Jobbnorge ID: 281273
Deadline: 8/1/2025
Website: http://www.ntnu.no
Scope: Fulltime
Duration: Temporary

The Department of Electronic Systems has a vacancy for a

PhD Candidate in Disordered Optical Metasurfaces for Energy Applications

This is NTNU

NTNU is a broad-based university with a technical-scientific profile and a focus in professional education. The university is located in three cities with headquarters in Trondheim.

At NTNU, 9,000 employees and 43,000 students work to create knowledge for a better world.

You will find more information about working at NTNU and the application process here.

Video: https://youtu.be/Xt-yHCN5QS0

About the position

Are you motivated to take a step towards a doctorate and open up exciting career opportunities? As a PhD Candidate with us, you will work to achieve your doctorate in a world-leading institute and group, and at the same time gain valuable experience that qualifies you for a further career in higher education and research, in and outside academia.

Your immediate leader will be the Head of Department. The supervisor for this position is Associate Professor Angelos Xomalis.

About the project

We are searching for a creative, skilled and ambitious candidate for our activities on the optics of disordered resonant metasurfaces with applications in production of clean energy.

The aim of the candidate is to design and characterize disordered optical metasurfaces. Main focus will be theoretical and experimental understanding of the complex optics of plasmonic disordered metasurfaces as well as optical characterization using advanced spectroscopic modules. We will investigate the potential of these structures in photocatalysis pushing towards green energy sources.

The research will be performed at the Department of Electronic Systems, NTNU in close collaboration with scientific partners in Switzerland. The applicant will be encouraged to spend short exchange visits with the scientific partners.

Relevant publications:
Plasmonic bimetallic two-dimensional supercrystals for H2 generation. Nature Catalysis 6, 1205-1214 (2023)

Controlling optically driven atomic migration using crystal-facet control in plasmonic nanocavities. ACS Nano 14 (8), 10562-10568 (2020)

The visual appearances of disordered optical metasurfaces. Nature Materials 21, 1035-1041 (2022)

Duties of the position

- Numerical simulations of plasmonic nanoparticles.
- Assembling and optical characterization of disordered metasurfaces.
- Perform photocatalysis experiments.
- Collaborate with an international network of scientific partners.
- Report research findings in international conferences and scientific articles.
- Take part in the Electronic and Telecommunications PhD program and fulfill the requirements for a PhD degree.

Be prepared for changes to your work duties after employment.

Required selection criteria

- You must have an academically relevant background within experimental and/or theoretical photonics, materials science, physics, electrical engineering, physical chemistry or nanotechnology (or other relevant disciplines).
- You must have a Master's degree in areas specified above or equivalent. Your course of study must correspond to a five-year Norwegian University degree, where 120 credits have been obtained at master's level. Master's students can apply, but the master's degree must be obtained and documented before starting the position.
- You must have a strong academic background from your previous studies and have an average grade from your Master's degree study, or equivalent education, which is equal to B or better compared to NTNU's grading scale. If you do not have letter grades from previous studies, you must have an equally good academic foundation. If you have a weaker grade background, you may be considered if you can document that you are particularly suitable for a PhD education.
- You must meet the requirements for admission to the faculty's PhD programme in electronics and telecommunications.

Preferred selection criteria

- Competence in spectroscopies and optical characterisation of nanomaterials.
- Experience with standard nanofabrication processes.
- Experience with electromagnetic simulation software (Lumerical, Comsol, CST or similar).
- Ability to work outside of Norway for short exchange periods.
- Good oral and written presentation skills in English.

Personal characteristics

To complete a doctoral degree (PhD), it is important that you:

- Have willingness to learn new fields and adapt to a multidisciplinary research environment
- Are a problem solver, with ability to use existing knowledge in new ways
- Work independently
- Work in a structured way, set goals and make plans to achieve them
- Present and discuss your research with other professionals
- Get involved and contribute constructively with feedback
- Work constructively under pressure or in the face of adversity
- Show curiosity and a strong motivation for the subject
- Analyze data, assess different perspectives and draw well-founded conclusions
- Are flexible and open to adjusting the plan for the project as needed

Emphasis will be placed on personal qualities.

We offer

- An exciting job with an important mission in society
- Developing tasks in a strong and international professional environment
- Career guidance and follow-up during the PhD period
- Open and inclusive working environment with committed colleagues
- Working capital that can be used to implement the project
- Mentor programme as a new employee at NTNU
- As a public employee, you have favourable benefits as a member of the Norwegian Public Service Pension Fund (SPK)

You will be employed as a PhD Candidate at NTNU and will have access to employee benefits and discounts.

