Appendices

Appendix B.i. (a) Input seismic velocity model for reflectivity method. IASP91 reference model [*Kennett and Engdahl,* 1991].

depth [km]	v_p [km/s]	v_s [km/s]	rho [g/cm^3]	Q_p	Q_s	n (layers)
0	5.8	3.36	2.8	1350	600	0
10	5.8	3.36	2.8	1350	600	1
20	5.8	3.36	2.8	1350	600	1
20	6.5	3.75	3	1350	600	0
35	6.5	3.75	3	1350	600	1
35	8.04	4.47	3.38	1350	600	0
71	8.044	4.483	3.37688	1447	600	4
120	8.05	4.5	3.37091	195	80	8
171	8.192	4.51	3.3671	195	80	5
210	8.3	4.518	3.4	195	80	5
210	8.3	4.522	3.4	362	143	0
271	8.523	4.628	3.46264	365	143	6
371	8.888	4.802	3.51639	370	143	10
410	9.03	4.87	3.54325	372	143	5
410	9.36	5.07	3.72378	366	143	0
450	9.494	5.1548	3.78678	365	143	8
500	9.662	5.2608	3.8498	364	143	8
550	9.83	5.3668	3.91282	363	143	8
600	9.9984	5.4728	3.97584	362	143	8
635	10.116	5.547	3.98399	362	143	6
660	10.2	5.6	3.99214	362	143	6
660	10.79	5.95	4.38071	759	312	0
721	10.9521	6.1083	4.41241	744	312	10
771	11.0756	6.218	4.44316	730	312	8
871	11.2506	6.2929	4.50372	737	312	15
971	11.4172	6.3635	4.56307	743	312	15
1071	11.5761	6.4302	4.62129	750	312	15
1271	11.8732	6.5532	4.7346	761	312	30
1471	12.1469	6.6643	4.84422	770	312	30
1671	12.402	6.7663	4.95073	779	312	30
1871	12.6435	6.8617	5.05469	788	312	30
2071	12.8764	6.9532	5.15669	795	312	30
2271	13.1055	7.0434	5.25729	803	312	30
2471	13.3359	7.1348	5.35706	811	312	30
2571	13.4531	7.1819	5.40681	815	312	15
2671	13.5725	7.2302	5.45657	819	312	15
2771	13.6636	7.2722	5.50642	823	312	15
2871	13.6866	7.297	5.55641	826	312	15
2889	13.6908	7.3015	5.56645	826	312	6
2889	8.009	0.2	9.915	57822	100	0
2971	8.15	0.2	10.043	57822	100	15
3071	8.317	0.2	10.195	57822	100	15
3171	8.477	0.2	10.34	57822	100	15
3271	8.63	0.2	10.478	57822	100	15
3371	8.777	0.2	10.611	57822	100	15
3471	8.917	0.2	10.738	57822	100	15
3571	9.05	0.2	10.859	57822	100	15
3671	9.176	0.2	10.974	57822	100	15
3771	9.295	0.2	11.084	57822	100	15
3871	9.408	0.2	11.189	57822	100	15
3971	9.514	0.2	11.288	57822	100	15
4071	9.614	0.2	11.383	57822	100	15
4171	9.706	0.2	11.473	57822	100	15
4271	9.792	0.2	11.558	57822	100	15
4371	9.871	0.2	11.639	57822	100	15
4471	9.944	0.2	11.716	57822	100	15
4571	10.009	0.2	11.789	57822	100	15
4671	10.068	0.2	11.857	57822	100	15
4771	10.12	0.2	11.922	57822	100	15
4871	10.166	0.2	11.984	57822	100	15
4971	10.204	0.2	12.042	57822	100	15
5071	10.236	0.2	12.096	57822	100	15
5153.9	10.258	0.2	12.703	57822	100	15
5153.9	10.971	3.439	12.703	633	100	0
5171	10.976	3.442	12.703	633	100	15
5271	10.999	3.462	12.753	626	100	15
5371	11.02	3.479	12.798	621	100	15
5471	11.039	3.496	12.834	617	100	15
5571	11.056	3.51	12.875	614	100	15
5671	11.071	3.523	12.907	611	100	15
5771	11.085	3.534	12.935	608	100	15
5871	11.096	3.543	12.959	606	100	15
5971	11.105	3.551	12.978	604	100	15

Appendix B.i. **(b)** Input seismic velocity model (BM3A) for reflectivity method.

depth [km]	v_p [km/s]	v_s [km/s]	rho [g/cm^3]	Q_p	Q_s	n (layers)
0	5.4	3.12	2.6	1350	600	5
4	6	3.47	2.7	1350	600	5
11	6.2	3.58	2.8	1350	600	5
13	6.3	3.64	2.8	1350	600	5
25	6.3	3.64	2.8	1350	600	5
34	8	4.47	3	1350	600	5
71	8.044	4.483	3.37688	1447	600	4
71	7.785	4.21	3.37091	195	80	0
100	7.785	4.21	3.37091	195	80	8
120	7.785	4.21	3.37091	195	80	8
171	7.785	4.21	3.3671	195	80	5
210	7.785	4.21	3.3671	195	80	5
210	8.3	4.522	3.4	362	143	0
271	8.523	4.628	3.46264	365	143	6
371	8.888	4.802	3.51639	370	143	10
410	9.03	4.87	3.54325	372	143	5
410	9.36	5.07	3.72378	366	143	0
450	9.494	5.1548	3.78678	365	143	8
500	9.662	5.2608	3.8498	364	143	8
550	9.83	5.3668	3.91282	363	143	8
600	9.9984	5.4728	3.97584	362	143	8
635	10.116	5.547	3.98399	362	143	6
660	10.2	5.6	3.99214	362	143	6
660	10.79	5.95	4.38071	759	312	0
721	10.9521	6.1083	4.41241	744	312	10
771	11.0756	6.218	4.44316	730	312	8
871	11.2506	6.2929	4.50372	737	312	15
971	11.4172	6.3635	4.56307	743	312	15
1071	11.5761	6.4302	4.62129	750	312	15
1271	11.8732	6.5532	4.7346	761	312	30
1471	12.1469	6.6643	4.84422	770	312	30
1671	12.402	6.7663	4.95073	779	312	30
1871	12.6435	6.8617	5.05469	788	312	30
2071	12.8764	6.9532	5.15669	795	312	30
2271	13.1055	7.0434	5.25729	803	312	30
2471	13.3359	7.1348	5.35706	811	312	30
2571	13.4531	7.1819	5.40681	815	312	15
2671	13.5725	7.2302	5.45657	819	312	15
2771	13.6636	7.2722	5.50642	823	312	15
2871	13.6866	7.297	5.55641	826	312	15
2889	13.6908	7.3015	5.56645	826	312	6
2889	8.009	0.2	9.915	57822	100	0
2971	8.15	0.2	10.043	57822	100	15
3071	8.317	0.2	10.195	57822	100	15
3171	8.477	0.2	10.34	57822	100	15
3271	8.63	0.2	10.478	57822	100	15
3371	8.777	0.2	10.611	57822	100	15
3471	8.917	0.2	10.738	57822	100	15
3571	9.05	0.2	10.859	57822	100	15
3671	9.176	0.2	10.974	57822	100	15
3771	9.295	0.2	11.084	57822	100	15
3871	9.408	0.2	11.189	57822	100	15
3971	9.514	0.2	11.288	57822	100	15
4071	9.614	0.2	11.383	57822	100	15
4171	9.706	0.2	11.473	57822	100	15
4271	9.792	0.2	11.558	57822	100	15
4371	9.871	0.2	11.639	57822	100	15
4471	9.944	0.2	11.716	57822	100	15
4571	10.009	0.2	11.789	57822	100	15
4671	10.068	0.2	11.857	57822	100	15
4771	10.12	0.2	11.922	57822	100	15
4871	10.166	0.2	11.984	57822	100	15
4971	10.204	0.2	12.042	57822	100	15
5071	10.236	0.2	12.096	57822	100	15
5153.9	10.258	0.2	12.703	57822	100	15
5153.9	10.971	3.439	12.703	633	100	0
5171	10.976	3.442	12.703	633	100	15
5271	10.999	3.462	12.753	626	100	15
5371	11.02	3.479	12.798	621	100	15
5471	11.039	3.496	12.834	617	100	15
5571	11.056	3.51	12.875	614	100	15
5671	11.071	3.523	12.907	611	100	15
5771	11.085	3.534	12.935	608	100	15
5871	11.096	3.543	12.959	606	100	15
5971	11.105	3.551	12.978	604	100	15

Appendix B.ii. Velocity models used for forward modelling (Figure B.10).

a) Gräfenberg - *Aichele* [1976]

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	4.0	1.73	5
1	5.6	1.73	5
3	5.8	1.73	5
6	5.9	1.73	5
6	5.5	1.73	0
12.5	5.5	1.73	5
12.5	6.3	1.73	0
14.5	6.3	1.73	5
20	6.4	1.73	5
23	6.9	1.73	5
32	7.2	1.73	5
33	7.2	1.73	5
33	8.2	1.76	0
50	8.3	1.76	5
100	8.3	1.76	1

d) MOKH - *Plešinger et al.* [1994]

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.9	1.73	3
6.5	5.9	1.73	5
6.7	6.5	1.73	5
22.5	6.5	1.73	5
23	6.6	1.73	5
32	6.6	1.73	5
32	8.1	1.79	0
55	8.1	1.79	5
55	7.8	1.79	0
140	7.8	1.79	5
140	8.2	1.79	0

b) GRANU95-shotpoint F - *Enderle et al.* [1998]

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.3	1.73	3
0.5	5.3	1.73	5
0.5	5.8	1.73	0
2	5.8	1.73	5
2	6.4	1.73	0
5	6.5	1.73	5
5	6.4	1.73	0
15.5	6.4	1.73	5
15.5	6.4	1.73	0
24.5	6.4	1.73	5
24.5	7.0	1.73	0
32.7	7.1	1.73	5
32.7	8.0	1.73	0
100	8.0	1.79	1

e) W-Bohemian Massif - *Strößenreuther* [1982]

