EXTRUSIVE CARBONATITE FROM RANGWA CALDERA COMPLEX, KENYA

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The Rangwa caldera is part of the eroded Kisingiri volcano, one of the four Miocene nephelinitic-carbonatitic complexes in the Kivirondo Rift, Kenya. Despite extensive alteration of the pyroclastic pile, which is made almost entirely of lapilli tuff, there is good evidence of original igneous material and textures at Rangwa. The extrusive carbonatites in these tuffs are not directly associated with nephelinites but instead with high K, ultrabasic silicate glasses. They are composed of shelled silicate lapilli and porphyritic carbonatite lapilli set in a matrix of fine-grained calcite and silicate droplets. The kernels are of phlogopite, apatite-magnetite-sovite xenoliths and fragments of angular calcite, less commonly clinopyroxene and K-feldspar debris. All of the ultrabasic glasses contain 7.8 to 10.5 wt% K_2O, 35-44 wt% SiO_2, 1wt% CaO, 0.5 wt% Na_2O. A particularly interesting variety of carbonatite lapilli contains calcite prisms arranged in diverging fans emerging from a K-bearing silicate glass matrix. This grain-supported lapilli tuff is cemented by dendritic analcite radiating outwards from lapilli shell and by later mosaic calcite. Analcite is not present inside the lapilli suggesting that no alteration or recrystallization occurred. There are also K-bearing minerals associated with the intrusive carbonatites at Rangwa, including extensive K-feldspathization, phlogopitization of ijolite wallrocks, and occasionally phlogopite in the carbonatiteWe are investigating the hypothesis that a high K ultrabasic silicate-bearing carbonatite melt originated from the mantle and fractionated carbonatite at shallow levels.