UiT The Arctic University of Norway
Department of Physics and Technology

Jobbnorge ID: 278625
Deadline: 5/11/2025
Website: https://uit.no/startsida
Scope: Fulltime
Duration: Fixed Term

Faculty of Science and Technology

PhD Fellow in Optical Biosensor

The position

A PhD position is available at the Department of Physics and Technology, Faculty of Natural Science at UiT The Arctic University of Norway. The positon is affiliated with the research group Ultrasound, Microwave and Optics with Professor Balpreet Singh Ahluwalia, and will work on two externally funded projects.

The research group has developed into a thriving multidisciplinary team, comprising several postdocs, PhD candidates, and cutting-edge research infrastructure within optical instrumentation. There is a constant flow of national and international experts. The group is involved in several ongoing projects funded by the European Union and the Research Council of Norway. Its members represent various disciplines, including microscopy, photonics, nanofabrication, and biology. The group places a strong emphasis on gender equality, cultural integration, a conducive work environment, excellence through cooperation and co-enabling, and supporting the growth of every member.Further information about the research group can be found here.

The position is for a period of three years. The objective of the position is to complete research training to the level of a doctoral degree. Admission to the PhD programme is a prerequisite for employment, and the programme period starts on commencement of the position.

The workplace is at UiT in Tromsø. You must be able to start in the position within a reasonable time after receiving the offer. Preferably during August 2025.

The position's field of research

The PhD candidate is expected to contribute to the Research Council of Norway (RCN) UTI-Diag project, which aims to develop highly sensitive optical biosensors based on surface plasmon resonance (SPR) and/or guided mode resonance (GMR). The target application focuses on pathogen detection, with a special emphasis on urinary tract infections (UTIs), which rank among the most prevalent infections globally. Rapid and accurate pathogen identification, along with antimicrobial susceptibility determination, is central to managing the global burden of UTIs.

The optical biosensors will be biofunctionalized to enable immobilization against specific pathogens. The sensitive biosensor chips will be integrated with microfluidics to create multiplexed opto-biosensors capable of detecting both mono- and polymicrobial infections (single and multiple pathogens). The project emphasizes rapid and on-site detection strategies, with a focus on building a robust and compact experimental setup equipped with its own graphical user interface (GUI), enabling the integration of optical biosensors with microfluidic chips.

UTI-Diag is a collaborative project led by Prof. Rafi Ahmed from Inland University of Applied Sciences, Hamar (INN), Norway, with a focus on addressing the global health burden. The project involves close cooperation with two institutes in India: the Indian Institute of Technology, Delhi (IIT Delhi), and the All India Institute of Medical Sciences (AIIMS), in addition to INN. Furthermore, the PhD candidate will collaborate closely with another RCN-funded project, OH-AMR-Diag, which focuses on the development of Surface Enhanced Raman Spectroscopy (SERS) methodology for building a Raman spectra library of different pathogens.

The main responsibilities of the PhD student in this project are:

- a) **Develop optical biosensors strategies**: Design, simulate and fabricate the opto-biosensor chip. The candidate should explore different routes of SPR and GMR based opto-sensors, optimization for high-sensitivity for achieve low limit of detection.
- b) **Functionalization of the opto-biosensor chips**: In co-operation with partners from INN and IIT Delhi, develop surface functionalization approach to immobile 4-6 different pathogens relevant to the project. Different bio-functionalization strategies will be explored to increase the selectivity, reproducibility, limit of detection and ease of use.
- c) **Build experimental set-up**: Integration with micro-fluidic and a compact optical instrumentation must be built to be able to use at the point-of-care.
- d) **Data analysis:** UTI-Diag. is a collaborative project where multi-modal detection of pathogens is carried out. The candidate must analysis the results of the optical biosensors. In addition, the candidate should collaborate with group members generating data from complementing methods such as SERS and genomics and contribute to the implementation of the AI tools.
- e) **PhD requirements**: The candidate must familiarize themselves with the official PhD requirements at the Faculty of Science and Technology.

Want to know more about the position?
For further information about the position, please contact Professor Balpreet Singh Ahluwalia:

- Phone: +4795861441
- Email: Balpreet.singh.ahluwalia@uit.no

Qualifications
This position requires a master's degree in Physics, Engineering, Biotechnology, or Chemistry, provided that the candidate has experience in the research area of optical sensors. The candidate should have background **on atleast two** fields mentioned below:

- a) Exposure on optical sensors (e.g. SPR, GMR, fiber based optical sensors, photonic-crystal biosensors, etc). Alternatively, a strong background on optical instrumentation that can be used to develop optical sensors.
- b) Exposure on bio-functionalization of the target specimens to the surface of the sensors. Alternatively, exposure on pathogen handling or cell biology.
- c) Exposure on skills that are essential for the implementation project, e.g. micro-fluidics, nano-fabrication and data analysis.

