

Mineral Chemistry of K-feldspar Megacryst bearing Granite occurred in Bongyang area

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Granite distributed in Bongyang area can be divided into two types; porphyritic granite(K-feldspar megacryst bearing) and medium-grained biotite granite. Porphyritic granite, host body of feldspar deposits, is 8~11 km in diameter and about 80 km² in area. It mainly contains K-feldspar, plagioclase, biotite and quartz, and magnetite, zircon, sphene and about apatite are accessory minerals. Enclosed minerals in K-feldspar megacryst with 3~10 cm in diameter are hornblende, plagioclase, quartz, magnetite, apatite, sphene and zircon. Mafic enclaves mainly consisting of hornblende, plagioclase and quartz are frequently observed in porphyritic granite. Medium-grained and zircon as accessory minerals.

Core and rim An contents of plagioclase from porphyritic granite, medium biotite granite, K-feldspar megacryst, and mafic enclave are 36 and 21, 40 and 32, 37 and 32, and 43 and 36, respectively. X_{Fe} values of hornblende are 0.57 at biotite granite, 0.51 at K-feldspar megacryst and 0.45 at mafic enclave. X_{Fe} values of biotite and hornblende are homogeneous without chemical zonation. K-feldspar megacryst shows end member of pure composition with exsolved thin lamellar pure albites.

Characteristics of mineral compositions and petrography indicate porphyritic granite is igneous origin and medium-grained biotite granite comes from the same source of magma; biotite granite is initiated to solidify and from residual melt porphyritic granite can be formed. Possibly K-feldspar megacrysts are formed under H₂O undersaturation condition and near K-feldspar solidus curve temperature; growth rate is faster than nucleation rate. Mafic enclaves are thought to be mingled mafic magma in felsic magma, which is formed from compositional stratigraphy. Estimated equilibrium temperature and pressure for medium-grained biotite granite are about 800. C and 4.83~5.27 Kb, respectively.