238U-230Th-226Ra disequilibrum analyses of Miyakejima lava samples

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We are developing a technique for the 238U-230Th-226Ra disequilibrum measurements for volcanic rock samples using MC-ICPMS. The concentrations of U, Th and Ra were determined by isotope dilution. In this study, we made 230Th low-enriched and 235U depleted mix spike solution and 228Ra high-enriched spike solution. Following sample dissolution by HF-HClO4, U and Th were then isolated from rock matrix by an anion exchange procedure. On the other hand, Ra was isolated by a cation exchange procedure and Sr spec resin procedure. Purified solutions were then analyzed using a MC-ICPMS with a micro-concentric nebulizer. In Ra isotope ratio measurements, molecular ions derived from Ba may disturb measurements of isotope ratio. We will have to isolate Ra from Ba, perfectly.

The 238U-230Th disequilibrum on Miyakejima lava samples was determined, these samples have 238U excess ((238U/230Th=1.3-1.4). It shows that U-Th elemental fractionation have occurred in several ten to thousand years. After this, we will determine the 230Th-226Ra disequilibrum on these samples to estimate time scale of magma process.