

Doctoral researcher in solvent-free synthesis of cellulose-based catalysts
Aalto University

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Posted Jul. 5, 2024, set to expire Dec. 30, 2024

Job Title	Doctoral researcher in solvent-free synthesis of cellulose-based catalysts
Department	T105 Chemistry and Materials
Institution	Aalto University , , Finland
Date Posted	Jul. 5, 2024
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Graduate Student
Academic Field(s)	Chemistry - General Biology - General
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Doctoral-researcher-in-solvent-free-synthesis-of-cellulose-based-catalysts_R40247-2

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.

[url=https://www.aalto.fi/en/node/5191]The School of Chemical Engineering is one of the six schools of Aalto University. It combines natural sciences and engineering in a unique way.

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We are now looking for a

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Are you interested in research, particularly in the field of organic chemistry and material science, and enthusiastic about exploring unconventional synthetic strategies? We are now seeking a motivated team player, passionate about developing sustainable material synthesis techniques. Our research focuses on the use of mechanochemical and related solid-state synthesis approaches to make materials under solvent-free or low-solvent conditions, aiming to reduce the waste, cost, and hazards of chemical reactions. You will explore these synthesis approaches for making porous heterogeneous catalysts from cellulosic materials. In this role, you have the opportunity to train skills in organic chemistry, large variety of material characterization techniques, and contribute to shaping a greener future.

Your role and goals

Your work, as a doctoral researcher, will be to conduct scientific research, publish and communicate your results, and complete your doctoral degree. The focus of your research will be on synthesis of porous heterogeneous catalysts in solid-state reaction set-ups (ball milling, extrusion, and accelerated aging), particularly to understand: *

Can the solvent-free techniques eliminate the need for toxic and harmful solvents that are typically used for cellulose modification and synthesis of covalent organic frameworks (COFs)? What are the mechanochemical reaction parameters that influence these processes? *

What are the material properties and catalytic activity of the obtained hybrid materials?

The goal is for you to become an expert of sustainable chemical processing and characterization of biomaterials, while creating cutting-edge bio-based catalysts. You will have the opportunity to share your results within the vibrant international green chemistry research community, while building skills in organic and physical chemistry, material science and advanced analytical techniques (e.g. state-of-the-art liquid and solid-state NMR techniques, X-ray diffraction, transmission electron microscopy, etc). The position involves participation in departmental teaching and student instruction, and international mobility (6 months).

Your experience and ambitions

The candidate is expected to have: *

M.Sc. degree (or close to graduation) in chemistry, materials science, or related field *

Good written and oral communication skills in English *

Motivation for working in the laboratory, carrying out experiments, and data analysis

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Experience in one of the following fields is highly valued in the choice of the candidate: synthesis of covalent organic frameworks, cellulose chemistry, and/or mechanochemistry.

Your team and network

You would work in the [[url=https://www.aalto.fi/en/department-of-chemistry-and-materials-science/synthesis-technologies](https://www.aalto.fi/en/department-of-chemistry-and-materials-science/synthesis-technologies)]Synthesis Technologies research group (led by Assistant Professor Sandra Kaabel) in the [[url=http://cmat.aalto.fi/en/](http://cmat.aalto.fi/en/)]Department of Chemistry and Materials Science (CMAT). The aim of the research team is to develop sustainable and safer technologies for chemical and enzymatic transformation of biopolymers, to expand the portfolio of available renewable materials. The CMAT Department offers a multi-disciplinary working environment, focused on micro-, nano-, and atomic scale engineering of compounds and materials. Your network will also include the collaborating group of Junior Professor Dr. Frederik Haase in Martin-Luther-Universität Halle-Wittenberg, Germany, [[url=https://www.aalto.fi/en/node/5266](https://www.aalto.fi/en/node/5266)]Department of Bioproducts and Biosystems, the [[url=https://www.finnceres.fi/](https://www.finnceres.fi/)]FinnCERES Materials cluster and the [[url=https://www.libercentre.fi/](https://www.libercentre.fi/)]LIBER Center of Excellence.

What we offer

Aalto University is one of the leading European research and higher education institutions in the field of sustainable chemistry and engineering based on the utilization of renewable resources. At Aalto University, you will work in our world-class facilities in the School of Chemical Engineering ([[url=https://www.aalto.fi/en/school-of-chemical-engineering/research-infrastructure](https://www.aalto.fi/en/school-of-chemical-engineering/research-infrastructure)]<https://www.aalto.fi/en/school-of-chemical-engineering/research-infrastructure>), Micronova, and Otanano, training your experimental skills on infrastructure dedicated to the development of biorefinery processes and analytical techniques. The workplace is situated on the main campus of Aalto University in Otaniemi (short metro ride from Helsinki). Our campus and the nearby area also host offices of several high-tech startups and international corporations, offering opportunities for networking and career development.

The first employment contract is made for one year, during which you will apply for the study right in doctoral studies at Aalto University School of Chemical Engineering. 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)]<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. Doctoral studies at Aalto University take approximately four years. The starting salary for a doctoral researcher is 3000 EUR/month, and will increase over time according to the salary system of Aalto University. The employment contract includes occupational health benefits, and access to the comprehensive social security system of Finland. The position is available immediately, with the exact starting date negotiated with the selected candidate.

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Ready to apply?

If you would like to join our community, please submit your application through our online recruitment system no later than 11.8.2024 using the link provided on Aalto University's webpage ("Apply now"). If you are an employee at Aalto, please apply for the position via the internal system Workday (internal jobs), by using your existing Workday user account.

To apply, please include the following (in English) as a single PDF document: *

Motivation letter: free-form letter (1 page) describing yourself, why you are interested in doctoral studies and this particular position. *

CV: including a short description of previous research experience (up to 1 page), possible list of publications, the title of your Master's thesis, and contact details of two references that we may contact.

We will start reviewing and interviewing candidates immediately. Applications will be considered until the position is filled.

Want to know more about us and your future colleagues? You can watch these videos:

[url=https://www.youtube.com/watch?v=#61;5k_og_6zUJQ]Aalto University - Towards a better world,

[url=https://www.youtube.com/watch?v=#61;dUfEGVM-ZP8&feature=#61;youtu.be]Aalto People, and

[url=https://www.youtube.com/watch?v=#61;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/.

If you want to know more about the position, please contact Assistant Professor Sandra Kaabel (sandra.kaabel(at)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/node/32446]For international staff | Aalto University

Contact Information

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Please reference Academickeys in your cover letter when
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Contact

Finland