UiT The Arctic University of Norway
Department of Physics and Technology

Jobbnorge ID: 262061
Deadline: 8/1/2024
Website: https://uit.no/startsida
Scope: Fulltime
Duration: Fixed Term

Faculty of Science and Technology

Postdoctoral Research Fellow Position in Development of SERS platform for rapid pathogen detection

The position

A 2-year position is available at UiT The Arctic University of Norway towards the development of an optical diagnostic platform exploiting Raman spectroscopy, surface-enhanced Raman spectroscopy, biofunctionalization, and nanotechnology at the Department of Physics and Technology, Faculty of Science and Technology. The focused application is within the detection of pathogens, including antimicrobial resistant (AMR) bacteria.

The position is associated with Professor Balpreet Singh Ahluwalia in the Ultrasound, Microwave and Optics (UMO) group. The scope of research is towards the development of a diagnostic platform for rapid detection of pathogens and AMR. The group has become a thriving multi-disciplinary research group, comprising of several postdocs, PhD candidates and cutting-edge research infrastructure within optical microscopy and spectroscopy. The group also has access to basic nanofabrication facilities and more advanced nanofabrication can be done using national infrastructure or via international co-operations. The group members represent disciplines like microscopy, spectroscopy, photonics, nanofabrication, and biology. There is an emphasis on gender equality, cultural integration, conducive work environment excellence through cooperation and co-enabling, and support of growth and ambition of everyone in the group.

Appointment to the position of Postdoctoral Research Fellow is mainly intended to provide qualification for work in top academic positions. It is a prerequisite that the applicant can carry out the project over the full course of the employment period. No person may hold more than one fixed term position as a Postdoctoral Research Fellow at the same institution.

The workplace is at UiT in Tromsø**.** You must be able to start in the position within a reasonable time after receiving the offer.

If you receive a personal overseas research grant from NFR it is possible to apply NFR for an extension of the fellowship period corresponding to the length of the stay abroad (minimum three months, maximum 12 months).

The project's field of research

The project is part of the OH-AMR-Diag project funded by The Research Council of Norway and led by Prof. Rafi Ahmad from Inland Norway University of Applied Science. The position has funding for a total of two years duration and possibility of overseas research mobility. The postdoctoral fellow will be hosted within the Nanoscopy sub-group in the UMO Group at the Department of Physics and Technology.

The main objective of OH-AMR-Diag is to develop a proof-of-concept diagnostic system for rapid, accurate, sensitive, and on-site detection of bacterial infection, pathogen ID, characterization of its resistance profile and prediction of antibiotic susceptibility from a one-health perspective.

The project consortium involves several national and international research collaborations, including Inland Norway University of Applied Science, Hamar, as well as a further research collaboration with clinicians at the University Hospital of North-Norway (UNN, Tromsø), and All India Institute of Medical Sciences (Delhi, India); industrial partners TINE AS and ANIMALIA AS. Furthermore, close cooperation with other international research groups is envisioned, such as the Indian Institute of Technology, Delhi (IIT-D) and the University of Southampton, UK.

The role of the postdoctoral fellow

The position will be 100 % devoted to research and development tasks. The candidate will be expected to take on a senior role within the sub-group of optical nanoscopy led by Prof. Ahluwalia working with other scientific staff and PhD partners, participating in group meetings, and communicating and disseminating their research. They will be encouraged to take an active role in developing new collaborative funding proposals within the group strengthening ongoing cooperation with several national and international partners and developing applications beyond pathogen detection.

The role of the postdoctoral fellow is as follows:

- Design, optimize and fabricate novel SERS platform design to improve reproducibility and sensitivity.
- Development experimental platform for acquiring and building library of SERS (possibly also conventional Raman) spectra of different pathogens.
- Use SERS (Raman spectroscopy) to build library of spectra as a pathogen ID.
- Explore one of more of the following options:
- Explore use of machine learning and AI for classification of pathogens in co-operation with other team members.
- Explore surface functionalization of the SERS chip with collaborators.
- Explore possibilities to combine Raman/SERS platform with label-free quantitative phase microscopy (QPM).

Contact

For further information about the position please contact Professor Balpreet Singh Ahluwalia:

- email: balpreet.singh.ahluwalia@uit.no

Qualifications

This position requires a Norwegian doctoral degree within a field relevant for the research theme of the position (Physics, Biotechnology, Engineering, Nanotechnology) or a corresponding foreign doctoral degree recognised as equivalent to a Norwegian doctoral degree. The scope of this research theme is towards the development of SERS, Raman spectroscopy and its use in diagnostic and bio-sensing. Here, the candidate must document their experimental exposure (e.g. PhD research direction) in the development of SERS platform or use of Raman spectroscopy in life sciences (bio-application). Exposure on nanofabrication methods is preferred.

Qualification with a PhD is required before commencement in the position. If you're at the final stages of your PhD, you may still apply if you have submitted your PhD thesis for doctoral degree evaluation within the application deadline.

We are looking for a strongly motivated individual, who has an excellent academic record and potential, with analytical and problem-solving skills. The assessment will emphasize scientific publications in internationally recognized peer-reviewed journals. The suitable candidate should have significant exposure within SERS and/or Raman spectroscopy and its usage in biology. It is preferred that the candidate has experience or vision to develop innovative methods for circumventing the challenges associated with the reproducibility of the SERS spectra. Exposure to analysis of Raman and SERS spectra, and nanofabrication exposure is preferred. Similarly, exposure to cells and pathogens is preferable. We are looking for a motivated candidate to find innovative routes to further accelerate the field of optical diagnostics using the Raman/SERS platform. This is a collaborative project, thus it is anticipated that the candidate is suitable to work with different research groups across different labs and countries.

