High- and lower- alumina basaltic melt inclusions from the Higashi-Izu Monogenetic Volcano Group, Japan.

R. WYSOCZANSKI, K. TANI AND Y. TATSUMI

Japan Agency for Marine Earth Science and Technology, Yokosuka, Japan: richardw@jamstec.go.jp

Melt inclusions in basalts from the Higashi-Izu Monogenetic Volcanic Group (HMVG), Japan, provide an opportunity to determine HMVG magma compositions prior to the widespread crustal assimilation and differentiation processes that affected aerially erupted volcanic rocks in this region. To elucidate parental melt compositions, and particularly volatile contents, of HMVG magmas at the initiation of volcanism in this region, we have examined olivine-hosted melt inclusions from two contemporary volcanic vents, the Takatsukayama and Sukumoyama scoria cones, formed early in the evolution of the HMVG.

As with previous melt inclusions studies, the melt inclusion population from these two deposits alone show a wider range in composition than all whole-rock compositions analysed from the same region. Indeed, the compositional range shown by the melt inclusions is comparable to that of all Quaternary basalts and basaltic andesites from the Izu-Bonin arc.

All Sukumoyama, and most Takatsukayama inclusions are high-alumina (up to 19 wt. % Al_2O_3) basalts similar to whole rock compositions previously reported from the HMVG, however the composition of melt inclusions from the vents differ markedly, despite their similar age and close proximity. Sukumoyama inclusions have more restricted and depleted compositional ranges than Takatsukayama inclusions, with lower alkali and volatile contents at similar SiO_2 and MgO content (44-55 wt.% SiO_2, 6-12 wt.% MgO), attributable to a relative depletion of slab-derived component(s) in their source region.

Takatsukayama melt inclusions include a unique series of lower-alumina (<14 wt. % Al_2O_3) compositions not previously reported from the HMVG. In some cases, high- and lower-alumina inclusions co-exist in the same olivine crystal. The origin of these inclusions, and implications for the genesis of both high- and lower- alumina basaltic compositions in the HMVG and Izu-Bonin arc will be discussed here. Contrasting models for their origin, including plagioclase fractionation, differences in source composition and/or extent of partial melting, and varying water content in the source, will be addressed.