

Leaching behavior of uranium and thorium(I):an experimental approach

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In order to understand the leaching behavior of uranium and thorium from Japanese geologic bodies, the simple leaching experiments were carried out. The 50 mg of rock samples was sealed in the polypropylene bottle with 50 ml solution containing oxidizing (H₂O₂) or reducing (NaHS) agents of various concentrations, and left for about 30 days at room temperature and pressure. Some rock samples collected from the Toki and Naegi area were used: fresh granite, weathered granite, middle Miocene sedimentary rocks, uranium ore (primary), uranium ore (secondary) and alluvial placer. They were prepared under 60 mesh in size for uranium ores and under 60-150 mesh for other rock types. The run products were filtered by 0.20 μm membrane filters, and the filtrated solution was analyzed by ICP and ICP-MS.

The results indicate that the leaching behavior of the elements is controlled by the properties of rocks together with amount of oxidizing or reducing agents. The behavior of some redox-sensitive elements such as Fe, Mn and V are well explained by the simple calculation by chemical thermodynamics, whereas that of some elements such as U cannot be fully explained.

(Kaori Shimizu[3]: Her contribution was made when she was enrolled at the College of Natural Science, Univ. of Tsukuba)