APPENDIX

Petrogenesis of the Mesoproterozoic anorthosite, syenite and carbonatite suites of NW Namibia and their contribution to the metasomatic formation of the Swartbooisdrif sodalite deposits

Dissertation zur Erlangung des
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A.1 Sample locations

Table A.1.1 Sample locations.

Sample	*Rock type*	*Comments*	*Pl. 3*	*Pl. 4*	*Locality*	*GPS*	*TS*	*OS*	*EMP*	*XRF*	*REE*	*XRD*	*LA-I*	*FI*	*SR*	*O*	*C*	*S*
Ku-97-02	A,px		1		Zebra Mountains (western margin)	S 17°08.403´ E 13°14.216´	X			X								
Ku-97-03	GN	5 m distant from a dyke of S,fs and CB	2		Swartbooisdrif	S 17°20.275´ E 13°49.800´	X		X	X								
Ku-97-03b	A,f (GN)	bordered by S,fs	2		Swartbooisdrif	S 17°20.275´ E 13°49.800´	X	X		X								X
Ku-97-03c	GN		2		Swartbooisdrif	S 17°20.275´ E 13°49.800´	X			X								
Ku-97-04	GN		2		Swartbooisdrif	S 17°20.275´ E 13°49.800´	X		X	X	X							
Ku-97-05	GN		2		Swartbooisdrif	S 17°20.300´ E 13°49.800´	X			X	X							
Ku-97-05a	S,f	transsected by sulphide veinlets	2		Swartbooisdrif	S 17°20.300´ E 13°49.800´	X	X										X
Ku-97-06	GN		2		Swartbooisdrif	S 17°20.330´ E 13°49.800´	X			X								
Ku-97-08a	GN		2		Swartbooisdrif	S 17°20.500´ E 13°49.820´	X			X								
Ku-97-08b	A,w		2		Swartbooisdrif	S 17°20.500´ E 13°49.820´	X		X	X								
Ku-97-12	A,px		2		Swartbooisdrif	S 17°20.700´ E 13°49.843´	X			X								
Ku-97-13	A,px		2		Swartbooisdrif	S 17°20.610´ E 13°49.820´	X		X	X	X							
Ku-97-15	CB,so	CB,so in contact to "black dyke" (Bt-Pl rock)		35	NBS mining area	S 17°20.500´ E 13°47.000´	X		X									
Ku-97-15a	CB,so	0-10 cm distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X		X									
Ku-97-15b	CB,so	20-30 cm distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X	X										
Ku-97-15c	CB,so	40-50 cm distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15d	CB,so	20 cm distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X		X									
Ku-97-15e	CB,so	contact between CB,so and the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X		X									
Ku-97-15f	FV	transsecting CB,so; 2.8 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15g	CB,so	3.0 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15h	FV	transsecting CB,so; 3.3 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15i	CB,so	3.8 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15j	FV	transsecting CB,so; 3.5 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15k	CB,so	4.1 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15l	CB,so	2.4 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15m	FV	transsecting CB,so; 2.4 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15n	CB,so	1.8 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15o	CB,so	1.4 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15p	FV	transsecting CB,so; 1.4 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15q	CB,so	1.0 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15r	CB,so	0.7 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15s	CB,so	0.7 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15t	CB,so	0.5 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15u	CB,so	2.0 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-15v	CB,so	2.0 m distant from the black dyke		35	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-19	CB,so	sulphide-bearing	21		NBS mining area	S 17°20.910´ E 13°45.826´	X	X	X									
Ku-97-24	CB,so	sulphide-bearing	21		NBS mining area	S 17°20.910´ E 13°45.826´	X	X	X									
Ku-97-26	CB,so		21		NBS mining area	S 17°20.910´ E 13°45.826´	X									X		
Ku-97-28	A,ol		3	1	NBS mining area	S 17°20.167´ E 13°46.576´	X			X	X							

Table A.1.1 Sample locations (continued).

Sample	*Rock type*	*Comments*	*Pl. 3*	*Pl. 4*	*Locality*	*GPS*	*TS*	*OS*	*EMP*	*XRF*	*REE*	*XRD*	*LA-I*	*FI*	*SR*	*O*	*C*	*S*
Ku-97-28a	A,ol		3	1	NBS mining area	S 17°20.167´ E 13°46.576´	X			X								
Ku-97-30	GN		4		NBS mining area	S 17°19.505´ E 13°48.110´	X			X								
Ku-97-31	A,px		3	2	NBS mining area	S 17°20.010´ E 13°46.600´	X			X	X					X		
Ku-97-31b	GN		3	2	NBS mining area	S 17°20.010´ E 13°46.600´	X			X								
Ku-97-33	A,w		3	2	NBS mining area	S 17°20.010´ E 13°46.600´	X		X	X						X		
Ku-97-33a	A,w		3	2	NBS mining area	S 17°20.010´ E 13°46.600´	X		X	X						X		
Ku-97-33b	A,w		3	2	NBS mining area	S 17°20.010´ E 13°46.600´	X			X	X					X		
Ku-97-43a	UMX/CB,so	ultramafic xenoliths, enclosed by CB,so		36	NBS mining area	S 17°20.500´ E 13°47.000´	X		X									
Ku-97-43b	UMX/CB,so	ultramafic xenoliths, enclosed by CB,so		36	NBS mining area	S 17°20.500´ E 13°47.000´	X											
Ku-97-44	A,w		5	3	NBS mining area	S 17°20.500´ E 13°47.000´	X		X	X	X							
Ku-97-92	T		6		Zebra Mountains (eastern margin)	S 17°12.049´ E 13°37.086´	X		X	X	X							
Ku-97-92a	A,px		6		Zebra Mountains (eastern margin)	S 17°12.049´ E 13°37.086´	X			X						X		
Ku-97-93	A,px		7		Zebra Mountains (eastern margin)	S 17°07.393´ E 13°29.881´	X		X	X								
Ku-97-95	A,ol		8		Zebra Mountains (eastern margin)	S 17°15.830´ E 13°42.042´	X		X	X						X		
Ku-97-96	T		9		Zebra Mountains (southern margin)	S 17°24.720´ E 13°38.100´	X			X								
Ku-97-99a	A,w		3		Swartbooisdrif	S 17°20.787´ E 13°49.926´	X			X								
Ku-97-104	T,grt		9		Zebra Mountains (southern margin)	S 17°25.800´ E 13°39.150´	X		X	X	X							
Ku-97-105	T,grt		9		Zebra Mountains (southern margin)	S 17°25.100´ E 13°38.500´	X		X	X						X		
Ku-98-05	CB,l			67	NBS mining area	S 17°20.170´ E 13°46.750´	X			X								
Ku-98-07	S,qtz		26		Zebra Mountains (southern margin)	S 17°19.908´ E 13°46.256´	X		X									
Ku-98-08	CB,m	bearing Fs-clasts		37	NBS mining area	S 17°20.170´ E 13°46.750´	X			X								
Ku-98-12	CB,m	bearing Fs- and Mag-clasts		38	NBS mining area	S 17°20.514´ E 13°46.314´	X											
Ku-98-13	Tr	carbonate-rich		92	NBS mining area	S 17°20.514´ E 13°46.314´	X											
Ku-98-14	CB,l	bearing rare clasts of Sdl		39	NBS mining area	S 17°21.454´ E 13°47.878´	X		X						X			
Ku-98-17	CB,so	bearing green to blue Sdl		40	NBS mining area	S 17°21.496´ E 13°47.517´	X			X								
Ku-98-18	CB,so	bearing green Sdl		40	NBS mining area	S 17°21.496´ E 13°47.517´	X			X		X			X			
Ku-98-19	A,f	Bt- and Ap-rich, foliated		69	NBS mining area	S 17°20.000´ E 13°47.836´	X											
Ku-98-21	Dol			85	NBS mining area	S 17°21.209´ E 13°47.808´	X											
Ku-98-23	A,ol		3	4	NBS mining area	S 17°20.710´ E 13°46.400´	X			X	X							
Ku-98-24	S,fs			27	NBS mining area	S 17°21.056´ E 13°47.431´	X											
Ku-98-25	L	Bt-Kfs-Ilm-Cal rock, interlayered with CB,so		86	NBS mining area	S 17°21.490´ E 13°47.890´	X		X									
Ku-98-27	CB,so	layered	22		NBS mining area	S 17°19.904´ E 13°46.601´	X			X								
Ku-98-28	CB,l		22		NBS mining area	S 17°19.904´ E 13°46.601´	X			X		X						
Ku-98-31	CB,so			41	NBS mining area	S 17°20.790´ E 13°47.685´	X											
Ku-98-32	FV	bearing green Sdl		42	NBS mining area	S 17°21.492´ E 13°47.509´	X											
Ku-98-34	FV	bearing green Sdl		42	NBS mining area	S 17°21.492´ E 13°47.509´	X											
Ku-98-36	A,f	bordered by CB,so		70	NBS mining area	S 17°20.563´ E 13°47.605´	X											
Ku-98-37	An	strongly altered		87	NBS mining area	S 17°20.540´ E 13°47.870´	X											
Ku´98-38	IM			88	NBS mining area	S 17°20.060´ E 13°46.870´	X											
Ku-98-40	S,qtz	bordered by CB,so		28	NBS mining area	S 17°21.550´ E 13°46.450´	X		X	X	X			X	X	X		

Table A.1.1 Sample locations (continued).

Sample	*Rock type*	*Comments*	*Pl. 3*	*Pl. 4*	*Locality*	*GPS*	*TS*	*OS*	*EMP*	*XRF*	*REE*	*XRD*	*LA-I*	*FI*	*SR*	*O*	*C*	*S*
Ku-98-41	T		10		NBS mining area	S 17°19.900´ E 13°46.220´	X			X	X							
Ku-98-43	An	altered		89	NBS mining area	S 17°20.400´ E 13°46.568´	X											
Ku-98-45	A,w	bordered by CB,so	3	5	NBS mining area	S 17°20.463´ E 13°46.456´	X			X	X					X		
Ku-98-47	CB,so			43	NBS mining area	S 17°20.550´ E 13°46.577´	X			X			X					
Ku-98-48	CB,l			44	NBS mining area	S 17°20.552´ E 13°46.468´	X		X						X	X		
Ku-98-51	CB,l			44	NBS mining area	S 17°20.552´ E 13°46.468´	X											
Ku-98-52	T		11	6	NBS mining area	S 17°20.847´ E 13°46.297´	X		X	X								
Ku-98-53	T		11	7	NBS mining area	S 17°20.856´ E 13°46.227´	X			X								
Ku-98-54	A,f/S,f	contact between A,f and S,f		71	NBS mining area	S 17°20.883´ E 13°46.739´	X											
Ku-98-55	A,f/CB,l	A,f xenolith, enclosed by CB,l		45	NBS mining area	S 17°20.739´ E 13°46.728´	X											
Ku-98-56	CB,l	sulphide-bearing and silicate-rich, bordered by S,f		46	NBS mining area	S 17°20.890´ E 13°46.774´	X		X	X		X						
Ku-98-57	CB,so			46	NBS mining area	S 17°20.890´ E 13°46.774´	X		X									
Ku-98-58	CB,so	bearing green Sdl, Ms, sulphides and Nal		46	NBS mining area	S 17°20.890´ E 13°46.774´	X		X									
Ku-98-59	S,f	heavily sheared, transsected by carbonatite veins		72	NBS mining area	S 17°20.890´ E 13°46.774´	X		X									
Ku-98-60	A,w	bordered by CB,so	12	8	NBS mining area	S 17°20.890´ E 13°46.774´	X			X						X		
Ku-98-62	CB,l	Bt- and Ab-rich layer		47	NBS mining area	S 17°20.884´ E 13°47.025´	X											
Ku-98-63	CB,m	foliated, in contact to anorthosite		48	NBS mining area	S 17°20.884´ E 13°47.025´	X											
Ku-98-64	CB,l	bearing Mag megacrysts		48	NBS mining area	S 17°20.884´ E 13°47.025´	X											
Ku-98-66	S,f	bordered by CB,l		73	NBS mining area	S 17°21.489´ E 13°46.606´	X			X								
Ku-98-68	GN		13	9	NBS mining area	S 17°20.399´ E 13°47.003´	X		X	X	X							
Ku-98-69	S,f/CB,l	contact between S,f and CB,l		49	NBS mining area	S 17°21.168´ E 13°47.012´	X											
Ku-98-70s	S,f	in contact to CB,l		74	NBS mining area	S 17°21.188´ E 13°47.033´	X			X						X		
Ku-98-70c	CB,l	in contact to S,f		50	NBS mining area	S 17°21.188´ E 13°47.033´	X			X								
Ku-98-71	A,f (GN)	20 cm distant from a CB,so dyke	13	10	NBS mining area	S 17°20.858´ E 13°46.983´	X		X	X								
Ku-98-72	A,f (GN)	2.0 m distant from a CB,so dyke	13	11	NBS mining area	S 17°20.881´ E 13°47.008´	X			X								
Ku-98-73s	S,f	in contact to CB,l		75	NBS mining area	S 17°21.464´ E 13°47.146´	X			X								
Ku-98-73c	CB,m	in contact to S,f		51	NBS mining area	S 17°21.464´ E 13°47.146´	X			X								
Ku-98-74	S,f	partially replaced by epidote		76	NBS mining area	S 17°21.387´ E 13°47.171´	X			X								
Ku-98-77	A,f (T)	2 m distant from a CB,so dyke	5		NBS mining area	S 17°19.904´ E 13°46.601´	X			X								
Ku-98-78	A,f (A,px)	2.5 m distant from a CB,so dyke	5		NBS mining area	S 17°19.904´ E 13°46.601´	X		X	X								
Ku-98-79	A,f (GN)	2.5 m distant from a CB,so dyke	5		NBS mining area	S 17°19.904´ E 13°46.601´	X		X									
Ku-98-80	CB,so		22		NBS mining area	S 17°19.904´ E 13°46.601´	X		X	X		X						
Ku-98-83	CB,so	Ms-rich	22		NBS mining area	S 17°19.904´ E 13°46.601´	X			X		X						
Ku-98-84	A,f (GN)	in contact to a CB,so dyke	5		NBS mining area	S 17°19.904´ E 13°46.601´	X		X	X								
Ku-98-87	CB,l	Ms-rich		52	NBS mining area	S 17°20.417´ E 13°47.000´	X											
Ku-98-89	A,f/CB,l	xenolith, enclosed by CB,l		52	NBS mining area	S 17°20.417´ E 13°47.000´	X											
Ku-98-91	FV	transsecting S,fs		68	NBS mining area	S 17°20.055´ E 13°46.849´	X											
Ku-98-92	GN		5	12	NBS mining area	S 17°20.064´ E 13°46.863´	X			X								
Ku-98-93	S,fs	bordered by CB,l		29	NBS mining area	S 17°20.000´ E 13°46.776´	X			X								
Ku-98-94	T		5	13	NBS mining area	S 17°20.000´ E 13°46.776´	X			X								
Ku-98-95	A,px	dyke, transsecting GN	5	13	NBS mining area	S 17°20.000´ E 13°46.776´	X											

Table A.1.1 Sample locations (continued).

Sample	*Rock type*	*Comments*	*Pl. 3*	*Pl. 4*	*Locality*	*GPS*	*TS*	*OS*	*EMP*	*XRF*	*REE*	*XRD*	*LA-I*	*FI*	*SR*	*O*	*C*	*S*
Ku-98-102	Dol			90	NBS mining area	S 17°20.520´ E 13°47.380´	X											
Ku-98-103s	S,f	in contact to CB,l		77	NBS mining area	S 17°20.582´ E 13°47.656´	X			X	X							
Ku-98-103c	CB,m	in contact to S,f		53	NBS mining area	S 17°20.582´ E 13°47.656´	X			X	X							
Ku-98-104	CB,m	bearing Fs clasts		54	NBS mining area	S 17°21.263´ E 13°47.866´	X											
Ku-98-105	S,f/CB,m	contact between S,f and CB,m		54	NBS mining area	S 17°21.263´ E 13°47.866´	X											
Ku-98-106	S,f/CB,m	contact between S,f and CB,m		55	NBS mining area	S 17°21.110´ E 13°47.900´	X											
Ku-98-107	S,f	transsected by micro-shearzones		78	NBS mining area	S 17°21.206´ E 13°47.801´	X											
Ku-98-109	Dol			91	NBS mining area	S 17°21.182´ E 13°47.811´	X											
Ku-98-111	S,fs	altered, largely replaced by epidote		30	NBS mining area	S 17°21.050´ E 13°47.777´	X											
Ku-98-114	A,f	contact between A,f and weathered ferrocarbonatite		79	NBS mining area	S 17°21.045´ E 13°47.078´	X											
Ku-98-118	CB,l	ankerite-rich layer		56	NBS mining area	S 17°20.941´ E 13°47.741´	X			X	X							
Ku-98-120	A,f	transsected by a vein of weathered ferrocarbonatite		80	NBS mining area	S 17°20.650´ E 13°47.410´	X											
Ku-98-121	T		11	14	NBS mining area	S 17°20.651´ E 13°46.165´	X			X								
Ku-98-123	A,px		11	15	NBS mining area	S 17°21.055´ E 13°45.900´	X			X								
Ku-98-124	A,ol		11	16	NBS mining area	S 17°20.948´ E 13°46.037´	X			X								
Ku-98-125	T		11	17	NBS mining area	S 17°20.994´ E 13°46.105´	X			X						X		
Ku-98-126	GN		11	18	NBS mining area	S 17°21.007´ E 13°46.111´	X			X								
Ku-98-128	GN		11	19	NBS mining area	S 17°20.855´ E 13°46.023´	X			X						X		
Ku-98-129	GN		11	20	NBS mining area	S 17°20.855´ E 13°46.023´	X			X								
Ku-98-130a	CB,REE	sulphide-bearing	21		NBS mining area	S 17°20.902´ E 13°45.823´	X		X	X	X	X		X	X			
Ku-98-220	T,grt		14		Zebra Mountains (southern margin)	S 17°26.140´ E 13°39.935´	X			X						X		
Ku-98-130b	CB,REE	sulphide-bearing	21		NBS mining area	S 17°20.902´ E 13°45.823´	X	X	X	X	X	X		X	X			X
Ku-98-131	CB,so	Sdl rimmed by Bt	21		NBS mining area	S 17°20.902´ E 13°45.823´	X		X	X	X	X		X				
Ku-98-221a	T,grt		14		Zebra Mountains (southern margin)	S 17°26.295´ E 13°39.750´	X		X	X								
Ku-98-221b	T,grt		14		Zebra Mountains (southern margin)	S 17°26.295´ E 13°39.750´	X		X	X								
Ku-98-222	GN		14		Zebra Mountains (southern margin)	S 17°26.301´ E 13°39.776´	X			X						X		
Ku-98-228	T		15		Zebra Mountains (southern margin)	S 17°23.880´ E 13°31.775´	X			X								
Ku-98-230	T		16		Zebra Mountains (southern margin)	S 17°24.009´ E 13°29.280´	X			X	X							
Ku-98-231	T		17		Zebra Mountains (southern margin)	S 17°24.432´ E 13°26.126´	X			X								

Ku-99-01	A,f	bordered by CB,so		81	NBS mining area	S 17°20.417´ E 13°47.000´	X											
Ku-99-02	A,f/CB,so	contact between A,f and CB,so		57	NBS mining area	S 17°20.417´ E 13°47.000´	X		X							X	X	
Ku-99-03	S,fs	altered		31	NBS mining area	S 17°20.890´ E 13°47.020´	X			X								
Ku-99-04	CB,l			58	NBS mining area	S 17°20.890´ E 13°47.020´	X			X								
Ku-99-05	CB,so	layered		58	NBS mining area	S 17°20.890´ E 13°47.020´	X		X	X						X		
Ku-99-06	S,f/CB,so	contact between S,f and CB,so		59	NBS mining area	S 17°20.898´ E 13°47.093´	X											
Ku-99-07	CB,so			60	NBS mining area	S 17°21.200´ E 13°47.750´	X			X								
Ku-99-08	CB,so			60	NBS mining area	S 17°21.200´ E 13°47.750´	X			X	X							
Ku-99-09	S,f	bordered by CB,l		82	NBS mining area	S 17°21.200´ E 13°47.750´	X			X								
Ku-99-10	S,f	Ms-rich, partially recrystallized		82	NBS mining area	S 17°21.200´ E 13°47.750´	X											
Ku-99-11	S,fs			32	NBS mining area	S 17°21.450´ E 13°47.950´	X		X	X								
Ku-99-12	S,fs			32	NBS mining area	S 17°21.450´ E 13°47.950´	X		X	X								

Table A.1.1 Sample locations (continued).

Sample	Rock type	Comments	Pl. 3	Pl. 4	Locality	GPS	TS	OS	EMP	XRF	REE	XRD	LA-I	FI	SR	O	C	S
Ku-99-13	S,fs			32	NBS mining area	S 17°21.450´ E 13°47.950´	X		X	X						X		
Ku-99-14	S,fs			32	NBS mining area	S 17°21.450´ E 13°47.950´	X		X	X								
Ku-99-15a	S,ne	bordered by CB,so		84	NBS mining area	S 17°21.100´ E 13°47.850´	X		X	X	X					X		
Ku-99-15b	S,ne	bordered by CB,so		84	NBS mining area	S 17°21.100´ E 13°47.850´	X											
Ku-99-15c	S,ne	bordered by CB,so		84	NBS mining area	S 17°21.100´ E 13°47.850´	X											
Ku-99-15d	S,ne	bordered by CB,so		84	NBS mining area	S 17°21.100´ E 13°47.850´	X											
Ku-99-16	S,fs	altered		33	NBS mining area	S 17°21.100´ E 13°47.850´	X			X								
Ku-99-17	CB,l			61	NBS mining area	S 17°21.100´ E 13°47.850´	X			X								
Ku-99-18	S,f/CB,l	contact between S,f and CB,l		61	NBS mining area	S 17°21.100´ E 13°47.850´	X											
Ku-99-19s	S,f	bordered by CB,l		83	NBS mining area	S 17°21.400´ E 13°47.100´	X			X						X		
Ku-99-19c	CB,l	bordered by S,f		62	NBS mining area	S 17°21.400´ E 13°47.100´	X			X								
Ku-99-20	S,fs			34	NBS mining area	S 17°21.400´ E 13°47.100´	X			X	X					X		
Ku-99-21	S,fs			34	NBS mining area	S 17°21.400´ E 13°47.100´	X									X		
Ku-99-SA8	CB,so	sulphide-bearing		63	NBS mining area	S 17°20.470´ E 13°47.000´	X	X	X							X	X	X
Ku-99-SA11	CB,so		23		NBS mining area	S 17°21.745´ E 13°48.001´	X									X	X	
Ku-01-OD1	CB,so	sulphide-bearing	21		NBS mining area	S 17°20.902´ E 13°45.823´	X	X										X
Ku-01-OD2	CB,so	sulphide-bearing	21		NBS mining area	S 17°20.902´ E 13°45.823´	X	X										X
Ku-01-OD3	CB,so	sulphide-bearing	21		NBS mining area	S 17°20.902´ E 13°45.823´	X			X			X					
Ku-01-03	FV	bearing rare Fs clasts		64	NBS mining area	S 17°20.095´ E 13°46.605´	X									X	X	
Ku-01-04	FV	almost silicate-free		65	NBS mining area	S 17°20.985´ E 13°47.845´	X		X	X	X				X			
Ku-01-05	FV	bearing rare Fs clasts		66	NBS mining area	S 17°21.492´ E 13°47.509´	X			X	X							
Ku-01-08	MC		24		Zebra Mountains (eastern margin)	S 17°13.585´ E 13°38.555´	X			X								
Ku-01-10	CC		25		Zebra Mountains (eastern margin)	S 17°12.560´ E 13°37.995´	X			X								
Ku-01-13	S,fs		27		Zebra Mountains (eastern margin)	S 17°00.880´ E 13°27.750´	X											
Ku-01-16	G		27		Zebra Mountains (eastern margin)	S 17°00.880´ E 13°27.750´	X											
Ku-01-19	GN	bearing amphibole megacrysts	1		Zebra Mountains (western margin)	S 17°08.000´ E 13°14.230´	X											
Ku-01-20	GN	bearing amphibole megacrysts	1		Zebra Mountains (western margin)	S 17°07.995´ E 13°14.280´	X											
Ku-01-21	GN	bearing amphibole megacrysts	1		Zebra Mountains (western margin)	S 17°08.403´ E 13°14.216´	X											
Ku-01-22	GN	bearing amphibole megacrysts	1		Zebra Mountains (western margin)	S 17°08.403´ E 13°14.216´	X											
Ku-01-23	GN	bearing amphibole megacrysts	1		Zebra Mountains (western margin)	S 17°08.403´ E 13°14.216´	X											
B-98-101a	GN	marginal intrusion	20		Zebra Mountains (western margin)	S 17°00.001´ E 13°00.017´	X			X								
B-98-170a	G	foliated	28		Zebra Mountains (southern margin)	S 17°25.539´ E 13°48.832´	X			X								
B-98-180a	G	foliated	29		Zebra Mountains (southern margin)	S 17°25.907´ E 13°45.796´	X			X								
B-98-274a	A,ol		18		Zebra Mountains (western margin)	S 17°09.338´ E 13°13.916´	X			X								
B-98-274b	A,ol		18		Zebra Mountains (western margin)	S 17°09.338´ E 13°13.916´	X			X								
B-98-281b	A,ol		19		Zebra Mountains (northern margin)	S 17°00.070´ E 13°16.373´	X			X								
B-99-410	G	foliated	30		Zebra Mountains (southern margin)	S 17°26.103´ E 13°43.128´	X			X								

(Abbrevations: ***C*** carbon isotope analysis, ***EMP*** electron microprobe analysis, ***FI*** microthermometric fluid inclusion tudies, ***LA-I*** laser ablation ICP-MS, ***O*** oxygen isotope analysis, ***OS*** petrographical investigation of ore sections, ***Pl.3*** and ***Pl.4*** numbers in the table refer to sample locations, marked on the attached locality maps Plate 3 and Plate 4, ***REE*** rare earth element analysis, ***S*** sulphur isotope analysis, ***SR*** synchrotron radiation X-ray fluorescence analysis, ***TS*** petrographical investigation of thin sections, ***XRD*** X-ray diffraction, ***XRF*** X-ray fluorescence analysis;)

Sample material of the field season 1997 ("Ku-97") was provided by Dr. habil. N. Cook (Geological Survey of Norway, Trondheim) and Dipl.-Min. S. Littmann (GeoForschungsZentrum Potsdam), whereas samples with the first abbrevation "B" were supplied by Dipl.-Geol. S. Brandt. Sample locations are marked in the attached locality maps (Plate 3 and 4).

A.2 Analytical methods

A.2.1 Petrography

Thin sections have been investigated with a Leitz polarisation microscope. The optical identification of the opaque phases was performed on polished sections with the help of a reflected light microscope.

A.2.2 X-ray diffraction (XRD)

The diffraction patterns were obtained with a powder X-ray diffractometer of the type Philips PW 1820 using CuKα radiation and operating conditions of 40 kV accelerating voltage and 30 mA cathode current. Powder diffraction files were processed with the computer software Jade 5.0 (Materials Data, Inc.).

A.2.3 Electron microprobe (EMP) analysis

All electron microprobe (EMP) analyses reported here were performed on a CAMECA SX50 instrument, with three wavelength-dispersive spectrometers. Matrix corrections were made with the PAP program of CAMECA. Element concentrations were determined on polished and carbon coated thin sections.

Operating conditions were 15 kV accelerating voltage and 15nA beam current, for silicate (generally 1 µm beam size; albite, chlorite, biotite: 5 µm beam size; sodalite: 10 µm beam size), apatite (8 µm beam size), pyrochlore (5 µm beam size), sulphide (1 µm beam size) and Fe-Ti-oxide (1 µm beam size) analysis. Bulk compositions of alkali-feldspars were determined with a defocused electron beam of 20 µm in size. Carbonates were analysed at 12 kV, 15 nA with a spot diameter of 5 µm. Where possible, profiles of 10 to 60 points were analysed on each phase.

The relative analytical error for major elements for the above given analytical conditions is approximately ± 1%, and ± 5% for minor elements with concentrations < 1wt.%. The lower detection limit is given at approximately 0.05-0.1 wt.%.

The following natural and synthetic silicate and oxide minerals were used as reference standards:

Element	Standard	Sin q line	Monochromato crystal	Counting (peak)	Counting (background)	Beam diameter
Silicates, oxides, apatite and pyrochlore						
Si	andradite	K_α	PET	20 sec	10 sec	1 µm
Ca	andradite	K_α	PET	20 sec	10 sec	1 µm
K	orthoclase	K_α	PET	20 sec	10 sec	1 µm
Na	albite	K_α	TAP	20 sec	10 sec	5 µm
Mg	periclase	K_α	TAP	20 sec	10 sec	1 µm
Ti	$MnTiO_3$	K_α	PET	20 sec	10 sec	1 µm
Mn	$MnTiO_3$	K_α	LIF	30 sec	15 sec	1 µm
Al	Al_2O_3	K_α	TAP	20 sec	10 sec	1 µm
Fe	Fe_2O_3	K_α	LIF	30 sec	15 sec	1 µm
Cr	Cr_2O_3	K_α	PET	20 sec	10 sec	1 µm
Ba	$BaSO_4$	L_α	PET	20 sec	10 sec	1 µm
F	LiF	K_α	TAP	30 sec	15 sec	10 µm
Cl	vanadinite	K_α	PET	20 sec	10 sec	1 µm
Nb	Nb	L_α	PET	30 sec	15 sec	5 µm
La	$LaPO_4$	L_α	LIF	50 sec	25 sec	5 µm
Ce	$CePO_4$	L_α	LIF	50 sec	25 sec	5 µm
Sr	strontianite	L_α	PET	20 sec	10 sec	1 µm
Carbonates						
Ca	calcite	K_α	PET	20 sec	10 sec	1 µm
Na	albite	K_α	TAP	20 sec	10 sec	5 µm
Mg	dolomite	K_α	TAP	20 sec	10 sec	1 µm
Mn	$MnTiO_3$	K_α	LIF	30 sec	15 sec	1 µm
Fe	siderite	K_α	LIF	30 sec	15 sec	1 µm
Ba	$BaSO_4$	L_α	PET	20 sec	10 sec	1 µm
La	$LaPO_4$	L_α	LIF	50 sec	25 sec	5 µm
Ce	$CePO_4$	L_α	LIF	50 sec	25 sec	5 µm
Sr	strontianite	L_α	PET	20 sec	10 sec	1 µm
Sulphides						
Cu	Cu	K_α	LIF	30 sec	15 sec	1 µm
Fe	FeS_2	K_α	LIF	30 sec	15 sec	5 µm
S	FeS_2	K_α	PET	20 sec	10 sec	1 µm
Mn	$MnTiO_3$	K_α	PET	20 sec	10 sec	1 µm
Co	Co	K_α	LIF	30 sec	15 sec	1 µm
Ni	Ni	K_α	LIF	30 sec	15 sec	1 µm
As	GaAs	L_α	TAP	20 sec	10 sec	1 µm
Sb	Sb_2S_3	L_α	PET	20 sec	10 sec	5 µm
Se	Se	L_α	TAP	20 sec	10 sec	5 µm
Te	Te	L_α	PET	20 sec	10 sec	1 µm

Mineral formulae were calculated by using special Excel and Framework macros (see also: A.3 Computer software).

A.2.4 Bulk rock geochemistry

All samples were prepared by removing alteration rims before and after crushing them into chips of < 1 cm with a steel jaw breaker (Siebtechnik GmbH). Afterwards each sample was finely ground in an agate mill (Siebtechnik GmbH) for about 150-300 sec.

A.2.4.1 X-ray fluorescence (XRF)

For x-ray fluorescence (XRF) analyses the samples were prepared by mixing 600 mg sample powder with 3.6 g SPECTROMELT A 12 and 600-1000 mg NH_4NO_3. The mixture was fused at a NUTECH burner station with temperatures up to 1000°C. Major and trace elements were determined from fused glass discs using a Philips PW 1480 XRF spectrometer. Matrix effects were corrected automatically by the Philips X40 software. The relative analytical error for major and trace elements is 1 % and 1-8 %, respectively.

A.2.4.2 Loss of ignition (LOI)

The loss of ignition was determined by heating ~ 1 g of dried sample powder for 4 hours at 1100°C. After cooling the sample was weighed again. The LOI is obtained by substracting the weight of the heated sample from the weight before heating.

A.2.4.3 Volumetry (CO_2)

CO_2 was determined volumetrically by reacting 1-3 g of the sample powder with 10 ml HCl (16-18%). For the calibration variable amounts of powdered $CaCO_3$ were used. The lower detection limit for CO_2 is given at 0.1 wt.%.

A.2.4.4 Colourmetry (FeO)

After decomposing the sample powder with HF/H_2SO_4 (SEROLAB), the FeO contents were analysed using a ZEISS PMD 2 spectral photometer at an extinction λ = 522 nm. For the calibration international reference standards (NIM-G, QLO-1, SDC-1, BHVO-1, NIM-N, DR-N) were used.

The FeO contents of samples with elevated CO_2 contents (e.g. > 13 wt.%) were not detectable by this method, due to a strong chemical reaction of the sample powders with the HF/H_2SO_4 mixture.

A.2.4.5 Rare earth elements

A.2.4.5.1 ICP-AES

Rare earth element analyses of the anorthosites, syenites, part of the samples of the carbonatitic breccia (Ku-98-08; Ku-98-103c, Ku-98-131) and one ferrocarbonatite sample (Ku-01-04) were performed at the GeoForschungsZentrum Potsdam, Germany. Sample preparation followed the method of Zuleger and Erzinger (1988): The REE were separated using ion-exchange columns with a sinterdisc filled with 100 mm ion exchange resin (DOBEX 50 WX8). After washing the resin with 300 ml HCL (1 mol/l) and re-equilibration, the sample solution was loaded onto the exchange columns. Flow rate was at 3ml/minute. Major constituents and most of the minor elements were eluated with 500 ml HCl (1.7 mol/l). The eluate was filtered and dried, the residue was dissolved with 10% HCl. Measurements of REE and Y concentrations were conducted by ICP-AES. Details on ICP equipment, operating conditions, background wavelength corrections and background equivalent concentrations as well as precision of the method are given in Zuleger and Erzinger (1988). For graphic presentation the analysed REE were normalised against the chondrite-values of Evenson et al. (1978):

La: 0.245	***Ce***: 0.638	***Pr***: 0.096
Nd: 0.474	***Sm***: 0.154	***Eu***: 0.058
Gd: 0.204	***Tb***: 0.037	***Dy***: 0.254
Ho: 0.057	***Er***: 0.166	***Tm***: 0.026
Yb: 0.165	***Lu***: 0.025	

A.2.4.5.2 ICP-MS

For part of the samples of the carbonatitic breccia (Ku-98-118, Ku-98-130a, Ku-98-130b) and one ferrocarbonatite sample (Ku-01-05) the digesting methode after Zuleger & Erzinger (1988) was not applicable. Hence, the concentrations of the REEs and Y in these samples were analysed by ICP-MS using a Perkin-Elmer/SCIEX Elan 5000 quadrupole ICP mass spectrometer housed at the GeoForschungsZentrum Potsdam, Germany. The samples were dissolved in PTFE digestion vessels

with 1:1 HF-$HClO_4$ for 16 hours at 180°C. After cooling, samples were evaporated at 180°C for approximately 4 hours to near dryness, dissolved with 5 ml HCl (10 mol l^{-1}) and heated again at 180°C to incipient dryness. The hot residues were taken up in 5 ml HCl (10 mol l^{-1}) and were heated in the closed vessels at 130°C for 12 hours. After this procedure the samples were dried again and the sample cakes redissolved in 2 ml HCl (10 mol l^{-1}) and 10 ml Milli-Q water. The solutions were poured into 50 ml volumetric flasks, filled up to volume with Milli-Q water and transferred into 50 ml polyethylene bottles. Before analysis, Ru and Re were added to aliquots of the solutions as internal standards to compensate for drift correction (Doherty, 1989), and the mixtures were diluted. In case of high concentrations of the REE a dilution factor of 50000 was used for the measurements. Interference corrections were followed considering the interferences of MO^+, MOH^+ and MCl^+ (Dulski, 1994). Calibration was carried out using multi-element solutions containing 10 mg ml^{-1} Rb, Sr, Y, Zr, Cs, Ba, all REEs, Hf, Pb, Th and U. International geological reference materials were used for routinely check of the accuracy. The precision ranged between 1 and 5% (rel.) for about 90% of the samples, for elements with low concentrations (lower than 0.1 µg g^{-1}) up to 10% (rel.).

A.2.5 Laser ablation ICP-MS

Trace element and REE analyses of sodalite in thin sections (~80 µm) were performed with a 266 nm Nd:YAG laser (New Wave Research Inc., Merchantek Products) connected to a quadrupole ICPMS (Agilent 7500i; Plasma power: 1320 W; Carrier gas flow: 1.11 l min^{-1} (Ar); Plasma gas flow: 14.9 l min^{-1} (Ar); auxiliary gas flow: 0.9 l min^{-1} (Ar)) at the Institute of Mineralogy, Würzburg. Laser parameters used were a frequency of 10 Hz and an energy setting of 50% (0.9 mJ). Ablation patterns were 600 µm long lines, ablated with a scan speed of 10 µm/sec. The diameter of the sample pit created by the laser is 50 µm. Data acquisition was done in Time Resolved Analysis mode with measurements of the instrument background (20 sec) and of sodalite (60 sec). The certified reference material NIST 612 with the values of Pearce et al. (1997) was used as an external standard whereas Si in sodalite – derived from EMP analyses - was used as internal standard. Raw counts for each element were solely corrected by subtracting the background counts and processed using the software GLITTER (Version 3.0; On-line Interactive Data Reduction for the LA-ICPMS, Macquarie Research Ltd., 2000). For graphic presentation the analysed REE were normalised against the chondrite-values of Evenson et al. (1978).

A.2.6 Stable isotope analysis

A.2.6.1 Carbon and Oxygen Isotope Analysis

Stable isotope ratios are reported for hand-picked mineral separates of feldspar, nepheline, magnetite, biotite and ankerite. Silicates and oxides were treated with ClF_3 according to the method described by Borthwick & Harmon (1982). Carbonate samples have been treated with 100% phosphoric acid. CO_2 was measured mass spectrometrically with a Finnigan MAT 251, housed at the Geochemical Institute, University of Göttingen. All $\delta^{18}O$ values are given relative to standard mean ocean water (SMOW), $\delta^{13}C$ values relative to PDB. The reproducibility of both δ values is better than ± 0.2 ‰.

A.2.6.2 Sulfur Isotope Analysis

Sulfur isotope analyses of pyrite and chalkopyrite in polished sections were performed with a Nd:YAG laser (SPECTRON LASERS 902Q CW) coupled to an VG SIRA II ICPMS at the Laboratory for Stable Isotopes, Scottish Universities Research and Rector Center (SURRC), East Kilbride, Glasgow. Laser parameters used were an energy setting of 1 W and approximately 25 µm beam diameter. For the δS measurements the diameter of the sample pit created by the laser has to be at least 100 µm. The certified reference gas and international reference standards of known isotopic composition were used as external standards.

A.2.7 Density determination

Densities of anorthosites, syenites and carbonatites from the Swartbooisdrif area were determined following the principle of Archimedes by using a pair of SARTORIUS precision scales at the Fraunhofer Institut für Silicatforschung (ISC), Würzburg. The density of destilled water at 17°C is 0.9988 g/cm^3.

A.2.8 Microthermometric fluid inclusion studies

Microthermometric investigations were performed on an U.S. Geological Survey gas-flow-heating/freezing stage modified by Fluid Inc.. For data collection five doubly polished thin sections (~ 150 µm thick) were used. The stage was calibrated against an ice-bath and synthetic standards of Syn Flinc (critical point of H_2O, critical point of CO_2). A heating rate of 0.1°C was used during phase changes. Temperature accuracy is ± 0.1°C at 0°C and at –56.6°C and ± 0.4°C at 374.1°C. Reproducibility is within the range of the calibration error. Due to the small size of the analysed fluid inclusions, detections of phase changes were repeated at least three times.

