Table A1: Identification codes, GPS coordinates, host rocks and petrographic classifications of the studied dykes are shown. The analyzed sectors and matrices for the chemical classification are also indicated. The identification codes of the dykes consist of the name of the alkaline province, followed by the type of the host rock or region in the province (see the text). The letter(s) after the main code designate(s) the sector sampled. BE is the layer of the dike adjacent to the host rock, B is located in the border of the dyke, I is the intermediate sector between the border and the center of the body, and C is the central region.

						Analysis	
				Classification		Whole rock	Matrix (H)
Dyke	Location	Host rock	Sector	Petrographic	Chemical		
APG	22J0794101/ 7255729	syenogranite [1]	BE	lamprophyre (monchiquite)	tephrite		
			B		tephrite	x	x (tephrite)
			I1		tephrite	x	x (tephrite)
			I2		tephrite	x	
			C		basanite	x	
SM-U	23K0495405/7405428	foliated granite [2]	BE1	lamprophyre (monchiquite)	basanite	x	
			BE2		basanite	x	
			B1		basanite	x	
			B2		basanite	x	
			C		basanite	x	
SM-PN	23K422454/7478475	clinopyroxenite or olivine melanograbbo [3]		lamprophyre (camptonite)	tephrite	x	x (tephrite)
SM-B	23k486199/7368789	charnockite or syenite [4]	B	olivine basalt	basanite	x	
			C		basanite	x*	

* whole-rock analysis = matrix (absent macrocrysts)

[1] Menezes *et al* . (2015), [2] Garda *et al* ., (1995), [3] Azzone *et al* . (2009), [4] Alves and Gomes (2001)

Table A2: Whole-rock compositions of the dykes (APG, SM-U, SM-PN and SM-B). BE is the layer adjacent to the host rock, B is the border of the body, I is the intermediate region between the border and the center, and C is the central region of the dyke. Oxides of major elements were determined by XRF and trace elements by ICP-MS. In parentheses it is found the number of replicate measurements, and SD is the standard deviation. The number in parentheses in the SD column of trace elements indicates the number of replicates. In this case, the results are from AcmeLabs®. Results are presented with 2-4 significant figures.

Dyke	APG		APG		APG		APG	
Sector	B		I1		I2		C	
Oxide/ %	X (1)		X (1)		X (1)		X (1)	
SiO_2	40.76		40.96		41.14		40.04	
TiO_2	4.97		4.97		4.93		3.96	
Al_2O_3	7.16		7.08		7.05		5.82	
Fe_2O_{3t}	16.05		16.18		15.86		15.32	
MnO	0.87		0.59		0.66		0.30	
MgO	7.93		8.65		8.57		13.83	
CaO	12.67		11.85		12.26		11.83	
Na_2O	2.56		2.17		2.26		1.23	
K_2O	2.47		3.02		2.65		2.82	
P_2O_5	0.75		0.76		0.75		0.58	
LOI*	3.56		3.41		3.60		4.16	
Total	99.75		99.64		99.73		99.89	
FeO**	11.70		11.86		11.61		11.33	
Fe_2O_3**	3.05		3.00		2.96		2.73	
mg#***	0.55		0.57		0.57		0.69	
Orthoclase (*or*)	9.33		11.29		12.86		-	
Albite (*ab*)	-		-		-		-	
Anorthite (*an*)	0.79		0.69		1.33		2.15	
Nepheline (*ne*)	12.37		10.48		10.92		5.97	
Diopside (*di*)	49.19		45.58		46.88		42.19	
Olivine (*ol*)	7.20		9.75		8.98		21.27	
Magnetite (*mt*)	4.67		4.58		4.53		4.19	
Ilmenite (*il*)	9.95		9.95		9.87		7.96	
Apatite (*ap*)	1.83		1.86		1.83		1.42	
Leucite (*lc*)	4.75		5.89		2.86		13.83	
Calcium silicate (*cs*)	-		-		-		1.09	
Element / ppm	X (3)	SD (3)	X (2)	SD(2)	X(2)	SD(2)	X(2)	SD(2)
Sc	39.4	2.9	40.3	3.8	39.8	3.1	34.5	3.5
V	415	6(2)	419	(1)	409	(1)	185	(1)
Cr	137	0 (2)	205	(1)	205	(1)	479	(1)
Co	59.3	3(2)	64.7	(1)	59.6	(1)	73.0	(1)
Ni	135	7(2)	170	(1)	170	(1)	460	(1)
Zn	100	0 (2)	90.0	(1)	110	(1)	110	(1)
Rb	95	1	117	2	104	1	117	1
Sr	1174	46	1134	96	1144	87	1022	70
Y	23.0	0.8	22.2	0.3	23.3	0.6	16.0	0.0
Zr	400	7	403	15	394	6	313	6
Nb	98.3	3.6	102	2	100	3	77.7	2.8
Cs	46.0	0.5	33.5	1.1	33.8	0.1	31.0	0.7
Ba	1708	70	1479	82	1390	49	1313	109
La	110	2	110	2	109	3	84.9	2.7
Ce	229	5	230	4	227	5	171	6
Pr	25.2	0.4	25.4	0.2	25.0	0.6	19.2	0.2
Nd	94.5	1.1	95.0	1.4	93.9	0.2	70.6	2.0
Sm	14.6	0.4	14.5	0.2	14.5	0.3	11.0	0.2
Eu	3.91	0.10	3.95	0.04	3.90	0.08	3.02	0.02
Gd	11.0	1.0	11.4	1.4	11.0	1.4	8.56	1.00
Tb	1.26	0.09	1.28	0.09	1.34	0.03	0.965	0.064
Dy	5.64	0.50	5.86	0.29	6.12	0.18	4.45	0.13
Ho	0.905	0.064	0.887	0.052	0.937	0.052	0.630	0.071
Er	2.10	0.25	2.09	0.28	2.27	0.22	1.52	0.30
Tm	0.253	0.031	0.236	0.009	0.257	0.011	0.174	0.020
Yb	1.34	0.06	1.33	0.02	1.49	0.09	1.03	0.02
Lu	0.201	0.003	0.195	0.007	0.203	0.004	0.151	0.001
Hf	9.88	0.10	10.1	0.4	9.76	0.09	7.66	0.05
Ta	6.10	0,28(2)	6.20	(1)	6.50	(1)	5.40	(1)
Th	9.72	0.33	9.07	0.81	9.50	0.15	9.87	0.10
U	2.13	0.16	2.01	0.02	1.94	0.07	2.11	0.13

* loss on ignition, ** FeO and Fe_2O_3 from Fe_2O_{3t}, calculated by MELTS, *** [MgO/(MgO+FeO)], with terms in mol

Dyke	SM-U		SM-U		SM-U		SM-U		SM-PN	
Sector	BE1		BE2		B1		B2			
Oxide/ %	X (2)	SD (2)	X (1)		X (2)	SD (2)	X (1)		X (1)	
SiO_2	41.51	0.25	40.81		41.51	0.01	40.69		43.94	
TiO_2	3.53	0.01	3.33		3.52	0.01	3.24		4.14	
Al_2O_3	13.26	0.06	12.66		13.36	0.01	12.12		15.26	
Fe_2O_{3t}	11.87	0.11	11.69		11.81	0.01	11.75		13.40	
MnO	0.18	0.00	0.17		0.18	0.00	0.17		0.20	
MgO	9.04	0.01	9.98		8.68	0.00	11.01		4.23	
CaO	11.09	0.08	10.86		11.18	0.01	10.27		9.45	
Na_2O	2.99	0.02	2.49		3.00	0.02	2.53		3.64	
K_2O	2.31	0.00	2.39		2.32	0.00	2.36		3.02	
P_2O_5	0.85	0.00	0.79		0.86	0.00	0.77		1.56	
LOI*	3.62	0.01	5.24		3.11	0.04	5.08		0.96	
Total	100.23		100.41		99.52		99.99		99.80	
FeO**	8.75		8.66		8.70		8.72		9.94	
Fe_2O_3**	2.14		2.07		2.14		2.05		2.35	
mg#***	0.65		0.67		0.64		0.69		0.43	
Orthoclase (*or*)	14.27		14.02		14.37		14.66		14.00	
Albite (*ab*)	0.89		-		1.07		-		16.76	
Anorthite (*an*)	16.69		17.31		16.93		15.69		9.49	
Nepheline (*ne*)	13.82		12.12		13.81		12.35		17.18	
Diopside (*di*)	28.20		27.66		28.46		26.65		9.10	
Olivine (*ol*)	13.85		16.33		13.07		18.93		3.49	
Magnetite (*mt*)	3.25		3.19		3.25		3.17		8.05	
Ilmenite (*il*)	7.01		6.71		7.01		6.55		3.70	
Apatite (*ap*)	2.06		1.94		2.09		1.90		-	
Leucite (*lc*)	-		0.76		-		0.15		-	
Calcium silicate (*cs*)	-		-		-		-		-	
Element / ppm	X(4)	SD(4)	X(2)	SD(2)	X(4)	SD(4)	X(3)	SD(3)	X(2)	SD(2)
Sc	21.3	1.0	21.2	0.9	21.1	1.1	19.4	0.3	7.92	1.52
V	262	1(2)	245	(1)	261	1(2)	243	(1)	165	(1)
Cr	171	0 (2)	205	(1)	171	0(2)	239	(1)	34.2	(1)
Co	42.0	4(2)	44.7	(1)	41.5	3,5(2)	46.4	(1)	38.7	(1)
Ni	135	7(2)	180	(1)	125	7(2)	270	(1)	<LLQ	(1)
Zn	90	0,0(2)	90	(1)	95	7,1(2)	100	(1)	130	(1)
Rb	54.4	1.6	51.3	2.2	52.2	1.4	52.0	1.7	69.9	2.0
Sr	1235	14	1333	39	1460	38	1245	19	1436	98
Y	24.2	2.4	26.2	1.8	26.2	2.0	25.0	0.2	36.7	1.0
Zr	265	7	281	8	281	7	256	8	173	240
Nb	72.1	6.3	77.4	4.7	78.1	4.7	70.4	5.3	88.9	0.6
Cs	3.54	0.09	2.46	0.10	2.40	0.02	3.56	0.14	0.985	0.025
Ba	961	7	1015	29	1024	50	918	21	1282	64
La	67.0	1.8	73.0	1.5	74.2	1.3	64.0	2.7	89.0	2.8
Ce	131	3	141	4	145	5	125	4	180	6
Pr	14.8	1.0	16.0	0.9	16.3	0.7	14.9	0.1	21.0	0.4
Nd	58.0	3.5	62.9	2.7	63.6	1.8	57.9	0.3	86.7	1.1
Sm	10.5	1.0	11.5	0.8	11.5	0.5	10.7	0.1	16.3	0.2
Eu	3.25	0.17	3.53	0.13	3.52	0.13	3.24	0.04	4.92	0.08
Gd	8.91	0.40	9.56	0.55	9.79	0.42	8.61	0.46	13.7	0.2
Tb	1.18	0.06	1.26	0.07	1.29	0.03	1.14	0.06	1.80	0.02
Dy	5.69	0.39	6.10	0.37	6.30	0.28	5.72	0.06	8.99	0.27
Ho	0.964	0.104	1.02	0.11	1.05	0.07	0.99	0.02	1.45	0.07
Er	2.20	0.37	2.42	0.26	2.45	0.28	2.36	0.04	3.41	0.22
Tm	0.286	0.037	0.329	0.003	0.314	0.026	0.293	0.008	0.427	0.010
Yb	1.72	0.05	1.80	0.08	1.89	0.10	1.61	0.13	2.29	0.15
Lu	0.237	0.025	0.243	0.033	0.256	0.020	0.239	0.008	0.319	0.027
Hf	6.13	0.15	6.23	0.18	6.33	0.12	5.72	0.11	7.56	0.15
Ta	4.40	0,00(2)	3.70	(1)	4.15	0,20(2)	3.50	(1)	6.00	(1)
Th	6.73	0.34	7.18	0.46	7.38	0.35	6.75	0.06	9.45	0.54
U	1.79	0.16	1.81	0.25	1.86	0.04	1.61	0.03	2.22	0.05

Dyke	SM-B		SM-B	
Sector	B		C	
Oxide/ %	X (1)		X (1)	
SiO_2	41.05		44.89	
TiO_2	4.18		3.37	
Al_2O_3	14.86		14.84	
Fe_2O_{3t}	12.58		10.83	
MnO	0.17		0.16	
MgO	5.62		7.05	
CaO	9.37		8.75	
Na_2O	3.37		3.30	
K_2O	2.10		2.96	
P_2O_5	1.65		1.29	
LOI*	4.44		2.31	
Total	99.39		99.75	
FeO**	9.39		8.05	
Fe_2O_3**	2.14		1.88	
mg#***	0.52		0.61	
Orthoclase (*or*)	13.22		18.12	
Albite (*ab*)	15.39		15.67	
Anorthite (*an*)	20.46		17.54	
Nepheline (*ne*)	8.12		7.18	
Diopside (*di*)	14.34		15.12	
Olivine (*ol*)	12.66		13.84	
Magnetite (*mt*)	3.31		2.83	
Ilmenite (*il*)	8.46		6.63	
Apatite (*ap*)	4.07		3.10	
Leucite (*lc*)	-		-	
Calcium silicate (*cs*)	-		-	
Element / ppm	X(3)	SD(3)	X (2)	SD(2)
Sc	15.8	0.0	17.7	1.8
V	293	(1)	224	(1)
Cr	<LLQ	(1)	103	(1)
Co	31.5	(1)	30.1	(1)
Ni	<LLQ	(1)	100	(1)
Zn	100	(1)	110	(1)
Rb	43.6	1.6	46.1	2.8
Sr	1805	6	2106	53
Y	27.0	0.0	23.6	2.4
Zr	151	0	142	6
Nb	45.3	0.1	40.6	3.9
Cs	0.383	0.000	0.663	0.052
Ba	2348	109	2959	137
La	57.8	0.2	58.5	3.1
Ce	125	0	126	5
Pr	16.4	0.1	15.8	1.2
Nd	69.9	0.1	66.0	5.6
Sm	12.8	0.0	11.8	1.1
Eu	4.57	0.01	4.43	0.53
Gd	9.99	0.39	9.64	0.48
Tb	1.33	0.00	1.21	0.09
Dy	6.31	0.02	5.66	0.49
Ho	1.09	0.01	0.949	0.112
Er	2.61	0.01	2.22	0.29
Tm	0.306	0.005	0.269	0.027
Yb	1.76	0.03	1.57	0.06
Lu	0.258	0.002	0.228	0.011
Hf	3.55	0.22	3.50	0.28
Ta	2.70	(1)	2.90	(1)
Th	3.39	0.01	3.04	0.34
U	0.796	0.004	0.624	0.175

Table A3: Matrix analysis of the dykes (APG, SM-PN). (H) is the analysis of the handpicked matrix by XRF and ICP-MS. The matrix composition of SM-U calculated by mass balance (MB) is also shown. B is the border of the body and I is the intermediate region between the border and the central region of the dyke. In parentheses it is found the number of replicates and SD is the standard deviation. Results are given with 2-4 significant figures. The number in parentheses in the SD column of trace elements indicates the number of replicates. In this case, the results are from AcmeLabs®.

