

## Ion chromatographic determination of fluorine and chlorine in silicate rocks following alkaline fusion

# Kenji Shimizu[1]; Takaaki Itai[1]; Minoru Kusakabe[1]

[1] ISEI, Okayama Univ.

We have developed a simple and accurate method to determine fluorine and chlorine contents in small amounts (~30 mg) of rock using ion chromatography after extraction by alkaline fusion. Powdered sample is mixed with sodium carbonate and zinc oxide at a weight ratio of 1:3:1, and is fused in an electric furnace at 900 degrees Celsius for 30-40 minutes. An aqueous solution from the fused silicate rock is diluted to the appropriate concentration of sodium carbonate (less than ~24 mmol/l) to minimize the tailing effect of a large amount of carbonate species coming from flux on F during ion chromatography. Fluorine and chlorine contents are then determined by a standard addition method. Based on the relative standard deviation of the backgrounds, detection limits of both fluorine and chlorine are ~4 ppm, when 30 mg sample was fused and diluted to a dilution factor of 1200. We also report new fluorine and chlorine contents in nine GSJ (Geological Survey of Japan) reference materials, including peridotite (JP-1), granite (JG-1a), basalts (JB-1b, 2 and 3), andesites (JA-1 and 2) and rhyolites (JR-1 and 2). Fluorine and chlorine contents in the reference materials in this study were consistent with the reported values. Reproducibilities were less than 10% for a sample with F and Cl greater than 20 ppm and less than 20 % with F and Cl less than 20 ppm.