

Doctoral Researcher in Electrochemical Interfacial Study
with Advanced Characterization
Aalto University

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Posted Nov. 20, 2025, set to expire Mar. 22, 2026

Job Title	Doctoral Researcher in Electrochemical Interfacial Study with Advanced Characterization
Department	T304 Dept. Applied Physics
Institution	Aalto University , , Finland
Date Posted	Nov. 20, 2025
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Graduate Student
Academic Field(s)	Physics - General Materials Sciences/Polymer Sciences Chemistry - General
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Doctoral-Researcher-in-Electrochemical-Interfacial-Study-with-Advanced-Characterization_R44811-1

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 120 nationalities, 14 000 students, 400 professors and close to 5000 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.

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At the Department of Applied Physics, our pioneering research in physical sciences creates important industrial applications that hold great technological potential. Our research focuses on Materials physics, Quantum technology, Soft & living matter, and Advanced energy solutions. Topics extend from fundamental research to important applications. We educate future generations of research and development professionals, data specialists, technology experts, inventors, and scientists for industry and society.

Position title Doctoral Researcher in Interfacial Phenomena of Lithium-based Electrochemical Systems

Are you fascinated by the hidden world of electrochemical interfaces?

We are now looking for a highly motivated Doctoral Researcher to join the Department of Applied Physics at Aalto University. In this position, you will have the opportunity to explore interfacial phenomena in lithium-based electrochemical systems using state-of-the-art characterization techniques. Your work will contribute to understanding and designing the next generation of energy storage and conversion technologies, with impact on both green ammonia production and sustainable energy storage. In this position, you will contribute to pioneering research in lithium batteries and lithium-mediated nitrogen reduction (LiNR), with a particular focus on electrode-electrolyte interface/interphase.

Your role and goals

- * Investigate interfacial phenomena in lithium-based electrochemical systems using advanced microscopy techniques, including operando TEM or cryo-EM, EC-AFM, etc.
- * Study the structure, chemistry, and dynamics of the electrodes and interfaces/interphases during electrochemical operation, i.e., operando.
- * Collaborate with ongoing efforts in interface characterization (X-ray based spectroscopy and microscopy) and engineering (e.g., atomic layer deposition, artificial interfaces) and advanced battery modeling to establish correlations between interface/interphase design and electrochemical performance.
- * Provide mechanistic insights that will help design next-generation electrochemical systems, with applications ranging from green ammonia production to advanced batteries.

Your network and team

You will work in a highly interdisciplinary environment within the Advanced Energy Solutions area of Aalto University. You will collaborate closely with colleagues working on batteries and lithium mediated nitrogen reduction (LiNR). Part of the characterizations will be performed at the Aalto Nanomicroscopy center (e.g., for cryo-FIB/STEM and operando TEM). Supervision will be provided by Prof. Yaolin Xu, team leader of EMI (Energy Materials & Interfaces). And you will have the opportunity to interact with

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world-class experts in electrochemistry, materials science, and microscopy.

Your experience and ambitions

We are looking for a candidate who:

- * Holds a Master's degree in materials science, physics, chemistry, microscopy, or a related field.
- * Has evident experience in at least one of the following: electron microscopy and electrochemistry.
- * Has strong motivation for research on electrochemical energy storage and conversion.
- * Is curious, collaborative, and open to working in a multidisciplinary research environment.
- * Fluency in English is required (spoken and written).
- * Finnish language is not required; proficiency is considered an advantage.

What we offer

- * A meaningful and inspiring research environment in a university ranked among the world's best in sustainability and materials science.
- * Access to world-class research infrastructure, including cryo-FIB/SEM, cryo-STEM, in-situ TEM, liquid cell TEM, EC-AFM and SAXS/WAXS in Aalto's Nanomicroscopy Center (NMC).
- * Access to state-of-the-art techniques, such as XAS/XES, XRS and XCT, at the Center for X-ray Spectroscopy at the University of Helsinki
- * The chance to collaborate with experts across electrochemistry, nanomaterials, and advanced energy solutions.
- * Support for professional development, including training, international conferences, and career coaching.
- * A vibrant, international campus community in Espoo, Finland, consistently ranked as one of the happiest and safest places to live worldwide

Our vast array of professional development opportunities means you will grow and learn, having the chance to participate actively in staff trainings and development projects based on your interests and needs.

The position of the Doctoral Researcher is initially filled for 2 years. The contract is continued for another 2 years after a successful midterm review. 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 is approximately 3075 €/month (gross), and it increases as the Doctoral Researcher progresses in the research and studies. The contract includes Aalto University occupational healthcare.

We value work-life balance and well-being in all aspects of life. We work in a hybrid model, with the primary workplace located at the Otaniemi Campus in Espoo, Finland. Life on the revitalized campus is

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vibrant, featuring stunning architecture, tranquil nature, and a variety of cafes, restaurants, and services, all complemented by excellent public transportation connections.

Join us!

To apply, please share your CV and motivation letter with us through our recruitment site ("Apply now!") latest at 23.59pm (EET) December 5th, 2025. We will go through applications, and we may invite suitable candidates to interview already during the application period.

Please note: Aalto University's employees should apply for the position via our internal HR system Workday (Internal Jobs) by using their existing Workday user account (not via the external webpage for open positions). If you are a student or visitor at Aalto University, please apply with your personal email address (not aalto.fi) via [\[url=https://www.aalto.fi/en/careers-at-aalto\]](https://www.aalto.fi/en/careers-at-aalto)Aalto University open positions

For more information about the role, please contact Prof. Yaolin Xu ([\[url=mailto:yaolin.xu@aalto.fi\]](mailto:yaolin.xu@aalto.fi)yaolin.xu@aalto.fi). For questions related to the application process, please contact HR Advisor Päivi Niemi ([\[url=mailto:paivi.j.niemi@aalto.fi\]](mailto:paivi.j.niemi@aalto.fi)paivi.j.niemi@aalto.fi).

Want to know more about us and your future colleagues? You can watch these videos: [\[url=https://www.youtube.com/watch?v=i8zawpNMVG8\]](https://www.youtube.com/watch?v=i8zawpNMVG8)This is Aalto University!
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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

Check out our new virtual campus experience: [\[url=https://virtualltour.aalto.fi/\]](https://virtualltour.aalto.fi/)Aalto University - virtual campus tour

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 listed again as the happiest country in the world: [\[url=https://worldhappiness.report/news/world-happiness-report-2025-people-are-much-kinder-than-we-expect-research-shows/\]](https://worldhappiness.report/news/world-happiness-report-2025-people-are-much-kinder-than-we-expect-research-shows/)World Happiness Report 2025

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)Aalto Careers for International Staff.

More about Aalto University:

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Contact Information

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

Contact

Finland