

Appendix 2 - TABLES

Table 2.1: Representative analyses of clinopyroxene

Sample	LMA1									LMA6		
Spot Location	Ph core rim		Ph core	Ph core rim		Ph core rim		Ph core rim		gm	gm	gm
SiO ₂	54.19	54.02	52.62	53.03	52.14	52.91	53.89	54.31	54.70	53.12	53.04	53.91
TiO ₂	0.32	0.58	0.66	0.63	0.85	0.75	0.65	0.27	0.43	0.77	0.76	0.59
Al ₂ O ₃	2.99	2.99	4.48	4.02	4.64	3.92	2.82	2.86	2.61	3.49	3.66	2.79
FeO ^a	4.95	5.08	5.18	5.50	5.40	5.59	5.59	4.77	5.47	5.57	5.7	5.10
Cr ₂ O ₃	0.32	0.20	0.69	0.36	0.68	0.83	0.71	0.79	0.00	0.75	0.94	0.80
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	18.45	17.59	16.9	16.97	16.95	16.58	18.13	17.83	18.26	16.5	16.41	16.82
CaO	17.76	18.51	18.34	18.40	18.22	18.78	17.67	18.61	17.47	19.31	19.22	19.50
Na ₂ O	1.01	1.03	1.12	1.09	1.11	0.64	0.56	0.56	1.06	0.50	0.28	0.49
K ₂ O	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	99.99	100.00	99.99	100.00	99.99	100.00	100.02	100.00	100	100.01	100.01	100.00
Mg#	86.94	86.04	85.33	84.61	84.83	84.08	85.26	86.94	85.64	84.11	83.69	85.45
Si	1.956	1.957	1.909	1.924	1.892	1.933	1.960	1.973	1.977	1.944	1.946	1.970
Al	0.044	0.043	0.091	0.076	0.108	0.067	0.040	0.027	0.023	0.056	0.054	0.030
Sum T	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Al	0.083	0.084	0.100	0.096	0.090	0.101	0.081	0.095	0.088	0.094	0.104	0.090
Ti	0.009	0.016	0.018	0.017	0.023	0.021	0.018	0.007	0.012	0.021	0.021	0.016
Fe ⁺³	0.005	0.000	0.014	0.012	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe ⁺²	0.144	0.154	0.143	0.155	0.134	0.171	0.170	0.145	0.165	0.170	0.175	0.156
Cr	0.009	0.006	0.020	0.010	0.019	0.024	0.020	0.023	0.000	0.022	0.027	0.023
Mg	0.993	0.949	0.913	0.918	0.917	0.903	0.983	0.965	0.984	0.900	0.898	0.916
Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ca	0.687	0.718	0.713	0.715	0.708	0.735	0.689	0.724	0.677	0.757	0.755	0.764
Na	0.071	0.072	0.079	0.077	0.078	0.045	0.039	0.039	0.074	0.035	0.020	0.035
K	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cations	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000

^a Total Fe is as FeO.

Pyroxene analyses are recalculated using the scheme of Yoder and Tilley (1974).

The pyroxene formula unit is normalized to 6 oxygens and recalculated to 4 cations. Fe^{+2/+3} partitioning according to Papike et al. (1974). The cations are allocated to their structural sites according to the IMA guidelines.

Fe Mg# = 100 Mg / (Mg + Fe²⁺).

Ph: phenocryst; gm: groundmass.

Table 2.1: Continued

Sample	A1A											
Spot Location	Ph core rim		Ph core rim		Ph rim	Ph rim	Ph rim	gm	gm	gm	gm	gm
SiO ₂	52.17	53.59	53.43	54.19	54.05	54.61	54.81	54.42	53.27	54.50	50.39	52.81
TiO ₂	0.86	0.53	0.44	0.22	0.55	0.00	0.33	0.00	0.61	0.00	0.00	0.00
Al ₂ O ₃	3.52	1.34	2.80	2.20	1.53	2.91	3.21	2.64	2.95	2.92	3.38	2.43
FeO ^a	6.33	8.50	5.10	5.89	6.54	5.55	5.75	6.37	6.14	5.74	9.47	6.87
Cr ₂ O ₃	0.22	0.20	0.32	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MnO	0.27	0.35	0.35	0.08	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	16.31	16.56	17.48	17.88	18.33	16.72	17.72	16.31	15.60	16.76	13.18	14.23
CaO	19.85	18.52	19.52	19.01	18.21	19.75	17.64	18.88	19.98	19.58	23.57	23.66
Na ₂ O	0.48	0.42	0.54	0.53	0.25	0.47	0.39	0.70	0.51	0.51	0.00	0.00
K ₂ O	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.18	0.00	0.00	0.00
Total	100.01	100.01	99.98	100.00	100.00	100.01	100.01	99.32	99.24	100.01	99.99	100.00
Mg _#	82.50	77.65	85.96	84.41	83.31	84.32	84.60	82.03	81.90	83.89	78.06	78.68
Si	1.911	1.976	1.945	1.971	1.974	1.992	1.994	2.002	1.969	2.015	1.880	1.956
Al	0.089	0.024	0.055	0.029	0.026	0.008	0.006	0.000	0.031	0.000	0.120	0.044
Sum T	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.020	2.000	2.000
Al	0.063	0.034	0.065	0.065	0.040	0.117	0.132	0.114	0.097	0.129	0.029	0.062
Ti	0.024	0.015	0.012	0.006	0.015	0.000	0.009	0.000	0.017	0.014	0.000	0.000
Fe ⁺³	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.090	0.000
Fe ⁺²	0.189	0.262	0.155	0.179	0.200	0.169	0.175	0.196	0.190	0.202	0.206	0.213
Cr	0.006	0.006	0.009	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mg	0.891	0.910	0.949	0.969	0.998	0.909	0.961	0.895	0.860	0.831	0.733	0.786
Mn	0.008	0.011	0.011	0.002	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ca	0.779	0.732	0.761	0.741	0.713	0.772	0.688	0.744	0.791	0.763	0.942	0.939
Na	0.034	0.030	0.038	0.037	0.018	0.033	0.028	0.050	0.037	0.045	0.000	0.000
K	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.000	0.008	0.000	0.000	0.000
Cations	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000

^a Total Fe is as FeO. Pyroxene analyses are recalculated using the scheme of Yoder and Tilley (1974). The pyroxene formula unit is normalized to 6 oxygens and recalculated to 4 cations. Fe^{+2/+3} partitioning according to Papike et al. (1974). The cations are allocated to their structural sites according to the IMA guidelines.

$$\text{Mg\#} = 100 \text{ Mg} / (\text{Mg} + \text{Fe}^{2+}).$$

Ph: phenocryst; gm: groundmass.

Table 2.1: Continued

Sample	VG1			VG8			VG11			
Spot location	Ph rim	core	rim	Ph rim	core	rim	Ph rim	Ph rim	core	rim
SiO ₂	53.19	52.34	53.05	51.55	51.91	50.18	53.15	51.09	47.62	49.98
TiO ₂	1.29	1.4	0.99	1.67	1.47	2.23	1.29	1.26	2.22	1.01
Al ₂ O ₃	4.76	5.81	5.34	4.14	4.16	5.54	3.99	2.67	5.04	2.14
FeO ^a	5.42	5.09	4.62	7.85	7.01	8.00	6.92	8.07	8.60	11.57
Cr ₂ O ₃	0.37	0.59	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.18	0.29
MgO	16.23	16.16	16.70	14.34	14.89	13.9	15.31	15.19	13.68	12.46
CaO	18.11	17.96	17.93	19.94	20.02	19.73	19.33	21.85	21.42	21.78
Na ₂ O	0.62	0.65	0.87	0.51	0.53	0.42	0.00	0.31	0.40	0.34
K ₂ O	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Total	99.99	100	99.99	100.00	99.99	100.00	99.99	100.59	99.16	99.59
Mg _#	84.21	85.02	86.6	76.52	79.13	75.61	79.77	77.06	73.91	65.73
Si	1.945	1.911	1.927	1.910	1.915	1.863	1.966	1.880	1.785	1.890
Al	0.055	0.089	0.073	0.090	0.085	0.137	0.034	0.116	0.215	0.095
Sum T	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	1.990
Al	0.150	0.161	0.155	0.090	0.095	0.105	0.140	0.000	0.008	0.000
Ti	0.035	0.038	0.027	0.047	0.041	0.062	0.036	0.035	0.063	0.029
Fe ⁺³	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe ⁺²	0.166	0.155	0.140	0.243	0.216	0.248	0.214	0.248	0.270	0.366
Cr	0.011	0.017	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mg	0.885	0.880	0.905	0.792	0.819	0.769	0.844	0.833	0.765	0.702
Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.006	0.009
Ca	0.710	0.703	0.698	0.791	0.791	0.785	0.766	0.861	0.860	0.882
Na	0.044	0.046	0.061	0.037	0.038	0.030	0.000	0.022	0.029	0.025
K	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Cations	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000	4.000

^a Total Fe is as FeO. Pyroxene analyses are recalculated using the scheme of Yoder and Tilley (1974). The pyroxene formula unit is normalized to 6 oxygens and recalculated to 4 cations. Fe^{+2/+3} partitioning according to Papike et al. (1974). The cations are allocated to their structural sites according to the IMA guidelines.

$$\text{Mg\#} = 100 \text{ Mg} / (\text{Mg} + \text{Fe}^{2+}).$$

Ph: phenocryst; gm: groundmass.

