

238U/230Th disequilibrium measurement for volcanic rock samples using a multiple-collector ICPMS

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We have developed a method for 238U/230Th disequilibrium measurements. The procedure were involved using a MC-ICPMS. Volcanic rock samples were digested in Teflon beakers with HF-HClO₄. The sample solution was separated into two parts, one of which is added spike solution to measure uranium and thorium precisely by isotope dilution. Another one is spike-free for isotope ratio measurements. Uranium and Thorium were then isolated from rock matrix by an anion exchange procedure. Purified solutions were then analyzed using a MC-ICPMS with a micro-concentric nebluzer. This procedure is applied to 238U/230Th equilibrium measurements from standard rock samples to check the accuracy of the method. These samples were also checked for 238U/230Th =1.

We have developed a method for 238U/230Th disequilibrium measurements. The procedure were involved using a multiple-collector inductively coupled plasma mass spectrometer (MC-ICPMS, Micromass IsoProbe). Volcanic rock samples were digested in screw-cap Savillex beakers with HF-HClO₄. The sample solution was separated into two parts, one of which is added spike solution to measure uranium and thorium precisely by isotope dilution. Another one is spike-free for isotope ratio measurements. Uranium and thorium were then isolated from rock matrix by an anion exchange procedure. Purified solutions were then analyzed using a MC-ICPMS with a micro-concentric nebluzer (Cetac Aridus). This procedure is applied to 238U/230Th equilibrium measurements from standard rock samples to check the accuracy of the method. These samples were also checked for 238U/230Th =1.