UNIVERSITETET I OSLO

Jobbnorge ID: 257236
Deadline: 2/29/2024
Website: http://www.uio.no/
Scope: Fulltime
Duration: Engagement

PhD Research Fellow in Chemistry: Metal-Organic Frameworks for Electrocatalytic CO2 Conversion

About the position

Position as PhD Research Fellow in Materials Science available at Centre for Materials Science and Nanotechnology (SMN), Department of Chemistry and Department of Physics, University of Oslo.

No one can be appointed for more than one PhD Research Fellowship period at the University of Oslo.

Starting date no later than September 1, 2024.

The fellowship period is 3 years.

A fourth year may be considered with a workload of 25 % that may consist of teaching, supervision duties, and/or research assistance. This is dependent upon the qualification of the applicant and the current needs of the department.

Knowledge development in a changing world - Science and technology towards 2030.

The Faculty of Mathematics and Natural Sciences

Video: https://www.youtube.com/watch?v=t4wvWQEhDEs

Job description

The successful candidate will be employed on our project entitled “Cuprous Single Sites in Metal-Organic Frameworks for Fuel Synthesis by Electrocatalytic CO2 Reduction”, a project that addresses the knowledge gap of designed-for-purpose single-site electrocatalysts for CO2 upcycling to fuels.

The candidate will be involved in delivering a new platform for developing advanced materials as efficient electrocatalysts for CO2 reduction by synergistically combining synthesis, theoretical modelling, state-of-the-art characterisation, and performance-analysis. In particular, they will design, synthesise, characterise, and test metal-organic frameworks with cuprous redox centres and establish structure-performance correlations for catalyst optimisation.

We are looking for an excellent candidate with demonstrated lab experience. The candidate will perform the synthesis of functional metal-organic frameworks (MOFs) built up of well-determined cuprous moieties, and carry out extensive characterisation of these materials using X-ray diffraction and absorption, nuclear magnetic resonance and vibrational spectroscopy, etc.

The candidate will also carry out electrochemical measurements and evaluate the results to gain insight into and develop models of the redox activity and electrocatalytic performance of the so-obtained MOFs.

Hands-on, practical experience with either electrochemical characterisation, or synthesis and characterisation of materials (ideally porous materials), or both, is desired. As eventually we aim at designing new MOF electrocatalysts with optimum performance, experience in using computational methods, e.g. density functional theory, is of advantage.

The position is full time, for 3 years, and will be carried out at the Department of Chemistry and the Centre for Materials and Nanotechnology of the University of Oslo, based in the Catalysis Group under the supervision of Prof. Dr Petra Ágota Szilágyi and in collaboration with the Electrochemistry Group at the Department of Chemistry and associated with the Centre for Materials Science and Nanotechnology (SMN).

The Centre for Materials Science and Nanotechnology (SMN) comprises UiO's focus on renewable energy, materials science, and nanotechnology. The Centre is an interdisciplinary collaboration between five research groups in physics and chemistry, and spearheads the MN Faculty's efforts for sustainable energy solutions.

Qualification requirements

The Faculty of Mathematics and Natural Sciences has a strategic ambition to be among Europe’s leading communities for research, education and innovation. Candidates for these fellowships will be selected in accordance with this, and expected to be in the upper segment of their class

with respect to academic credentials.

- Master's degree or equivalent in Chemistry, Materials Science, or a relevant subject
- Foreign completed degree (M.Sc.-level) corresponding to a minimum of four years in the Norwegian educational system
- Fluent oral and written communication skills in English
- Candidates without a Master's degree have until 30 June, 2023 to complete the final exam
- The position's subject area may require licensing under the Norwegian Export Control Act. In order to be considered for the position, it is a prerequisite that UiO must be able to be granted such licence. Må også lenke til denne siden: https://www.uio.no/english/studies/admission/master/export-control.html

Desired qualifications:

- A strong background within at least one of the following two areas a) and b):
  - a) Experience with materials synthesis and basic characterisation (NMR, FTIR spectroscopies, surface area measurements, X-ray diffraction, etc.)
  - b) Practical experience with electrochemical techniques, such as impedance spectroscopy and conductivity measurements, and their analysis
- Experience with porous material preparation and functionalisation techniques (i.e. metal-organic frameworks)
- Familiarity with advanced catalyst characterisation (e.g. X-ray spectroscopies, electron microscopy)
- Familiarity or experience with computational simulation of materials and/or their active sies