A.2.9 Synchrotron radiation x-ray fluorescence (SYXRF) analysis

The synchrotron-radiation X-ray fluorescence (SYXRF)-microanalyses of various fluid-inclusions and minerals were carried out at Beamline L at HASYLAB, Hamburg. Due to the small sizes (5-20 µm) of the fluid inclusions trapped in sodalite, apatite and ankerite of the carbonatitic breccia and in quartz of the syenite and the low concentrations of the elements of mineralogical interest (e.g. Sr, Nb, Ba, Th, U, Hf and REE) a high spatial resolution combined with low detection limits of ppm to sub-ppm is needed for the measurements of their respective chemical compositions. The analyses of fluid inclusions and minerals were performed with the standard polychromatic synchrotron radiation X-ray fluorescence set-up at beamline L which allows both, the multi-element analysis of even the high energetic REE and a destruction-free in situ measurement of the trace element geochemistry of the fluid inclusions. For measurements, capillary optics was used, focusing the beam to a minimum of 10 µm in diameter to determine the composition of individual fluid inclusions and the narrow zonation patterns of apatite and pyrochlore. These experiments were performed by using the cross-slit system only. Doubly polished thin sections (81-88 µm) were prepared for the data collection, which were also used for EMP re-measurements of each single spot. The thin sections were fixed with an elastic band on a rectangular aluminum-holder suitable for the specimen stage of the SYXRF. EMP major element analyses were used for the matrix correction and the SRXRF trace element quantification and standardisation. Ba, Sr and Fe – derived from the EMP analyses - were used as internal standard for quantification. For graphic presentation of the REE patterns the analysed REE were normalised against the chondrite-values of Evenson et al. (1978).

A.2.10 Scanning electron microscope (SEM) images

Scanning electron microscope (SEM) images of ilmenite-magnetite-orthopyroxene symplectites of the dark anorthosites of the KIC were performed on a LEO 1450 VP instrument, of the Fraunhofer Institut für Silicatforschung (ISC), Würzburg. Excitation voltage was set at 20 kV. Due to the good electrical conductivity of the Fe-Ti oxides, no sputter coating was applied.

A.3 Computer software

EMP analyses were processed using special designed formula calculation macros for the computer software Framework IV (Ashton Tate GmbH) and Excel 7.0 (Microsoft). The various macros were computed by K. Drüppel, Dr. L. Franz, Dr. H. Häussinger, Dr. T. Wagner, Dr. P. Wrobel und Dr. A. Zeh.

The evaluation of the bulk rock geochemistry, the REE analyses, the LA ICP-MS analyses and SYXRF analyses was carried out with the software Excel 7.0 (Microsoft) and Origin 5.0 (Microcal Software Inc.) as well as the shareware Newpet 94.01.07 by Daryl Clarke.

Microthermometric fluid inclusion data were processed using FLINCOR (Brown, 1989).

Equilibrium fractionation temperatures of oxygen isotopes in ankerite-magnetite pairs and the equilibrium fractionation temperatures of sulphur isotopes in pyrite-chalcopyrite pairs have been calculated with a computer spreadsheet for Excel 7.0 (Microsoft), computed by Dr. T. Wagner.

Powder diffraction files were processed with the computer software Jade 5.0 (Materials Data, Inc.).

A.4 Abbrevations

A.4.1 General abbrevations

A,f	fenitized anorthosite
A,m	massive, Px-bearing dark anorthosite, including A,px and GN
A,ol	olivine-bearing anorthosite of the dark anorthosite suite
a.p.f.u.	atoms per formula unit
A,px	pyroxene-bearing anorthosite of the dark anorthosite suite
b.d.l.	below detection limit
CB	carbonatitic breccia
CB,l	layered carbonatitic breccia
CB,m	massive carbonatitic breccia
CB,REE	REE-rich samples of the CB,so
CB,so	sodalite-rich carbonatitic breccia
EC	Epupa Complex
f	fugacity
F.I.	fenitization index
FV	ferrocarbonatite vein
G	granite
GN	leucogabbronorite of the dark anorthosite suite
HREE	heavy rare earth elements
iss	intermediate solid solution
KIC	Kunene Intrusive Complex
L	K-feldspar-biotite-ilmenite-calcite rock
LREE	light rare earth elements
n.a.	not analyzed
S,a	altered syenite of the first generation, including S,qtz and S,fs
S,f	fenitized syenite
S,fs	syenite
S,ne	nepheline-syenite
S,qtz	quartz syenite
SRXRF	Synchrotron-micro-X-ray fluorescence
ss	solid solution
T	leucotroctolite
Te	eutectic temperature
T,grt	garnet-bearing troctolite
Th	homogenization temperature
T,m	massive, Ol-bearing dark anorthosite, including T and A,ol
Tmf	temperature of final melting
UMX	fenititized ultramafic xenolith
X_{Mg}	$(Mg/(Mg+Fe^{2+})_{molar}$

A.4.2 Mineral abbrevations

Abbrevations of the rock-forming minerals generally follow the work of Kretz (1983).

Ab	albite	***Dol***	dolomite	***Pg***	paragonite
Act	actinolite	***Ep***	epidote	***Pl***	plagioclase
An	anorthite	***Fac***	ferro-actinolite	***Pn***	pentlandite
Ank	ankerite	***Fl***	fluorite	***Po***	pyrrhotite
Anl	analcite	***Grt***	garnet	***Py***	pyrite
Ap	apatite	***Hbl***	hornblende	***Qtz***	quartz
Arf	arfvedsonite	***Hem***	hematite	***Rbk***	riebeckite
Bn	bornite	***Ilm***	ilmenite	***Rt***	rutile
Bt	biotite	***Kfs***	K-feldspar	***Sdl***	sodalite
Cal	calcite	***Mag***	magnetite	***Ser***	sericite
Cc	chalcocite	***Mgs***	magnesite	***Spl***	spinel
Ccn	cancrinite	***Ms***	muscovite	***Str***	strontianite
Ccp	chalcopyrite	***Ne***	nepheline	***Ttn***	titanite
Chl	chlorite	***Ol***	olivine	***Zo***	zoisite
Cpx	Ca clinopyroxene	***Opx***	orthopyroxene	***Zrn***	zircon

Other mineral abbrevations include:

Ag	aegirine	***Nal***	unspecified Na-Al phase
Crb	carbocernaite	***Pcl***	pyrochlore
Flt	fletcherite	***Pd***	polydymite
Mi	millerite	***Vi***	violarite

A.5 Analytical data

Table of contents

A.5.1 Mineral chemistry – EMP analyses

Table A.5.1.1a Representative analyses of plagioclase.

Rock type	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN
Sample	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-04
	fs1	fs1	fs1	fs1	fs1	fs2	fs2	fs2	fs2	fs2	fs1	fs1	fs2	fs3	fs3
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	core	→	→	→	rim	core	→	→	→	rim	core	rim	core	core	rim
SiO_2	55.88	55.38	55.60	55.55	55.83	55.69	55.48	55.41	55.63	55.99	56.62	57.11	54.82	55.93	55.98
Al_2O_3	27.53	27.71	27.80	27.79	27.74	27.66	27.74	27.78	27.67	27.63	27.21	26.92	28.18	27.65	27.36
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	9.86	9.69	9.73	9.85	9.66	9.71	9.78	9.73	9.78	9.67	8.98	8.75	10.48	9.58	9.57
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.03	0.02	0.09	0.08	0.02	0.06	0.01	0.01	0.05	0.11	0.05	0.03	0.05	0.00	0.00
BaO	0.09	0.00	0.00	0.04	0.06	0.06	0.00	0.01	0.07	0.00	0.13	0.05	0.07	0.05	0.10
Na_2O	5.91	6.16	6.05	6.01	5.94	5.89	6.13	5.95	6.23	6.00	6.50	6.43	5.72	6.13	6.16
K_2O	0.08	0.09	0.05	0.07	0.07	0.05	0.05	0.02	0.04	0.01	0.04	0.07	0.02	0.08	0.10
Sum	99.38	99.05	99.32	99.39	99.31	99.12	99.19	98.90	99.47	99.41	99.52	99.36	99.33	99.42	99.26
Formula (O=8)															
Si	2.53	2.51	2.52	2.51	2.52	2.52	2.52	2.52	2.52	2.53	2.55	2.57	2.49	2.53	2.53
Al	1.47	1.48	1.48	1.48	1.48	1.48	1.48	1.49	1.48	1.47	1.45	1.43	1.51	1.47	1.46
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.48	0.47	0.47	0.48	0.47	0.47	0.48	0.47	0.47	0.47	0.43	0.42	0.51	0.46	0.46
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.52	0.54	0.53	0.53	0.52	0.52	0.54	0.52	0.55	0.53	0.57	0.56	0.50	0.54	0.54
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Sum	5.00	5.02	5.01	5.01	5.00	5.00	5.01	5.00	5.02	5.00	5.01	4.99	5.01	5.01	5.01
Si+Al	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.99	4.00	4.00	4.00	3.99	4.00	4.00
Na+Ca+K	1.00	1.02	1.01	1.01	0.99	0.99	1.02	1.00	1.02	0.99	1.01	0.99	1.01	1.01	1.01
An(Na/Ca)	47.66	46.26	46.92	47.29	47.10	47.50	46.75	47.41	46.30	47.08	43.10	42.69	50.22	46.10	45.86
Ab(Na/Ca)	51.74	53.26	52.81	52.26	52.39	52.09	52.99	52.49	53.38	52.84	56.46	56.79	49.56	53.37	53.38
Or	0.44	0.49	0.27	0.38	0.40	0.29	0.26	0.09	0.21	0.08	0.22	0.42	0.10	0.44	0.58
Ce	0.16	0.00	0.00	0.07	0.11	0.11	0.00	0.01	0.11	0.00	0.22	0.09	0.12	0.09	0.17

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	A,w	A,w	A,w	A,w	A,w	A,px	A,px	A,px	A,px	A,px	A,px	A,px	A,w	A,w
Sample	Ku-97-08b	Ku-97-08b	Ku-97-08b	Ku-97-08b	Ku-97-08b	Ku-97-13	Ku-97-13	Ku-97-13	Ku-97-13	Ku-97-13	Ku-97-13	Ku-97-13	Ku-97-33	Ku-97-33
	fs1	fs1	fs1	fs2	fs2	fs1	fs1	fs1	fs1	fs1	fs2	fs2	fs1	fs1
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	rim	→	core	core	rim	rim	→	core	→	rim	core	rim	core	→
SiO_2	54.52	54.95	54.40	55.45	55.49	55.46	55.00	54.80	54.90	55.43	56.15	55.35	67.23	66.71
Al_2O_3	28.39	28.29	28.42	27.93	27.94	27.93	27.89	28.04	27.92	27.88	27.59	27.63	20.17	20.08
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	10.59	10.86	10.95	10.26	9.97	10.20	10.06	10.34	10.13	10.23	9.61	9.72	0.95	0.90
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.33	0.04	0.08	0.07	0.01	0.06	0.07	0.07	0.01	0.04	0.00	0.00	0.30	0.30
BaO	0.04	0.03	0.00	0.00	0.11	0.04	0.04	0.04	0.00	0.08	0.00	0.04	0.00	0.02
Na_2O	5.39	5.60	5.42	5.63	5.85	5.80	5.87	5.85	5.90	5.82	5.93	6.08	11.13	11.13
K_2O	0.05	0.01	0.04	0.05	0.08	0.04	0.03	0.03	0.07	0.05	0.08	0.07	0.03	0.04
Sum	99.32	99.78	99.30	99.40	99.44	99.53	98.94	99.16	98.93	99.51	99.36	98.90	99.81	99.19
Formula (O=8)														
Si	2.48	2.48	2.47	2.51	2.51	2.51	2.50	2.49	2.50	2.51	2.54	2.52	2.95	2.95
Al	1.52	1.51	1.52	1.49	1.49	1.49	1.50	1.50	1.50	1.49	1.47	1.48	1.04	1.05
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.52	0.53	0.53	0.50	0.48	0.49	0.49	0.50	0.49	0.50	0.47	0.47	0.04	0.04
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.47	0.49	0.48	0.49	0.51	0.51	0.52	0.52	0.52	0.51	0.52	0.54	0.95	0.95
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	5.00	5.01	5.01	5.00	5.00	5.00	5.01	5.02	5.02	5.01	4.99	5.01	5.00	5.01
Si+Al	4.00	3.99	3.99	4.00	4.00	4.00	4.00	3.99	4.00	3.99	4.00	4.00	4.00	4.00
Na+Ca+K	0.99	1.02	1.01	0.99	1.00	1.01	1.01	1.02	1.02	1.01	0.99	1.01	0.99	1.00
An(Na/Ca)	51.84	51.67	52.67	50.02	48.18	49.11	48.51	49.29	48.50	49.10	47.03	46.68	4.49	4.25
Ab(Na/Ca)	47.78	48.25	47.13	49.70	51.16	50.58	51.26	50.47	51.13	50.51	52.51	52.85	95.35	95.46
Or	0.31	0.03	0.21	0.28	0.48	0.24	0.16	0.18	0.38	0.26	0.45	0.39	0.16	0.25
Ce	0.07	0.05	0.00	0.00	0.19	0.07	0.07	0.07	0.00	0.13	0.00	0.07	0.00	0.04

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,w	T
Sample	Ku-97-33	Ku-97-33	Ku-97-33	Ku-97-33	Ku-97-33	Ku-97-33a	Ku-97-44	Ku-97-44	Ku-97-44	Ku-97-44	Ku-97-44	Ku-97-44	Ku-97-44	Ku-97-92
	fs1	fs2	fs2	fs2	fs2	fs1	fs1	fs1	fs1	fs2	fs2	fs3	fs3	fs1
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	rim	rim	→	→	rim	core	core	→	rim	rim	core	core	rim	rim
SiO_2	66.77	51.78	54.64	51.67	52.01	53.26	67.41	66.73	65.51	54.66	54.82	56.62	57.11	54.05
Al_2O_3	20.41	24.47	24.23	24.11	24.56	24.52	19.92	20.57	21.47	28.41	28.18	27.21	26.92	29.42
MgO	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00
CaO	0.96	11.60	8.71	10.96	11.17	9.24	0.69	1.18	2.04	10.36	10.48	8.98	8.75	11.78
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.17	0.03	0.00	0.05	0.00	0.06	0.01	0.06	0.00	0.00	0.05	0.05	0.03	0.13
BaO	0.01	0.06	0.02	0.00	0.00	0.03	0.03	0.00	0.02	0.04	0.07	0.13	0.05	0.00
Na_2O	10.85	7.59	8.84	7.78	7.62	8.50	11.38	11.00	10.37	5.78	5.72	6.50	6.43	4.81
K_2O	0.02	0.19	0.15	0.21	0.21	0.29	0.08	0.05	0.07	0.05	0.02	0.04	0.07	0.27
Sum	99.20	95.72	96.59	94.77	95.56	95.89	99.51	99.60	99.50	99.29	99.33	99.52	99.36	100.45
Formula (O=8)														
Si	2.95	2.48	2.57	2.50	2.49	2.53	2.97	2.94	2.89	2.48	2.49	2.55	2.57	2.43
Al	1.06	1.38	1.34	1.37	1.39	1.37	1.03	1.07	1.12	1.52	1.51	1.45	1.43	1.56
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.05	0.60	0.44	0.57	0.57	0.47	0.03	0.06	0.10	0.50	0.51	0.43	0.42	0.57
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.93	0.71	0.81	0.73	0.71	0.78	0.97	0.94	0.89	0.51	0.50	0.57	0.56	0.42
K	0.00	0.01	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Sum	4.99	5.18	5.17	5.19	5.17	5.18	5.01	5.00	5.00	5.02	5.01	5.01	4.99	5.00
Si+Al	4.01	3.87	3.91	3.87	3.88	3.91	4.00	4.00	4.01	4.00	3.99	4.00	4.00	4.00
Na+Ca+K	0.97	1.31	1.25	1.31	1.29	1.27	1.01	1.00	0.99	1.02	1.01	1.01	0.99	1.00
An(Na/Ca)	4.67	45.33	35.00	43.34	44.31	37.01	3.23	5.58	9.77	49.58	50.22	43.10	42.69	56.62
Ab(Na/Ca)	95.20	53.72	64.24	55.66	54.72	61.59	96.29	94.16	89.82	50.09	49.56	56.46	56.79	41.83
Or	0.12	0.86	0.73	1.00	0.97	1.36	0.43	0.26	0.37	0.26	0.10	0.22	0.42	1.56
Ce	0.01	0.09	0.03	0.00	0.00	0.04	0.05	0.00	0.04	0.07	0.12	0.22	0.09	0.00

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	T	T	T	A,px	A,px	A,px	A,px	A,px	A,px	A,px	A,ol	A,ol	A,ol	A,ol
Sample	Ku-97-92	Ku-97-92	Ku-97-92	Ku-97-93	Ku-97-93	Ku-97-93	Ku-97-93	Ku-97-93	Ku-97-93	Ku-97-93	Ku-97-95	Ku-97-95	Ku-97-95	Ku-97-95
	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs2	fs2	fs1	fs1	fs1	fs1
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	→	→	rim	core	→	→	→	rim	core	rim	core	→	→	→
SiO_2	53.90	54.08	52.96	53.62	53.78	54.00	54.76	54.87	53.24	53.46	53.97	53.79	53.65	53.50
Al_2O_3	29.13	28.71	29.18	29.29	28.74	28.72	28.06	28.08	29.01	29.10	28.87	28.81	28.83	29.10
MgO	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	11.52	11.27	11.72	11.51	11.42	11.34	10.44	10.48	11.65	11.80	11.38	11.53	11.43	11.58
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.08	0.08	0.59	0.04	0.04	0.02	0.10	0.04	0.02	0.08	0.13	0.21	0.13	0.18
BaO	0.03	0.01	0.07	0.03	0.00	0.00	0.00	0.02	0.07	0.06	0.04	0.08	0.00	0.09
Na_2O	4.99	4.97	4.70	4.88	5.14	5.00	5.68	5.50	5.16	5.02	5.16	5.06	4.99	4.93
K_2O	0.36	0.42	0.26	0.07	0.05	0.05	0.05	0.06	0.05	0.08	0.06	0.07	0.03	0.06
Sum	100.02	99.52	99.49	99.43	99.17	99.13	99.08	99.05	99.19	99.60	99.60	99.55	99.05	99.43
Formula (O=8)														
Si	2.44	2.46	2.42	2.44	2.45	2.46	2.49	2.49	2.43	2.43	2.45	2.44	2.45	2.43
Al	1.55	1.54	1.57	1.57	1.54	1.54	1.50	1.50	1.56	1.56	1.54	1.54	1.55	1.56
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.56	0.55	0.57	0.56	0.56	0.55	0.51	0.51	0.57	0.57	0.55	0.56	0.56	0.56
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.44	0.44	0.42	0.43	0.45	0.44	0.50	0.48	0.46	0.44	0.45	0.45	0.44	0.43
K	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	5.01	5.01	5.01	5.00	5.01	4.99	5.01	5.00	5.02	5.01	5.01	5.01	5.00	5.01
Si+Al	3.99	3.99	3.99	4.00	3.99	4.00	3.99	4.00	3.99	3.99	3.99	3.99	4.00	3.99
Na+Ca+K	1.02	1.01	1.01	0.99	1.01	1.00	1.01	1.00	1.03	1.02	1.01	1.01	1.00	1.00
An(Na/Ca)	54.89	54.28	57.01	56.33	54.97	55.46	50.26	51.08	55.30	56.22	54.69	55.43	55.79	56.21
Ab(Na/Ca)	43.00	43.32	41.37	43.23	44.75	44.25	49.47	48.54	44.29	43.24	44.91	44.02	44.05	43.27
Or	2.06	2.39	1.50	0.40	0.28	0.30	0.28	0.34	0.29	0.44	0.33	0.41	0.16	0.36
Ce	0.05	0.01	0.12	0.05	0.00	0.00	0.00	0.04	0.12	0.10	0.07	0.14	0.00	0.16

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	A,ol	A,ol	A,ol	A,ol	A,ol	A,ol	A,ol	A,ol	A,ol	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-97-95	Ku-97-95	Ku-97-95	Ku-97-95	Ku-97-95	Ku-97-95	Ku-97-95	Ku-97-95	Ku-97-95	Ku-97-104	Ku-97-104	Ku-97-104	Ku-97-104	Ku-97-105
	fs1	fs2	fs2	fs2	fs2	fs poik.	fs poik.	fs poik.	fs poik.	fs1	fs1	fs2	fs2	fs1
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	rim	core	→	→	rim	rim	→	→	rim	core	rim	core	rim	core
SiO_2	52.48	53.78	53.72	53.89	54.51	53.66	53.87	53.23	53.56	50.66	52.90	52.44	52.58	52.50
Al_2O_3	29.62	28.74	28.81	28.91	29.00	28.66	28.93	29.00	29.00	31.12	29.42	29.71	29.80	30.11
MgO	0.02	0.03	0.00	0.00	0.00	0.32	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00
CaO	12.24	11.27	11.38	11.32	11.20	11.53	11.49	11.61	11.74	13.66	12.04	12.27	12.16	12.64
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.31	0.38	0.06	0.10	0.01	0.33	0.22	0.15	0.28	0.09	0.11	0.00	0.01	0.21
BaO	0.01	0.03	0.08	0.03	0.04	0.02	0.04	0.00	0.05	0.08	0.05	0.00	0.09	0.03
Na_2O	4.41	5.08	5.22	5.11	5.24	4.97	5.08	5.11	4.99	3.78	4.59	4.49	4.60	4.14
K_2O	0.06	0.11	0.09	0.07	0.07	0.03	0.08	0.04	0.07	0.05	0.05	0.03	0.04	0.19
Sum	99.14	99.40	99.34	99.44	100.06	99.52	99.71	99.13	99.73	99.44	99.15	98.92	99.27	99.80
Formula (O=8)														
Si	2.40	2.45	2.45	2.45	2.46	2.44	2.44	2.43	2.43	2.32	2.41	2.40	2.40	2.39
Al	1.60	1.54	1.55	1.55	1.54	1.54	1.55	1.56	1.55	1.68	1.58	1.60	1.60	1.61
Mg	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.60	0.55	0.55	0.55	0.54	0.56	0.56	0.57	0.57	0.67	0.59	0.60	0.59	0.62
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.39	0.45	0.46	0.45	0.46	0.44	0.45	0.45	0.44	0.34	0.41	0.40	0.41	0.36
K	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Sum	5.00	5.01	5.01	5.01	5.00	5.01	5.01	5.02	5.01	5.01	5.00	5.00	5.01	5.00
Si+Al	3.99	3.99	3.99	4.00	4.00	3.98	3.99	3.99	3.98	4.00	4.00	4.00	4.00	4.00
Na+Ca+K	0.99	1.00	1.02	1.01	1.00	1.00	1.01	1.02	1.02	1.01	1.00	1.00	1.00	0.99
An(Na/Ca)	60.33	54.74	54.30	54.79	53.91	56.07	55.27	55.56	56.25	66.32	58.94	60.06	59.14	62.11
Ab(Na/Ca)	39.29	44.61	45.04	44.76	45.62	43.72	44.19	44.22	43.26	33.26	40.66	39.77	40.45	36.76
Or	0.35	0.61	0.52	0.40	0.40	0.17	0.46	0.22	0.40	0.28	0.31	0.17	0.25	1.09
Ce	0.02	0.04	0.13	0.05	0.07	0.04	0.07	0.00	0.08	0.13	0.09	0.00	0.15	0.05

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	T,grt	T,grt	T,grt	T	T	T	T	T	T	T	T	T	T	T	T
Sample	Ku-97-105	Ku-97-105	Ku-97-105	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52
	fs1	fs2	fs2	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs2	fs2	fs2	fs2	fs2
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	rim	rim	core	rim	→	→	core	→	→	rim	rim	→	→	→	→
SiO_2	52.28	51.40	51.87	55.09	55.01	54.47	54.89	54.84	55.01	55.14	54.90	55.09	55.52	55.30	55.53
Al_2O_3	30.08	30.10	29.66	27.89	28.18	28.07	28.18	27.97	27.81	28.02	27.79	27.69	27.76	27.59	27.92
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
CaO	12.53	13.01	12.37	10.14	10.30	10.25	10.23	10.11	10.18	10.24	10.25	10.11	9.90	9.81	9.94
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.13	0.18	0.27	0.09	0.09	0.10	0.14	0.22	0.15	0.05	0.17	0.25	0.11	0.35	0.06
BaO	0.02	0.02	0.01	0.06	0.08	0.01	0.12	0.06	0.06	0.00	0.01	0.07	0.07	0.17	0.04
Na_2O	4.25	4.12	4.19	5.72	5.43	5.74	5.71	5.66	5.65	5.75	5.85	5.73	6.04	5.62	5.82
K_2O	0.21	0.16	0.22	0.08	0.09	0.13	0.15	0.19	0.16	0.14	0.12	0.15	0.08	0.29	0.14
Sum	99.48	98.98	98.60	99.07	99.17	98.77	99.41	99.04	99.01	99.34	99.09	99.10	99.47	99.15	99.45
Formula (O=8)															
Si	2.38	2.36	2.39	2.50	2.50	2.49	2.49	2.50	2.50	2.50	2.50	2.51	2.51	2.52	2.51
Al	1.62	1.63	1.61	1.49	1.51	1.51	1.51	1.50	1.49	1.50	1.49	1.48	1.48	1.48	1.49
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.61	0.64	0.61	0.49	0.50	0.50	0.50	0.49	0.50	0.50	0.50	0.49	0.48	0.48	0.48
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.38	0.37	0.37	0.50	0.48	0.51	0.50	0.50	0.50	0.51	0.52	0.51	0.53	0.50	0.51
K	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.02	0.01
Sum	5.00	5.01	5.00	5.00	4.99	5.02	5.01	5.01	5.00	5.01	5.02	5.01	5.01	5.00	5.00
Si+Al	4.00	3.99	4.00	4.00	4.00	4.00	4.00	4.00	3.99	4.00	3.99	3.99	3.99	3.99	4.00
Na+Ca+K	1.00	1.02	1.00	1.00	0.99	1.02	1.01	1.00	1.00	1.01	1.02	1.01	1.02	0.99	1.00
An(Na/Ca)	61.21	62.98	61.16	49.20	50.84	49.30	49.24	49.07	49.42	49.19	48.87	48.88	47.25	48.13	48.14
Ab(Na/Ca)	37.56	36.06	37.50	50.24	48.50	49.93	49.73	49.75	49.59	50.01	50.44	50.13	52.20	49.88	50.99
Or	1.19	0.92	1.31	0.45	0.52	0.76	0.83	1.08	0.90	0.80	0.67	0.86	0.43	1.69	0.80
Ce	0.04	0.04	0.02	0.11	0.14	0.01	0.21	0.10	0.10	0.00	0.02	0.13	0.12	0.30	0.07

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	T	T	T	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN
Sample	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-68	Ku-98-68	Ku-98-68	Ku-98-68	Ku-98-68	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-71
	fs2	fs2	fs2	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	→	→	core	rim	→	core	→	rim	rim	→	→	core	→	→
SiO_2	55.71	55.30	55.62	54.90	54.90	55.21	55.57	55.31	54.61	54.14	55.46	54.30	54.17	54.42
Al_2O_3	27.68	27.70	27.78	28.25	28.34	27.84	27.61	28.31	29.06	28.95	28.59	28.85	28.86	29.00
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	9.93	9.83	9.84	10.47	10.29	10.02	9.80	9.94	11.08	11.45	10.07	10.95	11.26	10.87
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.09	0.07	0.07	0.14	0.12	0.08	0.23	0.16	0.25	0.04	0.07	0.14	0.13	0.48
BaO	0.18	0.10	0.01	0.01	0.07	0.10	0.03	0.07	0.07	0.00	0.25	0.22	0.01	0.10
Na_2O	6.06	5.70	5.94	5.52	5.70	5.75	5.90	5.72	5.66	5.52	5.98	5.55	5.36	5.27
K_2O	0.13	0.13	0.11	0.11	0.14	0.18	0.36	0.11	0.02	0.01	0.05	0.07	0.08	0.17
Sum	99.78	98.84	99.38	99.41	99.55	99.18	99.50	99.61	100.74	100.09	100.47	100.08	99.87	100.31
Formula (O=8)														
Si	2.52	2.52	2.52	2.49	2.49	2.51	2.52	2.50	2.45	2.45	2.49	2.45	2.45	2.45
Al	1.47	1.49	1.48	1.51	1.51	1.49	1.47	1.51	1.54	1.54	1.51	1.54	1.54	1.54
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.48	0.48	0.48	0.51	0.50	0.49	0.48	0.48	0.53	0.55	0.48	0.53	0.55	0.53
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.02
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.53	0.50	0.52	0.49	0.50	0.51	0.52	0.50	0.49	0.48	0.52	0.49	0.47	0.46
K	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Sum	5.02	5.00	5.01	5.00	5.01	5.01	5.01	5.00	5.03	5.03	5.02	5.02	5.02	5.01
Si+Al	3.99	4.00	4.00	4.00	4.00	4.00	3.99	4.01	3.99	3.99	4.00	3.99	3.99	4.00
Na+Ca+K	1.02	0.99	1.01	1.00	1.01	1.01	1.01	0.99	1.03	1.04	1.01	1.02	1.02	1.00
An(Na/Ca)	47.02	48.32	47.47	50.82	49.50	48.45	46.86	48.60	51.83	53.40	47.86	51.76	53.47	52.62
Ab(Na/Ca)	51.98	50.72	51.87	48.51	49.60	50.34	51.02	50.62	47.94	46.57	51.43	47.48	46.04	46.21
Or	0.70	0.78	0.65	0.65	0.77	1.04	2.07	0.66	0.10	0.03	0.28	0.39	0.47	0.99
Ce	0.30	0.17	0.01	0.02	0.12	0.17	0.06	0.12	0.13	0.00	0.43	0.37	0.02	0.18

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	GN	A,px	A,px	A,px	A,px	A,px	A,px	A,px	A,px	A,px	A,px	A,px	A,px	A,px
Sample	Ku-98-71	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78
	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs2	fs2	fs2	fs2	fs2	fs2	fs2
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	rim	rim	→	→	core	→	rim	rim	→	→	core	→	→	rim
SiO_2	53.90	54.59	54.38	54.61	54.89	54.48	54.50	54.27	54.10	53.67	53.75	53.84	53.91	54.55
Al_2O_3	29.22	28.61	28.32	28.45	28.66	28.66	28.61	28.53	28.90	28.70	28.64	29.00	29.34	29.52
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	11.06	10.83	10.77	10.94	10.95	10.92	10.95	11.11	11.15	10.91	10.89	11.27	11.35	11.37
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.23	0.26	0.07	0.05	0.09	0.04	0.16	0.16	0.09	0.58	0.08	0.13	0.06	0.16
BaO	0.03	0.00	0.03	0.00	0.00	0.00	0.01	0.06	0.04	0.06	0.11	0.06	0.00	0.00
Na_2O	5.31	5.45	5.58	5.35	5.72	5.44	5.42	5.29	5.31	5.26	5.13	5.17	5.04	5.21
K_2O	0.08	0.08	0.12	0.11	0.10	0.08	0.11	0.08	0.12	0.30	0.28	0.17	0.12	0.14
Sum	99.83	99.82	99.28	99.51	100.41	99.61	99.76	99.49	99.71	99.47	98.87	99.63	99.82	100.97
Formula (O=8)														
Si	2.44	2.47	2.47	2.47	2.47	2.47	2.47	2.46	2.45	2.45	2.46	2.44	2.44	2.44
Al	1.56	1.52	1.52	1.52	1.52	1.53	1.53	1.53	1.54	1.54	1.54	1.55	1.56	1.56
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.54	0.52	0.52	0.53	0.53	0.53	0.53	0.54	0.54	0.53	0.53	0.55	0.55	0.55
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.47	0.48	0.49	0.47	0.50	0.48	0.48	0.47	0.47	0.46	0.45	0.45	0.44	0.45
K	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.02	0.02	0.01	0.01	0.01
Sum	5.02	5.01	5.02	5.00	5.02	5.01	5.01	5.01	5.01	5.02	5.01	5.01	5.00	5.01
Si+Al	4.00	3.99	3.99	3.99	3.99	4.00	3.99	3.99	3.99	3.99	4.00	3.99	4.00	4.00
Na+Ca+K	1.01	1.01	1.02	1.01	1.03	1.01	1.01	1.01	1.02	1.02	1.01	1.01	1.00	1.01
An(Na/Ca)	53.25	52.09	51.23	52.76	51.12	52.34	52.44	53.39	53.29	52.45	53.02	54.06	55.09	54.22
Ab(Na/Ca)	46.26	47.45	48.04	46.63	48.34	47.23	46.93	46.05	45.95	45.71	45.18	44.85	44.23	44.97
Or	0.44	0.46	0.69	0.60	0.54	0.43	0.60	0.46	0.69	1.73	1.61	0.98	0.69	0.81
Ce	0.05	0.00	0.04	0.00	0.00	0.00	0.02	0.10	0.07	0.11	0.19	0.11	0.00	0.00

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN
Sample	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84
	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs1
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	rim	→	→	core	→	→	→	rim	rim	→	→	core	→	→	rim
SiO_2	55.15	55.04	55.19	54.87	55.16	55.07	54.41	54.80	54.81	54.75	54.79	55.17	54.72	54.81	54.76
Al_2O_3	28.14	28.18	28.48	27.97	28.48	28.29	28.23	28.84	28.74	28.62	28.62	28.71	28.71	28.42	28.66
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	10.35	10.29	10.43	10.45	10.36	10.52	10.46	9.77	10.91	10.65	10.46	10.62	10.92	10.55	10.71
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.12	0.27	0.13	0.08	0.16	0.14	0.35	0.24	0.06	0.12	0.24	0.08	0.07	0.02	0.00
BaO	0.06	0.16	0.05	0.00	0.08	0.14	0.00	0.05	0.04	0.05	0.12	0.04	0.04	0.08	0.09
Na_2O	5.47	5.41	5.49	5.53	5.20	5.37	5.35	5.13	5.12	5.47	5.45	5.53	5.34	5.30	5.51
K_2O	0.07	0.06	0.03	0.05	0.04	0.04	0.11	0.57	0.01	0.04	0.05	0.02	0.00	0.04	0.01
Sum	99.36	99.40	99.80	98.94	99.47	99.57	98.91	99.41	99.70	99.69	99.74	100.17	99.80	99.23	99.73
Formula (O=8)															
Si	2.50	2.49	2.49	2.50	2.49	2.49	2.48	2.48	2.48	2.48	2.48	2.48	2.47	2.49	2.47
Al	1.50	1.51	1.51	1.50	1.52	1.51	1.52	1.54	1.53	1.52	1.52	1.52	1.53	1.52	1.53
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.50	0.50	0.50	0.51	0.50	0.51	0.51	0.47	0.53	0.52	0.51	0.51	0.53	0.51	0.52
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.48	0.48	0.48	0.49	0.46	0.47	0.47	0.45	0.45	0.48	0.48	0.48	0.47	0.47	0.48
K	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	4.99	4.99	5.00	5.00	4.98	4.99	5.00	4.99	4.98	5.00	5.00	5.00	5.00	4.99	5.00
Si+Al	4.00	4.00	4.00	4.00	4.01	4.00	4.00	4.02	4.00	4.00	4.00	4.00	4.00	4.01	4.00
Na+Ca+K	0.99	0.98	0.99	1.00	0.96	0.99	0.99	0.96	0.98	1.00	0.99	1.00	1.00	0.98	1.00
An(Na/Ca)	50.85	50.93	51.06	50.91	52.20	51.75	51.56	49.44	54.00	51.65	51.20	51.36	52.99	52.18	51.70
Ab(Na/Ca)	48.65	48.45	48.66	48.79	47.41	47.75	47.77	47.01	45.88	48.02	48.30	48.45	46.92	47.42	48.09
Or	0.39	0.35	0.20	0.30	0.23	0.25	0.66	3.45	0.05	0.25	0.28	0.12	0.02	0.26	0.05
Ce	0.11	0.28	0.08	0.01	0.15	0.26	0.00	0.10	0.07	0.08	0.22	0.07	0.07	0.14	0.16

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	GN	GN	GN	GN	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a
	fs2	fs2	fs2	fs2	fs1	fs1	fs1	fs1	fs1	fs1	fs1	fs2	fs2	fs2	fs2
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	rim	→	→	core	Grt/rim	→	→	→	→	→	core	rim	→	→	→
SiO_2	49.33	48.95	50.55	54.04	50.86	51.40	52.10	53.12	53.61	53.80	53.69	48.84	49.25	52.42	50.26
Al_2O_3	32.34	32.61	31.48	29.01	31.31	30.41	30.40	29.37	29.31	29.06	29.12	32.11	32.12	29.98	31.58
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	15.16	15.32	14.05	11.09	14.02	13.59	13.19	12.15	11.73	11.64	11.67	15.65	15.04	12.46	14.71
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.10	0.17	0.06	0.12	0.12	0.16	0.11	0.12	0.10	0.11	0.09	0.10	0.05	0.04	0.10
BaO	0.06	0.00	0.00	0.05	0.02	0.03	0.00	0.05	0.01	0.00	0.02	0.09	0.02	0.07	0.02
Na_2O	2.82	2.72	3.49	5.00	3.72	3.87	4.28	4.60	5.09	4.99	4.79	2.84	3.16	4.32	3.40
K_2O	0.02	0.02	0.00	0.06	0.07	0.13	0.10	0.18	0.12	0.16	0.15	0.06	0.08	0.14	0.08
Sum	99.82	99.78	99.62	99.36	100.11	99.58	100.17	99.57	99.97	99.76	99.53	99.69	99.71	99.43	100.13
Formula (O=8)															
Si	2.26	2.24	2.31	2.45	2.31	2.35	2.36	2.42	2.43	2.44	2.44	2.24	2.26	2.39	2.29
Al	1.74	1.76	1.69	1.55	1.68	1.64	1.63	1.57	1.56	1.55	1.56	1.74	1.74	1.61	1.70
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.74	0.75	0.69	0.54	0.68	0.67	0.64	0.59	0.57	0.57	0.57	0.77	0.74	0.61	0.72
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.25	0.24	0.31	0.44	0.33	0.34	0.38	0.41	0.45	0.44	0.42	0.25	0.28	0.38	0.30
K	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00
Sum	5.00	5.00	5.00	4.99	5.01	5.01	5.02	5.00	5.02	5.01	5.00	5.01	5.02	5.00	5.01
Si+Al	4.00	4.00	4.00	4.00	3.99	3.99	3.99	3.99	3.99	3.99	4.00	3.98	3.99	4.00	3.99
Na+Ca+K	0.99	0.99	1.00	0.98	1.02	1.02	1.02	1.01	1.02	1.01	1.00	1.03	1.02	1.00	1.02
An(Na/Ca)	74.68	75.62	68.95	54.83	67.25	65.45	62.64	58.69	55.62	55.79	56.88	74.92	72.14	60.87	70.19
Ab(Na/Ca)	25.11	24.26	31.04	44.74	32.31	33.74	36.79	40.18	43.72	43.30	42.22	24.58	27.40	38.21	29.33
Or	0.10	0.12	0.01	0.34	0.41	0.76	0.57	1.04	0.65	0.91	0.86	0.34	0.43	0.80	0.44
Ce	0.11	0.00	0.00	0.08	0.03	0.05	0.00	0.09	0.02	0.00	0.04	0.16	0.03	0.13	0.03

