UNIVERSITETET I OSLO

Jobbnorge ID: 274549
Deadline: 3/12/2025
Website: http://www.uio.no/
Scope: Fulltime
Duration: Engagement

Researcher in Theoretical Chemistry

About the position

Position as Researcher available at Hylleraas Centre for Quantum Molecular Sciences, Department of Chemistry.

The position is for a period for up to 2 years.

Starting date is no later than 01.09.2025.

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/project description:

Applicants are invited to apply for a 2 year position as a researcher in computational chemistry. The project will be lead by Hylleraas Centre PI Erik Tellgren and contribute to the Centre's Research Theme 3/4. The focus is quantum chemical method development for one or both of the following areas:

Chemistry in strong magnetic fields: strong magnetic fields compete with Coulomb forces in molecular systems and lead to many exotic phenomena. Rearrangement of electronic energy spectra due to the orbital and spin-Zeeman effect result in novel types of chemical bonding. Moreover, the presence of velocity-dependent forces (Lorentz forces and Berry screening forces) result in complicated dynamics, and modified rovibrational spectra. The candidate will continue to develop the functionality of our in-house program package (London) and explore strong magnetic field chemistry.

Density functional theory: The presently best prospect for more accurate densityfunctional approximations for magnetic properties is via functionals of the kinetic energy density, the current density, and related quantities. Functionals will be developed within a framework that is not specific to magnetic properties, yet naturally incorporates the current density dependence necessary for rigorous modelling of magnetic properties in a unified manner. This will be done using a combination of mathematical analysis, physical modelling, and fitting/machine learning to reference data.

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.

- Applicants must hold a degree equivalent to a Norwegian doctoral degree in quantum chemistry, condensed matter physics, applied mathematics, or similar with focus on quantum mechanical modelling. Doctoral dissertation must be submitted for evaluation by the closing date. Only applicants with an approved doctoral thesis and public defence are eligible for appointment.
- Fluent oral and written communication skills in English

The following qualifications will count in the assessment of the applicants:

- Demonstrated programming skills (Python and C++ being most relevant)are required
- Demonstrated experience with method development in quantum chemistry/many-body quantum mechanics is required

The following will be considered an advantage:

- Experience with mathematical modelling of electromagnetic propertie
- Experience with development of density functional approximations
- Experience with mathematical analysis of quantum chemical or densityfunctional method

Personal skills:

- Ability to work collaboratively in team
- Ability to work independently/take initiative

We offer:

- Salary NOK minimum 579 700 - 665 000 per year depending on qualifications in position as Researcher (position code 1109)
- Attractive welfare benefits and a generous pension agreement
- Professionally stimulating working environment
- Vibrant international academic environment
- Oslo's family-friendly surroundings with their rich opportunities for culture and outdoor activities

The application must include:

- Cover letter (statement of motivation, summarizing scientific work and research interest)
- CV (summarizing education, positions, pedagogical experience, administrative experience and other qualifying activity)
- Copies of educational certificates, academic transcript of records and letters of recommendation
- A complete list of publications and up to 5 academic works 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).

In assessing the applications, special emphasis will be placed on the documented, academic qualifications, as well as the candidates motivation and personal suitability. Interviews with the best qualified candidates will be arranged.

It is expected that the successful candidate will be able to complete the project in the course of the period of employment.

Formal regulations:

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.

The University of Oslo has an agreement for all employees, aiming to secure rights to research results a.o.

The University of Oslo aims to achieve a balanced gender composition in the workforce and to recruit people with ethnic minority backgrounds.

Contact persons:

For further information about the position, please contact: PI Erik Tellgren, phone number: +47 97406408, e-mail: erik.tellgren@kjemi.uio.no
Head of Office: Jan Ingar Johnsen, phone number: +47 228 54 826, e-mail: j.i.johnsen@kjemi.uio.no

For technical questions regarding the recruitment system, 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.

Hylleraas Centre for Quantum Molecular Sciences operates under the aegis of the Department of Chemistry at the Faculty of Mathematics and Natural Sciences. The Department of Chemistry is Norway's largest institution within research and education in chemistry. Our research excels internationally and we educate students to a wide variety of jobs in industry, academia, research institutions, schools and public administration. Our research ranges from the core topics of chemistry to applied science within in environmental, health, energy and materials. The Department has extensive contacts with industry, research and educational institutions at home and abroad. As partner in the Centre for Materials Science and Nanotechnology our researchers contributes to a significant interdisciplinary efforts in cooperation with the Department of Physics. The Department of Chemistry has its own school laboratory as a great resource for teachers, public outreach and the didactics of chemistry.

Additional information

Place of service:

Problemveien 7 0313 Oslo (Oslo Municipality)