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.5	1.73	3
2	5.8	1.73	5
4	6.0	1.73	5
11	6.1	1.73	5
11	5.8	1.73	0
13.5	5.8	1.73	5
15.5	6.4	1.73	5
15.5	6.1	1.73	0
23	6.2	1.73	5
27	6.7	1.73	5
29	6.8	1.73	5
30	7.2	1.73	5
33	7.3	1.73	5
33	8.1	1.79	0
40	8.2	1.79	5
100	8.2	1.79	1

c) Vogtland - *Köhler et al.* [1989]

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.0	1.73	5
1	5.6	1.73	5
3	6.0	1.73	5
17	6.3	1.73	5
32	7.1	1.73	5
32	8.0	1.79	0
40	8.2	1.79	5
100	8.2	1.79	1

f) Vogtland - *Schulze and Lück* [1992]

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	4.8	1.73	5
3.5	6.0	1.73	5
8	6.2	1.73	5
8	5.9	1.73	0
17.5	5.9	1.73	5
17.5	6.4	1.73	0
25	6.8	1.73	5
30	8.0	1.79	5
100	8.0	1.79	1

Appendix B.ii. (continued).

g) MVE90 CMP1 - *Behr et al.* [1994]

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.4	1.73	3
1	5.9	1.73	5
2	6.0	1.73	5
2	5.6	1.73	0
5	6.9	1.73	5
6	7.0	1.73	5
6	6.2	1.73	0
13	6.3	1.73	5
13	5.5	1.73	0
14	6.7	1.73	3
14.5	6.9	1.73	3
14.5	6.5	1.73	0
30	6.6	1.73	5
30	7.0	1.73	0
32	7.4	1.73	5
32	7.8	1.79	0
35	8.0	1.79	5
100	8.0	1.79	1

h) MVE90 CMP2 - *Behr et al.* [1994]

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.4	1.73	5
3	5.9	1.73	5
6	6.1	1.73	5
14	5.8	1.73	5
14	6.5	1.73	0
15	7.1	1.73	5
15	6.0	1.73	0
16.5	7.2	1.73	5
16.5	6.1	1.73	0
25	6.6	1.73	5
32	7.2	1.73	5
32	8.0	1.79	0
35	8.0	1.79	5
100	8.0	1.79	1

i) KTB MN - *Schmoll et al.* [1989]

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	4.9	1.73	3
1.5	5.7	1.73	5
3.5	5.8	1.73	5
4	6.0	1.73	5
6	6.1	1.73	5
6	5.7	1.73	0
9.5	5.8	1.73	5
9.5	6.0	1.73	0
12	6.2	1.73	5
15.5	6.2	1.73	5
19	6.9	1.73	5
19	6.3	1.73	0
25	6.3	1.73	5
25	6.7	1.73	0
29.5	7.1	1.73	5
29.5	6.2	1.73	0
32	6.4	1.73	5
32	8.1	1.79	0
36	8.2	1.79	5
100	8.2	1.79	1

Appendix B.iii. Velocity models used for forward modelling (Figure B.14).

a)

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.4	1.73	5
4	6.0	1.73	5
15	6.2	1.73	5
23	6.2	1.73	5
25	6.2	1.73	5
34	8.0	1.79	5
34	8.0	1.79	0
100	8.0	1.79	1

b)

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.4	1.73	5
4	6.0	1.73	5
11	6.2	1.73	5
11	5.7	1.73	0
13	5.7	1.73	5
13	6.3	1.73	0
25	6.3	1.73	5
34	8.0	1.79	5
34	8.0	1.79	0
35	8.0	1.79	5
100	8.0	1.79	1

c)

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.4	1.73	5
4	6.0	1.73	5
7.5	6.2	1.73	5
7.5	7.0	1.73	0
10.5	7.0	1.73	5
10.5	6.2	1.73	0
25	6.3	1.73	5
34	8.0	1.79	5
34	8.0	1.79	0
35	8.0	1.79	5
100	8.0	1.79	1

d)

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.4	1.73	5
4	6.0	1.73	5
5	6.0	1.73	5
15	6.2	1.73	5
23	6.2	1.73	5
25	6.2	1.73	5
33	8.0	1.79	5
40	8.0	1.79	5
43	7.3	1.95	5
48	7.3	1.95	5
49	8.2	1.79	5
100	8.2	1.79	1

e)

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.4	1.73	5
4	6.0	1.73	5
5	6.0	1.73	5
15	6.2	1.73	5
23	6.2	1.73	5
25	6.2	1.73	5
32	7.6	1.79	5
48	7.3	1.79	5
55	8.2	1.79	5
68	8.2	1.79	5
78	7.6	1.79	5
100	7.6	1.79	5

f)

depth [km]	v_p [km/s]	v_p/v_s ratio	n (layers)
0	5.4	1.73	5
4	6.0	1.73	5
11	6.2	1.73	5
11	5.9	1.73	0
13	5.9	1.73	5
13	6.3	1.73	0
23	6.3	1.73	5
25	6.3	1.73	5
32	7.8	1.79	5
48	7.6	1.79	5
55	8.2	1.79	5
68	8.2	1.79	5
78	7.9	1.79	5
100	7.9	1.79	5

Appendix C.i. Whole-rock chemistry (XRF) of the tephra profile Mýtina.

sample	nephelinite					country rock			Mýtina-lower unit								
	My1	My1-B	My2	My2-B	BK-2B	UF-B1	UF-B2	My-base	UT3	UT4	UT5	UT7	UT9	UT10	UT11	UT14	UT20
depth (cm)								420	390	380	370	350	330	320	310	280	220
SiO_2 (wt.%)	40.0	39.8	41.3	41.1	39.4	65.6	61.3	65.4	60.1	58.9	58.5	58.5	59.0	59.0	59.0	57.3	57.5
TiO_2	2.96	2.93	2.90	2.87	2.91	0.96	0.94	1.06	1.30	1.32	1.30	1.39	1.43	1.47	1.47	1.61	1.63
Al_2O_3	11.5	11.4	11.6	11.6	11.3	16.4	19.8	18.0	17.9	18.2	18.6	17.5	17.1	17.0	16.4	15.9	15.8
Fe_2O_3(t)	5.58	5.63	5.68	5.39	7.02	3.32	2.21	6.81	4.37	4.52	4.17	4.50	4.26	4.57	4.05	4.38	4.35
FeO	5.26	5.11	5.05	5.27	4.00	3.64	4.21		3.04	3.20	3.53	3.29	3.40	3.20	3.55	3.60	3.67
MnO	0.19	0.19	0.19	0.19	0.20	0.09	0.05	0.02	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.11	0.11
MgO	13.64	13.70	12.60	12.68	12.25	1.59	1.59	0.50	2.64	2.88	2.87	3.29	3.50	3.67	4.04	4.94	4.99
CaO	12.67	12.54	12.41	12.31	13.15	0.26	0.28	0.22	1.21	1.55	1.44	2.04	2.31	2.51	3.04	4.06	4.07
Na_2O	2.53	2.61	2.30	2.40	3.47	0.95	1.07	0.15	0.90	0.93	0.96	0.90	0.87	0.85	0.82	0.82	0.78
K_2O	1.55	1.53	1.42	1.42	2.17	3.02	4.16	3.46	3.36	3.38	3.46	3.17	3.10	3.03	2.84	2.60	2.47
P_2O_5	0.67	0.72	0.65	0.71	0.76	0.14	0.15	0.13	0.22	0.23	0.23	0.25	0.25	0.26	0.28	0.33	0.34
H_2O	2.21	2.28	2.51	2.75	1.07	3.96	4.09	4.82	4.91	4.95	5.00	4.81	4.62	4.48	4.31	4.35	4.35
CO_2	0.11	0.10	0.11	0.10	0.17	0.06	0.13	0.36	0.12	0.09	0.11	0.10	0.09	0.10	0.08	0.11	0.13
Total	99.38	98.49	99.33	98.78	97.81	99.95	99.93	100.93	100.11	100.22	100.18	99.92	100.00	100.23	100.02	100.11	100.11
Ba (ppm)	780	770	752	738	734	508	638	557	751	777	836	860	1010	1004	703	713	592
Cr	726	735	586	582	495	73	87		147	158	149	174	189	184	192	230	235
Nb		93		91	105	14	16		32	32	31	37	38	37	36	43	44
Rb	61	59	208	208	58	153	193	174	152	156	161	146	151	150	131	119	121
Sr	707	708	681	687	868	79	109	78	135	154	156	185	209	219	184	229	217
V	315	320	316	306	308	103	119		131	142	136	130	134	135	146	167	165
Y	21	22	22	24	23	41	40	29	39	38	35	38	32	30	33	33	32
Zn	70	72	74	75	76	98	83		101	105	105	104	104	106	102	96	94
Zr	225	220	247	243	259	422	216	178	310	286	292	284	282	289	274	273	288

Appendix C.i. (continued).