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b
	fs2	fs3	fs3	fs3	fs3	fs1	fs1	fs1	fs1	fs2	fs2	fs2	fs2	fs3	fs3
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	core	rim	→	→	core	core	→	→	rim/Grt	Grt/rim	→	→	core	core	→
SiO_2	50.23	51.29	52.02	51.43	51.28	57.32	57.55	56.82	55.33	53.04	52.15	52.42	52.05	51.63	52.66
Al_2O_3	31.66	30.40	29.99	30.77	30.65	27.41	27.05	27.67	28.16	30.25	29.96	30.22	30.31	27.98	29.29
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.77	0.00
CaO	14.39	13.34	13.08	13.39	13.42	8.99	9.15	9.54	10.38	12.61	12.75	12.95	12.87	10.43	12.23
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.22	0.30	0.06	0.13	0.18	0.15	0.18	0.12	0.31	0.13	0.08	0.08	0.05	2.52	0.12
BaO	0.00	0.00	0.00	0.00	0.06	0.05	0.00	0.08	0.07	0.04	0.02	0.00	0.00	0.05	0.00
Na_2O	3.36	4.05	4.10	4.03	3.94	6.48	6.30	6.15	5.89	4.32	4.46	4.47	4.25	4.52	4.76
K_2O	0.13	0.15	0.18	0.14	0.13	0.14	0.21	0.18	0.08	0.07	0.11	0.10	0.11	0.14	0.04
Sum	99.98	99.53	99.42	99.87	99.65	100.54	100.45	100.56	100.21	100.46	99.53	100.23	99.62	99.05	99.10
Formula (O=8)															
Si	2.29	2.35	2.38	2.34	2.34	2.56	2.57	2.54	2.49	2.39	2.38	2.37	2.37	2.39	2.41
Al	1.70	1.64	1.61	1.65	1.65	1.44	1.42	1.46	1.50	1.61	1.61	1.61	1.63	1.52	1.58
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00
Ca	0.70	0.65	0.64	0.65	0.66	0.43	0.44	0.46	0.50	0.61	0.62	0.63	0.63	0.52	0.60
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.10	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.30	0.36	0.36	0.36	0.35	0.56	0.55	0.53	0.51	0.38	0.39	0.39	0.37	0.41	0.42
K	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00
Sum	5.01	5.02	5.00	5.01	5.01	5.01	5.00	5.00	5.02	5.00	5.02	5.02	5.01	5.06	5.01
Si+Al	3.99	3.99	3.99	3.99	3.99	4.00	3.99	4.00	3.99	4.00	3.99	3.99	4.00	3.91	3.99
Na+Ca+K	1.01	1.02	1.01	1.02	1.01	1.00	1.00	1.00	1.02	0.99	1.02	1.03	1.01	0.93	1.02
An(Na/Ca)	69.82	63.96	63.17	64.26	64.76	43.01	43.97	45.64	49.09	61.42	60.82	61.20	62.25	55.48	58.57
Ab(Na/Ca)	29.45	35.17	35.79	34.97	34.39	56.13	54.81	53.22	50.37	38.10	38.52	38.27	37.15	43.51	41.19
Or	0.73	0.87	1.04	0.77	0.76	0.77	1.22	1.00	0.42	0.40	0.62	0.53	0.60	0.91	0.23
Ce	0.00	0.00	0.00	0.00	0.10	0.08	0.00	0.14	0.12	0.07	0.03	0.00	0.00	0.10	0.00

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	A,f	A,f	A,f	A,f	A,f	A,f	S,qtz	S,qtz
Sample	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-71	Ku-98-71	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-07	Ku-98-07
	fs3	fs3	fs3	fs4	fs4	fs4	fs2	fs2	fs2	fs2	fs2	fs2	3-fs4	3-fs4
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	→	→	rim/Grt	Grt/rim	→	core	core	core	rim →	→ core	rim →	→ core	rim	core
SiO_2	53.19	52.91	51.99	51.93	51.35	51.85	68.29	66.68	63.17	63.73	66.79	68.22	67.38	67.59
Al_2O_3	29.56	29.75	30.00	30.43	30.56	30.50	20.33	19.95	22.17	22.32	20.88	20.40	20.05	19.90
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.02	0.00	0.00	0.01	0.01
CaO	12.07	12.47	13.00	12.88	13.21	12.30	0.32	1.92	3.04	3.37	1.33	0.74	0.45	0.40
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.13	0.05	0.06	0.11	0.14	0.32	0.09	0.14	1.09	0.10	0.03	0.05	0.00	0.00
BaO	0.02	0.00	0.07	0.00	0.00	0.05	0.14	0.00	0.08	0.00	0.04	0.04	0.04	0.03
Na_2O	4.67	4.75	4.47	4.31	4.15	4.50	11.46	11.87	8.69	8.84	9.92	10.23	11.47	11.63
K_2O	0.04	0.05	0.07	0.02	0.07	0.11	0.03	0.01	0.02	0.10	0.03	0.05	0.03	0.03
Sum	99.69	99.98	99.66	99.67	99.48	99.63	100.68	100.56	98.30	98.49	99.01	99.72	99.44	99.58
Formula (O=8)														
Si	2.41	2.40	2.37	2.36	2.35	2.36	2.97	2.93	2.84	2.84	2.94	2.98	2.96	2.97
Al	1.58	1.59	1.61	1.63	1.65	1.64	1.04	1.03	1.17	1.17	1.08	1.05	1.04	1.03
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.59	0.61	0.64	0.63	0.65	0.60	0.01	0.09	0.15	0.16	0.06	0.03	0.02	0.02
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.41	0.42	0.39	0.38	0.37	0.40	0.97	1.01	0.76	0.76	0.85	0.87	0.98	0.99
K	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Sum	5.00	5.02	5.02	5.01	5.02	5.02	5.00	5.06	4.96	4.95	4.94	4.93	5.01	5.01
Si+Al	4.00	3.99	3.98	4.00	3.99	4.00	4.01	3.96	4.01	4.02	4.03	4.03	4.00	4.00
Na+Ca+K	1.00	1.03	1.04	1.01	1.02	1.01	0.98	1.10	0.91	0.93	0.91	0.90	1.00	1.01
An(Na/Ca)	58.65	59.02	61.33	62.21	63.50	59.75	1.52	8.19	16.13	17.29	6.88	3.82	2.13	1.86
Ab(Na/Ca)	41.06	40.71	38.13	37.70	36.08	39.53	98.06	91.77	83.59	82.08	92.87	95.82	97.61	97.92
Or	0.25	0.28	0.40	0.09	0.42	0.64	0.18	0.05	0.13	0.63	0.18	0.29	0.18	0.18
Ce	0.04	0.00	0.13	0.00	0.00	0.09	0.25	0.00	0.15	0.00	0.07	0.07	0.07	0.05

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	Ku-98-07	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11
	3-fs4	2-fs1	2-fs1	2-fs1	4-fs1	4-fs1	4-fs1	a-fs1	a-fs1	a-fs1	a-fs1	a-fs1	a-fs1	a-fs1
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	rim	rim	core	rim	rim	→	rim	rim	→	→	→	→	→	→
SiO_2	67.32	69.02	64.11	64.71	63.81	64.83	64.89	64.98	64.69	65.27	65.28	66.07	65.21	65.78
Al_2O_3	19.85	19.71	22.87	22.50	23.12	23.18	23.29	21.18	21.11	21.12	20.70	21.18	20.96	21.11
MgO	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00
CaO	0.27	0.17	3.73	3.26	3.64	3.62	3.71	2.27	2.07	1.96	1.96	1.86	1.91	1.86
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.05	0.07	0.10	0.00	0.62	0.00	0.05	0.27	0.18	0.20	0.16	0.24	0.27	0.20
BaO	0.00	0.04	0.00	0.00	0.00	0.04	0.09	0.00	0.00	0.07	0.00	0.00	0.00	0.01
Na_2O	11.62	11.78	9.57	10.05	9.26	9.42	9.54	10.21	10.58	10.46	10.24	10.66	10.57	10.52
K_2O	0.03	0.15	0.32	0.16	0.49	0.21	0.17	0.09	0.09	0.14	0.12	0.12	0.16	0.11
Sum	99.14	100.95	100.69	100.67	100.95	101.30	101.74	98.99	98.73	99.22	98.45	100.16	99.10	99.60
Formula (O=8)														
Si	2.97	2.99	2.81	2.84	2.80	2.82	2.82	2.89	2.88	2.89	2.91	2.90	2.90	2.90
Al	1.03	1.01	1.18	1.16	1.20	1.19	1.19	1.11	1.11	1.10	1.09	1.10	1.10	1.10
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.01	0.01	0.18	0.15	0.17	0.17	0.17	0.11	0.10	0.09	0.09	0.09	0.09	0.09
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.99	0.99	0.81	0.85	0.79	0.79	0.80	0.88	0.91	0.90	0.89	0.91	0.91	0.90
K	0.00	0.01	0.02	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sum	5.01	5.01	5.01	5.01	5.01	4.99	4.99	5.00	5.02	5.01	4.99	5.01	5.01	5.00
Si+Al	4.00	4.00	4.00	4.00	4.00	4.01	4.01	4.00	3.99	4.00	4.00	4.00	3.99	4.00
Na+Ca+K	1.01	1.01	1.01	1.02	0.99	0.98	0.99	0.99	1.02	1.00	0.99	1.00	1.01	0.99
An(Na/Ca)	1.26	0.76	17.43	15.07	17.36	17.31	17.47	10.86	9.71	9.29	9.48	8.74	9.00	8.86
Ab(Na/Ca)	98.55	98.36	80.81	84.05	79.84	81.43	81.41	88.63	89.76	89.81	89.85	90.57	90.09	90.49
Or	0.18	0.82	1.76	0.88	2.79	1.18	0.96	0.51	0.52	0.79	0.68	0.69	0.90	0.63
Ce	0.00	0.06	0.00	0.00	0.00	0.07	0.16	0.00	0.00	0.12	0.00	0.00	0.00	0.02

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11
	a-fs1	a-fs1	a-fs1	a-fs2	a-fs2	a-fs2	a-fs2	a-fs2	a-fs2	a-fs2	a-fs2	a-fs2	a-fs2	a-fs2	a-fs2
Mineral	plagioclase →	plagioclase →	plagioclase rim	plagioclase rim	plagioclase →	plagioclase →	plagioclase →	plagioclase rim/Kfs core	plagioclase Kfs core/rim	plagioclase →	plagioclase →	plagioclase →	plagioclase →	plagioclase →	plagioclase rim
SiO_2	64.54	65.53	64.82	64.68	64.88	65.31	64.92	64.97	65.15	65.09	64.62	65.58	64.74	64.92	
Al_2O_3	21.10	21.28	21.20	21.13	21.32	20.99	21.45	21.18	21.16	21.17	20.91	21.15	21.14	21.34	
MgO	0.00	0.03	0.05	0.00	0.00	0.02	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.00	
CaO	2.14	2.23	2.34	2.43	2.36	2.29	2.38	2.18	1.82	2.22	2.19	2.11	2.30	2.37	
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
FeO	0.28	0.31	0.44	0.34	0.17	0.20	0.17	0.23	1.39	0.09	0.15	0.12	0.14	0.23	
BaO	0.00	0.00	0.00	0.02	0.05	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.09	
Na_2O	10.24	10.22	10.37	9.98	10.18	10.15	10.42	10.15	10.19	10.31	10.16	10.32	10.31	9.97	
K_2O	0.13	0.14	0.07	0.16	0.20	0.18	0.16	0.12	0.34	0.12	0.11	0.13	0.10	0.14	
Sum	98.43	99.74	99.28	98.73	99.15	99.14	99.57	98.83	100.12	98.99	98.13	99.40	98.73	99.05	
Formula (O=8)															
Si	2.89	2.89	2.88	2.88	2.88	2.90	2.87	2.89	2.88	2.89	2.89	2.90	2.89	2.88	
Al	1.11	1.11	1.11	1.11	1.12	1.10	1.12	1.11	1.10	1.11	1.10	1.10	1.11	1.12	
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	
Ca	0.10	0.11	0.11	0.12	0.11	0.11	0.11	0.10	0.09	0.11	0.11	0.10	0.11	0.11	
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Fe	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.05	0.00	0.01	0.00	0.01	0.01	
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Na	0.89	0.87	0.89	0.86	0.88	0.87	0.89	0.88	0.87	0.89	0.88	0.88	0.89	0.86	
K	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	
Sum	5.01	5.00	5.02	5.00	5.00	5.00	5.02	5.00	5.02	5.00	5.00	5.00	5.01	4.99	
Si+Al	4.00	4.00	3.99	4.00	4.00	3.99	3.99	4.00	3.98	4.00	4.00	4.00	4.00	4.00	
Na+Ca+K	1.00	0.99	1.01	0.99	1.00	0.99	1.02	0.99	0.98	1.00	0.99	0.99	1.01	0.98	
An(Na/Ca)	10.28	10.69	11.02	11.73	11.23	10.97	11.10	10.54	8.78	10.57	10.57	10.07	10.92	11.51	
Ab(Na/Ca)	88.97	88.49	88.56	87.34	87.57	87.98	87.92	88.80	89.24	88.77	88.81	89.18	88.50	87.55	
Or	0.75	0.82	0.42	0.89	1.11	1.05	0.89	0.67	1.98	0.67	0.62	0.76	0.58	0.78	
Ce	0.00	0.01	0.00	0.03	0.09	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.15	

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13
	b-fs4	b-fs4	b-fs4	b-fs4	b-fs4	b-fs4	b-fs4	1-fs2	1-fs2	1-fs2	3-fs3	3-fs3	3-fs3	3-fs3
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	rim	→	→	rim/Kfs core	Kfs core/rim	→	rim	rim	core	rim	rim	→	→	→
SiO_2	66.62	66.23	66.32	66.55	66.97	66.85	66.99	66.55	66.19	66.78	67.97	66.89	66.67	66.78
Al_2O_3	20.14	19.87	20.02	19.89	20.05	20.23	20.24	19.80	19.83	20.30	19.95	20.11	20.05	19.95
MgO	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.01	0.00	0.03	0.00	0.01
CaO	0.96	0.89	0.88	0.96	0.91	0.89	0.85	0.58	0.99	0.84	0.59	0.88	0.89	0.84
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.11	0.05	0.00	0.07	0.18	0.04	0.05	0.33	0.16	0.07	0.16	0.14	0.10	0.06
BaO	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.09	0.02	0.03
Na_2O	10.99	10.85	11.12	11.07	11.34	11.22	11.25	11.20	10.84	11.44	11.36	11.36	11.12	11.22
K_2O	0.13	0.12	0.15	0.15	0.16	0.12	0.08	0.06	0.10	0.12	0.10	0.13	0.12	0.10
Sum	98.96	98.05	98.49	98.69	99.61	99.35	99.48	98.55	98.20	99.55	100.12	99.63	98.96	98.98
Formula (O=8)														
Si	2.95	2.96	2.95	2.95	2.95	2.95	2.95	2.96	2.95	2.94	2.97	2.95	2.95	2.96
Al	1.05	1.05	1.05	1.04	1.04	1.05	1.05	1.04	1.04	1.05	1.03	1.04	1.05	1.04
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.05	0.04	0.04	0.05	0.04	0.04	0.04	0.03	0.05	0.04	0.03	0.04	0.04	0.04
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.94	0.94	0.96	0.95	0.97	0.96	0.96	0.97	0.94	0.98	0.96	0.97	0.95	0.96
K	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Sum	5.00	4.99	5.01	5.01	5.02	5.01	5.01	5.01	5.00	5.02	5.00	5.02	5.01	5.01
Si+Al	4.00	4.00	4.00	4.00	3.99	4.00	4.00	4.00	4.00	4.00	4.00	3.99	4.00	4.00
Na+Ca+K	1.00	0.99	1.01	1.01	1.02	1.01	1.00	1.00	0.99	1.02	1.00	1.02	1.00	1.01
An(Na/Ca)	4.57	4.31	4.14	4.54	4.19	4.19	3.99	2.79	4.76	3.85	2.78	4.09	4.20	3.95
Ab(Na/Ca)	94.70	94.94	95.01	94.60	94.91	95.13	95.57	96.89	94.48	95.51	96.64	95.02	95.11	95.47
Or	0.71	0.71	0.85	0.86	0.90	0.68	0.44	0.32	0.60	0.64	0.58	0.74	0.66	0.54
Ce	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.16	0.03	0.04

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14
	3-fs3	3-fs3	3-fs3	3-fs3	3-fs3	a-fs2	a-fs2	a-fs2	a-fs3	a-fs3	a-fs3	a-fs3	a-fs3	a-fs3
Mineral	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase	plagioclase
	→	→	→	→	rim	rim	core	rim	rim	→	→	→	→	→
SiO_2	66.68	66.17	65.93	66.92	66.94	68.57	67.12	67.75	68.40	67.61	68.63	68.04	68.41	68.44
Al_2O_3	19.90	19.51	19.88	20.02	19.78	19.72	20.57	19.87	19.54	19.78	19.87	19.70	19.63	19.78
MgO	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.04
CaO	0.90	0.93	0.94	0.88	0.65	0.24	0.94	0.33	0.18	0.32	0.21	0.19	0.21	0.12
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.14	0.06	0.10	0.06	0.13	0.04	0.04	0.04	0.16	0.10	0.17	0.19	0.17	0.08
BaO	0.00	0.08	0.04	0.04	0.04	0.00	0.08	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Na_2O	11.02	10.91	10.99	11.12	11.13	11.05	10.96	11.05	11.28	11.03	11.31	11.28	11.22	11.19
K_2O	0.14	0.12	0.12	0.11	0.08	0.06	0.17	0.19	0.16	0.17	0.14	0.20	0.16	0.15
Sum	98.77	97.79	98.01	99.16	98.76	99.67	99.88	99.23	99.71	99.00	100.32	99.62	99.82	99.80
Formula (O=8)														
Si	2.96	2.96	2.95	2.96	2.97	3.00	2.94	2.98	3.00	2.98	2.99	2.99	2.99	2.99
Al	1.04	1.03	1.05	1.04	1.03	1.02	1.06	1.03	1.01	1.03	1.02	1.02	1.01	1.02
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.04	0.04	0.05	0.04	0.03	0.01	0.04	0.02	0.01	0.02	0.01	0.01	0.01	0.01
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.95	0.95	0.95	0.95	0.96	0.94	0.93	0.94	0.96	0.94	0.95	0.96	0.95	0.95
K	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sum	5.00	5.00	5.01	5.00	5.00	4.97	5.00	4.98	4.98	4.98	4.98	4.99	4.98	4.98
Si+Al	4.00	3.99	4.00	4.00	4.00	4.01	4.01	4.01	4.00	4.01	4.01	4.00	4.00	4.01
Na+Ca+K	1.00	1.00	1.01	1.00	0.99	0.95	0.99	0.97	0.97	0.97	0.97	0.98	0.97	0.96
An(Na/Ca)	4.28	4.45	4.48	4.16	3.11	1.17	4.48	1.59	0.84	1.55	0.99	0.90	1.02	0.59
Ab(Na/Ca)	94.93	94.73	94.77	95.14	96.34	98.50	94.42	97.33	98.26	97.49	98.20	97.93	98.04	98.51
Or	0.78	0.69	0.68	0.64	0.48	0.33	0.96	1.08	0.89	0.96	0.81	1.17	0.94	0.89
Ce	0.00	0.14	0.07	0.07	0.08	0.00	0.13	0.00	0.00	0.00	0.00	0.01	0.00	0.01

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	S,fs	S,fs	S,f	S,f	S,f	S,f	S,f	CB,so	CB,so	CB,so	CB,so	CB,so	CB,l
Sample	Ku-99-14 a-fs3	Ku-99-14 a-fs3	Ku-98-59b 9-fs2	Ku-98-59b 9-fs1	Ku-98-59b 9-fs1	Ku-98-59b 9-fs1	Ku-98-59b 1-fs1	Ku-97-15a b-fs1	Ku-97-15a b-fs1	Ku-97-15e c-fs1	Ku-97-15e c-fs1	Ku-97-15e b-fs1	Ku-98-48 1-fs1
Mineral	plagioclase →	plagioclase rim	albite core	albite core	albite core	albite core	albite core	albite core	albite core	albite core	albite core	albite core	albite core
SiO_2	68.13	68.31	69.01	67.56	68.31	67.57	67.20	68.60	69.06	68.41	68.54	68.20	68.77
Al_2O_3	19.71	19.61	19.93	19.61	20.27	19.87	19.47	19.60	19.72	20.01	19.58	19.89	19.90
MgO	0.01	0.00	0.03	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.03	0.00
CaO	0.33	0.18	0.08	0.23	0.08	0.02	0.06	0.01	0.02	0.04	0.00	0.08	0.03
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.13	0.12	0.04	0.00	0.05	0.01	0.07	0.02	0.00	0.14	0.12	0.11	0.07
BaO	0.00	0.00	0.06	0.03	0.00	0.07	0.00	0.06	0.00	0.01	0.00	0.04	0.00
Na_2O	11.05	11.26	11.67	11.52	11.63	11.56	11.52	11.53	11.71	11.58	11.48	11.70	11.49
K_2O	0.12	0.13	0.12	0.10	0.05	0.04	0.02	0.10	0.10	0.07	0.06	0.11	0.13
Sum	99.49	99.61	100.94	99.06	100.38	99.13	98.35	99.92	100.61	100.27	99.79	100.16	100.39
Formula (O=8)													
Si	2.99	2.99	2.99	2.98	2.97	2.98	2.98	3.00	3.00	2.98	3.00	2.98	2.99
Al	1.02	1.01	1.02	1.02	1.04	1.03	1.02	1.01	1.01	1.03	1.01	1.02	1.02
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.94	0.96	0.98	0.99	0.98	0.99	0.99	0.98	0.99	0.98	0.97	0.99	0.97
K	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01
Sum	4.98	4.98	5.00	5.00	5.00	5.00	5.00	4.99	5.00	5.00	4.99	5.01	4.99
Si+Al	4.01	4.01	4.00	4.00	4.01	4.01	4.00	4.01	4.00	4.01	4.01	4.00	4.01
Na+Ca+K	0.96	0.97	0.99	1.00	0.99	0.99	1.00	0.98	0.99	0.98	0.98	1.00	0.98
An(Na/Ca)	1.60	0.87	0.38	1.09	0.36	0.10	0.30	0.04	0.08	0.21	0.00	0.37	0.13
Ab(Na/Ca)	97.68	98.38	98.87	98.30	99.37	99.58	99.57	99.28	99.37	99.39	99.66	98.96	99.12
Or	0.72	0.75	0.65	0.56	0.27	0.20	0.13	0.57	0.55	0.38	0.34	0.60	0.75
Ce	0.00	0.00	0.10	0.04	0.00	0.12	0.00	0.11	0.00	0.02	0.00	0.07	0.00

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	CB,l	CB,l	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-48	Ku-98-56	Ku-98-57a	Ku-98-57a	Ku-98-57a	Ku-98-57a	Ku-98-57a	Ku-98-57a	Ku-98-57a	Ku-98-57a	Ku-98-57a	Ku-98-57a	Ku-98-57a	Ku-98-57a
	1-fs1	3-fs1	1-fs1	1-fs1	6-fs1	6-fs2	6-fs2	5-fs1	5-fs1	4-fs1	4-fs2	3-fs1	3-fs1	8-fs1
Mineral	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite
	core	core	core	core	core	core	core	core	core	core	core	core	core	core
SiO_2	69.03	68.78	68.21	68.05	68.14	68.02	67.76	67.61	67.75	67.62	67.76	67.86	67.85	67.80
Al_2O_3	19.99	20.22	19.46	19.58	19.57	19.43	19.48	19.71	19.52	19.67	19.44	19.37	19.49	19.59
MgO	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
CaO	0.02	0.01	0.06	0.02	0.06	0.04	0.04	0.17	0.01	0.15	0.04	0.06	0.04	0.02
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.05	0.02	0.06	0.08	0.09	0.08	0.07	0.04	0.00	0.10	0.05	0.01	0.01	0.10
BaO	0.06	0.00	0.00	0.00	0.06	0.04	0.00	0.00	0.09	0.00	0.00	0.02	0.00	0.00
Na_2O	11.61	11.73	11.77	11.86	11.79	11.67	11.60	11.58	11.71	11.63	11.75	11.72	11.66	11.66
K_2O	0.11	0.05	0.02	0.06	0.05	0.03	0.03	0.03	0.02	0.06	0.07	0.03	0.02	0.08
Sum	100.85	100.82	99.59	99.65	99.75	99.31	98.99	99.13	99.11	99.22	99.11	99.06	99.08	99.25
Formula (O=8)														
Si	2.99	2.98	2.99	2.99	2.99	2.99	2.99	2.98	2.99	2.98	2.99	2.99	2.99	2.99
Al	1.02	1.03	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.02	1.01	1.01	1.01	1.02
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.97	0.99	1.00	1.01	1.00	1.00	0.99	0.99	1.00	0.99	1.00	1.00	1.00	1.00
K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	4.99	5.00	5.01	5.01	5.01	5.00	5.00	5.00	5.01	5.01	5.01	5.01	5.00	5.01
Si+Al	4.01	4.01	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Na+Ca+K	0.98	0.99	1.00	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.01	1.01	1.00	1.00
An(Na/Ca)	0.09	0.03	0.29	0.10	0.29	0.17	0.18	0.81	0.04	0.68	0.20	0.28	0.19	0.08
Ab(Na/Ca)	99.20	99.68	99.61	99.56	99.33	99.57	99.65	99.03	99.67	99.01	99.43	99.53	99.70	99.46
Or	0.61	0.29	0.10	0.34	0.28	0.19	0.18	0.16	0.13	0.31	0.37	0.15	0.11	0.47
Ce	0.10	0.00	0.00	0.00	0.10	0.07	0.00	0.00	0.16	0.00	0.00	0.04	0.00	0.00

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,REE	CB,REE	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-57a	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-130a	Ku-98-130a	Ku-98-131	Ku-98-131	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05
	8-fs1	1-fs1	4-fs2	5-fs2	10-fs1	6-fs1	6-fs1	1-fs1	1-fs1	1-fs2	1-fs2	1-fs3	1-fs3	1-fs3
Mineral	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite	albite
	core	core	core	core	core	core	core	core	core	core	core	core	core	core
SiO_2	68.01	67.87	68.78	68.12	68.88	67.62	68.90	69.11	69.49	67.90	67.88	67.51	67.20	68.01
Al_2O_3	19.48	20.11	20.05	19.58	20.21	20.22	20.08	20.10	19.72	19.27	19.42	19.31	19.23	19.43
MgO	0.01	0.02	0.00	0.06	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.02	0.07
CaO	0.03	0.06	0.06	0.04	0.01	0.04	0.00	0.00	0.03	0.00	0.04	0.04	0.01	0.06
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.02	0.15	0.07	0.94	0.28	0.05	0.03	0.07	0.02	0.10	0.11	0.13	0.10	0.09
BaO	0.07	0.08	0.08	0.02	0.03	0.01	0.00	0.04	0.00	0.02	0.01	0.00	0.00	0.03
Na_2O	11.60	11.45	11.61	11.58	11.42	11.39	11.73	11.63	11.82	11.69	11.63	11.55	11.59	11.70
K_2O	0.06	0.10	0.05	0.10	0.09	0.06	0.04	0.10	0.10	0.05	0.03	0.08	0.07	0.03
Sum	99.29	99.84	100.69	100.44	100.92	99.40	100.79	101.04	101.18	99.03	99.13	98.61	98.22	99.42
Formula														
Si	2.99	2.97	2.98	2.98	2.98	2.97	2.98	2.99	3.00	3.00	2.99	2.99	2.99	2.99
Al	1.01	1.04	1.02	1.01	1.03	1.05	1.02	1.02	1.00	1.00	1.01	1.01	1.01	1.01
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.01	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.99	0.97	0.98	0.98	0.96	0.97	0.98	0.97	0.99	1.00	0.99	0.99	1.00	1.00
K	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Sum	5.00	5.00	4.99	5.01	4.99	4.99	5.00	4.99	5.00	5.00	5.00	5.00	5.01	5.01
Si+Al	4.00	4.01	4.01	3.99	4.01	4.02	4.01	4.01	4.00	4.00	4.00	4.00	4.00	4.00
Na+Ca+K	0.99	0.98	0.98	0.99	0.96	0.98	0.99	0.98	1.00	1.00	1.00	1.00	1.00	1.00
An(Na/Ca)	0.15	0.31	0.29	0.17	0.02	0.18	0.01	0.00	0.14	0.01	0.19	0.17	0.05	0.27
Ab(Na/Ca)	99.39	99.00	99.31	99.22	99.41	99.45	99.75	99.37	99.32	99.68	99.61	99.39	99.56	99.49
Or	0.33	0.55	0.28	0.56	0.52	0.35	0.24	0.56	0.54	0.26	0.17	0.43	0.39	0.18
Ce	0.13	0.15	0.13	0.04	0.05	0.02	0.00	0.07	0.00	0.04	0.02	0.00	0.00	0.05

Table A.5.1.1a Representative analyses of plagioclase (continued).

Rock type	CB,so	FV	FV	FV	FV	UMX
Sample	Ku-99-05	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-97-43a
	2-fs1	e-fs1	d-fs1	d-fs2	d-fs-es2	1-matrix
Mineral	albite	albite	albite	albite	albite	albite
	core	core	core	core	core	core
SiO_2	68.23	68.38	67.43	67.24	68.27	65.64
Al_2O_3	19.45	19.54	19.39	19.39	19.62	20.18
MgO	0.02	0.00	0.00	0.01	0.00	0.00
CaO	0.02	0.01	0.03	0.04	0.08	0.14
MnO	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.05	0.21	0.19	0.08	0.05	0.00
BaO	0.02	0.00	0.05	0.00	0.04	0.00
Na_2O	11.75	11.74	11.46	11.44	11.59	12.61
K_2O	0.08	0.10	0.04	0.04	0.04	0.00
Sum	99.61	99.98	98.57	98.23	99.68	98.56
Formula (O=8)						
Si	2.99	2.99	2.99	2.99	2.99	2.93
Al	1.01	1.01	1.01	1.02	1.01	1.06
Mg	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.01
Mn	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.01	0.01	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00
Na	1.00	1.00	0.98	0.99	0.98	1.09
K	0.00	0.01	0.00	0.00	0.00	0.00
Sum	5.01	5.00	5.00	5.00	5.00	5.09
Si+Al	4.00	4.00	4.00	4.00	4.00	3.99
Na+Ca+K	1.00	1.00	0.99	0.99	0.99	1.10
An(Na/Ca)	0.07	0.06	0.15	0.17	0.36	0.60
Ab(Na/Ca)	99.48	99.39	99.55	99.61	99.35	99.40
Or	0.42	0.55	0.22	0.22	0.23	0.00
Ce	0.03	0.00	0.00	0.00	0.00	0.00

Table A.5.1.1b Representative analyses of alkali-feldspar.

Rock type	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz
Sample	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07
	1-fs2	1-fs2	1-fs2	7-fs1	7-fs1	7-fs1	6-fs5	6-fs5	6-fs5	6-fs5	6-fs5	6-fs5	6-fs5
Mineral	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	albite	albite	K-feldspar	K-feldspar	albite
	rim	core	rim	rim	core	rim	rim	→	→	→	→	→	→
SiO_2	63.36	63.81	63.24	63.58	63.84	63.55	63.20	63.47	67.58	67.23	63.08	63.21	67.84
Al_2O_3	18.39	18.50	18.36	18.31	18.33	18.39	18.28	18.47	19.96	19.83	18.40	18.46	19.75
MgO	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
CaO	0.02	0.00	0.01	0.00	0.05	0.00	0.00	0.00	0.15	0.18	0.00	0.00	0.13
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.11	0.00	0.00	0.03	0.03	0.00	0.02	0.00	0.01	0.00	0.03	0.02	0.00
BaO	0.03	0.05	0.15	0.15	0.00	0.00	0.10	0.07	0.00	0.01	0.11	0.10	0.00
Na_2O	0.69	0.42	0.43	0.48	0.70	0.43	0.40	0.34	11.65	11.60	0.37	0.57	11.75
K_2O	15.71	16.14	16.06	15.91	15.73	16.12	16.01	16.18	0.03	0.04	16.08	15.77	0.11
Total	98.30	98.93	98.26	98.46	98.68	98.50	98.00	98.52	99.39	98.88	98.06	98.14	99.56
Formula (O=8)													
Si	2.98	2.98	2.98	2.99	2.99	2.98	2.99	2.98	2.97	2.97	2.98	2.98	2.98
Al	1.02	1.02	1.02	1.01	1.01	1.02	1.02	1.02	1.03	1.03	1.02	1.03	1.02
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.06	0.04	0.04	0.04	0.06	0.04	0.04	0.03	0.99	0.99	0.03	0.05	1.00
K	0.94	0.96	0.97	0.95	0.94	0.97	0.96	0.97	0.00	0.00	0.97	0.95	0.01
Total	5.01	5.01	5.01	5.00	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01	5.01
Si+Al	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.01	4.00	4.00	4.00	4.00
Na+Ca+K	1.01	1.00	1.01	1.00	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.01
An(Na/Ca)	0.08	0.00	0.04	0.00	0.23	0.00	0.00	0.00	0.71	0.82	0.00	0.00	0.58
Ab(Na/Ca)	6.27	3.78	3.91	4.38	6.36	3.90	3.62	3.09	99.12	98.95	3.33	5.23	98.82
Or	93.61	96.13	95.77	95.34	93.41	96.10	96.19	96.79	0.18	0.21	96.47	94.58	0.60
Ce	0.05	0.09	0.28	0.28	0.00	0.00	0.19	0.12	0.00	0.02	0.20	0.19	0.00

Table A.5.1.1b Representative analyses of alkali-feldspar (continued).

Rock type	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,fs	S,fs	S,fs	S,fs
Sample	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-99-13	Ku-99-13	Ku-99-14	Ku-99-14
	6-fs5	6-fs5	6-fs5	1-fs1	1-fs1	5-fs1	5-fs1	5-fs1	1-fs3	1-fs3	a-fs4	a-fs4
Mineral	albite	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar
	→	→	rim	rim	core	rim	→	rim	rim	core	rim	→
SiO_2	67.50	63.18	63.32	64.21	64.08	64.78	64.73	64.46	63.83	63.89	64.34	64.85
Al_2O_3	19.40	18.32	18.47	18.53	18.55	18.54	18.58	18.69	18.30	18.45	18.45	18.63
MgO	0.01	0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.02	0.00	0.00	0.04
CaO	0.03	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.02	0.00	0.00
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.13	0.15	0.01	0.00	0.00	0.06	0.04	0.04	0.51	0.26	0.00	0.00
BaO	0.00	0.18	0.04	0.45	0.46	0.56	0.54	0.66	0.02	0.02	0.00	0.05
Na_2O	11.63	0.39	0.69	0.77	0.43	0.76	0.48	0.57	0.91	0.76	0.55	0.98
K_2O	0.10	15.95	15.67	15.52	16.09	15.37	15.92	15.65	15.33	15.34	16.09	15.33
Total	98.81	98.17	98.21	99.48	99.62	100.14	100.28	100.08	98.93	98.73	99.43	99.88
Formula (O=8)												
Si	2.99	2.98	2.98	2.99	2.98	2.99	2.99	2.98	2.98	2.99	2.99	2.99
Al	1.01	1.02	1.02	1.02	1.02	1.01	1.01	1.02	1.01	1.02	1.01	1.01
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
Ba	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Na	1.00	0.04	0.06	0.07	0.04	0.07	0.04	0.05	0.08	0.07	0.05	0.09
K	0.01	0.96	0.94	0.92	0.96	0.91	0.94	0.92	0.91	0.91	0.95	0.90
Total	5.01	5.01	5.01	5.00	5.00	4.99	4.99	4.99	5.01	5.00	5.01	5.00
Si+Al	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.99	4.00	4.00	4.00
Na+Ca+K	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	0.99	1.00	0.99
An(Na/Ca)	0.13	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.08	0.02	0.00
Ab(Na/Ca)	99.31	3.56	6.28	6.92	3.86	6.88	4.35	5.15	8.29	7.02	4.93	8.83
Or	0.56	96.11	93.64	92.26	95.31	91.76	94.67	93.64	91.67	92.87	95.05	91.07
Ce	0.01	0.33	0.08	0.82	0.83	1.03	0.98	1.21	0.04	0.03	0.00	0.09

Table A.5.1.1b Representative analyses of alkali-feldspar (continued).

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11
	a-fs4	a-fs4	a-fs4	a-fs4	b-fs1	b-fs1	b-fs1	c-fs3	c-fs3	c-fs3	c-fs3	c-fs3	c-fs3
Mineral	albite	albite	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar
	→	→	→	rim	rim	core	rim	Pl-rim/core	core	core	core	core	core
SiO_2	68.04	67.16	64.38	64.09	63.89	63.85	64.31	65.62	65.88	66.23	65.20	66.04	65.93
Al_2O_3	19.77	19.75	18.45	18.40	18.26	18.43	18.41	19.74	19.83	20.09	19.44	19.89	19.90
MgO	0.02	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.07	0.01	0.00	0.00
CaO	0.45	0.47	0.01	0.00	0.01	0.00	0.00	0.65	0.79	0.75	0.61	0.80	0.66
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.08	0.07	0.07	0.02	0.25	0.13	0.02	0.00	0.09	0.15	0.04	0.08	0.09
BaO	0.03	0.00	0.05	0.05	0.03	0.02	0.02	0.00	0.04	0.03	0.00	0.03	0.00
Na_2O	11.25	11.36	0.71	0.58	0.64	0.57	0.70	7.83	8.46	8.69	7.39	7.83	7.97
K_2O	0.08	0.27	15.62	15.72	15.48	15.66	15.52	4.87	3.83	3.56	5.73	4.48	4.64
Total	99.71	99.10	99.29	98.86	98.56	98.65	98.97	98.71	98.91	99.57	98.42	99.14	99.19
Formula (O=8)													
Si	2.98	2.97	2.99	2.99	2.99	2.99	3.00	2.96	2.95	2.95	2.96	2.96	2.95
Al	1.02	1.03	1.01	1.01	1.01	1.02	1.01	1.05	1.05	1.05	1.04	1.05	1.05
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.04	0.03	0.04	0.03
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.96	0.97	0.06	0.05	0.06	0.05	0.06	0.68	0.74	0.75	0.65	0.68	0.69
K	0.00	0.01	0.93	0.94	0.92	0.94	0.92	0.28	0.22	0.20	0.33	0.26	0.27
Total	4.99	5.01	5.00	5.00	5.00	5.00	4.99	5.00	5.00	5.00	5.01	4.99	5.00
Si+Al	4.00	4.00	4.00	4.00	4.00	4.00	4.01	4.01	4.00	4.00	4.00	4.01	4.01
Na+Ca+K	0.98	1.01	0.99	0.99	0.98	0.99	0.99	1.00	0.99	0.99	1.01	0.97	0.99
An(Na/Ca)	2.15	2.19	0.03	0.00	0.07	0.00	0.00	3.14	3.82	3.61	2.95	3.92	3.20
Ab(Na/Ca)	97.35	96.32	6.48	5.28	5.94	5.25	6.37	68.74	74.09	75.90	64.29	69.74	69.97
Or	0.45	1.48	93.40	94.63	93.94	94.71	93.60	28.12	22.03	20.44	32.76	26.28	26.83
Ce	0.05	0.00	0.09	0.09	0.05	0.04	0.03	0.00	0.06	0.05	0.00	0.05	0.00

(alkali-feldpar of the syenite samples Ku-99-11 and Ku-99-12 measured with a with a defocused electron beam of 20 µm in diameter)

Table A.5.1.1b Representative analyses of alkali-feldspar (continued).

