The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

1 PhD position and 2 post doc positions in nanotechnology (IV-78/17)

(1 PhD position and 1 post doc position in Anti-icing surfaces; 1 post doc position in modelling and surface design for dropwise condensation)

The Norwegian University of Science and Technology (NTNU)
Faculty of Engineering Science (IV)
Department of Structural Engineering
NTNU Nanomechanical Lab

The Department of Structural Engineering, Faculty of Engineering Science (IV) at the Norwegian University of Science and Technology (NTNU) announces one vacant PhD and one vacant post doc position in the field of **anti-icing surfaces**. Both positions are for a period of three years. The PhD position is financed by the Research Council of Norway' FRINATEK program via the project titled *Towards Design of Super-Low Ice Adhesion Surfaces (**SLICE**)* while the post-doctoral position is financed by the Research Council of Norway' PETROMAKS II program via the project *Durable Arctic Icephobic Materials (**AIM**)*.

We also announce one vacant post doc position in the field of **modelling and surface design for CO_2 condensation**. The position is for a two years' period and financed by the Research Council of Norway' CLIMIT program via the project titled *Superlyophobic surfaces for efficient separation and droplet condensation of CO_2* (**NanoDrop**). The project is coordinated by SINTEF energy.

The PhD candidate and the post doc fellows will work at NTNU Nanomechanical Lab (NML), which is a sub-research group at Department of Structural Engineering at NTNU. NML currently has 2 professors, 17 PhD students, 2 post docs and 1 visiting PhD student, working on diverse topics related to materials, energy and nanotechnology. Recent publications, highlights and research activities can be found from the homepage www.ntnu.edu/nml. We offer multicultural, multidisciplinary and stimulating working environment with weekly Friday seminars given by either internal team members or international speakers, as well as well-established national and international scientific and industry network.

The PhD position in anti-icing surfaces (P1)
The primary objective of the **SLICE** project is to establish and evaluate design principles towards super-low ice adhesion surfaces, by developing models which couple the ice-solid interactions at atomistic scale to the interface crack initiation at macroscopic scale. Preventing the accretion of ice on exposed surfaces is of great importance for renewable energy,

electrical transmission cables in air, shipping and many other applications. Active de-icing involving chemical, thermal and mechanical methods are currently used to remove the ice that has already accumulated. These techniques, however, require periodic applications and high energy consumption, and have major detrimental effects on both the structures and environment. More information about the SLICE project can be found http://www.ntnu.edu/nml/slice. The task of this PhD candidate in the **SLICE** project is to experimentally realize super-low ice adhesion surfaces such that the eventually formed ice can fall off automatically by its own weigh or natural wind.

Applicants for the PhD position require a Master's degree or equivalent in nanotechnology, material science, surface science, or related fields. The successful applicants are motivated and ambitious students with excellent grades. Proficiency to carry out goal-oriented work, good skills to deliver oral and written presentation of research results, and good cooperation abilities will be emphasized.

The post doc position in anti-icing surfaces (P2)

The primary objective of the **AIM** project is to develop and test bio-inspired robust icephobic materials, which can survive multiple harsh environmental cycles and impacts. More information about the **AIM** project can be found http://www.ntnu.edu/nml/aim. The main focus of the **AIM** project is durability of the coatings. The task of the postdoctoral candidate is to synthesize materials with certain ice adhesion but strong durability.

In order to be considered for the postdoctoral position, the applicant must hold a PhD degree within nanotechnology, material chemistry, material physics or relevant research areas. Relevant research experience and publication record will be emphasized. Good communication capability both in written and oral English is a prerequisite.

The post doc position in modelling and surface design for dropwise condensation (P3)

The ultimate goal of the project **NanoDrop** is to accelerate the process necessary for reaching full-scale CO2-capture by reducing cost and increasing energy-efficiency. The specific tasks to be carried out by the postdoctoral fellow aim to understand/model the fundamental CO2 condensation mechanisms, to study the effect of nanoscale solid surface features on the condensation of saturated CO2 and to provide guidance the selection, design and optimization of substrate surfaces.

In order to be considered for the postdoctoral position, the applicant must hold a PhD degree within physics, chemistry, material technology, computational mechanics or relevant research areas. Candidates with strong experience in molecular and continuum simulations or designing surface superhydrophobicity will be preferred. Good communication capability both in written and oral English is a prerequisite.

Terms of employment

The appointment of the Postdoctoral fellows will be made according to Norwegian guidelines for universities and university colleges and to the general regulations regarding university employees.

PhD Candidates are remunerated in code 1017, and are normally remunerated at wage level 50, gross NOK 429 400 (about 49 000€) per annum (before tax). The salary is adjusted according to the recent wage negotiations, and given subject to the final approval of the Storting (the Norwegian Parliament). There will be a 2 % deduction for superannuation.

Postdoctoral fellows are remunerated in code 1352, with a minimum gross salary of NOK 485 700 (about 55 000€) per annum (before tax). The salary is adjusted according to the recent wage negotiations, and given subject to the final approval of the Storting (the Norwegian Parliament). There will be a 2 % deduction to the Norwegian Public Service Pension Fund from gross wage.

The engagement will be made in accordance with the regulations in force concerning State Employees and Civil Servants. The position adheres to the Norwegian Government's policy of balanced ethnicity, age and gender.

According to the new Freedom of Information Act, information concerning the applicant may be made public even if the applicant has requested not to be included in the list of applicants.

The application

The application including a CV, the project sketch, grade transcripts (courses with grades) from the undergraduate as well as graduate studies, recommendation letters, certified copies of academic diplomas and certificates, and other enclosures should be sent electronically via this webpage at https://www.jobbnorge.no. Mark the application with IV-78/17 and specify which position you intend to apply.

In case of questions, please contact Professor Zhiliang Zhang, zhiliang.zhang@ntnu.no, +47 73592530; Associate Professor Jianying He, jianying.he@ntnu.no, +47 73594686. No application should be directly sent to these email address.

Application deadline: April 03, 2017