Aalto Acoustics Lab](#) and Prof. Vapaavuori, [Multifunctional Materials Design | Aalto University](#), and it aims for both contributing to the fundamental knowledge of sound absorption in highly porous media as well as proof-of-concept prototyping of net-zero or carbon-negative sound absorbent products. You will be working with state-of-the-art facilities of both materials processing and acoustic measurements, including world-class anechoic room and measurement devices for porous materials.

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

We are looking for a team player, able to learn fast new concepts, since the position is open in an ongoing project already employing two PhD candidates. Your daily tasks involve planning your research, doing experiments, as well as analyzing and disseminating results in different forms. Tasks can involve occasional participation in teaching and participation to the general tasks of the research groups.

Your experience and ambitions

- A keen interest to work in the lab, learn how to build your own instruments, perform your own experiments, and analyze your results.
- Excellent academic student track records
- Prior work in any interdisciplinary research setting highly appreciated

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)

- a master's degree awarded by a university, or
- a study programme that in the awarding country gives eligibility for doctoral level studies

in materials chemistry, materials physics, biomass processing, or a closely related field. A good command of English is required, Finnish language is not.