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12
	c-fs3	a-fs2	a-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2
Mineral	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar
	core/Pl-rim	core	core	rim	→	→	→	→	→	→	→	core	core	
SiO_2	65.19	66.34	65.92	64.23	64.87	64.02	64.14	64.31	64.64	64.38	64.99	64.07	64.45	
Al_2O_3	19.59	20.27	19.45	19.26	19.31	19.43	19.23	19.16	19.30	19.67	19.62	19.34	19.16	
MgO	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
CaO	0.68	0.88	0.59	0.71	0.70	0.67	0.66	0.64	0.58	0.80	0.84	0.77	0.74	
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
FeO	0.10	0.06	0.03	0.06	0.04	0.02	0.01	0.02	0.00	0.09	0.07	0.06	0.14	
BaO	0.00	0.01	0.02	0.03	0.09	0.01	0.08	0.00	0.03	0.10	0.02	0.00	0.02	
Na_2O	7.36	8.15	8.20	5.91	6.13	6.15	5.83	5.73	5.45	7.27	7.17	6.74	6.74	
K_2O	5.47	4.32	4.05	7.43	7.50	7.18	7.73	7.69	8.51	5.58	5.90	6.39	6.24	
Total	98.39	100.02	98.26	97.63	98.63	97.49	97.67	97.55	98.52	97.89	98.62	97.37	97.49	
Formula (O=8)														
Si	2.96	2.95	2.97	2.96	2.96	2.95	2.96	2.96	2.96	2.94	2.95	2.95	2.96	
Al	1.05	1.06	1.03	1.04	1.04	1.05	1.04	1.04	1.04	1.06	1.05	1.05	1.04	
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Ca	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Fe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Na	0.65	0.70	0.72	0.53	0.54	0.55	0.52	0.51	0.48	0.64	0.63	0.60	0.60	
K	0.32	0.24	0.23	0.44	0.44	0.42	0.45	0.45	0.50	0.33	0.34	0.38	0.37	
Total	5.00	5.00	4.99	5.00	5.01	5.01	5.01	5.00	5.01	5.01	5.01	5.01	5.00	
Si+Al	4.00	4.01	4.01	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
Na+Ca+K	1.00	0.99	0.98	1.00	1.01	1.00	1.01	1.00	1.01	1.01	1.01	1.01	1.00	
An(Na/Ca)	3.31	4.23	2.93	3.50	3.37	3.27	3.22	3.19	2.82	3.86	4.04	3.72	3.63	
Ab(Na/Ca)	64.92	71.00	73.25	52.76	53.45	54.70	51.61	51.41	47.92	63.75	62.23	59.31	59.83	
Or	31.76	24.75	23.79	43.70	43.03	42.02	45.03	45.40	49.21	32.21	33.69	36.97	36.49	
Ce	0.01	0.02	0.04	0.05	0.15	0.01	0.14	0.00	0.05	0.18	0.04	0.00	0.04	

(alkali-feldpar of the syenite samples Ku-99-11 and Ku-99-12 measured with a with a defocused electron beam of 20 µm in diameter)

Table A.5.1.1b Representative analyses of alkali-feldspar (continued).

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	L
Sample	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-99-12	Ku-98-25
	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs2	b-fs4	b-fs4	b-fs4	b-fs4	1-fs1
Mineral	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar	K-feldspar
	→	→	→	→	→	→	→	rim	Pl-rim/core	core	core	core/Pl rim	rim
SiO_2	65.26	64.50	64.43	64.58	63.44	64.19	64.23	64.00	65.83	65.27	64.95	65.36	62.27
Al_2O_3	19.76	19.50	19.55	19.67	19.36	19.42	19.40	19.38	19.48	19.56	19.46	19.75	18.48
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.02	0.02
CaO	0.84	0.84	0.84	0.81	0.69	0.80	0.72	0.74	0.72	0.69	0.71	0.79	0.05
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.06	0.12	0.11	0.02	0.00	0.12	0.01	0.00	0.10	0.07	0.04	0.09	0.12
BaO	0.00	0.00	0.00	0.00	0.13	0.00	0.05	0.04	0.00	0.02	0.00	0.02	1.41
Na_2O	8.31	8.14	7.97	7.89	5.17	6.02	6.20	6.06	8.16	7.23	7.15	8.09	0.56
K_2O	4.03	4.34	4.33	4.72	8.53	7.49	7.51	7.23	4.47	5.79	5.91	4.30	15.28
Total	98.25	97.45	97.22	97.70	97.32	98.04	98.11	97.48	98.77	98.63	98.22	98.41	98.18
Formula (O=8)													
Si	2.95	2.95	2.95	2.94	2.94	2.95	2.95	2.95	2.96	2.96	2.96	2.95	2.96
Al	1.05	1.05	1.05	1.06	1.06	1.05	1.05	1.05	1.03	1.04	1.04	1.05	1.04
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.04	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Na	0.73	0.72	0.71	0.70	0.47	0.54	0.55	0.54	0.71	0.63	0.63	0.71	0.05
K	0.23	0.25	0.25	0.27	0.51	0.44	0.44	0.43	0.26	0.33	0.34	0.25	0.93
Total	5.00	5.02	5.01	5.01	5.01	5.02	5.02	5.01	5.00	5.01	5.01	5.00	5.01
Si+Al	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Na+Ca+K	1.00	1.01	1.00	1.01	1.01	1.01	1.03	1.00	1.00	1.00	1.01	0.99	1.01
An(Na/Ca)	4.05	4.07	4.09	3.92	3.42	3.89	3.43	3.63	3.45	3.33	3.44	3.85	0.27
Ab(Na/Ca)	72.76	71.01	70.66	68.95	46.19	52.83	53.69	53.95	70.97	63.29	62.56	71.22	5.10
Or	23.19	24.92	25.26	27.12	50.17	43.29	42.79	42.35	25.58	33.35	34.00	24.89	92.03
Ce	0.00	0.00	0.00	0.00	0.23	0.00	0.09	0.07	0.00	0.03	0.00	0.04	2.60

(alkali-feldpar of the syenite samples Ku-99-11 and Ku-99-12 measured with a with a defocused electron beam of 20 µm in diameter)

Table A.5.1.1b Representative analyses of alkali-feldspar (continued).

Rock type	L	L	L	L	L	L	L	L	L	L	L	L	L	L
Sample	Ku-98-25 1-fs1	Ku-98-25 1-fs1	Ku-98-25 1-fs1	Ku-98-25 1-fs1	Ku-98-25 1-fs1	Ku-98-25 1-fs1	Ku-98-25 1-fs1	Ku-98-25 1-fs1	Ku-98-25 3-fs1	Ku-98-25 3-fs1	Ku-98-25 3-fs1	Ku-98-25 3-fs2	Ku-98-25 3-fs2	Ku-98-25 3-fs2
Mineral	K-feldspar →	K-feldspar →	K-feldspar →	K-feldspar →	K-feldspar →	K-feldspar →	K-feldspar →	K-feldspar rim	K-feldspar rim	K-feldspar core	K-feldspar rim	K-feldspar rim	K-feldspar →	K-feldspar →
SiO_2	63.89	64.56	61.94	64.60	63.35	62.25	62.95	62.26	63.56	63.81	62.28	62.30	63.90	64.33
Al_2O_3	18.51	18.94	19.10	18.91	18.62	19.01	18.82	19.00	18.77	18.44	19.13	19.12	18.42	17.94
MgO	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.02
CaO	0.00	0.01	0.13	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.03	0.05	0.09	0.05	0.11	0.02	0.11	0.15	0.12	0.04	0.07	0.07	0.18	0.33
BaO	0.49	1.10	3.05	0.97	1.16	2.51	1.82	2.37	1.11	0.65	2.48	2.88	0.63	0.00
Na_2O	0.35	0.60	0.51	1.44	0.82	0.62	0.80	0.64	0.50	0.39	0.74	0.61	0.73	0.41
K_2O	16.08	15.36	14.85	14.44	14.79	14.67	14.84	14.90	15.54	15.95	14.94	14.83	15.59	16.19
Total	99.35	100.62	99.69	100.42	98.86	99.08	99.36	99.32	99.63	99.28	99.66	99.83	99.45	99.21
Formula (O=8)														
Si	2.98	2.98	2.93	2.98	2.97	2.95	2.96	2.94	2.97	2.98	2.94	2.94	2.98	3.00
Al	1.02	1.03	1.07	1.03	1.03	1.06	1.04	1.06	1.03	1.02	1.06	1.06	1.01	0.99
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01
Ba	0.01	0.02	0.06	0.02	0.02	0.05	0.03	0.04	0.02	0.01	0.05	0.05	0.01	0.00
Na	0.03	0.05	0.05	0.13	0.07	0.06	0.07	0.06	0.05	0.03	0.07	0.06	0.07	0.04
K	0.96	0.90	0.90	0.85	0.89	0.89	0.89	0.90	0.93	0.95	0.90	0.89	0.93	0.96
Total	5.00	4.99	5.01	5.00	4.99	5.00	5.00	5.01	5.00	5.00	5.02	5.00	5.01	5.00
Si+Al	4.00	4.01	4.00	4.00	4.00	4.01	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.99
Na+Ca+K	1.00	0.98	1.01	0.99	0.98	0.99	1.00	1.00	0.99	1.00	1.01	1.00	1.01	1.00
An(Na/Ca)	0.00	0.07	0.67	0.00	0.00	0.00	0.11	0.00	0.10	0.00	0.00	0.00	0.01	0.00
Ab(Na/Ca)	3.21	5.46	4.64	12.96	7.63	5.72	7.28	5.84	4.58	3.51	6.71	5.55	6.56	3.70
Or	95.90	92.45	89.08	85.29	90.20	89.57	89.24	89.77	93.27	95.31	88.76	89.13	92.28	96.30
Ce	0.89	2.02	5.61	1.75	2.18	4.71	3.37	4.39	2.05	1.19	4.53	5.32	1.15	0.00

Table A.5.1.1b Representative analyses of alkali-feldspar (continued).

Rock type	L	L	L	L
Sample	Ku-98-25 3-fs2	Ku-98-25 3-fs2	Ku-98-25 3-fs2	Ku-98-25 3-fs2
Mineral	K-feldspar →	K-feldspar →	K-feldspar →	K-feldspar rim
SiO_2	63.97	63.88	63.52	63.05
Al_2O_3	18.53	18.92	18.86	19.21
MgO	0.02	0.00	0.02	0.00
CaO	0.01	0.00	0.00	0.00
MnO	0.00	0.00	0.00	0.00
FeO	0.19	0.20	0.14	0.08
BaO	0.52	1.37	1.32	2.27
Na_2O	0.52	0.40	0.43	0.78
K_2O	15.71	15.48	15.50	14.77
Total	99.46	100.24	99.78	100.15
Formula (O=8)				
Si	2.98	2.97	2.97	2.95
Al	1.02	1.04	1.04	1.06
Mg	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00
Fe	0.01	0.01	0.01	0.00
Ba	0.01	0.02	0.02	0.04
Na	0.05	0.04	0.04	0.07
K	0.93	0.92	0.92	0.88
Total	5.00	4.99	5.00	5.00
Si+Al	4.00	4.00	4.00	4.00
Na+Ca+K	0.99	0.98	0.99	0.99
An(Na/Ca)	0.03	0.00	0.00	0.00
Ab(Na/Ca)	4.73	3.66	3.90	7.08
Or	94.27	93.80	93.65	88.74
Ce	0.96	2.54	2.45	4.19

Table A.5.1.2 Representative analyses of olivine.

Rock type	T	T	T	T	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T	T
Sample	Ku-97-92	Ku-97-92	Ku-97-92	Ku-97-92	Ku-97-104	Ku-97-104	Ku-97-104	Ku-97-104	Ku-97-104	Ku-97-105	Ku-98-52	Ku-98-52
	ol1	ol1	ol2	ol2	ol1	ol1	ol2	ol2	ol2	ol1	ol1	ol1
	core	rim	core	rim	core	rim	rim	core	rim	core	rim	→
SiO_2	36.70	36.85	36.49	36.94	36.57	36.42	36.43	36.48	37.11	36.11	35.25	35.69
TiO_2	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02
Al_2O_3	0.01	0.00	0.01	0.00	0.05	0.00	0.00	0.03	0.05	0.00	0.04	0.03
Cr_2O_3	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.03
MgO	32.31	32.12	31.91	31.92	31.33	31.36	31.23	31.84	31.37	30.99	26.36	26.19
CaO	0.01	0.04	0.00	0.02	0.00	0.02	0.02	0.00	0.02	0.01	0.00	0.01
MnO	0.37	0.34	0.39	0.35	0.26	0.29	0.34	0.33	0.31	0.46	0.78	0.82
FeO	30.16	30.47	31.20	30.95	31.26	31.46	31.57	31.92	31.61	31.84	37.28	37.83
NiO	0.15	0.22	0.13	0.11	0.20	0.10	0.08	0.28	0.17	0.09	0.05	0.11
Total	99.71	100.04	100.14	100.29	99.66	99.68	99.68	100.87	100.64	99.50	99.77	100.72
Formula (O=4)												
Si	1.00	1.00	0.99	1.00	1.00	1.00	1.00	0.99	1.00	0.99	0.99	1.00
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mg	1.31	1.30	1.29	1.29	1.28	1.28	1.27	1.29	1.26	1.27	1.11	1.09
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02
Fe^{2+}	0.69	0.69	0.71	0.70	0.71	0.72	0.72	0.72	0.71	0.73	0.88	0.89
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Total	3.00	3.00	3.01	3.00	3.00	3.00	3.00	3.01	3.00	3.01	3.00	3.00
Fo	65.24	64.83	64.19	64.41	63.78	63.69	63.48	63.58	63.51	63.04	55.22	54.63
Fa	34.16	34.49	35.22	35.04	35.70	35.83	36.00	35.75	35.91	36.33	43.80	44.26
Mo	0.02	0.05	0.00	0.03	0.00	0.03	0.03	0.00	0.03	0.01	0.00	0.01
Li	0.16	0.24	0.14	0.12	0.22	0.11	0.09	0.30	0.18	0.10	0.06	0.13
Te	0.43	0.39	0.45	0.40	0.30	0.34	0.40	0.37	0.36	0.53	0.93	0.97

Table A.5.2 Representative analyses of olivine (continued).

Rock type	T	T	T	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b
	ol1	ol1	ol1	ol1	ol1	ol1	ol1	ol1	ol1	ol1	ol1
	→	→	core	core	core	core	core	core	→	→	rim
SiO_2	35.01	35.37	35.11	35.87	35.44	35.38	35.08	36.25	36.26	36.00	36.04
TiO_2	0.00	0.01	0.02	0.02	0.00	0.00	0.04	0.01	0.03	0.00	0.00
Al_2O_3	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02	0.00
Cr_2O_3	0.02	0.00	0.00	0.00	0.01	0.07	0.00	0.00	0.00	0.00	0.00
MgO	25.93	25.81	25.96	27.03	26.55	26.94	27.20	29.89	29.69	29.74	30.21
CaO	0.01	0.01	0.03	0.00	0.00	0.00	0.01	0.02	0.00	0.02	0.00
MnO	0.78	0.76	0.70	0.47	0.46	0.42	0.46	0.46	0.43	0.44	0.46
FeO	37.87	38.24	38.07	37.58	37.39	36.51	37.31	33.76	33.89	34.10	34.07
NiO	0.02	0.08	0.00	0.02	0.08	0.08	0.15	0.06	0.10	0.08	0.11
Total	99.64	100.28	99.89	100.99	99.94	99.41	100.25	100.48	100.40	100.40	100.88
Formula (O=4)											
Si	0.99	1.00	0.99	1.00	1.00	1.00	0.98	0.99	1.00	0.99	0.99
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mg	1.10	1.08	1.09	1.12	1.11	1.13	1.14	1.22	1.22	1.22	1.23
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Fe^{2+}	0.90	0.90	0.90	0.87	0.88	0.86	0.88	0.77	0.78	0.78	0.78
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	3.01	3.00	3.01	3.00	3.00	3.00	3.01	3.00	3.00	3.01	3.01
Fo	54.43	54.06	54.37	55.86	55.51	56.48	56.11	60.83	60.59	60.48	60.85
Fa	44.60	44.93	44.74	43.56	43.85	42.93	43.17	38.54	38.80	38.90	38.50
Mo	0.02	0.01	0.05	0.00	0.00	0.00	0.02	0.03	0.00	0.02	0.00
Li	0.02	0.09	0.00	0.02	0.09	0.09	0.17	0.07	0.11	0.09	0.12
Te	0.93	0.91	0.83	0.55	0.54	0.50	0.54	0.53	0.50	0.50	0.52

Table A.5.3a Representative analyses of clinopyroxene (excluding aegirine).

Rock type	GN	GN	GN	GN	GN	GN	GN	GN	GN	T	T	T,grt	T,grt
Sample	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-92	Ku-97-92	Ku-97-105	Ku-97-105
	cpx1	cpx1	cpx1	cpx1	cpx1	cpx1	cpx1	cpx1	cpx1	cpx1	cpx1	cpx1	cpx1
	rim	→	→	→	→	core	rim	→	rim	core	rim	rim	core
SiO_2	50.71	50.76	50.49	50.91	50.84	51.04	51.37	50.59	50.49	49.16	48.95	50.36	50.30
TiO_2	0.44	0.35	0.34	0.38	0.44	0.42	0.23	0.26	0.41	1.02	0.99	0.84	0.81
Al_2O_3	1.92	1.86	1.84	1.81	1.88	1.71	1.55	1.49	1.74	5.55	5.45	3.25	3.16
Cr_2O_3	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.10	0.09	0.15	0.14
Fe_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	11.35	11.37	11.41	11.49	11.41	11.54	9.84	9.98	9.66	13.48	13.03	13.77	13.35
CaO	21.88	21.67	21.64	21.65	21.78	21.96	22.53	22.19	21.53	21.15	21.99	21.15	21.97
MnO	0.23	0.27	0.26	0.28	0.35	0.29	0.47	0.37	0.42	0.19	0.21	0.21	0.22
FeO	11.94	11.41	11.58	11.58	11.45	11.56	13.11	12.92	13.30	8.45	8.06	9.07	9.00
Na_2O	0.50	0.52	0.52	0.48	0.43	0.51	0.80	0.75	0.72	0.62	0.68	0.39	0.37
K_2O	0.00	0.02	0.00	0.01	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Total	98.97	98.23	98.09	98.58	98.62	99.07	99.89	98.56	98.27	99.73	99.44	99.19	99.33
Formula (O=6)													
Z													
Si	1.94	1.95	1.95	1.95	1.95	1.95	1.97	1.96	1.96	1.84	1.84	1.90	1.90
Al	0.06	0.05	0.05	0.05	0.05	0.05	0.03	0.04	0.04	0.16	0.16	0.10	0.10
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Y													
Al	0.03	0.04	0.03	0.04	0.04	0.03	0.04	0.03	0.04	0.08	0.08	0.04	0.04
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.03	0.02	0.02
Mg	0.65	0.65	0.66	0.66	0.65	0.66	0.56	0.58	0.56	0.75	0.73	0.77	0.75
Fe^{2+}	0.31	0.30	0.30	0.30	0.30	0.30	0.40	0.39	0.39	0.13	0.16	0.16	0.18
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X													
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	0.07	0.07	0.07	0.08	0.07	0.07	0.02	0.03	0.05	0.13	0.09	0.13	0.10
Mn	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Ca	0.90	0.89	0.90	0.89	0.90	0.90	0.92	0.92	0.90	0.85	0.89	0.85	0.89
Na	0.04	0.04	0.04	0.04	0.03	0.04	0.06	0.06	0.05	0.05	0.05	0.03	0.03
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.02	1.01	1.02	1.01	1.01	1.02	1.02	1.02	1.01	1.03	1.04	1.02	1.02
Total	4.02	4.01	4.02	4.01	4.01	4.02	4.02	4.02	4.01	4.03	4.04	4.02	4.02
X_{Mg}	0.63	0.64	0.64	0.64	0.64	0.64	0.57	0.58	0.56	0.74	0.74	0.73	0.73

Table A.5.3a Representative analyses of clinopyroxene (excluding aegirine; continued)

Rock type	T	T	T	T	T,grt	S,qtz	S,qtz	S,qtz	S,qtz
Sample	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-221a	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40
	cpx1	cpx2	cpx2	cpx2	cpx1	7-cpx1	7-cpx2	7-cpx2	7-cpx2
	core	rim	→	rim	core	rim	→	→	rim
SiO_2	48.77	51.11	50.45	50.76	51.29	50.22	51.08	51.15	51.17
TiO_2	0.45	0.36	0.40	0.40	0.43	0.08	0.05	0.15	0.15
Al_2O_3	3.19	1.67	1.66	1.65	2.27	0.62	0.41	0.79	0.44
Cr_2O_3	0.00	0.03	0.00	0.00	0.00	0.02	0.01	0.00	0.02
Fe_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	12.13	12.38	12.53	12.39	14.21	7.96	8.69	8.30	8.91
CaO	19.63	21.78	21.08	21.23	23.11	20.99	21.50	21.44	22.00
MnO	0.44	0.53	0.41	0.51	0.22	1.49	1.49	1.58	1.52
FeO	13.53	11.22	11.00	11.35	7.99	17.23	15.62	15.82	15.17
Na_2O	0.26	0.33	0.44	0.33	0.26	0.56	0.66	0.73	0.64
K_2O	0.00	0.02	0.02	0.00	0.00	0.02	0.00	0.00	0.02
Total	98.38	99.43	97.99	98.62	99.78	99.18	99.50	99.97	100.03
Formula (O=6)									
Z									
Si	1.89	1.94	1.94	1.95	1.92	1.98	1.99	1.99	1.98
Al	0.11	0.06	0.06	0.05	0.08	0.02	0.01	0.01	0.02
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Y									
Al	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.00
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Mg	0.70	0.70	0.72	0.71	0.79	0.47	0.50	0.48	0.51
Fe^{2+}	0.25	0.27	0.25	0.26	0.17	0.52	0.48	0.49	0.48
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X									
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	0.19	0.09	0.11	0.10	0.08	0.05	0.03	0.02	0.01
Mn	0.01	0.02	0.01	0.02	0.01	0.05	0.05	0.05	0.05
Ca	0.81	0.89	0.87	0.87	0.93	0.89	0.90	0.89	0.91
Na	0.02	0.02	0.03	0.02	0.02	0.04	0.05	0.05	0.05
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.03	1.02	1.02	1.02	1.03	1.03	1.02	1.02	1.03
Total	4.03	4.02	4.02	4.02	4.03	4.03	4.02	4.02	4.03
X_{Mg}	0.62	0.66	0.67	0.66	0.76	0.45	0.50	0.48	0.51

Table A.5.3b Representative analyses of orthopyroxene.

Rock type	A,w	T	T,grt	T,grt	T,grt	T,grt	T	T	T	T	T	T	T	T
Sample	Ku-97-33	Ku-97-92	Ku-97-104	Ku-97-104	Ku-97-105	Ku-97-105	Ku-97-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52
	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1
	core	core	core	rim	core	rim	rim				core			
SiO_2	53.70	52.19	54.52	54.08	53.13	52.98	52.02	52.00	51.63	52.27	52.23	51.89	51.74	51.95
TiO_2	0.06	0.12	0.00	0.00	0.24	0.14	0.20	0.26	0.21	0.23	0.21	0.24	0.23	0.23
Al_2O_3	0.22	3.24	0.68	0.90	1.58	1.49	1.55	1.44	1.51	1.52	1.37	1.35	1.48	1.33
Cr_2O_3	0.03	0.01	0.01	0.00	0.02	0.01	0.01	0.00	0.01	0.04	0.04	0.03	0.03	0.00
Fe_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	25.84	24.73	26.13	25.75	24.75	24.56	20.98	21.73	21.88	21.85	21.86	21.68	21.60	21.60
CaO	0.09	0.59	0.12	0.10	0.76	0.74	0.86	0.95	0.95	0.86	0.92	1.16	1.07	0.86
MnO	0.37	0.31	0.29	0.24	0.40	0.40	0.68	0.74	0.69	0.61	0.69	0.66	0.60	0.66
FeO	18.34	18.58	18.59	18.97	18.29	19.54	23.45	22.93	23.10	22.71	22.63	22.15	23.06	23.11
Na_2O	0.00	0.00	0.00	0.00	0.02	0.00	0.08	0.02	0.00	0.02	0.00	0.00	0.02	0.05
K_2O	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.00
Total	98.66	99.78	100.35	100.04	99.19	99.88	99.82	100.07	99.97	100.12	99.96	99.18	99.85	99.79
Formula (O=6)														
Z														
Si	1.99	1.91	1.98	1.97	1.96	1.95	1.96	1.95	1.94	1.95	1.95	1.96	1.94	1.95
Al	0.01	0.09	0.02	0.03	0.04	0.05	0.04	0.05	0.06	0.05	0.05	0.04	0.06	0.05
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Y														
Al	0.00	0.05	0.01	0.01	0.03	0.02	0.02	0.01	0.01	0.02	0.01	0.02	0.01	0.01
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Mg	1.00	0.94	0.99	0.99	0.97	0.98	0.97	0.98	0.99	0.97	0.98	0.98	0.98	0.98
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X														
Mg	0.43	0.41	0.43	0.42	0.39	0.37	0.21	0.23	0.24	0.24	0.24	0.24	0.23	0.23
Fe^{2+}	0.57	0.57	0.56	0.58	0.56	0.60	0.74	0.72	0.73	0.71	0.71	0.70	0.72	0.73
Mn	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Ca	0.00	0.02	0.00	0.00	0.03	0.03	0.03	0.04	0.04	0.03	0.04	0.05	0.04	0.03
Na	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.01	1.01	1.00	1.01	1.00	1.01	1.01	1.01	1.02	1.01	1.01	1.01	1.02	1.01
Total	4.01	4.01	4.00	4.01	4.00	4.01	4.01	4.01	4.02	4.01	4.01	4.01	4.02	4.01
X_{Mg}	0.64	0.62	0.64	0.63	0.63	0.62	0.57	0.58	0.58	0.58	0.58	0.58	0.58	0.57

Table A.5.3b Representative analyses of orthopyroxene.

Rock type	A,w	T	T,grt	T,grt	T,grt	T,grt	T	T	T	T	T	T	T	T
Sample	Ku-97-33	Ku-97-92	Ku-97-104	Ku-97-104	Ku-97-105	Ku-97-105	Ku-97-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52
	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1	opx1
	core	core	core	rim	core	rim	rim	→	→	→	core	→	→	→
SiO_2	53.70	52.19	54.52	54.08	53.13	52.98	52.02	52.00	51.63	52.27	52.23	51.89	51.74	51.95
TiO_2	0.06	0.12	0.00	0.00	0.24	0.14	0.20	0.26	0.21	0.23	0.21	0.24	0.23	0.23
Al_2O_3	0.22	3.24	0.68	0.90	1.58	1.49	1.55	1.44	1.51	1.52	1.37	1.35	1.48	1.33
Cr_2O_3	0.03	0.01	0.01	0.00	0.02	0.01	0.01	0.00	0.01	0.04	0.04	0.03	0.03	0.00
Fe_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	25.84	24.73	26.13	25.75	24.75	24.56	20.98	21.73	21.88	21.85	21.86	21.68	21.60	21.60
CaO	0.09	0.59	0.12	0.10	0.76	0.74	0.86	0.95	0.95	0.86	0.92	1.16	1.07	0.86
MnO	0.37	0.31	0.29	0.24	0.40	0.40	0.68	0.74	0.69	0.61	0.69	0.66	0.60	0.66
FeO	18.34	18.58	18.59	18.97	18.29	19.54	23.45	22.93	23.10	22.71	22.63	22.15	23.06	23.11
Na_2O	0.00	0.00	0.00	0.00	0.02	0.00	0.08	0.02	0.00	0.02	0.00	0.00	0.02	0.05
K_2O	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.00
Total	98.66	99.78	100.35	100.04	99.19	99.88	99.82	100.07	99.97	100.12	99.96	99.18	99.85	99.79
Formula (O=6)														
Z														
Si	1.99	1.91	1.98	1.97	1.96	1.95	1.96	1.95	1.94	1.95	1.95	1.96	1.94	1.95
Al	0.01	0.09	0.02	0.03	0.04	0.05	0.04	0.05	0.06	0.05	0.05	0.04	0.06	0.05
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Y														
Al	0.00	0.05	0.01	0.01	0.03	0.02	0.02	0.01	0.01	0.02	0.01	0.02	0.01	0.01
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Mg	1.00	0.94	0.99	0.99	0.97	0.98	0.97	0.98	0.99	0.97	0.98	0.98	0.98	0.98
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X														
Mg	0.43	0.41	0.43	0.42	0.39	0.37	0.21	0.23	0.24	0.24	0.24	0.24	0.23	0.23
Fe^{2+}	0.57	0.57	0.56	0.58	0.56	0.60	0.74	0.72	0.73	0.71	0.71	0.70	0.72	0.73
Mn	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Ca	0.00	0.02	0.00	0.00	0.03	0.03	0.03	0.04	0.04	0.03	0.04	0.05	0.04	0.03
Na	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.01	1.01	1.00	1.01	1.00	1.01	1.01	1.01	1.02	1.01	1.01	1.01	1.02	1.01
Total	4.01	4.01	4.00	4.01	4.00	4.01	4.01	4.01	4.02	4.01	4.01	4.01	4.02	4.01
X_{Mg}	0.64	0.62	0.64	0.63	0.63	0.62	0.57	0.58	0.58	0.58	0.58	0.58	0.58	0.57

Table A.5.3b Representative analyses of orthopyroxene (continued).

Rock type	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
Sample	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52
	opx1	opx2	opx2	opx2	opx3	opx3	opx3	opx3	opx3	opx3	opx3	opx3	opx4	opx4	opx4
	rim	Px/rim	→	rim/Pl	Ilm/rim	→	→	→	→	→	→	rim/Pl	rim	→	→
SiO_2	51.59	52.75	52.32	52.85	51.15	51.57	51.48	51.74	51.57	51.74	51.79	51.71	51.57	50.90	51.11
TiO_2	0.23	0.00	0.00	0.02	0.13	0.10	0.13	0.14	0.20	0.14	0.22	0.16	0.16	0.22	0.21
Al_2O_3	1.39	1.01	0.69	0.79	1.50	1.58	1.50	1.50	1.55	1.37	1.48	1.48	1.16	1.21	1.08
Cr_2O_3	0.00	0.00	0.06	0.01	0.04	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Fe_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	21.37	22.45	22.14	21.64	20.83	20.56	21.31	21.68	21.66	22.18	21.82	22.04	20.73	18.55	18.89
CaO	0.81	0.10	0.10	0.12	0.72	0.67	0.77	0.82	0.83	0.79	0.88	0.88	0.74	0.82	0.88
MnO	0.71	0.73	0.67	0.70	0.65	0.65	0.66	0.67	0.67	0.64	0.66	0.63	0.69	0.88	0.68
FeO	23.19	22.66	23.35	23.51	24.85	24.15	23.59	23.29	22.55	22.99	22.36	22.69	24.18	26.82	26.27
Na_2O	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.03	0.03	0.00	0.00	0.06	0.04	0.00
K_2O	0.01	0.00	0.03	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00
Total	99.29	99.70	99.37	99.65	99.88	99.28	99.46	99.84	99.07	99.88	99.20	99.60	99.30	99.43	99.12
Formula (O=6)															
Z															
Si	1.95	1.97	1.97	1.98	1.94	1.96	1.95	1.95	1.95	1.94	1.95	1.94	1.96	1.96	1.96
Al	0.05	0.03	0.03	0.02	0.06	0.04	0.05	0.05	0.05	0.06	0.05	0.06	0.04	0.04	0.04
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Y															
Al	0.01	0.02	0.00	0.02	0.01	0.03	0.01	0.01	0.02	0.00	0.02	0.01	0.01	0.01	0.01
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.01
Mg	0.98	0.98	1.00	0.98	0.99	0.97	0.98	0.98	0.98	0.99	0.98	0.99	0.99	0.98	0.98
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X															
Mg	0.22	0.27	0.25	0.23	0.19	0.19	0.22	0.23	0.24	0.25	0.25	0.25	0.19	0.08	0.10
Fe^{2+}	0.73	0.71	0.74	0.74	0.79	0.77	0.75	0.73	0.71	0.72	0.70	0.71	0.77	0.86	0.84
Mn	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02
Ca	0.03	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.04
Na	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.01	1.00	1.01	1.00	1.02	1.01	1.02	1.02	1.01	1.02	1.01	1.02	1.01	1.01	1.00
Total	4.01	4.00	4.01	4.00	4.02	4.01	4.02	4.02	4.01	4.02	4.01	4.02	4.01	4.01	4.00
X_{Mg}	0.57	0.58	0.57	0.57	0.56	0.56	0.57	0.57	0.58	0.58	0.58	0.58	0.56	0.53	0.54

Table A.5.3b Representative analyses of orthopyroxene (continued).

Rock type	T	T	T	T	T	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221b
	opx4	opx4	opx4	opx4	opx4	opx1	opx1	opx1	opx1	opx2	opx2	opx2	opx2	opx1
	→	core	→	→	rim	rim	→	→	rim	Ol/rim	→	→	rim/Gt	Ol/rim
SiO_2	50.84	51.37	51.21	50.82	51.02	52.71	52.74	52.48	52.22	53.31	53.33	53.09	53.57	53.36
TiO_2	0.18	0.17	0.16	0.18	0.21	0.19	0.21	0.17	0.18	0.00	0.01	0.02	0.00	0.00
Al_2O_3	1.03	0.87	0.97	1.09	0.90	1.67	1.59	1.43	1.46	0.74	0.61	0.56	0.57	0.48
Cr_2O_3	0.00	0.05	0.01	0.01	0.00	0.00	0.00	0.04	0.00	0.01	0.06	0.04	0.00	0.01
Fe_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	19.00	19.16	19.32	18.79	18.71	23.18	22.91	22.93	23.10	23.60	23.93	23.37	23.12	24.99
CaO	0.81	0.87	0.85	0.87	0.86	0.90	0.96	0.89	0.91	0.21	0.19	0.16	0.20	0.14
MnO	0.79	0.70	0.79	0.76	0.76	0.41	0.39	0.42	0.41	0.36	0.41	0.39	0.47	0.44
FeO	26.37	26.18	25.92	26.49	26.51	21.52	21.58	21.61	21.92	21.25	22.27	22.24	22.15	19.62
Na_2O	0.00	0.01	0.02	0.01	0.05	0.00	0.00	0.00	0.00	0.06	0.04	0.02	0.00	0.00
K_2O	0.04	0.01	0.00	0.00	0.01	0.00	0.00	0.02	0.01	0.02	0.03	0.01	0.03	0.02
Total	99.05	99.38	99.26	99.02	99.03	100.58	100.37	99.97	100.21	99.57	100.87	99.91	100.11	99.05
Formula (O=6)														
Z														
Si	1.96	1.97	1.96	1.96	1.97	1.95	1.95	1.95	1.94	1.98	1.97	1.98	1.99	1.98
Al	0.04	0.03	0.04	0.04	0.03	0.05	0.05	0.05	0.06	0.02	0.03	0.02	0.01	0.02
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.99	2.00	2.00	2.00
Y														
Al	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.00
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Mg	0.99	0.99	0.99	0.99	0.99	0.98	0.97	0.98	0.99	0.99	1.00	1.00	0.99	1.00
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X														
Mg	0.10	0.11	0.12	0.09	0.09	0.30	0.29	0.29	0.29	0.32	0.32	0.30	0.29	0.38
Fe^{2+}	0.85	0.84	0.83	0.85	0.85	0.66	0.67	0.67	0.68	0.66	0.69	0.69	0.69	0.61
Mn	0.03	0.02	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ca	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.01	0.01	0.01	0.01	0.01
Na	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.02	1.01	1.03	1.01	1.00	1.01
Total	4.01	4.01	4.01	4.01	4.01	4.01	4.01	4.01	4.02	4.01	4.02	4.01	4.00	4.01
X_{Mg}	0.54	0.54	0.54	0.54	0.54	0.60	0.59	0.59	0.59	0.60	0.59	0.59	0.59	0.62

Table A.5.3b Representative analyses of orthopyroxene (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b
	opx1	opx1	opx1	opx2	opx2	opx2	opx2	opx2	opx2	opx2	opx3	opx3	opx3	opx4	opx4
	→	→	rim/Grt	Grt/rim	→	→	→	→	→	rim/Ol	Grt/rim	→	rim/Pl	Grt/rim	→
SiO_2	53.58	53.35	52.74	50.14	53.36	53.43	53.57	52.40	53.55	53.46	52.47	52.23	52.47	51.86	52.58
TiO_2	0.00	0.02	0.00	0.02	0.02	0.00	0.01	0.00	0.01	0.00	0.11	0.13	0.09	0.17	0.25
Al_2O_3	0.45	0.64	1.67	5.24	1.35	0.60	0.67	1.53	0.68	0.39	1.64	1.78	1.54	1.20	1.07
Cr_2O_3	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00
Fe_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	25.07	24.57	24.13	22.90	24.64	25.09	24.92	24.10	24.87	24.91	23.58	23.47	23.47	22.26	22.47
CaO	0.10	0.12	0.14	0.14	0.15	0.18	0.16	0.16	0.13	0.13	0.60	0.47	0.56	0.64	0.98
MnO	0.43	0.46	0.36	0.26	0.31	0.25	0.29	0.28	0.37	0.29	0.40	0.38	0.38	0.40	0.41
FeO	20.53	20.63	21.06	21.32	20.12	20.25	19.71	20.85	19.97	19.98	20.62	20.65	21.21	22.54	22.07
Na_2O	0.00	0.00	0.02	0.00	0.00	0.06	0.01	0.01	0.00	0.02	0.00	0.02	0.00	0.03	0.02
K_2O	0.02	0.00	0.00	0.02	0.01	0.00	0.01	0.02	0.00	0.01	0.02	0.00	0.00	0.01	0.00
Total	100.17	99.77	100.13	100.03	99.98	99.85	99.35	99.35	99.58	99.18	99.43	99.15	99.71	99.09	99.84
Formula (O=6)															
Z															
Si	1.97	1.97	1.95	1.86	1.96	1.97	1.98	1.95	1.98	1.98	1.95	1.95	1.95	1.95	1.96
Al	0.02	0.03	0.05	0.14	0.04	0.03	0.02	0.05	0.02	0.02	0.05	0.05	0.05	0.05	0.04
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Y															
Al	0.00	0.00	0.02	0.09	0.02	0.00	0.01	0.02	0.01	0.00	0.02	0.03	0.02	0.01	0.01
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Mg	1.00	1.00	0.98	0.91	0.98	1.00	0.99	0.98	0.99	1.00	0.97	0.97	0.98	0.99	0.98
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X															
Mg	0.38	0.36	0.35	0.35	0.37	0.38	0.38	0.35	0.38	0.38	0.33	0.33	0.32	0.26	0.27
Fe^{2+}	0.63	0.64	0.65	0.66	0.62	0.62	0.61	0.65	0.62	0.62	0.64	0.64	0.66	0.71	0.69
Mn	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ca	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.04
Na	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.03	1.01	1.02	1.03	1.01	1.02	1.01	1.02	1.01	1.01	1.01	1.01	1.01	1.02	1.01
Total	4.02	4.01	4.02	4.03	4.01	4.02	4.01	4.02	4.01	4.01	4.01	4.01	4.01	4.02	4.01
X_{Mg}	0.61	0.61	0.60	0.58	0.61	0.62	0.62	0.60	0.62	0.62	0.60	0.60	0.60	0.58	0.59

Table A.5.3b Representative analyses of orthopyroxene (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b
	opx4	opx4	opx4	opx5	opx5	opx5	opx5	opx6	opx6	opx6	opx6
	→	→	rim/Ilm	rim	→	→	rim	rim	→	→	rim
SiO_2	52.10	51.93	51.97	52.08	51.89	51.89	52.07	52.05	51.85	52.10	52.24
TiO_2	0.19	0.16	0.20	0.20	0.22	0.22	0.23	0.14	0.12	0.18	0.10
Al_2O_3	1.25	1.29	1.13	1.36	1.38	1.38	1.35	1.54	1.54	1.69	1.59
Cr_2O_3	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.01	0.00	0.00	0.05
Fe_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MgO	22.11	22.67	22.83	22.79	22.23	22.23	22.77	22.67	22.38	22.58	22.67
CaO	0.87	0.69	0.76	0.53	0.84	0.84	0.82	0.60	0.48	0.43	0.40
MnO	0.44	0.40	0.41	0.43	0.46	0.46	0.37	0.42	0.41	0.37	0.44
FeO	22.16	22.55	21.90	21.75	22.19	22.19	22.02	22.52	22.64	22.47	22.45
Na_2O	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.03	0.01
K_2O	0.02	0.01	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Total	99.15	99.69	99.22	99.17	99.23	99.23	99.65	99.97	99.44	99.84	99.97
Formula (O=6)											
Z											
Si	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.94	1.95	1.95	1.95
Al	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Y											
Al	0.02	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Mg	0.98	0.99	0.99	0.98	0.98	0.98	0.99	0.98	0.98	0.98	0.98
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X											
Mg	0.26	0.27	0.29	0.29	0.27	0.27	0.28	0.28	0.27	0.28	0.28
Fe^{2+}	0.70	0.71	0.69	0.68	0.70	0.70	0.69	0.70	0.71	0.70	0.70
Mn	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ca	0.04	0.03	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.02
Na	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.01	1.02	1.02	1.01	1.01	1.01	1.02	1.02	1.02	1.01	1.01
Total	4.01	4.02	4.02	4.01	4.01	4.01	4.02	4.02	4.02	4.01	4.01
X_{Mg}	0.58	0.58	0.59	0.59	0.58	0.58	0.59	0.58	0.58	0.58	0.58

Table A.5.4 Representative analyses of amphibole.

