Chemical Variation in eruptive products of 2002 Nyiragongo eruption, Congo.

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Nyiragongo volcano is an active volcano in the Virunga volcanic field within the western branch of the East African rift zone. This volcano is characterized by its frequent volcanic activity and the presence of lava lake at the summit crater. A major eruption occurred on January 17th, 2002. Lava flows poured out from several fissures at the flank and the part of Goma was buried by lava flow.

Eleven lava samples from the 2002 lava flows of Nyiragongo, together with one pumiceous inclusion in 2002 lava flow, two ash fall samples and a sample of 1977 lava, were analyzed by XRF and XRD. Lava samples of 2002 eruption are aphyric nephelinites and rarely contain phenocrysts of leucite. Groundmass is glassy or hypocrystalline and usually contain nepheline, clinopyroxene and melilite. Pumiceous inclusion in the lava is white in colour and contains sillimanite etc. with vesiculated clear glass. One ash sample was collected at the flank (RSY) on June 11, 2002 and another was collected at the summit of Nyiragongo on July 17th, 2002. They are silt-sized rock powder and likely to be formed by small collapse of lava terrace in the summit crater of Nyiragongo.

All samples of lavas are nephelinitic in composition and show very little variation. MgO ranges from 3.93 % to 4.03 % with decreasing K2O content. 1977 lava smple and ash samples are slightly rich in MgO and range from 4.08 % to 4.13 %. Pumiceous inclusion contains 82.2 % silica and 15.1 % Al2O3 which indicates sedimentary origin of inclusion. It is very low in MgO (0.03 %). Contamination of lavas with pumiceous inclusion can not explain the chemical variation of 2002 Nyiragongo lava samples.