Doctoral Researcher in two-dimensional (2D) Nanodevices and Quantum Materials
Aalto University

Job Title	Doctoral Researcher in two-dimensional (2D) Nanodevices and Quantum Materials
Department	T304 Dept. Applied Physics
Institution	Aalto University , , Finland
Date Posted	Sep. 19, 2025
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Graduate Student
Academic Field(s)	Physics - General
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Doctoral-Researcher-in-two-dimensional--2D--Nanodevices-and-Quantum-Materials_R44306
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 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.

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

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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.

[url=https://www.aalto.fi/en/department-of-applied-physics/atomic-scale-physics]The Atomic Scale Physics group at the [url=https://www.aalto.fi/en/department-of-applied-physics]Department of Applied Physics is looking now for a Doctoral Researcher (PhD student) to pursue a degree in the field of 2D nanodevices and condensed matter physics (especially in low-dimensional correlated materials).

The student will work at the frontier of low dimensional quantum materials research with state-of-the-art experimental techniques including nanofabricated devices with 2D materials and low temperature scanning tunneling microscopy (STM) in a world-renowned group having expertise in these techniques and materials.

Your role and goals

The goal of the doctoral researcher is to study emergent electronic phenomena in two-dimensional materials by gate-tunable scanning tunneling microscopy (STM). Typical examples of these materials include van der Waals monolayers of transition metal dichalcogenide superconductors, Mott insulators, ferromagnets, multiferroics, etc.
Your tasks will include: * Fabrication of nanoelectronic devices in cleanroom facilities (lithography, deposition, exfoliation and transfer of 2D materials). * Characterization of 2D materials using Raman spectroscopy, AFM, and related techniques. * Integration of such devices into low-temperature STM experiments. * Collaboration with group members and international theoretical/computational partners.

Your experience and ambitions * Master’s degree in the field of condensed matter physics or a closely related field. * Existing skills and knowledge in electronic device nanofabrication and clean room processing of 2D materials (required). * Skill sets of handling low-temperature and ultra-high vacuum systems, such as molecular beam epitaxy (MBE) or STM experience, are a bonus. * Ability to work both independently and as a part of an international and multidisciplinary research group. * Interest in experimental condensed matter physics. * Excellent command of English. The Finnish language is not required.

The selected candidate needs to 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/study-options/aalto-doctoral-programme-in-science-0]Aalto Doctoral Programme in Science | Aalto University.

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What we offer

We offer a fully funded PhD project for one talented Doctoral Researcher under the guidance of Dr. Ziying Wang in the Atomic Scale Physics group led by Prof. Peter Liljeroth. The group consists currently of 3 Academy Research Fellows, 1 Postdoctoral Researcher and 5 Doctoral Researchers. The group focuses studying physical phenomena in atomically precise materials characterized using scanning tunneling microscopy and non-contact atomic force microscopy in a wide array of systems such as heterostructures of two-dimensional van der Waals materials, atomically well-defined graphene nanoribbons, and artificial lattices on surfaces.

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 2815 €/month (gross), and it increases as the Doctoral Researcher progresses in the research and studies. The contract includes Aalto University occupational healthcare.

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. There is great freedom in your role, and we have a flexible modern working culture. We value work-life balance and well-being in all aspects of life.
We work in a hybrid way, and the primary workplace is Otaniemi, Espoo. Life at the transformed Otaniemi campus is vibrant and filled with amazing architecture, calming nature, and a variety of cafes, restaurants, services and good connections along the recently opened metro line.

Join us!

To apply, please share the following application materials with us through our recruitment site (click "Apply now!” button on Aalto University’s webpage). Include the following documents: * Brief cover letter explaining your motivation and suitability for this position * CV including education background, skills and a list of publications * Degree certificates and academic transcripts * PDF copy of your Master’s thesis or a link (URL) to a repository where it can be found * Recommendation letter(s) and/or contact details of those who can give a recommendation

The deadline for applications is 10th October 2025. We will go through applications, and we may invite suitable candidates to interview already during the application period. We aim to have a transparent and equal recruitment process, so feel free to ask us for feedback. 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.

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See the group webpage and contact Dr. Ziying Wang ([url=mailto:somesh.ganguli@aalto.fi]ziying.wang@aalto.fi) for more details of this position.

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). Aalto University’s students and visitors should apply as external candidates with personal (not aalto) email.

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. Read more about working at Aalto: [url=https://www.aalto.fi/en/careers-at-aalto]Careers at Aalto | Aalto University

Check out our new virtual campus experience: [url=https://virtualtour.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 just listed again as the happiest country in the world: [url=https://data.worldhappiness.report/table]WHR Dashboard. For more information about living in Finland: [url=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