So-called avachite: an indicator for deep magmatic processes beneath the Avacha volcano, Kamchatka arc, Russia

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So-called avachite is described as an insight into deep magmatic processes beneath Avacha volcano, the Kamchatka arc. Avachite has been available only as boulders from Mutnoya River of the eastern slope of Avacha volcano. Its exposure and mode of occurrence have not been found due to thick snow cover on upstream area.

Avachite is highly porphyritic rock, with about 40 to 50 volume % of phenocrysts: one modal analysis demonstrates 14 % of olivine and 33 % of clinopyroxene. The matrix is mainly composed of clinopyroxene and plagioclase. Avachite is therefore very close to ankaramite except for the basanitic nature of the latter. Phenocrysts of clinopyroxene and olivine have various shapes, indicating their various origins. Olivine sometimes shows kinking, suggesting a xenocrystal origin. The Mg# of silicate phenocrysts is up to 0.92. Clinopyroxene phenocryst is chromian diopside. Chromian spinel, common as minute inclusions in olivine, is high-Cr# (0.7) and is low in TiO2 (0.1 wt%). The proportion of olivine and clinopyroxene as phenocrysts indicate their cotectic precipitation and accumulation. Avachite is an eruptive phase of clinopyroxene-olivine-accumulative part of the magma chamber beneath the Avacha volcano.