sample	Mýtina-lower unit			Mýtina-upper unit										
	UT21a	UT21b	UT22	OT1	OT2	OT3	OT4	OT5	OT6	OT7	OT8	OT9	OT10	OT26
depth (cm)	212	208	200	175	165	155	145	135	125	115	105	95	85	160
SiO_2 (wt.%)	55.9	55.4	55.8	49.3	50.5	46.7	50.6	51.2	52.6	48.3	50.9	45.3	49.6	49.4
TiO_2	1.68	1.53	1.66	2.24	2.22	2.16	2.21	2.09	2.12	2.34	2.22	2.50	2.06	2.21
Al_2O_3	16.4	18.4	16.5	14.1	14.0	13.5	14.5	14.2	13.0	13.8	13.9	13.4	15.4	14.2
Fe_2O_3(t)	4.50	5.09	4.71	6.12	5.95	5.73	5.88	5.86	5.76	6.47	6.23	6.16	7.00	6.33
FeO	3.76	3.32	3.60	3.74	3.72	4.65	3.70	3.65	3.56	3.81	3.49	4.17	3.48	3.62
MnO	0.11	0.09	0.11	0.15	0.15	0.16	0.15	0.14	0.15	0.16	0.15	0.16	0.15	0.15
MgO	5.15	3.32	4.98	9.48	9.21	12.32	8.66	9.20	9.21	10.60	9.41	12.14	8.41	9.98
CaO	4.33	2.35	4.02	7.12	7.06	7.34	6.50	6.45	6.91	7.47	6.77	8.70	5.52	6.83
Na_2O	0.80	0.83	0.76	0.73	0.69	1.00	0.72	0.84	0.74	0.66	0.68	0.80	0.66	0.79
K_2O	2.56	3.03	2.55	1.58	1.57	1.69	1.82	1.61	1.42	1.37	1.43	1.26	1.73	1.61
P_2O_5	0.35	0.30	0.34	0.47	0.45	0.46	0.43	0.42	0.45	0.48	0.45	0.48	0.42	0.46
H_2O	4.56	5.79	4.82	4.61	4.42	3.94	4.22	4.17	4.03	4.46	4.39	4.34	5.07	4.31
CO_2	0.12	0.24	0.16	0.21	0.18	0.16	0.18	0.20	0.20	0.24	0.24	0.44	0.56	0.22
Total	100.17	99.76	100.10	99.90	100.06	99.84	99.63	100.12	100.09	100.18	100.18	99.86	100.13	100.03
Ba (ppm)	635	714	666	784	770	834	793	753	746	817	797	765	789	806
Cr	247	179	235	444	432	430	410	441	432	522	456	676	390	484
Nb	45	50	47	67	63	64	63	59	65	69	70	69	61	66
Rb	121	155	125	88	88	113	105	90	98	76	77	61	91	101
Sr	224	170	212	362	366	419	351	349	377	380	359	389	299	372
V	174	181	172	233	226	221	223	223	218	244	223	280	217	223
Y	33	37	34	27	27	26	32	28	25	27	27	26	31	30
Zn	93	98	95	87	88	88	87	87	81	87	85	76	96	88
Zr	287	293	286	251	268	224	269	234	236	247	256	225	231	246

Appendix C.ii. Whole-rock chemistry of crustal xenoliths (XRF, ICP-MS).

sample		quartzitic rocks								
		XKZH4	XKZH8	XKZH5	XKZH53	XKZH64	XKZH6	XKZH54	XKZH55	XKZH58
SiO_2 (wt.%)		100.4	93.1	90.6	89.1	90.4	86.3	85.4	88.7	85.6
TiO_2		0.011	0.418	0.273	0.307	0.191	0.085	0.146	0.124	0.713
Al_2O_3		0.4	3.2	4.5	6.1	3.5	8.4	9.1	5.1	6.2
Fe_2O_3(t)		0.14	2.15	2.16	0.51	1.01	1.41	0.43	1.21	2.97
MnO		0.002	0.018	0.064	0.003	0.024	0.026	<0.004	0.027	0.016
MgO		<0,04	0.09	0.27	0.20	0.18	0.26	0.22	0.14	0.31
CaO		0.07	0.19	0.32	0.10	0.15	0.56	0.11	0.12	0.18
Na_2O		<0,1	<0,1	0.63	<0.1	0.82	1.07	<0.1	0.79	<0.1
K_2O		<0,2	0.64	0.86	1.94	0.37	1.31	2.83	2.32	2.42
P_2O_5		0.017	0.085	0.137	0.054	0.031	0.092	0.053	0.042	0.106
H_2O		0.40	1.13	0.77	1.02	0.58	1.05	1.20	0.71	0.91
CO_2		0.22	0.14	0.12	0.06	0.04	0.16	0.07	0.09	0.08
Total		101.66	101.16	100.70	99.33	97.29	100.72	99.48	99.34	99.46
Cs (ppm)	ICP-MS	0.12	1.19	3.8	2.2	0.74	1.28	2.4	1.69	5.5
Rb	XRF				64	17		93	94	85
	ICP-MS	1.8	33	66	64	22	37	89	95	87
Sr	XRF				10	94		12	116	61
	ICP-MS	2.7	90	143	12	92	161	14	111	63
Ba	XRF				348	160		497	604	486
	ICP-MS	7.8	1342	205	322	141	657	463	555	459
Zr[1)]	XRF				791	337		119	105	1409
	ICP-MS	4.7	276	247	202	68	15	29	36	396
Nb	ICP-MS				7.6	5.7		2.7	4.9	23
Ta	ICP-MS				< 1	< 1		< 1	< 1	3
Th	ICP-MS	0.39	22	12.3	9.9	4.3	1.47	1.7	2.7	37
U	ICP-MS	0.08	2.0	1.6	1.8	0.73	0.35	0.29	0.60	5.5
Pb	ICP-MS	0.61	4.7	4.8	2.3	4.5	22	3.9	15	24
V	XRF				<10	<10		<10	10	33
Cr	XRF				<10	<10		<10	<10	20
Ni	XRF				<10	<10		<10	<10	<10
Zn	XRF				<10	17		<10	27	16
Y	XRF				16	10		<10	<10	42
	ICP-MS	0.29	23	10.5	9.8	5.5	3.3	3.3	6.4	30
La	ICP-MS	0.30	29.6	24.9	18.5	12.7	2.56	7.26	12.7	41.1
Ce	ICP-MS	0.97	62.8	52.7	39.8	27.7	8.69	13.0	30.3	126
Pr	ICP-MS	0.07	7.19	5.73	4.47	2.75	0.59	1.37	2.75	9.98
Nd	ICP-MS	0.32	26.3	19.4	17.4	9.87	2.29	4.74	10.2	35.9
Sm	ICP-MS	0.14	5.26	3.51	3.33	1.73	0.54	0.91	1.90	6.95
Eu	ICP-MS	0.03	0.89	0.68	0.63	0.37	0.39	0.52	0.36	0.98
Gd	ICP-MS	0.11	5.09	2.71	2.86	1.44	0.60	0.73	1.54	5.96
Tb	ICP-MS	0.01	0.75	0.38	0.39	0.19	0.10	0.10	0.21	0.92
Dy	ICP-MS	0.07	4.17	1.92	2.09	1.17	0.58	0.62	1.22	5.55
Ho	ICP-MS	0.01	0.80	0.36	0.34	0.19	0.12	0.11	0.22	1.13
Er	ICP-MS	0.03	2.25	1.01	1.01	0.58	0.34	0.34	0.65	3.41
Tm	ICP-MS	< 0.006	0.34	0.15	0.13	0.08	0.05	0.04	0.08	0.50
Yb	ICP-MS	0.04	2.34	1.10	0.90	0.58	0.35	0.34	0.58	3.52
Lu	ICP-MS	< 0.02	0.34	0.17	0.15	0.08	0.05	0.05	0.08	0.55
Hf	ICP-MS	0.14	8.20	6.82	5.59	1.85	0.45	0.77	0.99	11.5
microscopy		qtz	qtz-m	qtz-m	qtz-m		qtz-m	qtz-m	qtz	qtz-m-o
				fsp-zrn						
				glass?			fsp	fsp	fsp?	zrn

[1)] Discrepancy in Zr (Hf, Th) contents probably due to incomplete decomposition of refractory minerals (ICP-MS).

Appendix C.ii. (continued).

sample		quartzitic rocks								
		XKZH75	XKZH7	XKZH11	XKZH12	XKZH13	XKZH14	XKZH16	XKZH51	XKZH59
SiO_2 (wt.%)		86.4	82.8	83.9	81.4	81.7	79.4	83.6	82.3	84.9
TiO_2		0.517	0.092	0.657	0.780	0.783	0.215	0.650	0.679	1.024
Al_2O_3		5.6	11.0	8.8	8.9	8.4	12.4	8.0	8.2	6.1
Fe_2O_3(t)		4.14	0.71	3.14	4.63	4.22	3.39	2.54	3.60	3.66
MnO		0.034	0.005	0.029	0.025	0.027	0.037	0.032	0.027	0.033
MgO		0.43	0.16	0.19	0.57	0.62	0.64	0.60	0.54	0.32
CaO		0.22	0.30	0.21	0.26	0.16	0.38	0.30	0.17	0.25
Na_2O		0.68	2.26	<0,1	1.10	<0,1	<0,1	<0,1	<0.1	<0.1
K_2O		0.55	1.99	1.76	1.50	3.12	2.02	2.78	2.68	2.01
P_2O_5		0.070	0.156	0.091	0.093	0.091	0.130	0.093	0.091	0.127
H_2O		1.28	0.86	2.36	1.24	1.49	2.31	1.53	1.43	1.02
CO_2		0.07	0.14	0.25	0.09	0.16	0.15	0.23	0.12	0.09
Total		99.91	100.47	101.39	100.59	100.77	101.07	100.36	99.77	99.57
Cs (ppm)	ICP-MS	2.23	1.53	2.02	9.06	6.13	4.54		6.05	2.6
Rb	XRF	31							100	56
	ICP-MS	35	55	51	95	118	68		102	64
Sr	XRF	35							45	70
	ICP-MS	38	49	62	43	56	123		47	71
Ba	XRF	171							514	512
	ICP-MS	161	382	547	350	479	748		476	462
Zr	XRF	695							1063	2304
	ICP-MS	206	18	536	483	947	41		438	476
Nb	ICP-MS	15							22	33
Ta	ICP-MS	2							3	4
Th	ICP-MS	15	1.8	25	25	43	4.0		29	59
U	ICP-MS	2.6	0.53	3.8	4.4	5.6	1.20		4.3	7.4
Pb	ICP-MS	6	10.6	20	6.6	22	17		14	33
V	XRF	36							34	43
Cr	XRF	16							27	29
Ni	XRF	12							15	28
Zn	XRF	59							31	30
Y	XRF	30							37	63
	ICP-MS	20	7.5	36	36	40	15		29	43
La	ICP-MS	37.7	9.82	46.6	53.7	46.8	12.0		49.4	69.1
Ce	ICP-MS	77.0	18.0	99.7	112	133	26.4		108	174
Pr	ICP-MS	8.76	2.06	11.4	13.4	11.6	2.90		11.9	16.1
Nd	ICP-MS	32.4	7.33	40.7	47.9	40.6	10.9		44.0	60.1
Sm	ICP-MS	5.74	1.42	7.95	8.95	7.74	2.59		8.15	11.4
Eu	ICP-MS	1.13	0.83	1.32	1.50	1.09	0.66		1.19	1.45
Gd	ICP-MS	4.83	1.40	7.29	7.47	6.76	3.22		6.70	9.90
Tb	ICP-MS	0.69	0.22	1.07	1.09	1.05	0.49		0.94	1.40
Dy	ICP-MS	3.89	1.34	6.32	6.33	6.47	2.88		5.71	8.16
Ho	ICP-MS	0.73	0.26	1.25	1.25	1.34	0.54		1.09	1.53
Er	ICP-MS	2.15	0.72	3.66	3.66	4.14	1.50		3.24	4.59
Tm	ICP-MS	0.30	0.10	0.55	0.55	0.66	0.21		0.45	0.66
Yb	ICP-MS	2.07	0.67	3.81	3.84	4.67	1.38		3.22	4.48
Lu	ICP-MS	0.30	0.08	0.56	0.57	0.72	0.19		0.48	0.69
Hf	ICP-MS	5.91	0.52	14.3	13.3	24.9	1.25		12.4	13.8
microscopy		qtz-m		qtz-m	qtz-m-mag	qtz-m-mag		qtz-m-mag	qtz-m	qtz-m-o
				zrn?		ms-bt?		ms-bt?		ms-bt?
		fsp?		melt?	grt-st	zrn-am?				zrn

