

<i>Basaltic andesite</i>										
10	900	6	cpx	opx	amph		plag	glass	30	Abundant prismatic amphibole and plagioclase; minor stubby clinopyroxene and rare laths of orthopyroxene; amph, plag \gg cpx > opx
10	940	4	cpx	opx	amph			glass	60	Abundant prismatic amphibole; common stubby clinopyroxene; rare laths of orthopyroxene; amph > cpx \gg opx
10	960	4	cpx	opx ?	amph			psdb glass	70	As above except that accessory pseudobrookite present
10	980	4	cpx	opx	amph			psdb	80	Common stubby clinopyroxene, minor amphibole, rare laths of orthopyroxene and accessory pseudobrookite needles; cpx > amph > opx
10	1,020	4	cpx	opx				psdb	95	Minor stubby clinopyroxene and lath-like orthopyroxene; amphibole not identified; accessory pseudobrookite needles; opx > cpx
<i>Andesite</i>										
10	900	4 $\frac{1}{2}$	cpx	opx	amph	ga	plag	psdb glass	40	Abundant laths of plagioclase, minor euhedral garnet; rare amphibole, clino- and ortho-pyroxene; plag \gg cpx, ga > amph, opx
10	940	4	cpx				plag	glass	85	Large plagioclase laths common, rare stubby clinopyroxene; plag \gg cpx

1968) and at 27 kb in the dacite (this composition was not studied at 18 kb) garnet is the liquidus phase. The garnet appears to become enriched in grossular as well as pyrope with increasing pressure.

Interpretation of Results

As indicated previously (p. 114) the experimental procedure involving wet conditions was not ideal, and involved iron loss from some of the samples and uncertain water vapour pressures. In spite of these limitations the results on the crystallization of high-alumina quartz tholeiite at 9–10 kb ($P_{H_2O} < P_{LOAD}$) strongly support the hypothesis for the origin of the calo-alkaline series by the wet partial melting or fractional crystallization of basalt as outlined earlier (p. 112). Thus the large field of crystallization of sub-silicic amphibole together with subordinate clinopyroxene and minor orthopyroxene and possibly calcic plagioclase, provides an efficient mechanism for silica and alkali enrichment, and to a smaller extent alumina enrichment (before crystallization of calcic plagioclase begins).

Experimental runs on the dacite composition under wet conditions

been carried out to determine the liquidus phase in this composition at high pressures accompanied by water to grow garnets in the partial melting field large enough, and sufficiently free of inclusions, to allow for analysis. In this several exploratory runs under varying degrees of "wet" conditions were carried out before a final run was carried out without boron nitride sleeves and without sealing the sample capsule or drying the sample.

Water added (mgm)		Estimated % of glass	R.I. garnet (± 0.01)	Comments and estimated crystal phases present
—	qz cpx felds ga glass	20		Medium grained, garnet filled, qz, cpx \gg ga
—	qz cpx felds ga glass	50		Medium grained; pyroxene size; garnet large, inclusions; qz > cpx \gg ga \gg felds
<1	qz cpx felds ga glass	20		Similar to 1220°, 27 kbar
>1		glass	100	Above liquidus.
>1		glass	100	Above liquidus.
>1		ga glass	99	1.78 Rare, very large (50 μ) garnet, pale green color
>1	cpx ga glass	85	1.785	Common, large euhedral garnet, common aggregates of crystals.
>1	qz cpx ga glass	70	1.785	Common, large euhedral garnet, common stubby pyroxene; ga > cpx \gg qz.
>1	qz cpx ga ky glass	40		Abundant stubby pyroxene garnet crystals, minor kyanite; cpx > ga \gg qz, ky.
>1	qz cpx plag glass	?		Very fine grained, cpx smaller than rest; qz, plag >