

Petrographical and morphological character of volcanic rocks dredged around the Sumisu caldera, Izu-Ogasawara arc

UEHARA, Taiki^{1*} ; SAKAMOTO, Izumi¹ ; YAGI, Masatoshi¹ ; INOUE, Tomohito¹ ; OKAMURA, Satoshi²

¹School of marine science and technology, ²Hokkaido Education University, Sapporo Campus

The Izu-Ogasawara arc is located the south of Izu peninsula. It opens for total extension approximately 1,500km, approximately 400km in width. In addition, it is an active oceanic island arc of the volcanic activity. A volcanic zone of the Quaternary period ranges to the Shititou-Ioushima ridge in the Izu-Ogasawara arc to the north and south and constitutes a volcanic front. There are many submarine volcano with caldera in the Izu-Ogasawara arc (Murakami, 1997).

In this study, mention of the topography of Smith caldera gathered by Tokai University Bousheimaru from May 9, 2014 through May 15 and the rock analyzed it.

As a result, (1)the diameter of the Sumisu caldera is 9km (2)the depth of the water of the outer rim of a volcanic crater top is 30m (3)caldera wall is steep than the outer slope (4)stepped terrain development in the caldera outside slope (5)water depth of caldera bottom 900m (6)there exists a central cone of relative height 100m in the center. As a result of bottom sampling, fresh rhyolite volcanic rock and volcano-clastic rock were gathered from a caldera bottom and the central cone. Fresh rhyolite volcanic rock rhyolite was gathered in the lower caldera wall and central part. By the petrochemistry composition, a value of SiO₂ was concentrated in two places of 49.6(wt.%)~51.1(wt.%) and 67.5(wt.%)~69.4(wt.%). Typical bimodal volcanic activity was confirmed from this caldera.

From the slope of the back arc side, flat basalt and a large quantity of pumice and acid plutonic rocks were collected. A large quantity of dacite quality pumice (quality of corner stone) was gathered at the same time, too. Therefore, bimodal volcanic activity was estimated in the back arc side than not including volcanic rock of the quality of andesite.

Keywords: Smith caldera, Bimodal volcanism, Spatter ejecta, Dacitic pumice