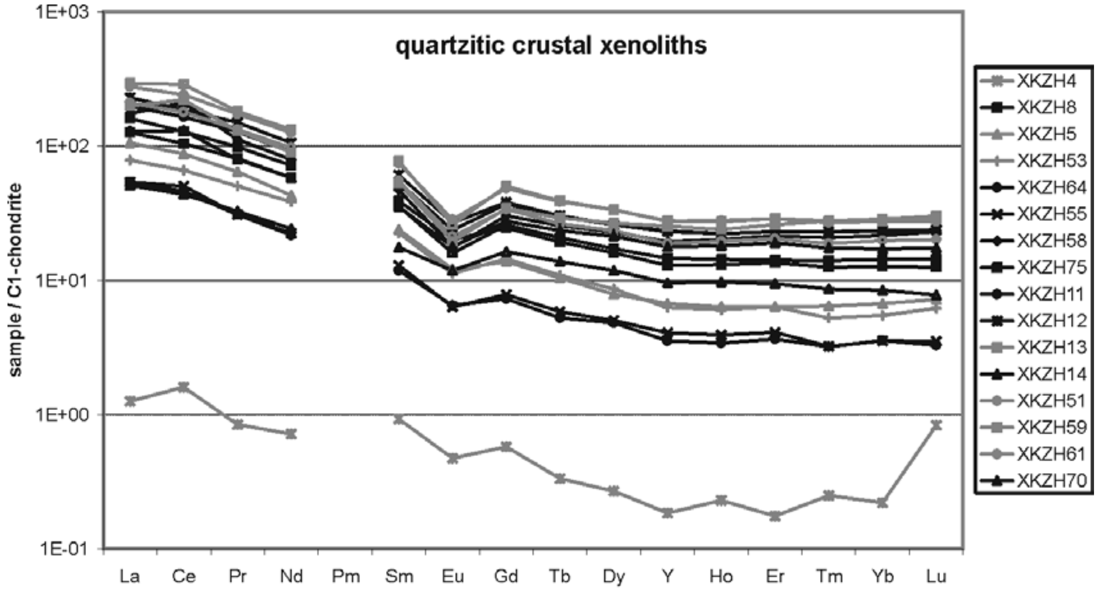
Appendix C.ii. (continued).

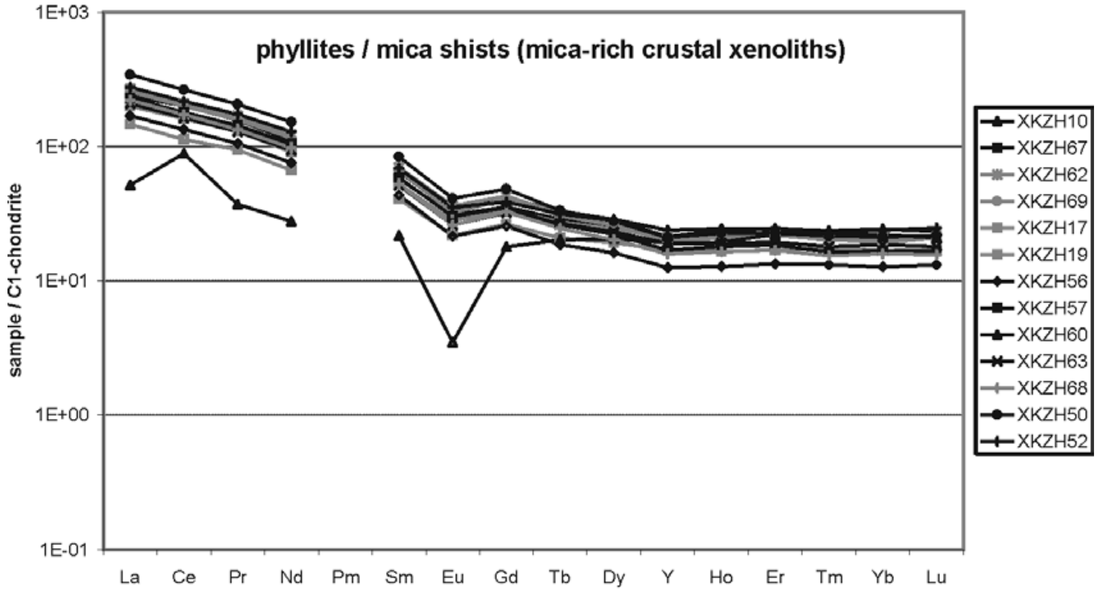
sample		quartzitic rocks				norite	phyllites, mica shists			
		XKZH61	XKZH70	XKZH65	XKZH 66	XKZH1	XKZH10	XKZH67	XKZH62	XKZH69
SiO_2 (wt.%)		83.6	84.3	82.6	83.3	52.2	55.2	57.4	59.9	61.0
TiO_2		0.796	0.524	0.206	0.138	0.281	1.467	1.128	1.093	1.067
Al_2O_3		7.2	6.0	8.6	9.4	21.6	24.7	21.8	21.8	20.2
Fe_2O_3(t)		3.15	4.08	1.23	1.25	5.30	7.47	7.71	6.44	6.16
MnO		0.014	0.075	0.014	0.010	0.091	0.083	0.067	0.046	0.049
MgO		0.37	0.52	0.33	0.39	7.19	1.80	1.60	1.21	1.40
CaO		0.18	0.29	0.35	0.39	9.51	0.42	0.32	0.34	0.33
Na_2O		<0.1	0.64	1.38	1.15	3.00	1.53	1.12	1.52	1.71
K_2O		2.68	1.47	1.82	1.15	0.14	4.48	4.34	4.58	4.09
P_2O_5		0.105	0.121	0.085	0.191	0.027	0.159	0.089	0.117	0.123
H_2O		1.16	1.40	0.96	1.50	0.64	2.75	4.58	3.03	3.98
CO_2		0.08	0.05	0.06	0.13	0.07	0.48	0.05	0.29	0.12
Total		99.34	99.50	97.65	99.04	100.05	100.54	100.21	100.34	100.28
Cs (ppm)	ICP-MS	3.9	12.9	1.1	0.76	0.0	10.2	12.6	12.7	10.2
Rb	XRF	81	90	44	28			215	196	188
	ICP-MS	85	90	44	29	2	136	204	196	198
Sr	XRF	81	87	77	81			144	168	123
	ICP-MS	84	85	70	78	446	129	130	163	123
Ba	XRF	584	252	1011	474			947	784	965
	ICP-MS	573	225	930	434	155	790	853	756	880
Zr	XRF	1727	800	54	52			233	285	279
	ICP-MS	492	437	27	20	6.6	226	182	189	199
Nb	ICP-MS	26	16	7	5			30	30	30
Ta	ICP-MS	4	2	< 1	< 1			4	7	5
Th	ICP-MS	43	17	2.1	2.1	0.05	20	19	21	20
U	ICP-MS	5.7	2.8	0.54	0.64	0.03	3.2	2.7	3.6	3.3
Pb	ICP-MS	22	33	12.4	5.3	1.12	36	23	28	20
V	XRF	42	32	17	13			126	137	109
Cr	XRF	25	23	21	<10			94	90	84
Ni	XRF	<10	13	12	<10			43	31	32
Zn	XRF	23	72	20	14			131	85	87
Y	XRF	60	35	<10	<10			40	42	41
	ICP-MS	43	28	6.0	7.6	3.20	37	32	31	32
La	ICP-MS	65.1	30.5	7.42	11.2	2.41	55.6	54.4	63.3	59.9
Ce	ICP-MS	146	78.4	15.7	19.3	3.96	121	107	126	120
Pr	ICP-MS	15.4	7.07	1.65	2.17	0.45	13.9	12.6	15.1	14.0
Nd	ICP-MS	56.7	26.3	6.22	7.68	1.75	50.0	46.1	55.2	52.3
Sm	ICP-MS	11.0	5.21	1.28	1.58	0.39	9.55	8.45	10.29	9.67
Eu	ICP-MS	1.59	1.00	0.61	0.78	0.57	1.82	1.72	2.02	1.80
Gd	ICP-MS	9.53	5.42	1.30	1.48	0.51	8.20	7.00	8.40	8.01
Tb	ICP-MS	1.38	0.85	0.18	0.23	0.09	1.19	1.03	1.14	1.09
Dy	ICP-MS	8.16	5.19	1.14	1.45	0.54	6.97	6.27	6.28	6.27
Ho	ICP-MS	1.56	1.01	0.21	0.26	0.11	1.36	1.20	1.17	1.17
Er	ICP-MS	4.57	3.02	0.66	0.77	0.35	3.87	3.69	3.47	3.50
Tm	ICP-MS	0.65	0.42	0.09	0.10	0.05	0.56	0.52	0.48	0.49
Yb	ICP-MS	4.48	2.81	0.58	0.64	0.36	3.95	3.43	3.29	3.14
Lu	ICP-MS	0.66	0.42	0.07	0.08	0.06	0.56	0.50	0.50	0.50
Hf	ICP-MS	15.0	11.5	0.74	0.63	0.23	6.37	5.34	5.65	5.92
microscopy		qtz-m-mag ms-bt zrn	qtz-m-o	qtz-m-fsp ms mag	qtz-m-fsp ms mag	fsp-opx phl-cpx-rt mag	m-qtz-mag	m-qtz-mag crd?	m-qtz-mag	m-qtz-mag crd?

