

Fig. 10. FMA plot showing experimentally determined fractionation trends at 27 kb. The encircled points represent the plots of the residua — the numbers correspond to the numbered points on the fractionation trends

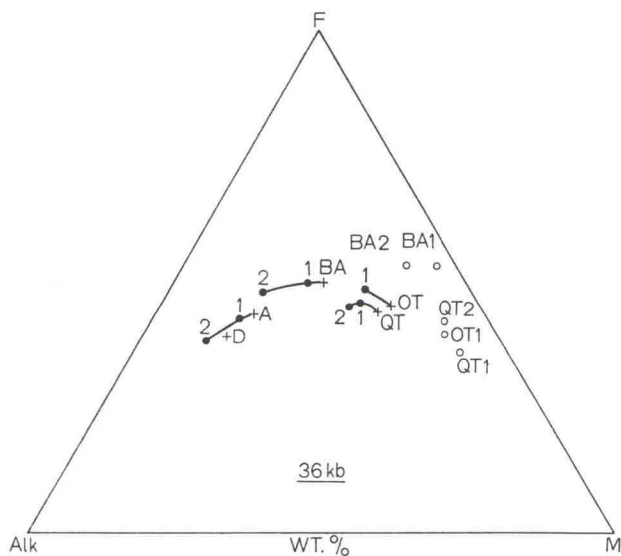


Fig. 11. FMA plot showing experimentally determined fractionation trends at 36 kb. The encircled points represent the plots of the residua — the numbers correspond to the numbered points on the fractionation trends

Calculation of Fractionation Trends

The calculated liquid fractionate compositions derived from the various initial compositions are listed in Tables 13—20, together with the compositions of the crystalline residua. At 18 kb, the liquids show minor enrichment in silica, alkalis

Table 13. *Calculated compositions of liquid fractionates and crystalline residua derived from the high-alumina olivine tholeiite composition at 18 kb*

Temperature		1,340° C	1,320° C	1,300° C	1,260° C (Wet)	1,230° C (Wet)
Nature and estimated % of crystals	Initial liquid	10% cpx	20% cpx	30% cpx	20% cpx 2% ga	30% cpx 15% ga 5% plag
<i>Liquid fractionate</i>						
SiO ₂	50.3	50.3	50.4 ^a	50.8 ^a	50.4	52.9 ^a
TiO ₂	1.7	1.8	1.9	2.0	1.9	1.8
Al ₂ O ₃	17.0	17.8	18.5	19.0	18.6	16.7
Fe ₂ O ₃	1.5	1.7	1.9	2.1	1.9	3.0
FeO	7.6	7.8	8.0	8.5	8.3	6.3
MnO	0.16	0.18	0.2	0.23	0.2	0.2
MgO	7.8	6.9	6.1	5.0	5.8	5.6
CaO	11.4	10.9	10.2	9.3	10.1	9.9
Na ₂ O	2.8	3.0	3.2	3.4	3.3	4.0
K ₂ O	0.18	0.2	0.2	0.26	0.23	0.3
	100.4	100.6	100.6	100.6	100.7	100.7
Mol Prop						
100 MgO	60.7	57.0	52.9	46.2	50.8	52.6
MgO + FeO _{Total}						
<i>CIPW norm</i>						
Qz	—	—	—	—	—	0.8
Or	1.1	1.2	1.3	1.6	1.3	1.8
Ab	23.7	25.3	27.1	28.8	27.9	33.9
An	33.3	34.5	35.4	35.7	35.2	26.7
Diop	18.9	15.9	12.3	8.6	12.2	18.1
Hyp	11.9	12.3	14.1	18.8	13.1	11.7
Ol	6.2	5.4	4.0	0.3	4.6	—
Mt	2.2	2.5	2.8	3.0	2.8	4.4
Ilm	3.2	3.4	3.6	3.8	3.6	3.4
<i>Crystal residuum</i>						
SiO ₂		50.0	49.9 ^a	49.2 ^a	50.0	47.7 ^a
TiO ₂		0.7	0.9	0.9	1.1	1.6
Al ₂ O ₃		9.4	11.1	12.3	11.3	17.3
FeO		5.4	5.8	5.6	5.2	8.5
MnO		—	—	—	0.04	0.1
MgO		15.9	14.6	14.4	14.9	10.0
CaO		16.2	16.4	16.3	16.2	12.8
Na ₂ O		1.3	1.3	1.3	1.0	1.6
K ₂ O		—	—	—	—	tr
		98.9	100.0	100.0	99.7	99.6
Mol prop.						
100 MgO		84.0	81.8	82.1	83.6	67.7
MgO + FeO						

^a Denotes compositions determined from analyses calculated in the manner described on p. 116.