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KIZIMEN VOLCANO BASALTIC ANDESITES: PETROGRAPHY AND MAGMATIC INCLUSIONS

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Kizimen volcano has unique geological position because it is located just between global active volcanic structures as East Volcanic Front (EVF) and Central Kamchatka Depression (CKD), but it still remains one of the pure studied volcanoes of Kamchatka. Several samples of basaltic andesites (53-54 wt.% SiO_2) was studied. Microprobe analyses of olivine phenocryst cores show composition from Fo_{79} to Fo_{72}. Olivine rims are strongly zoned and have Fe-rich composition (from $Fo_{72}$to Fo_{62}). Phenocrysts of clinopyroxene are slightly zoned (En_{44-38} Fs_{15-10} Wo_{47-39}). Orthopyroxene phenocrysts have nearly constant composition (En_{64-63} Fs_{35-34} Wo_{2-1}). Apatite inclusions and silica-rich melt inclusions in orthopyroxene argues for their late crystallization. Plagioclase represented by two generations: An_{96-93} to An_{93-87} and An_{65-62} to An_{70-67}. At the same time clinopyroxene+magnetite aggregates that have early amphibole morphology was founded. These aggregates have been produced by amphibole breakdown during magma ascending. Ferrous oxide phases have narrow range of compositions corresponding to Ti-magnetite. Solid inclusions of plagioclase in olivine show clear correlation between their compositions. High-Ca plagioclase (An_{97-92}) coexists with relatively high-Mg olivine (Fo_{79-75}). Such assemblage is very similar to allivalites (Ol-Pl cumulates of the eucritic composition). This assemblage has the most magnesian olivine for Kizimen volcano and probably is the earliest assemblage, known for these rocks. Initial magma composition of studied eruption was calculated using melt inclusion compositions from olivine of earliest Ol-Pl assemblage. Partially crystallized melt inclusions were heated experimentally, quenched, exposed to the grain surface and their compositions were measured. Reconstructed melts are corresponding to basalt composition (46-47 wt.% SiO_2) and

falls into the field of middle-K series. Temperatures of olivine crystallization are near 1110±10° T. According to Frolova et al. (2001) allivalite assemblages were known only for low-K island arc tholeitic series and discovering of the earliest Ol-Pl assemblage can be applied for expanding of boundaries of allivalite-bearing rock compositions from low-K series to middle-K one.