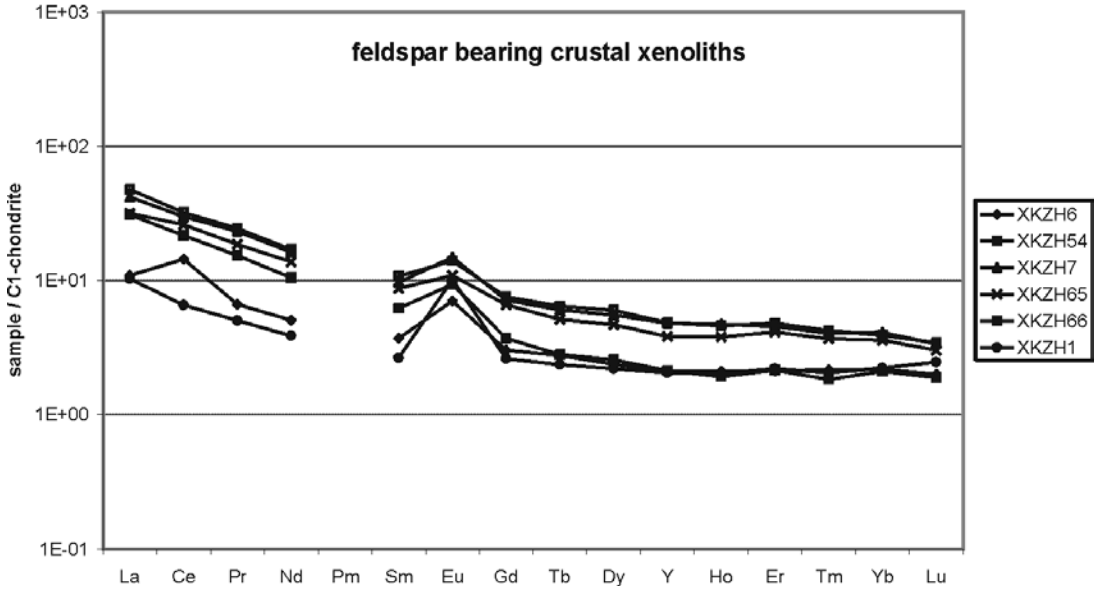
Appendix C.ii. (continued).

sample		phyllites, mica shists						mica shists		?
		XKZH17	XKZH19	XKZH56	XKZH57	XKZH 68	XKZH63	XKZH50	XKZH52	XKZH60
SiO_2 (wt.%)		60.6	70.9	68.9	65.6	74.5	76.3	43.2	41.6	71.5
TiO_2		1.093	0.704	0.799	1.054	0.923	0.840	1.432	1.477	0.261
Al_2O_3		21.6	13.8	13.8	19.3	12.9	10.1	32.0	31.2	17.0
Fe_2O_3(t)		6.54	7.17	7.98	5.52	6.68	6.51	9.23	9.07	1.80
MnO		0.060	0.049	0.044	0.050	0.085	0.066	0.069	0.122	0.011
MgO		0.86	1.48	1.67	0.70	0.74	1.18	1.56	2.02	0.57
CaO		0.35	0.26	0.30	0.31	0.29	0.29	0.39	0.25	0.24
Na_2O		1.24	0.63	2.13	1.68	0.63	0.82	1.33	0.54	<0.1
K_2O		4.22	2.44	2.37	3.10	1.13	1.42	6.63	7.59	5.81
P_2O_5		0.096	0.071	0.074	0.084	0.074	0.074	0.073	0.059	0.136
H_2O		3.90	3.28	2.11	2.81	2.48	2.54	3.92	6.39	2.10
CO_2		0.37	0.17	0.16	0.18	0.06	0.05	0.15	0.07	0.08
Total		100.93	100.95	100.36	100.36	100.52	100.20	99.99	100.33	99.54
Cs (ppm)	ICP-MS	7.4	13.3	11.7	5.8	2.6	5.8	14.4	16.9	10.7
Rb	XRF			164	117	51	96	256	323	295
	ICP-MS	161	158	175	120	50	101	254	269	298
Sr	XRF			117	142	92	69	196	189	41
	ICP-MS	119	100	114	141	90	70	190	168	42
Ba	XRF			428	627	436	571	2079	1371	912
	ICP-MS	694	669	378	569	387	492	1866	1176	881
Zr	XRF			243	281	537	495	263	291	188
	ICP-MS	216	161	107	151	170	210	207	254	104
Nb	ICP-MS			24	31	27	23	45	42	17
Ta	ICP-MS			5	5	4	3	9	7	4
Th	ICP-MS	18	12	15	18	19	18	25	23	15
U	ICP-MS	2.7	2.4	2.4	3.2	3.3	3.6	3.7	3.4	6.5
Pb	ICP-MS	31	17	18	18	6	7	59	28	10
V	XRF			72	108	76	58	204	205	10
Cr	XRF			55	74	48	41	128	135	<10
Ni	XRF			32	28	27	25	40	57	<10
Zn	XRF			121	88	86	113	104	148	40
Y	XRF			29	40	43	39	52	46	45
	ICP-MS	33	27	20	26	25	30	33	33	30
La	ICP-MS	47.0	34.3	39.6	53.9	51.8	49.0	80.4	64.6	12.1
Ce	ICP-MS	97.1	68.1	80.6	108	104	98.8	159	130	53.2
Pr	ICP-MS	11.5	8.39	9.37	12.7	11.9	11.5	18.4	15.4	3.29
Nd	ICP-MS	41.1	30.1	34.2	47.3	44.1	42.2	68.6	58.0	12.6
Sm	ICP-MS	7.74	5.94	6.38	8.63	7.71	7.54	12.3	10.1	3.18
Eu	ICP-MS	1.57	1.22	1.20	1.69	1.46	1.46	2.30	1.97	0.19
Gd	ICP-MS	6.66	5.20	5.01	6.89	6.38	6.31	9.48	7.57	3.52
Tb	ICP-MS	0.99	0.75	0.67	0.94	0.88	0.96	1.20	1.13	0.73
Dy	ICP-MS	5.90	4.65	3.92	5.38	4.89	5.60	6.74	6.82	4.99
Ho	ICP-MS	1.18	0.93	0.71	1.00	0.92	1.06	1.27	1.32	1.08
Er	ICP-MS	3.44	2.68	2.12	2.94	2.69	3.09	3.60	3.89	3.52
Tm	ICP-MS	0.51	0.42	0.32	0.39	0.37	0.43	0.51	0.56	0.54
Yb	ICP-MS	3.53	2.72	2.06	2.72	2.59	3.02	3.46	3.88	3.58
Lu	ICP-MS	0.51	0.41	0.32	0.40	0.37	0.43	0.52	0.59	0.50
Hf	ICP-MS	6.13	4.55	3.13	4.47	4.94	6.17	5.85	7.08	3.67
microscopy		m-qtz-mag	qtz-m-mag	qtz-m-mag	qtz-m-mag	qtz-m	qtz-m	m-grt-qtz-mag	m-qtz-mag	qtz-m
		ms	ms-bt?	ms-bt?				(ms-bt-chl)	crd?	ms-bt?
		crd?-pm		fsp?			fsp?	zrn-crd?	hbl?	fsp?

