Jobbnorge ID: 261618
Deadline: 5/22/2024
Website: http://www.ntnu.no
Scope: Fulltime
Duration: Temporary

The Department of Chemical Engineering has a vacancy for a

PhD Candidate within Mass Transfer in Gas Fermentation Bioreactors

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

The PhD position is part of a research-based innovation centre on industrial biotechnology (SFI-IB) which is constituted by universities, research organizations, and industry. This PhD project focuses on gas fermentation where gases with low solubility challenge economical and viable large-scale operation of the multiphase bioreactor. To realize new viable industrial-scale fermentation processes, the multiphase bioreactor must be designed and operated such that the mass transfer between bubbles and liquid is optimized. This project aims to use both experimental and computational techniques to understand the favorable operation window for gas fermentation processes. This project is in collaboration with an industrial partner who is developing a proprietary gas fermentation process to convert waste CO2 emissions into chemicals. The novel gas fermentation process by the SFI-IB industrial partner is a relevant case in this PhD project.

For a position as a PhD Candidate, the goal is a completed doctoral education up to an obtained doctoral degree. Your immediate leader is Prof. Jannike Solsvik.

Duties of the position

The PhD candidate will through experimental and theoretical studies identify favourable operational conditions for the gas fermentation processes. The PhD candidate will take part in planning and conducting laboratory experiments and computational analyses. The investigation should result in better understanding of how various parameters impact mass transfer between bubbles and liquid, like pressure, liquid composition, flow dynamics, rector design and operation. Laboratory equipment and computational resources at the Department of Chemical Engineering and SINTEF BTN's gas fermentation laboratory will be used in the project along with input from the industry partner. The results of the project are expected to be published in scientific journals, at international conferences, and in the PhD thesis. The Phd candidate will also take part in and present at regular meetings with the supervising team. The PhD candidate will be part of the SFI-IB PhD Network and activities within the innovation centre.

Required selection criteria

- You must have a professionally relevant background in Chemical Engineering, Bio-chemical Engineering, Fluid Mechanics, or similar.
- Your education must correspond to a five-year Norwegian degree program, where 120 credits are obtained at master's level
- You must have a strong academic background from your previous studies and an average grade from the master's degree program, or equivalent education, which is equal to B or better compared with NTNU's grading scale. If you do not have letter grades from previous studies, you must have an equally good academic basis. If you have a weaker grade background, you may be assessed if you can document that you are particularly suitable for a PhD education.
- You must meet the requirements for admission to the faculty's doctoral program (Chemical Engineering)
- Good written and oral English language skills.

The appointment is to be made in accordance with Regulations on terms of employment for positions such as postdoctoral fellow, Phd candidate, research assistant and specialist candidate and Regulations concerning the degrees of Philosophiae Doctor (PhD) and Philosodophiae Doctor (PhD) in artistic research national guidelines for appointment as PhD, post doctor and research assistant

Preferred selection criteria
A strong background and experience with multiphase gas-liquid systems from a theoretical and practical point of view. The ideal candidate has a strong academic background in chemical engineering, biochemical engineering, or similar, with experience in transport phenomena (interface mass transfer), reactor technology, and fluid dynamics. Furthermore, the candidate has expertise from both running numerical simulations and experience from laboratory work, preferably related with reactor operation, interface mass transfer, experimental fluid dynamics.

Personal characteristics
- Communicative skills, both written and oral.
- Ability to work individually and in team.
- Enthusiasm for academic work.
- Curious and willing to learn.
- Practically and theoretically skilled.
- Take responsibility for own progress and can work independently.
- Be organized, targeted and solution oriented.
- Positive and friendly attitude.

Emphasis will be placed on personal and interpersonal qualities.

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
As a PhD candidate (code 1017) you are normally paid from gross NOK 532 200 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 (website), within three months of employment, and that you participate in an organized PhD programme during the employment period.

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.

The position is subject to external funding.

It is a prerequisite you can be present at and accessible to 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 be attached to the application. Please note that your application will be considered based solely on information submitted by the application deadline. You must therefore ensure that your application clearly demonstrates how your skills and experience fulfil the criteria specified above.

The application must include:

- Motivation letter (max 1 A4-page)
- CV and certificates
- Transcripts and diplomas for bachelor's and master's degrees. If you have not completed the master's degree, you must submit a confirmation that the master's thesis has been submitted.
- Name and contact information of three referees
- If you have publications or other relevant research work

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. Description of the documentation required can be found here. If you already have a statement from NOKUT, please attach this as well.

We will take joint work into account. If it is difficult to identify your efforts in the joint work, you must enclose a short description of your participation.

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal and interpersonal qualities. Motivation, ambitions, and potential will also count in the assessment of the candidates.

NTNU is committed to following evaluation criteria for research quality according to The San Francisco Declaration on Research Assessment - DORA.

General information

Working at NTNU

NTNU believes that inclusion and diversity is our strength. We want to recruit people with different competencies, educational backgrounds, life experiences and perspectives to contribute to solving our social responsibilities within education and research. We will facilitate for our employees' needs.

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.

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.

A public list of applicants with name, age, job title and municipality of residence is prepared after the application deadline. If you want to reserve yourself 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 reservation is not accepted.

If you have any questions about the position, please contact Prof. Jannike Solsvik, email: jannike.solsvik@ntnu.no.

If you have any questions about the recruitment process, please contact HR Advisor Merete Thyholdt, email: merete.thyholdt@ntnu.no

If you think this looks interesting and in line with your qualifications, please submit your application electronically via jobbnorge.no with your CV, diplomas and certificates attached. Applications submitted elsewhere will not be considered. Upon request, you must be able to obtain certified copies of your documentation.

Application deadline: 01.05.2024

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 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:

Sem Sælands vei 4 7491 Trondheim (Trondheim Municipality)