

Simple method for separation of boron from volcanic rocks for isotopic analysis by MC-ICP-MS

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We developed a simple and thus effective method of separation of boron from volcanic rocks.

It has been suggested that easy volatilization of boron and isotopic fractionation during evaporation step after HF decomposition of silicate rock samples; therefore procedure of evaporation at low-temperature (<80C) with mannitol (which suppress volatilization) under boron-free specific experiment environment has been utilized.

Our new method dose not require evaporation step, thus effectively preventing boron volatilization and related fractionation. Contamination opportunity can also be reduced. In our method, supernatant HF solution at sample digestion step is loaded onto mini-column cartridge of Amberlite IRA 743 (0.25mL) with no evaporation step. Recovery yield for silicate rocks was generally >80%. To evaluate our method, the GSJ rock standards (JB-2, JB-3 and JR-2) were analyzed by following the proposed method. Measured boron isotopic compositions for these rocks were in good agreement with preferred values.