Dyke	APG		APG		SM-PN		SM-U	
Sector	B(H)		I1(H)		(H)		MB	
Oxide/ %	X (1)		X (1)		X(1)			
SiO_2	40.04		41.09		43.84		41.23	0.49
TiO_2	5.12		5.10		4.20		3.78	0.16
Al_2O_3	7.36		7.22		15.38		14.28	0.64
Fe_2O_3t	16.32		16.07		13.43		11.48	0.18
MnO	1.75		0.54		0.20		0.17	0.01
MgO	7.34		7.59		3.93		5.60	1.17
CaO	11.48		12.88		9.31		12.02	0.45
Na_2O	2.43		2.83		3.69		3.06	0.31
K_2O	2.87		2.18		2.99		2.60	0.04
P_2O_5	0.77		0.77		1.58		0.91	0.05
LOI*	3.79		3.33		0.99		4.73	
Total	99.27		99.60		99.54		99.87	
FeO**	11.97		11.69		9.97		8.59	
Fe_2O_3**	3.01		3.08		2.35		1.93	
Mg#***	0.52		0.54		0.41		0.54	
Orthoclase (*or*)	11.72		12.85		14.93		16.30	
Albite (*ab*)	-		-		17.01		-	
Anorthite (*an*)	0.74		0.59		9.27		18.64	
Nepheline (*ne*)	11.83		13.66		16.41		14.87	
Diopside (*di*)	44.70		50.06		8.83		31.28	
Olivine (*ol*)	9.27		5.57		3.49		6.09	
Magnetite (*mt*)	4.64		4.71		8.19		2.97	
Ilmenite (*il*)	10.33		10.20		3.76		7.63	
Apatite (*ap*)	1.90		1.88		-		2.24	
Leucite (*lc*)	4.93		0.56		-		0.03	
Calcium silicate (*cs*)	-		-		-		-	
Element / ppm	X (3)	SD (3)	X (4)	SD (4)	X (3)	SD (3)		
Sc	37.2	3.4	36.8	0.7	6.28	0.08	22.6	1.0
V	441	(1)	431	4(2)	167	(1)	280	11
Cr	103	(1)	137	(1)	34	(1)	177	39
Co	56.0	(1)	59.3	2,9(2)	39.9	(1)	31.7	3.0
Ni	110	(1)	120	(1)	<LLQ	(1)	162	74
Zn	120	(1)	110	(1)	130	(1)	94.1	5.5
Rb	111	2	91.8	1.1	68.0	1.4	58.2	1.5
Sr	1132	64	1179	80	1407	17	1465	116
Y	30.4	1.0	22.3	0.8	37.4	1.5	28.2	1.1
Zr	396	6	413	11	358	11	300	14
Nb	102	4	102	5	91.3	2.0	82.8	4.3
Cs	54.2	1.1	47.8	1.3	0.91	0.10	3.32	0.72
Ba	1518	81	1590	98	1268	57	1088	55
La	114	2	114	3	90.1	2.1	77.3	5.4
Ce	249	18	239	2	182	5	151	10
Pr	26.2	0.3	26.3	0.4	21.7	0.5	17.2	0.8
Nd	97.2	1.0	98.3	0.4	86.9	2.5	67.3	3.4
Sm	15.2	0.36	14.8	0.6	16.4	0.3	12.3	0.6
Eu	4.01	0.17	4.08	0.11	5.00	0.08	3.76	0.18
Gd	12.7	0.7	11.75	0.98	14.2	0.4	10.24	0.61
Tb	1.53	0.01	1.33	0.07	1.83	0.03	1.35	0.07
Dy	7.25	0.10	5.92	0.44	8.94	0.18	6.60	0.33
Ho	1.15	0.08	0.900	0.071	1.47	0.11	1.12	0.04
Er	2.90	0.07	2.20	0.23	3.56	0.14	2.61	0.12
Tm	0.326	0.006	0.255	0.018	0.449	0.021	0.339	0.022
Yb	1.72	0.03	1.43	0.06	2.45	0.06	1.95	0.14
Lu	0.232	0.028	0.203	0.010	0.340	0.019	0.271	0.010
Hf	9.92	0.20	10.5	0.5	7.95	0.25	6.76	0.30
Ta	6.30	(1)	6.75	0.07	5.60	(1)	4.38	0.46
Th	11.3	0.3	10.8	0.4	9.62	0.24	7.79	0.36
U	2.24	0.06	2.53	0.16	2.29	0.10	1.97	0.12

* loss on ignition, ** FeO and Fe_2O_3 from Fe_2O_{3t} calculated by MELTS, *** [MgO/(MgO+FeO)], with terms in mol

Table A4: Olivine composition and structural formula. The analyzed sectors are R (rim) and C (core). Oxides of major elements were determined by EMP and trace elements by LA-ICP-MS. In parentheses it is found the number of replicate measurements, and SD is the standard deviation. LLQ is the lower limit of quantification. Results are given with 2-4 significant figures.

Sample	SM-U-BE2		SM-U-BE2		SM-U-BE2		SM-U-BE2	
Crystal	ol 112a		ol 112a		ol 112b		ol 112b	
Zone	R1		C		R2		C2	
Oxide / %	X(2)	SD (2)	X(2)	SD(2)	X(3)	SD(3)	X(2)	SD(2)
SiO_2	40.08	0.44	40.74	0.01	40.20	0.17	40.70	0.35
FeO	14.66	0.92	11.73	0.10	14.01	0.27	11.68	0.04
MnO	0.25	0.01	0.15	0.01	0.21	0.01	0.16	0.00
MgO	44.29	0.24	46.98	0.32	45.20	0.14	46.98	0.05
CaO	0.45	0.11	0.19	0.03	0.36	0.05	0.21	0.02
NiO	0.14	0.04	0.32	0.01	0.20	0.00	0.32	0.22
Total	99.87		100.10		100.18		100.04	
	Structural formula - 4 oxigens and 3 cations per formula							
Si^{4+}	1.009		1.009		1.005		1.008	
Fe^{2+}	0.309		0.243		0.293		0.242	
Mn^{2+}	0.005		0.003		0.004		0.003	
Mg^{2+}	1.662		1.734		1.684		1.735	
Ca^{2+}	0.012		0.005		0.010		0.005	
Ni^{2+}	0.003		0.006		0.004		0.006	
Mg#	84.3		87.7		85.2		87.8	
Element / ppm	X(1)		X(1)		X(1)		X(1)	
Li	2.49		2.20		5.72		<LLQ	
Na	116		146		144		151	
P	166		86.6		<LLQ		110	
Sc	3.87		3.20		4.85		3.65	
Ti	159		80.3		135		81.6	
V	5.48		7.31		6.75		7.54	
Cr	311		454		541		506	
Co	144		153		180		146	
Cu	1.78		2.56		1.70		2.34	
Zn	79.0		93.4		92.9		77.0	
Rb	<LLQ		<LLQ		<LLQ		<LLQ	
Sr	0.210		<LLQ		0.217		<LLQ	
Y	0.133		<LLQ		<LLQ		<LLQ	
Zr	<LLQ		0.154		<LLQ		<LLQ	
Nb	0.062		<LLQ		<LLQ		<LLQ	
Ba	0.940		<LLQ		<LLQ		<LLQ	
La	<LLQ		<LLQ		<LLQ		<LLQ	
Eu	<LLQ		<LLQ		<LLQ		<LLQ	
Dy	<LLQ		<LLQ		<LLQ		<LLQ	
Er	0.088		<LLQ		<LLQ		<LLQ	
Tm	<LLQ		<LLQ		<LLQ		<LLQ	
Yb	<LLQ		<LLQ		<LLQ		<LLQ	
Hf	<LLQ		<LLQ		<LLQ		<LLQ	
Ta	<LLQ		<LLQ		<LLQ		<LLQ	

* $[Mg/(Mg+Fe^{2+})]$, with terms in *apfu*

Sample	SM-U-BE2		SM-U-BE2		SM-U-BE2	SM-U-B2		SM-U-B2	
Crystal	ol 113b		ol 113a		ol 113b	ol 96		ol 96'	
Zone	R2		C1		C2	C		R	
Oxide / %	X(2)	SD(2)	X(2)	SD(2)	X(1)	X(4)	SD(4)	X (3)	SD(3)
SiO_2	39.99	0.16	40.73	0.14	40.31	40.26	0.11	39.70	0.26
FeO	14.47	0.49	11.70	0.20	13.36	11.89	0.27	13.75	0.12
MnO	0.22	0.03	0.12	0.01	0.22	0.15	0.02	0.22	0.02
MgO	44.95	0.13	46.78	0.37	45.46	47.85	0.26	46.03	0.60
CaO	0.43	0.61	0.19	0.02	0.29	0.19	0.03	0.33	0.33
NiO	0.15	0.04	0.33	0.01	0.23	0.32	0.03	0.21	0.01
Total	100.21		99.86		99.87	100.66		100.24	
	Structural formula - 4 oxigens and 3 cations per formula								
Si^{4+}	1.001		1.011		1.008	0.989		0.988	
Fe^{2+}	0.303		0.243		0.279	0.244		0.286	
Mn^{2+}	0.005		0.003		0.005	0.003		0.005	
Mg^{2+}	1.677		1.732		1.695	1.752		1.708	
Ca^{2+}	0.011		0.005		0.008	0.005		0.009	
Ni^{2+}	0.003		0.007		0.005	0.006		0.004	
Mg#	84.7		87.7		85.8	87.8		85.6	
Element / ppm	X(1)		X(1)		X(1)	X(2)	SD(2)	X(2)	SD(2)
Li	<LLQ		<LLQ		2.46	<LLQ		<LLQ	
Na	107		149		137	137	1	112	4
P	194		143		107	<LLQ		<LLQ	
Sc	4.84		3.29		3.13	3.79	0.49	3.84	1.04
Ti	149		80.8		62.3	107	2	140	13
V	4.59		7.21		5.77	8.28	1.86	5.39	0.08
Cr	210		442		402	446	9	278	48
Co	145		153		128	142	1	145	4
Cu	<LLQ		3.05		2.30	3.37	0.92	<LLQ	
Zn	96.0		103		74.2	83.3	2.7	88.3	0.8
Rb	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Sr	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Y	0.317		0.119		<LLQ	<LLQ		<LLQ	
Zr	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Nb	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Ba	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
La	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Eu	<LLQ		0.029		<LLQ	<LLQ		<LLQ	
Dy	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Er	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Tm	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Yb	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Hf	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	
Ta	<LLQ		<LLQ		<LLQ	<LLQ		<LLQ	

Sample	SM-U-B2		SM-U-B2		SM-U-B2		SM-U-C	
Crystal	ol 96'		ol 96"		ol 96"		ol 63	
Zone	C		R		C		R	
Oxide / %	X(5)	SD(5)	X(4)	SD(4)	X(3)	SD(3)	X(3)	SD(3)
SiO_2	40.17	0.26	39.81	0.56	40.18	0.20	39.96	0.17
FeO	11.61	0.08	14.06	0.22	11.73	0.17	14.48	0.47
MnO	0.14	0.01	0.23	0.02	0.16	0.01	0.22	0.02
MgO	47.85	0.18	45.84	0.23	47.68	0.12	45.38	
CaO	0.19	0.01	0.39	0.03	0.20	0.02	0.34	0.06
NiO	0.31	0.02	0.18	0.02	0.31	0.02	0.19	0.06
Total	100.26		100.51		100.27		100.58	
	Structural formula - 4 oxigens and 3 cations per formula							
Si^{4+}	0.990		0.990		0.991		0.995	
Fe^{2+}	0.239		0.292		0.242		0.302	
Mn^{2+}	0.003		0.005		0.003		0.005	
Mg^{2+}	1.757		1.699		1.753		1.685	
Ca^{2+}	0.005		0.010		0.005		0.009	
Ni^{2+}	0.006		0.004		0.006		0.004	
Mg#	88.0		85.3		87.9		84.8	
Element / ppm	X(2)	SD(2)	X(2)	SD(2)	X(2)	SD(2)	X(1)	
Li	<LLQ		<LLQ		<LLQ		<LLQ	
Na	130	1	92	2	133	4	110	
P	<LLQ		<LLQ		<LLQ		<LLQ	
Sc	3.48	0.69	3.85	0.07	3.46	0.18	<LLQ	
Ti	98	9	142	21	123	4	<LLQ	
V	5.48	0.21	3.75	0.43	6.46	0.33	<LLQ	
Cr	409	41	192	19	492	6	186	
Co	138	6	145	2	147	2	155	
Cu	<LLQ		<LLQ		3.06	0.69	<LLQ	
Zn	78.9	6.0	90.4	5.4	83.5	2.3	116	
Rb	<LLQ		<LLQ		<LLQ		<LLQ	
Sr	<LLQ		<LLQ		<LLQ		<LLQ	
Y	<LLQ		<LLQ		<LLQ		<LLQ	
Zr	<LLQ		<LLQ		<LLQ		<LLQ	
Nb	<LLQ		<LLQ		<LLQ		<LLQ	
Ba	<LLQ		<LLQ		<LLQ		<LLQ	
La	<LLQ		<LLQ		<LLQ		<LLQ	
Eu	<LLQ		<LLQ		<LLQ		<LLQ	
Dy	0.125	0.070	<LLQ		<LLQ		<LLQ	
Er	<LLQ		<LLQ		<LLQ		<LLQ	
Tm	<LLQ		<LLQ		<LLQ		<LLQ	
Yb	<LLQ		<LLQ		<LLQ		<LLQ	
Hf	<LLQ		<LLQ		<LLQ		<LLQ	
Ta	<LLQ		<LLQ		<LLQ		<LLQ	