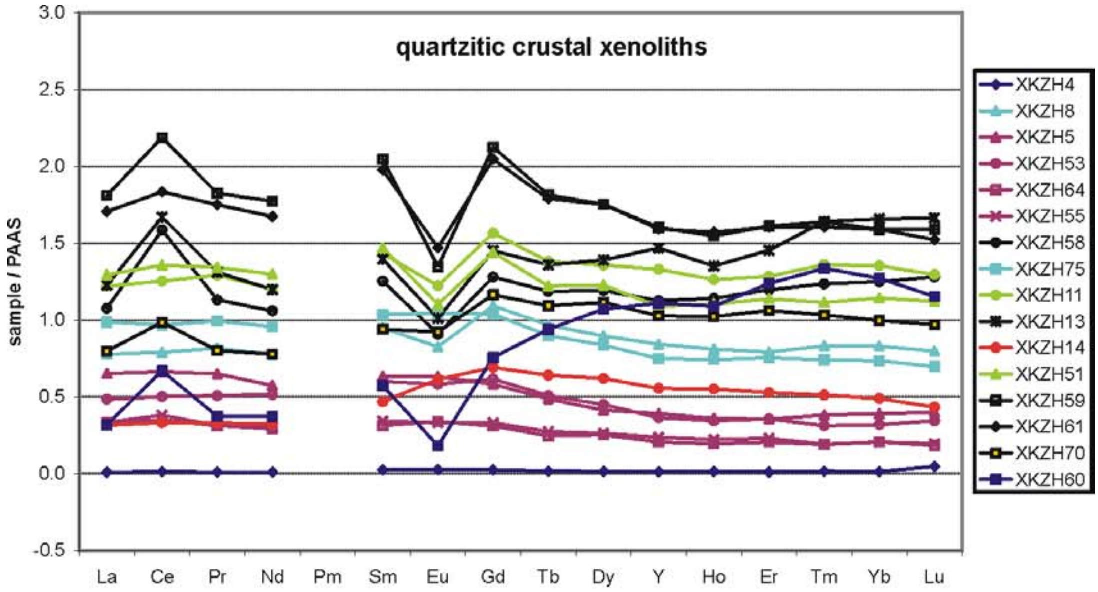
Appendix C.iii. **(a)** Chondrite (C1)-normalised REE patterns of crustal xenoliths from the tephra deposit in Mýtina. REE values of C1-chondrites taken from *Anders and Grevesse* [1989].

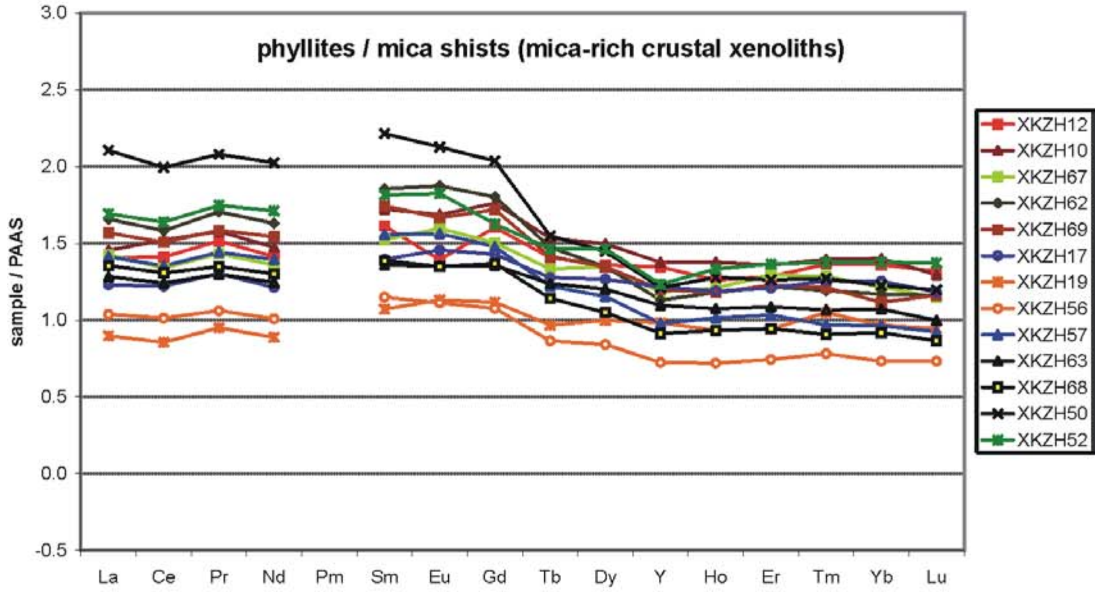


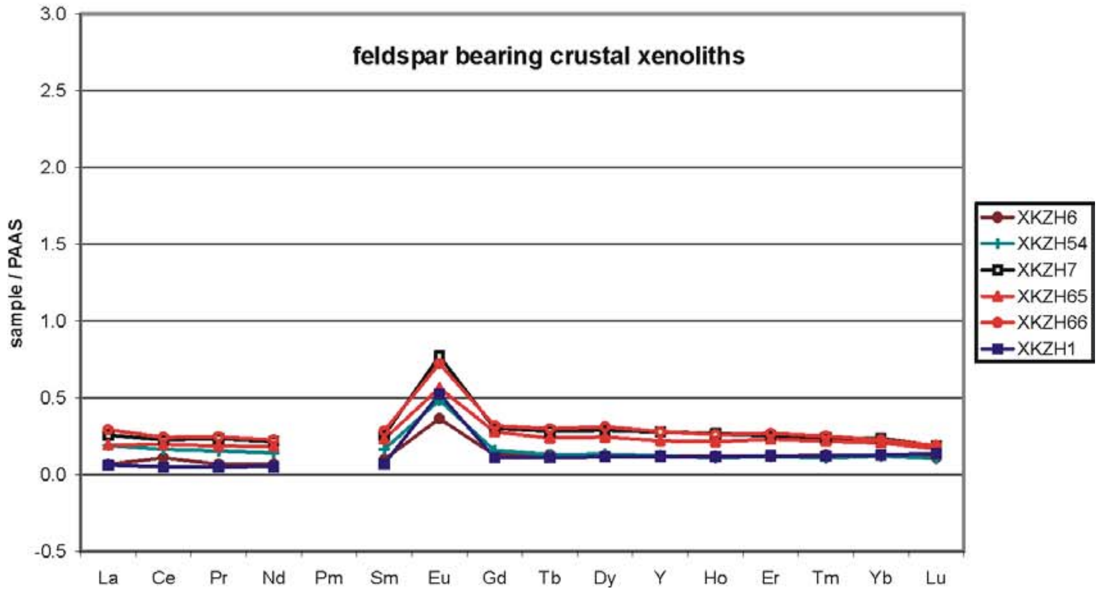




Appendix C.iii. **(b)** Post-Archean Australian Shale (PAAS)-normalised REE patterns of crustal xenoliths from the tephra deposit in Mýtina. REE values of PAAS taken from *McLennann* [1989].







Appendix C.iv. Pressure estimates from clinopyroxenes, calculated with the Excel-worksheet of *Nimis* [1999]. Due to uncertainties in estimating temperatures, pressure was calculated for two different temperature values.

Sample	P(BA) kbar	Temp (°C)	P(BH) kbar	Temp (°C)	P(BH) kbar
peridotites					
MXZH66	7	960	20	1058	15
		1100	13	1150	12
Zinst-1	9	1000	21	1100	16
Go01-1	6	920	20	980	17
wehrlites, ol-cpx cumulates					
MXZH1	7	1000	18	1150	10
MXZH2-cpx1	7	1000	18	1150	10
MXZH2-cpx2	5	1000	15	1150	8
MXZH4	5	1000	15	1150	7
MXZH8	6	1000	17	1150	9
MXZH18-cpx1	6	1050	14	1110	11
MXZH18-cpx2-c	6	1050	14	1110	11
MXZH18-cpx2-r	0	1050	5	1110	2
MXZH61-cpx1-c	6	1100	12	1150	10
MXZH61-cpx1-r	-1	1050	3	1100	0
MXZH61-cpx2	8	1100	14	1150	12
MXZH64-c	6	1060	14	1120	11
MXZH64-r	0	1060	5	1150	1
clinopyroxenites, hornblendites					
MXZH11	0	900	12	1000	7
MXZH5	0	900	13	1000	8
MXZH33	-1	900	10	1000	5
MXZH12	1	930	11	970	9
MXZH13	-1	930	9	1000	6
megacrysts					
MXZH9	7	1000	18	1150	11
MXZH14	7	1000	18	1150	11
MXZH16	8	1000	19	1150	12
MXZH62-cpxold	6	1000	16	1150	8
MXZH62-cpx	8	1000	19	1150	12
MXZH62-cpx-r1	7	1000	18	1150	11
MXZH62-cpx-r2	0	1000	8	1150	1
EB2-cpx-s1	6	1000	17	1150	9
EB2-cpx-s2	7	1000	19	1150	11
EB7	8	1000	19	1150	12
EB6	5	1000	15	1150	8
groundmass					
MXZH8-gm-c	-2	1000	4	1150	-2
MXZH24-gm-c	7	1100	13	1150	11
MXZH24-gm-r	-1	1000	6	1150	-1
MXZH24-glass	-1	1000	7	1150	0
crust xenoliths					
XKZH1	4	800	23	1150	5
XKZH3	5	1000	17	1150	10

Appendix C.v. Results of two-pyroxene geothermometry [*Brey and Köhler,* 1990].

	Go01-1		Zinst-1		XKZH1					
	cpx	opx	cpx	opx		opx-r		opx-c	cpx	opx-x
Si	1.917	1.931	1.931	1.917		1.940		1.942	1.846	1.914
Ti	0.001	0.00	0.009	0.004		0.002		0.003	0.039	0.010
Al	0.167	0.109	0.165	0.147		0.103		0.108	0.247	0.162
Cr	0.027	0.010	0.035	0.021		0.001		0.002	0.005	0.003
Fe^{3+}										
Fe^{2+}	0.080	0.174	0.091	0.164		0.538		0.539	0.229	0.414
Mg	0.920	1.762	0.918	1.700		1.395		1.375	0.788	1.426
Mn	0.003	0.004	0.002	0.004		0.012		0.012	0.004	0.004
Ni										
Ca	0.84	0.019	0.759	0.036		0.014		0.020	0.812	0.057
Ba										
Na	0.060	0.003	0.100	0.010		0.000		0.002	0.045	0.008
K	0.000	0.000	0.000	0.000		0.001		0.000	0.001	0.000
P										
Total	4.014	4.011	4.011	4.001	0.000	4.006	0.000	4.002	4.014	3.998
Mg/(Mg+Fe)	0.92	0.91	0.91	0.91		0.72		0.72	0.77	0.78
K_D	0.109		0.162		1.015		1.020		0.159	
p (kbar)	19		21		6		6		6	
	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)
Ca-in-opx	1195	922	1351	1078	1081	808	1139	866	1398	1125
BKN	1257	984	1378	1105					1239	966
Na-in-cpxopx	1276	1003	1444	1171					1555	1282

Appendix C.vi. Results of olivine-spinel geothermometry.