Rock type	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN
Sample	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03
	am1	am1	am1	am3	am3	am4	am4	am5	am5	am5	am6	am6	am8	am8
	rim	→	rim	rim	core	core	core	core	core	rim	rim	core	rim	→
Position	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial
SiO_2	40.73	40.76	40.63	40.30	40.20	39.07	38.85	40.89	41.26	39.60	38.94	39.20	40.29	40.72
TiO_2	3.24	2.54	2.47	3.02	2.96	2.91	2.85	3.16	3.09	3.08	2.36	2.49	2.94	2.92
Al_2O_3	11.90	12.96	12.84	12.46	12.45	13.33	13.35	11.42	11.20	12.41	13.85	13.82	12.50	12.23
Cr_2O_3	0.03	0.01	0.00	0.00	0.03	0.02	0.00	0.00	0.01	0.02	0.02	0.00	0.02	0.00
Fe_2O_3	1.19	1.97	1.93	0.36	0.93	9.19	10.23	8.97	9.47	1.23	1.43	2.89	0.79	0.80
FeO	14.52	14.61	14.65	14.91	14.87	9.05	7.51	8.07	7.10	14.31	15.48	14.33	14.27	14.20
MgO	10.28	10.19	10.06	10.10	10.12	8.43	9.03	9.50	10.63	10.19	9.09	9.57	10.22	10.44
MnO	0.19	0.18	0.19	0.20	0.14	0.18	0.27	0.17	0.18	0.18	0.17	0.14	0.14	0.13
CaO	11.03	11.35	11.21	11.30	11.33	11.16	11.18	11.52	11.37	11.22	11.42	10.90	11.06	11.14
Na_2O	2.43	2.36	2.40	2.66	2.52	2.47	2.46	2.95	2.61	2.46	2.34	2.40	2.56	2.50
K_2O	1.07	1.06	1.08	1.07	1.06	1.15	1.14	0.81	0.85	1.04	1.14	1.08	1.06	1.03
Total	96.59	97.98	97.46	96.36	96.61	96.94	96.87	97.46	97.75	95.73	96.23	96.81	95.84	96.13
Formula (O=23)														
Si	6.20	6.12	6.14	6.15	6.13	5.92	5.87	6.12	6.13	6.09	5.99	5.97	6.16	6.21
Ti	0.37	0.29	0.28	0.35	0.34	0.33	0.32	0.36	0.34	0.36	0.27	0.29	0.34	0.33
Al	2.13	2.29	2.29	2.24	2.24	2.38	2.38	2.02	1.96	2.25	2.51	2.48	2.26	2.20
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.14	0.22	0.22	0.04	0.11	1.05	1.16	1.01	1.06	0.14	0.17	0.33	0.09	0.09
Fe^{2+}	1.85	1.83	1.85	1.90	1.90	1.15	0.95	1.01	0.88	1.84	1.99	1.83	1.83	1.81
Mg	2.33	2.28	2.27	2.30	2.30	1.90	2.03	2.12	2.35	2.34	2.09	2.17	2.33	2.37
Mn	0.02	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Ca	1.80	1.83	1.81	1.85	1.85	1.81	1.81	1.85	1.81	1.85	1.88	1.78	1.81	1.82
Na	0.72	0.69	0.70	0.79	0.74	0.72	0.72	0.86	0.75	0.73	0.70	0.71	0.76	0.74
K	0.21	0.20	0.21	0.21	0.21	0.22	0.22	0.15	0.16	0.20	0.22	0.21	0.21	0.20
Total	15.76	15.78	15.79	15.86	15.83	15.51	15.50	15.51	15.47	15.83	15.85	15.79	15.81	15.79
X_{Mg}	0.56	0.55	0.55	0.55	0.55	0.62	0.68	0.68	0.73	0.56	0.51	0.54	0.56	0.57

Table A.5.4 Representative analyses of amphibole (continued).

Rock type	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN
Sample	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-04
	am8	am9	am9	am9	am9	am1	am1	am1	am2	am3	am3	am3	am3	am4
	rim	rim	→	→	rim	core	core	core	core	core	core	core	core	core
Position	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial
SiO_2	41.41	40.92	40.83	40.45	40.87	39.07	38.93	39.38	39.08	40.15	39.22	40.34	39.97	40.63
TiO_2	2.92	1.73	1.76	1.69	1.62	3.43	2.92	3.45	1.89	2.80	3.35	2.28	2.37	2.45
Al_2O_3	11.88	12.97	12.87	12.90	12.42	12.84	13.27	11.84	12.27	11.31	11.34	12.19	11.56	11.16
Cr_2O_3	0.00	0.01	0.00	0.00	0.04	0.01	0.02	0.03	0.00	0.00	0.05	0.00	0.01	0.00
Fe_2O_3	0.84	2.04	2.52	1.99	2.63	0.23	0.62	0.02	2.07	0.00	0.65	0.99	1.16	1.01
FeO	13.58	13.85	13.43	13.80	13.24	19.17	18.95	19.32	18.35	19.25	19.46	18.90	18.43	18.43
MgO	10.81	10.65	10.85	10.59	10.87	7.10	7.07	7.44	7.42	7.77	7.28	7.79	7.95	8.26
MnO	0.15	0.15	0.15	0.18	0.26	0.26	0.24	0.24	0.21	0.23	0.29	0.23	0.19	0.31
CaO	11.26	11.29	11.35	11.38	10.84	11.16	11.27	11.20	10.82	11.31	10.94	11.31	11.09	11.22
Na_2O	2.18	2.55	2.35	2.46	2.80	2.34	2.23	2.40	2.32	2.47	2.43	2.25	2.25	2.23
K_2O	0.97	1.05	1.07	1.06	0.96	1.31	1.33	1.34	1.25	1.25	1.32	1.46	1.35	1.43
Total	95.99	97.21	97.19	96.50	96.54	96.91	96.86	96.66	95.67	96.55	96.33	97.73	96.32	97.12
Formula (O=23)														
Si	6.29	6.17	6.16	6.15	6.20	6.07	6.04	6.14	6.15	6.25	6.15	6.20	6.23	6.28
Ti	0.33	0.20	0.20	0.19	0.18	0.40	0.34	0.40	0.22	0.33	0.40	0.26	0.28	0.28
Al	2.12	2.31	2.29	2.31	2.22	2.35	2.43	2.17	2.27	2.08	2.10	2.21	2.12	2.03
Cr	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Fe^{3+}	0.10	0.23	0.29	0.23	0.30	0.03	0.07	0.00	0.24	0.00	0.08	0.11	0.14	0.12
Fe^{2+}	1.72	1.75	1.69	1.75	1.68	2.49	2.46	2.52	2.41	2.51	2.55	2.43	2.40	2.38
Mg	2.45	2.39	2.44	2.40	2.46	1.64	1.64	1.73	1.74	1.80	1.70	1.78	1.85	1.90
Mn	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.02	0.04
Ca	1.83	1.82	1.83	1.85	1.76	1.86	1.87	1.87	1.82	1.89	1.84	1.86	1.85	1.86
Na	0.64	0.74	0.69	0.73	0.82	0.70	0.67	0.73	0.71	0.75	0.74	0.67	0.68	0.67
K	0.19	0.20	0.21	0.20	0.18	0.26	0.26	0.27	0.25	0.25	0.26	0.29	0.27	0.28
Total	15.69	15.84	15.81	15.85	15.85	15.83	15.83	15.86	15.85	15.88	15.87	15.85	15.84	15.84
X_{Mg}	0.59	0.58	0.59	0.58	0.59	0.40	0.40	0.41	0.42	0.42	0.40	0.42	0.44	0.44

Table A.5.4 Representative analyses of amphibole (continued).

Rock type	GN	GN	GN	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,px	A,px
Sample	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-08b	Ku-97-08b	Ku-97-08b	Ku-97-08b	Ku-97-08b	Ku-97-08b	Ku-97-08b	Ku-97-08b	Ku-97-13	Ku-97-13
	am4	am5	am5	am1	am1	am1	am1	am2	am2	am3	am3	am1	am1
	core	core	core	rim	→	→	core	core	rim	core	core	core	core
Position	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial
SiO_2	40.60	39.52	39.09	41.69	41.47	40.61	41.35	40.46	40.66	40.96	39.82	40.65	40.85
TiO_2	2.78	2.96	2.84	0.73	0.72	0.25	0.99	2.09	1.56	1.82	1.89	0.80	0.31
Al_2O_3	11.41	11.96	12.25	14.29	14.87	17.15	13.77	14.01	14.16	15.11	14.83	12.21	12.73
Cr_2O_3	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.02	0.05	0.00	0.00
Fe_2O_3	0.78	0.25	0.13	4.07	4.26	5.19	4.20	3.42	4.30	3.03	3.43	4.55	5.19
FeO	18.43	20.38	20.34	10.12	10.51	8.98	11.06	10.76	9.47	10.29	10.53	16.17	15.56
MgO	8.17	6.90	6.68	11.88	11.21	11.16	11.34	11.80	12.23	11.82	11.50	7.83	8.12
MnO	0.30	0.28	0.33	0.19	0.18	0.18	0.17	0.23	0.14	0.19	0.21	0.20	0.23
CaO	11.13	11.41	11.41	11.21	11.30	11.14	11.31	11.32	11.23	11.08	10.90	11.53	11.74
Na_2O	2.35	2.16	2.10	2.05	1.90	2.10	1.93	2.43	2.32	2.55	2.68	1.33	1.50
K_2O	1.33	1.58	1.63	1.00	0.84	0.65	1.07	0.75	0.76	0.71	0.66	1.03	0.98
Total	97.27	97.39	96.79	97.23	97.27	97.41	97.20	97.26	96.85	97.57	96.47	96.30	97.19
Formula (O=23)													
Si	6.25	6.15	6.12	6.17	6.14	5.97	6.16	6.03	6.05	6.04	5.97	6.28	6.24
Ti	0.32	0.35	0.33	0.08	0.08	0.03	0.11	0.23	0.17	0.20	0.21	0.09	0.04
Al	2.07	2.19	2.26	2.49	2.60	2.97	2.42	2.46	2.48	2.63	2.62	2.22	2.29
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Fe^{3+}	0.09	0.03	0.01	0.45	0.48	0.57	0.47	0.38	0.48	0.34	0.39	0.53	0.60
Fe^{2+}	2.37	2.65	2.66	1.25	1.30	1.10	1.38	1.34	1.18	1.27	1.32	2.09	1.99
Mg	1.87	1.60	1.56	2.62	2.47	2.44	2.52	2.62	2.71	2.60	2.57	1.80	1.85
Mn	0.04	0.04	0.04	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.03
Ca	1.84	1.90	1.92	1.78	1.79	1.76	1.81	1.81	1.79	1.75	1.75	1.91	1.92
Na	0.70	0.65	0.64	0.59	0.54	0.60	0.56	0.70	0.67	0.73	0.78	0.40	0.44
K	0.26	0.31	0.33	0.19	0.16	0.12	0.20	0.14	0.14	0.13	0.13	0.20	0.19
Total	15.83	15.88	15.88	15.66	15.59	15.59	15.66	15.74	15.70	15.71	15.76	15.55	15.59
X_{Mg}	0.44	0.38	0.37	0.68	0.66	0.69	0.65	0.66	0.70	0.67	0.66	0.46	0.48

Table A.5.4 Representative analyses of amphibole (continued).

Rock type	A,px	A,px	A,px	A,px	GN	GN	GN	GN	GN	GN	GN	T,grt	T,grt
Sample	Ku-97-13	Ku-97-13	Ku-97-13	Ku-97-13	Ku-98-68	Ku-98-68	Ku-98-68	Ku-98-68	Ku-98-68	Ku-98-68	Ku-98-68	Ku-98-221b	Ku-98-221b
	am1	am2	am2	am2	am1	am1	am2	am2	am3	am4	am4	am1	am2
	core	core	core	core	rim	rim	rim	core	rim	rim	core	core	core
Position	interstitial	interstitial	interstitial	interstitial	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	rim on Ol	rim on Ol
SiO_2	40.83	43.24	41.20	41.37	52.55	53.07	51.01	52.61	52.26	52.53	53.45	41.87	40.87
TiO_2	0.86	0.16	0.38	0.69	0.11	0.00	0.14	0.12	0.11	0.15	0.05	0.07	0.04
Al_2O_3	11.88	10.22	11.48	11.24	2.02	1.13	5.71	1.92	1.57	2.16	2.44	15.97	16.34
Cr_2O_3	0.02	0.01	0.05	0.02	0.00	0.00	0.00	0.02	0.03	0.00	0.00	0.02	0.04
Fe_2O_3	4.65	5.54	4.73	4.85	1.72	0.25	0.00	2.11	1.04	0.98	0.00	5.05	6.67
FeO	15.91	14.34	15.63	15.38	15.24	15.78	12.56	12.89	14.73	13.84	15.40	7.05	5.38
MgO	8.27	9.65	8.37	8.69	13.13	13.33	12.31	14.53	13.48	14.24	13.09	13.07	13.36
MnO	0.24	0.26	0.24	0.21	0.13	0.10	0.23	0.15	0.18	0.14	0.15	0.10	0.09
CaO	11.47	11.62	11.62	11.75	12.62	12.74	14.65	12.90	12.61	12.73	12.13	12.00	11.78
Na_2O	1.56	1.32	1.44	1.34	0.14	0.14	0.54	0.17	0.20	0.35	0.78	1.95	1.98
K_2O	1.01	0.74	0.93	1.00	0.04	0.03	0.05	0.05	0.02	0.08	0.04	0.79	0.78
Total	96.70	97.09	96.06	96.55	97.70	96.57	97.19	97.46	96.21	97.20	97.53	97.94	97.34
Formula (O=23)													
Si	6.28	6.55	6.37	6.36	7.70	7.86	7.44	7.67	7.76	7.69	7.80	6.07	5.96
Ti	0.10	0.02	0.04	0.08	0.01	0.00	0.02	0.01	0.01	0.02	0.01	0.01	0.00
Al	2.15	1.82	2.09	2.04	0.35	0.20	0.98	0.33	0.27	0.37	0.42	2.73	2.81
Cr	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.54	0.63	0.55	0.56	0.19	0.03	0.00	0.23	0.12	0.11	0.00	0.55	0.73
Fe^{2+}	2.05	1.82	2.02	1.98	1.87	1.95	1.53	1.57	1.83	1.69	1.88	0.86	0.66
Mg	1.90	2.18	1.93	1.99	2.87	2.94	2.68	3.16	2.98	3.11	2.85	2.83	2.90
Mn	0.03	0.03	0.03	0.03	0.02	0.01	0.03	0.02	0.02	0.02	0.02	0.01	0.01
Ca	1.89	1.89	1.92	1.93	1.98	2.02	2.29	2.01	2.01	2.00	1.90	1.86	1.84
Na	0.46	0.39	0.43	0.40	0.04	0.04	0.15	0.05	0.06	0.10	0.22	0.55	0.56
K	0.20	0.14	0.18	0.20	0.01	0.00	0.01	0.01	0.00	0.02	0.01	0.15	0.15
Total	15.60	15.47	15.57	15.56	15.04	15.05	15.13	15.06	15.06	15.11	15.10	15.62	15.62
X_{Mg}	0.48	0.55	0.49	0.50	0.61	0.60	0.64	0.67	0.62	0.65	0.60	0.77	0.82

Table A.5.4 Representative analyses of amphibole (continued).

Rock type	T,grt	T,grt	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	Ku-98-221b	Ku-98-221b	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-13	Ku-99-13
	am1	am1	a-am2	a-am2	a-am2	b-am1	b-am1	b-am1	b-am1	b-am1	b-am1	3-am1	3-am1
	core	core	rim	core	rim	rim	→	→	→	→	rim	rim	→
Position	rim on Ol	rim on Ol	interstitial	interstitial	interstitial	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	interstitial	interstitial
SiO_2	41.19	38.39	36.79	36.72	36.13	48.53	44.96	48.04	46.69	44.92	41.31	37.51	36.66
TiO_2	0.05	0.06	1.87	1.94	1.57	0.00	0.05	0.09	0.00	0.00	0.05	0.80	0.82
Al_2O_3	15.20	18.02	10.33	10.23	10.74	1.19	3.90	3.81	3.46	3.77	6.98	9.86	10.07
Cr_2O_3	0.01	0.00	0.00	0.03	0.03	0.00	0.00	0.02	0.03	0.02	0.01	0.00	0.01
Fe_2O_3	8.29	8.14	9.27	10.53	10.07	1.84	6.45	4.42	4.32	5.49	7.71	11.52	13.48
FeO	5.09	5.49	22.68	22.24	21.98	26.47	24.24	22.64	23.50	22.90	22.72	21.80	20.89
MgO	13.55	11.95	0.42	0.48	0.47	4.69	3.58	5.77	5.06	4.59	2.75	0.40	0.29
MnO	0.11	0.09	0.83	0.88	0.80	0.79	0.88	0.44	0.72	0.72	0.49	0.95	1.05
CaO	11.33	11.60	10.46	10.63	10.51	11.50	10.81	10.05	11.35	11.25	10.11	9.72	10.12
Na_2O	1.86	1.89	1.81	1.94	1.74	0.19	0.44	0.43	0.45	0.51	0.77	2.09	2.27
K_2O	0.99	1.00	1.75	1.76	1.87	0.19	0.67	0.46	0.53	0.65	1.40	1.91	1.91
Total	97.65	96.62	96.21	97.37	95.90	95.38	95.98	96.17	96.10	94.83	94.31	96.56	97.58
Formula (O=23)													
Si	6.00	5.69	6.07	6.00	5.98	7.77	7.23	7.50	7.40	7.26	6.80	6.16	6.00
Ti	0.01	0.01	0.23	0.24	0.20	0.00	0.01	0.01	0.00	0.00	0.01	0.10	0.10
Al	2.61	3.15	2.01	1.97	2.10	0.22	0.74	0.70	0.65	0.72	1.35	1.91	1.94
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.91	0.91	1.15	1.29	1.26	0.22	0.78	0.52	0.52	0.67	0.96	1.42	1.66
Fe^{2+}	0.62	0.68	3.13	3.04	3.04	3.54	3.26	2.96	3.12	3.10	3.13	3.00	2.86
Mg	2.94	2.64	0.10	0.12	0.12	1.12	0.86	1.34	1.20	1.11	0.67	0.10	0.07
Mn	0.01	0.01	0.12	0.12	0.11	0.11	0.12	0.06	0.10	0.10	0.07	0.13	0.15
Ca	1.77	1.84	1.85	1.86	1.86	1.97	1.86	1.68	1.93	1.95	1.78	1.71	1.77
Na	0.52	0.54	0.58	0.61	0.56	0.06	0.14	0.13	0.14	0.16	0.25	0.66	0.72
K	0.18	0.19	0.37	0.37	0.39	0.04	0.14	0.09	0.11	0.13	0.29	0.40	0.40
Total	15.58	15.65	15.60	15.62	15.62	15.06	15.14	14.99	15.14	15.19	15.31	15.60	15.66
X_{Mg}	0.83	0.79	0.03	0.04	0.04	0.24	0.21	0.31	0.28	0.26	0.18	0.03	0.02

Table A.5.4 Representative analyses of amphibole (continued).

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13
	3-am1	3-am1	3-am1	3-am1	3-am1	3-am1	3-am1	3-am1	4-am1	4-am1	4-am1	4-am2	4-am2	4-am3
	→	→	core	→	→	→	→	rim	rim	core	rim	rim	core	rim
Position	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial
SiO_2	36.71	35.94	36.67	36.10	36.56	36.44	35.80	36.33	36.85	36.25	35.93	36.24	36.54	36.73
TiO_2	0.81	0.73	0.75	0.75	0.73	0.64	0.71	0.69	0.81	0.80	0.61	0.57	0.81	0.75
Al_2O_3	10.47	10.19	10.26	10.13	10.44	10.28	10.32	10.42	10.42	10.31	10.38	10.34	10.09	9.85
Cr_2O_3	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.01	0.00	0.00	0.02
Fe_2O_3	14.01	13.89	13.70	14.43	13.86	12.99	13.86	12.54	12.33	12.87	14.21	12.51	12.36	12.94
FeO	20.66	20.28	20.85	20.52	20.95	21.01	20.79	21.68	21.77	21.25	20.93	21.85	21.59	21.19
MgO	0.26	0.17	0.23	0.21	0.22	0.24	0.22	0.21	0.26	0.24	0.17	0.23	0.21	0.24
MnO	0.94	1.08	1.05	0.96	0.98	1.02	0.99	0.97	1.09	0.83	1.03	0.92	0.90	0.91
CaO	10.17	9.92	10.27	10.09	10.37	10.04	10.24	10.28	10.49	10.27	10.31	10.33	10.33	10.22
Na_2O	2.48	2.40	2.42	2.30	2.38	2.21	2.10	1.99	2.15	2.29	2.09	1.90	2.23	2.46
K_2O	1.90	1.93	1.96	1.95	2.04	2.04	2.13	2.26	2.18	2.09	2.22	2.38	2.01	1.91
Total	98.44	96.52	98.16	97.44	98.52	96.90	97.16	97.38	98.34	97.25	97.87	97.27	97.08	97.22
Formula (O=23)														
Si	5.95	5.95	5.97	5.93	5.93	6.00	5.90	5.97	5.99	5.96	5.89	5.97	6.01	6.03
Ti	0.10	0.09	0.09	0.09	0.09	0.08	0.09	0.09	0.10	0.10	0.07	0.07	0.10	0.09
Al	2.00	1.99	1.97	1.96	2.00	1.99	2.01	2.02	2.00	2.00	2.01	2.01	1.96	1.91
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Fe^{3+}	1.71	1.73	1.68	1.78	1.69	1.61	1.72	1.55	1.51	1.59	1.75	1.55	1.53	1.60
Fe^{2+}	2.80	2.81	2.84	2.82	2.84	2.89	2.87	2.98	2.96	2.92	2.87	3.01	2.97	2.91
Mg	0.06	0.04	0.06	0.05	0.05	0.06	0.05	0.05	0.06	0.06	0.04	0.06	0.05	0.06
Mn	0.13	0.15	0.14	0.13	0.13	0.14	0.14	0.14	0.15	0.12	0.14	0.13	0.13	0.13
Ca	1.77	1.76	1.79	1.78	1.80	1.77	1.81	1.81	1.83	1.81	1.81	1.82	1.82	1.80
Na	0.78	0.77	0.76	0.73	0.75	0.71	0.67	0.63	0.68	0.73	0.66	0.61	0.71	0.78
K	0.39	0.41	0.41	0.41	0.42	0.43	0.45	0.47	0.45	0.44	0.46	0.50	0.42	0.40
Total	15.68	15.69	15.70	15.68	15.72	15.69	15.70	15.71	15.72	15.73	15.72	15.73	15.71	15.71
X_{Mg}	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02

Table A.5.4 Representative analyses of amphibole (continued).

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14
	4-am3	4-am3	4-am3	4-am3	a-am1	a-am1	a-am1	a-am1	a-am1	a-am1	a-am1	a-am1	b-am2	b-am2
	→	→	→	rim	rim	→	→	→	→	→	→	rim	rim	core
Position	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial	interstitial
SiO_2	36.56	36.57	36.51	36.62	36.89	36.89	36.45	34.42	37.15	37.12	36.76	36.91	36.21	35.02
TiO_2	0.78	0.76	0.75	0.75	0.70	0.76	0.83	0.98	0.89	0.94	0.94	0.82	0.74	0.82
Al_2O_3	10.11	9.94	10.19	10.20	10.84	10.78	10.42	9.51	9.90	10.47	10.68	10.74	10.82	10.02
Cr_2O_3	0.02	0.01	0.04	0.08	0.00	0.05	0.00	0.00	0.02	0.01	0.03	0.00	0.01	0.00
Fe_2O_3	13.18	12.53	13.22	12.85	11.79	11.92	12.81	13.45	12.20	12.23	12.97	12.66	12.37	12.31
FeO	21.18	21.48	21.19	21.25	21.51	21.63	21.05	19.41	21.21	21.40	21.18	21.51	21.07	20.30
MgO	0.24	0.22	0.22	0.17	0.37	0.31	0.30	0.32	0.54	0.25	0.35	0.26	0.39	0.32
MnO	1.02	0.93	0.98	1.07	1.08	1.05	1.00	1.14	0.90	1.11	0.96	1.05	1.10	1.07
CaO	10.38	10.27	10.15	10.39	10.49	10.40	10.17	9.78	10.26	10.41	10.44	10.36	10.53	10.12
Na_2O	2.25	2.24	2.21	2.34	2.21	2.20	2.15	2.10	2.22	2.27	2.20	2.16	2.09	1.98
K_2O	1.95	1.98	2.03	1.98	2.21	2.22	1.98	1.75	1.77	1.81	1.97	2.11	2.23	1.90
Total	97.66	96.93	97.48	97.71	98.08	98.20	97.16	92.86	97.04	98.04	98.47	98.58	97.56	93.85
Formula (O=23)														
Si	5.98	6.03	5.98	5.99	6.00	5.99	5.98	5.93	6.08	6.02	5.95	5.97	5.93	5.96
Ti	0.10	0.09	0.09	0.09	0.09	0.09	0.10	0.13	0.11	0.12	0.11	0.10	0.09	0.10
Al	1.95	1.93	1.97	1.97	2.08	2.06	2.02	1.93	1.91	2.00	2.04	2.05	2.09	2.01
Cr	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	1.62	1.55	1.63	1.58	1.44	1.46	1.58	1.74	1.50	1.49	1.58	1.54	1.52	1.58
Fe^{2+}	2.90	2.96	2.91	2.91	2.92	2.94	2.89	2.79	2.90	2.91	2.87	2.91	2.88	2.89
Mg	0.06	0.05	0.05	0.04	0.09	0.08	0.07	0.08	0.13	0.06	0.08	0.06	0.10	0.08
Mn	0.14	0.13	0.14	0.15	0.15	0.14	0.14	0.17	0.12	0.15	0.13	0.14	0.15	0.15
Ca	1.82	1.81	1.78	1.82	1.83	1.81	1.79	1.80	1.80	1.81	1.81	1.80	1.85	1.84
Na	0.71	0.72	0.70	0.74	0.70	0.69	0.68	0.70	0.70	0.72	0.69	0.68	0.66	0.65
K	0.41	0.42	0.42	0.41	0.46	0.46	0.41	0.38	0.37	0.38	0.41	0.43	0.47	0.41
Total	15.69	15.70	15.68	15.72	15.74	15.73	15.67	15.65	15.64	15.66	15.67	15.69	15.74	15.68
X_{Mg}	0.02	0.02	0.02	0.01	0.03	0.02	0.02	0.03	0.04	0.02	0.03	0.02	0.03	0.03

Table A.5.4 Representative analyses of amphibole (continued).

Rock type	S,fs	S,fs	S,fs	S,fs	FA	A,f	A,f	A,f	A,f	A,f	A,f	A,f	UMX
Sample	Ku-99-14	Ku-99-14	Ku-99-14	Ku-99-14	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-71	Ku-97-43a
	b-am2	c-am1	c-am1	c-am1	am1	am1	am1	am2	am2	am2	am3	am4	5-am1
	rim	rim	core	rim	core	→	rim	core	→	rim	core	core	rim
Position	interstitial	interstitial	interstitial	interstitial	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	repl. Cpx	matrix
SiO_2	36.82	36.07	36.46	36.67	54.94	54.78	54.65	53.44	54.53	54.78	54.42	55.43	54.72
TiO_2	0.80	0.81	0.88	0.84	0.11	0.05	0.11	0.33	0.17	0.05	0.03	0.14	0.07
Al_2O_3	10.71	10.62	10.33	10.33	1.23	1.71	1.29	2.80	1.53	1.71	1.75	1.02	0.78
Cr_2O_3	0.01	0.01	0.04	0.00	0.01	0.02	0.00	0.00	0.00	0.02	0.04	0.02	0.00
Fe_2O_3	12.48	13.22	12.35	12.61	14.11	14.02	12.75	10.78	10.95	12.02	12.08	11.47	13.88
FeO	21.77	20.92	21.35	21.54	5.44	5.41	7.65	6.47	6.57	7.21	7.24	6.88	4.36
MgO	0.30	0.29	0.34	0.31	13.45	14.00	12.79	14.00	15.01	14.00	13.74	14.50	13.68
MnO	1.10	1.01	0.93	1.07	0.05	0.12	0.15	0.08	0.12	0.12	0.09	0.09	0.05
CaO	10.38	10.26	10.36	10.53	1.73	2.07	1.93	4.28	2.88	2.07	2.04	2.03	0.28
Na_2O	1.98	2.24	2.14	2.15	7.16	7.22	7.06	6.10	6.29	7.22	6.92	6.92	8.42
K_2O	2.30	2.25	2.03	2.14	0.08	0.07	0.11	0.09	0.06	0.07	0.06	0.10	0.78
Total	98.64	97.72	97.22	98.17	98.32	99.47	98.49	98.36	98.11	99.27	98.42	98.60	97.02
Formula (O=23)													
Si	5.97	5.91	5.99	5.97	7.82	7.72	7.82	7.62	7.76	7.75	7.76	7.86	7.88
Ti	0.10	0.10	0.11	0.10	0.01	0.01	0.01	0.04	0.02	0.01	0.00	0.01	0.01
Al	2.05	2.05	2.00	1.98	0.21	0.28	0.22	0.47	0.26	0.29	0.29	0.17	0.13
Cr	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	1.52	1.63	1.53	1.55	1.51	1.49	1.37	1.16	1.17	1.28	1.30	1.22	1.50
Fe^{2+}	2.95	2.87	2.93	2.93	0.65	0.64	0.92	0.77	0.78	0.85	0.86	0.82	0.53
Mg	0.07	0.07	0.08	0.07	2.85	2.94	2.73	2.97	3.18	2.95	2.92	3.06	2.94
Mn	0.15	0.14	0.13	0.15	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Ca	1.80	1.80	1.82	1.84	0.26	0.31	0.30	0.65	0.44	0.31	0.31	0.31	0.04
Na	0.62	0.71	0.68	0.68	1.98	1.97	1.96	1.69	1.73	1.98	1.92	1.90	2.35
K	0.48	0.47	0.43	0.45	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.02	0.14
Total	15.70	15.75	15.70	15.72	15.31	15.38	15.36	15.39	15.38	15.46	15.40	15.39	15.54
X_{Mg}	0.02	0.02	0.03	0.02	0.81	0.82	0.75	0.79	0.80	0.78	0.77	0.79	0.85

Table A.5.4 Representative analyses of amphibole (continued).

Rock type	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX
Sample	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a
	5-am1	6-am1	6-am1	6-am2	6-am2	5-am2	5-am2	5-am2
	core	rim	core	rim	core	rim	core	rim
Position	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
SiO_2	54.78	53.31	55.70	53.87	54.85	54.12	55.60	54.00
TiO_2	0.04	0.08	0.00	0.06	0.02	0.10	0.03	0.10
Al_2O_3	0.78	1.48	0.04	0.95	0.41	0.93	0.14	0.99
Cr_2O_3	0.02	0.01	0.02	0.00	0.01	0.03	0.01	0.00
Fe_2O_3	13.83	15.13	12.88	14.50	11.94	13.78	9.14	13.78
FeO	4.72	4.00	3.42	4.03	4.18	4.22	4.45	4.54
MgO	14.08	13.37	15.25	13.80	15.02	13.75	16.61	13.80
MnO	0.07	0.01	0.08	0.02	0.05	0.04	0.01	0.00
CaO	0.42	0.30	1.33	0.63	1.59	0.28	3.89	0.30
Na_2O	8.97	8.56	8.03	8.33	7.91	8.52	6.74	8.77
K_2O	0.75	0.78	0.47	0.74	0.72	0.83	0.42	0.86
Total	98.46	97.02	97.22	96.93	96.68	96.60	97.03	97.13
Formula (O=23)								
Si	7.81	7.72	7.95	7.79	7.90	7.84	7.93	7.80
Ti	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
Al	0.13	0.25	0.01	0.16	0.07	0.16	0.02	0.17
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	1.48	1.65	1.38	1.58	1.29	1.50	0.98	1.50
Fe^{2+}	0.56	0.48	0.41	0.49	0.50	0.51	0.53	0.55
Mg	2.99	2.88	3.24	2.97	3.23	2.97	3.53	2.97
Mn	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Ca	0.06	0.05	0.20	0.10	0.24	0.04	0.59	0.05
Na	2.48	2.40	2.22	2.34	2.21	2.39	1.86	2.46
K	0.14	0.14	0.09	0.14	0.13	0.15	0.08	0.16
Total	15.68	15.59	15.51	15.57	15.59	15.59	15.53	15.66
X_{Mg}	0.84	0.86	0.89	0.86	0.87	0.85	0.87	0.84

Table A.5.5 Representative analyses of biotite.

Rock type	A,px	A,w	GN	T	T	T	T	GN	GN	GN	A,px	A,px	GN	GN	GN	GN	GN	GN
Sample	Ku-97-13	Ku-97-44	Ku-97-92	Ku-97-104	Ku-97-105	Ku-98-52	Ku-98-52	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-78	Ku-98-78	Ku-98-79	Ku-98-79	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84
	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt1	bt2	bt2
	core	core	core	core	core	Pl/rim	rim/Ilm	Ilm/rim	→	rim/Pl	Ilm/rim	rim/Pl	Ilm/rim	rim/Pl	core	core	Pl/rim	→
SiO_2	35.27	35.33	34.01	36.27	36.50	35.03	33.92	35.73	34.88	34.69	33.45	34.39	34.83	34.99	36.72	37.06	37.55	36.80
TiO_7	2.43	1.06	1.82	3.78	3.24	2.24	2.23	2.19	2.20	2.26	2.09	2.24	1.47	1.81	2.37	2.42	1.36	1.46
Al_2O_3	15.74	18.69	18.65	16.14	16.10	17.63	17.68	16.25	17.06	17.01	17.09	16.35	18.31	18.13	17.69	17.53	17.58	17.33
Cr_2O_3	0.04	0.00	0.10	0.08	0.10	0.05	0.03	0.02	0.04	0.06	0.07	0.00	0.02	0.02	0.00	0.05	0.04	0.05
MgO	10.41	9.71	9.54	15.46	18.51	10.50	9.99	9.35	9.53	9.62	8.85	8.62	10.52	10.52	12.99	12.77	14.74	14.44
CaO	0.02	0.07	0.09	0.02	0.02	0.02	0.02	0.00	0.02	0.05	0.06	0.03	0.06	0.05	0.02	0.00	0.06	0.00
MnO	0.09	0.06	0.13	0.01	0.01	0.04	0.04	0.01	0.02	0.06	0.05	0.02	0.10	0.09	0.00	0.07	0.05	0.07
FeO	21.41	18.93	20.71	13.27	10.02	20.66	20.91	23.15	22.32	22.19	24.66	23.73	20.79	19.96	16.21	16.16	15.38	16.41
BaO	0.29	0.95	0.19	0.11	0.00	0.11	0.11	0.25	0.37	0.35	0.28	0.26	0.16	0.22	0.59	0.73	0.04	0.18
NiO	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	0.16	0.20	0.30	0.30	0.02	0.10	0.11	0.96	0.93	0.79	0.13	0.18	0.13	0.18	0.55	0.50	0.85	0.58
K_2O	9.29	9.42	8.68	9.41	9.65	9.32	9.08	8.50	8.36	8.40	8.25	8.82	9.36	9.04	8.01	8.21	7.44	7.93
F	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cl	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sum	95.16	94.41	94.22	94.85	94.18	95.69	94.10	96.41	95.71	95.48	94.98	94.64	95.76	95.00	95.15	95.50	95.09	95.23
O=F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O=Cl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	95.16	94.41	94.22	94.85	94.18	95.69	94.10	96.41	95.71	95.48	94.98	94.64	95.76	95.00	95.15	95.50	95.09	95.23
Formula (O=22)																		
Si	5.47	5.46	5.29	5.41	5.40	5.36	5.30	5.49	5.38	5.37	5.26	5.42	5.33	5.37	5.49	5.53	5.55	5.49
Al^{IV}	2.53	2.54	2.71	2.59	2.60	2.64	2.70	2.51	2.62	2.63	2.74	2.58	2.67	2.63	2.51	2.47	2.45	2.51
Ti^{VI}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe3+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	0.35	0.87	0.71	0.25	0.21	0.54	0.55	0.43	0.49	0.47	0.44	0.45	0.64	0.65	0.61	0.61	0.61	0.54
Cr	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Ti	0.28	0.12	0.21	0.42	0.36	0.26	0.26	0.25	0.26	0.26	0.25	0.26	0.17	0.21	0.27	0.27	0.15	0.16
Fe^{2+}	2.78	2.45	2.69	1.66	1.24	2.64	2.73	2.97	2.88	2.87	3.25	3.13	2.66	2.56	2.03	2.02	1.90	2.05
Mn	0.01	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01
Mg	2.41	2.24	2.21	3.44	4.08	2.40	2.33	2.14	2.19	2.22	2.08	2.02	2.40	2.41	2.90	2.84	3.25	3.21
Ni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sum VI	5.84	5.68	5.85	5.79	5.91	5.85	5.88	5.80	5.82	5.84	6.02	5.87	5.89	5.85	5.80	5.76	5.93	5.97
Ba	0.02	0.06	0.01	0.01	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.03	0.04	0.00	0.01
Ca	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00
Na	0.05	0.06	0.09	0.09	0.01	0.03	0.03	0.29	0.28	0.24	0.04	0.06	0.04	0.05	0.16	0.14	0.24	0.17
K	1.84	1.86	1.72	1.79	1.82	1.82	1.81	1.67	1.65	1.66	1.66	1.77	1.83	1.77	1.53	1.56	1.40	1.51
Sum XII	1.91	1.99	1.84	1.89	1.83	1.86	1.85	1.97	1.95	1.92	1.72	1.85	1.89	1.84	1.73	1.75	1.66	1.69
Total	15.75	15.67	15.69	15.68	15.74	15.71	15.73	15.76	15.77	15.76	15.75	15.72	15.78	15.69	15.53	15.51	15.59	15.66
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A.5.5 Representative analyses of biotite (continued).

