Undergraduate education in geochemistry and cosmochemistry at Osaka University, Japan

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Researches on Geochemistry and Cosmochemistry are currently conducted by 5 research groups at Department of Earth and Space Science, Osaka University, Japan, which are composed of 8 research groups in total. They are Physical Geochemistry Group, Infrared Astronomy Group, Earth and Planetary Material Science Group, High Pressure Material Physics Group, and Planetary Science Group. The groups also have a collaborative relationship with Mass Spectrometry Group from Department of Physics.

Our undergraduate syllabus covers the introductory courses on the individual groups' expertise, and our original laboratory and field courses. The field works in Earth and Space Science aims to enhance students' understanding about the dynamics and physicochemical processes of the Earth by utilizing the unique geology of Western Japan, such as Genbudo (columnar joints in volcanic rocks), Ikuno Silver Mine (deposit formation), paleo-Lake Biwa sediments (lignite coal), Mt. Daimonji, Mt. Minoh (accretionary prism), Uemachi fault (seismic event).

The first year students take a small group physics seminar. They are assigned to the individual research groups, and the group staffs give basic lessons at their discretion about the principles, methods, and applications in Earth and Space Science. The students have opportunities to observe meteorites, to practice analytical techniques (e.g., SEM-EDS, XRD, UV-Vis, FTIR, ESR, GCMS, MALDI/ToF-MS), to visit a high power laser facility at Institute of Laser Engineering, and to go to a planetarium at Osaka city science museum, etc. Aside from the course, an official spring study tour for the first year students to Japan Synchrotron Radiation Research Institute (SPring-8) and Nishi-Harima Astronomical Observatory, is also effective for Geo- and Cosmochemistry education. Many staff members are involved in a number of space exploration missions (e.g., Kaguya, Hayabusa, Hayabusa-2, JUICE, SPICA, ISS experiment), and place emphasis on raising the next generation scientists who lead the future missions and Astrobiology.