

# PhD scholarship in Atomic-Resolution Electron Microscopy in Catalysis

Do you want to impact sustainability of our modern society? The Center for Visualizing Catalytic Processes (VISION) strives at developing and applying a platform for visualizing catalytic nanoparticles and reactions at the atomic-level. VISION combines cutting-edge atomic-resolution electron microscopy, micro-electro-mechanical-systems, nanoparticle synthesis and theoretical modelling to relate the atomic-scale structure, dynamics and functions of single nanoparticles in the thermal catalysis and electrocatalysis needed to tackle the environmental challenge of our time.

## Responsibilities and qualifications

You will work quantitatively with atomic-resolution (scanning) transmission electron microscopy ((S)TEM) of single nanoparticles under catalytic reaction conditions. The primary tasks will be:

- Establishing experimental imaging and spectroscopy schemes for retrieving structural, chemical and electronic information about single nanoparticles containing few to thousands of atoms.
- Advancing protocols for detecting the pristine state of nanoparticles by modulating the electron beams in space and time.
- Developing combined (S)TEM imaging and spectroscopy capabilities for operando studies of nanoparticles under catalytic reaction condition.

You will collaborate with VISION's five faculty members and a group of PhD students, postdocs and international leading scientists all working at the technological edge of modern electron microscopy for advancing catalysis science. In close interplay with complementary functionality measurements and theoretical modelling, you will contribute to elucidating how single nanoparticles catalyze chemical reactions at the atomic-level.

You must have a two-year master's degree (120 ECTS points) or a similar degree with an academic level equivalent to a two-year master's degree.

We favor candidates with a degree in physics, chemistry or materials science. The candidate should have experience in solid state physics, crystallography and atomic-resolution electron microscopy. Experience in scientific programming, e.g. using Python, is an advantage.

The candidate has obtained excellent grades in his/her Bachelor and Master educations, good communication skills in both spoken and written English, and experience in working independently and in teams.

## Approval and Enrolment

The scholarship for the PhD degree is subject to academic approval, and the candidate will be enrolled in one of the general degree programmes at DTU. For information about our enrolment requirements and the general planning of the PhD study programme, please see the [DTU PhD Guide](#).

## Assessment

The assessment of the applications will be made by Associate Professor Christian D. Damsgaard, Associate Professor Jakob Kibsgaard and Professor Stig Helveg, DTU Physics.

## We offer

DTU is a leading technical university globally recognized for the excellence of its research, education, innovation and scientific advice. We offer a rewarding and challenging job in an international environment. We strive for academic excellence in an environment characterized by collegial respect and academic freedom tempered by responsibility.

## Salary and appointment terms

The appointment will be based on the collective agreement with the Danish Confederation of Professional Associations. The allowance will be agreed upon with the relevant union. The period of employment is 3 years.

You can read more about [career paths at DTU here](#).

### Further information

Further information may be obtained from Associate Professor Christian D. Damsgaard, e-mail: [cdda@fysik.dtu.dk](mailto:cdda@fysik.dtu.dk), Associate Professor Jakob Kibsgaard, e-mail: [jkib@fysik.dtu.dk](mailto:jkib@fysik.dtu.dk) and Professor Stig Helveg, e-mail: [stig@fysik.dtu.dk](mailto:stig@fysik.dtu.dk).

You can read more about the VISION center at [www.vision.dtu.dk](http://www.vision.dtu.dk) and DTU Physics at [www.fysik.dtu.dk/english](http://www.fysik.dtu.dk/english)

If you are applying from abroad, you may find useful information on working in Denmark and at DTU at [DTU – Moving to Denmark](#).

### Application procedure

Your complete online application must be submitted no later than **9 January 2022 (Danish time)**.  
Apply online at [www.career.dtu.dk](http://www.career.dtu.dk).

Applications must be submitted as **one PDF file** containing all materials to be given consideration. To apply, please open the link "Apply online", fill out the online application form, and attach **all your materials in English in one PDF file**. The file must include:

- A letter motivating the application (cover letter)
- Curriculum vitae
- Grade transcripts and BSc/MSc diploma
- Excel sheet with translation of grades to the Danish grading system (see guidelines and [Excel spreadsheet here](#))

You may apply prior to obtaining your master's degree but cannot begin before having received it.

Applications received after the deadline will not be considered.

All interested candidates irrespective of age, gender, race, disability, religion or ethnic background are encouraged to apply.

### DTU Physics

*At DTU Physics, we carry out cutting-edge research in modern physics, with particular focus on four main areas: quantum technology, sustainable energy, materials, and biophysics. Our focus is both to acquire greater knowledge about basic scientific problems and to conduct research oriented towards use in societies and companies.*

### Technology for people

*DTU develops technology for people. With our international elite research and study programmes, we are helping to create a better world and to solve the global challenges formulated in the UN's 17 Sustainable Development Goals. Hans Christian Ørsted founded DTU in 1829 with a clear vision to develop and create value using science and engineering to benefit society. That vision lives on today. DTU has 12,900 students and 6,000 employees. We work in an international atmosphere and have an inclusive, evolving, and informal working environment. DTU has campuses in all parts of Denmark and in Greenland, and we collaborate with the best universities around the world.*