Doctoral researcher, Characterization of wood nanostructure with X-ray scattering and machine learning
Aalto University

Job Title	Doctoral researcher, Characterization of wood nanostructure with X-ray scattering and machine learning
Department	T107 Bioproducts and Biosystems
Institution	Aalto University , , Finland
Date Posted	Apr. 29, 2024
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Graduate Student
Academic Field(s)	Bioengineering (all Bio-related fields)
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Doctoral-researcher--Characterization-of-wood-nanostructure-with-X-ray-scattering-and-machine-learning_R39536-4

Apply By Email

Job Description

Aalto University is where science and art meet technology and business. We shape a sustainable future by making research breakthroughs in and across our disciplines, sparking the game changers of tomorrow and creating novel solutions to major global challenges. Our community is made up of 13 000 students, 400 professors and close to 4 500 other faculty and staff working on our dynamic campus in Espoo, Greater Helsinki, Finland. Diversity is part of who we are, and we actively work to ensure our community's diversity and inclusiveness. This is why we warmly encourage qualified candidates from all backgrounds to join our community.

We are now looking for a

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Doctoral researcher in Characterization of wood nanostructure with X-ray scattering and machine learning

A detailed picture of the structure of wood cell walls is highly desired to accelerate the development of new, sustainable applications from this abundant renewable raw material. We are currently developing machine learning based methods to analyze and interpret large quantities of X-ray scattering data from wood. These methods would enable extracting new information on the hierarchical structure of wood, including its variation in nature and due to different processes.

We are searching for a doctoral researcher to work in the NNxWOOD (2021-2026) and WoodCensus (2024-2026) projects funded by the Research Council of Finland. Both of these ongoing projects develop and utilize machine learning based approaches for automatizing the analysis of X-ray scattering data from wood samples. The WoodCensus project is a collaboration between Aalto University and VTT Technical Research Centre of Finland, involving also international partners.

Your role is to utilize machine learning based tools to analyze large quantities of X-ray scattering (small/wide-angle X-ray scattering, SAXS, WAXS) data from wood samples and interpret them in the context of wood nanostructure. You may also participate in scattering experiments using laboratory X-ray sources and state-of-the-art synchrotron facilities (e.g., MAX IV) or contribute to further development of the machine learning based data analysis methods. The work involves scientific programming and eventually working in a high-performance computing environment. The position is based at the [url=https://www.aalto.fi/en/department-of-bioproducts-and-biosystems]Department of Bioproducts and Biosystems of Aalto University/School of Chemical Engineering (Otaniemi Campus, Espoo, Finland), in the [url=https://www.aalto.fi/en/department-of-bioproducts-and-biosystems/biobased-materials-structure]Biobased Materials Structure research group led by Academy Research Fellow, Dr. Paavo Penttilä. The inspiring and international research environment offers high-quality infrastructure, and the work is supported by national and international collaborators and the [url=http://finnceres.fi/]FinnCERES Flagship Programme of the Research Council of Finland.

Your background and expertise

Required: *
Master's degree in physics, chemistry, materials science, computer science, or a related field *
Desire to understand the structure of (biological) materials *
Experience on scientific programming (especially Python) *
Excellent writing and communication skills in English

Desired experience or interests: *

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Wood anatomy and cell-wall nanostructure, lignocellulosic materials *
Structural characterization with synchrotron and laboratory X-ray scattering methods (especially SAXS, WAXS) *
Machine learning, large amounts of data, high-performance computing

This position is suitable to a well-motivated and self-guided candidate, who is interested in conducting ambitious research in a highly multidisciplinary and growing area, linking AI technology with cutting-edge physical characterization and bio-based materials for a sustainable future.

What we offer

Doctoral studies at Aalto University take approximately four years. The candidate will be granted a one-year contract with the possibility of extension. The starting salary for a doctoral researcher is approximately 2600-2700 EUR/month.

If you are chosen for this position, you will apply for the study right in doctoral studies at Aalto University School of Chemical Engineering. Thus, please check the student information and admission criteria at [url=https://www.aalto.fi/en/study-options/aalto-doctoral-programme-in-chemical-engineering]https://www.aalto.fi/en/study-options/aalto-doctoral-programme-in-chemical-engineering. In particular, please pay attention to the mandatory skill level in English.

We work in Otaniemi, Espoo. The Otaniemi campus is a thriving and connected community of 100 nationalities, 13 000 students and 4 500 employees. Life at the transformed campus is vibrant and filled with amazing architecture, calming nature, and a variety of cafes, restaurants, services and good connections along the metro line.

Ready to apply?

If you want to join our community, please submit your application through our online recruitment system no later than May 31st, 2024, using the link on Aalto University's webpage ("Apply now"). If you are an Aalto employee, please apply via Workday system (internal jobs).

To apply, please include the following documents in English and as a single pdf document: *
Motivation letter *
CV with a possible list of publications and the title of your Master's thesis *
List of references that we may contact *
A study transcript provided by the applicant's university that lists studies completed and grades achieved

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The deadline for applications is May 31, 2024, and the employment would ideally start at the beginning of September 2024.

For additional information, please contact Dr. Paavo Penttilä ([url=mailto:paavo.penttila@aalto.fi]paavo.penttila@aalto.fi).

Want to know more about us and your future colleagues? You can watch these videos: [url=https://www.youtube.com/watch?v==5k_og_6zUJQ]Aalto University - Towards a better world, [url=https://www.youtube.com/watch?v==dUfEGVM-ZP8&feature=youtu.be]Aalto People, and [url=https://www.youtube.com/watch?v==ZK6pDWm1_CE]Shaping a Sustainable Future. You can also check out our webpage about Aalto and Finland: [url=https://www.aalto.fi/en/services/welcome-to-aalto-university-and-finland-info-package]https://www.aalto.fi/en/services/welcome-to-aalto-university-and-finland-info-package and our new virtual campus experience: [url=https://virtualtour.aalto.fi/]https://virtualtour.aalto.fi/.

About Finland

Finland is a great place for living with or without family - it is a safe, politically stable, and well-organized Nordic society. Finland is consistently ranked high in quality of life and was just listed again as the happiest country in the world: [url=https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/]https://worldhappiness.report/news/its-a-three-peat-finland-keeps-top-spot-as-happiest-country-in-world/. For more information about living in Finland: [url=https://www.aalto.fi/en/careers-at-aalto/for-international-staff]For international staff | Aalto University

Aalto University reserves the right for justified reasons to leave the position open, to extend the application period, and to consider candidates who have not submitted applications during the application period.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

Finland

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