A cryptodome formation imitation experiment using cocoa and chocolate

Shunji Mouri[1]; Shintaro Hayashi[2]

[1] Earth Sci., Akita Univ; [2] Dep. of Earth Sci., Akita Univ.

The simulation systems of a cryptodome using cocoa and chocolate are the teaching materials for making a cryptodome built by the HAYASHI (2003) understand. Raw chocolate (chocolate magma) is poured in from under the volcano (cocoa volcano) made from cocoa, and it can observe that the crack on the surface of cocoa, upheaval of a dislocation, and internal chocolate magma (chocolate rock mass) are drop-like form. By this research, the size of a cocoa volcano and the viscosity of chocolate magma were changed, were performed, and were investigated about the relation between the surface phenomenon of a cocoa volcano, and the viscosity of chocolate magma and the form of a chocolate rock mass, and the simulation system of a cryptodome was considered about a possibility that it can argue about the viscosity of magma, and the form of a cryptodome from the surface phenomenon of a volcano object.

The experiment method is performed according to the simulation system of a cryptodome.A cocoa volcano is made on the acrylics board which made the small hole.Raw chocolate (chocolate magma, chocolate:whipped cream:starch syrup =5:4:1) is poured in using an injector from under the hole of an acrylics board.The surface phenomenon of a cocoa volcano and the form of a chocolate rock mass are observed.In this research, the height of a cocoa volcano is set to about 2 cm, about 3 cm, and about 5 cm, and the lapsed time after 5 cc and viscosity put raw chocolate into an injector for the quantity of a chocolate magma to pour in was changed with 0 minute, 5 minutes, and 10 minutes, and it experimented noting that viscosity was relatively high so that lapsed time was long.

The experiment result was as follows.About the surface phenomenon of a cocoa volcano, when [that a cocoa volcano was small] the viscosity of chocolate magma was low, two or more cracks were formed in the surface of a cocoa volcano with chocolate magma pouring, and it crushed finely, and upheaved, and the lava dome was formed.When [that a cocoa volcano was small] the viscosity of chocolate magma was high, of chocolate magma pouring, several cracks were formed in a cocoa volcano surface, it upheaved in the shape of a block, and the lava dome was formed.When a cocoa volcano was large, there was no difference in the viscosity of chocolate magma, several cracks were formed of chocolate magma pouring, the crack was expanded by it, and the excellence dislocation and a cryptodome were formed.Moreover, when the form of a chocolate rock mass had a small cocoa volcano, it became campamulate, and when a cocoa volcano was large, it became the form of the shape of a distorted polyhedron.

Bibliography:Making of a cryptodome by chocolate magma, Shintaro HAYASHI, 2003, The 2003 Japan Earth and Planetary Science Joint Meeting Secretariat, J068-005

* It demonstration-plans at the poster hall.