



Postdoc position

About the position

The Department of Physics has a vacancy for a postdoc position with the title "**Advanced electron microscopy characterization to understand interphase physics in metal additive manufacturing of multi-material products**" within experimental physics and materials technology.

The postdoc position will be part of an ongoing cross-disciplinary center for research based innovations (SFI) for competitive high value manufacturing in Norway, [SFI Manufacturing](#). This center includes 15 industrial partners as well as Europa's fourth largest independent research institute, SINTEF. The postdoc will work in close cooperation with one or several of SFI Manufacturing's partners and with PhDs that study the same or similar topics by complementary approaches.

The topic of the position is "Advanced electron microscopy characterization to understand interphase physics in metal additive manufacturing of multi-material products" and is devoted to materials characterization at the nano- and microscale. Additive manufacturing (AM) of metallic materials is a rapidly growing field with many application areas, relevant for a range of industrial applications in Norway as well as internationally. Some complex applications need multi-material solutions, however, most of the AM machines have been developed for single material production. There are therefore several issues and challenges, such as flaking behavior, residual stress, AM process parameters and build strategy effects, thermal history and part deflections, that need to be handled in multi-material AM.

The position reports to Per Erik Vullum (adjunct associate professor).

Main duties and responsibilities

The postdoc will be devoted to advanced characterization of multi-material interfaces in order to fundamentally understand the physics and chemistry of these interfaces, and hence the properties of the joined materials. Transmission electron microscopy (TEM) and dual-beam focused ion beam - scanning electron microscopy (FIB-SEM) will be two of the primary characterization tools. TEM, SEM and dual-beam FIB-SEM are offered through the national infrastructures [NORTEM](#) and [NORFAB](#).

Qualification requirements

A postdoctoral research fellowship is a qualification position in which the main objective is qualification for work in academic positions. Completion of a Norwegian doctoral degree in physics, materials technology or closely related field, or corresponding foreign doctoral degree recognized as equivalent to a Norwegian doctoral degree is required.

The appointment is to be made in accordance with the regulations in force concerning State Employees and Civil Servants and [national guidelines for appointment as PhD, postdoctor and research assistant](#). The appointment will also be made according to the ITAR regulations.

NTNU is committed to following evaluation criteria for research quality according to [The San Francisco Declaration on Research Assessment - DORA](#).

The following qualifications will be desired

- At least 3 years of hands-on experience with electron microscopy, and TEM in particular.
- Experience with relevant sample preparation techniques for electron microscopy, such as focused ion beam (FIB) and conventional TEM specimen preparation routines
- Knowledge and practical experience with relevant data handling, image analysis and basic programming (f.ex. Python, scripting in Digital Micrograph, Matlab etc)
- Hands-on experience with aberration corrected (S)TEM, HAADF-STEM, EDX and EELS.
- Experience with metals and alloys
- An excellent record of quality publications in international journals
- Excellent written and oral communication skills in English

Personal characteristics

We are looking for a highly motivated, quality oriented, conscientious, creative and independent young scientist. He/She should enjoy interdisciplinary research and be interested in team work. We seek a person with a solid experimental background and interest in materials and applied sciences

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal suitability, as well as motivation, in terms of the qualification requirements specified in the advertisement

We offer

- exciting and stimulating tasks in a strong international academic environment
- an open and [inclusive work environment](#) with dedicated colleagues
- favourable terms in the [Norwegian Public Service Pension Fund](#)
- [employee benefits](#)

Salary and conditions

Postdoctoral candidates are remunerated in code 1352, and are normally remunerated at gross from NOK 515 200 before tax per year. From the salary, 2 % is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 2 - 4 years

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants, and the acts relating to Control of the Export of Strategic Goods, Services and Technology. Candidates who by assessment of the application and attachment are seen to conflict with the criterias in the latter law will be prohibited from recruitment to NTNU. After the appointment you must assume that there may be changes in the area of work.

General information

A good work environment is characterized by diversity. We encourage qualified candidates to apply, regardless of their gender, functional capacity or cultural background. Under the Freedom of Information Act (offentleglova), information about the applicant may be made public even if the applicant has requested not to have their name entered on the list of applicants.

Questions about the position can be directed to Per Erik Vullum, phone number +47 93016522, e-mail per.vullum@ntnu.no, or to Prof. Randi Holmestad, phone number +47 48170066, Randi.holmestad@ntnu.no

About the application:

Publications and other academic works that the applicant would like to be considered in the evaluation must accompany the application. Joint works will be considered. If it is difficult to identify the individual applicant's contribution to joint works, the applicant must include a brief description of his or her contribution.

Please submit your application electronically via jobb norge.no with your CV, diplomas and certificates. Applicants invited for interview must include certified copies of transcripts and reference letters. Please refer to the application number 2019/18656 when applying.

Application deadline: 15.08.2019

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

Department of Physics

Our research and teaching are both experimental and theoretical, covering a wide range of disciplines. Our activities contribute to development of new medical technology and to finding solutions for the next generation's communication technology, energy utilization and development of materials. [The Department of Physics](#) is one of eight departments in the [Faculty of Natural Sciences](#).

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