	Go01-1		Zinst-1		MXZH66		MXZH18		MXZH64		MXZH61		MXZH17		EB5-9		MXZH69-gm	
	ol	sp	ol	sp	ol	sp	ol	sp	ol	sp	ol	sp	ol	sp	ol	sp	ol	sp
Si	0.996	0.00	0.994	0.02	0.978	0.03	0.993	0.03	0.994	0.02	0.988	0.02	0.991	0.03	0.991	0.02	0.986	0.02
Ti	0.000	0.00	0.000	0.11	0.000	0.26	0.000	0.24	0.000	0.25	0.000	0.25	0.000	0.24	0.000	0.25	0.000	0.25
Al	0.000	10.48	0.000	8.55	0.001	10.88	0.001	7.82	0.001	7.54	0.001	8.16	0.001	7.94	0.001	6.37	0.001	8.20
Cr	0.000	4.61	0.001	6.25	0.000	2.50	0.001	6.36	0.001	6.60	0.001	6.00	0.001	6.15	0.001	7.79	0.001	6.01
Fe^{3+}		0.90		1.04		2.26		1.47		1.51		1.50		1.57		1.49		1.46
Fe^{2+}	0.183	1.92	0.183	2.13	0.347	2.82	0.224	2.40	0.222	2.40	0.256	2.41	0.231	2.29	0.217	2.47	0.228	2.38
Mg	1.813	6.00	1.813	5.77	1.681	5.07	1.774	5.52	1.773	5.49	1.751	5.50	1.770	5.61	1.785	5.43	1.782	5.52
Mn	0.003	0.01	0.003	0.02	0.005	0.03	0.002	0.01	0.003	0.02	0.004	0.03	0.004	0.02	0.003	0.02	0.003	0.02
Ni	0.008	0.04	0.008	0.05	0.003	0.03	0.005	0.03	0.005	0.03	0.004	0.03	0.005	0.04	0.005	0.03	0.005	0.04
Ca	0.001	0.00	0.002	0.00	0.004	0.00	0.004	0.00	0.004	0.01	0.004	0.00	0.005	0.00	0.005	0.00	0.005	0.00
Ba																		
Na																		
K																		
P																		
Total	3.004	23.976	3.004	23.937	3.020	23.878	3.005	23.897	3.004	23.880	3.010	23.897	3.007	23.886	3.007	23.881	3.011	23.900
$Mg/(Mg+Fe^{2+})$	0.908	0.758	0.908	0.730	0.829	0.643	0.888	0.697	0.889	0.696	0.872	0.695	0.885	0.710	0.892	0.688	0.887	0.699
X_{Mg}/X_{Fe}	9.905	3.128	9.922	2.705	4.842	1.801	7.911	2.302	7.986	2.286	6.837	2.283	7.677	2.452	8.240	2.202	7.814	2.318
CaO/MgO																		
Cr/(Cr+Al)		0.306		0.422		0.187		0.449		0.467		0.424		0.436		0.550		0.423
$Cr/(Cr+Al+Fe^{3+})$		0.288		0.395		0.160		0.406		0.422		0.383		0.393		0.498		0.383
$Al/(Cr+Al+Fe^{3+})$		0.655		0.540		0.695		0.500		0.482		0.521		0.507		0.407		0.524
$Fe^{3+}/(Cr+Al+Fe^{3+})$		0.056		0.066		0.145		0.094		0.097		0.096		0.100		0.095		0.093
$K_D(Mg/Fe^{2+})$	3.166		3.668		2.688		3.437		3.494		2.995		3.131		3.741		3.371	
p (kbar)	19		21		15		10		10		10		10		10		10	
	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)	T (K)	T (°C)
Roeder et al. [1979]	1339	1066	1328	1055	1563	1290	1445	1172	1449	1176	1575	1302	1543	1270	1456	1183	1439	1166
Ballhaus et al., [1991]	1170	897	1236	963	1219	946	1317	1044	1329	1056	1374	1101	1375	1102	1364	1091	1302	1029
O'Neill and Wall [1987]	1196	923	1276	1003	1331	1058	1381	1108	1393	1120	1459	1186	1443	1170	1435	1162	1364	1091
Fabries [1979]																		
Irvine [1965]	KD_0=	2.530	KD_0=	2.817	KD_0=	1.507	KD_0=	2.360	KD_0=	2.374	KD_0=	2.042	KD_0=	2.098	KD_0=	2.554	KD_0=	2.323
	1268	995	1298	1025	1589	1316	1414	1141	1422	1149	1498	1225	1485	1212	1431	1158	1406	1133
Roeder et al. [1979]	KD_0=	2.830	KD_0=	3.215	KD_0=	2.013	KD_0=	2.848	KD_0=	2.880	KD_0=	2.473	KD_0=	2.563	KD_0=	3.091	KD_0=	2.798
	1202	929	1228	955	1295	1022	1301	1028	1307	1034	1366	1093	1351	1078	1326	1053	1292	1019
O'Neill [1981] - p_{max}	p (kbar)	25		27		24		27		27		27		27		29		27

Appendix C.vii. Results of olivine-clinopyroxene geobarometry [*Köhler and Brey,* 1990]. Temperatures were calculated with different geothermometers [BKN - *Brey and Köhler,* 1990; NW1987 - *O'Neill and Wall,* 1987; *R1979 - Roeder et al.,* 1979] or assumed (T=1150°C).

	Go01-1		Zinst-1		MXZH66		MXZH1		MXZH2				MXZH4		MXZH18		MXZH64	
	ol	cpx	ol	cpx	ol	cpx	ol	cpx	ol1	cpx1	ol2	cpx2	ol1	cpx1	ol	cpx	ol	cpx
Si	0.996	1.917	0.994	1.93	0.978	1.82	0.990	1.87	0.986	1.87	0.988	1.90	0.989	1.90	0.993	1.89	0.994	1.89
Ti	0.000	0.001	0.000	0.01	0.000	0.03	0.000	0.02	0.000	0.02	0.000	0.02	0.000	0.02	0.000	0.02	0.000	0.02
Al	0.000	0.167	0.000	0.17	0.001	0.28	0.001	0.21	0.001	0.23	0.001	0.16	0.001	0.17	0.001	0.18	0.001	0.19
Cr	0.000	0.027	0.001	0.04	0.000	0.00	0.005	0.04	0.001	0.04	0.001	0.03	0.001	0.03	0.001	0.04	0.001	0.04
Fe^{3+}																		
Fe^{2+}	0.183	0.080	0.183	0.09	0.347	0.17	0.228	0.11	0.241	0.12	0.230	0.12	0.239	0.12	0.224	0.11	0.222	0.10
Mg	1.813	0.920	1.813	0.92	1.681	0.81	1.774	0.88	1.771	0.85	1.778	0.92	1.766	0.90	1.774	0.93	1.773	0.88
Mn	0.003	0.003	0.003	0.00	0.005	0.02	0.004	0.00	0.003	0.00	0.003	0.00	0.003	0.00	0.002	0.00	0.003	0.00
Ni	0.008		0.008		0.003		0.005	0.0008	0.004	0.0005	0.004	0.00167	0.004	0.0012	0.005		0.005	
Ca	0.001	0.840	0.002	0.76	0.004	0.82	0.005	0.81	0.004	0.82	0.004	0.80	0.004	0.82	0.004	0.80	0.004	0.81
Ba																		
Na		0.060		0.10		0.07		0.07		0.07		0.06		0.06		0.06	0.002	0.06
K		0.000		0.00		0.00		0.00		0.00		0.00		0.00		0.00	0.000	0.00
P																		
Total	3.004	4.014	3.004	4.011	3.020	4.034	3.012	4.013	3.011	4.012	3.010	4.014	3.008	4.017	3.005	4.018	3.005	4.007
Ca (trace)	0.0010		0.0020		0.0038		0.0045		0.0044		0.0042		0.0044*)		0.0039		0.0039	
Mg/(Mg+Fe)	0.91	0.92	0.91	0.91	0.83	0.82	0.89	0.89	0.88	0.88	0.89	0.88	0.88	0.88	0.89	0.90	0.89	0.89
X_{Mg}/X_{Fe}	9.90		9.92		4.84		7.77		7.35		7.73		7.38		7.91		7.99	
D_{Ca}	0.0012		0.0026		0.0047		0.0055		0.0054		0.0053		0.0054		0.0049		0.0048	
	T (K)	p (kbar)	T (K)	p (kbar)	T (K)	p (kbar)	T (K)	p (kbar)	T (K)	p (kbar)	T (K)	p (kbar)	T (K)	p (kbar)	T (K)	p (kbar)	T (K)	p (kbar)
BKN or assumed	1257	**19**	1378	**21**	1423	**14**	1423	**10**	1423	**10**	1423	**11**	1423	**11**	1423	**13**	1423	**13**
NW1987	1196	**8**	1276	**4**	1331	**-1**									1381	**6**	1393	**9**
R1979	1339	**34**	1328	**12**	1563	**37**									1445	**16**	1449	**18**
Fo	90.3		90.3		82.4		88.0		87.5		88.0		87.6		88.3		88.3	
Wo		44.1		40.6		43.1		43.4		43.9		42.2		42.9		42.0		43.5
En		48.4		49.1		42.9		46.9		45.9		48.3		47.5		49.1		47.3
Fs		4.3		5.0		10.1		6.2		6.5		6.5		6.4		5.8		5.8
Ac		3.2		5.4		3.9		3.5		3.7		3.1		3.2		3.1		3.5

*) - value taken from MXZH2

Appendix C.viii. Results of (clinopyroxene-) amphibole geobarometry.