* $[Mg/(Mg+Fe^{2+})]$, with terms in apfu

Sample	SM-U-C		SM-U-C		SM-U-C	SM-U-C		SM-U-C
Crystal	ol 63'		ol 71		ol 63	ol 72		ol 71
Zone	C		R		R	C		C
Oxide / %	X(4)	SD(4)	X(3)	SD(3)	X(1)	X(3)	SD(3)	X(1)
SiO_2	40.37	0.11	39.78	0.10	39.77	40.15	0.14	40.31
FeO	11.88	0.38	14.98	1.26	14.04	12.60	0.20	11.69
MnO	0.16	0.01	0.27	0.04	0.19	0.15	0.01	0.18
MgO	47.77	0.33	45.10	1.25	45.91	47.05	0.13	47.51
CaO	0.21	0.05	0.40	0.11	0.31	0.20	0.01	0.21
NiO	0.30	0.03	0.14	0.03	0.24	0.29	0.02	0.30
Total	100.69		100.68		100.46	100.43		100.19
	Structural formula - 4 oxigens and 3 cations per formula							
Si^{4+}	0.992		0.992		0.989	0.992		0.995
Fe^{2+}	0.244		0.312		0.292	0.260		0.241
Mn^{2+}	0.003		0.006		0.004	0.003		0.004
Mg^{2+}	1.749		1.677		1.702	1.733		1.748
Ca^{2+}	0.005		0.011		0.008	0.005		0.006
Ni^{2+}	0.006		0.003		0.005	0.006		0.006
Mg#	87.8		84.3		85.4	86.9		87.9
Element / ppm	X(4)	SD(4)	X(2)	SD(2)	X(1)	X(2)	SD(2)	X(1)
Li	<LLQ		3.72	1.24	4.63	<LLQ		<LLQ
Na	158	7	146	13	133	118	118	141
P	320		<LLQ		232	<LLQ		<LLQ
Sc	4.13		5.10	1.14	3.33	<LLQ		<LLQ
Ti	105	26	159	36	133	114	114	93
V	6.64	1.36	5.81	0.85	2.45	10.4	10.4	6.42
Cr	399	70	478	295	129	337	337	500
Co	160	18	160	4	136	164	164	172
Cu	3.28	0.53	3.24	0.82		<LLQ		<LLQ
Zn	89.6	13.0	111	4	76.1	95.4	95.4	104
Rb	<LLQ		<LLQ		0.82	<LLQ		<LLQ
Sr	<LLQ		0.910	0.150	1.76	<LLQ		<LLQ
Y	<LLQ		<LLQ			<LLQ		<LLQ
Zr	<LLQ		<LLQ			<LLQ		<LLQ
Nb	<LLQ		<LLQ			<LLQ		<LLQ
Ba	<LLQ		<LLQ		2.38	<LLQ		<LLQ
La	0.033	0.019	<LLQ			<LLQ		<LLQ
Eu	<LLQ		<LLQ			<LLQ		<LLQ
Dy	<LLQ		<LLQ			<LLQ		<LLQ
Er	<LLQ		<LLQ			<LLQ		<LLQ
Tm	<LLQ		<LLQ			<LLQ		<LLQ
Yb	<LLQ		<LLQ			<LLQ		<LLQ
Hf	0.157	0.092	<LLQ			<LLQ		<LLQ
Ta	<LLQ		<LLQ			<LLQ		<LLQ

* $[Mg/(Mg+Fe^{2+})]$, with terms in apfu

Sample	SM-B-C		SM-B-C		SM-B-C		SM-B-C
Crystal	ol A1		ol A1		ol A2		ol A2
Zone	R		C		R		C
Oxide / %	X(2)	SD(2)	X(1)		X(1)		X(1)
SiO_2	38.34	0.22	38.58		38.79		38.56
FeO	22.52	0.21	22.45		22.52		22.64
MnO	0.48	0.02	0.52		0.48		0.49
MgO	39.39	0.24	39.39		39.29		39.42
CaO	0.24	0.02	0.20		0.23		0.21
NiO	0.00	0.02	0.01		0.01		0.00
Total	100.97		101.14		101.32		101.33
	Structural formula - 4 oxigens and 3 cations per formula						
Si^{4+}	0.987		0.992		0.996		0.990
Fe^{2+}	0.485		0.483		0.484		0.486
Mn^{2+}	0.010		0.011		0.010		0.011
Mg^{2+}	1.511		1.509		1.504		1.508
Ca^{2+}	0.007		0.005		0.006		0.006
Ni^{2+}	0.000		0.000		0.000		0.000
Mg#	75.7		75.8		75.7		75.6
Element / ppm	X(2)	SD(2)	X(3)	SD(3)	X(4)	SD(4)	X(1)
Li	<LLQ		<LLQ		<LLQ		3.00
Na	72.4	2.0	71.9	0.4	70.1	6.3	72.1
P	<LLQ		<LLQ		<LLQ		<LLQ
Sc	4.26	0.12	4.01	0.34	3.88	0.41	3.54
Ti	160	11	148	6	162	15	148
V	3.46	0.37	3.23	0.13	3.21	0.31	2.79
Cr	<LLQ		<LLQ		<LLQ		<LLQ
Co	97.1	10.1	87.8	2.7	96.7	5.4	90.3
Cu	<LLQ		<LLQ		<LLQ		<LLQ
Zn	213	10	226	21	216	7	228
Rb	<LLQ		<LLQ		<LLQ		<LLQ
Sr	<LLQ		<LLQ		<LLQ		<LLQ
Y	0.258	0.025	0.334	0.065	0.280	0.054	0.315
Zr	<LLQ		<LLQ		<LLQ		<LLQ
Nb	<LLQ		<LLQ		<LLQ		<LLQ
Ba	<LLQ		<LLQ		<LLQ		<LLQ
La	<LLQ		<LLQ		<LLQ		<LLQ
Eu	<LLQ		<LLQ		0.045	0.023	<LLQ
Dy	<LLQ		<LLQ		<LLQ		<LLQ
Er	<LLQ		<LLQ		0.059	0.035	<LLQ
Tm	<LLQ		<LLQ		0.050	0.006	0.04
Yb	0.340	0.120	<LLQ		0.260	0.110	0.480
Hf	<LLQ		<LLQ		<LLQ		<LLQ
Ta	0.068	0.025	0.047	0.019	<LLQ		<LLQ

* $[Mg/(Mg+Fe^{2+})]$, with terms in apfu

Table A5: Clinopyroxene composition, structural formula and nomenclature (Morimoto *et al*., 1988). The analyzed sectors are R (rim), I (intermediate) and C (core). Oxides of major elements were determined by XRF and trace elements by LA-ICP-MS. In parentheses it is found the number of replicate measurements, and SD is the standard deviation. LLQ is the lower limit of quantification. Results are given with 2-4 significant figures.

Sample	APG-BE	APG-BE	APG-BE		APG-BE		APG-BE	APG-BE
Crystal	CPX 1	CPX 1	CPX 5		CPX 5		CPX 5'	CPX 5'
Sector	C1	C2	R		C		R1	R2
Oxide / %	X(1)	X (1)	X (2)	SD (2)	X (2)	SD (2)	X (1)	X (1)
SiO_2	52.16	50.10	48.68	0.06	52.03	0.30	45.95	49.48
TiO_2	1.62	2.32	2.96	0.16	1.55	0.02	4.52	2.60
Al_2O_3	1.50	2.69	3.29	0.70	1.45	0.05	4.70	2.38
Cr_2O_3	0.34	0.50	0.06	0.01	0.18	0.07	<LLQ	<LLQ
FeO	5.70	6.30	8.23	0.39	5.49	0.05	9.00	8.18
MnO	<LLQ	0.10	0.18	0.06	0.08	0.02	0.12	0.15
MgO	15.79	14.56	13.33	0.04	15.79	0.14	12.17	14.12
CaO	22.90	22.83	22.78	0.07	23.23	0.12	22.45	22.48
Na_2O	0.22	0.31	0.38	0.03	0.22	0.03	0.53	0.26
Total	100.23	99.71	99.89		100.00		99.44	99.65
	Structural formula - 6 oxigens and 4 cations per formula							
TSi	1.920	1.864	1.821		1.917		1.738	1.852
TAl	0.065	0.118	0.145		0.063		0.209	0.105
TFe^{3+}	0.015	0.019	0.034		0.020		0.053	0.043
ΣT	2.000	2.000	2.000		2.000		2.000	2.000
M1AL	0.000	0.000	0.000		0.000		0.000	0.000
$M1Fe^{3+}$	0.000	0.015	0.039		0.009		0.046	0.020
M1Ti	0.045	0.065	0.083		0.043		0.129	0.073
M1Cr	0.010	0.015	0.002		0.005		0.000	0.000
M1Mg	0.866	0.807	0.743		0.867		0.686	0.788
$M1Fe^{2+}$	0.079	0.098	0.133		0.076		0.140	0.119
M1Mn	0.000	0.000	0.000		0.000		0.000	0.000
ΣM1	1.000	1.000	1.000		1.000		1.000	1.000
M2Mg	0.000	0.000	0.000		0.000		0.000	0.000
$M2Fe^{2+}$	0.086	0.064	0.053		0.064		0.046	0.075
M2Mn	0.000	0.003	0.006		0.003		0.004	0.005
M2Ca	0.903	0.910	0.913		0.917		0.910	0.902
M2Na	0.015	0.023	0.028		0.016		0.039	0.019
M2K	0.000	0.000	0.001		0.001		0.002	0.000
ΣM2	1.000	1.000	1.000		1.000		1.000	1.000
Nomenclature	Diopside	Diopside	Diopside		Diopside		Diopside	Diopside
Mg#*	84.1	83.2	80.0		86.1		78.7	80.3
Element / ppm		X (1)						
Sc		107						
V		73.4						
Cr		1616						
Mn		312						
Co		17.8						
Ni		93.2						
Zn		9.62						
Rb		<LLQ						
Sr		106						
Y		4.09						
Zr		61.4						
Nb		0.560						
Ba		<LLQ						
La		7.20						
Ce		18.2						
Pr		2.89						
Nd		16.7						
Sm		3.06						
Eu		0.820						
Gd		2.29						
Tb		0.290						
Dy		1.32						
Ho		<LLQ						
Er		0.470						
Tm		<LLQ						
Yb		<LLQ						
Lu		<LLQ						
Hf		2.75						
Ta		<LLQ						
Th		<LLQ						
U		<LLQ						

* [Mg/(Mg+Fe2+)], with terms in apfu

Sample	APG-BE	APG-BE		APG-B		APG-B	APG-B	
Crystal	CPX 5'	CPX 5'		CPX 47		CPX 47	CPX 47	
Sector	I	C1		R1		R2	C1	
Oxide / %	X (1)	X (2)	SD (2)	X (1)	X (2)	SD (2)	X (1)	X (2)	SD (2)
SiO_2	51.14	50.24	0.30	51.88	49.03	0.42	51.06	51.28	0.08
TiO_2	0.69	2.37	0.06	1.64	2.50	0.23	2.02	1.81	0.01
Al_2O_3	0.95	2.21	0.01	1.41	3.15	0.08	2.00	2.00	0.02
Cr_2O_3	<LLQ	0.06	0.01	0.18	0.50	0.01	<LLQ	<LLQ	
FeO	16.24	7.08	0.04	5.65	6.91	0.67	7.06	5.88	0.01
MnO	0.41	0.12	0.00	0.13	0.10	0.00	0.14	0.09	0.00
MgO	8.12	14.58	0.01	15.76	14.24	0.45	14.04	14.81	0.15
CaO	19.56	22.67	0.07	23.18	22.97	0.14	23.39	23.48	0.20
Na_2O	2.35	0.25	0.01	0.20	0.34	0.01	0.31	0.30	0.02
Total	99.46	99.57		100.03	99.74		100.02	99.65	
	Structural formula - 6 oxigens and 4 cations per formula								
TSi	1.960	1.875		1.913	1.826		1.899	1.903	
TAl	0.040	0.097		0.061	0.138		0.088	0.087	
TFe^{3+}	0.000	0.028		0.026	0.036		0.013	0.010	
ΣT	2.000	2.000		2.000	2.000		2.000	2.000	
M1AL	0.003	0.000		0.000	0.000		0.000	0.000	
$M1Fe^{3+}$	0.172	0.008		0.005	0.044		0.011	0.018	
M1Ti	0.020	0.067		0.045	0.070		0.057	0.050	
M1Cr	0.000	0.002		0.005	0.015		0.000	0.000	
M1Mg	0.464	0.811		0.866	0.791		0.778	0.819	
$M1Fe^{2+}$	0.341	0.112		0.078	0.081		0.154	0.113	
M1Mn	0.000	0.000		0.000	0.000		0.000	0.000	
ΣM1	1.000	1.000		1.000	1.000		1.000	1.000	
M2Mg	0.000	0.000		0.000	0.000		0.000	0.000	
$M2Fe^{2+}$	0.008	0.072		0.065	0.055		0.041	0.042	
M2Mn	0.013	0.004		0.004	0.003		0.004	0.003	
M2Ca	0.803	0.906		0.916	0.917		0.932	0.934	
M2Na	0.175	0.018		0.015	0.024		0.023	0.022	
M2K	0.001			0.000	0.001		0.000	0.000	
ΣM2	1.000	1.000		1.000	1.000		1.000	1.000	
Nomenclature	Diopside	Diopside		Diopside	Diopside		Diopside	Diopside	
Mg#*	57.1	81.5		85.8	85.4		79.9	84.1	
Element / ppm				X (1)	X (1)		X (1)		
Sc				96.1	132		89.8		
V				58.3	77.0		155		
Cr				1166	2197		18.4		
Mn				313	467		729		
Co				17.3	25.7		31.9		
Ni				99.4	174		83.0		
Zn				9.48	13.1		22.4		
Rb				<LLQ	<LLQ		<LLQ		
Sr				<LLQ	231		386		
Y				100	6.64		18.1		
Zr				4.31	68.0		276		
Nb				44.0	0.780		1.31		
Ba				0.370	1.58		0.630		
La				<LLQ	9.41		24.2		
Ce				5.33	20.8		57.4		
Pr				14.8	3.59		11.4		
Nd				2.61	20.0		59.9		
Sm				14.0	4.69		11.2		
Eu				2.26	1.09		3.16		
Gd				0.870	3.55		6.98		
Tb				2.36	0.390		0.960		
Dy				0.220	2.08		3.71		
Ho				1.30	0.260		0.760		
Er				0.20	0.500		1.30		
Tm				<LLQ	0.070		0.180		
Yb				<LLQ	0.41		0.79		
Lu				<LLQ	0.100		0.180		
Hf				<LLQ	4.45		10.74		
Ta				<LLQ	0.130		0.390		
Th				2.59	0.080		0.210		
U				<LLQ	<LLQ		<LLQ		