It is desirable that candidate has good computation and scientific writing skills. We are looking for a highly motivated candidate with analytical and problem-solving skills, takes responsibility and work in a collaborative project setting.

Applicants must document:

- Fluency of in English and be able to work in an international environment. Nordic applicants can document their English capabilities by attaching their high school diploma.
- Proficiency in Norwegian, Swedish or Danish at a minimum of level A2. If the candidate does not document proficiency in Norwegian, Swedish or Danish at level A2, then the doctoral fellow must complete a language course equal to 15 ECTS before the end of the fixed-term period. UiT will facilitate this.

In the assessment, the emphasis is on the applicant's potential to complete a research education based on the master's thesis or equivalent, and any other scientific work. In addition, other experience of significance for the completion of the doctoral programme may be given consideration. We will also emphasize motivation and personal suitability for the position.

As many people as possible should have the opportunity to undertake organized research training. If you already hold a PhD or have equivalent competence, we will not appoint you to this position.

Admission to the PhD programme
For employment in the PhD position, you must be qualified for admission to the PhD programme at the Faculty of Science and Technology and participate in organized doctoral studies within the employment period.

Admission normally requires:

- A bachelor's degree of 180 ECTS and a master's degree of 120 ECTS, or an integrated master's degree of 300 ECTS.

In order to gain admission to the programme, the candidate must document sufficient potential for research. The applicant must have a grade point average of C (strong 3.0) or better for the master's degree, which must contain an independent work. A more detailed description of admission requirements can be found here.

If you are employed in the position, you will be provisionally admitted to the PhD programme. Application for final admission must be submitted no later than two months after taking up the position.

Applicants with a foreign education will be subjected to an evaluation of whether the educational background is equal to Norwegian higher education, following national guidelines from Norwegian Directorate for Higher Education and Skills. Depending on which country the education is from, one or two additional years of university education may be required to fulfil admission requirements, e.g. a 4-year bachelor's degree and a 2-year master's degree. UiT normally accepts higher education from countries that are part of the Lisbon Recognition Convention.

Inclusion and diversity
UiT The Arctic University of 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 are 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 at 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
- PhD Fellows are normally given a salary of 550 000 NOK/year with a 3% yearly increase

- If you have to relocate to Tromsø then the Faculty of Science and Technology may reimburse your moving costs. Further details regarding this matter will be made available if you receive an offer from us.

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 about working and living in Norway can be found here: https://uit.no/staffmobility

Application

Your application must include:

- **Cover letter** explaining your motivation and research interests
- **CV**
- **Diploma** for bachelor's and master's degree
- **Official transcripts** of grades/academic record for bachelor's and master's degree
- **Explanation** of the grading system for foreign education (Diploma Supplement if available)
- **Documentation** of English proficiency
- **Documentation** of proficiency in Norwegian, Swedish, or Danish at a minimum of level A2 (if available)
- **2-3 References** with contact information
- **Master's thesis**, and any other academic works

Qualification with a master's degree is required before commencement in the position. If you are near completion of your master's degree, you may still apply and submit a draft version of the thesis and a statement from your supervisor or institution indicating when the degree will be obtained. You must still submit your transcript of grades for the master's degree with your application.

All documentation to be considered **must** be in a Scandinavian language or English. Diplomas and transcripts must also be submitted in the original language, if not in English or Scandinavian. 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. A copy of the assessment report will be sent to all applicants.

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.

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 engagement is to be made in accordance with 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 criteria in the latter law will be prohibited from recruitment.

After the appointment you must assume that there may be changes in the area of work.

Remuneration for the position of PhD Fellow is in accordance with the State salary scale code 1017. 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.

A shorter period of appointment may be decided when the PhD Fellow has already completed parts of their research training programme or when the appointment is based on a previous qualifying position PhD Fellow, research assistant, or the like in such a way that the total time used for research training amounts to three years.

We process personal data given in an application or CV in accordance with the Personal Data Act (Offentleglova). According to the Personal Data Act information about the applicant may be included in the public applicant list, also in cases where the applicant has requested non-disclosure. You will receive advance notification in the event of such publication, if you have 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)