

## Hydrogen isotope analysis of the erupted materials of Asama 2004 eruption by heating and cryogenic method (preliminary reports)

# Miwa Kuri[1]; Michihiko Nakamura[1]

[1] Inst. Mineral. Petrol. Econ. Geol., Tohoku Univ.

Preliminary water contents and hydrogen isotopic ratios were obtained for the erupted materials of 2004 Asama eruption. The analyzed samples were lava fragments and bread-crust bombs of Vulcanian eruption on Sep.1, ashes of Sep.16-17 Strombolian eruption, and scoria of Sep.23 Vulcanian. The hydrogen in the samples were collected by a conventional heating and cryogenic method in a vacuum line at Tohoku University. The extraction temperature is from 150 - 300 deg.C to 1000-1150 deg.C. The hydrogen emitted below the temperature was not measured because most of them seem to originate from the adsorbed water. Water contents of the bulk samples determined with manometry range from 0.0253 to 0.217 wt.%. The hydrogen isotope has been measured by dual-inlet IRMS (SerCon Geo20-20) using a working standard gas of electrolyzed hydrogen. The  $\delta D$  values of the separated hydrogen gases range from -97 to -64 permil.

The ejecta of Sep.1 eruption show systematic relationship between water contents and  $\delta D$  values, which is similar to that found in the 1991 eruptions of Unzen volcano (Kusakabe et. al., 1999). Lava fragments have lower water contents and lower  $\delta D$  value than the bread-crust bombs. As a preliminary experiments for future stepwise heating analysis, we have monitored the extracted gas pressure at each temperature with 50 deg.C interval. We found flux of the emitted gas had peaks at different temperature according to the mode of eruption. The bread-crust bombs emit the gases at around 600 and 1000 deg.C, ashes at ca. 400 deg.C, and the lava fragments at ca. 400, 600 and 800 degree C.