

Ph.D. Student position in Chemistry with focus on Planetary Geochemistry and Spectroscopy

Is there water on Mars? What is the role of water in martian geochemical history? How can we reveal the potential water resources for future human explorations on Mars?

If you are interested in discovering all these fascinating phenomena related to Mars, you are welcomed to apply for a fully funded four-year PhD student position. We are looking for you who has a Master's degree in chemistry or geochemistry, physics, planetary science, astrobiology, or equivalent qualifications, and a particular fascination and skill sets for advancing knowledge of Mars geochemistry by bridging laboratory results with martian orbit data.

Application deadline is **May 24, 2022**.

Tasks

The doctoral studies are aimed at a doctoral degree where the main task is research within a project to resolve the formation and stability of liquid water in martian analogue soil and salt mixtures, and is funded by the Swedish Research Council. You will explore the interfacial chemistry of water/ice formed in these mixtures using vibrational spectroscopy under low and high temperature settings available at Umeå University. Furthermore, you will bridge these analyses with remote sensing data from Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) of NASA to understand the aqueous history of Mars and revealing potential water resources for future human explorations. In addition to the research assignment, participation in postgraduate courses is also included.

You will work with the newly-established Yeşilbaş Lab at Umeå University. You will integrate into the [Molecular Geochemistry](#) and Environmental Chemistry research environments of the [Department of Chemistry](#), and work with various analytical platforms of the [Chemical and Biological Center](#). Furthermore, the successful candidate will have a chance to collaborate with several international research teams including NASA.

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.

You are interested in geochemistry, planetary science, astrobiology and physical chemistry and have demonstrated abilities at thinking at the molecular level and implement these results in the planetary settings. You must have at least 15 ECTS credits in (geo)chemistry, mineralogy, aquatic (geo)chemistry, environmental (geo)chemistry, planetary (geo)chemistry, astrobiology or the equivalent at an advanced level. A very good oral and written proficiency in English are required.

Practical experience in vibrational spectroscopy, minerals, rocks and soils and/or advanced spectral data evaluation (MATLAB, R, Python) are considered valuable assets. Experience in remote sensing (ENVI-IDL) are not mandatory but will be viewed favorably.

You are a logical thinker, ambitious and creative thorough at work. You have organizational skills and willing to participate in national and international meetings. You are able to work independently and also collaborate with the other research teams, and take all initiatives needed to enjoy and pursue a 4-year degree.

Terms of employment

The appointment aims at a PhD degree and the main task of the PhD student is to pursue their doctoral studies, which includes participation in research projects as well as 40 ECTS in postgraduate courses. In the assignments, teaching and other departmental work (up to a maximum of 20%) can be included. The employment is limited to four years full-time, and can be extended up to a fifth year to compensate for part-time teaching. The salary is determined according to the established salary levels by the University. You will be also offered a wide variety of employment benefits like *paid holiday leave*, *reimbursement of fitness* and *medical expenses* and *doctor visits during paid working hours*. The candidate's physical workplace will be in Umeå, and starting date can be negotiated with the successful candidate.

Application

The application must contain the following items:

- *Curriculum vitae* of a maximum of two A4;
- Cover letter of a maximum of one A4 stating why you are interested in the position;
- Certified copies of degree certificates, including documentation of completed academic courses and obtained grades;
- Names and contact information for at least two reference persons.

You must apply through our e-recruitment system. Log in and apply using the link at the bottom of the page. The application deadline is **May 24th, 2022**.

Further information can be obtained from Assistant Prof. Dr. Merve Yeşilbaş , e-mail: merve.yesilbas@umu.se, web: <http://moleculargeo.chem.umu.se/merve-yesilbas/>.

About us

The Department of Chemistry is one of the largest departments within the Faculty of Science and Technology with approximately 200 employees, of which approximately 40 graduate students, and a strong and expanding research. The Department has three major research areas: Biological Chemistry, Environmental and Biogeochemistry, and Technical Chemistry. We are active in three of the priority research areas of the Faculty of Science and Technology and are 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: <http://www.teknat.umu.se/english/doctoral-studies/>. For more information about working at Umeå University: <https://www.umu.se/en/work-with-us/>.

The Nobel Prize in Chemistry in 2020 was awarded to Emmanuelle Charpentier, who was employed at Umeå University when the CRISPR-Cas9 method was developed.