

PhD position in Chemistry, with a specialization in Silicate Geochemistry

The Department of Chemistry is opening a PhD position in Chemistry with a specialization in geochemistry, inorganic chemistry, physical chemistry, or any related field. The thesis project will focus on studying geologic minerals at the molecular level using advanced theoretical and experimental synchrotron-based techniques, in the context of nuclear waste disposal. The position is for four years of doctoral studies, including participation in research and postgraduate courses. The last day to apply is November 30, 2023. Starting date is January 1, 2024 or by agreement.

Project description and tasks

In response to the plans of several countries, including Sweden and Finland, to deposit high-level nuclear waste in deep geological repositories, this doctoral project funded by the Swedish Radiation Authority (SSM), will investigate the chemical and structural changes of various minerals in contact with water upon exposure to ionizing radiation (gamma and X-ray radiation). The successful candidate will join a research group specializing in molecular geochemistry (moleculargeo.chem.umu.se) at the Department of Chemistry at Umeå university (www.umu.se/chemistry), in collaboration with Prof. Mats Jonsson at Applied Physical Chemistry, KTH, Sweden. In addition to gamma radiation capabilities at KTH and the research group's own resources at Umeå University, the doctoral student will use various experimental platforms within the Chemical Biological Center (KBC; www.umu.se/en/chemical-biological-centre/), as well as various synchrotron light techniques (XANES, EXAFS, XRD) available at various synchrotron light facilities, for example at MAXIV in Lund.

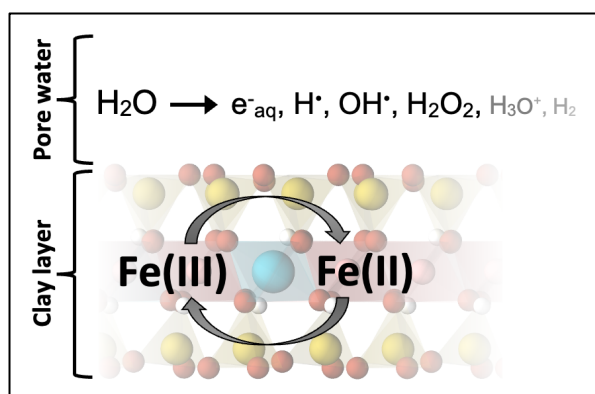


Figure 1. Schematic of flip-flopping of structural Fe(III) to Fe(II) and back, due to reactions with the primary radicals from water radiolysis.



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Qualifications

To be admitted for studies at third-cycle level you are required to have completed a second-cycle level degree, or completed course requirements of at least 240 ECTS credits, of which at least 60 ECTS credits are at second-cycle level or have an equivalent education from abroad, or equivalent qualifications.

To fulfil the specific entry requirements to be admitted for studies at third-cycle level in chemistry, you are required to have completed first-cycle courses of at least 90 ECTS credits within the field of chemistry or another subject considered to be directly relevant to the specialization in question. Of those 90 ECTS credits, at least 15 ECTS credits shall have been acquired at second-cycle level within the specialization or an equivalent subject.

Additional required qualifications are: Good knowledge of the English language, both written and spoken is required, as well as a great interest within the field of geochemistry. A suitable candidate must also be creative, have a high degree of independence, and problem-solving analytical ability. A suitable candidate must also have the ability to work both independently and in collaboration in groups, and take all initiatives needed to enjoy and pursue this 4-year degree.

Merits are: We are particularly interested in candidates who have studied courses in geochemistry, inorganic chemistry, and physical chemistry or equivalent at an advanced level (at least 15 ECTS). Prior experience of various experimental spectroscopy or diffraction techniques and knowledge of basic programming would be advantageous. Consideration will also be given to collaborative skills, drive and independence, and how the applicant, through experience and skills, is deemed to have the abilities necessary for successfully completing doctoral studies.

About the employment

The position is intended to result in a doctoral degree. The main task of the PhD student is to pursue their doctoral studies, including participation in research and doctoral courses. The duties can include teaching and other departmental work (up to 20%). The employment is limited to the equivalent of four years of full-time (48 months) or up to five years for teaching part-time. Salary is set in accordance with the established salary levels for PhD positions.

As employees at Umeå University PhD students are granted social benefits such as parental leave, holiday leave, and occupational health services. Read more about the benefits of being an employee at Umeå University here: <https://www.umu.se/en/work-with-us/benefits/>. The candidate's physical workplace will be at the Chemistry department, Umeå university.

Application

You apply via our e-recruitment system Varbi. Log in and apply via the button at the bottom of the page. The deadline for applications is November 30, 2023.

The application, written in English or Swedish, should include:



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- a personal letter with a brief description of why you are applying for the position, and how your qualifications and research interests are relevant to the doctoral project described above (no more than 2 pages),
- a curriculum vitae,
- copies of degree certificates, diplomas or equivalent, including documentation of completed academic courses, grades obtained, and other certificates of relevance to the described project,
- copies of student theses on advance level or other publications (no more than 5)
- contact information for at least two reference persons.

Further information

Further information is provided by Michael Holmboe, e-post: michael.holmboe@umu.se, web: <http://moleculargeo.chem.umu.se/holmboe/>.

Welcome with your application!

About us

The Department of Chemistry is one of the largest departments within the Faculty of Science and Technology with approximately 200 employees and strong and expanding research. The Department has four major research areas: Biological Chemistry, IBEAM, Organic chemistry and Technical Chemistry. We are also a strong partner in the KBC, Chemical-Biological Center. Information about the postgraduate education can be found on the Faculty of Science and Technology website: www.umu.se/en/faculty-of-science-and-technology/education/doctoral-studies/chemistry/. For more information about working at Umeå University, <https://www.umu.se/en/work-with-us/>.