Doctoral researcher in next-generation inkjetable materials
Aalto University

Job Title	Doctoral researcher in next-generation inkjetable materials
Department	T106 Chemical and Metallurgical Eng
Institution	Aalto University , , Finland
Date Posted	Sep. 9, 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-in-next-generation-inkjetable-materials_R40763-2
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.

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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The research will be in the framework of the project "3D-GRINO-PPCI, 3D Graded Index Optics Printed using Photocurable Inks". 3D-GRINO-PPCI will deliver locally optimized polymeric materials with designed gradient compositions to tailor the performance of the optical systems well beyond the capabilities of today's technologies. We will present a groundbreaking opportunity to replace conventional optical lenses, where material interface (form) refracts light rays, with lenses with parallel tailored refractive index distribution (graded-index GRIN), which makes it possible for the optical rays also to bend inside the optical elements. Although freeform optics have already been introduced and simple geometrically symmetric GRIN optics are possible to manufacture - separately - our unique multi-material 3D printing technology will enable simultaneous control of form and GRIN structure with accuracy, flexibility, and functionality never seen before. We will also develop optical design algorithms that will benefit from the researched materials and be able to optimize optical systems for a much smaller number of elements than ever before. One key element of the new algorithms is 'Micro-correction of Chromatic Aberration', which keeps all colors of white light traveling together by proper choice of newly developed photocurable ink materials with respect of the refractive indices and the Abbe numbers.

The 3D-GRINO-PPCI is a Research Council of Finland Consortia Funding between Aalto University and the University of Eastern Finland. For one of the working packages, we are seeking a highly motivated doctoral researcher to join our innovative project focused on developing next-generation inkjetable and rapidly photocuring polymeric materials for optical applications. This project aims to advance the field of optical materials by creating formulations that enable precise voxel-by-voxel manufacturing of 3D structures with pre-defined refractive index gradients.

Your role and goals * Design and synthesize novel photocurable oligomeric precursors, polymeric resins, and polymer composites with varying refractive indices. * Characterize materials to understand their properties and performance. * Optimize material formulations for inkjet printing. * Collaborate with a multidisciplinary team to achieve project objectives.

Your experience and ambitions * MSc degree in polymer science, materials science, or a related field * Proven experience in polymer synthesis and characterization. * Understanding of material properties relevant to optical applications. * Ability to work with and optimize complex formulations for inkjet printing.

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Your network and team
This position will be based in the [url=https://www.aalto.fi/en/department-of-chemical-and-metallurgical-engineering/polymer-synthesis-technology]Polymer Synthesis Technology Group, led by Prof. Jukka Niskanen, which focuses on the synthesis and characterization of novel polymers.

The unique competitive edge of the [url=https://www.aalto.fi/en/department-of-chemical-and-metallurgical-engineering]Department of Chemical and Metallurgical Engineering in the School of Chemical Engineering is based on sustainable utilization of raw materials, designing more efficient processes and developing new materials and products. Our department’s areas of expertise enable sustainable future with high performance products and processes in circular economy and bioeconomy. The department is in a key position in research of chemical engineering, materials technology, metals processing, efficient energy technologies and digitalization of these. Our core competences include unit operations and processes in chemical engineering, hydro- and pyro-metallurgy, catalyst and polymeric materials, novel catalytic process, process control and process systems engineering.

What we offer
The starting date is November 1, 2024, or as mutually agreed. 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. 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.

Join us!
If you want to join our community, please submit your application no later than 30.9.2024, in English through our online recruitment system by using the link ("Apply Now") on Aalto University's web page. Please note that we only accept applications via Workday.

Please including the following attachments mentioned below, as one single PDF document ('lastname_firstname_application.pdf'): * Letter of motivation including a brief description of your research interests. * CV including a list of publications * Degree certificates and academic transcripts * Contact details of at least two referees (or letters of recommendation, if already available)

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Please note that the position will be filled as soon as a suitable candidate is identified.

For additional information, kindly contact Asst. Prof Jukka Niskanen [url=mailto:jukka.niskanen@aalto.fi]jukka.niskanen@aalto.fi, or Staff Scientist Dr. Hossein Baniasadi [url=mailto:hossein.baniasadi@aalto.fi]hossein.baniasadi@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.Read more about working at Aalto: https://www.aalto.fi/en/careers-at-aalto
Check out our new virtual campus experience: [url=https://virtualtour.aalto.fi/]https://virtualtour.aalto.fi/

Please note: Aalto University's employees and visitors should apply for the position via our internal system Workday -> find jobs (not external aalto.fi webpage on open positions) by using their existing Workday user account.

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]https://www.aalto.fi/en/careers-at-aalto/for-international-staff .

Contact Information

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

Contact

Finland