Volcanostratigraphy and petrochemistry of the Shimohorizawa lava, Yakedake volcano

Shin'ya Hashimoto[1]; Yasuyuki Miyake[2]

[1] Graduate School of Science and Tecnology,Shinshu Univ; [2] Dept.Geology, Fac.Sci.,Shinshu Univ.

Yakedake volcano is an active volcano belonging to the Norikura Volcanic Belt, and it consists of lava flows, lava domes and pyroclastic flow deposits. Oikawa (2002) clarified that Shimohorizawa lava is the most voluminous($1.5km^3$) constituent of Yakedake volcano, and older than 4ka. Although Shimohorizawa lava is divided into several flow units Oikawa(2002) considered that they are products of a successive effusion. We will report the subdivision of the flow units of Shimohorizawa lava, and their petrochemical features.

The Shimohorizawa lava is divided into seven flow units, each consisting of lower flow foot breccia, central massive part and upper autoclastic part. In ascending order, they are divided into Unit 1-6. The Unit 1-3 are andesite and the Unit 4-6 are dacite and we designate the former the Lower Shimohorizawa Lava (LSL) and the latter the Upper Shimohorizawa Lava (USL). LSL is 1.9km $*$2.1km wide, and USL 1.6km $*$1.3km wide. The rocks of both USL and LSL contain phenocrysts of pl, amp, opx, cpx, bi, qz, (ol) and opaque. The bulk modal abundance of phenocrysts are richer in USL than in LSL. And hornblende phenocrysts in the LSL are almost wholly replaced by opacite, whereas opacitization is scarcely recognized in USL. Both LSL and USL include lots of dark enclaves. These enclaves are classified into Type 1 and Type 2, the latter is a cumulative rock almost wholly consisting of phenocrysts of hornblende and plagioclase, whereas the former is a rather normal andesite.

Bulk rock chemistry reveals that the SiO2 content of LSL(60.2-62.9wt.%) is lower than that of USL(63.3 - 64.4wt%), and all of these analyses make a remarkable trend for most of the analysed elements on Harker diagramas. Enclaves of Type 1 have SiO2 contents of 56.2 - 58.7wt.%, whereas the Type 2 have 52.8 - 55.9wt%. It is to be stressed that the chemical analyses of Type 2 enclaves are plotted just on the extensions of the trends formed by LSL and USL for most of the elements, suggesting that the crystallization fractionation of hornblende and plagioclase caused the chemical variation from LSL to USL.