Appendix 2 – Tables

Table 2.2: Representative major element composition of amphibole

Sample	LMA1	LMA3				LMA6		
Mineral	Ts	Ts	Mg-hs	Ts	Mg-hs	Mg-hs	Mg-hs	Mg-hs
SiO ₂	46.56	44.91	42.97	44.57	41.27	41.90	41.43	41.34
TiO ₂	3.21	3.54	3.23	3.25	2.84	3.18	3.51	4.04
Al ₂ O ₃	10.41	11.18	9.57	11.79	10.38	10.59	10.96	10.88
FeO ^a	10.92	11.32	11.16	10.89	11.55	11.63	12.01	12.16
Cr ₂ O ₃	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MnO	0.00	0.00	0.30	0.00	0.31	0.31	0.20	0.19
MgO	15.38	14.75	15.21	15.29	14.74	14.43	14.61	14.27
CaO	10.41	10.95	11.27	10.45	10.92	11.43	11.29	11.40
Na ₂ O	2.39	2.52	2.51	2.86	2.59	2.49	2.50	2.63
K ₂ O	0.72	0.83	0.66	0.76	0.78	0.73	0.80	0.76
Total	100.00	100.00	97.37	99.86	95.92	97.21	97.71	98.16
Mg#	86.19	80.44	83.64	87.86	86.43	80.43	83.62	79.10
Si	6.488	6.333	6.281	6.243	6.129	6.171	6.053	6.052
Al	1.512	1.667	1.649	1.757	1.817	1.829	1.887	1.877
Sum T	8.000	8.000	7.929	8.000	7.946	8.000	7.940	7.929
Al	0.196	0.189	0.000	0.189	0.000	0.009	0.000	0.000
Ti	0.336	0.375	0.355	0.342	0.317	0.352	0.386	0.445
Fe ⁺³	0.761	0.581	0.716	0.834	0.922	0.661	0.844	0.666
Cr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mg	3.195	3.101	3.314	3.193	3.264	3.168	3.182	3.114
Fe ⁺²	0.512	0.754	0.648	0.441	0.512	0.771	0.623	0.823
Mn	0.000	0.000	0.000	0.000	0.039	0.039	0.025	0.024
Sum C	5.000	5.000	5.000	5.000	5.054	5.000	5.060	5.071
Mg	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe ⁺²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mn	0.000	0.000	0.037	0.000	0.000	0.000	0.000	0.000
Ca	1.554	1.654	1.765	1.568	1.737	1.803	1.767	1.788
Na	0.446	0.346	0.000	0.432	0.263	0.197	0.233	0.212
Sum B	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Ca	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Na	0.200	0.343	0.711	0.345	0.483	0.514	0.475	0.534
K	0.128	0.149	0.123	0.136	0.148	0.137	0.149	0.142
Sum A	0.328	0.492	0.834	0.481	0.631	0.651	0.624	0.676
Sum cat	15.33	15.49	15.76	15.48	15.63	15.65	15.62	15.68
Oxigens	23.00	23.00	23.00	23.000	23.00	23.00	23.00	23.00

^a Total Fe is as FeO.

Atomic proportions are based on an anhydrous basis per 23 oxygens and on different cation sum to account for minimum and maximum ferric estimate to Schumacher (1997). Fe^{+2/+3} partitioning is given as an average of the minimum and the maximum ferric estimates (Schumacher, 1997).

Classification is according to Leake (1997).

Ts: Tschermakite; Mg-hs: Magnesio-hastingsite; Mg-Hbl: Magnesio-hornblende; Act: actinolite.

Table 2.2: Continued

Sample	F8									
Mineral	Mg-hbl	Mg-hbl	Mg-hbl	Mg-hbl	Act	Mg-hbl	Act	Mg-hbl	Mg-hbl	Mg-hbl
SiO ₂	49.24	49.51	50.71	48.99	55.36	47.37	54.36	55.40	47.52	52.63
TiO ₂	1.72	1.09	0.85	1.69	0.56	2.17	0.42	0.20	0.77	0.50
Al ₂ O ₃	8.76	8.91	8.21	8.94	4.27	10.23	1.88	0.87	5.80	2.93
FeO ^a	13.14	13.55	13.15	13.69	13.41	13.09	8.33	12.59	14.45	11.04
Cr ₂ O ₃	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.37	0.37	0.34
MgO	13.89	14.71	14.96	14.19	14.90	13.95	18.88	16.10	15.36	17.70
CaO	10.95	10.28	10.27	10.60	9.79	10.49	12.44	12.36	9.94	11.47
Na ₂ O	1.81	1.64	1.50	1.53	1.38	2.16	0.51	0.35	1.37	0.69
K ₂ O	0.49	0.31	0.34	0.37	0.33	0.54	0.13	0.05	0.22	0.14
Total	100.00	100.00	99.99	100.00	100.00	100.00	97.21	98.29	95.80	97.44
Mg#	73.16	86.77	86.06	80.97	76.29	78.79	80.15	69.51	65.46	74.08
Si	6.917	6.841	6.989	6.819	7.637	6.636	7.722	7.910	7.103	7.559
Al	1.083	1.159	1.011	1.181	0.363	1.364	0.278	0.090	0.897	0.441
Sum T	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000
Al	0.366	0.291	0.322	0.285	0.331	0.324	0.036	0.056	0.124	0.054
Ti	0.182	0.113	0.088	0.177	0.058	0.229	0.045	0.021	0.087	0.054
Fe ⁺³	0.477	1.104	1.018	0.902	0.595	0.750	0.000	0.000	0.000	0.000
Cr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mg	2.909	3.030	3.074	2.945	3.064	2.913	3.998	3.427	3.423	3.790
Fe ⁺²	1.067	0.462	0.498	0.692	0.952	0.784	0.921	1.496	1.366	1.102
Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sum C	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
Mg	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe ⁺²	0.000	0.000	0.000	0.000	0.000	0.000	0.069	0.007	0.440	0.224
Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.031	0.045	0.047	0.041
Ca	1.648	1.522	1.517	1.581	1.447	1.575	1.893	1.891	1.513	1.735
Na	0.352	0.439	0.401	0.413	0.369	0.425	0.006	0.057	0.000	0.000
Sum B	2.000	1.961	1.918	1.994	1.816	2.000	2.000	2.000	2.000	2.000
Ca	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.079	0.030
Na	0.141	0.000	0.000	0.000	0.000	0.161	0.134	0.040	0.397	0.192
K	0.088	0.055	0.060	0.066	0.058	0.097	0.024	0.009	0.042	0.026
Sum A	0.229	0.055	0.060	0.066	0.058	0.258	0.158	0.049	0.518	0.248
Sum cat	15.23	15.02	14.98	15.06	14.87	15.26	15.16	15.05	15.52	15.25
Oxigens	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00

^a Total Fe is as FeO.

Atomic proportions are based on an anhydrous basis per 23 oxigens and on different cation sum to account for minimum and maximum ferric estimate to Schumacher (1997). Fe^{+2/+3} partitioning is given as an average of the minimum and the maximum ferric estimates (Schumacher, 1997). Classification is according to Leake (1997).

Ts: Tschermakite; Mg-hs: Magnesio-hastingsite; Mg-Hbl: Magnesio-hornblende; Act: actinolite.

Appendix 2 – Tables

Tab. 2.2: Continued

Sample	A1A										
Mineral	Mg-hbl	Ts	Ts	Mg-hbl	Mg-hbl	Ts	Mg-hbl	Mg-hbl	Ts	Ts	Mg-hbl
SiO ₂	45.18	42.99	43.31	46.17	45.67	44.20	44.88	44.66	43.64	44.04	46.14
TiO ₂	2.03	2.71	2.63	1.36	1.73	2.86	2.01	2.30	2.68	2.65	1.29
Al ₂ O ₃	9.18	11.94	11.90	7.61	8.48	9.78	9.24	9.83	11.66	11.39	7.79
FeO ^a	15.86	12.93	13.81	17.39	17.59	12.91	16.04	14.57	12.86	12.68	17.29
Cr ₂ O ₃	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.02	0.01
MnO	0.22	0.19	0.20	0.29	0.29	0.21	0.24	0.22	0.21	0.25	0.31
MgO	12.76	13.55	13.25	11.84	12.04	13.78	12.63	13.37	13.84	13.86	12.29
CaO	11.12	11.02	10.88	10.58	10.78	11.26	10.92	11.23	11.11	11.04	10.76
Na ₂ O	1.98	2.17	2.19	1.73	1.87	2.00	2.02	2.09	2.10	2.06	1.76
K ₂ O	0.44	0.50	0.50	0.42	0.41	0.45	0.43	0.44	0.51	0.55	0.41
Total	98.77	98.00	98.67	97.39	98.87	97.45	98.41	98.71	98.62	98.54	98.05
Mg#	72.35	81.69	80.83	68.41	70.16	77.17	73.14	75.85	82.44	81.96	71.19
Si	6.527	6.192	6.203	6.775	6.606	6.428	6.503	6.432	6.237	6.296	6.714
Al	1.473	1.808	1.797	1.225	1.394	1.572	1.497	1.568	1.763	1.704	1.286
Sum T	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000
Al	0.088	0.217	0.210	0.090	0.051	0.103	0.080	0.099	0.200	0.213	0.049
Ti	0.221	0.294	0.283	0.150	0.188	0.313	0.219	0.249	0.288	0.285	0.141
Fe ⁺³	0.866	0.906	0.983	0.938	1.024	0.686	0.942	0.841	0.909	0.866	1.025
Cr	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.002	0.001
Mg	2.748	2.909	2.829	2.590	2.596	2.988	2.728	2.870	2.949	2.954	2.666
Fe ⁺²	1.050	0.652	0.671	1.196	1.104	0.884	1.002	0.914	0.628	0.650	1.079
Mn	0.027	0.023	0.024	0.036	0.036	0.026	0.029	0.027	0.025	0.030	0.038
Sum C	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
Mg	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe ⁺²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ca	1.721	1.700	1.669	1.663	1.671	1.755	1.695	1.733	1.701	1.691	1.678
Na	0.279	0.300	0.331	0.337	0.329	0.245	0.305	0.267	0.299	0.309	0.322
Sum B	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Ca	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Na	0.276	0.306	0.278	0.156	0.195	0.319	0.263	0.316	0.283	0.262	0.174
K	0.081	0.092	0.091	0.079	0.076	0.083	0.079	0.081	0.093	0.100	0.076
Sum A	0.357	0.398	0.369	0.234	0.271	0.402	0.342	0.397	0.376	0.362	0.250
Sum cat	15.36	15.40	15.37	15.23	15.27	15.40	15.34	15.40	15.38	15.36	15.25
Oxigens	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00

^a Total Fe is as FeO

Atomic proportions are based on an anhydrous basis per 23 oxygens and on different cation sum to account for minimum and maximum ferric estimate to Schumacher (1997). Fe^{+2/+3} partitioning is given as an average of the minimum and the maximum ferric estimates (Schumacher, 1997). Classification is according to Leake (1997).

Ts: Tschermakite; Mg-hs: Magnesio-hastingsite; Mg-Hbl: Magnesio-horneblende; Act: actinolite.

Table 2.3: Representative major element composition of feldspar

Sample	LMA1	LMA3	LMA6	PDL12	F8	F8
Spot Location	gm	gm	gm	Ph rim	Ph core	Ph core
SiO ₂	67.22	55.90	66.13	62.97	65.50	64.60
TiO ₂	0.00	0.07	0.00	0.00	0.00	0.00
Al ₂ O ₃	21.15	15.96	21.98	24.77	19.80	23.24
FeO ^a	0.00	0.26	0.00	1.07	0.00	0.00
MnO	0.00	0.33	0.00	0.00	0.00	0.00
MgO	0.00	0.22	0.00	0.39	0.00	0.00
CaO	1.77	7.76	1.66	0.00	1.13	1.95
Na ₂ O	9.86	4.85	9.37	5.88	3.44	8.30
K ₂ O	0.00	7.15	0.86	4.91	10.13	1.91
Total	100.00	92.55	100.00	99.99	100.00	100.00
Si	11.735	11.282	11.593	11.192	11.841	11.380
Al	4.348	3.794	4.538	5.184	4.215	4.821
Ti	0.000	0.011	0.000	0.000	0.000	0.000
Fe	0.000	0.044	0.000	0.159	0.000	0.000
Mn	0.000	0.056	0.000	0.000	0.000	0.000
Mg	0.000	0.066	0.000	0.103	0.000	0.000
Ca	0.331	1.678	0.312	0.000	0.219	0.368
Na	3.338	1.898	3.185	2.026	1.206	2.835
K	0.000	1.841	0.192	1.113	2.336	0.429
Cations	19.75	20.68	19.82	19.78	19.82	19.83
Ab (mol %)	91.00	35.00	86.30	64.50	12.10	32.10
An (mol %)	9.00	31.00	8.50	0.00	0.00	5.80
Or (mol %)	0.00	34.00	5.20	35.50	87.90	62.10

^a Total Fe is as FeO

Atomic proportions are based on 32 oxygens and 20 cations.

