

Postdoctoral researchers in carbon nanotube synthesis
research
Aalto University

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Posted Jul. 1, 2022, set to expire Oct. 31, 2022

Job Title	Postdoctoral researchers in carbon nanotube synthesis research
Department	T304 Dept. Applied Physics
Institution	Aalto University , , Finland
Date Posted	Jul. 1, 2022
Application Deadline	Open until filled
Position Start Date	Available immediately
Job Categories	Post-Doc
Academic Field(s)	Physics - General
Job Website	https://aalto.wd3.myworkdayjobs.com/aalto/job/Otaniemi-Espoo-Finland/Postdoctoral-researchers-in-carbon-nanotube-synthesis-research_R34018

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Job Description

The Nanomaterials Group at the Department of Applied Physics is now looking for a

Post doctoral Researchers to develop synthesis methods for carbon nanotube materials.

We are now looking for 2 active post/docs to develop novel gas phase i.e. floating catalyst chemical vapor deposition (FC-CVD) methods to produce carbon nanotubes (CNT) with atomically controlled structure. FC-CVD method is based on introducing nanosized metallic (e.g. iron) catalyst particles into a high temperature gas environment containing carbon precursors, i.e. carbonaceous molecules like CO, methane, methylene, ethanol, toluene etc. The carbon precursors are decomposed at the catalyst nanoparticle surface, liberating carbon atoms into the catalyst particles followed by the growth of the carbon nanotubes. In this position you will have a chance to make a significant impact on the carbon

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nanotube synthesis development as well as to contribute to the development of important industrial CNT applications.

Your role and goals

The main roles of the post-docs to be hired include developing novel catalyst systems (e.g. bimetallic and high melting temperature catalysts) and finding the carbon precursors as well as growth promoters and also the reactor operating condition, which would allow to control the atomic structure of the grown nanotubes. You will operate the existing FC-CVD reactors available in the group to synthesize various kinds of CNTs, including single, double and few walled ones. In addition, you will design and develop novel reactors using novel, advanced catalysts, carbon sources and better growth promoters. Also, you will characterize the material you will produce with electron and atomic microscopy (TEM, SEM and AFM) as well as with optical methods (absorption and Raman spectroscopies). Also, you will produce CNT thin films and determine their electrical transport properties. Your main goal is the develop FC-CVD methods allowing the CNT synthesis with controlled atomic i.e. (n,m) structures.

Your experience and ambitions

A prospective postdoc is expected to hold a PhD degree in materials science, chemical engineering, physics or chemistry. To be successful in this position, proficiency in the following areas is required:

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Competence to design and operate high temperature material synthesis reactors

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Experience with CVD and/or other high temperature methods to produce nanomaterials

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Experience on carbon nanomaterial synthesis and their characterization is a plus

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Experience on TEM is a plus

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Experience on gas phase material synthesis i.e. aerosol science and technology is a plus

What we offer

The Nanomaterials Group at the Department of Applied Physics (<https://www.aalto.fi/en/department-of-applied-physics/nanomaterials-nmg>) has pioneered the development of FC-CVD method for CNT synthesis and thin film deposition for many industrial applications over 20 years, having published around 300 reviewed publications in this field. It operates multitude FC-CVD reactors used for CNT synthesis, and has advanced electron microscopic (<https://www.aalto.fi/en/otanano>), optical and aerosol technology-based material characterization equipment. The FC-CVD methods developed by the group have been industrialized for the industrial production of advanced CNT thin film-based products.

The fixed term contract is initially for three years, and can be continued for 2 more years. The annual workload of research and teaching staff at Aalto University is currently 1612 hours. Aalto University follows the salary system of Finnish universities. The salary ranges for a postdoc from 3700€ to 4100€ per month, depending on previous experience. The contract includes Aalto University occupational healthcare. The primary workplace will be the Otaniemi Campus at Aalto University. The international collaboration project offers possibilities to visit international research collaborator laboratories.

Ready to apply?

To apply for the position, please submit your application including the attachments mentioned below as one single PDF document in English through our online recruitment system by using the link on Aalto University's web page ("Apply Now").

- (1) Letter of motivation
- (2) CV including list of publications
- (3) Degree certificates and academic transcripts
- (4) Contact details of at least two referees (or letters of recommendation, if already available)

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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

The deadline for applications is August. 15th, 2022. The positions will be filled as soon as a suitable candidates are identified. For additional information, kindly contact Prof. Esko Kauppinen (firstname.lastname (at) 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.

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/services/about-finland](https://www.aalto.fi/services/about-finland)]https://www.aalto.fi/services/about-finland

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