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# PhD student in Chemistry – Specializing in Molecular Biomimetics

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**Uppsala University is a comprehensive research-intensive university with a strong international standing. Our ultimate goal is to conduct education and research of the highest quality and relevance to make a long-term difference in society. Our most important assets are all the individuals whose curiosity and dedication make Uppsala University one of Sweden's most exciting workplaces. Uppsala University has over 54,000 students, more than 7,500 employees and a turnover of around SEK 8 billion.**

The Department of Chemistry - Ångström conducts research and education in the chemistry field. The department has more than 250 employees and has a turnover of 250 million SEK. At the department's six programs, we conduct very successful research of a high international standard. We have a large number of externally funded research projects, often with international cooperation and we see continued good growth in our subject area. The department has education assignments in engineering programs and master's programs.

The student will be part of the bioinorganic chemistry group within the molecular biomimetics program. The program, which is highly recognized internationally, is part of the Department of Chemistry – Ångström at Uppsala University. The group is situated in a modern building at the Ångström Laboratory. The research at the department spans from organic, inorganic and physical chemistry to biochemistry, biophysics, synthetic biology and microbial chemistry with strong cross-disciplinary collaborations being a characteristic of the research environment.

More information is available on our [website](#).

## **Project description**

The research project is part of an EU funded network (PhotoSynH2), which aims at developing novel methods for the production of green H<sub>2</sub> as a solar fuel. The hydrogenase enzymes are key components in any such technology, as these are central to H<sub>2</sub> metabolism and catalyze the formation and oxidation of H<sub>2</sub> gas. To realize their biotechnological potential, we need highly efficient hydrogenase enzymes that are well integrated into the metabolic pathways of technologically relevant host organisms. The project will address this challenge via characterization of novel examples of this diverse enzyme family, followed by their optimization via rationale design to ensure stable and high H<sub>2</sub> productivity in photobioreactors.

## **Work duties**

The applicant will work in an interdisciplinary project that involves biochemistry,

molecular biology and biophysics. The primary role of the PhD student in the project will involve the identification of novel [FeFe] hydrogenases of potential biotechnological relevance, through heterologous expression and screening efforts in defined host organisms. Selected enzymes will be characterized in depth utilizing a combination of electrochemistry and spectroscopy, with a focus on determining key factors governing kinetics and inhibitor tolerance, to enable rationale design of engineered hydrogenases. The work will be performed by the PhD student in close collaboration with other partner laboratories at Uppsala University and abroad.

The main duties of doctoral students are to devote themselves to their research studies which includes participating in research projects mentioned above and third cycle courses. The work duties can also include teaching and other departmental duties (no more than 20%).

## **Eligibility requirements**

A person meets the general admission requirements for third-cycle courses and study programmes if he or she:

- has been awarded a second-cycle qualification, or
- has satisfied the requirements for courses comprising at least 240 credits of which at least 60 credits were awarded in the second cycle, or
- has acquired essentially equivalent knowledge in some other way in Sweden or abroad.

**Required qualifications:**

- Degree or equivalent as above in chemistry, biochemistry, biophysics or molecular biology.
- Experience in working with proteins (during studies or in industry).
- Very good oral and written proficiency in English.
- The ability of the PhD student to be innovative and not afraid to go outside traditional discipline.

Consideration will also be given to good collaborative skills, drive and independence, and how the applicant's experience and skills complement and strengthen ongoing research within the department, and how they stand to contribute to its future development.

**Desirable qualifications:**

- Advanced knowledge and/or practical experience in biochemistry, molecular biology and/or (bio)inorganic chemistry is desirable.
- Prior experience in working with metalloenzymes will be beneficial.
- Prior experience with in vitro enzyme characterization will also be highly beneficial.

The rules about PhD students are found in the Higher Education Ordinance Chapter 5 §§1-7 and the [university's rules and guidelines](#).

**Application procedure:** The application should include a statement of research interest, CV, certificates of exams, degrees and grades, a copy of Master thesis, published article or relevant materials, if available. Also, contact information of at least two reference persons should be included.

**About the employment**

The employment is a temporary position according to the Higher Education Ordinance chapter 5 § 7. Scope of employment 100 %. Starting date 2022-11-01 or as agreed. Placement: Uppsala

**For further information about the position, please contact:** Associate Professor Gustav Berggren, Gustav.Berggren@kemi.uu.se, Professor Peter Lindblad, Peter.Lindblad@kemi.uu.se

**Please submit your application by 30 September 2022, UFV-PA 2022/3240.**

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Please do not send offers of recruitment or advertising services.

**Submit your application through Uppsala University's recruitment system.**

**Placement:** Department of Chemistry - Ångström Laboratory

**Type of employment:** Full time , Temporary position longer than 6 months

**Pay:** Fixed salary

**Number of positions:** 1

**Working hours:** 100 %

**Town:** Uppsala

**County:** Uppsala län

**Country:** Sweden

**Union representative:** Seko Universitetsklubben seko@uadm.uu.se

ST/TCO tco@fackorg.uu.se

Saco-rådet sacco@uadm.uu.se

**Number of reference:** UFV-PA 2022/3240

**Last application date:** 2022-09-30

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