Sample	APG-B		APG-B	APG-B	APG-B	APG-B	APG-B	APG-B
Crystal	CPX 47		CPX 47'	CPX 47'	CPX 47'	CPX 48	CPX 48	CPX 48
Sector	C2		C1	C2	C3	R	R2	R3
Oxide / %	X (3)	SD (3)	X (1)	X (1)	X (1)	X (1)	X (1)	X (1)
SiO_2	51.93	0.26	49.79	50.23	51.92	46.68	48.23	49.30
TiO_2	1.50	0.21	2.32	2.15	1.72	3.83	2.80	2.38
Al_2O_3	1.61	0.16	2.63	2.35	1.42	4.08	3.47	3.15
Cr_2O_3	0.14	0.06	0.54	0.30	0.15	<LLQ	<LLQ	0.11
FeO	5.08	0.26	6.18	5.92	5.80	9.66	8.43	7.43
MnO	0.09	0.02	0.11	0.13	0.11	0.22	0.21	0.16
MgO	15.53	0.27	14.54	14.94	15.48	11.92	12.98	13.97
CaO	23.58	0.12	23.10	23.14	22.92	22.65	22.87	21.87
Na_2O	0.24	0.04	0.30	0.28	0.21	0.56	0.49	0.35
Total	99.69		99.51	99.44	99.74	99.60	99.48	98.72
	Structural formula - 6 oxigens and 4 cations per formula							
TSi	1.919		1.855	1.869	1.922	1.766	1.812	1.850
TAl	0.070		0.116	0.103	0.062	0.182	0.154	0.139
TFe^{3+}	0.011		0.029	0.028	0.015	0.053	0.034	0.011
ΣT	2.000		2.000	2.000	2.000	2.000	2.000	2.000
M1AL	0.000		0.000	0.000	0.000	0.000	0.000	0.000
$M1Fe^{3+}$	0.011		0.020	0.022	0.000	0.058	0.065	0.054
M1Ti	0.042		0.065	0.060	0.048	0.109	0.079	0.067
M1Cr	0.004		0.016	0.009	0.005	0.000	0.000	0.003
M1Mg	0.855		0.808	0.829	0.854	0.672	0.727	0.781
$M1Fe^{2+}$	0.088		0.091	0.080	0.093	0.161	0.129	0.094
M1Mn	0.000		0.000	0.000	0.000	0.000	0.000	0.000
ΣM1	1.000		1.000	1.000	1.000	1.000	1.000	1.000
M2Mg	0.000		0.000	0.000	0.000	0.000	0.000	0.000
$M2Fe^{2+}$	0.047		0.052	0.053	0.078	0.034	0.037	0.074
M2Mn	0.003		0.003	0.004	0.003	0.007	0.007	0.005
M2Ca	0.933		0.922	0.922	0.909	0.918	0.921	0.879
M2Na	0.017		0.022	0.020	0.015	0.041	0.036	0.025
M2K	0.000		0.000	0.000	0.001	0.000	0.000	0.016
ΣM2	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Nomenclature	Diopside		Diopside	Diopside	Diopside	Diopside	Diopside	Diopside
Mg#*	86.4		85.0	86.1	83.3	77.5	81.4	82.2
Element / ppm	X (1)		X (1)				X (1)	
Sc	88.0		167				114	
V	104		135				120	
Cr	81.9		3145				1448	
Mn	462		728				543	
Co	24.4		31.7				27.1	
Ni	100		157				157	
Zn	14.6		19.4				16.0	
Rb	<LLQ		2.90				0.800	
Sr	257		276				201	
Y	5.18		11.1				6.79	
Zr	65.0		137				112	
Nb	0.24		1.72				0.910	
Ba	0.370		18.0				1.41	
La	8.22		13.7				10.7	
Ce	21.7		30.6				28.2	
Pr	3.75		5.28				4.68	
Nd	18.7		29.9				21.4	
Sm	3.55		5.50				4.53	
Eu	1.04		1.93				1.27	
Gd	2.31		4.95				2.99	
Tb	0.290		0.480				0.410	
Dy	1.31		2.74				1.94	
Ho	0.220		0.450				0.260	
Er	0.390		0.960				0.650	
Tm	<LLQ		<LLQ				0.120	
Yb	0.300		<LLQ				0.440	
Lu	<LLQ		<LLQ				<LLQ	
Hf	2.71		6.86				5.87	
Ta	<LLQ		0.190				0.150	
Th	0.120		1.19				0.640	
U	<LLQ		0.142				0.070	

Sample	APG-B		APG-B	APG-B		APG-B	APG-B	
Crystal	CPX 48		CPX 48	CPX 48		CPX 48	CPX 48	
Sector	I		C1	C2		C3	C4	
Oxide / %	X (2)	SD (2)	X (1)	X (3)	SD (3)	X (1)	X (4)	SD (4)
SiO_2	50.42	0.02	52.11	50.20	0.29	48.45	50.17	0.12
TiO_2	1.97	0.06	1.37	2.12	0.15	2.93	2.08	0.11
Al_2O_3	2.27	0.16	1.42	2.36	0.01	3.34	2.42	0.07
Cr_2O_3	0.30	0.13	0.29	0.41	0.04	0.09	0.46	0.08
FeO	5.91	0.30	4.66	5.68	0.23	7.15	5.75	0.07
MnO	0.10	0.03	0.08	0.09	0.01	0.11	0.09	0.01
MgO	14.97	0.25	15.59	14.93	0.16	13.87	14.88	0.13
CaO	23.07	0.09	23.37	23.01	0.06	22.93	23.02	0.06
Na_2O	0.27	0.04	0.26	0.26	0.09	0.33	0.28	0.01
Total	99.28		99.15	99.07		99.20	99.15	
	Structural formula - 6 oxigens and 4 cations per formula							
TSi	1.878		1.934	1.874		1.818	1.870	
TAl	0.100		0.062	0.104		0.148	0.106	
TFe^{3+}	0.022		0.004	0.022		0.035	0.024	
ΣT	2.000		2.000	2.000		2.000	2.000	
M1AL	0.000		0.000	0.000		0.000	0.000	
$M1Fe^{3+}$	0.023		0.000	0.013		0.038	0.025	
M1Ti	0.055		0.038	0.060		0.083	0.058	
M1Cr	0.009		0.008	0.012		0.003	0.014	
M1Mg	0.831		0.862	0.831		0.776	0.826	
$M1Fe^{2+}$	0.082		0.091	0.084		0.101	0.077	
M1Mn	0.000		0.001	0.000		0.000	0.000	
ΣM1	1.000		1.000	1.000		1.000	1.000	
M2Mg	0.000		0.000	0.000		0.000	0.000	
$M2Fe^{2+}$	0.057		0.049	0.058		0.051	0.053	
M2Mn	0.003		0.003	0.003		0.003	0.003	
M2Ca	0.921		0.929	0.921		0.922	0.919	
M2Na	0.020		0.019	0.019		0.024	0.020	
M2K	0.000		0.000	0.000		0.000	0.005	
ΣM2	1.000		1.000	1.000		1.000	1.000	
Nomenclature	Diopside		Diopside	Diopside		Diopside	Diopside	
Mg#*	85.7		86.0	85.4		86.3	86.4	
Element / ppm							X (1)	
Sc							153	
V							101	
Cr							2742	
Mn							494	
Co							27.0	
Ni							181	
Zn							14.4	
Rb							<LLQ	
Sr							213	
Y							6.61	
Zr							101	
Nb							0.520	
Ba							<LLQ	
La							8.98	
Ce							23.1	
Pr							3.70	
Nd							20.2	
Sm							5.30	
Eu							1.24	
Gd							3.09	
Tb							0.35	
Dy							1.62	
Ho							0.320	
Er							0.550	
Tm							<LLQ	
Yb							40.0	
Lu							<LLQ	
Hf							5.50	
Ta							0.130	
Th							<LLQ	
U							<LLQ	

Sample	APG-B	APG-B	APG-B	APG-B	APG-B	APG-B	APG-I1	APG-I1	
Crystal	CPX 48 LAT	CPX 48 LAT	CPX 48'	CPX 48'	CPX 48'	CPX 48'	CPX 1	CPX 1	
Sector	R	C	R1	R2	C1	C2	C1	R	
Oxide / %	X (1)	X (1)	X (1)	X (1)	X (1)	X (1)	X (1)	X (3)	SD (3)
SiO_2	47.36	52.29	49.59	50.21	50.01	51.44	51.28	48.72	0.74
TiO_2	3.28	1.27	2.62	2.04	2.30	1.73	1.98	3.14	0.42
Al_2O_3	4.09	1.30	2.31	2.15	2.67	1.58	2.09	3.75	0.44
Cr_2O_3	<LLQ	0.39	<LLQ	<LLQ	0.43	0.39	<LLQ	0.04	0.01
FeO	8.67	4.53	8.10	7.47	6.15	5.59	6.89	8.12	0.37
MnO	0.19	0.09	0.19	0.14	0.12	0.10	0.10	0.12	0.03
MgO	12.73	15.90	13.23	14.30	14.46	15.70	14.61	13.24	0.43
CaO	22.67	23.48	23.16	22.73	22.86	22.95	23.26	23.05	0.04
Na_2O	0.47	0.25	0.42	0.30	0.29	0.22	0.31	0.42	0.04
Total	99.45	99.50	99.62	99.34	99.28	99.69	100.53	100.60	
	Structural formula - 6 oxigens and 4 cations per formula								
TSi	1.783	1.932	1.861	1.879	1.868	1.903	1.892	1.809	
TAl	0.181	0.057	0.102	0.095	0.118	0.069	0.091	0.164	
TFe^{3+}	0.036	0.012	0.037	0.026	0.014	0.028	0.017	0.027	
ΣT	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	
M1AL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
$M1Fe^{3+}$	0.066	0.004	0.022	0.028	0.011	0.006	0.020	0.046	
M1Ti	0.093	0.035	0.074	0.057	0.065	0.048	0.055	0.088	
M1Cr	0.000	0.012	0.000	0.000	0.013	0.011	0.000	0.001	
M1Mg	0.714	0.876	0.740	0.798	0.805	0.866	0.804	0.733	
$M1Fe^{2+}$	0.127	0.074	0.164	0.117	0.107	0.069	0.121	0.132	
M1Mn	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
ΣM1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
M2Mg	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
$M2Fe^{2+}$	0.045	0.050	0.031	0.062	0.060	0.070	0.055	0.047	
M2Mn	0.006	0.003	0.006	0.005	0.004	0.003	0.003	0.004	
M2Ca	0.914	0.929	0.931	0.911	0.915	0.910	0.920	0.917	
M2Na	0.035	0.018	0.030	0.022	0.021	0.015	0.023	0.030	
M2K	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.002	
ΣM2	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Nomenclature	Diopside	Diopside	Diopside	Diopside	Diopside	Diopside	Diopside	Diopside	
Mg#*	80.6	87.6	79.2	81.7	82.8	86.1	82.1	80.4	
Element / ppm									
Sc									
V									
Cr									
Mn									
Co									
Ni									
Zn									
Rb									
Sr									
Y									
Zr									
Nb									
Ba									
La									
Ce									
Pr									
Nd									
Sm									
Eu									
Gd									
Tb									
Dy									
Ho									
Er									
Tm									
Yb									
Lu									
Hf									
Ta									
Th									
U									

Sample	APG-I1	APG-I1		APG-I1	APG-I1	APG-I1		APG-I1	
Crystal	CPX 1	CPX 2		CPX 2	CPX 36	CPX 36		CPX 36	
Sector	C2	R		C	R1	R2		I	
Oxide / %	X (1)	X (2)	SD (2)	X (1)	X (1)	X (3)	SD (3)	X (2)	SD (2)
SiO_2	52.19	47.95	0.25	52.15	49.63	51.23	0.21	51.81	0.37
TiO_2	1.57	3.16	0.25	1.66	2.79	1.92	0.18	1.69	0.06
Al_2O_3	1.50	4.01	0.29	1.62	2.20	1.98	0.22	1.54	0.15
Cr_2O_3	0.38	<LLQ		0.24	0.02	<LLQ		0.32	0.12
FeO	5.63	8.12	0.08	5.69	8.53	6.97	0.28	5.64	0.01
MnO	0.12	0.11	0.02	0.07	0.21	0.11	0.02	0.11	0.01
MgO	15.83	13.09	0.18	15.62	12.94	14.76	0.37	15.72	0.00
CaO	23.32	22.84	0.18	23.31	23.34	23.30	0.13	23.32	0.27
Na_2O	0.21	0.39	0.05	0.24	0.53	0.28	0.04	0.21	0.03
Total	100.75	99.67		100.60	100.18	100.55		100.36	
	Structural formula - 6 oxigens and 4 cations per formula								
TSi	1.911	1.798		1.912	1.855	1.889		1.912	
TAl	0.065	0.025		0.070	0.097	0.086		0.067	
TFe^{3+}	0.024	0.000		0.018	0.048	0.025		0.021	
ΣT	2.000	2.000		2.000	2.000	2.000		2.000	
M1AL	0.000	0.052		0.000	0.000	0.000		0.000	
$M1Fe^{3+}$	0.006	0.000		0.007	0.027	0.025		0.000	
M1Ti	0.043	0.089		0.046	0.078	0.053		0.047	
M1Cr	0.011	0.000		0.007	0.000	0.000		0.009	
M1Mg	0.864	0.732		0.854	0.721	0.811		0.865	
$M1Fe^{2+}$	0.075	0.127		0.086	0.173	0.111		0.079	
M1Mn	0.000	0.000		0.000	0.000	0.000		0.000	
ΣM1	1.000	1.000		1.000	1.000	1.000		1.000	
M2Mg	0.000	0.000		0.000	0.000	0.000		0.000	
$M2Fe^{2+}$	0.067	0.050		0.064	0.019	0.055		0.095	
M2Mn	0.004	0.004		0.002	0.007	0.004		0.003	
M2Ca	0.915	0.918		0.916	0.935	0.921		0.922	
M2Na	0.015	0.028		0.017	0.038	0.020		0.015	
M2K	0.000	0.000		0.001	0.001	0.001		0.000	
ΣM2	1.000	1.000		1.000	1.000	1.000		1.000	
Nomenclature	Diopside	Diopside		Diopside	Diopside	Diopside		Diopside	
Mg#*	85.9	80.5		85.1	79.0	83.1		83.2	
Element / ppm									
Sc									
V									
Cr									
Mn									
Co									
Ni									
Zn									
Rb									
Sr									
Y									
Zr									
Nb									
Ba									
La									
Ce									
Pr									
Nd									
Sm									
Eu									
Gd									
Tb									
Dy									
Ho									
Er									
Tm									
Yb									
Lu									
Hf									
Ta									
Th									
U									