Ph: Phenocryst; gm: groundmass.

Table 2.3: Continued

Sample	A1A		A1B	A3C		ST11		ST8			ST9
Spot Location	gm	gm	gm	Ph core	Ph core	Ph rim	gm	Ph rim	Ph core	Ph core	gm
SiO ₂	67.55	67.94	68.82	68.65	65.41	56.91	69.36	67.96	68.04	67.38	63.08
TiO ₂	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Al ₂ O ₃	20.50	20.80	19.88	19.69	21.49	32.79	19.82	19.29	19.36	19.60	22.03
FeO ^a	0.58	0.32	0.52	0.12	0.21	0.00	0.00	0.12	0.19	0.13	0.50
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
MgO	0.20	0.13	0.14	0.46	0.87	0.00	0.00	0.67	0.75	0.68	0.27
CaO	1.11	1.13	1.12	0.07	0.41	0.00	0.00	0.14	0.14	0.14	0.09
Na ₂ O	9.88	9.68	9.50	10.83	10.06	0.00	10.81	11.66	11.37	11.72	9.16
K ₂ O	0.00	0.00	0.00	0.18	1.56	10.30	0.00	0.16	0.15	0.35	2.51
Total	99.98	100.00	99.98	100.00	100.01	100.00	99.99	100.00	100.00	100.00	97.68
Si	11.803	11.834	11.979	11.966	11.534	10.210	12.046	11.904	11.907	11.829	11.433
Al	4.218	4.267	4.075	4.042	4.462	6.928	4.054	3.979	3.990	4.052	4.702
Ti	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Fe	0.085	0.047	0.076	0.017	0.031	0.000	0.000	0.018	0.028	0.019	0.076
Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
Mg	0.052	0.034	0.036	0.120	0.229	0.000	0.000	0.175	0.196	0.178	0.073
Ca	0.208	0.211	0.209	0.013	0.077	0.000	0.000	0.026	0.026	0.026	0.017
Na	3.347	3.269	3.206	3.660	3.440	0.000	3.640	3.960	3.858	3.990	3.219
K	0.000	0.000	0.000	0.040	0.351	2.357	0.000	0.036	0.033	0.078	0.580
Cations	19.73	19.66	19.58	19.86	20.12	19.50	19.74	20.10	20.04	20.17	20.11
Ab (mol %)	94.10	93.90	93.90	98.60	88.90	0.00	100.00	98.50	98.50	97.50	84.40
An (mol %)	5.90	6.10	6.10	0.40	2.00	0.00	0.00	0.60	0.70	0.60	0.40
Or (mol %)	0.00	0.00	0.00	1.10	9.10	100.00	0.00	0.90	0.80	1.90	15.20

^a Total Fe is as FeO

Atomic proportions are based on 32 oxygens and 20 cations.

Ph: Phenocryst; gm: groundmass

Table 2.3: Continued

Sample	BM1											
Spot Location	Ph core	rim	Ph rim	Ph rim	Ph core	Ph rim	Ph core	to	rim	Ph core	rim	
SiO ₂	51.57	53.95	53.82	63.91	59.63	53.33	53.65	51.74	55.62	52.35	51.12	54.53
TiO ₂	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al ₂ O ₃	30.29	29.16	28.16	22.73	20.48	29.28	30.81	30.07	31	29.84	30.81	28.53
FeO ^a	0.63	0.65	0.65	0.41	6.34	0.78	0.65	0.64	0.69	0.66	0.68	0.65
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	0.36	0.25	0.11	0.82	2.43	0.27	0.37	0.35	0.39	0.32	0.45	0.33
CaO	13.29	11.1	11.69	1.01	0.95	11.71	9.74	12.98	5.35	12.9	13.43	10.43
Na ₂ O	3.68	4.63	5.08	11.12	10.16	4.38	4.55	3.94	6.72	3.7	3.29	5.28
K ₂ O	0.18	0.26	0.12	0.00	0.00	0.25	0.23	0.28	0.22	0.24	0.23	0.25
Total	100.00	100.00	99.67	100.00	99.99	100.00	100.00	100.00	99.99	100.01	100.01	100.00
Si	9.393	9.758	9.800	11.272	10.887	9.672	9.652	9.428	9.910	9.515	9.311	9.859
Al	6.497	6.211	6.038	4.721	4.404	6.254	6.528	6.453	6.505	6.387	6.609	6.074
Ti	0.000	0.000	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
Fe	0.096	0.098	0.019	0.060	0.968	0.118	0.098	0.098	0.103	0.100	0.104	0.098
Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mg	0.098	0.067	0.030	0.216	0.661	0.073	0.099	0.095	0.104	0.0087	0.122	0.089
Ca	2.594	2.151	2.281	0.191	0.187	2.278	1.877	2.534	1.021	2.512	2.621	2.020
Na	1.300	1.624	1.794	3.803	3.597	1.540	1.587	1.392	2.324	1.304	1.162	1.851
K	0.042	0.060	0.028	0.000	0.000	0.058	0.053	0.065	0.050	0.056	0.053	0.058
Cations	20.02	19.97	20.08	20.26	20.70	19.99	19.89	20.07	20.02	19.96	19.98	20.05
Ab (mol%)	33.00	42.30	43.70	95.20	95.10	39.80	45.10	34.90	68.40	33.70	30.30	47.10
An (mol%)	65.90	56.10	55.60	4.80	4.90	58.70	53.40	63.50	30.10	64.90	68.30	51.40
Or (mol%)	1.10	1.60	0.70	0.00	0.00	1.50	1.50	1.60	1.50	1.40	1.40	1.50

^a Total Fe is as FeO

Atomic proportions are based on 32 oxygens and 20 cations.

Ph: Phenocryst; gm: groundmass

Table 2.3: Continued

Sample	MA1			MA3		VG1			VG8		
Spot Location	Ph core	rim	Ph rim	Ph core	Ph core	gm	gm	gm	gm	gm	gm
SiO ₂	67.42	67.38	67.52	67.27	68.18	65.74	63.02	68.85	68.67	67.96	67.24
TiO ₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al ₂ O ₃	19.71	19.60	19.89	19.66	19.52	20.47	24.43	19.53	20.40	20.49	20.93
FeO ^a	0.27	0.18	0.14	0.29	0.04	0.00	0.00	0.14	0.00	0.00	0.00
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
MgO	0.71	0.69	0.69	0.71	0.66	0.43	0.65	0.00	0.00	0.00	0.00
CaO	0.23	0.16	0.24	0.30	0.07	0.81	0.57	0.51	0.00	1.21	1.73
Na ₂ O	11.67	12.00	11.52	11.74	11.50	12.47	8.13	11.71	10.93	10.34	10.11
K ₂ O	0.00	0.00	0.00	0.04	0.04	0.08	3.20	0.04	0.00	0.00	0.00
Total	100.01	100.01	100.00	100.01	100.01	100.00	100.00	100.80	100.00	100.00	100.01
Si	11.819	11.821	11.821	11.806	11.913	11.602	11.158	11.955	11.942	11.853	11.749
Al	4.069	4.049	4.101	4.063	4.017	4.254	5.094	3.994	4.178	4.209	4.307
Ti	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe	0.040	0.026	0.020	0.043	0.006	0.000	0.000	0.020	0.000	0.000	0.000
Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000
Mg	0.186	0.180	0.180	0.186	0.172	0.113	0.172	0.000	0.000	0.000	0.000
Ca	0.043	0.030	0.045	0.056	0.013	0.153	0.108	0.095	0.000	0.226	0.324
Na	3.967	4.082	3.911	3.995	3.896	4.267	2.791	3.943	3.686	3.497	3.425
K	0.000	0.000	0.000	0.009	0.009	0.018	0.723	0.009	0.000	0.000	0.000
Cations	20.12	20.19	20.08	20.16	20.03	20.41	20.05	20.02	19.81	19.79	19.81
Ab (mol %)	98.900	99.300	98.900	98.400	99.400	96.10	77.10	97.40	96.60	93.90	91.40
An (mol %)	1.10	0.70	1.10	1.40	0.30	3.40	3.00	2.30	3.40	6.10	8.60
Or (mol %)	0.00	0.00	0.00	0.20	0.20	0.40	20.00	0.20	0.00	0.00	0.00

^a Total Fe is as FeO

Atomic proportions are based on 32 oxygens and 20 cations.

Ph: Phenocryst; gm: groundmass

Table 2.4: Major element composition of representative biotite

Sample	VG1					
Spot Location	gm	gm	gm	gm	gm	gm
SiO ₂	31.95	34.73	37.67	35.17	39.12	39.32
TiO ₂	3.18	2.04	5.29	3.74	4.67	4.55
Al ₂ O ₃	12.7	14.47	13.31	14.74	13.54	13.48
FeO ^a	25.22	33.09	24.36	27.02	18.63	18.99
MnO	0.18	0.32	0.29	0.28	0.29	0.17
MgO	12.26	12.66	10.23	13.49	15.48	15.11
CaO	0.84	0.86	0.21	1.25	0.28	0.22
Na ₂ O	0.14	0.18	0.38	0.27	0.57	0.61
K ₂ O	3.26	1.25	7.96	3.74	7.19	7.19
F	0.21	0.00	0.00	0.00	0	0
Cl	0.22	0.40	0.29	0.30	0.24	0.36
Total	90.16	100.00	99.99	100.00	100.01	100.00
Si	5.493	5.440	5.839	5.430	5.860	5.900
Al ^{IV}	2.507	2.560	2.161	2.570	2.140	2.100
Sum Z	8.00	8.00	8.00	8.00	8.00	8.00
Al ^{VI}	0.064	0.109	0.269	0.110	0.248	0.282
Ti	0.411	0.240	0.617	0.434	0.526	0.514
Fe ⁺³	0.000	0.000	0.000	0.000	0.000	0.000
Fe ⁺²	3.626	4.335	3.158	3.489	2.334	2.383
Cr	0.000	0.000	0.000	0.000	0.000	0.000
Mn	0.026	0.042	0.038	0.037	0.037	0.022
Mg	3.142	2.956	2.364	3.105	3.457	3.380
Ca	0.155	0.144	0.035	0.207	0.045	0.035
Na	0.047	0.055	0.114	0.081	0.166	0.177
K	0.715	0.25	1.574	0.737	1.374	1.376
Cations	16.19	16.13	16.17	16.20	16.19	16.17
Fe/FeMg	0.54	0.59	0.57	0.53	0.40	0.41
Mg/FeMg	0.46	0.41	0.43	0.47	0.60	0.59

^a Total Fe is as FeO.

