# Geochemical education in Kanazawa University: Combination of fieldwork, material handling, and instrumental techniques

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We have two practicals for geochemistry (one for primary and one for advanced) along with several lectures related to geochemistry (e.g., isotope geology, petrology, environmental sciences, etc.).

The primary class includes

1) Safety measure to treat chemicals
2) Mineral separation
3) Dissolution of minerals
4) Air sampling and analyses
6) Water sampling and analyses

This practical is designed to learn handling of three types of samples from geosphere (rock), hydrosphere (liquid), and atmosphere (air).

The advanced class mainly focuses on instrumental analyses. They include

1) XRF
2) EPMA
3) Cathode luminescence
4) Raman spectroscopy

Students learn how to prepare samples for each instrumental analysis, physical and chemical basics of instruments, and how to work on these instruments. This practical is linked to practicals for learning geological fieldworks, and samples analyzed here were collected by students themselves during the geological fieldworks. Students will learn not only techniques necessary for instrumental analyses but also the philosophy of analyses. Students are encouraged to think why you need geochemical data, what kind of data is effective for your research purposes, and what is the requirement in choosing (collecting) samples for geochemical analyses, etc.