Sample	APG-I1		APG-I1	APG-I1	APG-I1		APG-I1
Crystal	CPX 36'		CPX 36'	CPX 39	CPX 39	CPX 39	
Sector	R		C	R1	R2	C1	C2
Oxide / %	X (2)	SD (2)	X (1)	X (1)	X (1)	X (2)	SD (2)	X (1)
SiO_2	50.46	0.29	50.13	48.07	50.27	52.55	0.06	51.41
TiO_2	2.37	0.01	2.40	3.13	2.32	1.43	0.08	1.77
Al_2O_3	2.20	0.14	2.73	3.89	2.26	1.27	0.02	2.09
Cr_2O_3	<LLQ		0.45	<LLQ	<LLQ	0.31	0.01	0.54
FeO	7.39	0.02	6.33	8.47	7.71	4.95	0.07	5.33
MnO	0.14	0.04	0.15	0.12	0.14	0.09	0.01	0.09
MgO	14.02	0.16	14.68	13.08	14.08	15.99	0.01	15.43
CaO	23.41	0.04	23.14	23.17	23.01	23.63	0.16	23.29
Na_2O	0.38	0.05	0.30	0.41	0.35	0.21	0.00	0.25
Total	100.36		100.30	100.34	100.14	100.43		100.19
	Structural formula - 6 oxigens and 4 cations per formula							
TSi	1.872		1.854	1.792	1.869	1.926		1.894
TAl	0.096		0.229	0.171	0.099	0.055		0.091
TFe^{3+}	0.032		0.027	0.037	0.031	0.019		0.016
ΣT	2.000		2.000	2.000	2.000	2.000		2.000
M1AL	0.000		0.000	0.000	0.000	0.000		0.000
$M1Fe^{3+}$	0.023		0.021	0.063	0.026	0.001		0.010
M1Ti	0.066		0.067	0.088	0.065	0.040		0.049
M1Cr	0.000		0.013	0.000	0.000	0.009		0.016
M1Mg	0.775		0.809	0.727	0.781	0.874		0.847
$M1Fe^{2+}$	0.135		0.090	0.123	0.129	0.077		0.078
M1Mn	0.000		0.000	0.000	0.000	0.000		0.000
ΣM1	1.000		1.000	1.000	1.000	1.000		1.000
M2Mg	0.000		0.000	0.000	0.000	0.000		0.000
$M2Fe^{2+}$	0.038		0.057	0.041	0.054	0.055		0.060
M2Mn	0.004		0.005	0.004	0.004	0.003		0.003
M2Ca	0.930		0.917	0.925	0.917	0.928		0.919
M2Na	0.027		0.021	0.030	0.025	0.015		0.018
M2K	0.000		0.000	0.000	0.000	0.000		0.000
ΣM2	1.000		2.000	1.000	1.000	1.000		1.000
Nomenclature	Diopside		Diopside	Diopside	Diopside	Diopside		Diopside
Mg#*	81.7		84.6	81.6	81.0	86.9		86.0
Element / ppm				X (1)	X (1)	X (1)		
Sc				134	140	118		
V				120	111	79.8		
Cr				1009	2827	2205		
Mn				524	536	463		
Co				30.1	28.4	25.7		
Ni				209	269	227		
Zn				16.0	18.4	13.9		
Rb				<LLQ	7.60	0.700		
Sr				206	187	177		
Y				6.60	5.90	4.00		
Zr				93.0	68.1	34.1		
Nb				0.800	1.20	0.300		
Ba				<LLQ	8.93	<LLQ		
La				10.8	8.18	5.97		
Ce				27.8	20.2	15.9		
Pr				5.06	3.72	2.92		
Nd				24.3	20.1	14.9		
Sm				5.26	5.36	2.90		
Eu				1.11	1.11	0.93		
Gd				3.78	2.67	2.41		
Tb				0.29	0.30	0.270		
Dy				1.44	<LLQ	<LLQ		
Ho				0.240	<LLQ	<LLQ		
Er				0.810	0.580	<LLQ		
Tm				<LLQ	<LLQ	<LLQ		
Yb				<LLQ	<LLQ	<LLQ		
Lu				<LLQ	<LLQ	<LLQ		
Hf				4.22	2.84	1.50		
Ta				<LLQ	<LLQ	<LLQ		
Th				<LLQ	0.390	<LLQ		
U				<LLQ	<LLQ	<LLQ		

Sample	APG-I1		APG-I1	APG-I1	APG-I1	APG-I1	APG-I1	APG-I2	
Crystal	CPX 44		CPX 44'	CPX 44'	CPX 44'	CPX 44'	CPX A	CPX A	
Sector	R		R1	R2	I	C	I1	R	
Oxide / %	X (2)	SD (2)	X (1)	X (1)	X (1)	X (1)	X (1)	X(3)	SD (3)
SiO_2	48.76	0.13	48.14	50.56	51.40	51.93	50.75	48.05	0.45
TiO_2	2.86	0.11	3.11	2.07	1.88	1.53	1.95	3.37	0.19
Al_2O_3	3.58	0.11	3.90	1.72	1.82	1.46	2.43	3.71	0.34
Cr_2O_3	<LLQ		<LLQ	<LLQ	0.03	0.42	0.20	<LLQ	
FeO	8.21	0.12	8.58	8.85	7.02	5.23	6.34	8.48	0.15
MnO	0.12	0.01	0.12	0.23	0.10	0.10	0.08	0.15	0.01
MgO	13.46	0.00	13.05	12.80	14.72	15.85	14.96	12.70	0.19
CaO	23.04	0.12	22.81	23.06	22.49	23.25	23.20	23.06	0.00
Na_2O	0.43	0.02	0.43	0.64	0.56	0.22	0.29	0.52	0.06
Total	100.46		100.14	99.93	100.02	99.99	100.20	100.05	
	Structural formula - 6 oxigens and 4 cations per formula								
TSi	1.811		1.798	1.894	1.903	1.913	1.874	1.799	
TAl	0.157		0.172	0.076	0.079	0.063	0.106	0.164	
TFe^{3+}	0.032		0.030	0.030	0.018	0.023	0.020	0.037	
ΣT	2.000		2.000	2.000	2.000	2.000	2.000	2.000	
M1AL	0.000		0.000	0.000	0.000	0.000	0.000	0.000	
$M1Fe^{3+}$	0.060		0.059	0.036	0.032	0.006	0.033	0.049	
M1Ti	0.080		0.087	0.058	0.052	0.042	0.054	0.095	
M1Cr	0.000		0.000	0.000	0.001	0.012	0.006	0.000	
M1Mg	0.745		0.727	0.715	0.812	0.871	0.823	0.709	
$M1Fe^{2+}$	0.115		0.127	0.191	0.103	0.069	0.084	0.147	
M1Mn	0.000		0.000	0.000	0.000	0.000	0.000	0.000	
ΣM1	1.000		1.000	1.000	1.000	1.000	1.000	1.000	
M2Mg	0.000		0.000	0.000	0.000	0.000	0.000	0.000	
$M2Fe^{2+}$	0.048		0.052	0.021	0.065	0.063	0.059	0.032	
M2Mn	0.004		0.004	0.007	0.003	0.003	0.003	0.005	
M2Ca	0.917		0.913	0.926	0.892	0.918	0.918	0.925	
M2Na	0.031		0.031	0.046	0.040	0.016	0.021	0.038	
M2K	0.000		0.001	0.000	0.000	0.000	0.000	0.000	
ΣM2	1.000		1.000	1.000	1.000	1.000	1.000	1.000	
Nomenclature	Diopside		Diopside	Diopside	Diopside	Diopside	Diopside	Diopside	
Mg#*	82.0		80.2	77.1	82.9	86.8	85.2	79.8	
Element / ppm	X (1)		X (1)	X (1)	X (1)	X (1)		X (1)	
Sc	108		101	18.0	83.0	177		15.0	
V	136		177	310	147	88.5		246	
Cr	279		520	<LLQ	<LLQ	2232		36.0	
Mn	588		677	1677	750	568		959	
Co	31.4		37.5	34.1	41.1	26.0		24.1	
Ni	166		206	<LLQ	185	210		41.0	
Zn	19.5		24.7	46.0	24.9	11.3		37.0	
Rb	3.60		6.50	1.50	1.50	<LLQ		19.3	
Sr	240		290	1171	238	154		436	
Y	8.00		8.50	7.30	8.00	7.30		8.37	
Zr	95.7		127	200	78.2	69.0		145	
Nb	0.900		0.900	2.50	0.700	0.500		5.10	
Ba	7.45		10.7	<LLQ	<LLQ	7.75		15.1	
La	12.0		14.3	13.5	8.56	20.9		14.5	
Ce	29.7		35.3	30.8	26.6	4.09		30.5	
Pr	5.43		5.92	5.03	4.89	24.5		4.49	
Nd	29.0		33.1	22.5	25.5	4.54		20.7	
Sm	5.32		5.94	3.77	5.11	1.39		4.21	
Eu	1.74		2.15	1.21	1.66	3.51		1.08	
Gd	4.37		4.83	3.55	4.18	0.44		3.09	
Tb	0.580		0.590	0.340	0.370	2.05		0.27	
Dy	2.08		2.49	<LLQ	2.70	0.29		1.65	
Ho	0.290		0.340	0.280	0.270	0.910		0.280	
Er	<LLQ		<LLQ	1.04	<LLQ	<LLQ		0.860	
Tm	<LLQ		<LLQ	<LLQ	<LLQ	<LLQ		0.090	
Yb	<LLQ		<LLQ	<LLQ	<LLQ	<LLQ		0.780	
Lu	<LLQ		<LLQ	<LLQ	<LLQ	<LLQ		<LLQ	
Hf	4.69		4.96	6.53	4.55	3.44		5.52	
Ta	<LLQ		<LLQ	<LLQ	<LLQ	<LLQ		0.320	
Th	0.300		0.300	1.28	0.560	<LLQ		3.88	
U	<LLQ		<LLQ	0.31	<LLQ	<LLQ		0.650	

Sample	APG-I2	APG-I2		APG-I2		APG-I2		APG-I2
Crystal	CPX A	CPX A		CPX B		CPX B		CPX B
Sector	I2	C		R		I		C
Oxide / %	X (1)	X (1)		X (2)	SD (2)	X (1)	X (2)	SD (2)
SiO_2	50.15	52.80		50.20	0.40	52.17	51.61	0.14
TiO_2	2.46	1.25		2.09	0.11	1.52	1.90	0.13
Al_2O_3	2.79	1.28		2.33	0.43	1.32	1.63	0.13
Cr_2O_3	0.60	0.28		<LLQ		0.29	0.10	0.05
FeO	6.33	4.81		7.28	0.03	5.41	5.34	0.16
MnO	0.06	0.07		0.11	0.00	0.10	0.07	0.02
MgO	14.68	16.07		14.56	0.17	16.08	15.62	0.09
CaO	23.06	23.52		23.24	0.05	23.30	23.68	0.02
Na_2O	0.32	0.22		0.33	0.03	0.23	0.28	0.03
Total	100.46	100.30		100.13		100.42	100.23	
Structural formula - 6 oxigens and 4 cations per formula								
TSi	1.852	1.935		1.861		1.913	1.898	
TAl	0.121	0.055		0.102		0.057	0.071	
TFe^{3+}	0.027	0.010		0.038		0.030	0.031	
ΣT	2.000	2.000		2.000		2.000	2.000	
M1AL	0.000	0.000		0.000		0.000	0.000	
$M1Fe^{3+}$	0.017	0.004		0.047		0.011	0.014	
M1Ti	0.068	0.035		0.058		0.042	0.052	
M1Cr	0.018	0.008		0.000		0.009	0.003	
M1Mg	0.808	0.878		0.805		0.879	0.856	
$M1Fe^{2+}$	0.089	0.076		0.091		0.059	0.075	
M1Mn	0.000	0.000		0.000		0.000	0.000	
ΣM1	1.000	1.000		1.000		1.000	1.000	
M2Mg	0.000	0.000		0.000		0.000	0.000	
$M2Fe^{2+}$	0.063	0.058		0.050		0.065	0.045	
M2Mn	0.002	0.002		0.003		0.003	0.002	
M2Ca	0.912	0.924		0.923		0.915	0.933	
M2Na	0.023	0.016		0.023		0.016	0.020	
M2K	0.000	0.000		0.000		0.000	0.000	
ΣM2	1.000	1.000		1.000		1.000	1.000	
Nomenclature	Diopside	Diopside		Diopside		Diopside	Diopside	
Mg#*	84.2	86.8		85.1		87.6	87.8	
Element / ppm		X (2)	SD (2)	X (1)			X (1)	
Sc		104	6	108			92.0	
V		72.2	3.6	92.4			88.2	
Cr		2341	338	592			1190	
Mn		476	23	645			548	
Co		31.4	1.4	36.9			34.0	
Ni		307	4	292			291	
Zn		13.4	2.5	19.9			18.4	
Rb		<LLQ		<LLQ			<LLQ	
Sr		171	1	187			297	
Y		2.89	0.11	5.78			3.84	
Zr		22.2	2.7	47.7			27.8	
Nb		<LLQ		<LLQ			<LLQ	
Ba		0.340	0.110	<LLQ			4.16	
La		4.65	0.52	6.74			6.68	
Ce		13.7	1.4	21.1			21.6	
Pr		2.28	0.07	3.71			3.50	
Nd		12.6	0.7	18.2			21.4	
Sm		2.20	0.54	3.85			2.67	
Eu		0.680	0.011	1.24			0.780	
Gd		1.98	0.37	3.13			2.25	
Tb		0.175	0.037	0.370			0.170	
Dy		0.880	0.198	1.74			1.82	
Ho		<LLQ		0.200			0.180	
Er		<LLQ		0.490			0.53	
Tm		<LLQ		<LLQ			<LLQ	
Yb		<LLQ		<LLQ			<LLQ	
Lu		<LLQ		<LLQ			<LLQ	
Hf		1.29	0.22	2.13			1.34	
Ta		<LLQ		<LLQ			<LLQ	
Th		<LLQ		<LLQ			<LLQ	
U		0.055	0.023	<LLQ			<LLQ	