Rock type	T	T	T	T	T	T	T	S,ne	S,ne	S,ne	S,ne	S,ne	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f
Sample	Ku-98-221a	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b
	bt1	bt1	bt2	bt2	bt3	bt4	bt5	e-bt1	c-bt1	c-bt1	c-bt1	a-bt1	2-bt2	2-bt2	2-bt2	2-bt2	2-bt2	2-bt2	2-bt2	3-bt1
	Ol/rim	core	Pl/rim	rim/Ilm	core	Grt/rim	core	core	rim	→	rim	core	rim	→	→	→	→	→	rim	rim
SiO_2	38.02	36.44	36.32	35.91	36.57	37.51	37.12	35.503	36.962	37.161	35.978	35.832	33.88	32.73	32.38	33.08	33.58	32.72	33.34	33.65
TiO_7	3.13	4.10	4.11	4.26	3.95	3.03	2.37	2.192	2.136	2.109	1.985	2.169	1.83	1.74	1.66	2.04	2.24	2.06	2.43	1.84
Al_2O_3	16.08	16.43	16.21	16.00	16.56	16.88	17.62	16.010	14.876	15.104	15.878	15.973	17.14	16.65	17.13	16.33	15.22	17.88	17.25	16.04
Cr_2O_3	0.00	0.13	0.10	0.06	0.17	0.17	0.03	0.033	0.000	0.017	0.000	0.000	0.03	0.01	0.00	0.00	0.00	0.00	0.03	0.03
MgO	18.50	15.85	15.02	15.08	15.83	17.54	17.25	10.802	12.895	12.838	12.173	11.840	6.03	5.61	5.62	5.82	6.27	5.89	6.22	5.66
CaO	0.00	0.05	0.00	0.01	0.08	0.06	0.00	0.000	0.000	0.003	0.016	0.038	0.02	0.21	0.06	0.11	0.02	0.01	0.03	0.04
MnO	0.02	0.05	0.06	0.02	0.07	0.03	0.04	0.079	0.084	0.007	0.059	0.118	0.00	0.06	0.09	0.06	0.03	0.09	0.08	0.08
FeO	10.95	13.26	13.73	13.73	12.92	11.53	11.99	19.012	17.649	17.387	18.532	18.869	25.44	26.62	26.78	26.66	25.52	25.45	25.28	25.34
BaO	0.14	0.10	0.31	0.41	0.14	0.03	0.22	0.243	0.000	0.000	0.251	0.271	0.17	0.07	0.08	0.10	0.20	0.23	0.11	0.01
NiO	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.00	0.00	0.00	0.00	0.04	0.06	0.00	0.00
Na_2O	0.22	0.22	0.12	0.11	0.24	0.32	0.33	0.144	0.127	0.092	0.078	0.115	0.23	0.21	0.16	0.13	0.08	0.06	0.12	0.35
K_2O	9.20	9.36	9.46	9.54	9.17	8.88	9.00	9.561	9.988	10.003	10.069	9.777	9.19	8.82	8.91	9.01	9.43	9.23	9.26	9.65
F	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.64	0.60	0.82	0.71	0.69	0.86	0.67	1.00
Cl	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.01	0.00	0.00	0.06	0.04	0.04	0.02	0.07
Sum	96.26	95.99	95.43	95.13	95.70	95.97	95.96	93.58	94.72	94.72	95.02	95.00	94.61	93.32	93.70	94.10	93.34	94.59	94.82	93.76
O=F	-	-	-	-	-	-	-	-	-	-	-	-	-0.27	-0.25	-0.35	-0.30	-0.29	-0.36	-0.28	-0.42
O=Cl	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	-0.02
Total	96.26	95.99	95.43	95.13	95.70	95.97	95.96	93.58	94.72	94.72	95.02	95.00	94.34	93.07	93.36	93.79	93.05	94.22	94.54	93.32
Formula	(O=22)																			
Si	5.50	5.37	5.41	5.38	5.39	5.45	5.41	5.538	5.648	5.663	5.523	5.505	5.39	5.32	5.25	5.34	5.45	5.22	5.30	5.43
Al^{IV}	2.50	2.63	2.59	2.62	2.61	2.55	2.59	2.462	2.352	2.337	2.477	2.495	2.61	2.68	2.75	2.66	2.55	2.78	2.70	2.57
Ti^{VI}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe3+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.000	8.000	8.000	8.000	8.000	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	0.24	0.22	0.25	0.20	0.27	0.34	0.44	0.481	0.326	0.375	0.395	0.398	0.60	0.52	0.53	0.45	0.36	0.59	0.52	0.48
Cr	0.00	0.02	0.01	0.01	0.02	0.02	0.00	0.004	0.000	0.002	0.000	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.34	0.45	0.46	0.48	0.44	0.33	0.26	0.257	0.245	0.242	0.229	0.251	0.22	0.21	0.20	0.25	0.27	0.25	0.29	0.22
Fe^{2+}	1.32	1.63	1.71	1.72	1.59	1.40	1.46	2.480	2.255	2.216	2.379	2.424	3.38	3.62	3.63	3.60	3.47	3.40	3.36	3.42
Mn	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.010	0.011	0.001	0.008	0.015	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01
Mg	3.99	3.48	3.33	3.37	3.48	3.80	3.75	2.512	2.937	2.916	2.786	2.712	1.43	1.36	1.36	1.40	1.52	1.40	1.47	1.36
Ni	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Sum VI	5.90	5.82	5.77	5.78	5.81	5.89	5.92	5.744	5.775	5.752	5.797	5.800	5.64	5.72	5.73	5.70	5.63	5.66	5.66	5.50
Ba	0.01	0.01	0.02	0.02	0.01	0.00	0.01	0.015	0.000	0.000	0.015	0.016	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00
Ca	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.000	0.000	0.000	0.003	0.006	0.00	0.04	0.01	0.02	0.00	0.00	0.00	0.01
Na	0.06	0.06	0.03	0.03	0.07	0.09	0.09	0.044	0.038	0.027	0.023	0.034	0.07	0.07	0.05	0.04	0.03	0.02	0.04	0.11
K	1.70	1.76	1.80	1.82	1.72	1.64	1.67	1.902	1.947	1.945	1.972	1.916	1.87	1.83	1.84	1.86	1.95	1.88	1.88	1.99
Sum XII	1.77	1.84	1.85	1.88	1.81	1.74	1.78	1.961	1.985	1.972	2.013	1.973	1.95	1.94	1.91	1.92	1.99	1.92	1.93	2.10
Total	15.67	15.65	15.62	15.65	15.62	15.63	15.70	15.705	15.760	15.724	15.809	15.773	15.59	15.66	15.64	15.62	15.63	15.57	15.58	15.60
F	-	-	-	-	-	-	-	-	-	-	-	-	0.32	0.31	0.42	0.36	0.35	0.43	0.34	0.51
Cl	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.02	0.01	0.01	0.01	0.02
OH	-	-	-	-	-	-	-	-	-	-	-	-	1.67	1.69	1.58	1.62	1.64	1.56	1.66	1.47

Table A.5.5 Representative analyses of biotite (continued).

Rock type	S,f	S,f	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,l	CB,l
Sample	Ku-98-59b	Ku-98-59b	Ku-97-15	Ku-97-15	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15a	Ku-97-15e	Ku-97-15e	Ku-97-15e	Ku-98-14	Ku-98-14
	3-bt1	3-bt1	a-bt1	a-bt1	d-bt1	c-bt1	c-bt1	c-bt1	c-bt1	c-bt1	c-bt1	d-bt1	d-bt1	d-bt1	e-bt1	e-bt1	c-bt1	c-bt1	c-bt1	2-bt1	2-bt1
	core	rim	core	core	core	rim	→	→	→	→	rim	core	core	core	core	core	rim	→	rim	rim	→
SiO_2	35.09	34.00	35.98	35.83	36.28	35.68	36.00	37.29	37.50	37.48	37.64	36.21	36.37	36.29	35.16	35.49	36.96	36.88	37.16	34.10	33.86
TiO_7	1.74	1.60	1.99	2.17	2.17	2.16	2.15	2.09	2.08	2.08	2.02	2.19	2.17	1.98	2.11	2.25	2.14	2.00	2.11	2.53	2.54
Al_2O_3	16.26	17.12	15.88	15.97	15.67	16.31	15.78	14.78	14.37	14.75	14.85	15.42	15.49	16.14	16.41	16.47	14.88	14.63	15.10	15.49	15.34
Cr_2O_3	0.02	0.04	0.00	0.00	0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.02	0.01	0.00	0.00	0.02	0.01	0.00
MgO	6.27	5.92	12.17	11.84	12.29	11.79	12.15	13.40	13.76	13.66	13.60	12.39	12.19	12.79	11.10	10.87	12.90	12.88	12.84	10.58	10.36
CaO	0.00	0.00	0.02	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05
MnO	0.12	0.10	0.06	0.12	0.08	0.11	0.07	0.08	0.07	0.07	0.02	0.09	0.06	0.10	0.12	0.10	0.08	0.08	0.01	0.05	0.04
FeO	24.66	25.60	18.53	18.87	17.97	18.05	18.15	16.42	16.50	16.35	16.10	18.15	18.11	17.70	18.87	19.78	17.65	17.49	17.39	20.97	21.69
BaO	0.12	0.02	0.25	0.27	0.27	0.38	0.48	0.29	0.12	0.07	0.06	0.23	0.24	0.26	0.22	0.21	0.00	0.04	0.00	0.49	0.46
NiO	0.02	0.07	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.06	0.04
Na_2O	0.12	0.22	0.08	0.12	0.16	0.11	0.11	0.13	0.15	0.11	0.10	0.08	0.11	0.10	0.15	0.15	0.13	0.12	0.09	0.16	0.16
K_2O	9.58	9.41	10.07	9.78	9.91	9.82	9.80	9.90	10.01	10.07	9.92	9.89	9.79	10.00	9.65	9.60	9.99	9.83	10.00	8.67	8.97
F	1.14	0.75	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.36	1.73
Cl	0.02	0.08	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.05	0.05
Sum	95.14	94.93	95.02	95.00	94.82	94.45	94.70	94.37	94.55	94.63	94.31	94.64	94.53	95.43	93.79	94.92	94.72	93.94	94.72	94.55	95.28
O=F	-0.48	-0.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.57	-0.73
O=Cl	0.00	-0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.01	-0.01
Total	94.66	94.60	95.02	95.00	94.82	94.45	94.70	94.37	94.55	94.63	94.31	94.64	94.53	95.43	93.79	94.92	94.72	93.94	94.72	93.97	94.54
Formula	(O=22)																				
Si	5.52	5.40	5.52	5.51	5.56	5.50	5.54	5.69	5.71	5.69	5.72	5.56	5.59	5.52	5.47	5.47	5.65	5.68	5.66	5.32	5.28
Al^{IV}	2.48	2.60	2.48	2.49	2.44	2.50	2.46	2.31	2.29	2.31	2.28	2.44	2.41	2.48	2.53	2.53	2.35	2.32	2.34	2.68	2.72
Ti^{VI}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe3+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	0.54	0.60	0.40	0.40	0.39	0.46	0.40	0.35	0.29	0.34	0.38	0.36	0.39	0.41	0.48	0.47	0.33	0.33	0.38	0.17	0.09
Cr	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.21	0.19	0.23	0.25	0.25	0.25	0.25	0.24	0.24	0.24	0.23	0.25	0.25	0.23	0.25	0.26	0.25	0.23	0.24	0.30	0.30
Fe^{2+}	3.25	3.40	2.38	2.42	2.30	2.33	2.33	2.10	2.10	2.08	2.05	2.33	2.33	2.25	2.46	2.55	2.26	2.25	2.22	2.74	2.83
Mn	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.00
Mg	1.47	1.40	2.79	2.71	2.81	2.71	2.79	3.05	3.12	3.09	3.08	2.84	2.79	2.90	2.58	2.50	2.94	2.96	2.92	2.46	2.41
Ni	0.00	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.01
Sum VI	5.49	5.62	5.80	5.80	5.76	5.76	5.78	5.74	5.76	5.75	5.74	5.79	5.77	5.81	5.78	5.79	5.78	5.78	5.75	5.69	5.63
Ba	0.01	0.00	0.02	0.02	0.02	0.02	0.03	0.02	0.01	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.03	0.03
Ca	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Na	0.04	0.07	0.02	0.03	0.05	0.03	0.03	0.04	0.04	0.03	0.03	0.02	0.03	0.03	0.04	0.04	0.04	0.04	0.03	0.05	0.05
K	1.92	1.91	1.97	1.92	1.94	1.93	1.92	1.93	1.94	1.95	1.92	1.94	1.92	1.94	1.92	1.89	1.95	1.93	1.94	1.73	1.78
Sum XII	1.97	1.97	2.01	1.97	2.00	1.98	1.98	1.98	1.99	1.99	1.96	1.98	1.96	1.98	1.97	1.94	1.98	1.97	1.97	1.81	1.87
Total	15.45	15.60	15.81	15.77	15.77	15.75	15.76	15.72	15.76	15.74	15.70	15.77	15.73	15.79	15.75	15.73	15.76	15.75	15.72	15.50	15.50
F	0.57	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.67	0.85
Cl	0.00	0.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.01
OH	1.43	1.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.32	1.13

Table A.5.5 Representative analyses of biotite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48
	2-bt1	2-bt2	2-bt2	2-bt2	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt1	a-bt3	a-bt3
	rim	rim	core	rim	rim	→	→	→	→	→	→	→	→	→	→	→	→	→	rim	core	core
SiO_2	34.13	35.35	35.72	34.77	35.44	35.21	35.36	34.93	35.06	34.84	35.27	34.88	35.24	35.25	34.85	35.01	35.06	34.95	35.05	34.37	35.30	35.72
TiO_7	2.40	2.72	2.49	2.63	3.36	3.27	3.28	3.34	3.34	3.32	3.34	3.40	3.44	3.32	3.33	3.25	3.22	3.21	3.32	3.17	3.16	3.20
Al_2O_3	15.45	14.95	13.91	14.54	13.54	13.60	13.61	13.54	13.42	13.30	13.33	13.66	13.47	13.84	13.89	13.39	13.64	13.94	14.03	14.06	14.26	14.20
Cr_2O_3	0.01	0.00	0.00	0.04	0.04	0.05	0.04	0.00	0.00	0.03	0.02	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.02	0.01	0.06	0.00
MgO	10.26	11.16	11.07	11.38	9.01	8.74	8.93	8.95	8.83	8.92	8.98	9.03	8.89	8.91	8.92	8.82	8.77	8.89	8.85	8.52	9.53	9.78
CaO	0.03	0.12	0.00	0.01	0.00	0.00	0.00	0.03	0.11	0.32	0.00	0.01	0.00	0.02	0.00	0.03	0.00	0.01	0.00	0.00	0.03	0.02
MnO	0.12	0.04	0.03	0.12	0.09	0.13	0.05	0.12	0.15	0.08	0.12	0.12	0.18	0.14	0.08	0.17	0.04	0.14	0.06	0.13	0.05	0.10
FeO	21.05	20.08	21.11	20.35	23.94	24.45	24.20	23.75	23.65	23.30	24.29	24.03	23.78	23.92	23.66	23.55	23.79	24.13	24.19	24.50	22.63	21.88
BaO	0.27	0.18	0.11	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NiO	0.01	0.05	0.00	0.02	0.05	0.00	0.02	0.02	0.02	0.00	0.01	0.00	0.00	0.04	0.02	0.00	0.03	0.00	0.01	0.04	0.01	0.00
Na_2O	0.05	0.08	0.12	0.18	0.05	0.20	0.13	0.21	0.19	0.33	0.10	0.15	0.10	0.13	0.18	0.25	0.18	0.05	0.10	0.12	0.29	0.16
K_2O	9.40	9.31	9.49	8.97	9.55	9.50	9.63	9.50	9.29	9.34	9.66	9.64	9.57	9.53	9.50	9.53	9.45	9.63	9.47	9.60	8.79	9.26
F	1.69	1.62	2.18	2.15	1.11	1.14	0.89	0.88	0.89	0.79	0.63	0.92	1.06	1.06	0.97	0.80	1.03	1.18	1.28	0.96	1.26	1.29
Cl	0.02	0.01	0.00	0.03	0.00	0.02	0.00	0.00	0.02	0.07	0.01	0.06	0.01	0.03	0.02	0.00	0.02	0.00	0.00	0.05	0.04	0.00
Sum	94.86	95.68	96.23	95.52	96.18	96.30	96.15	95.27	94.96	94.63	95.75	95.91	95.74	96.17	95.43	94.82	95.23	96.14	96.37	95.52	95.39	95.61
O=F	-0.71	-0.68	-0.92	-0.91	-0.47	-0.48	-0.37	-0.37	-0.37	-0.33	-0.27	-0.39	-0.44	-0.45	-0.41	-0.34	-0.43	-0.50	-0.54	-0.41	-0.53	-0.54
O=Cl	0.00	0.00	0.00	-0.01	0.00	-0.01	0.00	0.00	0.00	-0.02	0.00	-0.01	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00
Total	94.14	94.99	95.31	94.60	95.71	95.82	95.78	94.90	94.58	94.28	95.48	95.51	95.29	95.72	95.02	94.48	94.80	95.64	95.84	95.11	94.85	95.07
Formula (O=22)																						
Si	5.32	5.42	5.47	5.36	5.51	5.49	5.52	5.50	5.53	5.51	5.53	5.46	5.51	5.49	5.47	5.53	5.51	5.45	5.45	5.42	5.48	5.52
Al^{IV}	2.68	2.58	2.51	2.64	2.48	2.50	2.48	2.50	2.47	2.48	2.46	2.52	2.48	2.51	2.53	2.47	2.49	2.55	2.55	2.58	2.52	2.48
Ti^{VI}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe3+	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum T	8.00	8.00	7.98	8.00	8.00	7.99	8.00	8.00	8.00	8.00	8.00	7.98	7.99	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	0.16	0.12	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.04	0.02	0.02	0.03	0.09	0.10
Cr	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Ti	0.28	0.31	0.29	0.30	0.39	0.38	0.39	0.40	0.40	0.40	0.39	0.40	0.40	0.39	0.39	0.39	0.38	0.38	0.39	0.38	0.37	0.37
Fe^{2+}	2.75	2.57	2.69	2.62	3.11	3.18	3.16	3.12	3.12	3.08	3.19	3.13	3.11	3.12	3.10	3.11	3.13	3.15	3.14	3.23	2.94	2.83
Mn	0.02	0.01	0.00	0.02	0.01	0.02	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.01
Mg	2.38	2.55	2.53	2.61	2.09	2.03	2.08	2.10	2.07	2.11	2.10	2.11	2.07	2.07	2.09	2.08	2.05	2.07	2.05	2.00	2.20	2.25
Ni	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum VI	5.59	5.57	5.51	5.56	5.62	5.62	5.65	5.64	5.63	5.59	5.70	5.65	5.61	5.62	5.63	5.63	5.61	5.63	5.61	5.67	5.61	5.56
Ba	0.02	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.02	0.02	0.04	0.05	0.02	0.06	0.04	0.06	0.06	0.10	0.03	0.05	0.03	0.04	0.06	0.08	0.06	0.02	0.03	0.04	0.09	0.05
K	1.87	1.82	1.85	1.76	1.90	1.89	1.92	1.91	1.87	1.89	1.93	1.93	1.91	1.89	1.90	1.92	1.90	1.92	1.88	1.93	1.74	1.82
Sum XII	1.91	1.88	1.90	1.84	1.91	1.95	1.96	1.97	1.94	2.04	1.96	1.97	1.94	1.93	1.96	2.00	1.95	1.94	1.91	1.97	1.83	1.88
Total	15.50	15.44	15.39	15.39	15.53	15.55	15.61	15.62	15.57	15.63	15.66	15.61	15.54	15.55	15.59	15.63	15.56	15.56	15.52	15.63	15.44	15.44
F	0.83	0.79	1.06	1.05	0.54	0.56	0.44	0.44	0.44	0.39	0.31	0.45	0.52	0.52	0.48	0.40	0.51	0.58	0.63	0.48	0.62	0.63
Cl	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00
OH	1.16	1.21	0.94	0.94	1.46	1.43	1.56	1.56	1.55	1.59	1.68	1.53	1.47	1.47	1.51	1.60	1.49	1.42	1.37	1.51	1.37	1.37

Table A.5.5 Representative analyses of biotite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-131
	7-bt1	7-bt1	7-bt1	9-bt1	9-bt1	9-bt1	9-bt1	9-bt1	9-bt1	9-bt1	9-bt1	9-bt1	9-bt1	9-bt1	9-bt1	9-bt1	10-bt2	10-bt2	10-bt2	10-bt2	10-bt2	5-bt2
	rim	→	rim	rim	→	→	→	→	→	→	→	→	→	→	→	rim	rim	→	→	→	rim	rim
SiO_2	38.00	37.70	38.00	36.79	36.66	36.54	36.30	36.26	36.42	35.06	34.39	34.23	33.94	34.34	33.65	34.82	34.04	33.63	33.56	33.63	34.19	36.75
TiO_7	2.36	2.31	2.30	2.53	2.67	2.63	2.58	2.65	2.71	2.62	2.40	2.41	2.30	2.25	2.36	2.37	2.23	2.32	2.40	2.45	2.22	2.78
Al_2O_3	12.84	12.88	12.78	15.63	15.63	15.44	15.65	15.40	15.18	16.49	17.05	17.26	17.25	17.29	17.04	16.56	17.08	17.21	17.20	17.01	17.70	12.91
Cr_2O_3	0.04	0.05	0.07	0.01	0.18	0.16	0.17	0.14	0.10	0.14	0.07	0.09	0.00	0.07	0.06	0.02	0.00	0.06	0.01	0.03	0.07	0.15
MgO	13.35	13.21	13.47	9.45	9.40	9.23	9.42	9.34	9.33	8.29	7.96	7.76	8.15	8.49	7.97	8.85	8.38	8.05	7.94	8.02	8.37	11.85
CaO	0.08	0.11	0.06	0.00	0.00	0.06	0.00	0.00	0.00	0.01	0.05	0.05	0.02	0.04	0.02	0.03	0.11	0.02	0.02	0.00	0.03	0.00
MnO	0.03	0.06	0.02	0.04	0.03	0.02	0.05	0.06	0.08	0.02	0.03	0.01	0.06	0.05	0.03	0.04	0.07	0.05	0.06	0.02	0.05	0.03
FeO	18.13	18.39	18.19	20.30	20.91	21.26	21.21	20.95	21.46	22.87	23.00	23.21	23.27	23.04	24.21	22.78	22.81	23.43	23.42	23.46	22.54	20.27
BaO	0.00	0.00	0.00	0.09	0.00	0.00	0.01	0.00	0.00	0.27	0.43	0.34	0.47	0.40	0.42	0.19	0.21	0.34	0.35	0.50	0.24	0.01
NiO	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	0.12	0.11	0.10	0.12	0.09	0.10	0.10	0.10	0.04	0.08	0.10	0.07	0.11	0.09	0.11	0.05	0.12	0.06	0.03	0.12	0.09	0.04
K_2O	9.71	9.89	9.85	9.74	9.76	9.49	9.93	9.70	9.83	9.63	9.63	9.69	9.38	9.28	9.57	9.57	9.51	9.53	9.52	9.47	9.50	9.78
F	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cl	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sum	94.66	94.71	94.83	94.69	95.32	94.93	95.44	94.59	95.14	95.46	95.10	95.13	94.94	95.33	95.45	95.26	94.58	94.70	94.52	94.70	94.99	94.57
O=F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O=Cl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	94.66	94.71	94.83	94.69	95.32	94.93	95.44	94.59	95.14	95.46	95.10	95.13	94.94	95.33	95.45	95.26	94.58	94.70	94.52	94.70	94.99	94.57
Formula (O=22)																						
Si	5.81	5.79	5.81	5.68	5.64	5.65	5.60	5.63	5.64	5.46	5.40	5.37	5.34	5.36	5.30	5.43	5.36	5.32	5.32	5.32	5.34	5.71
Al^{IV}	2.19	2.21	2.19	2.32	2.36	2.35	2.40	2.37	2.36	2.54	2.60	2.63	2.66	2.64	2.70	2.57	2.64	2.68	2.68	2.68	2.66	2.29
Ti^{VI}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe3+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	0.13	0.11	0.11	0.52	0.47	0.46	0.45	0.45	0.41	0.49	0.55	0.57	0.54	0.54	0.47	0.48	0.53	0.52	0.53	0.50	0.61	0.07
Cr	0.00	0.01	0.01	0.00	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.02
Ti	0.27	0.27	0.26	0.29	0.31	0.31	0.30	0.31	0.32	0.31	0.28	0.29	0.27	0.26	0.28	0.28	0.26	0.28	0.29	0.29	0.26	0.32
Fe^{2+}	2.32	2.36	2.33	2.62	2.69	2.75	2.74	2.72	2.78	2.98	3.02	3.05	3.06	3.01	3.19	2.97	3.01	3.10	3.10	3.11	2.95	2.63
Mn	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00
Mg	3.04	3.02	3.07	2.17	2.16	2.13	2.17	2.16	2.15	1.92	1.86	1.82	1.91	1.98	1.87	2.06	1.97	1.90	1.88	1.89	1.95	2.74
Ni	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sum VI	5.78	5.78	5.78	5.62	5.65	5.67	5.68	5.67	5.68	5.72	5.73	5.73	5.80	5.81	5.82	5.79	5.78	5.81	5.80	5.79	5.78	5.80
Ba	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.03	0.02	0.03	0.01	0.01	0.02	0.02	0.03	0.01	0.00
Ca	0.01	0.02	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
Na	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.01	0.02	0.03	0.02	0.03	0.03	0.03	0.01	0.04	0.02	0.01	0.04	0.03	0.01
K	1.90	1.94	1.92	1.92	1.92	1.87	1.95	1.92	1.94	1.91	1.93	1.94	1.88	1.85	1.92	1.90	1.91	1.92	1.92	1.91	1.89	1.94
Sum XII	1.94	1.99	1.96	1.96	1.94	1.91	1.99	1.95	1.95	1.95	1.99	1.99	1.95	1.91	1.99	1.93	1.98	1.96	1.96	1.98	1.94	1.95
Total	15.72	15.77	15.74	15.58	15.60	15.58	15.66	15.62	15.63	15.68	15.72	15.72	15.74	15.72	15.81	15.73	15.76	15.77	15.76	15.77	15.72	15.75
F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A.5.5 Representative analyses of biotite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8
	5-bt2	5-bt2	6-bt1	6-bt1	6-2-bt1	6-2-bt1	6-2-bt1	L1-bt	L1-bt	L1-bt	L2-bt	L2-bt	L2-bt	2-bt2	2-bt2	2-bt2	2-bt2	2-bt2	2-bt2
	core	rim	rim	core	rim	→	core	rim	core	rim	rim	core	rim	rim	→	→	→	→	→
SiO_2	37.13	36.81	36.71	36.46	35.69	36.19	36.30	35.54	36.54	36.13	35.07	36.13	35.48	35.35	35.26	35.29	35.18	34.86	35.09
TiO_7	2.93	2.93	2.66	2.66	2.72	2.69	2.47	2.96	2.76	2.84	2.86	2.78	2.93	2.25	2.32	2.45	2.49	2.49	2.41
Al_2O_3	12.92	12.96	13.02	12.97	12.87	12.37	12.52	12.94	13.04	13.42	12.99	13.20	13.20	15.27	14.98	15.12	15.14	15.34	15.38
Cr_2O_3	0.20	0.18	0.19	0.16	0.22	0.13	0.14	0.18	0.17	0.18	0.17	0.11	0.15	0.00	0.01	0.01	0.00	0.01	0.00
MgO	12.03	11.98	12.46	11.99	12.36	12.82	13.56	11.34	12.26	11.59	11.24	11.53	11.30	10.58	10.54	10.57	10.44	10.16	10.05
CaO	0.00	0.02	0.00	0.00	0.02	0.04	0.00	0.11	0.00	0.00	0.07	0.01	0.02	0.04	0.02	0.00	0.01	0.00	0.00
MnO	0.06	0.03	0.02	0.00	0.09	0.03	0.00	0.06	0.00	0.06	0.03	0.01	0.05	0.14	0.02	0.11	0.09	0.13	0.13
FeO	20.64	20.34	19.41	20.21	19.67	18.95	18.26	20.19	19.66	20.39	20.74	20.05	20.70	20.92	21.12	21.20	21.52	22.02	22.00
BaO	0.00	0.04	0.04	0.06	0.06	0.01	0.03	0.21	0.00	0.29	0.21	0.06	0.20	0.22	0.35	0.20	0.23	0.17	0.24
NiO	n.a.	n.a.	n.a.	n.a.	0.10	0.06	0.07	0.08	0.00	0.09	0.07	0.00	0.00	0.00	0.00	0.03	0.03	0.04	0.00
Na_2O	0.10	0.17	0.10	0.08	0.06	0.12	0.08	0.08	0.05	0.09	0.15	0.05	0.07	0.07	0.03	0.09	0.07	0.10	0.08
K_2O	9.80	9.64	9.71	10.05	9.47	9.70	9.75	9.65	9.60	9.61	9.53	9.59	9.50	9.46	9.41	9.48	9.52	9.59	9.41
F	n.a.	n.a.	n.a.	n.a.	2.16	2.48	2.72	2.03	2.24	1.85	1.65	2.11	1.69	1.66	1.74	1.68	1.35	1.54	1.31
Cl	n.a.	n.a.	n.a.	n.a.	0.00	0.00	0.02	0.00	0.01	0.00	0.02	0.02	0.00	0.02	0.02	0.02	0.02	0.00	0.02
Sum	95.82	95.10	94.32	94.64	95.47	95.58	95.92	95.36	96.32	96.53	94.79	95.65	95.29	95.98	95.83	96.22	96.09	96.45	96.11
O=F	-	-	-	-	-0.91	-1.05	-1.15	-0.85	-0.94	-0.78	-0.70	-0.89	-0.71	-0.70	-0.73	-0.71	-0.57	-0.65	-0.55
O=Cl	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	95.82	95.10	94.32	94.64	94.56	94.53	94.77	94.51	95.37	95.76	94.09	94.76	94.58	95.28	95.09	95.51	95.51	95.80	95.56
Formula (O=22)																			
Si	5.70	5.69	5.70	5.68	5.49	5.54	5.52	5.50	5.55	5.51	5.48	5.54	5.50	5.43	5.43	5.41	5.42	5.36	5.41
Al^{IV}	2.30	2.31	2.30	2.32	2.33	2.23	2.24	2.36	2.33	2.41	2.39	2.39	2.41	2.57	2.57	2.59	2.58	2.64	2.59
Ti^{VI}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe3+	0.00	0.00	0.00	0.00	0.18	0.23	0.24	0.14	0.12	0.07	0.13	0.07	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Sum T	8.00	8.00	8.00	8.00	7.82	7.77	7.76	7.86	7.88	7.93	7.87	7.93	7.91	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	0.04	0.05	0.08	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.15	0.14	0.16	0.14	0.20
Cr	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.34	0.34	0.31	0.31	0.31	0.31	0.28	0.34	0.32	0.33	0.34	0.32	0.34	0.26	0.27	0.28	0.29	0.29	0.28
Fe^{2+}	2.65	2.63	2.52	2.63	2.37	2.22	2.10	2.49	2.39	2.54	2.60	2.51	2.60	2.68	2.72	2.72	2.77	2.83	2.84
Mn	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.01	0.02	0.02
Mg	2.75	2.76	2.88	2.78	2.83	2.93	3.07	2.62	2.77	2.64	2.62	2.64	2.61	2.42	2.42	2.42	2.39	2.33	2.31
Ni	-	-	-	-	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum VI	5.81	5.80	5.81	5.80	5.55	5.46	5.46	5.47	5.49	5.53	5.57	5.47	5.57	5.57	5.56	5.58	5.63	5.62	5.64
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01
Ca	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Na	0.03	0.05	0.03	0.02	0.02	0.03	0.02	0.03	0.01	0.03	0.04	0.01	0.02	0.02	0.01	0.03	0.02	0.03	0.02
K	1.92	1.90	1.92	2.00	1.86	1.89	1.89	1.91	1.86	1.87	1.90	1.88	1.88	1.85	1.85	1.85	1.87	1.88	1.85
Sum XII	1.95	1.96	1.95	2.02	1.88	1.93	1.91	1.96	1.87	1.91	1.97	1.90	1.91	1.89	1.88	1.89	1.91	1.92	1.89
Total	15.76	15.76	15.77	15.82	15.25	15.16	15.13	15.29	15.24	15.37	15.41	15.30	15.39	15.47	15.44	15.47	15.54	15.54	15.53
F	-	-	-	-	1.05	1.20	1.31	0.99	1.07	0.89	0.82	1.02	0.83	0.80	0.85	0.81	0.66	0.75	0.64
Cl	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00
OH	-	-	-	-	0.95	0.80	0.69	1.01	0.92	1.11	1.18	0.97	1.17	1.19	1.15	1.18	1.34	1.25	1.36

Table A.5.5 Representative analyses of biotite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	L	L	L	L	L	L	L
Sample	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25
	2-bt2	2-bt2	2-bt2	2-bt2	2-bt2	2-bt2	3-bt2	3-bt2	3-bt2	3-bt2	4-bt1	4-bt1	4-bt1	3-bt1	3-bt1	3-bt1	3-bt1	3-bt1	3-bt1	3-bt1
	→	→	→	→	→	rim	rim	→	→	rim	rim	core	rim	rim	→	→	→	→	→	rim
SiO_2	34.88	35.05	34.98	35.41	35.08	35.21	34.65	34.96	34.51	34.90	35.81	36.05	35.31	38.12	38.52	38.23	38.20	38.35	38.54	38.72
TiO_7	2.40	2.48	2.43	2.40	2.41	2.33	2.91	2.94	2.73	2.81	2.20	2.77	2.71	3.03	2.96	3.15	3.08	2.97	2.99	2.71
Al_2O_3	15.24	15.16	15.26	15.00	15.20	15.29	15.03	14.93	14.95	14.75	15.35	14.29	14.05	12.32	12.10	12.51	12.48	12.33	12.50	12.55
Cr_2O_3	0.01	0.01	0.00	0.04	0.00	0.04	0.00	0.03	0.00	0.00	0.01	0.00	0.00	0.01	0.02	0.03	0.00	0.00	0.05	0.07
MgO	10.34	10.26	10.19	10.22	10.42	10.32	10.04	10.04	10.14	9.85	11.07	10.91	10.51	14.46	14.70	14.89	14.64	14.75	14.88	15.08
CaO	0.00	0.01	0.00	0.00	0.00	0.00	0.09	0.08	0.04	0.05	0.45	0.00	0.05	0.13	0.09	0.07	0.04	0.03	0.01	0.00
MnO	0.02	0.13	0.13	0.09	0.11	0.07	0.10	0.06	0.13	0.16	0.08	0.06	0.06	0.05	0.05	0.03	0.06	0.05	0.02	0.05
FeO	21.51	21.45	21.51	21.60	21.03	21.32	21.54	21.32	21.14	21.30	19.77	20.24	20.43	16.43	16.47	16.16	16.37	15.99	16.04	16.05
BaO	0.15	0.23	0.18	0.14	0.10	0.00	0.10	0.08	0.21	0.04	0.05	0.15	0.15	0.20	0.35	0.35	0.33	0.47	0.36	0.45
NiO	0.05	0.01	0.00	0.04	0.02	0.00	0.02	0.00	0.06	0.04	0.02	0.00	0.05	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	0.14	0.07	0.15	0.12	0.08	0.04	0.08	0.10	0.21	0.14	0.08	0.08	0.17	0.04	0.00	0.04	0.02	0.03	0.01	0.01
K_2O	9.46	9.64	9.45	9.48	9.45	9.72	9.31	9.35	9.41	9.33	9.45	9.65	9.53	9.49	9.59	9.65	9.55	9.51	9.54	9.63
F	1.81	1.44	1.43	1.44	1.74	1.37	1.22	1.20	1.35	1.54	1.53	1.67	1.77	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cl	0.01	0.01	0.04	0.03	0.00	0.00	0.00	0.04	0.03	0.02	0.02	0.00	0.07	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sum	96.03	95.93	95.75	96.01	95.64	95.71	95.09	95.11	94.91	94.95	95.90	95.87	94.84	94.28	94.85	95.11	94.78	94.48	94.94	95.32
O=F	-0.76	-0.60	-0.60	-0.60	-0.73	-0.58	-0.51	-0.50	-0.57	-0.65	-0.65	-0.70	-0.74	-	-	-	-	-	-	-
O=Cl	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00	-0.01	-	-	-	-	-	-	-
Total	95.26	95.32	95.14	95.40	94.90	95.14	94.57	94.60	94.33	94.29	95.25	95.16	94.09	94.28	94.85	95.11	94.78	94.48	94.94	95.32
Formula (O=22)																				
Si	5.37	5.41	5.40	5.45	5.41	5.43	5.39	5.43	5.38	5.43	5.46	5.52	5.49	5.81	5.84	5.78	5.80	5.83	5.82	5.83
Al^{IV}	2.63	2.59	2.60	2.55	2.59	2.57	2.61	2.57	2.62	2.57	2.54	2.48	2.51	2.19	2.16	2.22	2.20	2.17	2.18	2.17
Ti^{VI}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe3+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	0.13	0.17	0.18	0.17	0.17	0.21	0.15	0.16	0.13	0.13	0.22	0.10	0.06	0.03	0.01	0.01	0.03	0.04	0.05	0.06
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Ti	0.28	0.29	0.28	0.28	0.28	0.27	0.34	0.34	0.32	0.33	0.25	0.32	0.32	0.35	0.34	0.36	0.35	0.34	0.34	0.31
Fe^{2+}	2.77	2.77	2.78	2.78	2.71	2.75	2.80	2.77	2.76	2.77	2.52	2.59	2.66	2.10	2.09	2.04	2.08	2.03	2.03	2.02
Mn	0.00	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01
Mg	2.37	2.36	2.35	2.34	2.39	2.37	2.33	2.32	2.36	2.28	2.52	2.49	2.44	3.29	3.33	3.36	3.31	3.34	3.35	3.39
Ni	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	-	-	-	-	-	-	-
Sum VI	5.57	5.60	5.61	5.60	5.57	5.61	5.63	5.60	5.60	5.55	5.53	5.51	5.48	5.77	5.77	5.78	5.78	5.76	5.78	5.79
Ba	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.02	0.03
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.01	0.07	0.00	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Na	0.04	0.02	0.04	0.04	0.02	0.01	0.02	0.03	0.06	0.04	0.02	0.02	0.05	0.01	0.00	0.01	0.01	0.01	0.00	0.00
K	1.86	1.90	1.86	1.86	1.86	1.91	1.85	1.85	1.87	1.85	1.84	1.88	1.89	1.85	1.86	1.86	1.85	1.84	1.84	1.85
Sum XII	1.91	1.93	1.92	1.91	1.89	1.92	1.89	1.90	1.96	1.91	1.94	1.92	1.96	1.89	1.89	1.91	1.88	1.89	1.86	1.88
Total	15.48	15.53	15.52	15.50	15.45	15.54	15.53	15.50	15.55	15.45	15.46	15.42	15.44	15.66	15.66	15.68	15.66	15.65	15.64	15.67
F	0.88	0.70	0.70	0.70	0.85	0.67	0.60	0.59	0.67	0.76	0.74	0.81	0.87	-	-	-	-	-	-	-
Cl	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.02	-	-	-	-	-	-	-
OH	1.12	1.30	1.29	1.29	1.15	1.33	1.40	1.40	1.33	1.23	1.26	1.19	1.12	-	-	-	-	-	-	-

Table A.5.5 Representative analyses of biotite (continued).

