

Practical course of petrology and geochemistry for students in the field of mineral resources

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The course is a part of the practical course of the 'Leadership Program for New Frontier Rare Metals and Other Resources: Practical Human Resource Development for International Resource Development' of Akita University supported by MEXT (the Ministry of Education, Culture, Sports, Science & Technology in Japan) since 2012. The program is focused on fostering students who will play leading roles on resources developments in the academic, industrial and governmental sectors after their graduation.

As the resources field covers large disciplines from the exploration to exploitation and even mine economics, some students in the program do not have enough knowledge of petrology and geochemistry. Thus, The course aims to provide the basics of petrology and research methods including geochemical approaches in petrology. As the petrology is one of the essential subjects to understand mineral deposits, the course will provide advanced knowledge of the petrology necessary for any exploration and exploitation of mineral resources. It consists of six major sessions; (1) basic petrology, (2) sample preparation methods for petrographic microscope, (3) observation of thin sections under petrographic microscope, (4) basics of SEM-EDS-CL (scanning electron microscope with energy dispersive X-ray spectrometer and cathode luminescence detector), (5) basic sample preparation methods for whole-rock chemistry, (6) basics of quadra-pole ICP-MS (inductively coupled plasma-mass spectrometer). Each session includes practical laboratory works for improving their understanding.

It was found that there was no significant difference in initial knowledge among the students evaluated with pre-course examinations of the last three years course. Although the course is shorter than typical course of the topics for undergraduate student, it quickly provides opportunity to obtain and refresh advanced knowledge of the topics at the beginning of their postgraduate studies. Course participants have pre-course and final tests, and results are useful for tracking effectiveness of the course. The results show that their knowledge is improved. Questionnaire for students shows that they acknowledge the understanding of techniques on the various analytical works.