Structural formulae calculated on the basis of 24 oxygens and Fe⁺³/Fe⁺² repartition according to Dymek (1983).

gm = groundmass

Table 2.5: Representative major element composition of muscovite

Sample	ST1	ST9				ST11	ST12	VZ4		
	Silic-poor group	Silica-rich group								
Spot Location	gm	gm	gm	gm	gm	gm	gm	gm	gm	gm
SiO ₂	40.74	48.38	47.64	45.55	47.64	45.55	53.34	53.06	54.69	55.08
TiO ₂	0.57	0.94	0.85	0.79	0.85	0.79	0.37	0.21	0.09	0.21
Al ₂ O ₃	27.80	30.06	29.63	29.50	29.63	29.50	30.71	32.12	29.27	28.71
FeO ^a	12.95	3.04	3.41	5.50	3.41	5.50	3.24	2.70	3.29	3.34
MnO	0.17	0.04	0.00	0.02	0.00	0.02	0.00	0.07	0.00	0.12
MgO	2.46	1.29	1.31	1.70	1.31	1.70	1.68	1.26	2.15	2.54
CaO	0.04	0.02	0.04	0.07	0.04	0.07	0.14	0.14	0.15	0.16
Na ₂ O	0.08	0.12	0.14	0.13	0.14	0.13	0.11	0.13	0.16	0.06
K ₂ O	7.57	10.43	10.32	9.70	10.32	9.70	10.41	10.24	10.20	9.79
F	0.13	0.18	0.04	0.18	0.04	0.18	0.00	0.00	0.00	0.00
Cl	0.02	0.01	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00
Total	92.53	94.51	93.40	93.14	93.40	93.14	100.00	99.93	100.00	100.01
Si	5.932	6.545	6.529	6.343	6.529	6.343	6.758	6.700	6.913	6.948
Al	2.068	1.455	1.471	1.657	1.471	1.657	1.242	1.300	1.087	1.052
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al	2.699	3.334	3.311	3.181	3.311	3.181	3.340	3.476	3.270	3.213
Ti	0.062	0.096	0.088	0.083	0.088	0.083	0.035	0.020	0.009	0.020
Fe ⁺³	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Fe ⁺²	1.577	0.344	0.391	0.640	0.391	0.640	0.343	0.285	0.348	0.352
Cr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mn	0.021	0.005	0.000	0.002	0.000	0.002	0.000	0.007	0.000	0.013
Mg	0.534	0.260	0.268	0.353	0.268	0.353	0.317	0.237	0.405	0.478
Ca	0.006	0.003	0.006	0.010	0.006	0.010	0.019	0.019	0.020	0.022
Na	0.023	0.031	0.037	0.035	0.037	0.035	0.027	0.032	0.039	0.015
K	1.406	1.800	1.804	1.723	1.804	1.723	1.683	1.649	1.645	1.576
Cations	14.33	13.87	13.91	14.03	13.91	14.03	13.76	13.73	13.74	13.69

^a Total Fe is as FeO.

Structural formulae calculated on the basis of 24 oxygens and Fe⁺³/Fe⁺² repartition according to Dymek (1983).

gm = groundmass

Table 2.6: Representative major element composition of ilmenite

Sample	A1A	F8	MA3	MA5	VG1	VG8	VG11
TiO ₂	44.28	45.08	62.85	54.80	50.19	49.81	50.85
Cr ₂ O ₃	0.00	0.42	0.00	0.00	0.00	0.00	0.00
Al ₂ O ₃	0.00	0.11	0.00	0.45	0.00	0.00	0.00
FeO	43.20	47.54	35.83	42.39	46.49	47.60	48.86
MnO	12.52	5.49	0.00	0.84	3.11	0.98	0.82
MgO	0.00	0.23	1.32	0.57	0.11	1.61	0.29
CaO	0.00	0.34	0.00	0.43	0.11	0.00	0.03
SiO ₂	0.00	0.81	0.00	0.34	0.06	0.00	0.01
Na ₂ O	0.00	0.00	0.00	0.18	0.02	0.00	0.02
K ₂ O	0.00	0.00	0.00	0.00	0.01	0.00	0.00
TOTAL	100.00	100.02	100.00	100.00	100.10	100.00	100.86
Ti	1.763	1.79	2.243	2.049	1.934	1.906	1.936
Cr	0.000	0.02	0.000	0.000	0.000	0.000	0.000
Al	0.000	0.01	0.000	0.026	0.000	0.000	0.000
Fe	1.912	2.10	1.421	1.762	1.991	2.025	2.069
Mn	0.561	0.25	0.000	0.035	0.135	0.042	0.035
Mg	0.000	0.02	0.093	0.042	0.000	0.122	0.022
Ca	0.000	0.02	0.000	0.023	0.006	0.000	0.002
Si	0.000	0.04	0.000	0.017	0.001	0.000	0.001
TOTAL	4.24	4.20	3.76	3.94	4.07	4.09	4.06
Ilm	77.31	88.84	93.84	95.78	93.65	92.49	97.32

^a Total Fe as FeO

Atomic proportions based on 6 oxygens and 4 cations.

Table 2.7: Major and trace elements composition of representative Serre dyke samples

	LMA1	LMA2	LMA3	LMA4	LMA6	PDL1	PDL2	PDL3	PDL5B	PDL7
	BA	BA	BA	BA	BA	BA	BA	BA	BA	BA
SiO ₂	51.88	51.62	51.49	52.04	51.68	51.43	52.88	51.12	53.09	49.03
TiO ₂	1.34	1.17	1.23	1.26	1.19	1.01	0.96	1.03	1.09	1.05
Al ₂ O ₃	15.18	14.58	15.08	15.25	14.34	16.48	15.06	16.07	15.99	15.21
Fe ₂ O ₃	9.35	8.48	8.61	8.53	8.40	12.07	10.74	11.16	8.49	11.29
MnO	0.14	0.15	0.12	0.15	0.12	0.11	0.10	0.10	0.12	0.12
MgO	8.01	9.12	8.50	8.63	9.03	8.29	9.55	9.19	9.04	13.21
CaO	3.75	4.97	4.48	3.85	4.79	1.13	0.89	1.01	1.97	0.74
Na ₂ O	3.51	1.78	2.53	2.72	1.95	1.12	0.72	1.50	3.40	2.68
K ₂ O	1.94	3.46	2.68	2.84	3.95	2.74	1.64	2.70	2.05	0.34
P ₂ O ₅	0.45	0.52	0.48	0.46	0.44	0.38	0.38	0.38	0.35	0.40
L.O.I.	4.45	4.16	4.80	4.27	4.12	5.25	7.08	5.72	4.41	5.92
Mg#	62.93	68.06	66.18	66.72	68.04	57.64	63.79	62.00	67.84	69.86
ASI	1.65	1.43	1.56	1.62	1.34	3.30	4.63	3.08	2.15	4.05
V	147	102	147	142	140	149	158	138	139	147
Cr	280	322	290	270	280	300	340	250	120	300
Co	34	62	30	31	29	38	35	24	23	33
Ni	123	126	111	110	118	90	95	108	53	100
Zn	102	96	88	103	90	70	n.d.	98	99	90
Rb	109	198	136	162	217	155	128	145	98	13
Sr	298	354	326	255	279	35	27	52	148	34
Ba	378	592	412	427	800	691	309	986	653	335
Pb	13	12	12	16	18	15	n.d.	11	<5	5
Nb	14	n.d.	13	13	13	15	n.d.	11	10	15
Zr	217	222	199	206	198	214	210	180	185	211
Th	11	11	11	11	10	11	n.d.	10	10	10
Y	31	52	36	26	26	13	76	59	33	16
La	60.7	n.d.	63.9	58.6	50.3	31.3	n.d.	51.6	49.3	11.1
Ce	107.0	100.8	108.0	100.0	101.0	72.5	187.0	73.8	97.6	26.2
Pr	14.9	n.d.	17.0	14.5	12.6	10.0	n.d.	13.0	11.2	3.2
Nd	56.6	n.d.	66.3	54.7	47.6	46.4	n.d.	55.7	45.0	13.4
Sm	10.5	n.d.	11.7	9.9	8.5	12.6	n.d.	10.9	7.4	3.3
Eu	2.3	n.d.	2.6	2.2	2.1	1.9	n.d.	1.7	1.7	0.7
Gd	8.4	n.d.	9.4	7.8	7.0	11.9	n.d.	11.2	6.9	3.3
Tb	1.3	n.d.	1.4	1.2	1.1	2.1	n.d.	1.7	1.0	0.6
Dy	6.4	n.d.	6.6	5.6	5.2	13.2	n.d.	10.5	6.0	3.3
Ho	1.3	n.d.	1.3	1.1	1.1	2.6	n.d.	1.8	1.1	0.7
Er	3.3	n.d.	3.6	3.0	3.0	7.6	n.d.	5.3	3.4	2.4
Tm	0.5	n.d.	0.5	0.4	0.4	1.2	n.d.	0.7	0.5	0.4
Yb	3.0	n.d.	3.0	2.8	2.7	8.0	n.d.	3.9	2.7	2.8
Lu	0.4	n.d.	0.5	0.4	0.4	1.1	n.d.	0.5	0.4	0.5
Hf	5.0	n.d.	5.0	5.0	5.0	5.0	n.d.	4.0	5.0	4.6
Ta	0.8	n.d.	0.7	0.7	0.7	0.9	n.d.	0.7	0.6	0.9
ΣREE	282.3	n.d.	301.6	267.8	248.6	228.3	n.d.	247.0	239.7	77.4
(La/Yb) _n	13.5	n.d.	14.2	14.0	12.5	2.6	n.d.	8.8	12.2	2.7
Eu/Eu*	0.8	n.d.	0.8	0.8	0.8	0.5	n.d.	0.5	0.7	0.6

BA: Basaltic andesite; A: Andesite; D: dacite; D-RD s-p: Dacite-rhyodacite silica-poor; D-RD s-r: Dacite-rhyodacite silica-rich.

