

GEOCHEMISTRY

Characteristics of the study program

- *Title of the study program:* Geochemistry
- *Study field* 4.1.28 Geochemistry
- *Degree of the study:* doctoral
- *Duration of study:* 4 academic years
- *Degree:* philosophiae doctor (PhD.)
- *Guarantor of the program:* prof. Ján Spišiak, DrSc.

Scope of the study program –

Geochemistry is the interdisciplinary branch of Earth Science that applies chemical principles to deepen an understanding of the Earth system and systems of other planets. Geochemistry consider Earth composed of discrete spheres - rocks, fluids, gases and biology - that exchange matter and energy over a range of time scales. An appreciation for rates of reactions and the range of physical conditions responsible for the chemical expressions of each sphere provides the framework to study the co-evolution of the solid Earth, its oceans, atmosphere, biosphere, and climate. Sub-disciplines are biogeochemistry, organic geochemistry, trace and elemental geochemistry, and metamorphic and igneous-rock geochemistry. The graduate study comprises two parts: a study part and a research part. A plan of the study is prepared by the supervisor, and should be approved by a committee.

Profile of a graduate

Geochemistry study the composition, structure, processes, and other physical aspects of the Earth. They examine the distribution of chemical elements in rocks and minerals, as well as the movement of these elements into soil and water systems. There is a wealth of information buried in the liquids, gases, and mineral deposits of rock. Most of work utilizes major and trace elements, stable isotopes and the products of natural radioactive decay in rocks, waters and other geomaterials. We use these tools as process tracers and to determine absolute ages of rocks and minerals. Isotopic techniques include Rb-Sr, Sm-Nd, U-Pb, Re-Os, and stable isotopes of Li, Mg, O, H, C and S. Understanding the chemical composition of rocks enables scientists to put together broad-based theories about the way the Earth is changing; helps environmental management companies decide how to dispose of a toxic or hazardous substance; and steers mining companies toward use of natural resources with a minimum environmental impact. Geochemists spend a significant amount of time in the field, this is also a career for people who enjoy outdoor activities such as camping, hiking, and climbing.

Requirements on applicants

An applicant is required to have completed the Master-degree in geology, petrology, mineralogy. Masters in other subjects are considered on case-by-case basis. All applicants have to pass an entrance exam. The exam committee is appointed by the Dean of the Faculty of Natural Sciences. Supervisor of a prospective graduate student is a member of the exam committee.

Members of the Geochemistry of the Graduate School:

Prof. Ján Spišiak, DrSc.; Jan.Spisiak@umb.sk

Prof. Jozef Kobza, CSc. Jozef.Kobza@umb.sk

As. Prof. Stanislav Jeleň, PhD. Stanislav.Jelen@umb.sk

Prof. Peter András, PhD. Peter.Andras@umb.sk

RNDr. Roberta Prokešová, PhD.; Roberta.Prokesova@umb.sk

Fees: 4000€ per ac. year

Fee does not cover living expenses at the place. Students may apply for accommodation at the dormitories of Matej Bel University.

Contact:

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See also <http://www.fpv.umb.sk/en/departments/department-of-geography-and-geology/>