Sample	APG-I2	APG-I2		APG-I2	APG-I2		APG-I2	
Crystal	CPX C	CPX C		CPX B'	CPX B'		CPX C'	
Sector	R	I		R	C		R1	
Oxide / %	X (1)	X (3)	SD (3)	X (1)	X (2)	SD (2)	X (2)	SD (2)
SiO_2	50.85	51.98	0.64	48.28	51.03	0.74	49.88	0.78
TiO_2	2.14	1.57	0.05	3.03	1.85	0.20	2.40	0.15
Al_2O_3	2.06	1.42	0.09	3.50	2.01	0.09	2.75	0.62
Cr_2O_3	<LLQ	0.29	0.07	<LLQ	0.16	0.19	<LLQ	
FeO	7.25	5.60	0.19	8.23	6.18	0.79	7.44	0.06
MnO	0.15	0.10	0.01	0.14	0.11	0.01	0.12	0.00
MgO	14.17	15.89	0.16	13.27	15.37	0.41	14.25	0.13
CaO	23.67	23.36	0.16	23.18	23.32	0.23	23.25	0.19
Na_2O	0.40	0.21	0.03	0.54	0.28	0.01	0.34	0.01
Total	100.69	100.42		100.17	100.30		100.42	
	Structural formula - 6 oxigens and 4 cations per formula							
TSi	1.877	1.908		1.799	1.88		1.846	
TAl	0.090	0.061		0.154	0.09		0.120	
TFe^{3+}	0.033	0.030		0.047	0.03		0.034	
ΣT	2.000	2.000		2.000	2.00		2.000	
M1AL	0.000	0.000		0.000	0.00		0.000	
$M1Fe^{3+}$	0.034	0.012		0.070	0.03		0.046	
M1Ti	0.059	0.043		0.085	0.05		0.067	
M1Cr	0.000	0.008		0.000	0.01		0.000	
M1Mg	0.780	0.870		0.737	0.84		0.786	
$M1Fe^{2+}$	0.127	0.067		0.108	0.07		0.101	
M1Mn	0.000	0.000		0.000	0.00		0.000	
ΣM1	1.000	1.000		1.000	1.00		1.000	
M2Mg	0.000	0.000		0.000	0.00		0.000	
$M2Fe^{2+}$	0.029	0.063		0.031	0.06		0.049	
M2Mn	0.005	0.003		0.005	0.00		0.004	
M2Ca	0.936	0.919		0.925	0.92		0.922	
M2Na	0.029	0.015		0.039	0.02		0.024	
M2K	0.001	0.000		0.000	0.00		0.001	
ΣM2	1.000	1.000		1.000	1.00		1.000	
Nomenclature	Diopside	Diopside		Diopside	Diopside		Diopside	
Mg#*	83.3	87.0		84.1	87.3		83.9	
Element / ppm		X (1)			X (2)	SD (2)	X (1)	
Sc		158			163	0	121	
V		97.6			128	3	130	
Cr		1963			3273	659	2044	
Mn		715			681	50	573	
Co		39.1			37.5	2.1	36.4	
Ni		325			341	42	288	
Zn		17.8			21.7	2.2	17.4	
Rb		<LLQ			3.48	1.88	<LLQ	
Sr		175			194	15	190	
Y		7.35			6.88	0.55	4.59	
Zr		58.3			73.8	5	62.3	
Nb		0.337			0.633	0.092	0.750	
Ba		<LLQ			7.18	4.85	1.61	
La		7.77			8.96	0.10	8.54	
Ce		23.5			25.1	0.1	26.5	
Pr		4.01			4.42	0.02	4.42	
Nd		23.2			24.6	2.4	21.3	
Sm		4.74			4.31	0.23	4.27	
Eu		1.60			1.15	0.20	1.09	
Gd		3.56			3.69	0.41	2.64	
Tb		0.440			0.415	0.031	0.360	
Dy		1.77			2.06	0.72	2.03	
Ho		0.340			0.415	0.006	<LLQ	
Er		0.540			0.697	0.042	<LLQ	
Tm		<LLQ			<LLQ		<LLQ	
Yb		<LLQ			<LLQ		<LLQ	
Lu		<LLQ			<LLQ		<LLQ	
Hf		3.12			3.82	0.13	3.87	
Ta		0.020			<LLQ		0.180	
Th		<LLQ			0.375	0.088	<LLQ	
U		<LLQ			<LLQ		<LLQ	

Sample	APG-I2	APG-I2		APG-C2	APG-C2	APG-C2	APG-C2	APG-C2
Crystal	CPX C'	CPX C'		CPX 1 M	CPX 1 M	CPX 1 LAT	CPX 1	CPX 1
Sector	R2	C		R	C	R	R	C
Oxide / %	X (1)	X (2)	SD (2)	X (1)	X (1)	X (1)	X (1)	X (1)
SiO_2	51.70	53.06	0.10	49.19	52.21	51.05	51.26	52.14
TiO_2	1.72	1.30	0.01	2.77	1.65	2.19	2.02	1.56
Al_2O_3	1.64	1.15	0.07	3.45	1.57	2.07	2.03	1.46
Cr_2O_3	0.04	0.45	0.01	<LLQ	0.07	<LLQ	<LLQ	0.23
FeO	6.32	4.36	0.04	7.75	6.18	7.13	7.15	5.66
MnO	0.12	0.08	0.01	0.10	0.13	0.13	0.13	0.09
MgO	15.44	16.48	0.15	13.85	15.43	14.26	14.68	15.77
CaO	22.96	23.71	0.01	22.89	23.15	23.40	22.96	23.41
Na_2O	0.26	0.23	0.02	0.37	0.27	0.38	0.30	0.20
Total	100.21	100.81		100.36	100.66	100.60	100.53	100.52
	Structural formula - 6 oxigens and 4 cations per formula							
TSi	1.906	1.932		1.824	1.916	1.866	1.893	1.913
TAl	0.071	0.050		0.151	0.068	0.090	0.088	0.063
TFe^{3+}	0.022	0.019		0.025	0.016	0.024	0.019	0.024
ΣT	2.000	2.000		2.000	2.000	2.000	2.000	2.000
M1AL	0.000	0.000		0.000	0.000	0.000	0.000	0.000
$M1Fe^{3+}$	0.016	0.000		0.051	0.010	0.021	0.016	0.009
M1Ti	0.048	0.036		0.077	0.046	0.061	0.056	0.043
M1Cr	0.001	0.013		0.000	0.002	0.000	0.000	0.007
M1Mg	0.849	0.894		0.766	0.844	0.785	0.808	0.863
$M1Fe^{2+}$	0.087	0.057		0.106	0.098	0.133	0.119	0.079
M1Mn	0.000	0.000		0.000	0.000	0.000	0.000	0.000
ΣM1	1.000	1.000		1.000	1.000	1.000	1.000	1.000
M2Mg	0.000	0.000		0.000	0.000	0.000	0.000	0.000
$M2Fe^{2+}$	0.070	0.057		0.058	0.066	0.042	0.066	0.062
M2Mn	0.004	0.002		0.003	0.004	0.004	0.004	0.003
M2Ca	0.907	0.925		0.909	0.910	0.926	0.908	0.920
M2Na	0.019	0.016		0.026	0.019	0.027	0.021	0.014
M2K	0.000	0.000		0.003	0.001	0.001	0.000	0.000
ΣM2	1.000	1.000		1.000	1.000	1.000	1.000	1.000
Nomenclature	Diopside	Diopside		Diopside	Diopside	Diopside	Diopside	Diopside
Mg#*	84.4	88.7		82.4	83.8	81.8	81.3	85.9
Element / ppm		X (1)				X (1)		
Sc		101				160		
V		86.5				132		
Cr		3072				2373		
Mn		577				576		
Co		36.2				33.3		
Ni		377				198		
Zn		17.6				19.7		
Rb		1.21				<LLQ		
Sr		191				213		
Y		3.93				6.80		
Zr		20.4				104		
Nb		<LLQ				0.960		
Ba		<LLQ				1.59		
La		4.32				10.8		
Ce		15.4				29.5		
Pr		2.55				4.87		
Nd		14.0				28.2		
Sm		3.96				4.56		
Eu		0.570				1.18		
Gd		2.43				4.54		
Tb		<LLQ				0.471		
Dy		<LLQ				2.51		
Ho		<LLQ				0.27		
Er		<LLQ				0.82		
Tm		<LLQ				<LLQ		
Yb		<LLQ				<LLQ		
Lu		<LLQ				<LLQ		
Hf		1.14				<LLQ		
Ta		<LLQ				5.35		
Th		<LLQ				<LLQ		
U		<LLQ				0.374		

Sample	APG-C2		APG-C2	APG-C2	APG-C2	APG-C2	APG-C2	APG-C2
Crystal	CPX 10		CPX 10	CPX 10	CPX 10	CPX 10	CPX 13	CPX 13
Sector	R1		R2	I1	I2	C1	R1	R2
Oxide / %	X (3)	SD (3)	X (1)	X	X	X	X	X
SiO_2	49.15	0.35	52.79	50.69	50.18	51.61	48.44	50.75
TiO_2	2.77	0.22	1.05	2.37	2.31	1.86	3.02	2.34
Al_2O_3	3.51	0.22	1.12	2.20	3.01	2.19	4.00	2.11
Cr_2O_3	0.05	0.01	<LLQ	<LLQ	0.04	0.13	0.03	<LLQ
FeO	7.59	0.29	8.03	7.67	7.25	5.29	8.14	7.79
MnO	0.10	0.00	0.23	0.18	0.12	0.10	0.10	0.17
MgO	13.67	0.44	13.73	13.77	14.25	15.40	13.49	13.54
CaO	23.02	0.14	23.16	23.33	23.14	23.68	23.03	23.56
Na_2O	0.39	0.03	0.60	0.40	0.35	0.26	0.44	0.43
Total	100.25		100.71	100.61	100.64	100.51	100.68	100.69
	Structural formula - 6 oxigens and 4 cations per formula							
TSi	1.826		1.951	1.879	1.852	1.893	1.794	1.881
TAl	0.154		0.049	0.096	0.131	0.095	0.175	0.092
TFe^{3+}	0.020		0.001	0.025	0.017	0.012	0.031	0.027
ΣT	2.000		2.000	2.000	2.000	2.000	2.000	1.000
M1AL	0.000		0.000	0.000	0.000	0.000	0.000	0.000
$M1Fe^{3+}$	0.047		0.034	0.018	0.045	0.020	0.069	0.020
M1Ti	0.077		0.029	0.066	0.064	0.051	0.084	0.065
M1Cr	0.001		0.000	0.000	0.001	0.004	0.001	0.000
M1Mg	0.757		0.756	0.761	0.784	0.842	0.745	0.748
$M1Fe^{2+}$	0.117		0.181	0.156	0.106	0.083	0.101	0.167
M1Mn	0.000		0.000	0.000	0.000	0.000	0.000	0.000
ΣM1	1.000		1.000	1.000	1.000	1.000	1.000	2.000
M2Mg	0.000		0.000	0.000	0.000	0.000	0.000	0.000
$M2Fe^{2+}$	0.051		0.033	0.039	0.056	0.047	0.050	0.028
M2Mn	0.003		0.007	0.006	0.004	0.003	0.003	0.005
M2Ca	0.916		0.917	0.926	0.915	0.931	0.914	0.936
M2Na	0.028		0.043	0.028	0.025	0.018	0.031	0.031
M2K	0.001		0.000	0.000	0.001	0.001	0.001	0.000
ΣM2	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Nomenclature	Diopside		Diopside	Diopside	Diopside	Diopside	Diopside	Diopside
Mg#*	81.8		77.9	79.6	82.9	86.6	83.1	79.3
Element / ppm	X (3)	SD (3)		X (1)		X (1)		X (1)
Sc	114	3		54.0		119		49.0
V	165	6		125		117		143
Cr	563	292		<LLQ		298		<LLQ
Mn	697	24		813		490		862
Co	38.6	1.6		39.2		30.8		35.5
Ni	177	13		92.0		216		<LLQ
Zn	18.9	0.4		25.8		18.0		25.5
Rb	1.88	0.37		0.490		<LLQ		<LLQ
Sr	234	6		283		213		317
Y	7.51	0.45		7.51		4.14		8.07
Zr	119	3		92.0		48.0		106
Nb	0.940	0.014		0.480		0.640		0.630
Ba	2.31	0.87		<LLQ		1.97		3.73
La	11.8	0.4		10.8		6.39		11.1
Ce	36.0	2.6		31.4		17.4		31.3
Pr	5.99	0.76		5.70		3.21		5.66
Nd	28.7	5.6		30.0		14.5		30.9
Sm	5.59	1.56		5.99		2.67		6.46
Eu	1.39	0.17		1.85		1.09		1.54
Gd	3.18	0.19		4.00		<LLQ		2.55
Tb	0.413	0.066		0.523		0.28		0.58
Dy	2.28	0.33		2.35		1.45		2.11
Ho	0.232	0.008		0.257		0.284		0.320
Er	0.815	0.049		1.04		<LLQ		1.03
Tm	<LLQ			<LLQ		<LLQ		<LLQ
Yb	<LLQ			<LLQ		<LLQ		<LLQ
Lu	<LLQ			<LLQ		<LLQ		<LLQ
Hf	4.77	0.62		4.46		2.15		4.56
Ta	0.150			<LLQ		0.073		<LLQ
Th	0.348	0.142		<LLQ		0.271		0.155
U	<LLQ			<LLQ		<LLQ		<LLQ