Diversity

Diversity is a strength, and at NTNU we aim to be an employer that reflects the diversity in society and that makes use of the potential of the population's collective skills. Our vision is Knowledge for a better world and our values are creative, critical, constructive and respectful. We believe that an organization that is equal, diverse and gender-balanced is essential for us to achieve our goals.

We strive to attract employees with different skills, life experiences and perspectives to contribute to even better problem solving of our societal mission in research and education.

If you think this position is relevant and interesting, we encourage you to apply, regardless of gender, functional ability and cultural background, or whether you have been out of work for a period of time.

At NTNU we want to increase the proportion of women in scientific positions. We have a number of measures to promote equality.

Salary and conditions

In the position of PhD Candidate, code 1017, your gross salary will normally be NOK 536 200,- per annum depending on qualifications and seniority. A 2% statutory contribution to the State Pension Fund is deducted from the salary.

The employment period is 3 years with a possible extension to 4 years with 25 % teaching duties.

For employment as a PhD Candidate, it is a prerequisite that you gain admission to the PhD programme in electronics and telecommunications within three months of your employment contract start date, and that you participate in an organized doctoral programme throughout the period of employment.

The position is conditional on external funding.

As an employee at NTNU, it is important that you keep yourself up to date with academic and organizational changes and adapt to them.

For the necessary academic and social interaction, it is a prerequisite that you are physically present and available to the institution on a daily basis.

The appointment is carried out in accordance with the principles of the State Employees Act, and Export control(legislation that regulates the export of knowledge, technology and services). Candidates who, after assessment of the application and attachments, are considered to bein conflict with the criteria in the latter act, will not be able to be employed.

About the application

The attachments (including a description of your scientific work) must accompany the application as these documents form the basis of the application assessment. The documents must be in English.

Please note: the application will only be assessed on the basis of the information we have received by the application deadline. Therefore, make sure that your application clearly shows how your skills and experience meet the criteria described above. The application and all attachments must be sent electronically via Jobbnorge.no. If you are invited to an interview, you must bring certified copies of certificates and diplomas upon request.

The application must include:

- Transcripts and diplomas for Bachelor's and Master's degrees
- CV
- Copy of Master's thesis. If you have recently submitted your Master's thesis, you can attach a draft of the thesis. Documentation of a completed Master's degree must be presented before taking up the position.
- Project outline containing proposals for an overall description of research questions, theoretical perspectives, methodological design for the project and progress plan (maximum 1500 words/4 pages)
- Short letter of motivation (400 words/1 page)
- Possible publications and other relevant research work
- Possible certificates of relevance
- Names and contact information of three relevant referees

If all, or parts, of your education has been taken abroad, we also ask you to attach documentation of the scope and quality of your entire education, both Bachelor's and Master's education, in addition to other higher education. If your institution uses “diploma supplement” (normal for most European institutions), you must attach this. A description of the documentation required can also be found here. If you already have a statement from Norwegian Directorate for Higher Education and Skills (HK-dir), please attach this as well.

Joint works will be considered. If it is difficult to identify your contribution to joint work, you must attach a brief description of your participation.

When assessing the best qualified, we emphasize necessary qualifications such as education, experience and personal suitability. Motivation for the position, ambitions and potential for research will also count when assessing the candidates.

NTNU recognizes a wide range of academic contributions and has committed itself to The San Francisco Declaration on Research Assessment and CoARA (responsible assessment of research and recognition of a greater breadth of academic contributions in accordance with NTNU's social mission).

General information

A public list of applicants with name, age, job title and municipality of residence is prepared after the application deadline. If you wish to be exempt from entry on the public applicant list, this must be justified. Assessment will be made in accordance with current legislation. You will be notified if the exemption is not granted.

If you think this position looks interesting and in line with your qualifications, you are welcome to apply.

If you have any questions about the position, please contact Associate Professor Angelos Xomalis, angelos.xomalis@ntnu.no.If you have any questions about the recruitment process, please contact HR, e-mail: hr@ies.ntnu.no

Application deadline: 01.08.2025

For practical information about working at NTNU, please visit this webpage.

The city of Trondheim is a modern European city with a rich cultural scene. Trondheim is the tech capital of Norway with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.

NTNU - knowledge for a better world

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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 Electronic Systems

The digitalization of Norway is impossible without electronic systems. We are Norway’s leading academic environment in this field, and contribute with our expertise in areas ranging from nanoelectronics, phototonics, signal processing, radio technology and acoustics to satellite technology and autonomous systems. Knowledge of electronic systems is also vital for addressing important challenges in transport, energy, the environment, and health. The Department of Electronic Systems is one of seven departments in the Faculty of Information Technology and Electrical Engineering .

Additional information

Contact person:

Angelos Xomalis, Professor
Phone: | E-mail: angelos.xomalis@ntnu.no

Place of service:

Høgskoleringen 1 7491 Trondheim (Trondheim Municipality)