白山火山，南竜ヶ馬場の岩石学
Petrology of the Minamiryu-ga-banba in Hakusan Volcano

*宮下 太一郎[1]、海野 進[1]、茨木 柚季[2]
*Taichiro Miyashita[1], Susumu Umino[1], Yuzuki Ibaraki[2]

1. 金沢大学、2. 株式会社中研コンサルタント
1. Kanazawa University, 2. Chuken Consultant Co., Ltd

The Minamiryu-ga-banba Lava dated at 30 Ka extends from 100 m below a scoria cone on the southern foot of Gozengamine 4 km downslope to Nakahanba. A scoria raft was found on the Minamiryu-ga-banba Lava 1.5 km from the vent, which has identical whole-rock and mineral compositions to the remnants of a scoria cone on the southern slope of Gozengamine. This indicates that the scoria cone is the source vent of the Minamiryu-ga-banba Lava. We report results of whole-rock and mineral analyses of Minamiryu-ga-banba Lava and the scoria cone at the foot of Gozengamine.

Thirty-six samples of scoria clasts from the cone and raft and Minamiryu-ga-banba Lava were examined under an optical microscope and analyzed by XRF and by EPMA. Lava samples contain phenocrysts of plagioclase, orthopyroxene, hornblende and magnetite set in the groundmass of plagioclase, clinopyroxene, olivine, quartz, ilmenite and glass. Scoria carries phenocrysts of plagioclase and olivine with a small amount of hornblende and orthopyroxene. Plagioclase with or without dusty zone is present. Hornblende phenocrysts are opacitized. The groundmass contains abundant glass and vesicles. Scoria raft contains plagioclase and olivine phenocrysts in the groundmass of abundant glass and vesicles.

Whole-rock SiO2 of scoriae of the raft and cone largely overlaps, ranging from 55 wt%–60 wt%, while the Minamiryu-ga-banba Lava shows a limited range of 60 wt%–62 wt%. The lava and the scoriae form a single liquid line of descent with decreasing TiO2, FeO, MnO, MgO, CaO and P2O5, increasing Al2O3 and K2O and invariant Na2O, with increasing SiO2. These variations could be interpreted by crystallization differentiation of phenocrystic phases except TiO2 and K2O, which requires end component with higher TiO2 and K2O. The whole-rock compositions of the Nohi Ryolite, basement of the Hakusan Volcano, plot on the extension of lines connecting the scoriae and the Minamiryu-ga-banba Lava. This strongly suggests contamination of the Minamiryu-ga-banba Lava by the Nohi Ryolite.

Plagioclase has An34-61 with a peak An42 in the raft and An36-61 with a peak An42 in the cone. Olivines in the raft and the cone have Fo69-86 with a peak Fo85 and Fo76-86 with a peak Fo84, respectively, and orthopyroxenes in the raft and the cone show Mg#62-84 with a peak Mg#64 and Mg#62-75 with a peak Mg#63, respectively.

Whole-rock and mineral compositions of the scoriae of the raft and the summit cone are essentially identical and were parts of a scoria cone formed by an earlier Strombolian phase, which was subsequently destroyed by extruding Minamiryu-ga-banba Lava.

Although the Minamiryu-ga-banba Lava is dated to 30 Ka by K-Ar method, the lava preserves the original flow morphology as clear as the 2.2 Ka Shiramizunotaki Lava. In addition to this, the summit scoria cone exposes on the surface and is neither covered by soil nor later tephras. Besides this scoria cone, the only

known mafic tephra carrying olivine phenocrysts is the Minamiryu Tephra, that has a easterly dispersal axis and widely covers Murodo, Midagahara and Minamiryu-ga-banba. Although the source vent of Minamiryu Tephra is considered to be in the summit region now buried by the Kengamine, our observations suggest a correlation of the summit scoria cone and the Minamiryu Tephra. This means that the Hakusan Minamiryu eruption at 2.2 Ka was much larger in magnitude and formed not only the Shiramizunotaki Lava, Kengamine and the Hakusan Minamiryu Tephra, but also the Minamiryu-ga-banba Lava.

キーワード：白山火山、スコリア、スコリアラフト、溶岩流
Keywords: Hakusan volcano, scoria, scoria raft, lava flow