Grade requirements:
The norm is as follows:

- The average grade point for courses included in the Bachelor's degree must be C or better in the Norwegian educational system
- The average grade point for courses included in the Master's degree must be B or better in the Norwegian educational system
- The Master's thesis must have the grade B or better in the Norwegian educa-tional system
- English requirements for applicants from outside of EU/ EEA countries and exemptions from the requirements:

https://www.mn.uio.no/english/research/phd/regulations/regulations.html#toc8

The purpose of the fellowship is research training leading to the successful completion of a PhD degree.

The fellowship requires admission to the PhD programme at the Faculty of Mathematics and Natural Sciences. The application to the PhD programme must be submitted to the department no later than two months after taking up the position.

For more information see:

http://www.uio.no/english/research/phd/

http://www.mn.uio.no/english/research/phd/

Personal skills

- Ability to conduct high-quality independent research within a collaborative team
- Interpersonal communication skills and the ability to work as part of a team
- Self-motivation, creativity, genuine curiosity about the subject, work discipline, professional ethics, and ambition
- Willingness to collaborate across disciplines and with various researchers
- Willingness and ability to work as a member of a diverse research group

We offer

- Salary NOK 532 200 - 575 400 per annum depending on qualifications and seniority as PhD Research Fellow (position code 1017)
- Attractive welfare benefits and a generous pension agreement
- Vibrant international academic environment
- Career development programmes
- An inclusive work environment and many activities within the group, the Catalysis sections, and the SMN centre, examples include cabin tours, hikes, music bingo, etc.
- Oslo's family-friendly surroundings with their rich opportunities for culture and outdoor activities

How to apply

The application must include:

- Cover letter - statement of motivation and research interests
- CV (summarizing education, positions and academic work - scientific publications)
- Copies of the original Bachelor and Master's degree diploma and transcripts of records
- If possible, please include letters of recommendation
- Documentation of English proficiency if applicable
- List of publications and academic work that the applicant wishes to be considered by the evaluation committee
- Names and contact details of 2-3 references (name, relation to candidate, e-mail and telephone number)

The application with attachments must be delivered in our electronic recruiting system (please follow the link "Apply for this job"). Foreign applicants are advised to attach an explanation of their University's grading system. Please note that **all** documents should be in English or a Scandinavian language.

Interviews with the best qualified candidates will be arranged.

Formal regulations

Please see the guidelines and regulations for appointments to Research Fellowships at the University of Oslo.

According to the Norwegian Freedom and Information Act (Offentleglova) information about the applicant may be included in the public applicant list, also in cases where the applicant has requested non-disclosure.

UiO has an agreement for all employees, aiming to secure rights to research results a.o.

Inclusion and diversity are a strength. The University of Oslo has a personnel policy objective of achieving a balanced gender composition. Furthermore, we want employees with diverse professional expertise, life experience and perspectives.

If there are qualified applicants with disabilities, employment gaps or immigrant background, we will invite at least one applicant from each of these categories to an interview.

Contact information

For further information about the position please contact:

Professor Petra Ágota Szilágyi, phone: +47 228 557045, e-mail: p.a.szilagyi@kjemi.uio.no

For technical questions regarding Jobbnorge, please contact:

HR Adviser Olga Holmlund, e-mail: olga.holmlund@mn.uio.no

About the University of Oslo

The University of Oslo is Norway's oldest and highest rated institution of research and education with 28 000 students and 7000 employees. Its broad range of academic disciplines and internationally esteemed research communities make UiO an important contributor to society.

Centre for Materials Science and Nanotechnology (SMN) is an interdisciplinary focus field for material and energy research at the University of Oslo.

SMN has focused on basic research in renewable energy and environmentally friendly use of fossil energy sources. The center consists of research groups from the Department of Physics and the Department of Chemistry, has about 100 employees from around the world and manages more than 80 projects funded by the EU, the RCN and others.

Additional information

Place of service:

Problemveien 7 0313 Oslo (Oslo Municipality)