Paper No. 3-1

Presentation Time: 8:00 AM-6:00 PM

5-15 KB EXPERIMENTS ON BULK COMPOSITIONS OF THE KIGLAPAIT INTRUSION, LABRADOR

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We have conducted melting experiments in graphite on compositions representing the troctolitic bulk composition of the Kiglapait Intrusion, Labrador. We have mapped liquidus phase relationships up to 15 kb, where the new assemblages represent possible source compositions. The plagioclase field extends to 11kb, the spinel field lies from 12-14 kb, and at 15kb we find only garnet with two aluminous pyroxenes. At 13 kb, we have caught the entire spinel-garnet transition assemblage of Al-CPX + Al-OPX + Pl + SP + GAR + 90%L in a three hour run. Three different types of pyroxene occur in this transitional run: a normal low-Ca OPX, with 1%CaO and 1%Al2O3, a high-Al low-Ca OPX with 2% CaO and 10% Al2O3, and an Al-CPX with 9% CaO and 11% Al2O3. Spinel (Mg 60) and Gt (Mg 62) also occur. The aluminous CPX is the most abundant pyroxene in this run, occurring in clusters around olivine remnants, abutting the spinel cluster and with glass + plagioclase.

We have also looked at the partitioning of plagioclase at 11 and 13 kb. Plagioclase An53 +/- 2 occurs together with a melt An50 at both 11 and 13 kb in two bulk compositions which straddle the 5 kb OL-PL cotectic. The derived partition coefficient D=XAb(S)/XAb(L) is 0.94 +/- 0.02 for these runs. Use of the linear partitioning method (Morse, 2000 GCA) leads to an extrapolated KD of 0.88 at XAn(xl)=1.0 This KD is much higher than our experimentally determined 5 kb value of 0.525, implying a narrower PL loop at higher pressures. Such a narrow PL loop leads to high-P liquids that have intermediate plagioclase composition and yet crystallize more An-rich plagioclase at lower pressures as is seen at the base of the Kiglapait intrusion (An 67).

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General Information for this Meeting

Session No. 3--Booth# 7
Igneous Petrology and Economic Geology (Posters)
Westin Hotel: Commonwealth A
8:00 AM-6:00 PM, Thursday, March 27, 2003