ES7010 Geochemistry (3AUs)

This course is designed to introduce you the principles of chemistry related to geology (therefore, geochemistry) and their applications to understand processes taking place on and within the Earth. The aim is to provide you with a powerful toolbox and the related skills, more than a static bank of knowledge. You will become familiar with the principles of geochemistry, including analytical chemistry, governing equations and typical applications in the Earth Systems Sciences (e.g., atmosphere, hydrosphere, biosphere, solid earth, anthroposphere). You will have experience to work with geochemistry analytical equipment, learn to collect, organize and present geochemical data, including presenting and writing a research report on a problem of your choice. With this set of tools and knowledge, you will have the mind skills and technical know-hows to answer a range of practical problems in geochemistry, including some that may not have been addressed in the class.

This course is divided into two parts:

In Part (i) lecture classes, you will be introduced to the basic principles and tools of geochemistry. You will learn about the large-scale processes occurring in the geosphere, hydrosphere, biosphere, atmosphere and anthroposphere on the Earth, using major and trace element geochemistry, and stable and radiogenic isotopes. You will also learn processes such as element and isotope fractionation, element transport and mixing as well as radiogenic isotopes and their application for geochronological purposes.

In Part (ii) tutorial classes and individual time, you will work closely with our researcher team and undertake hands-on data collection via geochemistry analytical instruments and data analysis.