	MXZH66		MXZH11		MXZH5		MXZH33		MXZH12		MXZH13		XKZH1	
	cpx	am	cpx	am	cpx	am	cpx	am	cpx	am	cpx	am	cpx	am
Si	1.823	5.974	1.804	5.978	1.806	5.949	1.895	6.009	1.839	6.039	1.879	5.961	1.846	6.549
Ti	0.031	0.349	0.053	0.286	0.041	0.265	0.024	0.285	0.045	0.340	0.030	0.343	0.039	0.179
Al	0.280	2.463	0.262	2.364	0.280	2.514	0.156	2.257	0.221	2.287	0.176	2.274	0.247	1.954
Cr	0.004	0.090	0.000	0.002	0.000	0.001	0.000	0.001	0.001	0.000	0.000	0.001	0.005	0.005
Fe^{3+}														
Fe^{2+}	0.173	0.863	0.289	1.796	0.303	1.865	0.217	1.477	0.233	1.459	0.216	1.472	0.229	1.243
Mg	0.814	3.329	0.639	2.637	0.625	2.486	0.738	3.042	0.711	2.894	0.723	2.987	0.788	3.289
Mn	0.019	0.008	0.007	0.026	0.006	0.024	0.004	0.017	0.005	0.015	0.005	0.017	0.004	0.015
Ni					0.001	0.001								
Ca	0.817	1.784	0.915	1.901	0.916	1.925	0.937	1.945	0.915	1.895	0.941	1.952	0.812	1.734
Ba								0.001				0.001		
Na	0.074	0.635	0.088	0.859	0.069	0.668	0.063	0.801	0.075	0.753	0.068	0.748	0.045	0.547
K	0.000	0.413	0.000	0.257	0.000	0.322	0.000	0.285	0.001	0.339	0.000	0.350	0.001	0.101
P														
Total	4.034	15.907	4.056	16.106	4.047	16.021	3.005	16.119	4.044	16.022	4.037	16.105	4.014	15.614
$Mg/(Mg+Fe^{2+})$	0.825	0.794	0.689	0.595	0.674	0.571	0.773	0.673	0.754	0.665	0.770	0.670	0.775	0.726
		p (kbar)		p (kbar)		p (kbar)		p (kbar)		p (kbar)		p (kbar)		p (kbar)
Huckenholz et al., 1992		**15**		**11**		**12**		**5**		**10**		**8**		**6**
Schmidt, 1992		9		8		9		8		8		8		6
Hollister et al., 1987		9		9		9		8		8		8		6
Hammarstrom and Zen, 1986		8		8		9		7		8		8		6
Johnson and Rutherford, 1989		7		7		7		6		6		6		5
													XAb	0.43
													XAn	0.56
$p_{Schmidt}$ (kbar)														6
HB1 - *Holland and Blundy*, 1994													T (°C)	812
HB2 - *Holland and Blundy*, 1994														837
BH - *Blundy and Holland*, 1990														847

Appendix C.ix. p-T estimates for phlogopite-glass pairs after *Righter and Carmichael* [1996].

sample	MXZH24				MXZH69		MXZH21	My1
n	phl1	glass1	phl2	glass2	phl	glass	phl	ON
SiO_2	38.23	41.43	38.61	40.99	38.54	42.42	37.74	39.87
TiO_2	4.70	3.63	4.64	3.65	5.09	3.39	4.25	2.95
Al_2O_3	17.14	15.29	17.12	15.24	17.13	16.34	16.93	11.43
Cr_2O_3	0.12	0.00	0.84	0.01	0.56	0.03	0.03	
Fe_2O_3								5.60
FeO	7.21	9.68	5.53	9.93	5.99	9.10	7.54	5.19
MgO	19.99	5.74	20.76	5.81	21.12	4.54	19.12	13.67
MnO	0.05	0.19	0.02	0.19	0.05	0.21		0.19
NiO	0.08	0.02	0.14	0.00		0.02		
CaO	0.05	15.30	0.03	16.01	0.01	13.86	0.14	12.61
BaO	0.25	0.20	0.27	0.18	0.30	0.16	0.13	0.08
Na_2O	0.72	3.61	0.45	3.79	0.48	4.07	0.67	2.57
K_2O	9.09	3.70	9.57	3.68	8.89	4.71	8.59	1.54
P_2O_5		0.96		1.00		1.01	0.00	0.70
Cl	0.02	0.28	0.03	0.27	0.02	0.30	0.02	
F	0.00	0.03	0.00	0.00	0.00	0.02	0.00	
H_2O	4.26		4.30		4.32			2.25
Total	101.89	99.98	102.28	100.71	102.49	100.13	95.17	98.62
TiO_2/TiO_2		1.295		1.270		1.501		1.443
BaO/BaO		1.287		1.549		1.931		1.723
T (K)		1424		1426		1407		1412
T (°C)		1151		1153		1134		1139
p (kbar) - a_{H2O} =1		*8*		*6*		*4*		*6*

Appendix C.x. Density measurements on xenolith hand specimen using the weigh method.

sample	mass [g]			density [g/cm³]			volume [cm³]		porosity [%]
	dry sample	dipped in H_2O	H_2O saturated	fluid	bulk sample	sample matrix	sample	pore space	
mantle									
MXZH 67[1]	24.80	17.80	25.50	1.0000	*3.22*	*3.54*	7.70	0.70	9.1
MXZH 27[2]	77.60	52.50	80.30	1.0000	2.79	3.09	27.80	2.70	9.7
MXZH 32[2]	50.40	34.20	50.90	1.0000	3.02	3.11	16.70	0.50	3.0
MXZH 1[3]	82.05	57.03	87.68	0.9989	2.67	3.28	30.69	5.64	18.4
MXZH 2[3]	15.94	11.12	16.77	0.9989	2.82	3.30	5.66	0.83	14.7
MXZH 3[3]	31.62	21.74	33.72	0.9989	2.64	3.20	11.99	2.10	17.5
MXZH 4[3]	36.86	25.77	39.31	0.9989	2.72	3.32	13.55	2.45	18.1
MXZH 8[3]	20.60	14.25	22.09	0.9989	2.62	3.24	7.85	1.50	19.1
MXZH 19[3]	101.17	71.07	105.38	0.9989	2.95	3.36	34.35	4.22	12.3
crust									
XKZH 5[2]	23.70	14.50	23.90	1.0000	2.52	2.58	9.40	0.20	2.1
XKZH 12[2]	66.80	42.40	67.30	1.0000	2.68	2.74	24.90	0.50	2.0
XKZH 52[2]	343.30	222.70	347.50	1.0000	2.75	2.85	124.80	4.20	3.4
XKZH 53[2]	255.60	159.50	257.20	1.0000	2.62	2.66	97.70	1.60	1.6
XKZH 54[2]	347.10	217.70	349.60	1.0000	2.63	2.68	131.90	2.50	1.9
XKZH 55[2]	159.00	98.90	160.50	1.0000	2.58	2.65	61.60	1.50	2.4
XKZH 56[2]	51.90	33.00	52.50	1.0000	2.66	2.75	19.50	0.60	3.1
XKZH 58[2]	178.70	112.90	181.30	1.0000	2.61	2.72	68.40	2.60	3.8
XKZH 59[1]	10.70	6.70	10.90	1.0000	2.55	2.68	4.20	0.20	4.8
XKZH 60[2]	94.10	59.50	96.00	1.0000	2.58	2.72	36.50	1.90	5.2
XKZH 62[2]	80.70	51.30	81.60	1.0000	2.66	2.74	30.30	0.90	3.0
XKZH 63[2]	217.70	137.20	219.10	1.0000	2.66	2.70	81.90	1.40	1.7
XKZH 67[2]	203.00	128.90	205.10	1.0000	2.66	2.74	76.20	2.10	2.8
XKZH 69[2]	156.50	99.10	158.70	1.0000	2.63	2.73	59.60	2.20	3.7
XKZH 70[2]	257.20	162.00	260.30	1.0000	2.62	2.70	98.30	3.10	3.2
XKZH 75[2]	73.90	46.60	74.80	1.0000	2.62	2.71	28.20	0.90	3.2

[1] analyses by T. Schläfke
[2] analyses by C. Cunow and I. Schüler
[3] analyses by C. Karger

Appendix D.i. Elastic properties of mantle minerals, calculations after *Mechie et al.* [1994]. (STP: surface temperature-pressure conditions).

	STP						1.0 GPa 650 °C						2.0 GPa 1000 °C					
	r_0 g/cm^3	v_p km/s	v_s km/s	v_p/v_s	K_s kbar	G kbar	r g/cm^3	v_p km/s	v_s km/s	v_p/v_s	K_s kbar	G kbar	r g/cm^3	v_p km/s	v_s km/s	v_p/v_s	K_s kbar	G kbar
olivine	3.34	8.37	4.86	1.72	129	79	3.31	8.15	4.67	1.75	124	72	3.31	8.08	4.58	1.76	123	70
orthopyroxene	3.28	7.87	4.77	1.65	104	75	3.26	7.70	4.61	1.67	101	69	3.27	7.67	4.55	1.69	102	68
clinopyroxene	3.32	7.81	4.48	1.75	114	66	3.29	7.63	4.33	1.76	110	62	3.29	7.58	4.26	1.78	110	60
spinel	3.62	9.91	5.64	1.76	202	115	3.60	9.76	5.50	1.77	198	109	3.60	9.70	5.42	1.79	197	106
jadeite	3.32	8.76	5.03	1.74	143	84	3.29	8.54	4.84	1.76	137	77	3.29	8.46	4.76	1.78	136	74
garnet																		
pyrop/almandin	3.71	8.95	4.97	1.80	175	92	3.68	8.75	4.85	1.80	166	87	3.68	8.67	4.79	1.81	164	84
grossular	3.60	9.25	5.38	1.72	169	104	3.57	9.04	5.18	1.74	164	96	3.56	8.96	5.09	1.76	163	92
plagioclase (An60)		6.69						6.74						6.85				
amphibole		6.92						7.24						7.62				