Table 2.7: Continued

	PDL9	PDL11	PDL12	PDL13	PDL15	A1B	A3D1	A3C	A1E	A3D2
	BA	BA	BA	BA	BA	A	A	A	A	A
SiO ₂	52.84	51.90	54.31	53.97	52.76	60.26	59.36	61.72	60.64	59.81
TiO ₂	0.99	1.00	1.03	1.03	0.99	0.45	0.56	0.62	0.60	0.57
Al ₂ O ₃	15.64	14.96	15.56	15.29	15.99	12.77	13.14	15.35	16.76	14.31
Fe ₂ O ₃	8.73	9.57	7.06	6.85	7.91	4.80	5.02	3.79	3.43	4.60
MnO	0.12	0.11	0.11	0.14	0.12	0.13	0.18	0.09	0.09	0.14
MgO	9.30	11.42	7.66	8.28	9.17	9.77	9.58	4.80	4.15	8.48
CaO	1.99	1.63	3.71	5.34	2.70	2.69	1.81	1.88	2.60	1.60
Na ₂ O	2.78	2.77	3.19	3.14	2.77	2.76	2.94	4.61	3.01	3.25
K ₂ O	2.55	1.51	2.10	2.00	2.71	1.78	2.41	3.38	3.92	2.60
P ₂ O ₅	0.35	0.35	0.36	0.36	0.36	0.17	0.19	0.22	0.20	0.19
L.O.I.	4.70	4.78	4.89	3.60	4.52	4.41	4.82	3.53	4.59	4.44
Mg#	67.85	70.28	68.25	70.54	69.67	80.13	63.67	71.50	70.56	78.51
ASI	2.14	2.53	1.73	1.46	1.95	1.77	1.84	1.56	1.76	1.92
V	133	136	132	133	134	78	89	73	67	77
Cr	140	280	130	140	140	220	289	60	16	190
Co	22	27	22	25	27	20.9	22	11.7	11	18.6
Ni	54	108	52	89	62	112	122	36	10	82
Zn	85	85	95	91	73	126	n.d.	188	n.d.	244
Rb	110	69	91	78	117	64.6	86	119	164	83.6
Sr	81	77	212	311	129	147	173	173	146	142
Ba	431	551	347	261	323	289	1004	546	384	651
Pb	<5	<5	6	8	7	38	n.d.	7	n.d.	23
Nb	9	11	10	11	11	4	5	4	7	4
Zr	182	170	179	186	199	139	163	147	181	141
Th	9	9	10	10	11	7.1	n.d.	7.6	n.d.	7.4
Y	26	30	32	26	24	11.9	13	12.3	10	13.2
La	67.6	91.8	94.9	43.3	55.6	21.1	31.0	25.9	22.9	27.0
Ce	120.0	171.0	208.0	84.8	111.0	44.1	34.0	48.5	48.6	50.9
Pr	13.2	18.5	21.3	11.8	13.6	5.3	n.d.	6.0	5.8	6.5
Nd	52.3	69.9	73.6	44.5	50.1	20.4	n.d.	22.6	21.9	24.6
Sm	7.6	9.1	8.8	8.3	8.0	3.9	n.d.	4.2	4.2	4.6
Eu	2.1	2.3	2.3	1.9	2.1	1.0	n.d.	1.2	1.2	1.2
Gd	6.7	7.6	7.8	6.9	6.2	3.2	n.d.	3.4	3.3	3.6
Tb	0.9	1.1	1.1	1.1	1.0	0.5	n.d.	0.5	0.5	0.6
Dy	5.0	5.8	6.1	5.4	4.7	2.5	n.d.	2.5	2.4	2.8
Ho	0.9	1.0	1.1	1.1	1.0	0.5	n.d.	0.5	0.5	0.5
Er	2.8	3.0	3.2	3.1	2.9	1.4	n.d.	1.4	1.3	1.5
Tm	0.3	0.4	0.4	0.4	0.4	0.2	n.d.	0.2	0.2	0.2
Yb	2.4	2.5	2.6	2.8	2.7	1.3	n.d.	1.3	1.3	1.3
Lu	0.3	0.4	0.4	0.4	0.4	0.2	n.d.	0.2	0.2	0.2
Hf	4.0	4.0	4.0	5.0	5.0	4.0	n.d.	4.0	4.0	4.0
Ta	0.5	0.6	0.5	0.6	0.6	0.5	n.d.	0.5	0.5	0.5
ΣREE	286.7	389.0	436.0	221.4	265.2	110.0	n.d.	122.9	118.8	130.0
(La/Yb) _n	18.8	24.6	24.4	10.3	13.8	10.9	n.d.	13.3	11.8	13.9
Eu/Eu*	0.9	0.8	0.9	0.8	0.9	0.9	n.d.	1.0	1.0	0.9

BA: Basaltic andesite; A: Andesite; D: dacite; D-RD s-p: Dacite-rhyodacite silica-poor; D-RD s-r: Dacite-rhyodacite silica-rich.

Table 2.7: Continued

	A1A A	A1C A	A2C A	A3B A	A2B A	A1D A	A2A A	A3A A	F1 A	F2 A
SiO ₂	59.69	62.29	60.77	59.62	61.16	60.04	60.78	62.87	61.30	60.46
TiO ₂	0.50	0.57	0.56	0.57	0.57	0.58	0.57	0.58	0.56	0.57
Al ₂ O ₃	13.88	16.63	17.62	14.90	17.90	16.99	17.59	16.57	14.06	13.99
Fe ₂ O ₃	5.02	3.46	3.51	4.62	3.58	3.38	3.57	3.22	5.40	5.82
MnO	0.15	0.07	0.06	0.15	0.05	0.06	0.07	0.08	0.13	0.14
MgO	9.13	4.16	4.66	7.29	4.62	2.99	4.73	3.31	6.05	6.71
CaO	2.23	2.22	1.49	2.17	0.99	4.16	1.52	1.66	3.32	3.23
Na ₂ O	2.30	4.65	2.29	3.13	2.20	3.68	2.53	5.93	3.78	3.60
K ₂ O	2.68	2.82	3.64	3.03	4.50	2.52	3.48	2.88	1.86	1.75
P ₂ O ₅	0.18	0.23	0.19	0.20	0.20	0.18	0.19	0.19	0.22	0.22
L.O.I.	4.23	2.90	5.20	4.32	4.24	5.41	4.96	2.70	3.33	3.51
Mg#	78.28	70.43	72.45	75.77	71.89	79.08	72.41	67.07	68.94	69.55
ASI	1.93	1.72	2.37	1.79	2.33	1.64	2.34	1.58	1.57	1.63
V	80	66	60	77	63	71	75	62	71	78
Cr	240	23	<10	160	20	13	10	<10	160	180
Co	21.4	13	8.9	16.7	8	10	9.1	8.7	16.4	17.7
Ni	117	11	7	85	20	8	25	14	90	104
Zn	173	n.d.	95	143	70	n.d.	126	55	138	154
Rb	115	99	176	109	195	136	163	100	65	64.7
Sr	241	263	43.8	170	58	126	69.3	152	194	190
Ba	585	412	274	394	335	153	404	313	228	228
Pb	49	n.d.	<5	202	7	n.d.	10	<5	7	9
Nb	4	6	5	4	5	6	4	4	4	5
Zr	136	142	151	137	155	131	152	146	144	141
Th	7.2	n.d.	7.7	7.4	7.4	n.d.	7.9	7.4	7.4	7.3
Y	11.8	11	17	11.6	23	11	15.9	15.2	12.9	13.7
La	20.9	23.0	22.3	22.4	18.0	22.0	25.7	20.6	22.4	22.9
Ce	43.2	48.3	41.1	46.8	36.8	42.0	47.4	44.2	45.6	47.1
Pr	5.3	5.4	5.7	5.7	4.3	n.d.	6.3	5.4	5.6	5.9
Nd	20.6	20.3	22.7	21.7	17.6	n.d.	24.1	20.7	21.2	21.9
Sm	3.9	4.1	4.7	4.3	3.8	n.d.	4.8	4.0	4.2	4.2
Eu	1.0	1.1	1.3	1.1	1.1	n.d.	1.4	1.3	1.0	1.1
Gd	3.2	3.4	4.4	3.2	3.8	n.d.	4.2	3.5	3.4	3.7
Tb	0.5	0.5	0.7	0.5	0.6	n.d.	0.7	0.6	0.5	0.5
Dy	2.5	2.5	3.4	2.5	3.1	n.d.	3.2	3.0	2.6	2.7
Ho	0.5	0.5	0.7	0.5	0.6	n.d.	0.6	0.6	0.5	0.5
Er	1.4	1.3	1.8	1.3	1.5	n.d.	1.7	1.6	1.4	1.5
Tm	0.2	0.2	0.2	0.2	0.2	n.d.	0.2	0.2	0.2	0.2
Yb	1.3	1.1	1.5	1.3	1.2	n.d.	1.3	1.3	1.3	1.3
Lu	0.2	0.2	0.2	0.2	0.2	n.d.	0.2	0.2	0.2	0.2
Hf	4.0	3.6	4.0	4.0	3.7	n.d.	4.0	4.0	4.0	4.0
Ta	0.5	0.4	0.5	0.5	0.5	n.d.	0.5	0.5	0.5	0.5
ΣREE	109.2	115.9	115.2	116.2	97.1	n.d.	126.2	111.7	114.7	118.1
(La/Yb) _n	10.8	14.0	9.9	11.5	10.0	n.d.	13.2	10.6	11.5	11.8
Eu/Eu*	0.9	0.9	0.8	0.9	0.9	n.d.	0.9	1.1	0.8	0.9

BA: Basaltic andesite; A: Andesite; D: dacite; D-RD s-p: Dacite-rhyodacite silica-poor; D-RD s-r: Dacite-rhyodacite silica-rich.

