Jobbnorge ID: 192970
Deadline: 10/15/2020
Website: http://www.ntnu.no
Scope: Fulltime
Duration: Permanent

The Department of Chemical Engineering has a vacancy for a

PhD Position in heterogeneous catalysis

This is NTNU

At NTNU, creating knowledge for a better world is the vision that unites our 7 400 employees and 42 000 students.

We are looking for dedicated employees to join us.

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

Video: https://www.youtube.com/watch?v=clgKd1SwGLI

About the position

The Department of Chemical Engineering has a vacancy for a PhD Candidate within the field of heterogeneous catalysis.

The position is part of **iCSI** (industrial Catalysis Science and Innovation), a Centre for Research-based Innovation (SFI) funded by the Research Council of Norway and key industry partners together with NTNU and SINTEF. https://www.ntnu.edu/web/icsi/news.

In this project we seek a candidate that will help us provide fundamental experimental data for important catalytic reactions using the In Situ Mass Analyzer (ISMA), combined fixed-bed reactor and microbalance, developed by SINTEF. ISMA is based on the same principle as Tapered Element Oscillating Microbalance (TEOM) which is a powerful technique for studying important phenomena such as reaction kinetics, mechanisms, catalyst deactivation, diffusion in porous materials and adsorption, absorption and desorption. ISMA has wide application in industrial catalytic reactions: Steam Methane Reforming (SMR) over nickel catalysts (carbon and thresholds); Ethene oligomerization over various zeolites; CH4 decomposition to (nano)carbon and hydrogen; Pre-reforming of C1 -C3 mixtures over Ni catalysts; Dry (CO2) reforming of CH4 to synthesis gas over nickel catalysts; Adsorption (CO2) enhanced steam reforming (AER); Methanol To Olefins (MTO); Dehydrogenation over chromium oxide and Pt based catalysts.

Some travelling is to be expected in the position, to national or international conferences. A conventional fixed-bed reactor will be available at NTNU for regular catalytic testing and the ISMA will be located in Oslo, so some research stay at SINTEF (Oslo) is to be expected.

The Catalysis group at NTNU is one of 4 research groups in the Department of Chemical Engineering at NTNU. Our focus is on heterogeneous catalysis, and in addition to fundamental work we study applications related to industrial chemistry, environmental protection, and renewable energy.

More information about the group is available here: https://www.ntnu.edu/chemeng/research/catalysis#/view/about

Main duties and responsibilities

The research work will involve:

- This PhD project is mainly experimentally oriented, and the candidate will be responsible for a catalytic testing rig with the appropriate analytical system
- Calculations, data treatment and modelling are key elements of the work
- Material synthesis and characterization using standard as well as advanced methods are important activities
- First principles modelling can be a useful tool in understanding materials and mechanisms
- Peer-reviewed scientific publications and conference presentations are expected

Required selection criteria

The PhD-position's main objective is to qualify for work in research positions. The qualification requirement is that you have completed a master's degree or second degree (equivalent to 120 credits) with a strong academic background preferably in Chemical Engineering with a equivalent education with a grade of B or better in terms of NTNU's grading scale .Candidates with a background in Chemistry can also be considered. If you do not have letter grades from previous studies, you must have an equally good academic foundation. If you are unable to meet these criteria you may be considered only if you can document that you are particularly suitable for education leading to a PhD degree.

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, post doctor and research assistant.

Essential Qualifications

We are looking for candidates with:

- A strong background in kinetics and heterogeneous catalysis.
- Good and relevant experimental skills and knowledge of central characterization methods.
- Some knowledge of modelling will be beneficial.
- The applicant must have an MSc (or equivalent), preferably in Chemical Engineering but candidates with a background in Chemistry can also be considered.

Personal characteristics

- Creative, with a strong ability to work problem oriented.
- Enjoy interdisciplinary research.
- Take keen interest working in teams.
- Good communicative skills, both written as well as oral are essential.

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal suitability, 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

PhD candidates are remunerated in code 1017, and are normally remunerated at gross from NOK 479 600 per annum before tax, depending on qualifications and seniority. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 3 years.

Appointment to a PhD position requires that you are admitted to the PhD programme in Chemical Engineering (https://www.ntnu.edu/chemeng) within three months of employment, and that you participate in an organized PhD programme during the employment period.

As a PhD candidate, you undertake to participate in an organized PhD programme during the employment period. A condition of appointment is that you are in fact qualified for admission to the PhD programme within three months.

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 criteria 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.

It is a prerequisite you can be present at the institution daily.

About the application

The application and supporting documentation to be used as the basis for the assessment must be in English.

Publications and other scientific work must follow the application. Please note that applications are only evaluated based on the information available on the application deadline. You should ensure that your application shows clearly how your skills and experience meet the criteria which are set out above.

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

General information

Working at NTNU

A good work environment is characterized by diversity. We encourage qualified candidates to apply, regardless of their gender, functional capacity or cultural background.

The city of Trondheim is a modern European city with a rich cultural scene. Trondheim is the innovation 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 is committed to following evaluation criteria for research quality according to The San Francisco Declaration on Research Assessment - DORA.

As an employee at NTNU, you must at all times adhere to the changes that the development in the subject entails and the organizational changes that are adopted.

Information Act (Offentleglova), your name, age, position and municipality may be made public even if you have requested not to have your name entered on the list of applicants.

If you have any questions about the position, please contact Assoc. Professor Jia Yang, telephone +47 73 59 31 46, email jia.yang@ntnu.no.

If you have any questions about the recruitment process, please contact HR Advisor Nina Sandberg, e-mail: nina.sandberg@ntnu.no

Please submit your application electronically via jobbnorge.no with your CV, diplomas and certificates. Applications submitted elsewhere will not be considered. Diploma Supplement is required to attach for European Master Diplomas outside Norway. Chinese applicants are required to provide confirmation of Master Diploma from China Credentials Verification (CHSI).

Candidates from universities outside Norway are kindly requested to send a Diploma Supplement or a similar document, which describes in detail the study and grade system and the rights for further studies associated with the obtained degree: http://ec.europa.eu/education/tools/diploma-supplement_en.htm

The positions requires spoken and written fluency in the English language. Applicants from non-English-speaking countries outside Europe must document English skills by an approved test. Approved tests are TOEFL, IELTS and Cambridge Certificate in Advanced English (CAE) or Cambridge Certificate of Proficiency in English (CPE).

If you are invited for interview you must include certified copies of transcripts and reference letters. Please refer to the application number 92/20 when applying.

Application deadline: 15.10.2020

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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 Chemical Engineering

We take chemistry from laboratory scale to industrial production.

This demands a wide range of knowledge, from molecular processes and nanotechnology to building and operation of large processing plants. We educate graduates for some of Norway's most important industries. The Department of Chemical Engineering is one of eight departments in the Faculty of Natural Sciences.

Additional information

Place of service:

Gløshaugen, Trondheim 7491 Trondheim (Trondheim Municipality)