

Isotope geochemistry of alkalic basalts from South Arch volcanic field, Hawaii

Tomomi Kani[1], Eiichi Takahashi[2], Susumu Nohda[3]

[1] Envi. Sci., Kumamoto Univ., [2] Earth and Planetary Sci., Tokyo Inst. of Tech., [3] Envi.Sci.,Kumamoto Univ.

The Hawaiian Arch is a broad swell in the Cretaceous sea floor surrounding the Hawaiian Islands. Numbers of Tertiary/Quaternary volcanoes, which located on the Hawaiian Arch, are discovered in 1986 during surveys using the USGS GLORIA sonar system. The origin of the arch lavas may be somewhat related to the structure of the arch itself. The total area of identified arch lavas exceeds that of the subaerially exposed Hawaiian Islands. There has been a growing interest in the origin of these arch type volcanisms to understand Hawaiian hot spot magmatism.

The South Arch Volcanic Field is one area of the arch volcanism located 200km south of Hawaii Island. The South Arch volcanic field consists of flat sheet flows and pillows in a 35 by 50 km area. It is reported that South Arch lavas erupted at 1~10 ka according to the palagonite thickness on lava surfaces, demonstrating South Arch volcanism is similar in chemical compositions to North Arch lavas which located 500km far from the center of the plume beneath Kilauea (Lipman et al., 1989). Glassy fresh pillow lavas were collected from the young lava flow field in South Arch volcanic field by ROV-KAIKO during JAMSTEC 2001 Hawaii Cruise. We have measured Pb and Sr isotope compositions of the glasses. The present Sr and Pb isotope data of South Arch glasses plot in the limited ranges; Sr-87/86: 0.70331-0.70342, Pb-206/204: 18.41-18.43, respectively. In order to examine temporal special distribution of mantle components beneath Hawaiian hot spot region, we present comparative study of isotope geochemical characteristics of the mantle source components involved in South Arch volcanism and North Arch volcanism.