Table 2.7: Continued

	F3 A	F4 A	F5 A	F6 A	F7 A	F8 A	F9 A	VZ1 D	VZ2 D	VZ3 D	VZ4 D
SiO ₂	61.09	59.67	60.43	56.19	57.27	59.99	61.52	67.45	65.37	65.34	68.33
TiO ₂	0.57	0.52	0.52	0.63	0.61	0.52	0.61	0.24	0.24	0.26	0.25
Al ₂ O ₃	13.99	13.49	13.33	13.63	13.61	13.12	14.87	17.38	18.24	18.20	20.22
Fe ₂ O ₃	5.70	6.02	5.80	8.20	7.34	6.10	5.52	2.32	3.07	2.65	1.82
MnO	0.12	0.12	0.12	0.12	0.12	0.19	0.12	0.06	0.11	0.10	0.01
MgO	6.58	7.67	7.14	12.89	11.69	8.25	5.31	0.76	1.48	1.52	0.56
CaO	3.10	2.54	2.99	0.34	0.72	3.13	2.92	2.49	1.88	2.00	0.26
Na ₂ O	3.42	2.96	3.27	2.43	2.77	3.12	4.13	0.04	0.05	0.04	0.04
K ₂ O	2.09	1.91	1.73	0.61	0.78	1.38	1.66	4.61	4.60	4.75	5.14
P ₂ O ₅	0.22	0.19	0.20	0.19	0.19	0.20	0.24	0.09	0.10	0.10	0.11
L.O.I.	3.13	4.91	4.47	4.77	4.92	4.01	3.10	4.55	4.86	5.04	3.27
Mg#	69.56	71.62	70.93	75.69	75.95	72.83	65.57	39.49	48.80	53.13	37.83
ASI	1.63	1.82	1.67	4.03	3.19	1.72	1.71	2.43	2.79	2.68	3.72
V	76	81	77	62.82	62.29	76	73	17	11	14	12
Cr	180	240	220	298.76	298.58	230	120	<10	<10	<10	<10
Co	18.1	122	25	49.96	46.55	33.9	16.8	2.1	1.9	2.3	2.3
Ni	123	146	135	138.5	140.12	169	74	5	7	6	<5
Zn	207	103	125	101.82	120.74	161	124	21	28	27	44
Rb	78.6	80.8	62.1	30.41	37.44	52.4	58.9	239	244	254	217
Sr	200	103	167	38.83	75.36	177	233	24.9	11.5	9.9	9.8
Ba	235	205	211	37.79	83.17	207	203	345	173	177	196
Pb	11	9	21	1.55	4.11	14	24	5	8	6	7
Nb	5	4	4	4	4.67	4	4	9	9	9	10
Zr	144	140	134	158.36	160.47	134	150	184	187	180	192
Th	7.4	7.1	7	10.51	10.47	7.3	7.3	16.9	16.8	16	18.2
Y	14.6	12.5	13.6	17.93	18.68	16.2	14.1	19.3	20.3	19.1	19.9
La	23.1	22.4	21.7	8.2	16.2	22.8	22.9	41.1	42.3	38.6	45.4
Ce	47.9	45.8	44.3	26.5	45.1	46.5	48.0	81.7	85.5	77.7	91.9
Pr	5.9	5.5	5.5	n.d.	n.d.	6.0	5.9	9.3	9.7	9.0	10.7
Nd	22.8	21.3	20.8	n.d.	n.d.	23.6	23.1	34.0	35.0	32.3	38.2
Sm	4.7	4.2	4.2	n.d.	n.d.	4.9	4.5	6.3	6.7	6.1	7.0
Eu	1.1	1.5	1.1	n.d.	n.d.	1.3	1.2	1.0	1.0	1.0	1.0
Gd	3.7	3.4	3.6	n.d.	n.d.	4.2	3.8	4.9	5.3	4.9	5.1
Tb	0.6	0.5	0.6	n.d.	n.d.	0.7	0.6	0.8	0.9	0.8	0.8
Dy	2.9	2.5	2.7	n.d.	n.d.	3.4	2.9	3.8	4.0	3.8	3.9
Ho	0.5	0.5	0.5	n.d.	n.d.	0.7	0.6	0.8	0.8	0.8	0.8
Er	1.6	1.4	1.5	n.d.	n.d.	1.9	1.6	2.3	2.3	2.1	2.2
Tm	0.2	0.2	0.2	n.d.	n.d.	0.3	0.2	0.3	0.3	0.3	0.3
Yb	1.4	1.3	1.4	n.d.	n.d.	1.8	1.4	2.1	2.1	2.0	2.2
Lu	0.2	0.3	0.2	n.d.	n.d.	0.3	0.2	0.3	0.3	0.3	0.3
Hf	4.0	4.0	3.0	n.d.	n.d.	3.0	4.0	5.0	5.0	5.0	6.0
Ta	0.5	0.5	0.5	n.d.	n.d.	0.5	0.5	0.7	0.8	0.7	0.8
ΣREE	121.1	115.3	111.8	n.d.	n.d.	121.8	121.5	194.3	202.1	185.3	216.6
(La/Yb) _n	11.0	11.5	10.4	n.d.	n.d.	8.5	10.9	13.1	13.5	12.9	13.8
Eu/Eu*	0.8	1.2	0.9	n.d.	n.d.	0.9	0.9	0.5	0.5	0.6	0.5

BA: Basaltic andesite; A: Andesite; D: dacite; D-RD s-p: Dacite-rhyodacite silica-poor; D-RD s-r: Dacite-rhyodacite silica-rich.

Table 2.7: Continued

	ST1	ST3	ST4	ST5	ST6	ST7	ST8	ST9	ST10	ST11	ST12
	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD
	s-p	s-p	s-p	s-p	s-r	s-r	s-r	s-r	s-r	s-r	s-r
SiO ₂	65.90	63.43	67.08	65.44	68.50	65.44	69.97	70.97	70.19	67.06	67.02
TiO ₂	0.70	0.81	0.63	0.65	0.40	0.71	0.20	0.19	0.22	0.38	0.38
Al ₂ O ₃	15.20	15.01	14.69	14.81	16.11	14.75	15.50	14.83	15.63	16.24	16.36
Fe ₂ O ₃	5.56	6.92	5.41	6.60	3.92	7.03	3.40	3.24	3.48	4.00	4.42
MnO	0.10	0.11	0.09	0.11	0.05	0.09	0.02	0.02	0.03	0.04	0.04
MgO	1.31	3.27	1.27	1.77	2.26	2.99	2.68	2.68	2.18	2.90	2.92
CaO	1.98	0.79	1.95	1.62	0.31	0.49	0.14	0.11	0.11	0.28	0.25
Na ₂ O	4.43	4.12	5.47	4.72	3.93	4.43	2.89	2.82	3.20	3.46	3.26
K ₂ O	2.97	2.68	1.81	2.33	2.28	1.21	2.66	2.51	2.64	2.44	2.60
P ₂ O ₅	0.23	0.23	0.23	0.24	0.09	0.21	0.06	0.05	0.06	0.11	0.10
L.O.I.	1.61	2.64	1.38	1.71	2.15	2.65	2.47	2.58	2.27	3.09	2.65
Mg#	31.86	48.32	31.69	34.66	53.28	45.77	60.95	62.12	55.39	58.97	56.70
ASI	1.62	1.98	1.59	1.71	2.47	2.4	2.73	2.73	2.62	2.63	2.68
V	38.08	36.74	46	53	17	48	7.32	8	9	16	18
Cr	0	1.9	50	<10	<10	<10	8.58	<10	<10	<10	<10
Co	21.36	24.49	6.9	7.8	4.2	9.5	12.7	2	1.9	3.6	3.8
Ni	3.16	3.65	42	<5	12	10	3.99	10	12	10	20
Zn	50.93	44.84	40	54	30	41	24.89	24	28	32	33
Rb	118.74	111.32	54.8	76.3	103	64.2	153.39	143	128	106	106
Sr	219.54	147.3	157	150	66.6	72.5	67.74	56.2	60.3	76	82.5
Ba	463.33	362.28	379	507	84.6	62.2	156.22	147	140	221	230
Pb	9.01	5.3	<5	9	<5	<5	1.24	14	<5	7	<5
Nb	11.35	12.31	10	9	6	9	8.86	8	9	5	5
Zr	273.65	289.38	240	237	189	221	166.73	157	186	190	187
Th	14.21	15.2	10.8	10.3	8	10.4	18.31	14.2	14.4	8.2	8.2
Y	35.53	37.61	25.6	28.8	16.7	27.9	28.66	25.9	25.5	18.7	16.4
La	30.4	33.2	40.1	39.4	24.7	14.7	36.0	42.3	23.9	13.3	10.8
Ce	82.1	93.7	81.2	81.1	49.0	32.6	72.5	87.7	50.5	26.1	20.4
Pr	n.d.	n.d.	9.8	9.9	6.2	4.1	n.d.	10.0	5.8	3.4	2.7
Nd	n.d.	n.d.	36.9	37.5	23.1	17.2	n.d.	35.4	21.7	13.7	10.5
Sm	n.d.	n.d.	7.6	7.6	4.4	4.2	n.d.	6.7	4.6	3.1	2.5
Eu	n.d.	n.d.	1.6	1.7	0.9	1.1	n.d.	1.1	0.8	0.7	0.6
Gd	n.d.	n.d.	6.4	6.8	3.5	4.3	n.d.	5.6	4.4	3.0	2.5
Tb	n.d.	n.d.	1.0	1.1	0.6	0.8	n.d.	1.0	0.8	0.6	0.5
Dy	n.d.	n.d.	5.3	5.4	2.9	4.8	n.d.	4.9	4.6	3.1	2.7
Ho	n.d.	n.d.	1.0	1.1	0.6	1.1	n.d.	1.0	1.0	0.7	0.6
Er	n.d.	n.d.	3.0	3.2	1.9	3.4	n.d.	2.8	2.8	2.0	1.9
Tm	n.d.	n.d.	0.4	0.5	0.3	0.5	n.d.	0.4	0.4	0.3	0.3
Yb	n.d.	n.d.	2.8	3.0	2.0	3.6	n.d.	2.6	2.7	2.0	2.0
Lu	n.d.	n.d.	0.4	0.5	0.3	0.6	n.d.	0.4	0.4	0.4	0.3
Hf	n.d.	n.d.	6.0	6.0	5.0	5.0	n.d.	5.0	5.0	5.0	5.0
Ta	n.d.	n.d.	0.5	0.5	0.5	0.5	n.d.	0.6	0.6	0.5	0.5
ΣREE	n.d.	n.d.	204.0	205.2	125.9	98.4	n.d.	207.4	130.1	77.9	63.7
(La/Yb) _n	n.d.	n.d.	9.6	8.8	8.3	2.7	n.d.	10.9	5.9	4.4	3.6
Eu/Eu*	n.d.	n.d.	0.7	0.7	0.7	0.8	n.d.	0.5	0.5	0.7	0.7

BA: Basaltic andesite; A: Andesite; D: dacite; D-RD s-p: Dacite-rhyodacite silica-poor; D-RD s-r: Dacite-rhyodacite silica-rich.

