Japan Geoscience Union Meeting 2015
(May 24th - 28th at Makuhari, Chiba, Japan)

SMP42-P01 Room:Convention Hall Time:May 26 18:15-19:30

Change in fayalites with ultraviolet rays and water

KOMORI, Nobuo[1*]

[1]Kamata junior high school

I reported a change in quality of the fayalite from Hachijojima with ultraviolet rays and the water in this meeting two years ago. I did similar experiment with fayalite from Kawamata-machi, Fukushima afterwards.

I purchased these Fayalites from two companies (company A and company B).

These Fayalites were done the ultrasonic cleaning with tap water and distilled water.

The fayalite of company A has weak degree of the weathering in the outdoors.

The fayalite of company B has more intence degree of the weathering in the outdoors than company A. I decided that the fayalite of company A is called sample A and tha fayalite of company B is called sample B. I carried out following experiment using sample A and sample B.

One of sample B which weight is about 2g, are put in the test tube filled with distilled water. The test tube is irradiated with ultraviolet rays with their peak wave length of 254 nm. Another experiment was done as a comparison under the same condition but without ultraviolet. The tubes were irradiated with ultraviolet rays for three months. The illuminance of ultraviolet rays is 40w/m2when the experiments were first strated.

As a result of this experiment, a lot of brown powder was generated in the test tube that was irradiated with ultraviolet rays. It was estimated by XRD analysis that the brown powder might include Fe_2O,{3},FeO (OH),MnO_2.

However, the tube without ultraviolet rays irradiation generated no powder. And I did the same experiment using sample A. As a result no brown powder was generated in the test tube that was irradiated with ultraviolet rays and was not irradiated too.

About these result I estimated as follows.

Because the sample B had much quantity of iron ion in the water and the oxidation of iron ion was promoted by ultraviolet rays, so a lot of powder of the iron oxide was produced in water. Because the sample A had very little iron ion in water,so iron oxide hardly occurs.

Keywords: ultraviolet rays, water, fayalite, iron oxide, maghemite, change