

Doctoral researcher to work on Materials Engineering for
Efficient Green Ammonia Production
Aalto University

Direct Link: <https://www.AcademicKeys.com/r?job=242414>

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Posted Jul. 31, 2024, set to expire Dec. 30, 2024

Job Title Doctoral researcher to work on Materials Engineering
for Efficient Green Ammonia Production

Department

Institution Aalto University
, , Finland

Date Posted Jul. 31, 2024

Application Deadline Open until filled

Position Start Date Available immediately

Job Categories Graduate Student

Academic Field(s) Material/Metallurgy

Job Website https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Doctoral-researcher-to-work-on-Materials-Engineering-for-Efficient-Green-Ammonia-Production_R40322

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.

The School of Science and The School of Chemical Engineering are two of the six schools of Aalto University.

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We are now looking for a

Doctoral researcher to work on Materials Engineering for Efficient Green Ammonia Production

Join us in this challenging endeavour of developing the key materials and methods for green transition! Ammonia is one of the most produced compounds in the world (~150 million tons per year), and a vital raw material for various important substances, such as fertilizers. It is also a promising green hydrogen carrier and zero-carbon fuel. Currently, ammonia is produced by energy-hungry Haber-Bosch synthesis using fossil-originated hydrogen. Lithium-mediated nitrogen reduction (LiNR) has demonstrated significant promise in ambient-condition electrochemical ammonia synthesis. LiNR, however, still has poor efficiency due to unstable materials and lack of understanding for rational engineering approach. This project will fill these gaps and precisely tailor the materials through atomic layer deposition (ALD) and investigate them with advanced characterization methods. The main aim is to obtain fundamental understanding of the role of solid-electrolyte interface (SEI) and optimize the materials for efficient LiNR, contributing towards efficient electrochemical ammonia production and realization of a carbon-neutral society.

Your role and goals

This position is part of the doctoral school of [url=https://www.aalto.fi/en/aalto-university-h2-innovation-center]Aalto Hydrogen Innovation Center, which will be supported by common seminars, networking activities and contact with industry. In your role, you will develop and engineer the materials required for LiNR and gain understanding on their behavior employing modern facilities at Aalto University. In the beginning of the employment, you will apply for the study right in doctoral studies at Aalto University School of Science. Please check the student information and admission criteria at [url=https://www.aalto.fi/en/programmes/aalto-doctoral-programme-in-science]Aalto Doctoral Programme in Science | Aalto University. In particular, please pay attention to the mandatory skill level in English. The first employment contract is made for two years and doctoral studies at Aalto University take approximately four years altogether.

This project involves collaboration between two schools at Aalto University. The ALD-based interface engineering will be carried out in the School of Chemical Engineering (CHEM, supervisor Ville Miikkulainen). Mechanistic investigations on the interfacial dynamics and LiNR performance will be done in the School of Science (SCI, supervisor Yaolin Xu). Part of the characterizations will be performed at the Nanomicroscopy center (NMC, e.g., for cryo-FIB/STEM and operando TEM) of the Finnish national infrastructure OtaNano and at the synchrotron facilities (e.g. MAX IV, ESRF, BESSY, SOLEIL).

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Your experience and ambitions

We are looking for an ambitious scientist, who enjoys working in an interdisciplinary environment learning about new methods and approaches. We expect the candidate to have a MSc degree in chemistry, materials science, physics, or closely related discipline. Expertise in one or more of the following fields is highly valued for the candidates: * Electrochemical analysis and/or electrocatalysis * Atomic layer deposition (ALD) * Transmission electron microscopy (TEM) * X-Ray spectroscopies (e.g. XAS, XPS)

Working proficiency in English is mandatory. Finnish language is not required.

What we offer

At Aalto University we conduct cutting-edge research on development of advanced materials by several research groups. The Otaniemi campus is a thriving and connected community of 100 nationalities, 13,000 students and 4,500 employees. Otaniemi and the nearby area also hosts offices of several high-tech startups and international corporations, offering intriguing prospects for networking and career development.

The annual workload of research and teaching staff at Aalto University is 1612 hours. Aalto University follows the salary system of Finnish universities. The starting salary for Doctoral Researchers is approximately 2700 € per month (gross), and it increases as you progress in your research and studies. The contract includes occupational health care and Finland has a comprehensive social security system.

Starting date will be in Fall 2024, the exact date can be agreed with the selected candidate.

Join us!

If you would like to join our community, please submit your application through our online recruiting system no later than September 15, 2024 by clicking the link "Apply now!" on the recruitment site. Please include the following documents in English. * Motivation letter: free-form 1 page letter where you describe yourself and why you are interested in postgraduate studies and this particular position. * CV describing education and employment history, including contact details of two references * MSc degree certificate

If you are an employee at Aalto, please note: you should apply for the position via our internal system Workday. Use your existing Workday user account. Aalto University's students and visitors should

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apply as external candidates with personal (not aalto) email.

If you have any questions, you can reach out to Professors Yaolin Xu ([yaolin.xu\(at\)aalto.fi](mailto:yaolin.xu@aalto.fi)) and Ville Miikkulainen ([ville.miikkulainen\(at\)aalto.fi](mailto:ville.miikkulainen@aalto.fi)).

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

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](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](https://www.youtube.com/watch?v=dUfEGVM-ZP8&feature=youtu.be)]Aalto People , and [[url=https://www.youtube.com/watch?v=ZK6pDWm1_CE](https://www.youtube.com/watch?v=ZK6pDWm1_CE)]Shaping a Sustainable Future. Read more about working at Aalto: [[url=https://www.aalto.fi/en/careers-at-aalto](https://www.aalto.fi/en/careers-at-aalto)]Careers at Aalto | Aalto University

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/)]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](https://www.aalto.fi/en/careers-at-aalto/for-international-staff)]For international staff | Aalto University.

Contact Information

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

Contact

Finland