

PhD Research Fellowship in Synthesis of Gold Compounds as Precursors for Nanofabricated Materials

Position as PhD Research fellow available at Department of Chemistry

The fellowship is for a period of three years. Starting date April 2017.

No one can be appointed for more than one fixed-term period at the same institution.

Job/ project description:

In the Catalysis group at the Department of Chemistry and Centre for Materials Science and Nanotechnology, University of Oslo (UiO), a PhD position is available for experimental research on the synthesis, characterization, and exploration of gold complexes that may be of interest as precursors for nanofabricated structures. This project offers exciting challenges to a PhD student who is interested to work at the interface between physics and chemistry, guided by an industrial application perspective.

The project is part of the Marie Skłodowska-Curie Innovative Training Network *ELENA* (Low energy *EL*ectron driven chemistry for the advantage of emerging *NA*no-fabrication methods) in which young researchers investigate the chemistry and physics involved in two emerging techniques for creating nanostructures: “writing” using electron beams, and lithography with light of very short wavelengths (“extreme ultraviolet”). *ELENA* participants are 8 academic institutions, 2 research institutes and 4 companies. Fifteen young researchers will be working in the network. Two secondments at partner laboratories are part of the training.

Participants in the *ELENA* network (see www.elena-eu.org for further details) explore the fundamental mechanisms of pattern formation by extreme ultraviolet radiation of materials, one application being use in photoresist films. In order to enable writing of very small features, the use of radiation at very short wavelengths (Extreme UV, 13.5 nm) is currently the state of the art. For this use, materials need to be designed and optimized. Our goal is to support this development by synthesizing materials and metal complexes, in particular based on gold, whose properties may contribute to the fundamental understanding of the chain of processes from EUV photon absorption to chemical change.

About the group

The Catalysis group at UiO does catalysis research in a broad sense, covering homogeneous and heterogeneous catalysis by metals and metal complexes. The group has broad experience in the synthesis and characterization of catalysts of all types. The homogeneous catalysis research, led by Prof. Tilset, is directed towards homogeneous catalysis with organometallic complexes. The activities include synthesis, characterization, and studies of reaction mechanisms, with a current emphasis on the chemistry of gold. The Catalysis group hosts a national center of excellence in catalysis. Currently it has ca. 40 members, and is equipped with state-of-the-art equipment and instrumentation. We are located at the Blindern campus of the University of Oslo. See <http://www.mn.uio.no/kjemi/english/research/groups/catalysis/> for detailed information about us.

Qualifications

The Faculty of Mathematics and Natural Sciences has a strategic ambition of being a leading research faculty. 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 Master's degree or equivalent in Chemistry.

Applicants must document extensive practical experience with the synthesis, handling, and characterization of organometallic compounds, including the use of inert-atmosphere techniques and advanced NMR methods. Experience with X-ray diffraction methods, molecular modeling by DFT, and materials characterization by methods such as TGA and DSC will be a great advantage.

Researchers of all nationalities are welcome to apply. They are required to undertake transnational mobility (i.e. move from one country to another) when taking up their appointment, as described by the Mobility Rule: at the time of recruitment by UiO, researchers must not have resided or carried out their main activity (work, studies, etc.) in Norway for more than 12 months in the 3 years immediately before the appointment date. Compulsory national service and/or short stays such as holidays are not taken into account.

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/doctoral-degree-and-career/phd-programme/index.html>

A good command of English is required.

Salary:

Position code 1017, Salary: NOK 432 700 – 489 300 per year (pay grade 50 – 57), depending on qualifications and seniority.

The application must include:

- Application letter
- CV (summarizing education, positions and academic work - scientific publications)
- Copies of educational certificates, transcript of records and letters of recommendation
- Documentation of English proficiency
<http://www.mn.uio.no/english/research/doctoral-degree-and-career/regulations/proficiency-requirements.html>
- 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)

- Statement in which you explain your motivation to join the Oslo group (max. 1 page). Applications without this statement of motivation will not be taken into account. However, with this motivation your application will receive our full attention.

Foreign applicants are advised to attach an explanation of their University's grading system. Please remember that **all** documents should be in English or a Scandinavian language.

In accordance with the University of Oslo's equal opportunities policy, we invite applications from all interested individuals regardless of gender or ethnicity.

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

Frist: 6. January 2017

Contact info

Prof. Mats Tilset

Section for Catalysis Research, University of Oslo

E-mail: mats.tilset@kjemi.uio.no

Phone: +47 2285 5502