Rock type	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX
Sample	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a
	3-bt1	3-bt1	3-bt1	3-bt1	3-bt1	3-bt2	3-bt2	3-bt2	3-bt2	3-bt2	3-bt2	3-bt2	3-bt2	3-bt2	3-bt2	3-bt2	2-bt1	2-bt1	2-bt1	2-bt1	2-bt1
	rim	→	→	→	rim	rim	→	→	→	→	→	→	→	→	→	rim	rim	→	→	→	rim
SiO_2	39.26	39.66	39.67	39.92	39.50	39.21	39.49	39.15	39.08	39.04	38.96	39.12	38.80	39.01	39.25	39.65	38.11	37.83	37.11	37.32	37.22
TiO_7	0.35	0.39	0.34	0.41	0.34	0.32	0.30	0.31	0.36	0.33	0.30	0.33	0.33	0.35	0.28	0.30	0.44	0.40	0.49	0.43	0.48
Al_2O_3	10.85	10.66	10.90	10.98	10.89	11.04	11.14	11.21	11.15	10.97	11.24	11.31	11.08	10.90	11.27	11.09	11.92	12.29	12.30	12.34	12.31
Cr_2O_3	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.01	0.01	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00
MgO	19.54	19.55	19.64	19.47	19.47	18.92	18.65	18.73	18.41	18.67	18.46	18.40	18.50	18.40	18.71	19.14	17.02	16.87	16.38	16.96	16.54
CaO	0.04	0.05	0.07	0.07	0.15	0.05	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.03	0.06	0.07	0.05	0.10	0.02	0.01	0.02
MnO	0.03	0.06	0.05	0.00	0.00	0.00	0.06	0.01	0.02	0.00	0.00	0.03	0.04	0.07	0.02	0.01	0.03	0.03	0.09	0.00	0.01
FeO	12.88	13.23	12.96	13.18	13.21	14.03	14.18	14.28	14.43	14.56	14.43	14.47	14.48	14.85	14.38	13.78	16.49	16.76	17.73	16.99	17.75
BaO	0.01	0.00	0.04	0.00	0.04	0.00	0.02	0.01	0.01	0.00	0.08	0.02	0.04	0.04	0.02	0.00	0.00	0.01	0.00	0.02	0.00
NiO	0.08	0.15	0.12	0.13	0.07	0.03	0.07	0.06	0.07	0.09	0.00	0.10	0.04	0.02	0.09	0.07	0.00	0.02	0.00	0.05	0.06
Na_2O	0.15	0.13	0.15	0.12	0.09	0.12	0.11	0.09	0.13	0.09	0.12	0.11	0.15	0.11	0.06	0.10	0.07	0.11	0.10	0.07	0.12
K_2O	9.70	9.67	9.86	9.65	9.65	9.74	9.76	9.68	9.67	9.94	9.84	9.82	9.83	10.01	9.83	9.78	9.00	8.85	9.08	9.29	9.18
F	3.16	3.26	2.95	3.06	3.78	3.07	3.01	3.70	3.19	3.39	3.05	3.10	3.21	2.90	3.13	3.15	2.50	2.37	2.54	2.47	2.17
Cl	0.03	0.02	0.03	0.01	0.03	0.01	0.03	0.00	0.00	0.03	0.01	0.00	0.03	0.01	0.00	0.00	0.04	0.04	0.00	0.01	0.00
Sum	96.06	96.82	96.78	97.00	97.22	96.53	96.83	97.25	96.52	97.15	96.52	96.83	96.53	96.69	97.15	97.14	95.71	95.67	95.85	95.94	95.84
O=F	-1.33	-1.37	-1.24	-1.29	-1.59	-1.29	-1.27	-1.56	-1.34	-1.43	-1.29	-1.31	-1.35	-1.22	-1.32	-1.33	-1.05	-1.00	-1.07	-1.04	-0.91
O=Cl	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00	0.00	-0.01	0.00	0.00	-0.01	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00
Total	94.73	95.45	95.53	95.70	95.62	95.24	95.55	95.70	95.17	95.71	95.23	95.52	95.17	95.47	95.83	95.82	94.65	94.66	94.78	94.90	94.93
Formula	(O=22)																				
Si	5.77	5.79	5.79	5.81	5.74	5.77	5.79	5.72	5.76	5.73	5.75	5.75	5.73	5.77	5.75	5.78	5.70	5.67	5.59	5.60	5.61
Al^{IV}	1.88	1.84	1.88	1.88	1.87	1.91	1.92	1.93	1.94	1.90	1.95	1.96	1.93	1.90	1.94	1.91	2.10	2.17	2.18	2.18	2.19
Ti^{VI}	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.04	0.04	0.03	0.04	0.04	0.04	0.03	0.03	0.05	0.05	0.06	0.05	0.05
Fe3+	0.31	0.33	0.29	0.26	0.35	0.29	0.25	0.32	0.27	0.34	0.26	0.25	0.30	0.30	0.28	0.28	0.15	0.12	0.17	0.17	0.15
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.31	1.32	1.32	1.37	1.29	1.47	1.51	1.46	1.54	1.48	1.54	1.55	1.51	1.57	1.51	1.43	1.93	2.00	2.09	1.98	2.11
Mn	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Mg	4.28	4.26	4.28	4.22	4.22	4.15	4.08	4.08	4.04	4.09	4.06	4.03	4.07	4.05	4.08	4.16	3.80	3.77	3.68	3.80	3.72
Ni	0.01	0.02	0.01	0.02	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01
Sum VI	5.60	5.60	5.62	5.60	5.52	5.62	5.60	5.54	5.59	5.58	5.60	5.60	5.60	5.63	5.61	5.60	5.74	5.77	5.78	5.79	5.83
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.01	0.01	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.00	0.00	0.00
Na	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.04	0.03	0.02	0.03	0.02	0.03	0.03	0.02	0.03
K	1.82	1.80	1.84	1.79	1.79	1.83	1.83	1.80	1.82	1.86	1.85	1.84	1.85	1.89	1.84	1.82	1.72	1.69	1.75	1.78	1.77
Sum XII	1.87	1.85	1.89	1.84	1.84	1.87	1.86	1.83	1.86	1.89	1.89	1.87	1.90	1.93	1.86	1.86	1.75	1.74	1.78	1.80	1.80
Total	15.47	15.45	15.51	15.44	15.36	15.49	15.47	15.38	15.45	15.47	15.50	15.47	15.49	15.56	15.48	15.46	15.48	15.51	15.56	15.59	15.64
F	1.47	1.51	1.36	1.41	1.74	1.43	1.40	1.71	1.48	1.57	1.42	1.44	1.50	1.35	1.45	1.45	1.18	1.12	1.21	1.17	1.03
Cl	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
OH	0.52	0.49	0.63	0.59	0.26	0.57	0.60	0.29	0.52	0.42	0.57	0.56	0.49	0.64	0.55	0.55	0.81	0.87	0.79	0.83	0.97

Table A.5.6 Representative analyses of titanite.

Rock type	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,fs	S,fs	S,fs
Sample	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-99-13	Ku-99-13	Ku-99-13
	6-ttn1	5-ttn1	5-ttn1	5-ttn1	6-ttn2	6-ttn2	6-ttn2	1-ttn1	1-ttn1	1-ttn1
	rim	→	→	→	→	→	rim	rim	→	rim
SiO_2	28.73	28.94	28.88	28.88	28.97	29.35	29.15	30.34	30.58	30.16
TiO_2	33.17	31.96	31.52	32.45	32.55	33.56	33.90	33.65	31.49	32.33
Al_2O_3	1.67	1.95	2.13	1.94	1.63	1.52	1.69	4.43	5.75	4.95
CaO	25.11	24.84	24.26	24.41	25.05	25.93	26.00	28.42	28.50	27.33
Fe2O3	2.98	3.34	4.01	3.35	3.07	2.68	2.54	2.06	2.31	4.31
Total	91.66	91.02	90.79	91.02	91.27	93.03	93.28	98.89	98.64	99.07
Formula (O=20)										
Si	4.12	4.18	4.19	4.16	4.17	4.14	4.10	4.02	4.05	4.02
Ti	3.58	3.47	3.44	3.52	3.52	3.56	3.59	3.35	3.14	3.24
Al	0.28	0.33	0.36	0.33	0.28	0.25	0.28	0.69	0.90	0.78
Ca	3.86	3.84	3.77	3.77	3.86	3.92	3.92	4.03	4.05	3.90
Fe	0.32	0.36	0.44	0.36	0.33	0.29	0.27	0.21	0.23	0.43
Total	12.16	12.19	12.19	12.15	12.17	12.17	12.17	12.29	12.36	12.36
Si	4.12	4.18	4.19	4.16	4.17	4.14	4.10	4.02	4.05	4.02
Al^{VI}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	4.12	4.18	4.19	4.16	4.17	4.14	4.10	4.02	4.05	4.02
Al^{VI}	0.28	0.33	0.36	0.33	0.28	0.25	0.28	0.69	0.90	0.78
Ti	3.58	3.47	3.44	3.52	3.52	3.56	3.59	3.35	3.14	3.24
Fe	0.32	0.36	0.44	0.36	0.33	0.29	0.27	0.21	0.23	0.43
Sum	4.18	4.17	4.24	4.21	4.13	4.10	4.14	4.25	4.27	4.45
Ca	3.86	3.84	3.77	3.77	3.86	3.92	3.92	4.03	4.05	3.90
aSph	0.89	0.87	0.85	0.86	0.89	0.90	0.90	0.85	0.80	0.79

Table A.5.7 Representative analyses of ilmenite.

Rock type	GN	GN	GN	GN	GN	A,w	A,px	A,w	T	A,ol	A,ol	T,grt
Sample	Ku-97-03	Ku-97-03	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-08b	Ku-97-13	Ku-97-44	Ku-97-92	Ku-97-95	Ku-97-95	Ku-97-104
	1-ilm1	1-ilm2	1-ilm1	1-ilm2	1-ilm3	1-ilm1	1-ilm1	1-ilm1	1-ilm1	1-ilm1	1-ilm2	1-ilm1
	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated
	core	core	core	core	core	core	core	core	core	core	core	core
SiO_2	0.00	0.04	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.04
TiO_2	51.72	51.88	51.37	51.42	51.75	52.86	51.13	51.79	53.10	52.51	51.75	53.05
Al_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr_2O_3	0.01	0.01	0.03	0.02	0.03	0.03	0.06	0.02	0.07	0.11	0.06	0.04
Fe_2O_3	1.50	1.51	3.12	3.14	1.53	0.00	3.68	2.11	0.50	0.51	2.07	0.00
MgO	0.03	0.05	0.06	0.00	0.00	0.00	0.06	0.19	0.78	0.08	0.07	0.13
MnO	2.88	2.91	1.82	1.87	2.02	2.62	2.04	0.74	1.28	1.66	1.65	2.20
FeO	43.76	43.81	43.99	44.25	44.39	44.41	43.98	45.47	44.95	45.49	44.72	44.96
Summe	99.90	100.21	100.38	100.70	99.71	99.95	100.94	100.31	100.70	100.36	100.33	100.42
Formula (O=6)												
A-Position												
Si	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	1.97	1.97	1.94	1.94	1.97	2.01	1.93	1.96	1.99	1.99	1.96	2.00
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.06	0.06	0.12	0.12	0.06	0.00	0.14	0.08	0.02	0.02	0.08	0.00
Sum	2.03	2.03	2.06	2.06	2.03	2.01	2.07	2.04	2.01	2.01	2.04	2.01
B-Position												
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.06	0.01	0.01	0.01
Mn	0.12	0.12	0.08	0.08	0.09	0.11	0.09	0.03	0.05	0.07	0.07	0.09
Fe^{2+}	1.85	1.85	1.85	1.86	1.88	1.87	1.84	1.91	1.87	1.91	1.88	1.89
Sum	1.98	1.98	1.93	1.94	1.97	1.99	1.93	1.96	1.99	1.99	1.96	1.99
A + B	4.00	4.00	4.00	4.00	4.00	3.99	4.00	4.00	4.00	4.00	4.00	4.00
Ilmenite	92.34	92.19	92.97	93.06	94.19	94.36	91.94	95.70	93.91	95.68	94.29	94.82
Pyrophanite	6.14	6.19	3.87	3.96	4.36	5.64	4.34	1.60	2.71	3.55	3.51	4.73
Geikielite	0.10	0.20	0.20	0.00	0.00	0.00	0.25	0.70	2.91	0.30	0.25	0.45
Hematite	1.42	1.42	2.96	2.98	1.45	0.00	3.47	2.00	0.48	0.47	1.95	0.00

Table A.5.7 Representative analyses of ilmenite (continued).

Sample	T,grt Ku-97-104 1-ilm2 isolated core	T,grt Ku-97-105 1-ilm1 isolated core	T,grt Ku-97-105 1-ilm2 isolated core	T Ku-98-52 1-ilm1 symplectite Opx/rim	T Ku-98-52 1-ilm1 symplectite →	T Ku-98-52 1-ilm1 symplectite →	T Ku-98-52 1-ilm1 symplectite rim/Opx	T Ku-98-52 1-ilm2 lamellae rim	T Ku-98-52 1-ilm2 lamellae →	T Ku-98-52 1-ilm2 lamellae rim	GN Ku-98-68 1-ilm1 isolated Hbl/rim	GN Ku-98-68 1-ilm1 isolated rim/Hbl	A,f Ku-98-71 1-ilm1 lamellae core
SiO_2	0.00	0.00	0.00	0.01	0.02	0.04	0.03	0.03	0.00	0.04	0.00	0.06	0.04
TiO_2	52.66	51.23	51.31	52.50	53.05	52.71	52.88	52.81	52.11	53.06	52.44	52.17	52.54
Al_2O_3	0.00	0.00	0.00	0.07	0.04	0.06	0.04	0.03	0.06	0.02	0.04	0.06	0.07
Cr_2O_3	0.05	0.05	0.09	0.00	0.01	0.02	0.02	0.03	0.00	0.00	0.08	0.05	0.11
Fe_2O_3	0.51	3.07	3.11	0.72	0.00	0.52	0.05	0.15	0.77	0.16	1.33	0.96	0.63
MgO	0.12	0.02	0.15	0.09	0.09	0.11	0.07	0.17	0.14	0.16	0.08	0.07	0.00
MnO	1.74	3.02	2.30	1.22	1.14	1.24	1.20	0.99	0.95	0.97	2.23	2.23	0.71
FeO	45.59	43.23	43.81	45.84	46.39	45.98	46.24	46.25	45.67	46.51	44.77	44.63	46.57
Summe	100.67	100.60	100.76	100.45	100.74	100.69	100.52	100.45	99.69	100.91	100.97	100.22	100.66
Formula (O=6)													
A-Position													
Si	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	1.99	1.94	1.94	1.98	2.00	1.99	2.00	1.99	1.98	1.99	1.97	1.98	1.98
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.02	0.12	0.12	0.03	0.00	0.02	0.00	0.01	0.03	0.01	0.05	0.04	0.02
Sum	2.01	2.06	2.06	2.02	2.00	2.01	2.00	2.00	2.02	2.00	2.03	2.02	2.02
B-Position													
Mg	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00
Mn	0.07	0.13	0.10	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.09	0.10	0.03
Fe^{2+}	1.91	1.82	1.84	1.93	1.94	1.93	1.94	1.94	1.93	1.94	1.87	1.88	1.95
Sum	2.00	1.95	1.95	1.98	2.00	1.99	2.00	2.00	1.98	2.00	1.97	1.98	1.98
A + B	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Ilmenite	95.39	90.63	91.65	96.37	97.25	96.45	97.16	97.12	96.70	97.19	93.73	94.09	97.89
Pyrophanite	3.69	6.43	4.89	2.60	2.42	2.64	2.55	2.11	2.03	2.05	4.74	4.76	1.50
Geikielite	0.45	0.05	0.55	0.34	0.33	0.42	0.25	0.63	0.54	0.61	0.28	0.24	0.01
Hematite	0.47	2.89	2.92	0.68	0.00	0.49	0.05	0.15	0.74	0.15	1.25	0.91	0.59

Table A.5.7 Representative analyses of ilmenite (continued).

Rock type	GN	GN	GN	A,px	GN	GN	GN	GN	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-71	Ku-98-71	Ku-98-71	Ku-98-78	Ku-98-79	Ku-98-79	Ku-98-84	Ku-98-84	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b
	1-ilm2	1-ilm3	1-ilm3	1-ilm1	1-ilm1	1-ilm1	1-ilm1	1-ilm1	1-ilm1	1-ilm1	1-ilm2	1-ilm2	1-ilm2
	lamellae	lamellae	lamellae	symplectite	symplectite	symplectite	lamellae	lamellae	symplectite	symplectite	isolated	isolated	isolated
	core	rim	core	Px/rim	Mag/rim	rim/Mag	rim	core	Pl/rim	rim/Px	Grt/rim	→	rim/Grt
SiO_2	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.05	0.00	0.00	0.10
TiO_2	52.92	53.27	53.05	53.29	52.98	52.55	51.79	51.66	53.27	53.76	52.51	50.36	51.91
Al_2O_3	0.05	0.07	0.06	0.09	0.04	0.07	0.12	0.04	0.06	0.04	0.02	0.04	0.02
Cr_2O_3	0.01	0.02	0.05	0.06	0.06	0.00	0.02	0.03	0.00	0.04	0.05	0.07	0.01
Fe_2O_3	0.53	0.47	0.68	0.52	0.25	0.87	1.93	1.61	0.00	0.00	1.15	4.30	2.07
MgO	0.05	0.20	0.18	0.08	0.01	0.02	0.12	0.04	0.05	0.00	0.11	0.11	0.10
MnO	0.55	0.70	0.62	1.50	2.09	1.92	1.10	1.09	3.54	3.51	3.09	2.88	2.92
FeO	46.97	46.84	46.79	46.27	45.53	45.30	45.26	45.31	42.32	42.43	43.92	42.16	43.65
Summe	101.09	101.59	101.42	101.80	100.97	100.72	100.35	99.79	99.30	99.82	100.86	99.91	100.79
Formula (O=6)													
A-Position													
Si	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Ti	1.99	1.99	1.98	1.99	1.99	1.98	1.96	1.97	2.02	2.03	1.98	1.92	1.96
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.02	0.02	0.03	0.02	0.01	0.03	0.07	0.06	0.00	0.00	0.04	0.16	0.08
Sum	2.01	2.01	2.02	2.01	2.01	2.02	2.04	2.03	2.03	2.04	2.02	2.08	2.04
B-Position													
Mg	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01
Mn	0.02	0.03	0.03	0.06	0.09	0.08	0.05	0.05	0.15	0.15	0.13	0.12	0.12
Fe^{2+}	1.96	1.94	1.95	1.92	1.90	1.90	1.90	1.92	1.79	1.78	1.84	1.78	1.83
Sum	1.99	1.99	1.98	1.99	1.99	1.98	1.96	1.97	1.94	1.93	1.98	1.91	1.96
A + B	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.97	3.97	4.00	4.00	4.00
Ilmenite	98.14	97.33	97.40	96.08	95.31	95.04	95.37	95.96	92.01	92.28	91.95	89.32	91.46
Pyrophanite	1.16	1.48	1.30	3.15	4.43	4.07	2.35	2.34	7.79	7.72	6.56	6.18	6.20
Geikielite	0.20	0.75	0.66	0.29	0.02	0.06	0.44	0.16	0.19	0.00	0.41	0.41	0.39
Hematite	0.50	0.44	0.64	0.49	0.24	0.82	1.83	1.53	0.00	0.00	1.08	4.09	1.95

Table A.5.7 Representative analyses of ilmenite (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	S,qtz	S,qtz	S,fs	S,fs	S,fs	S,fs	S,f	S,f	CB,so
Sample	Ku-98-221b 1-ilm3 symplectite Px/rim	Ku-98-221b 1-ilm3 symplectite →	Ku-98-221b 1-ilm3 symplectite →	Ku-98-221b 1-ilm3 symplectite rim/Px	Ku-98-40 8-ilm-el lamellae core	Ku-98-40 8-ilm-el lamellae core	Ku-99-11 a-ilm1 isolated core	Ku-99-13 1-ilm1 isolated rim	Ku-99-13 1-ilm1 isolated →	Ku-99-13 1-ilm1 isolated rim	Ku-98-59b 3-ilm1 isolated core	Ku-98-59b 3-ilm1 isolated core	Ku-98-80 3-ilm1 isolated core
SiO_2	0.08	0.11	0.02	0.13	0.02	0.02	0.05	0.00	0.00	0.00	0.45	0.24	0.02
TiO_2	52.83	52.24	51.75	51.85	51.63	51.19	50.38	52.52	53.26	53.00	54.01	48.90	50.04
Al_2O_3	0.08	0.00	0.03	0.05	0.00	0.03	0.03	0.08	0.05	0.04	0.14	0.17	0.08
Cr_2O_3	0.02	0.00	0.05	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.04	0.01	0.01
Fe_2O_3	0.15	1.02	0.80	1.69	2.53	2.56	2.31	0.00	0.00	0.00	0.00	0.00	4.48
MgO	0.03	0.04	0.11	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.10	0.02	0.04
MnO	2.17	2.26	2.26	2.17	4.94	4.88	5.81	6.04	5.55	5.37	4.33	2.59	0.97
FeO	45.36	44.80	44.11	44.53	41.44	41.12	39.48	40.02	41.79	42.21	33.86	41.22	43.96
Summe	100.71	100.46	99.13	100.46	100.56	99.82	98.07	98.66	100.68	100.62	92.92	93.16	99.60
Formula (O=6)													
A-Position													
Si	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00
Ti	1.99	1.97	1.98	1.96	1.95	1.95	1.95	2.01	2.00	2.00	2.13	1.99	1.91
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.01	0.04	0.03	0.06	0.10	0.10	0.09	0.00	0.00	0.00	0.00	0.00	0.17
Sum	2.01	2.02	2.02	2.03	2.05	2.05	2.05	2.02	2.01	2.00	2.16	2.01	2.09
B-Position													
Mg	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Mn	0.09	0.10	0.10	0.09	0.21	0.21	0.25	0.26	0.24	0.23	0.19	0.12	0.04
Fe^{2+}	1.90	1.88	1.88	1.87	1.74	1.74	1.70	1.71	1.75	1.77	1.48	1.86	1.87
Sum	1.99	1.98	1.98	1.97	1.95	1.95	1.95	1.97	1.98	2.00	1.68	1.98	1.91
A + B	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.98	3.99	4.00	3.84	3.99	4.00
Ilmenite	95.15	94.08	93.95	93.64	87.10	87.06	85.04	86.73	88.14	88.59	88.12	93.90	93.48
Pyrophanite	4.61	4.80	4.88	4.62	10.50	10.47	12.71	13.27	11.86	11.41	11.41	6.00	2.09
Geikielite	0.10	0.16	0.40	0.15	0.01	0.03	0.00	0.00	0.00	0.00	0.48	0.10	0.15
Hematite	0.14	0.96	0.76	1.60	2.39	2.44	2.25	0.00	0.00	0.00	0.00	0.00	4.29

Table A.5.7 Representative analyses of ilmenite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	L	L	L	L	L
Sample	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25
	3-ilm1	6-ilm1	6-ilm1	7-ilm1	6-ilm1	6-ilm1	6-ilm1	6-ilm2	6-ilm2	2-ilm1	2-ilm1	4-ilm1	4-ilm1	4-ilm1
	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated
	core	core	core	core	rim	→	rim	core	core	core	core	rim	→	→
SiO_2	0.05	0.03	0.06	0.00	0.00	0.05	0.04	0.01	0.05	0.07	0.04	0.00	0.00	0.03
TiO_2	50.56	51.12	50.23	51.12	51.22	51.31	50.88	51.03	51.25	51.78	51.76	52.49	52.62	52.21
Al_2O_3	0.03	0.02	0.01	0.06	0.03	0.10	0.06	0.07	0.03	0.05	0.00	0.06	0.09	0.08
Cr_2O_3	0.05	0.01	0.00	0.02	0.06	0.08	0.02	0.04	0.03	0.02	0.06	0.03	0.03	0.00
Fe_2O_3	4.12	2.63	4.56	2.03	2.14	2.15	2.08	2.07	1.71	1.02	1.49	0.35	0.98	0.45
MgO	0.01	0.01	0.01	0.01	0.07	0.02	0.02	0.07	0.05	0.00	0.05	0.09	0.07	0.03
MnO	1.06	1.03	0.98	0.91	0.82	0.85	0.83	1.01	0.92	1.51	1.59	1.80	1.85	1.86
FeO	44.41	44.95	44.22	45.03	45.09	45.31	44.90	44.78	45.13	45.09	44.91	45.24	45.32	45.02
Summe	100.30	99.80	100.08	99.19	99.44	99.86	98.84	99.09	99.17	99.55	99.90	100.05	100.96	99.68
Formula (O=6)														
A-Position														
Si	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	1.92	1.95	1.91	1.96	1.96	1.95	1.96	1.96	1.96	1.98	1.97	1.99	1.98	1.99
Al	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.16	0.10	0.17	0.08	0.08	0.08	0.08	0.08	0.07	0.04	0.06	0.01	0.04	0.02
Sum	2.08	2.05	2.09	2.04	2.04	2.05	2.04	2.04	2.03	2.02	2.03	2.01	2.02	2.01
B-Position														
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00
Mn	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.06	0.07	0.08	0.08	0.08
Fe^{2+}	1.87	1.90	1.87	1.92	1.92	1.92	1.92	1.91	1.92	1.91	1.90	1.91	1.89	1.91
Sum	1.92	1.95	1.91	1.96	1.96	1.95	1.96	1.96	1.97	1.98	1.97	1.99	1.98	1.99
A + B	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Ilmenite	93.78	95.25	93.51	96.05	95.94	96.06	96.11	95.54	96.19	95.76	94.99	95.49	94.91	95.44
Pyrophanite	2.27	2.21	2.10	1.96	1.76	1.82	1.80	2.19	1.99	3.25	3.41	3.85	3.91	4.00
Geikielite	0.03	0.03	0.05	0.05	0.25	0.08	0.08	0.27	0.18	0.02	0.17	0.32	0.26	0.13
Hematite	3.91	2.51	4.34	1.95	2.05	2.05	2.00	1.99	1.64	0.98	1.42	0.34	0.92	0.43

Table A.5.7 Representative analyses of ilmenite (continued).

Rock type	L	L	L	L	L
Sample	Ku-98-25 4-ilm1 isolated →	Ku-98-25 4-ilm1 isolated →	Ku-98-25 4-ilm1 isolated →	Ku-98-25 4-ilm1 isolated →	Ku-98-25 4-ilm1 isolated rim
SiO_2	0.03	0.13	0.00	0.00	0.03
TiO_2	52.82	51.97	52.38	52.39	51.97
Al_2O_3	0.09	0.09	0.06	0.03	0.04
Cr_2O_3	0.01	0.02	0.00	0.04	0.06
Fe_2O_3	0.15	0.61	0.81	0.76	1.33
MgO	0.02	0.06	0.07	0.03	0.06
MnO	1.76	1.83	1.91	1.84	1.91
FeO	45.73	44.97	45.05	45.19	44.78
Summe	100.62	99.69	100.28	100.28	100.17
Formula (O=6)					
A-Position					
Si	0.00	0.01	0.00	0.00	0.00
Ti	1.99	1.98	1.98	1.98	1.97
Al	0.01	0.01	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.01	0.02	0.03	0.03	0.05
Sum	2.01	2.01	2.02	2.02	2.03
B-Position					
Mg	0.00	0.00	0.01	0.00	0.00
Mn	0.07	0.08	0.08	0.08	0.08
Fe^{2+}	1.92	1.90	1.90	1.90	1.89
Sum	1.99	1.99	1.98	1.98	1.97
A + B	4.00	4.00	4.00	4.00	4.00
Ilmenite	96.03	95.28	94.90	95.24	94.45
Pyrophanite	3.75	3.93	4.07	3.92	4.07
Geikielite	0.07	0.22	0.27	0.12	0.22
Hematite	0.14	0.58	0.77	0.72	1.26

Table A.5.8 Representative analyses of magnetite.

Rock type	T,grt	T,grt	T	T	T	T	T	T	T	T	T	T	T	A,f
Sample	Ku-97-105	Ku-97-105	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-52	Ku-98-79
	1-mag1	1-mag1	1-mag1	1-mag1	1-mag2	1-mag3	1-mag4	1-mag4	1-mag4	1-mag5	1-mag5	1-mag5	1-mag6	1-mag1
Position	isolated	isolated	lamellae	lamellae	isolated	lamellae	symplectite	symplectite	symplectite	symplectite	symplectite	symplectite	isolated	isolated
SiO_2	0.05	0.03	0.03	0.01	0.00	0.07	0.00	0.00	0.03	0.06	0.00	0.04	0.06	0.11
TiO_2	0.65	0.59	0.03	0.08	0.63	0.06	0.07	0.07	0.09	0.08	0.17	0.12	0.03	0.13
Al_2O_3	0.66	1.02	0.21	0.26	0.27	0.32	0.28	0.23	0.37	0.26	0.28	0.14	0.02	0.37
Cr_2O_3	0.18	1.60	0.11	0.08	0.06	0.06	0.12	0.13	0.06	0.11	0.06	0.08	0.03	0.19
Fe_2O_3	66.34	64.56	69.32	69.22	67.87	69.26	69.24	69.34	69.08	68.79	68.99	68.77	69.39	69.73
MgO	0.07	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.03	0.00	0.04	0.00	0.05	0.06
CaO	0.00	0.00	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
MnO	0.03	0.09	0.00	0.01	0.04	0.03	0.00	0.00	0.00	0.11	0.05	0.03	0.07	0.00
FeO	31.52	31.56	30.73	30.69	30.91	30.70	30.56	30.60	30.55	30.49	30.58	30.48	30.35	31.19
ZnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NiO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	99.49	99.44	101.15	101.08	100.51	101.22	100.99	101.11	100.93	100.63	100.90	100.38	100.72	102.50
Formula (O=4)														
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.02	1.02	0.98	0.97	0.99	0.97	0.97	0.97	0.97	0.97	0.97	0.98	0.97	0.98
Zn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum A-site	1.02	1.02	1.01	1.01	1.02	1.00	1.00	1.00	1.00	1.01	1.01	1.01	1.00	1.01
Si	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.02	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al	0.03	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.02
Cr	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Fe^{2+}	1.92	1.87	1.98	1.98	1.95	1.98	1.98	1.98	1.98	1.97	1.97	1.98	1.99	1.96
Sum B-site	1.98	1.98	2.00	2.00	1.98	2.00	2.00	2.00	2.00	1.99	1.99	1.99	2.00	1.99
Total	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Table A.5.8 Representative analyses of magnetite (continued).

Rock type	GN	GN	GN	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,fs	S,f	S,f
Sample	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-98-40	Ku-99-11	Ku-98-59b	Ku-98-59b
	1-mag1	1-mag2	1-mag2	8-mag1	8-mag1	8-mag2	8-mag2	8-mag2	8-mag2	8-mag2	a-mag1	1-mag1	1-mag1
Position	lamellae	symplectite	symplectite	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated
SiO_2	0.37	0.07	0.12	0.00	0.04	0.00	0.00	0.01	0.00	0.02	0.15	0.00	0.09
TiO_2	0.10	0.02	0.03	0.13	0.07	0.00	0.05	0.08	0.02	0.00	0.02	0.00	0.00
Al_2O_3	0.60	0.00	0.05	0.02	0.03	0.02	0.04	0.02	0.04	0.00	0.04	0.03	0.03
Cr_2O_3	0.44	0.15	0.11	0.00	0.00	0.28	0.04	0.05	0.00	0.03	0.00	0.00	0.01
Fe_2O_3	66.16	68.45	68.61	68.72	68.81	68.90	69.24	69.00	69.57	69.75	66.22	69.08	68.23
MgO	0.17	0.00	0.08	0.05	0.00	0.00	0.06	0.00	0.01	0.02	0.00	0.07	0.05
CaO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.03	0.04
MnO	0.00	0.01	0.00	0.03	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.01
FeO	31.15	31.03	31.11	31.09	31.13	31.17	31.18	31.21	31.33	31.41	30.16	30.90	30.80
ZnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NiO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.03
Total	99.00	99.72	100.11	100.04	100.08	100.37	100.63	100.38	100.97	101.23	96.65	100.17	99.29
Formula (O=4)													
Mg	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00
Zn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum A-site	1.02	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.00	1.00
Si	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.92	1.99	1.98	1.99	1.99	1.99	1.99	1.99	2.00	2.00	1.98	2.00	1.99
Sum B-site	1.98	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.99	2.00	2.00
Total	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Table A.5.8 Representative analyses of magnetite (continued).

Rock type	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f
Sample	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b
	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1
Position	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated
SiO_2	0.02	0.02	0.06	0.03	0.00	0.02	0.20	0.27	0.05	0.00	0.02	0.00	0.00	0.09	0.02
TiO_2	0.00	0.01	0.00	0.03	0.27	0.16	0.07	0.05	0.05	0.00	0.02	0.01	0.00	0.00	0.00
Al_2O_3	0.05	0.00	0.00	0.01	0.01	0.01	0.18	0.23	0.05	0.08	0.11	0.00	0.03	0.03	0.05
Cr_2O_3	0.05	0.03	0.04	0.03	0.09	0.05	0.00	0.04	0.05	0.05	0.00	0.00	0.00	0.01	0.05
Fe_2O_3	68.36	68.75	68.22	68.29	67.88	68.63	67.72	67.30	68.21	68.23	68.98	68.88	69.08	68.23	68.36
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.00
CaO	0.01	0.02	0.03	0.04	0.02	0.00	0.03	0.04	0.00	0.04	0.01	0.02	0.03	0.04	0.01
MnO	0.00	0.00	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.07	0.00	0.04	0.00	0.01	0.00
FeO	30.85	30.96	30.72	30.75	30.91	31.12	31.05	31.06	30.92	30.66	31.14	31.01	30.90	30.80	30.85
ZnO	0.00	0.00	0.00	0.04	0.09	0.06	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
NiO	0.00	0.00	0.02	0.06	0.00	0.02	0.00	0.07	0.06	0.02	0.00	0.00	0.06	0.03	0.00
Total	99.34	99.79	99.11	99.28	99.28	100.07	99.30	99.07	99.39	99.17	100.28	99.96	100.17	99.29	99.34
Formula (O=4)															
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.01	1.00	1.00	1.00	1.00	0.99	1.00	1.00
Zn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum A-site	1.00	1.00	1.00	1.00	1.01	1.00	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Si	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.99	2.00	1.99	1.99	1.98	1.99	1.97	1.96	1.99	1.99	1.99	2.00	2.00	1.99	1.99
Sum B-site	2.00	2.00	2.00	2.00	1.99	2.00	1.99	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Table A.5.8 Representative analyses of magnetite (continued).

Rock type	S,f	S,f	S,f	S,f	S,f	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,so	CB,so	CB,so
Sample	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-99-05	Ku-99-05	Ku-99-05
	1-mag1	1-mag1	1-mag1	1-mag1	1-mag1	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1
Position	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated
SiO_2	0.02	0.06	0.03	0.00	0.02	0.09	0.08	0.07	0.00	0.08	0.03	0.02	0.07	0.00
TiO_2	0.01	0.00	0.03	0.27	0.16	0.10	0.03	0.00	0.00	0.07	0.09	0.03	0.05	0.03
Al_2O_3	0.00	0.00	0.01	0.01	0.01	0.03	0.01	0.03	0.03	0.02	0.03	0.04	0.09	0.05
Cr_2O_3	0.03	0.04	0.03	0.09	0.05	0.05	0.05	0.03	0.00	0.05	0.04	0.10	0.11	0.08
Fe_2O_3	68.75	68.22	68.29	67.88	68.63	67.94	68.67	67.45	68.57	67.94	67.91	69.43	69.03	68.42
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03
CaO	0.02	0.03	0.04	0.02	0.00	0.01	0.01	0.04	0.00	0.01	0.01	0.16	0.02	0.00
MnO	0.00	0.03	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.01	0.02	0.02	0.05
FeO	30.96	30.72	30.75	30.91	31.12	30.87	30.78	30.44	30.81	30.80	30.79	31.13	31.30	30.74
ZnO	0.00	0.00	0.04	0.09	0.06	0.02	0.10	0.03	0.00	0.05	0.00	0.00	0.02	0.00
NiO	0.00	0.02	0.06	0.00	0.02	0.08	0.22	0.00	0.09	0.06	0.00	0.01	0.10	0.11
Total	99.79	99.11	99.28	99.28	100.07	99.18	99.99	98.13	99.50	99.07	98.89	100.97	100.80	99.51
Formula (O=4)														
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	0.99	1.00	1.00
Zn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum A-site	1.00	1.00	1.00	1.01	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Si	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	2.00	1.99	1.99	1.98	1.99	1.99	1.99	1.99	2.00	1.99	1.99	1.99	1.98	1.99
Sum B-site	2.00	2.00	2.00	1.99	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Table A.5.8 Representative analyses of magnetite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	FV	FV	FV	FV	FV
Sample	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04
	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1	2-mag1	a-mag1	a-mag1	a-mag1	a-mag1	e-mag1
Position	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated
SiO_2	0.00	0.00	0.00	0.00	0.04	0.00	0.03	0.02	0.00	0.06	0.00	0.07	0.01	0.06
TiO_2	0.06	0.02	0.20	0.02	0.06	1.24	0.00	0.05	0.04	0.00	0.00	0.00	0.01	0.83
Al_2O_3	0.06	0.02	0.04	0.04	0.05	0.01	0.06	0.04	0.04	0.00	0.00	0.00	0.00	0.04
Cr_2O_3	0.10	0.21	0.13	0.10	0.07	0.09	0.01	0.05	0.00	0.05	0.00	0.02	0.00	0.00
Fe_2O_3	68.45	68.65	68.47	68.96	68.65	66.42	68.69	68.66	69.09	68.02	69.16	68.77	69.26	69.11
MgO	0.00	0.02	0.00	0.02	0.03	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.00	0.03
CaO	0.02	0.00	0.01	0.00	0.02	0.00	0.01	0.02	0.06	0.00	0.00	0.00	0.00	0.00
MnO	0.00	0.01	0.03	0.04	0.00	0.05	0.01	0.10	0.07	0.01	0.00	0.02	0.06	0.00
FeO	30.96	30.92	31.18	30.92	30.99	31.90	31.00	30.99	30.97	30.60	31.12	30.94	31.16	31.09
ZnO	0.00	0.00	0.00	0.03	0.05	0.01	0.00	0.02	0.04	0.00	0.00	0.00	0.00	0.00
NiO	0.00	0.04	0.04	0.09	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	99.64	99.88	100.10	100.22	99.97	99.89	99.81	99.95	100.32	98.74	100.32	99.85	100.50	101.16
Formula (O=4)														
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.00	1.00	1.00	0.99	1.00	1.03	1.00	1.00	0.99	1.00	1.00	1.00	1.00	0.99
Zn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum A-site	1.00	1.00	1.01	1.00	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
Si	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.99	1.99	1.98	1.99	1.99	1.93	1.99	1.99	2.00	2.00	2.00	2.00	2.00	1.97
Sum B-site	2.00	2.00	1.99	2.00	2.00	1.96	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.99

Table A.5.8 Representative analyses of magnetite (continued).