Sample	APG-C2		APG-C2		APG-C2	APG-C2		APG-C2	
Crystal	CPX 13		CPX 13'		CPX 13'	CPX 13'		CPX 13'	
Sector	C		R1		C1	R2		C2	
Oxide / %	X	SD	X	SD	X	X	SD	X	SD
SiO_2	52.27	0.39	48.18	0.09	51.09	49.14	0.34	52.39	
TiO_2	1.77	0.11	3.31	0.02	1.89	2.65	0.09	1.66	
Al_2O_3	1.69	0.11	3.79	0.02	2.10	3.44	0.06	1.43	
Cr_2O_3	0.22	0.07	<LLQ		0.29	<LLQ		0.12	
FeO	5.92	0.11	8.43	0.01	6.02	7.67	0.20	5.72	
MnO	0.12	0.01	0.15	0.00	0.10	0.12	0.01	0.10	
MgO	15.63	0.07	12.85	0.18	15.27	13.67	0.11	15.55	
CaO	23.16	0.12	22.97	0.04	22.99	23.14	0.20	23.56	
Na_2O	0.19	0.02	0.53	0.03	0.22	0.36	0.02	0.23	
Total	100.95		100.21		99.97	100.18		100.75	
	Structural formula - 6 oxigens and 4 cations per formula								
TSi	1.913		1.799		1.889	1.827		1.920	
TAl	0.073		0.167		0.092	0.151		0.062	
TFe^{3+}	0.014		0.035		0.019	0.022		0.018	
ΣT	2.000		2.000		2.000	2.000		2.000	
M1AL	0.000		0.000		0.000	0.000		0.000	
$M1Fe^{3+}$	0.000		0.055		0.013	0.050		0.001	
M1Ti	0.049		0.093		0.053	0.074		0.046	
M1Cr	0.006		0.000		0.009	0.000		0.003	
M1Mg	0.853		0.715		0.842	0.758		0.850	
$M1Fe^{2+}$	0.092		0.137		0.084	0.118		0.100	
M1Mn	0.000		0.000		0.000	0.000		0.000	
ΣM1	1.000		1.000		1.000	1.000		1.000	
M2Mg	0.000		0.000		0.000	0.000		0.000	
$M2Fe^{2+}$	0.077		0.037		0.070	0.048		0.056	
M2Mn	0.004		0.005		0.003	0.004		0.003	
M2Ca	0.908		0.919		0.911	0.922		0.925	
M2Na	0.014		0.038		0.016	0.026		0.016	
M2K	0.000		0.001		0.000	0.000		0.000	
ΣM2	1.000		1.000		1.000	1.000		1.000	
Nomenclature	Diopside		Diopside		Diopside	Diopside		Diopside	
Mg#*	83.4		80.5		84.5	82.0		84.5	
Element / ppm	X (1)		X (1)			X (1)		X (2)	
Sc	144		37.0			65.0		132	4
V	138		213			165		83.7	2.6
Cr	1244		16.0			688		381	34
Mn	785		966			36.8		580	16
Co	36.0		35.7			36.8		32.8	0.1
Ni	282		<LLQ			96.0		208	11
Zn	37.7		33.4			21.3		19.3	0.6
Rb	10.9		0.980			<LLQ		<LLQ	
Sr	199		556			297		187	12
Y	8.15		7.98			7.81		4.81	0.06
Zr	97.0		171			129		41.3	5.8
Nb	0.910		0.890			0.880		<LLQ	
Ba	10.4		<LLQ			<LLQ		1.60	0.41
La	10.4		15.8			13.6		6.25	0.35
Ce	28.9		40.8			36.5		17.9	0.0
Pr	5.08		6.78			6.33		3.00	0.15
Nd	26.5		35.6			32.2		16.8	1.2
Sm	6.15		5.66			5.94		4.05	0.14
Eu	1.40		2.06			1.79		1.09	0.07
Gd	4.07		4.47			4.56		2.47	0.04
Tb	0.50		0.417			0.475		0.289	0.002
Dy	2.39		2.24			2.50		1.56	0.45
Ho	0.450		0.301			0.387		0.231	0.070
Er	<LLQ		0.72			<LLQ		<LLQ	
Tm	<LLQ		<LLQ			<LLQ		<LLQ	
Yb	<LLQ		<LLQ			<LLQ		<LLQ	
Lu	<LLQ		<LLQ			<LLQ		<LLQ	
Hf	4.77		6.45			5.19		1.90	0.09
Ta	<LLQ		0.304			<LLQ		<LLQ	
Th	0.448		<LLQ			<LLQ		<LLQ	
U	<LLQ		0.008			<LLQ		<LLQ	

Sample	APG-C2		APG-C2	SM-U-BE2	SM-U-BE2	SM-U-B2	SM-U-B2	SM-U-C	
Crystal	CPX 15		CPX 15	CPX 18	CPX 18	CPX 96	CPX 96'	CPX 71'	
Sector	R		I	b	C	C	C	C	
Oxide / %	X	SD	X	X (1)	X (1)	X (1)	X (1)	X (1)	
SiO_2	51.17	0.18	51.29	46.32	49.31	46.89	45.88	41.12	
TiO_2	2.31	0.11	1.88	3.33	2.26	3.09	3.59	5.51	
Al_2O_3	2.24	0.18	2.27	6.08	4.42	6.40	6.88	11.06	
Cr_2O_3	<LLQ		0.53	<LLQ	0.41	0.16	0.11	0.08	
FeO	7.42	0.03	5.67	7.63	6.13	7.25	7.48	8.01	
MnO	0.15	0.01	0.09	0.12	0.10	0.10	0.11	0.09	
MgO	13.70	0.06	15.22	13.00	14.36	13.25	12.69	10.59	
CaO	23.49	0.04	23.12	22.52	22.51	22.37	22.11	22.35	
Na_2O	0.41	0.00	0.30	0.36	0.32	0.36	0.45	0.50	
Total	100.89		100.37	99.37	99.83	99.88	99.30	99.31	
	Structural formula - 6 oxigens and 4 cations per formula								
TSi	1.891		1.888	1.737	1.830	1.746	1.722	1.554	
TAl	0.098		0.098	0.263	0.170	0.254	0.278	0.446	
TFe^{3+}	0.012		0.013	0.000	0.000	0.000	0.000	0.000	
ΣT	2.000		2.000	2.000	2.000	2.000	2.000	2.000	
M1AL	0.000		0.000	0.005	0.023	0.027	0.026	0.047	
$M1Fe^{3+}$	0.011		0.014	0.094	0.063	0.087	0.101	0.157	
M1Ti	0.064		0.052	0.096	0.029	0.073	0.077	0.117	
M1Cr	0.000		0.016	0.000	0.007	0.003	0.002	0.002	
M1Mg	0.754		0.835	0.727	0.794	0.736	0.710	0.597	
$M1Fe^{2+}$	0.171		0.084	0.078	0.083	0.074	0.083	0.081	
M1Mn	0.000		0.000	0.000	0.000	0.000	0.000	0.000	
ΣM1	1.000		1.000	1.000	1.000	1.000	1.000	1.000	
M2Mg	0.000		0.000	0.000	0.000	0.000	0.000	0.000	
$M2Fe^{2+}$	0.036		0.064	0.065	0.079	0.078	0.075	0.056	
M2Mn	0.005		0.003	0.004	0.003	0.003	0.003	0.003	
M2Ca	0.930		0.912	0.905	0.895	0.893	0.889	0.905	
M2Na	0.029		0.021	0.026	0.023	0.026	0.033	0.036	
M2K	0.000		0.000	0.000	0.000	0.000	0.000	0.000	
ΣM2	1.000		1.000	1.000	1.000	1.000	1.000	1.000	
Nomenclature	Diopside		Diopside	Diopside	Diopside	Diopside	Diopside	Diopside	
Mg#*	78.5		85.0	83.5	83.1	82.8	81.8	81.4	
Element / ppm				X (1)	X (1)	X (1)	X (1)	X (2)	DP (2)
Sc				139	145	121	146	71.3	14.3
V				170	266	259	285	288	21
Cr				2624	618	982	1092	359	314
Mn				620	661	633	697	662	74
Co				23.8	23.9	25.3	26.1	26.7	0.8
Ni				107	67	75	118	<LLQ	<LLQ
Zn				23.3	18.8	22.8	26.7	35.3	8.7
Rb				<LLQ	<LLQ	2	<LLQ	<LLQ	<LLQ
Sr				159	194	201	186	306	33
Y				18.08	26.8	30.8	32.6	31.3	0.93
Zr				167	354	331	352	372	42
Nb				0.91	3.62	5.75	3.47	7.81	4.37
Ba				0.77	0.28	7.09	2.68	14.1	2.83
La				8.22	13.3	19.0	17.4	33.4	4.88
Ce				30.0	53.2	48.9	48.1	96.1	20.2
Pr				5.53	9.43	8.72	9.21	14.4	2.47
Nd				27.9	44.8	50.3	53.4	70.9	12.0
Sm				7.39	11.0	13.7	13.9	18.0	4.09
Eu				2.49	4.08	3.90	4.23	4.77	1.07
Gd				7.14	13.8	11.3	12.5	13.9	1.55
Tb				0.92	1.30	1.47	1.79	1.90	0.28
Dy				5.48	8.00	6.75	8.67	8.66	0.64
Ho				0.85	1.61	1.12	1.73	1.48	0.10
Er				1.70	2.36	2.66	3.38	3.68	0.11
Tm				0.21	0.44	0.39	0.470	<LLQ	<LLQ
Yb				1.68	1.92	2.07	2.27	3.47	<LLQ
Lu				0.21	0.37	<LLQ	<LLQ	<LLQ	<LLQ
Hf				7.48	16.8	11.3	13.1	12.0	1.41
Ta				0.18	1.14	1.03	1.14	1.71	0.64
Th				0.14	0.42	0.76	<LLQ	1.13	0.48
U				<LLQ	<LLQ	<LLQ	<LLQ	<LLQ	<LLQ

Sample	SM-U-C	SM-U-C	SM-PN		SM-PN		SM-PN	
Crystal	CPX 72'	CPX 72'	CPX 3		CPX 3		CPX 4	
Sector	R	C	R1		C		C1	
Oxide / %	X (1)	X (1)	X (3)	DP (3)	X (2)	DP (2)	X (2)	DP (2)
SiO_2	42.77	47.98	47.23	0.27	49.01	0.53	47.74	1.25
TiO_2	5.06	2.68	2.92	0.11	2.32	0.14	2.99	0.90
Al_2O_3	9.77	5.87	6.43	0.27	5.23	0.16	5.87	1.41
Cr_2O_3	<LLQ	<LLQ	0.16	0.00	0.26	0.06	<LLQ	
FeO	8.03	7.21	7.18	0.24	6.57	0.25	9.66	0.80
MnO	0.09	0.11	0.10	0.01	0.10	0.03	0.24	0.05
MgO	10.96	13.03	13.21	0.19	13.99	0.24	11.15	0.03
CaO	22.51	22.43	22.24	0.17	22.49	0.18	21.95	0.01
Na_2O	0.48	0.44	0.44	0.04	0.36	0.00	0.50	0.01
Total	99.68	99.75	99.90		100.31		100.08	
	Structural formula - 6 oxigens and 4 cations per formula							
TSi	1.610	1.788	1.757		1.811		1.797	
TAl	0.390	0.212	0.243		0.189		0.203	
TFe^{3+}	0.000	0.000	0.000		0.000		0.000	
ΣT	2.000	2.000	2.000		2.000		2.000	
M1AL	0.043	0.046	0.039		0.039		0.057	
$M1Fe^{3+}$	0.143	0.075	0.082		0.064		0.085	
M1Ti	0.095	0.048	0.066		0.038		0.014	
M1Cr	0.000	0.000	0.003		0.005		0.000	
M1Mg	0.615	0.724	0.732		0.771		0.626	
$M1Fe^{2+}$	0.103	0.108	0.078		0.084		0.219	
M1Mn	0.000	0.000	0.000		0.000		0.000	
ΣM1	1.000	1.000	1.000		1.000		1.000	
M2Mg	0.000	0.000	0.000		0.000		0.000	
$M2Fe^{2+}$	0.054	0.069	0.079		0.081		0.071	
M2Mn	0.003	0.004	0.003		0.003		0.008	
M2Ca	0.908	0.895	0.886		0.890		0.885	
M2Na	0.035	0.032	0.032		0.026		0.036	
M2K	0.000	0.000	0.000		0.000		0.000	
ΣM2	1.000	1.000	1.000		1.000		1.000	
Nomenclature	Diopside	Diopside	Diopside		Diopside		Diopside	
Mg#*	79.6	80.4	82.4		82.4		68.3	
Element / ppm	X (1)	X (1)	X (2)	DP (2)	X (2)	DP (2)	X (1)	
Sc	84.6	56.3	55.2	13.6	100	2	34.3	
V	305	325	333	49	209	13	19.9	
Cr	<LLQ	<LLQ	40.5	2.3	1490	81	<LLQ	
Mn	778	684	846	152	536	17	1322	
Co	30.6	27.1	26.6	1.0	28.2	0.1	21.4	
Ni	114	<LLQ	69.9	17.3	148	2	<LLQ	
Zn	33.8	39.2	34.5	10.9	23.3	0.3	52.8	
Rb	1.29	3.72	5.78	0.54	0.041	0.016	<LLQ	
Sr	310	353	159	36	120	8	264	
Y	34.0	33.5	28.8	0.63	14.6	0.75	59.8	
Zr	368	392	227	72	79	13	631	
Nb	5.94	11.1	1.50	0.61	0.34	0.04	5.42	
Ba	2.06	37.9	8.32	0.69	0.15	0.05	<LLQ	
La	29.3	35.3	10.7	0.63	5.43	0.47	36.9	
Ce	87.9	97.1	26.0	2.50	15.0	1.45	90.9	
Pr	13.1	14.2	5.70	0.63	3.23	0.09	18.2	
Nd	64.6	71.4	34.1	0.54	19.72	1.11	90.4	
Sm	16.7	16.6	9.77	0.62	5.43	1.10	25.3	
Eu	5.28	4.05	2.68	0.06	1.48	0.05	4.35	
Gd	12.7	13.4	9.53	0.53	5.48	0.35	24.2	
Tb	2.01	1.59	1.30	0.18	0.67	0.07	3.10	
Dy	8.85	8.48	6.29	0.25	3.83	0.88	15.5	
Ho	1.63	1.54	1.21	7.07	0.63	0.13	2.74	
Er	3.17	2.94	2.64	0.00	1.45	0.08	6.65	
Tm	0.500	<LLQ	0.279	0.011	0.140	0.006	0.758	
Yb	1.94	2.26	1.78	0.22	0.97	0.04	4.78	
Lu	<LLQ	<LLQ	0.259	0.037	0.095	0.010	0.841	
Hf	14.1	13.1	8.05	2.47	4.07	0.67	24.8	
Ta	1.09	1.81	0.268	0.064	0.135	0.013	1.88	
Th	0.650	1.19	0.312	0.258	0.074	0.017	0.620	
U	<LLQ	<LLQ	<LLQ	<LLQ	<LLQ	<LLQ	0.065	