Table 2.7: Continued

	ST13	ST14	ST15	ST17	ST18	ST19	ST20	ST21	ST22	ST23	ST24
	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD
	s-r	s-r	s-r	s-r	s-r	s-r	s-r	s-r	s-r	s-r	s-r
SiO ₂	65.73	65.61	66.36	66.91	68.02	67.19	67.17	68.73	68.89	69.31	68.28
TiO ₂	0.38	0.39	0.39	0.39	0.37	0.38	0.41	0.36	0.37	0.38	0.37
Al ₂ O ₃	16.69	16.46	16.52	16.53	15.32	16.02	15.88	15.66	16.10	14.99	14.99
Fe ₂ O ₃	4.69	4.50	4.46	4.37	4.79	4.61	4.11	3.93	3.89	4.64	4.84
MnO	0.05	0.04	0.04	0.04	0.06	0.04	0.04	0.03	0.04	0.04	0.04
MgO	3.27	3.67	3.28	2.86	2.71	2.82	3.51	2.44	1.75	1.99	2.73
CaO	0.29	0.26	0.26	0.25	0.37	0.26	0.30	0.27	0.30	0.22	0.25
Na ₂ O	3.43	3.22	3.19	3.25	2.88	3.25	3.10	3.55	3.94	3.36	2.51
K ₂ O	2.59	2.69	2.78	2.62	2.78	2.46	2.62	2.27	2.29	2.46	2.49
P ₂ O ₅	0.11	0.09	0.10	0.10	0.11	0.10	0.10	0.09	0.10	0.11	0.10
L.O.I.	2.78	3.08	2.63	2.68	2.60	2.87	2.77	2.68	2.32	2.51	3.39
Mg#	58.01	61.77	59.33	56.45	52.84	54.83	62.86	55.15	47.12	45.99	52.73
ASI	2.64	2.67	2.65	2.7	2.54	2.68	2.64	2.57	2.46	2.48	2.85
V	17	12.86	14.98	17	16.44	18	23	16	13.89	19	22
Cr	<10	11.25	9.53	<10	7.26	<10	<10	<10	8.42	<10	<10
Co	4.3	16.01	15.71	4.9	17.56	4.7	3.6	9.9	14.84	4	3.9
Ni	7	3.45	5.48	13	4.31	<5	10	5	4.41	16	245
Zn	34	37.02	35.89	31	35.56	29	43	34	31.51	36	34
Rb	107	113.75	120.51	107	118.94	112	103	101	107.09	112	115
Sr	95.4	84.72	82.5	70.3	70.65	47.2	79.1	71.8	86.55	66.2	64.5
Ba	228	214.86	212.35	208	216.63	151	224	176	237.66	150	240
Pb	<5	1.66	2.17	5	2.92	<5	<5	7	1.9	<5	<5
Nb	6	7.19	7.06	5	6.33	5	6	5	6.52	5	6
Zr	198	226.08	226.86	190	202.15	186	181	175	214.19	173	168
Th	8.6	11.45	13.04	8.2	10.66	8.2	8.1	7.8	11	7.9	8.1
Y	18.6	25.46	22.58	15.2	24.01	16.9	19.4	16.5	23.71	17.9	17.1
La	8.6	19.4	15.1	15.9	11.8	15.1	11.6	10.6	9.8	11.0	7.5
Ce	16.8	40.9	25.0	30.4	12.2	29.7	23.2	20.6	11.4	22.3	16.4
Pr	2.3	n.d.	n.d.	3.9	n.d.	3.7	3.2	2.7	n.d.	2.8	2.2
Nd	9.7	n.d.	n.d.	14.9	n.d.	13.8	12.8	11.4	n.d.	10.9	9.2
Sm	2.5	n.d.	n.d.	3.0	n.d.	3.0	3.2	2.8	n.d.	2.7	2.8
Eu	0.6	n.d.	n.d.	0.6	n.d.	0.7	0.7	0.7	n.d.	0.7	0.7
Gd	2.4	n.d.	n.d.	2.6	n.d.	2.8	3.3	2.7	n.d.	2.4	2.5
Tb	0.5	n.d.	n.d.	0.5	n.d.	0.5	0.6	0.5	n.d.	0.5	0.5
Dy	2.8	n.d.	n.d.	2.4	n.d.	2.9	3.1	2.7	n.d.	2.7	3.0
Ho	0.7	n.d.	n.d.	0.6	n.d.	0.7	0.7	0.6	n.d.	0.6	0.6
Er	2.1	n.d.	n.d.	1.7	n.d.	1.9	2.1	1.7	n.d.	2.1	2.0
Tm	0.3	n.d.	n.d.	0.3	n.d.	0.3	0.3	0.3	n.d.	0.3	0.3
Yb	2.2	n.d.	n.d.	1.9	n.d.	2.0	2.1	1.8	n.d.	2.5	2.2
Lu	0.4	n.d.	n.d.	0.3	n.d.	0.3	0.4	0.3	n.d.	0.5	0.4
Hf	5.0	n.d.	n.d.	5.0	n.d.	5.0	5.0	4.0	n.d.	4.0	4.0
Ta	0.5	n.d.	n.d.	0.5	n.d.	0.5	0.5	0.5	n.d.	0.5	0.5
ΣREE	57.4	n.d.	n.d.	84.5	n.d.	82.8	72.7	63.8	n.d.	66.5	54.8
(La/Yb) _n	2.6	n.d.	n.d.	5.6	n.d.	5.0	3.7	3.9	n.d.	2.9	2.3
Eu/Eu*	0.7	n.d.	n.d.	0.7	n.d.	0.7	0.7	0.7	n.d.	0.8	0.8

BA: Basaltic andesite; A: Andesite; D: dacite; D-RD s-p: Dacite-rhyodacite silica-poor; D-RD s-r: Dacite-rhyodacite silica-rich.

Table 2.7: Continued

	ST25	ST26	ST27	ST28	ST29	ST30	ST33	ST36	ST37	ST39	ST40
	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD	D-RD
	s-r	s-p	s-p	s-p	s-p	s-p	s-p	s-p	s-p	s-p	s-r
SiO ₂	65.71	65.50	63.85	62.85	64.14	64.14	64.48	65.65	63.62	65.76	70.92
TiO ₂	0.63	0.66	0.76	0.81	0.73	0.72	0.72	0.69	0.75	0.58	0.17
Al ₂ O ₃	14.17	15.31	15.50	16.25	15.59	15.23	15.37	15.12	15.52	15.92	14.68
Fe ₂ O ₃	7.00	6.30	6.49	6.92	5.97	6.37	6.23	5.68	5.87	4.58	3.37
MnO	0.09	0.08	0.10	0.12	0.11	0.11	0.14	0.10	0.10	0.07	0.02
MgO	3.38	1.43	2.67	2.60	2.09	2.72	1.95	1.85	2.32	1.52	2.59
CaO	0.51	1.09	0.69	0.84	1.55	1.28	1.24	1.25	1.06	1.8	0.1
Na ₂ O	2.38	4.00	4.23	3.53	3.61	4.34	4.10	4.65	4.26	4.39	3.87
K ₂ O	2.97	2.75	2.34	3.01	3.32	2.35	3.08	2.72	2.94	2.99	1.96
P ₂ O ₅	0.18	0.23	0.25	0.25	0.24	0.24	0.24	0.23	0.25	0.22	0.04
L.O.I.	2.98	2.67	3.13	2.83	2.67	2.51	2.46	2.05	3.31	2.17	2.29
Mg#	48.88	31.01	44.95	42.72	45.79	38.23	40.95	39.18	43.88	39.67	60.36
ASI	2.42	1.95	2.14	2.2	1.84	1.91	1.83	1.75	1.88	1.73	2.48
V	41.03	48	50	54	39.64	56	52	48	53	54	10
Cr	7.05	<10	<10	<10	2.26	<10	<10	<10	<10	6	8
Co	22.23	6.6	7.6	7.3	26.43	8	7.9	7.8	7.7	12	7
Ni	3.72	10	<5	<5	4.73	<5	15	<5	11	4	6
Zn	54.29	53	38	45	48.9	49	63	46	46	n.d.	n.d.
Rb	111.07	108	87.6	121	126.26	92.3	120	98.2	112	116	106
Sr	72.52	115	111	169	196.39	136	128	136	190	226	73
Ba	381.57	409	453	492	519.16	357	450	515	1050	490	88
Pb	16.35	<5	<5	9	6.41	7	12	9	8	n.d.	n.d.
Nb	12.8	9	9	10	8.58	10	9	9	9	11	9
Zr	169.8	225	232	246	256.84	244	229	234	229	232	136
Th	16.35	11.5	10.7	11.4	12.54	11	11	11.3	11.5	n.d.	n.d.
Y	27.03	31.7	27.1	32.8	37.45	32.3	30.7	28.6	31.2	34	22
La	2.6	59.9	16.2	23.3	56.8	77.9	39.4	41.5	44.3	38.0	38.0
Ce	1.6	91.8	35.4	49.9	115.1	168.0	80.7	88.9	93.8	80.0	82.0
Pr	n.d.	12.6	4.6	6.6	n.d.	19.0	9.8	10.6	11.2	n.d.	n.d.
Nd	n.d.	46.5	18.9	25.9	n.d.	67.3	37.9	40.3	42.3	n.d.	n.d.
Sm	n.d.	8.6	4.2	5.8	n.d.	11.3	7.8	8.2	8.5	n.d.	n.d.
Eu	n.d.	1.8	0.8	1.1	n.d.	2.3	1.5	1.6	1.9	n.d.	n.d.
Gd	n.d.	7.1	3.9	5.5	n.d.	8.4	6.6	6.4	7.3	n.d.	n.d.
Tb	n.d.	1.2	0.7	1.0	n.d.	1.4	1.2	1.1	1.2	n.d.	n.d.
Dy	n.d.	5.8	4.2	5.8	n.d.	6.3	5.9	5.6	6.2	n.d.	n.d.
Ho	n.d.	1.2	1.0	1.3	n.d.	1.2	1.2	1.1	1.2	n.d.	n.d.
Er	n.d.	3.4	3.4	3.9	n.d.	3.6	3.5	3.3	3.4	n.d.	n.d.
Tm	n.d.	0.5	0.5	0.5	n.d.	0.5	0.5	0.5	0.5	n.d.	n.d.
Yb	n.d.	3.1	3.4	3.6	n.d.	3.2	3.3	3.1	3.3	n.d.	n.d.
Lu	n.d.	0.5	0.6	0.6	n.d.	0.6	0.5	0.5	0.5	n.d.	n.d.
Hf	n.d.	6.0	6.0	6.0	n.d.	6.0	6.0	6.0	6.0	n.d.	n.d.
Ta	n.d.	0.5	0.5	0.6	n.d.	0.5	0.6	0.5	0.5	n.d.	n.d.
ΣREE	n.d.	250.4	104.3	141.4	n.d.	377.4	206.4	219.2	232.0	n.d.	n.d.
(La/Yb) _n	n.d.	12.9	3.2	4.3	n.d.	16.3	8.0	9.0	9.0	n.d.	n.d.
Eu/Eu*	n.d.	0.7	0.6	0.6	n.d.	0.7	0.6	0.7	0.7	n.d.	n.d.

BA: Basaltic andesite; A: Andesite; D: dacite; D-RD s-p: Dacite-rhyodacite silica-poor; D-RD s-r: Dacite-rhyodacite silica-rich.