Other required qualification skills include:

- Independence and self-motivation
- Creativity and ability to think outside the box
- Excellent work ethic and commitment to the job
- Oral and written fluency in English is required. Nordic applicants can document their capabilities by attaching their high school diploma.
- International experience is an advantage
- Emphasis is also given to personal suitability.

At UiT we put emphasis on the quality, relevance and significance of the research work and not on where the work is published, in accordance with the principles of The San Francisco Declaration on Research Assessment (DORA).

Inclusion and diversity

UiT The Arctic University i Norway is working actively to promote equality, gender balance and diversity among employees and students, and to create an inclusive and safe working environment. We believe that inclusion and diversity is a strength, and we want employees with different competencies, professional experience, life experience and perspectives.

If you have a disability, a gap in your CV or immigrant background, we encourage you to tick the box for this in your application. If there are qualified applicants, we invite least one in each group for an interview. If you get the job, we will adapt the working conditions if you need it. Apart from selecting the right candidates, we will only use the information for anonymous statistics.

We offer

- Involvement in an interesting research project
- Good career opportunities
- A good academic environment with dedicated colleagues
- Flexible working hours and a state collective pay agreement
- Pension scheme through the state pension fund
- The stunning landscape of Tromsø

Norwegian health policy aims to ensure that everyone, irrespective of their personal finances and where they live, has access to good health and care services of equal standard. As an employee you will become member of the National Insurance Scheme which also include health care services.

More practical information for working and living in Norway can be found here: https://uit.no/staffmobility

Application

Your application must include:

- Application letter (max 1 page)

- Description of your proposed 2-year research project, including background, goals, and the steps you will take to develop Raman or SERS platform for pathogen detection (max 2 pages)
- CV (max 2 pages)
- Diplomas and transcripts (all degrees)
- Documentation of English proficiency
- Contact information to 2 references
- A list of your academic production
- Description of your academic production, stating which 3 works you consider most important (max 1 page)
- Academic works, up to ten. The doctoral thesis is regarded as one work.

If you're at the final stages of your PhD, you may still apply if you have submitted your PhD thesis for doctoral degree evaluation within the application deadline. You must submit the thesis with your application. Documentation of your completed PhD degree must be submitted before commencement.

All documentation to be considered must be in a Scandinavian language or English. If English proficiency is not documented in the application, it must be documented before starting in the position. We only accept applications and documentation sent via Jobbnorge within the application deadline.

Assessment

The applicants will be assessed by an expert committee. The committee's mandate is to undertake an assessment of the applicants' qualifications based on the written material presented by the applicants, and the detailed description draw up for the position.

The applicants who are assessed as best qualified will be called to an interview. The interview should among other things, aim to clarify the applicant's motivation and personal suitability for the position. A trial lecture may also be held.

General information

The appointment is made in accordance with State regulations and guidelines at UiT. At our website, you will find more information for applicants.

The remuneration for Postdoctoral research fellow is in accordance with the State salary scale code 1352. A compulsory contribution of 2 % to the Norwegian Public Service Pension Fund will be deducted. You will become a member of the Norwegian Public Service Pension Fund, which gives you many benefits in addition to a lifelong pension: You may be entitled to financial support if you become ill or disabled, your family may be entitled to financial support when you die, you become insured against occupational injury or occupational disease, and you can get good terms on a mortgage. Read more about your employee benefits at: spk.no.

The successful candidate must be willing to get involved in the ongoing development of their department and the university as a whole.

UiT wishes to promote gender equality. If two or more applicants are found to be equally qualified, the university will rank applicants from the underrepresented gender ahead of others.

According to the Norwegian Freedom and Information Act (Offentleglova) information about the applicant may be included in the public applicant list, also in cases where the applicant has requested non-disclosure.

Eallju - Developing the High North

UiT The Arctic University of Norway is a multi-campus comprehensive university at the international forefront. Our vision is to be a driving force for developing the High North. The Northern Sami notion eallju, which means eagerness to work, sets the tone for this motive power at UiT. Along with students, staff and the wider community, we aim to utilise our location in Northern Norway and Sápmi, our broad and diverse research and study portfolio and interdisciplinary advantage to shape the future.

Our social mission is to provide research-based education of high quality, perform artistic development and carry out research of the highest international quality standards in the entire range from basic to applied. We will convey knowledge about disciplines and contribute to innovation. Our social mission unites UiT across various studies, research fields and large geographical distances. This demands good cooperation with trade and industry and civil society as well as with international partners. We will strengthen knowledge-based and sustainable development at a regional, national and international level.

Academic freedom and scientific and ethical principles form the basis for all UiT's activities. Participation, co-determination, transparency and good processes will provide the decision-making basis we need to make wise and far-sighted priorities. Our students and staff will have the opportunity to develop their abilities and potential. Founded on academic integrity, we will be courageous, committed and generous in close contact with disciplines, people and contemporary developments.

We will demonstrate adaptability and seek good and purposeful utilisation of resources, so we are ready to meet the expectations and opportunities of the future. We will strengthen the quality and impact of our disciplines and core tasks through the following three strategic priority areas.

Additional information

Place of service:

Hansine Hansens veg18 9019 Tromsø (Tromsø - Romsa Municipality)