

Basement plutonic rocks of the Hakone Volcano, northern part of Izu-Boni Arc.

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It is important to understanding of the geological structure of the Izu-Bonin Arc for clarification of development of crust and continent. Suehiro et al.,(1996) has estimate to structure of middle and lower crust of the Izu-Bonin Arc by seismography. The middle crust is 6-7km/s similar to tonalitic rocks, the lower crust is 7-7.5km/s similar to gabbroic or amphibolitic rocks. Those are comparable to tonalities of the Tanzawa Mountain, northern part of the Izu-Bonin Arc. In addition, plutonic rock xenoliths appear in some volcanic rocks of northern parts of the Izu-Bonin Arc.

We analyzed a xenolith included in the Suwanohara tephra (SwS) and plutonic rock gravels in the Hayakawa tuffbreccia Formation in Hakone area. Former is hornblende gabbro, consisted in plagioclase, hornblende and camingtonite. Bulk compositions are $\text{SiO}_2=46.48\text{wt.}\%$, $\text{Al}_2\text{O}_3=20.99\text{wt.}\%$, $\text{Fe}_2\text{O}_3=12.70\text{wt.}\%$, $\text{MgO}=7.29\text{wt.}\%$, $\text{Na}_2\text{O}=1.29\text{wt.}\%$, $\text{K}_2\text{O}=0.08\text{wt.}\%$. The mineral assemblage and the bulk composition are similar to gabbroic rocks of the Tanzawa plutonic rocks. Later is gabbroic nodule, consisted in mainly plagioclase, clinopyroxene and orthopyroxene accessory with quartz, hornblende, magnetite, ilmenite and apatite. Bulk chemical composition are $\text{SiO}_2=48.56\text{wt.}\%$, $\text{Al}_2\text{O}_3=17.76\text{wt.}\%$, $\text{Fe}_2\text{O}_3=9.62\text{wt.}\%$, $\text{MgO}=8.67\text{wt.}\%$, $\text{Na}_2\text{O}=0.80\text{wt.}\%$, $\text{K}_2\text{O}=0.02\text{wt.}\%$. SiO_2 and MgO components are higher than hornblende gabbro in the Suwanohara tephra (SwS). Components of MgO and CaO are higher, Al_2O_3 and Na_2O are lower than gabbroic rocks of the Tanzawa plutonic rocks. In that all, basement plutonic rocks of the Hakone volcano has several rock type variations.