Appendix 2 – Tables

Tab. 2.8: Major and trace elements composition of representative Sicilian dykes

	VG1	VG2	VG3	VG4	VG5	VG6	VG7	VG8	VG9	VG10	VG11	BM1	BM2
	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB	AB	TB	TB
SiO ₂	45.35	46.20	46.76	44.61	46.41	42.56	48.35	49.32	47.91	47.67	47.22	38.64	43.62
TiO ₂	2.42	2.62	2.17	2.16	2.57	2.21	2.23	2.19	2.37	2.12	2.34	1.58	1.99
Al ₂ O ₃	12.23	12.42	13.15	13.58	13.03	12.28	13.80	15.00	13.97	14.30	13.77	11.37	13.39
Fe ₂ O ₃	13.45	13.87	12.97	11.30	13.82	11.47	12.61	11.36	13.10	12.38	12.77	9.14	11.51
MnO	0.17	0.18	0.14	0.14	0.18	0.13	0.16	0.15	0.16	0.15	0.15	0.28	0.21
MgO	10.14	9.25	8.32	7.54	8.19	6.30	6.79	5.41	6.49	5.87	5.61	4.44	5.04
CaO	7.35	6.54	10.56	11.07	6.75	12.60	6.94	8.16	7.66	8.79	8.38	19.38	10.24
Na ₂ O	3.02	3.46	3.50	3.45	3.67	3.65	4.27	4.04	3.98	3.87	4.14	1.90	3.04
K ₂ O	0.38	0.19	0.58	0.06	0.27	0.05	0.41	0.63	0.48	0.56	0.70	0.00	0.00
P ₂ O ₅	0.38	0.38	0.38	0.37	0.38	0.34	0.40	0.39	0.43	0.41	0.42	0.27	0.26
L.O.I.	5.12	4.88	1.47	5.72	4.73	8.42	4.05	3.35	3.45	3.89	4.48	13.13	10.84
Mg#	59.90	56.92	55.95	56.94	54.00	52.13	51.63	48.52	49.54	48.46	46.55	49.05	46.43
ASI	1.01	1.05	0.82	0.86	1.05	0.70	1.00	1.02	1.00	0.95	0.91	0.55	0.94
V	118	136	121	123	133	110	118	112	116	108	121	243	268
Cr	200	192	199	162	200	175	67	103	88	52	54	293	300
Co	77	80	70	62	71	61	65	62	65	63	65	141	43
Ni	136	94	84	78	80	64	54	61	60	56	48	94	95
Zn	76	71	76	57	72	65	74	71	72	76	79	62	104
Rb	12	5	11	1	6	2	8	13	11	16	14	0	1
Sr	517	229	537	222	404	466	450	560	439	421	584	337	193
Ba	110	51	250	54	593	434	133	169	290	290	209	72	13
Pb	5	9	5	5	8	5	4	4	3	4	8	4	7
Nb	28	32	30	29	32	31	32	32	32	31	33	11	11
Zr	132	145	142	129	147	160	148	148	146	148	158	190	172
Th	0	3	0	2	1	2	1	1	1	1	0	2	3
Y	20	22	21	20	21	22	23	21	22	21	23	36	42
La	15.95	19.15	13.54	11.93	16.51	16.68	14.63	15.59	14.75	19.45	14.88	22.00	16.3
Ce	41.40	40.02	35.92	35.66	22.20	43.88	43.41	53.97	24.53	39.26	52.03	43.53	37.4
Pr	5.39	n.d.	5.46	n.d.	n.d.	6.26	6.14	n.d.	n.d.	n.d.	6.29	n.d.	5.12
Nd	32.00	n.d.	32.00	n.d.	n.d.	35.00	35.00	n.d.	n.d.	n.d.	37.00	21.78	22.5
Sm	5.30	n.d.	5.40	n.d.	n.d.	5.90	5.80	n.d.	n.d.	n.d.	6.10	n.d.	5.9
Eu	1.86	n.d.	1.90	n.d.	n.d.	2.00	2.12	n.d.	n.d.	n.d.	2.05	n.d.	1.39
Gd	5.11	n.d.	5.30	n.d.	n.d.	5.67	5.70	n.d.	n.d.	n.d.	5.77	n.d.	6.49
Tb	0.86	n.d.	0.87	n.d.	n.d.	0.93	0.89	n.d.	n.d.	n.d.	0.94	n.d.	1.17
Dy	4.84	n.d.	4.73	n.d.	n.d.	5.23	4.93	n.d.	n.d.	n.d.	5.32	n.d.	7.73
Ho	0.87	n.d.	0.91	n.d.	n.d.	0.97	0.96	n.d.	n.d.	n.d.	0.97	n.d.	1.65
Er	2.37	n.d.	2.24	n.d.	n.d.	2.43	2.47	n.d.	n.d.	n.d.	2.51	n.d.	4.71
Tm	0.28	n.d.	0.31	n.d.	n.d.	0.30	0.30	n.d.	n.d.	n.d.	0.33	n.d.	0.64
Yb	1.80	n.d.	1.70	n.d.	n.d.	1.90	1.80	n.d.	n.d.	n.d.	2.00	n.d.	4.4
Lu	0.26	n.d.	0.36	n.d.	n.d.	0.28	0.37	n.d.	n.d.	n.d.	0.26	n.d.	0.7
Hf	4.0	n.d.	4.0	n.d.	n.d.	5.0	4.0	n.d.	n.d.	n.d.	5.0	n.d.	5.00
Ta	2.0	n.d.	2.1	n.d.	n.d.	2.3	2.1	n.d.	n.d.	n.d.	2.4	n.d.	0.70
ΣREE	118.29		59.17			110.65	47.58				38.71		127.43
(La/Yb) _N	7.43		8.18			8.76	8.62				7.79		2.48
Eu/Eu*	1.09		1.08			1.06	1.13				1.06		0.69

AB: Alkali basalt; TB: tholeiitic basalt

Tab. 2.8: Continued

	BM4	MA1	MA3	MA4	MA6	MA7	MA8	MA9	MA11	MA12	MA13	MA14	MA16
	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB	TB
SiO ₂	38.74	43.52	46.92	44.70	41.26	43.43	45.35	47.00	40.59	44.83	42.51	45.26	41.17
TiO ₂	1.78	1.55	1.98	1.66	1.73	1.99	2.15	2.05	2.03	1.87	1.73	1.94	2.12
Al ₂ O ₃	11.91	12.81	12.81	12.53	12.89	11.85	13.41	12.27	12.01	12.72	12.68	12.88	13.22
Fe ₂ O ₃	10.25	13.43	13.13	13.61	14.55	13.51	14.15	13.97	14.04	12.95	12.95	13.06	13.84
MnO	0.53	0.18	0.23	0.22	0.20	0.18	0.23	0.21	0.19	0.17	0.21	0.14	0.25
MgO	4.90	10.80	6.79	9.33	10.80	9.03	9.60	8.36	12.53	8.60	9.39	8.10	9.77
CaO	15.65	6.73	6.51	6.85	7.03	8.35	4.67	5.55	6.93	7.21	8.35	6.64	7.59
Na ₂ O	3.01	3.13	3.94	3.33	3.04	2.59	3.52	3.60	2.53	3.49	3.11	3.31	3.18
K ₂ O	0.00	0.00	0.11	0.00	0.00	0.12	0.00	0.00	0.02	0.00	0.00	0.00	0.00
P ₂ O ₅	0.25	0.27	0.32	0.29	0.29	0.29	0.30	0.39	0.27	0.26	0.26	0.25	0.26
L.O.I.	13.16	7.68	7.26	7.53	8.32	8.65	6.71	6.66	8.85	8.01	8.92	8.43	8.63
Mg#	48.61	61.43	50.61	57.59	59.52	56.98	57.36	54.25	63.88	56.83	58.97	55.15	58.29
ASI	0.62	1.14	1.02	1.07	1.13	0.99	1.34	1.12	1.14	1.04	1.00	1.12	1.09
V	243	217	256	219	242	244	259	229	245	250	232	247	270
Cr	297	293	230	327	333	300	288	276	323	290	297	270	304
Co	136	162	44	165	179	53	168	157	170	54	155	55	165
Ni	91	92	42	96	105	105	81	62	106	99	76	94	58
Zn	79	80	89	86	88	85	82	89	84	86	81	94	91
Rb	0	0	9	1	0	12	0	0	4	1	0	4	1
Sr	207	113	277	292	115	248	119	125	314	128	153	221	207
Ba	39	62	92	120	57	127	65	63	92	21	67	42	77
Pb	14	7	<5	9	6	9	5	6	9	<5	6	6	7
Nb	12	13	14	12	13	11	14	18	13	11	13	11	13
Zr	187	195	209	202	198	181	213	316	221	167	204	170	208
Th	3	4	3	1	3	3	3	4	0	2	2	2	1
Y	36	40	53	50	47	49	41	67	50	47	47	46	52
La	9.02	19.13	18	23.88	15.50	17.5	15.43	24.89	17.68	16.1	16.8	15.18	16.35
Ce	34.87	39.89	43.3	44.80	30.61	41.1	43.04	76.98	54.66	36.7	38.5	15.96	31.97
Pr	n.d.	n.d.	6.15	n.d.	n.d.	5.66	n.d.	n.d.	n.d.	5.1	5.38	n.d.	n.d.
Nd	n.d.	n.d.	27.4	n.d.	n.d.	24.8	n.d.	n.d.	n.d.	22.7	23.9	n.d.	n.d.
Sm	n.d.	n.d.	7	n.d.	n.d.	6.2	n.d.	n.d.	n.d.	6.1	6.1	n.d.	n.d.
Eu	n.d.	n.d.	1.59	n.d.	n.d.	1.49	n.d.	n.d.	n.d.	1.42	1.43	n.d.	n.d.
Gd	n.d.	n.d.	7.94	n.d.	n.d.	6.84	n.d.	n.d.	n.d.	6.71	6.53	n.d.	n.d.
Tb	n.d.	n.d.	1.41	n.d.	n.d.	1.31	n.d.	n.d.	n.d.	1.24	1.2	n.d.	n.d.
Dy	n.d.	n.d.	9.09	n.d.	n.d.	8.37	n.d.	n.d.	n.d.	8.12	7.76	n.d.	n.d.
Ho	n.d.	n.d.	1.94	n.d.	n.d.	1.84	n.d.	n.d.	n.d.	1.8	1.71	n.d.	n.d.
Er	n.d.	n.d.	5.87	n.d.	n.d.	5.28	n.d.	n.d.	n.d.	5.04	4.91	n.d.	n.d.
Tm	n.d.	n.d.	0.78	n.d.	n.d.	0.71	n.d.	n.d.	n.d.	0.69	0.67	n.d.	n.d.
Yb	n.d.	n.d.	5.3	n.d.	n.d.	4.9	n.d.	n.d.	n.d.	4.6	4.6	n.d.	n.d.
Lu	n.d.	n.d.	0.87	n.d.	n.d.	0.75	n.d.	n.d.	n.d.	0.76	0.78	n.d.	n.d.
Hf	n.d.	n.d.	7.00	n.d.	n.d.	6.00	n.d.	n.d.	n.d.	5.00	n.d.	5.00	n.d.
Ta	n.d.	n.d.	0.90	n.d.	n.d.	0.70	n.d.	n.d.	n.d.	0.80	n.d.	0.70	n.d.
ΣREE			124.52			69.56				39.28	58.72		
(La/Yb) _N			2.27			2.39				2.34	2.44		
Eu/Eu*			0.65			0.70				0.68	0.69		

AB: Alkali basalt; TB: tholeiitic basalt.