Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

AHW025-09 Room:202 Time:May 22 16:30-16:45

The behavior of vanadium between water and basalt

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Dissolved chemical compositions in ground water and river water in the area, where is not contaminated by human, are derived mainly from rains, soils and rocks. A regional water quality could be characterized by them. In the surrounding area of Mt. Fuji, it has been reported that vanadium concentration is relatively high 0.05-0.1(mg/l) in ground water and river water, due to the dissolution of vanadium from basalt. This concentration is 50 to 100 times high compared to the normal concentration of vanadium in natural waters. However a relationship between inland waters and rocks has not been reported. The reason is that most previous studies examined the relationship between land and water and rocks, which applies to water pollution. Vanadium is not considered a contaminant in the water. Therefore, this study examines the behavior of vanadium between basalt and groundwater, and the behavior of vanadium in groundwater in the surrounding area of Mt. Fuji. In the experiment, the basalts samples of different ages were used and the dissolution experiment between them and water was performed. The behavior of vanadium dissolved in aquifers in Mt. Fuji area was considered. The results of the dissolution experiments showed that the dissolved vanadium species in water were affected by pH and dissolved oxygen. In addition, the vanadium in basalts is considered to be contained in magnetite, in pyroxene and in the glass and to have adsorbed onto each minerals surface. The experiment of extracting vanadium from them revealed the existing forms of vanadium in basalts.