Sample	SM-PN		SM-B-C		SM-B-C		SM-B-C	
Crystal	CPX 4		CPX A1		CPX A1		CPX A1	
Sector	C2		R		R2		I	
Oxide / %	X (2)	DP (2)	X (2)	DP (2)	X (2)	DP (2)	X (2)	DP (2)
SiO_2	49.48	0.02	45.35	0.06	45.81	0.11	48.88	0.08
TiO_2	2.22	0.04	3.62	0.08	3.63	0.28	2.06	0.01
Al_2O_3	4.55	0.06	7.99	0.45	8.08	0.31	6.07	0.04
Cr_2O_3	<LLQ		<LLQ		<LLQ		0.03	0.01
FeO	8.09	0.49	8.00	0.11	7.86	0.09	7.75	0.06
MnO	0.20	0.01	0.14	0.01	0.15	0.02	0.21	0.03
MgO	12.84	0.03	12.33	0.06	12.39	0.03	13.69	0.04
CaO	22.07	0.24	22.08	0.66	22.04	0.15	20.85	0.06
Na_2O	0.67	0.22	0.51	0.03	0.53	0.01	0.70	0.02
Total	100.12		100.01		100.47		100.23	
	Structural formula - 6 oxigens and 4 cations per formula							
TSi	1.840		1.690		1.699		1.804	
TAl	0.160		0.310		0.301		0.196	
TFe^{3+}	0.000		0.000		0.000		0.000	
ΣT	2.000		2.000		2.000		2.000	
M1AL	0.040		0.041		0.052		0.068	
$M1Fe^{3+}$	0.062		0.101		0.101		0.057	
M1Ti	0.044		0.101		0.084		0.062	
M1Cr	0.000		0.000		0.000		0.001	
M1Mg	0.712		0.685		0.685		0.753	
$M1Fe^{2+}$	0.142		0.071		0.078		0.059	
M1Mn	0.000		0.000		0.000		0.000	
ΣM1	1.000		1.000		1.000		1.000	
M2Mg	0.000		0.000		0.000		0.000	
$M2Fe^{2+}$	0.066		0.077		0.082		0.119	
M2Mn	0.006		0.004		0.005		0.007	
M2Ca	0.880		0.882		0.876		0.824	
M2Na	0.049		0.037		0.038		0.050	
M2K	0.000		0.000		0.000		0.000	
ΣM2	1.000		1.000		1.000		1.000	
Nomenclature	Diopside		Diopside		Diopside		Diopside	
Mg#*	77.4		82.2		81.1		81.0	
Element / ppm	X (1)		X (1)		X (1)		X (1)	
Sc	35.3		101		105		82.6	
V	122		225		243		156	
Cr	<LLQ		15.0		75.0		10.8	
Mn	935		1144		950		1388	
Co	27.0		17.2		18.3		9.92	
Ni	<LLQ		29.7		32.4		5.68	
Zn	33.1		34.5		29.0		42.7	
Rb	<LLQ		<LLQ		<LLQ		<LLQ	
Sr	188		328		353		250	
Y	33.9		52.3		42.44		56.71	
Zr	203		200		148		79.3	
Nb	1.27		2.51		1.18		0.740	
Ba	<LLQ		<LLQ		0.800		<LLQ	
La	13.3		19.1		14.7		14.6	
Ce	35.5		61.6		47.1		49.5	
Pr	7.49		14.5		10.7		10.28	
Nd	45.6		76.4		61.0		67.96	
Sm	12.0		22.5		19.1		24.49	
Eu	3.00		6.53		5.17		6.27	
Gd	12.6		21.3		13.6		15.5	
Tb	1.55		2.40		1.86		1.95	
Dy	8.32		15.3		11.6		13.1	
Ho	1.25		2.16		1.97		2.60	
Er	2.98		4.81		3.87		3.92	
Tm	0.335		0.610		0.400		0.610	
Yb	2.30		3.27		2.68		3.07	
Lu	0.245		0.328		0.321		0.329	
Hf	8.01		11.4		7.20		3.94	
Ta	0.264		0.412		0.499		0.193	
Th	0.154		<LLQ		<LLQ		0.119	
U	<LLQ		<LLQ		<LLQ		<LLQ	

Sample	SM-B-C		SM-B-C	SM-B-C	SM-B-C	SM-B-C		SM-B-C	
Crystal	CPX A1		CPX A1L	CPX - A2	CPX - A2	CPX A2L		CPX E	
Sector	C		R	R1	R1	R		R	
Oxide / %	X (2)	DP (2)	X (1)	X (1)	X (1)	X (3)	DP (3)	X (2)	DP (2)
SiO_2	47.99	0.01	45.47	44.63	48.88	46.92	0.65	48.02	0.81
TiO_2	2.41	0.06	3.80	4.10	2.17	3.29	0.32	2.81	0.21
Al_2O_3	6.74	0.02	7.94	9.33	6.20	6.90	0.57	6.19	0.37
Cr_2O_3	<LLQ		<LLQ	<LLQ	<LLQ	0.04	0.01	<LLQ	
FeO	8.07	0.02	7.81	8.13	7.92	7.59	0.13	7.70	0.15
MnO	0.22	0.02	0.16	0.13	0.20	0.16	0.01	0.17	0.00
MgO	13.23	0.12	12.45	11.91	13.49	12.91	0.29	13.24	0.15
CaO	20.71	0.04	22.01	21.87	20.78	22.06	0.08	22.16	0.11
Na_2O	0.71	0.03	0.49	0.52	0.69	0.47	0.03	0.54	0.05
Total	100.06		100.13	100.63	100.32	100.35		100.80	
	Structural formula - 6 oxigens and 4 cations per formula								
TSi	1.778		1.693	1.656	1.805	1.741		1.770	
TAl	0.222		0.307	0.344	0.195	0.259		0.230	
TFe^{3+}	0.000		0.000	0.000	0.000	0.000		0.000	
ΣT	2.000		2.000	2.000	2.000	2.000		2.000	
M1AL	0.072		0.041	0.064	0.075	0.042		0.039	
$M1Fe^{3+}$	0.067		0.106	0.114	0.060	0.092		0.078	
M1Ti	0.066		0.088	0.089	0.048	0.066		0.073	
M1Cr	0.000		0.000	0.000	0.000	0.001		0.000	
M1Mg	0.731		0.691	0.659	0.743	0.714		0.727	
$M1Fe^{2+}$	0.064		0.073	0.074	0.074	0.086		0.083	
M1Mn	0.000		0.000	0.000	0.000	0.000		0.000	
ΣM1	1.000		1.000	1.000	1.000	1.000		1.000	
M2Mg	0.000		0.000	0.000	0.000	0.000		0.000	
$M2Fe^{2+}$	0.120		0.082	0.089	0.123	0.084		0.081	
M2Mn	0.007		0.005	0.004	0.006	0.005		0.005	
M2Ca	0.822		0.878	0.869	0.822	0.877		0.875	
M2Na	0.051		0.036	0.038	0.049	0.034		0.038	
M2K	0.000		0.000	0.000	0.000	0.000		0.000	
ΣM2	1.000		1.000	1.000	1.000	1.000		1.000	
Nomenclature	Diopside		Diopside	Diopside	Diopside	Diopside		Diopside	
Mg#*	79.9		81.7	80.1	79.1	80.8		81.6	
Element / ppm	X (1)		X (1)	X (1)	X (1)	X (1)		X (2)	DP (2)
Sc	74.5		110	117	95.7	84.8		70.8	2.8
V	194		277	254	181	227		266	24
Cr	12.3		793	68	9.1	156		54.1	7.2
Mn	1501		1050	584	1217	763		1057	31
Co	14.5		19.4	20.5	17.0	15.8		19.6	0.5
Ni	4.0		68.2	27.8	<LLQ	37.2		<LLQ	
Zn	31.1		26.6	24.3	30.1	23.9		37.0	2.5
Rb	<LLQ		<LLQ	<LLQ	<LLQ	0		<LLQ	
Sr	315		299	288	392	273		307	13
Y	47.39		37.61	33.2	47.0	32.6		30.7	0.95
Zr	112		163	122	89.6	105		108	6
Nb	1.04		2.01	1.21	0.890	1.35		1.39	0.12
Ba	<LLQ		9.73	<LLQ	<LLQ	0.730		<LLQ	
La	16.2		12.5	12.9	13.8	12.6		17.5	1.03
Ce	59.6		42.9	36.6	41.7	33.7		63.3	0.03
Pr	12.4		9.13	9.35	12.6	8.64		12.3	0.05
Nd	70.9		52.5	33.5	66.8	54.8		67.8	2.34
Sm	23.5		16.2	15.4	22.6	13.6		16.1	0.38
Eu	6.43		5.02	4.26	6.34	4.48		6.29	0.06
Gd	20.0		13.1	13.5	14.8	14.8		12.7	1.12
Tb	2.26		1.82	1.60	2.44	1.23		1.73	0.09
Dy	13.6		10.6	8.66	11.9	9.77		9.63	1.07
Ho	2.28		1.85	2.07	1.99	1.52		1.40	0.03
Er	3.83		3.33	4.28	4.80	3.39		2.93	0.23
Tm	0.520		0.400	0.370	0.470	0.340		0.332	0.016
Yb	4.10		2.47	2.33	3.22	2.39		2.21	0.13
Lu	0.430		0.282	0.268	0.420	0.340		0.389	0.105
Hf	5.39		7.91	6.49	3.78	6.33		4.55	0.72
Ta	0.181		0.580	0.429	<LLQ	0.344		0.408	0.101
Th	<LLQ		0.228	0.131	<LLQ	0.113		<LLQ	
U	<LLQ		<LLQ	<LLQ	<LLQ	<LLQ		<LLQ	

Sample	SM-B-C	SM-B-C		SM-B-C	SM-B-B	
Crystal	CPX F	CPX F		CPX F	CPX 19	
Sector	I	R		C	I	
Oxide / %	X (1)	X(1)		X (1)	X (1)	
SiO_2	49.07	47.56		50.77	41.63	
TiO_2	2.23	2.73		1.63	5.29	
Al_2O_3	5.93	6.34		4.80	10.79	
Cr_2O_3	<LLQ	<LLQ		<LLQ	<LLQ	
FeO	8.28	7.51		8.04	8.59	
MnO	0.24	0.16		0.27	0.10	
MgO	13.35	13.12		14.40	10.75	
CaO	20.86	22.05		20.45	21.57	
Na_2O	0.68	0.49		0.68	0.46	
Total	100.64	99.96		101.05	99.18	
	Structural formula - 6 oxigens and 4 cations per formula					
TSi	1.810	1.767		1.858	1.576	
TAl	0.190	0.233		0.142	0.424	
TFe^{3+}	0.000	0.000		0.000	0.000	
ΣT	2.000	2.000		2.000	2.000	
M1AL	0.068	0.045		0.065	0.058	
$M1Fe^{3+}$	0.062	0.076		0.045	0.151	
M1Ti	0.047	0.070		0.036	0.097	
M1Cr	0.000	0.000		0.000	0.000	
M1Mg	0.734	0.727		0.786	0.607	
$M1Fe^{2+}$	0.089	0.082		0.069	0.087	
M1Mn	0.000	0.000		0.000	0.000	
ΣM1	1.000	1.000		1.000	1.000	
M2Mg	0.000	0.000		0.000	0.000	
$M2Fe^{2+}$	0.119	0.082		0.141	0.088	
M2Mn	0.008	0.005		0.008	0.003	
M2Ca	0.824	0.878		0.802	0.875	
M2Na	0.049	0.035		0.048	0.034	
M2K	0.000	0.000		0.000	0.000	
ΣM2	1.000	1.000		1.000	1.000	
Nomenclature	Augite	Diopside		Augite	Diopside	
Mg#*	77.9	81.6		78.9	77.6	
Element / ppm	X (1)	X (3)	DP (3)	X (1)	X (2)	DP (2)
Sc	51.4	64.3	9.8	54.4	94.3	13.5
V	178	251	12	158	373	34
Cr	<LLQ	32.3	9.6	<LLQ	<LLQ	
Mn	1741	1226	98	1735	826	61
Co	12.6	18.9	1.0	13.7	28.4	2.2
Ni	<LLQ	33.2	10.7	<LLQ	36.1	6.3
Zn	43.0	37.0	2.7	46.0	34.7	3.6
Rb	<LLQ	0.490	0.130	<LLQ	<LLQ	
Sr	269	333	7	268	257	17
Y	41.0	41.7	7.60	32.1	38.01	2.69
Zr	75.8	127	15	54.5	170	13
Nb	1.22	1.85	0.54	0.75	3.84	1.62
Ba	<LLQ	<LLQ		<LLQ	4.36	0.76
La	20.3	22.6	4.56	14.9	18.4	5.66
Ce	70.1	76.3	15.4	<LLQ	62.6	16.2
Pr	13.9	14.1	3.12	<LLQ	12.0	3.16
Nd	73.6	76.0	12.4	55.8	68.1	13.0
Sm	20.2	19.9	3.55	15.4	17.7	2.23
Eu	8.76	6.91	1.26	6.13	5.97	0.88
Gd	16.4	16.6	3.53	12.7	17.0	2.58
Tb	2.11	2.01	0.42	1.35	1.91	0.25
Dy	10.4	10.6	2.0	9.22	9.52	1.75
Ho	1.88	1.77	0.33	1.14	1.67	0.25
Er	3.68	3.92	0.67	3.37	3.77	0.85
Tm	0.557	0.359	0.041	0.331	0.576	0.080
Yb	2.11	2.44	0.82	1.55	2.67	0.42
Lu	0.328	0.369	0.121	0.233	0.403	0.110
Hf	3.23	5.47	0.14	1.89	6.23	0.85
Ta	<LLQ	0.453	0.125	<LLQ	1.16	0.74
Th	<LLQ	<LLQ		<LLQ	0.455	0.142
U	<LLQ	<LLQ		<LLQ	<LLQ	

Table A6: Equations to calculate $K_D^{(Mg-Fe^{2+})}$ between olivine and the melt (matrix) (1), the temperature of clinopyroxene crystallization in n anhydrous system (3.8) and in a hydrous system (34) and $K_D^{(Mg-Fe^{2+})}$ between clinopyroxene and the melt (matrix) (3.3). NBO/T is nonbridging oxygens per tetrahedrally coordinated cation, X is the molar ratio, T is temperature (K), P is pressure (bar), and Fm is Fe + Mg.

N°	Equation	Reference
1	$K_D = 0{,}235 + 0{,}120\left(\frac{NBO}{T}\right) - 0{,}031\left(\frac{NBO}{T}\right)^2$	Kushiro and Walters (1998)
3.8	$\frac{10^4}{T^{sat.cpx}} = 3{,}12 - 2{,}59 \times 10^{-2}P - 0{,}37\ln\left(mg\#^{liq}\right) + 0{,}47\ln\left[x_{Ca}^{liq}\, x_{Fm}^{liq}\left(x_{Si}^{liq}\right)^2\right] - 0{,}78\ln\left[\left(x_{Fm}^{liq}\right)^2\left(x_{Si}^{liq}\right)^2\right] - 0{,}34\ln\left[x_{Ca}^{liq}\left(x_{Al}^{liq}\right)^2 x_{Si}^{liq}\right]$	Putirka (1999)
34	$\frac{10^4}{T} = 6{,}39 - 0{,}076\left(H_2O^{liq}\right) - 5{,}55\left(X_{Ca}^{liq}\, X_{Si}^{liq}\right) - 0{,}386\left(X_{Mg}^{liq}\right) - 0{,}0496P + 2{,}2 \times 10^{-4}P^2$	Putirka (2008)
3.3	$\ln\left(\frac{X_{Fe^{2+}}^{cpx} X_{Mg}^{liq}}{X_{Fe^{2+}}^{liq} X_{Mg}^{cpx}}\right) = 31.8 - 36.8\left(X_{Si}^{liq}\right) - 4.76\left(X_{Na}^{liq}\right) + 17.0\ln\left(X_{Si}^{liq}\right) - \frac{3879}{T} - 0.014\frac{P}{T}$	Putirka (1999)