Rock type	FV	FV	FV	FV	UMX	UMX	UMX	UMX
Sample	Ku-01-04 e-mag1	Ku-01-04 e-mag1	Ku-01-04 e-mag1	Ku-01-04 e-mag1	Ku-97-43a 6-mag1	Ku-97-43a 6-mag1	Ku-97-43a 6-mag1	Ku-97-43a 6-mag1
Position	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated
SiO_2	0.03	0.01	0.02	0.00	0.19	0.40	0.37	0.40
TiO_2	0.44	0.54	0.49	0.50	0.18	0.06	0.11	0.11
Al_2O_3	0.02	0.08	0.03	0.01	0.05	0.09	0.00	0.06
Cr_2O_3	0.00	0.00	0.04	0.00	0.00	0.00	0.01	0.00
Fe_2O_3	68.89	68.63	68.75	68.54	65.34	65.23	65.36	65.48
MgO	0.02	0.00	0.00	0.01	0.14	0.00	0.11	0.08
CaO	0.00	0.00	0.00	0.00	0.12	0.01	0.12	0.01
MnO	0.04	0.03	0.00	0.00	0.00	0.08	0.08	0.06
FeO	30.99	30.88	30.93	30.84	29.82	30.38	30.03	30.43
ZnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NiO	0.00	0.00	0.00	0.00	0.00	0.02	0.08	0.00
Total	100.44	100.17	100.26	99.89	95.85	96.27	96.26	96.62
Formula (O=4)								
Mg	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01
Ca	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	0.99	0.99	0.99	0.99	1.00	1.01	1.00	1.01
Zn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum A-site	1.00	0.99	0.99	0.99	1.01	1.02	1.02	1.02
Si	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02
Ti	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	1.98	1.98	1.98	1.98	1.97	1.96	1.96	1.96
Sum B-site	2.00	2.00	2.00	2.00	1.99	1.98	1.98	1.98
Total	2.99	2.99	2.99	2.99	3.00	3.00	3.00	3.00

Table A.5.9 Representative analyses of hematite

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-11	Ku-99-13	Ku-99-13	Ku-97-15a	Ku-97-15a	Ku-98-58a	Ku-98-58a	Ku-98-58a	Ku-98-58a
	a-hem2	a-hem2	a-hem2	a-hem2	a-hem1	2-hem1	2-hem1	e-hem1	e-hem1	4-hem1	4-hem1	4-hem1	3-hem1
SiO_2	0.15	0.15	0.52	0.40	0.21	0.42	0.28	0.01	0.00	0.00	0.00	0.00	0.00
TiO_2	0.18	0.07	0.09	0.10	0.08	0.10	0.03	0.02	0.06	2.84	4.05	3.04	2.68
Al_2O_3	0.11	0.06	0.10	0.14	0.03	0.19	0.04	0.00	0.04	0.00	0.00	0.00	0.03
Cr_2O_3	0.00	0.00	0.00	0.02	0.01	0.01	0.01	0.05	0.04	0.02	0.00	0.01	0.02
Fe_2O_3	99.45	99.80	98.05	99.06	98.44	101.21	102.32	101.66	100.75	95.46	93.07	94.45	95.01
MgO	0.02	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.01	0.00	0.03
MnO	0.04	0.06	0.00	0.08	0.00	0.04	0.06	0.00	0.00	0.03	0.03	0.00	0.10
FeO	0.27	0.18	0.71	0.49	0.36	0.55	0.23	0.00	0.05	2.52	3.58	2.72	2.28
Total	100.23	100.31	99.47	100.29	99.13	102.52	103.01	101.79	100.93	100.87	100.74	100.22	100.15
Formula (O=6)													
Si	0.01	0.01	0.03	0.02	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.16	0.12	0.11
Al	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	3.96	3.98	3.93	3.94	3.97	3.94	3.97	3.99	3.99	3.77	3.68	3.76	3.78
Sum A-site	3.99	3.99	3.97	3.98	3.99	3.97	3.98	4.00	4.00	3.89	3.84	3.88	3.89
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	0.01	0.01	0.03	0.02	0.02	0.02	0.01	0.00	0.00	0.11	0.16	0.12	0.10
Sum B-site	0.02	0.01	0.03	0.03	0.02	0.03	0.02	0.00	0.00	0.11	0.16	0.12	0.11
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Ilmenite	0.60	0.40	1.60	1.10	0.80	1.19	0.50	0.00	0.10	5.54	7.87	6.01	5.05
Pyrophanite	0.10	0.10	0.00	0.20	0.00	0.09	0.13	0.01	0.00	0.06	0.07	0.00	0.22
Geikielite	0.05	0.00	0.00	0.00	0.00	0.00	0.16	0.17	0.00	0.00	0.02	0.00	0.10
Hematite	99.25	99.50	98.40	98.70	99.20	98.72	99.21	99.82	99.90	94.40	92.04	93.99	94.63

Table A.5.9 Representative analyses of hematite (continued).

Rock type	CB,so	CB,so	L
Sample	Ku-98-58a	Ku-98-58a	Ku-98-25
	3-hem1	3-hem1	c-hem1
SiO_2	0.00	0.16	0.00
TiO_2	3.87	3.56	2.11
Al_2O_3	0.01	0.01	0.00
Cr_2O_3	0.01	0.00	0.04
Fe_2O_3	92.45	93.14	97.58
MgO	0.03	0.07	0.00
MnO	0.09	0.07	0.00
FeO	3.33	3.22	1.88
Total	99.78	100.24	101.62
Formula (O=6)			
Si	0.00	0.01	0.00
Ti	0.15	0.14	0.08
Al	0.00	0.00	0.00
Cr	0.00	0.00	0.00
Fe^{3+}	3.69	3.70	3.83
Sum A-site	3.85	3.85	3.92
Mg	0.00	0.01	0.00
Mn	0.00	0.00	0.00
Fe^{2+}	0.15	0.14	0.08
Sum B-site	0.15	0.15	0.08
Total	4.00	4.00	4.00
Ilmenite	7.39	7.11	4.11
Pyrophanite	0.21	0.16	0.00
Geikielite	0.10	0.26	0.00
Hematite	92.30	92.47	95.89

Table A.5.10 Representative analyses of garnet.

Rock type	GN	GN	GN	A,w	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-08b	Ku-97-104	Ku-97-104	Ku-97-104	Ku-97-105	Ku-97-105	Ku-98-221a	Ku-98-221a	Ku-98-221a
	Grt1	Grt1	Granat 2	Grt1	Grt1	Grt1	Grt1	Grt1	Grt1	Grt1	Grt1	Grt1
	core	core	core	core	core	→	rim	core	core	Pl/rim	→	→
Position	xenocryst	xenocryst	xenocryst	xenocryst	corona around Ol	corona around Ol	corona around Ol	corona around Ol	corona around Ol	corona around Ol	corona around Ol	corona around Ol
SiO_2	35.51	37.05	35.99	34.60	38.76	38.33	38.69	36.51	37.88	38.19	38.41	37.08
TiO_2	0.16	0.32	0.31	0.14	0.00	0.00	0.03	0.00	0.03	0.00	0.02	0.04
Al_2O_3	6.50	6.41	8.29	0.91	21.88	21.88	22.29	22.95	21.35	21.98	21.59	21.39
Cr_2O_3	0.01	0.00	0.00	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00
Fe_2O_3	23.33	21.10	20.23	30.19	0.73	1.53	0.99	2.82	1.15	1.71	1.77	1.75
MgO	0.00	2.79	0.00	0.00	8.17	8.38	8.59	6.33	5.89	7.20	6.59	7.29
CaO	34.15	31.51	34.11	33.29	3.79	3.54	3.67	6.31	6.75	5.39	5.75	5.03
MnO	0.12	0.11	0.23	0.08	1.19	1.17	1.00	1.04	1.25	1.53	1.59	1.60
FeO	0.00	0.00	0.00	0.00	25.74	25.18	25.25	23.22	24.92	24.30	25.28	24.86
Total	99.77	99.28	99.16	99.22	100.28	100.11	100.52	99.18	99.21	100.29	101.00	99.04
Formula (O=24)												
Si	5.82	6.00	6.00	5.90	5.97	5.91	5.93	5.72	5.95	5.90	5.93	5.81
Ti	0.02	0.04	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Al	1.26	1.22	1.22	0.18	3.97	3.98	4.02	4.24	3.95	4.00	3.93	3.95
Cr	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	2.88	2.57	2.57	3.87	0.09	0.18	0.11	0.33	0.14	0.20	0.21	0.21
Mg	0.00	0.67	0.67	0.00	1.87	1.93	1.96	1.48	1.38	1.66	1.51	1.70
Ca	6.00	5.47	5.47	6.08	0.63	0.59	0.60	1.06	1.14	0.89	0.95	0.84
Mn	0.02	0.01	0.01	0.01	0.16	0.15	0.13	0.14	0.17	0.20	0.21	0.21
Fe^{2+}	0.00	0.00	0.00	0.00	3.32	3.25	3.24	3.04	3.27	3.14	3.26	3.26
Total	16.00	16.00	16.00	16.06	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
X_{Mg}	0.00	0.21	0.21	0.00	0.36	0.36	0.37	0.30	0.29	0.33	0.30	0.33
Uva	0.03	0.00	0.00	0.00	0.03	0.30	0.00	0.00	0.00	0.00	0.00	0.00
Ti-And	0.49	1.01	1.01	0.45	0.00	0.00	0.07	0.00	0.07	0.00	0.06	0.13
And	72.33	67.08	67.08	94.92	2.14	4.52	2.81	8.72	3.37	5.05	5.20	5.18
Prp	0.00	11.71	11.71	0.00	31.39	32.59	33.08	25.85	23.15	28.15	25.52	28.56
Sps	0.27	0.26	0.26	0.18	2.61	2.59	2.19	2.41	2.79	3.40	3.51	3.57
Grs	26.89	19.94	19.94	4.44	8.30	5.09	7.28	9.81	15.64	10.09	10.75	8.84
Alm	0.00	0.00	0.00	0.00	55.53	54.93	54.57	53.21	54.98	53.31	54.96	53.73
Sum	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A.5.10 Representative analyses of garnet (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221a	Ku-98-221b	Ku-98-221b	Ku-98-221b
	Grt1	Grt1	Grt1	Grt2	Grt2	Grt2	Grt2	Grt2	Grt2	Grt2	Grt1	Grt1	Grt1
	→	→	rim/Px	Px/rim	→	→	→	→	→	rim/Px	Pl/rim	→	→
Position	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona
	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol
SiO_2	38.31	38.17	38.46	38.55	38.60	38.07	38.65	38.65	38.54	38.38	38.73	38.34	38.53
TiO_2	0.00	0.01	0.03	0.00	0.01	0.00	0.04	0.04	0.01	0.01	0.00	0.04	0.04
Al_2O_3	21.87	21.88	21.64	21.93	22.03	22.06	21.81	21.81	21.99	22.02	22.10	22.24	22.16
Cr_2O_3	0.01	0.00	0.04	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.00
Fe_2O_3	1.80	1.82	1.76	1.78	1.77	1.82	1.81	1.52	1.83	1.81	1.32	1.33	1.32
MgO	7.00	6.85	6.77	7.07	6.94	6.81	6.78	6.78	6.22	6.32	8.14	8.09	7.90
CaO	4.85	5.04	5.29	5.21	5.31	5.27	5.84	5.84	6.15	5.85	4.27	4.42	4.70
MnO	1.70	1.68	1.59	1.58	1.54	1.70	1.63	1.63	1.70	1.56	1.29	1.35	1.27
FeO	25.48	25.41	24.64	24.57	24.39	25.07	24.71	24.98	24.92	24.34	24.97	25.09	24.93
Total	101.02	100.85	100.21	100.69	100.58	100.82	101.27	101.24	101.39	100.28	100.83	100.90	100.85
Formula (O=24)													
Si	5.90	5.89	5.97	5.95	5.96	5.88	5.94	5.94	5.93	5.96	5.93	5.87	5.90
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Al	3.97	3.98	3.96	3.99	4.01	4.01	3.95	3.95	3.99	4.03	3.99	4.01	4.00
Cr	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.18	0.21	0.21	0.15	0.15	0.15
Mg	1.61	1.58	1.57	1.63	1.60	1.57	1.55	1.55	1.43	1.46	1.86	1.85	1.80
Ca	0.80	0.83	0.88	0.86	0.88	0.87	0.96	0.96	1.01	0.97	0.70	0.72	0.77
Mn	0.22	0.22	0.21	0.21	0.20	0.22	0.21	0.21	0.22	0.21	0.17	0.18	0.17
Fe^{2+}	3.28	3.28	3.20	3.17	3.15	3.24	3.17	3.21	3.21	3.16	3.20	3.21	3.20
Total	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
X_{Mg}	0.32	0.31	0.32	0.32	0.32	0.31	0.31	0.33	0.29	0.30	0.36	0.35	0.35
Uva	0.02	0.00	0.13	0.00	0.00	0.05	0.00	0.00	0.09	0.00	0.00	0.00	0.00
Ti-And	0.00	0.04	0.07	0.00	0.03	0.00	0.12	0.12	0.03	0.02	0.01	0.12	0.12
And	5.30	5.36	5.28	5.29	5.28	5.36	5.32	4.44	5.41	5.46	3.85	3.85	3.84
Prp	27.19	26.66	26.76	27.72	27.39	26.58	26.31	26.16	24.31	25.20	31.37	30.98	30.39
Sps	3.75	3.72	3.56	3.53	3.47	3.77	3.59	3.57	3.78	3.54	2.82	2.95	2.78
Grs	8.22	8.70	9.55	9.39	9.77	9.35	10.85	11.64	11.74	11.29	7.97	8.20	9.05
Alm	55.51	55.52	54.65	54.07	54.06	54.88	53.81	54.07	54.64	54.50	53.98	53.91	53.82
Sum	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A.5.10 Representative analyses of garnet (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b
	Grt1	Grt1	Grt1	Grt1	Grt1	Grt2	Grt2	Grt2	Grt2	Grt2	Grt2	Grt2	Grt2	Grt2
	→	→	→	→	rim/Opx	Bt/rim	→	→	→	→	→	→	→	→
Position	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona
	around Ol	around Ol	around Ol	around Ol	around Ol	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm
SiO_2	38.80	33.47	38.78	39.82	38.03	37.82	37.83	37.84	38.52	38.00	38.02	37.95	37.89	37.08
TiO_2	0.00	0.00	0.00	0.04	0.00	0.12	0.15	0.07	0.05	0.06	0.06	0.00	0.01	0.00
Al_2O_3	22.02	25.65	22.07	21.64	21.95	21.29	21.09	21.38	19.86	21.46	21.18	21.71	21.31	20.86
Cr_2O_3	0.00	0.03	0.02	0.02	0.00	0.01	0.06	0.03	0.02	0.10	0.16	0.14	0.17	0.14
Fe_2O_3	1.34	1.38	1.36	1.30	1.38	1.47	1.49	1.51	1.47	1.56	1.57	1.54	1.51	1.57
MgO	8.00	8.63	8.69	10.08	8.39	4.87	5.02	4.88	6.51	5.29	5.10	5.27	6.40	5.62
CaO	4.36	3.43	3.44	3.07	3.54	6.29	6.54	6.26	5.50	5.15	5.72	5.55	5.49	5.26
MnO	1.42	1.41	1.35	1.21	1.31	1.53	1.45	1.50	1.37	1.61	1.50	1.50	1.56	1.49
FeO	25.31	25.67	25.08	24.00	25.38	26.94	27.11	27.31	26.43	27.83	27.46	27.06	26.37	27.00
Total	101.25	99.68	100.78	101.18	99.99	100.35	100.73	100.79	99.74	101.08	100.76	100.72	100.72	99.02
Formula (O=24)														
Si	5.93	5.15	5.93	6.02	5.87	5.94	5.91	5.92	6.05	5.92	5.95	5.92	5.88	5.89
Ti	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Al	3.96	4.65	3.98	3.86	4.00	3.94	3.89	3.94	3.67	3.94	3.90	3.99	3.90	3.90
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.02	0.02	0.02	0.02
Fe^{3+}	0.15	0.16	0.16	0.15	0.16	0.17	0.17	0.18	0.17	0.18	0.18	0.18	0.18	0.19
Mg	1.82	1.98	1.98	2.27	1.93	1.14	1.17	1.14	1.52	1.23	1.19	1.22	1.48	1.33
Ca	0.71	0.57	0.56	0.50	0.59	1.06	1.09	1.05	0.93	0.86	0.96	0.93	0.91	0.89
Mn	0.18	0.18	0.18	0.16	0.17	0.20	0.19	0.20	0.18	0.21	0.20	0.20	0.20	0.20
Fe^{2+}	3.23	3.30	3.21	3.04	3.28	3.54	3.54	3.57	3.47	3.63	3.59	3.53	3.42	3.58
Total	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
X_{Mg}	0.35	0.36	0.37	0.42	0.36	0.23	0.24	0.23	0.29	0.24	0.24	0.25	0.29	0.26
Uva	0.00	0.09	0.06	0.05	0.00	0.03	0.18	0.10	0.05	0.31	0.51	0.42	0.53	0.43
Ti-And	0.00	0.00	0.00	0.11	0.00	0.37	0.43	0.21	0.16	0.18	0.18	0.00	0.04	0.00
And	3.87	4.03	3.96	3.73	4.04	4.40	4.37	4.47	4.50	4.64	4.65	4.62	4.42	4.68
Prp	30.59	33.29	33.41	38.13	32.37	19.18	19.50	19.08	26.34	20.73	20.03	20.81	24.81	22.22
Sps	3.09	3.08	2.96	2.60	2.88	3.44	3.20	3.34	3.14	3.59	3.36	3.38	3.43	3.35
Grs	8.12	5.41	5.50	4.45	5.78	13.03	13.27	12.83	11.30	9.37	10.80	10.73	10.31	9.83
Alm	54.32	54.11	54.12	50.93	54.93	59.56	59.05	59.97	54.51	61.18	60.48	60.03	56.45	59.49
Sum	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A.5.10 Representative analyses of garnet (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b
	Grt2	Grt2	Grt2	Grt2	Grt2	Grt3	Grt3	Grt3	Grt3	Grt3	Grt3	Grt3	Grt3
	→	→	→	→	rim/Bt	Bt/rim	→	→	→	→	→	→	rim/Bt
Position	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona	corona
	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm	around Ilm
SiO_2	37.71	37.87	37.48	37.47	37.87	37.95	37.93	37.79	37.90	37.81	37.75	37.44	38.01
TiO_2	0.01	0.04	0.03	0.12	0.04	0.03	0.05	0.04	0.07	0.06	0.05	0.07	0.04
Al_2O_3	21.29	21.55	21.62	21.19	21.79	21.61	21.84	21.95	22.17	22.19	21.72	21.73	21.76
Cr_2O_3	0.10	0.05	0.00	0.17	0.11	0.05	0.01	0.00	0.02	0.01	0.01	0.03	0.02
Fe_2O_3	1.60	1.57	1.58	1.59	1.59	1.49	1.46	1.48	1.54	1.50	1.49	1.50	1.51
MgO	5.23	5.20	5.23	5.31	5.12	6.81	6.85	6.55	6.53	6.49	6.40	6.70	6.27
CaO	5.30	5.62	5.30	5.26	5.85	5.38	5.50	5.75	5.22	5.52	5.53	5.50	5.79
MnO	1.59	1.58	1.65	1.47	1.50	1.61	1.56	1.63	1.69	1.67	1.66	1.58	1.68
FeO	27.42	26.92	27.15	27.25	27.17	25.46	24.88	25.33	26.14	25.46	25.30	25.38	25.64
Total	100.25	100.41	100.05	99.83	101.03	100.39	100.08	100.52	101.28	100.70	99.92	99.93	100.72
Formula (O=24)													
Si	5.92	5.93	5.89	5.91	5.90	5.89	5.89	5.85	5.84	5.85	5.89	5.83	5.89
Ti	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01
Al	3.94	3.98	4.01	3.94	4.00	3.95	4.00	4.01	4.03	4.04	3.99	3.99	3.97
Cr	0.01	0.01	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.19	0.19	0.19	0.19	0.19	0.17	0.17	0.17	0.18	0.17	0.18	0.18	0.18
Mg	1.23	1.21	1.23	1.25	1.19	1.57	1.59	1.51	1.50	1.50	1.49	1.56	1.45
Ca	0.89	0.94	0.89	0.89	0.98	0.89	0.92	0.95	0.86	0.91	0.92	0.92	0.96
Mn	0.21	0.21	0.22	0.20	0.20	0.21	0.20	0.21	0.22	0.22	0.22	0.21	0.22
Fe^{2+}	3.60	3.53	3.57	3.59	3.54	3.30	3.23	3.28	3.37	3.29	3.30	3.31	3.32
Total	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
X_{Mg}	0.24	0.25	0.25	0.25	0.24	0.31	0.32	0.30	0.30	0.30	0.30	0.31	0.29
Uva	0.30	0.17	0.00	0.52	0.35	0.16	0.04	0.00	0.07	0.02	0.03	0.08	0.05
Ti-And	0.04	0.12	0.08	0.36	0.12	0.09	0.16	0.12	0.21	0.16	0.15	0.20	0.13
And	4.78	4.71	4.76	4.78	4.72	4.36	4.30	4.35	4.49	4.42	4.43	4.40	4.44
Prp	20.66	20.61	20.74	21.07	20.13	26.32	26.71	25.37	25.20	25.25	25.09	25.97	24.33
Sps	3.56	3.55	3.72	3.30	3.36	3.54	3.44	3.58	3.71	3.70	3.70	3.48	3.70
Grs	9.91	11.01	10.28	9.34	11.34	10.33	10.91	11.52	9.71	10.83	10.96	10.66	11.53
Alm	60.74	59.83	60.42	60.63	59.97	55.20	54.42	55.05	56.61	55.61	55.64	55.22	55.81
Sum	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A.5.10 Representative analyses of garnet (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt	T,grt
Sample	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b	Ku-98-221b
	Grt4	Grt4	Grt4	Grt4	Grt4	Grt4	Grt4
	Pl/rim	→	→	→	→	→	rim/Px
Position	corona	corona	corona	corona	corona	corona	corona
	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol	around Ol
SiO_2	38.46	38.19	37.48	38.37	38.13	38.20	38.74
TiO_2	0.00	0.00	0.05	0.01	0.00	0.00	0.00
Al_2O_3	22.03	21.93	21.42	21.68	21.93	21.98	21.94
Cr_2O_3	0.03	0.01	0.02	0.00	0.00	0.02	0.00
Fe_2O_3	1.76	1.80	1.75	1.83	1.81	1.85	1.81
MgO	6.91	7.01	6.66	7.00	7.46	7.45	7.35
CaO	4.45	4.21	4.42	4.02	3.64	3.68	3.82
MnO	1.40	1.33	1.40	1.37	1.33	1.25	1.30
FeO	25.53	26.06	25.40	26.24	25.97	26.47	25.95
Total	100.58	100.54	98.59	100.51	100.26	100.90	100.91
Formula (O=24)							
Si	5.95	5.92	5.93	5.95	5.91	5.89	5.97
Ti	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Al	4.02	4.00	3.99	3.96	4.01	4.00	3.98
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.20	0.21	0.21	0.21	0.21	0.21	0.21
Mg	1.59	1.62	1.57	1.62	1.72	1.71	1.69
Ca	0.74	0.70	0.75	0.67	0.60	0.61	0.63
Mn	0.18	0.17	0.19	0.18	0.17	0.16	0.17
Fe^{2+}	3.30	3.38	3.36	3.40	3.37	3.41	3.35
Total	16.00	16.00	16.00	16.00	16.00	16.00	16.00
X_{Mg}	0.31	0.31	0.31	0.31	0.33	0.32	0.32
Uva	0.08	0.04	0.05	0.00	0.00	0.07	0.00
Ti-And	0.00	0.00	0.16	0.02	0.00	0.00	0.00
And	5.28	5.35	5.34	5.46	5.40	5.45	5.40
Prp	27.40	27.58	26.75	27.58	29.37	29.02	28.95
Sps	3.16	2.97	3.20	3.06	2.97	2.77	2.91
Grs	7.32	6.52	7.23	5.89	4.89	4.79	5.41
Alm	56.76	57.54	57.28	57.98	57.36	57.90	57.33
Sum	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table A.5.11 Representative analyses of epidote.

Rock type	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz
Sample	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07
	4-ep1	4-ep1	4-ep1	4-ep1	4-ep1	4-ep1	4-ep2	4-ep2	4-ep2	4-ep2	4-ep2	4-ep2	4-ep2	4-ep2	4-ep3	4-ep3	4-ep3	4-ep3
	rim	→	→	→	→	rim	rim	→	→	→	→	→	→	rim	rim	→	→	→
SiO_2	36.70	36.88	36.79	36.60	37.36	36.93	37.64	37.31	36.92	37.16	37.17	37.18	37.38	36.95	37.11	37.37	37.36	37.30
TiO_2	0.03	0.02	0.00	0.05	0.07	0.00	0.00	0.03	0.02	0.01	0.02	0.00	0.10	0.00	0.00	0.00	0.00	0.04
Al_2O_3	22.81	22.35	23.04	22.47	23.67	24.88	25.59	24.63	24.37	24.35	23.90	22.81	24.09	22.12	23.76	22.53	23.11	22.91
Cr_2O_3	0.00	0.02	0.02	0.04	0.00	0.02	0.02	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.01	0.00	0.00
Fe_2O_3	13.89	14.57	13.54	13.75	13.50	10.79	10.51	11.53	11.57	11.58	12.81	14.27	11.60	14.69	12.71	14.57	14.33	14.07
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	22.61	22.63	22.61	22.24	23.15	22.31	22.59	22.88	22.60	22.54	22.88	23.25	22.91	22.88	22.61	23.27	23.07	22.65
MnO	0.20	0.13	0.27	0.11	0.19	0.05	0.17	0.12	0.18	0.04	0.09	0.01	0.09	0.06	0.12	0.13	0.08	0.24
BaO	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.02	0.00	0.00	0.04	0.00	0.03	0.02	0.00
Na_2O	0.00	0.00	0.04	0.03	0.00	0.00	0.03	0.00	0.00	0.01	0.01	0.00	0.03	0.00	0.27	0.02	0.00	0.00
K_2O	0.01	0.02	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.02	0.01	0.01	0.00	0.03	0.00	0.00	0.00	0.02
Total	96.25	96.60	96.36	95.30	97.93	94.98	96.55	96.49	95.69	95.75	96.92	97.52	96.24	96.76	96.57	97.94	97.96	97.22
Formula (O=25)																		
Si	5.96	5.98	5.97	6.00	5.95	6.00	6.00	5.99	5.98	6.01	5.97	5.97	6.02	5.99	5.98	5.98	5.97	6.00
Al^{IV}	0.04	0.02	0.03	0.00	0.05	0.00	0.00	0.01	0.02	0.00	0.03	0.03	0.00	0.01	0.02	0.02	0.03	0.00
Sum	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.01	6.00	6.00	6.02	6.00	6.00	6.00	6.00	6.00
Al^{VI}	4.33	4.26	4.37	4.34	4.40	4.76	4.81	4.64	4.63	4.64	4.49	4.29	4.57	4.22	4.49	4.24	4.32	4.34
Ti	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	1.70	1.78	1.65	1.70	1.62	1.32	1.26	1.39	1.41	1.41	1.55	1.72	1.41	1.79	1.54	1.76	1.72	1.70
Sum	6.03	6.04	6.03	6.05	6.03	6.08	6.07	6.04	6.04	6.05	6.04	6.01	5.99	6.01	6.03	6.00	6.04	6.04
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	3.94	3.93	3.93	3.91	3.95	3.88	3.86	3.93	3.92	3.90	3.94	4.00	3.95	3.97	3.90	3.99	3.95	3.90
Mn	0.03	0.02	0.04	0.02	0.03	0.01	0.02	0.02	0.02	0.01	0.01	0.00	0.01	0.01	0.02	0.02	0.01	0.03
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.08	0.01	0.00	0.00
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Sum	3.97	3.95	3.98	3.93	3.98	3.89	3.89	3.95	3.95	3.92	3.96	4.00	3.97	3.99	4.00	4.02	3.96	3.94
Total	16.00	15.99	16.01	15.98	16.01	15.97	15.97	15.99	15.99	15.97	16.00	16.01	15.99	16.00	16.04	16.01	16.00	15.98
XPs	0.28	0.29	0.27	0.28	0.27	0.22	0.21	0.23	0.23	0.23	0.26	0.29	0.24	0.30	0.26	0.29	0.29	0.28

Table A.5.11 Representative analyses of epidote (continued).

Rock type	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz
Sample	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07	Ku-98-07
	4-ep3	4-ep3	4-ep3	4-ep3	4-ep3	6-ep1	6-ep1	6-ep1	6-ep1	6-ep1	6-ep1	6-ep1	6-ep2	6-ep2	6-ep2	6-ep2	6-ep2	7-ep1
	→	→	→	→	rim	rim	→	→	→	→	→	rim	rim	→	→	→	→	→
SiO_2	37.32	37.26	36.52	36.77	36.87	37.47	37.19	36.89	37.04	37.09	37.02	36.82	36.67	36.88	36.95	37.16	37.18	37.22
TiO_2	0.04	0.00	0.04	0.01	0.00	0.04	0.05	0.04	0.08	0.00	0.01	0.00	0.04	0.00	0.00	0.06	0.01	0.00
Al_2O_3	23.54	22.83	24.76	21.52	21.41	25.20	24.52	23.69	23.11	23.24	22.96	23.55	22.96	23.14	23.48	24.21	24.78	22.13
Cr_2O_3	0.00	0.00	0.05	0.03	0.06	0.00	0.01	0.00	0.00	0.03	0.03	0.03	0.00	0.00	0.00	0.03	0.03	0.00
Fe_2O_3	12.96	14.07	10.70	15.40	15.46	10.92	12.15	12.73	13.55	13.34	13.65	13.22	13.95	13.57	13.07	12.06	11.14	14.99
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	22.86	22.40	21.24	22.73	22.85	23.49	23.30	22.89	23.08	22.43	22.82	22.17	23.38	23.19	22.76	22.44	22.72	22.99
MnO	0.09	0.21	0.13	0.10	0.12	0.04	0.13	0.07	0.12	0.06	0.06	0.14	0.15	0.07	0.12	0.12	0.15	0.06
BaO	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.03	0.04	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.05	0.01
Na_2O	0.00	0.02	0.02	0.00	0.01	0.04	0.01	0.04	0.04	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.00	0.02
K_2O	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.02	0.02	0.02	0.00	0.00	0.04	0.00	0.02	0.00	0.01	0.00
Total	96.82	96.80	93.46	96.56	96.78	97.21	97.45	96.40	97.08	96.21	96.58	95.93	97.22	96.87	96.43	96.08	96.07	97.42
Formula (O=25)																		
Si	6.00	6.01	6.01	5.99	6.00	5.96	5.93	5.96	5.96	6.00	5.99	5.97	5.92	5.95	5.97	5.99	5.99	6.00
Al^{IV}	0.00	0.00	0.00	0.01	0.00	0.04	0.07	0.04	0.04	0.00	0.01	0.03	0.08	0.05	0.03	0.01	0.01	0.00
Sum	6.00	6.01	6.01	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Al^{VI}	4.46	4.34	4.80	4.12	4.10	4.69	4.55	4.47	4.35	4.43	4.36	4.48	4.28	4.35	4.44	4.60	4.69	4.20
Ti	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
Cr	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	1.57	1.71	1.32	1.89	1.89	1.31	1.46	1.55	1.64	1.62	1.66	1.61	1.69	1.65	1.59	1.46	1.35	1.82
Sum	6.03	6.05	6.14	6.02	6.00	6.00	6.01	6.02	6.00	6.06	6.03	6.09	5.98	6.00	6.03	6.07	6.04	6.01
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	3.94	3.87	3.75	3.97	3.98	4.00	3.98	3.96	3.98	3.89	3.95	3.85	4.04	4.01	3.94	3.88	3.92	3.97
Mn	0.01	0.03	0.02	0.01	0.02	0.01	0.02	0.01	0.02	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Sum	3.95	3.91	3.77	3.98	4.00	4.02	4.01	3.99	4.02	3.90	3.97	3.87	4.07	4.02	3.97	3.90	3.94	3.98
Total	15.98	15.97	15.92	16.00	16.00	16.02	16.03	16.01	16.02	15.97	16.00	15.97	16.05	16.02	16.00	15.97	15.99	16.00
XPs	0.26	0.28	0.22	0.31	0.32	0.22	0.24	0.26	0.27	0.27	0.28	0.27	0.28	0.27	0.26	0.24	0.22	0.30

Table A.5.11 Representative analyses of epidote (continued).

Rock type	S,qtz	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	GN	GN	GN	GN
Sample	Ku-98-07	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-97-04	Ku-97-04	Ku-97-04	Ku-97-04
	7-ep1	3-ep1	3-ep1	3-ep1	3-ep1	3-ep1	3-ep1	3-ep1	3-ep1	3-ep1	1-ep1	1-ep2	1-ep3	1-ep4
	rim	rim	→	→	→	→	→	→	→	rim	rim	→	→	rim
SiO_2	36.91	36.81	36.79	36.54	36.18	35.91	37.15	36.35	35.84	36.76	38.04	36.87	37.09	37.24
TiO_2	0.10	0.03	0.00	0.03	0.03	0.02	0.02	0.01	0.00	0.02	0.00	0.05	0.51	0.06
Al_2O_3	22.55	21.40	21.08	21.20	21.07	21.30	23.00	20.45	20.40	21.50	28.40	24.19	26.12	27.06
Cr_2O_3	0.00	0.04	0.00	0.00	0.04	0.06	0.01	0.00	0.01	0.06	0.01	0.00	0.00	0.02
Fe_2O_3	14.00	15.79	15.25	15.56	15.93	15.07	13.33	16.75	16.43	15.65	7.13	12.50	9.06	8.92
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	23.16	22.63	22.47	23.10	23.09	21.52	21.99	22.01	21.82	22.88	23.15	23.24	23.51	23.01
MnO	0.14	0.11	0.08	0.17	0.12	0.07	0.25	0.19	0.20	0.11	0.10	0.04	0.03	0.28
BaO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na_2O	0.00	0.00	0.05	0.03	0.00	0.03	0.00	0.00	0.01	0.00	0.04	0.00	0.00	0.00
K_2O	0.02	0.00	0.01	0.02	0.02	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Total	96.89	96.82	95.73	96.69	96.48	94.02	95.77	95.76	94.70	97.00	96.86	96.90	96.32	96.58
Formula (O=25)														
Si	5.97	5.99	6.04	5.97	5.93	5.99	6.04	6.00	5.98	5.97	5.97	5.92	5.92	5.92
Al^{IV}	0.03	0.01	0.00	0.03	0.07	0.01	0.00	0.00	0.02	0.03	0.03	0.08	0.08	0.08
Sum	6.00	6.00	6.04	6.00	6.00	6.00	6.04	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Al^{VI}	4.27	4.09	4.08	4.05	4.00	4.19	4.40	3.97	3.99	4.09	5.23	4.50	4.84	4.98
Ti	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.01
Cr	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Fe^{3+}	1.70	1.93	1.88	1.91	1.96	1.89	1.63	2.08	2.06	1.91	0.84	1.51	1.09	1.07
Sum	5.98	6.03	5.96	5.96	5.97	6.09	6.04	6.05	6.05	6.01	6.07	6.02	5.99	6.06
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	4.01	3.94	3.95	4.04	4.06	3.85	3.83	3.89	3.90	3.98	3.89	4.00	4.02	3.92
Mn	0.02	0.02	0.01	0.02	0.02	0.01	0.03	0.03	0.03	0.01	0.01	0.00	0.00	0.04
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
K	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	4.04	3.96	3.98	4.08	4.08	3.87	3.87	3.92	3.93	4.00	3.92	4.01	4.03	3.95
Total	16.02	15.99	15.99	16.04	16.05	15.96	15.94	15.97	15.98	16.01	15.99	16.03	16.01	16.01
XPs	0.29	0.32	0.32	0.32	0.33	0.31	0.27	0.34	0.34	0.32	0.14	0.25	0.18	0.18

Table A.5.12 Representative analyses of chlorite.

Rock type	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	GN	T	GN	GN	GN
Sample	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-99-13	Ku-97-04	Ku-97-92	Ku-98-68	Ku-98-68	Ku-98-68
	2-chl1	2-chl1	2-chl1	2-chl1	2-chl1	2-chl2	2-chl2	2-chl2	2-chl2	2-chl2	2-chl2	1-chl1	1-chl1	1-chl1	1-chl2	1-chl3
SiO_2	25.81	27.17	25.34	26.11	24.42	26.03	25.81	27.17	25.34	26.11	24.42	24.49	25.44	26.77	26.65	27.08
TiO_2	2.73	5.07	0.77	2.09	1.06	1.44	2.73	5.07	0.77	2.09	1.06	0.00	0.00	0.04	0.11	0.12
Al_2O_3	12.79	12.28	14.39	13.92	14.47	14.01	12.79	12.28	14.39	13.92	14.47	17.99	18.40	17.26	17.75	17.64
Fe_2O_3	0.76	0.74	0.84	0.81	0.86	0.84	0.76	0.74	0.84	0.81	0.86	0.69	0.34	0.62	1.19	0.62
MgO	2.39	2.16	2.56	2.47	2.41	2.52	2.39	2.16	2.56	2.47	2.41	8.02	12.65	16.26	16.71	16.10
CaO	1.49	4.05	0.18	1.00	0.14	0.13	1.49	4.05	0.18	1.00	0.14	0.01	0.06	0.03	0.11	0.05
MnO	0.52	0.74	0.96	0.74	0.69	0.78	0.52	0.74	0.96	0.74	0.69	0.17	0.26	0.17	0.08	0.09
FeO	37.13	36.46	41.45	39.74	42.32	41.39	37.13	36.46	41.45	39.74	42.32	36.20	29.40	25.36	25.00	26.47
Na_2O	0.15	0.05	0.12	0.14	0.01	0.08	0.15	0.05	0.12	0.14	0.01	0.05	0.05	0.00	0.00	0.02
K_2O	1.05	0.68	0.80	0.63	0.84	0.94	1.05	0.68	0.80	0.63	0.84	0.00	0.00	0.03	0.01	0.03
Total	84.82	89.39	87.40	87.64	87.20	88.16	84.82	89.39	87.40	87.64	87.20	87.63	86.59	86.53	87.61	88.21
Formula (O=28)																
Si	6.19	6.15	6.00	6.09	5.83	6.08	6.19	6.15	6.00	6.09	5.83	5.54	5.59	5.76	5.66	5.73
Al^{IV}	1.81	1.85	2.00	1.91	2.17	1.92	1.81	1.85	2.00	1.91	2.17	2.46	2.41	2.24	2.34	2.27
Sum	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	1.81	1.43	2.01	1.92	1.90	1.94	1.81	1.43	2.01	1.92	1.90	2.34	2.35	2.13	2.11	2.13
Fe^{3+}	0.14	0.13	0.15	0.14	0.15	0.15	0.14	0.13	0.15	0.14	0.15	0.12	0.06	0.10	0.19	0.10
Ti	0.49	0.86	0.14	0.37	0.19	0.25	0.49	0.86	0.14	0.37	0.19	0.00	0.00	0.01	0.02	0.02
Fe^{2+}	7.45	6.90	8.20	7.75	8.45	8.09	7.45	6.90	8.20	7.75	8.45	6.86	5.41	4.57	4.46	4.70
Mn	0.11	0.14	0.19	0.15	0.14	0.16	0.11	0.14	0.19	0.15	0.14	0.03	0.05	0.03	0.01	0.02
Mg	0.85	0.73	0.90	0.86	0.86	0.88	0.85	0.73	0.90	0.86	0.86	2.71	4.14	5.21	5.29	5.08
Ca	0.38	0.98	0.04	0.25	0.04	0.03	0.38	0.98	0.04	0.25	0.04	0.00	0.01	0.01	0.02	0.01
Na	0.07	0.02	0.05	0.06	0.00	0.04	0.07	0.02	0.05	0.06	0.00	0.02	0.02	0.00	0.00	0.01
K	0.32	0.20	0.24	0.19	0.26	0.28	0.32	0.20	0.24	0.19	0.26	0.00	0.00	0.01	0.00	0.01
Sum	11.63	11.39	11.93	11.68	11.99	11.82	11.63	11.39	11.93	11.68	11.99	12.08	12.03	12.06	12.09	12.06
Total	19.63	19.39	19.93	19.68	19.99	19.82	19.63	19.39	19.93	19.68	19.99	20.08	20.03	20.06	20.09	20.06

Table A.5.13 Representative analyses of ankerite-dolomite

Rock type	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f
Sample	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02	Ku-99-02
	4-ank1	4-ank1	4-ank1	4-ank1	4-ank1	4-ank1	4-ank1	4-ank1	4-ank1	4-ank1	4-ank1	4-ank1	6-ank3	6-ank3	6-ank3	6-ank4	6-ank4
	rim	→	→	→	→	→	→	→	→	→	→	rim	rim	core	rim	rim	core
MgO	11.80	11.76	10.99	11.03	10.63	10.90	10.98	10.95	10.78	11.05	10.81	11.04	4.93	10.36	9.23	10.03	10.11
CaO	27.07	27.07	27.56	26.70	26.66	26.69	26.94	26.62	27.17	26.63	26.42	26.42	26.13	27.34	26.94	27.02	26.72
MnO	2.22	1.87	1.77	2.04	2.03	2.10	2.30	2.23	2.00	2.23	2.09	2.13	1.30	2.23	2.11	2.11	2.10
FeO	12.68	13.18	14.11	14.57	14.92	14.78	14.75	14.90	15.01	14.79	14.49	15.23	23.86	14.76	16.01	15.56	15.52
SrO	0.60	0.53	0.49	0.52	0.60	0.58	0.71	0.57	0.62	0.65	0.55	0.58	0.50	0.59	0.74	0.61	0.73
BaO	0.07	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.09	0.07	0.03	0.00	0.04	0.09
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	43.55	43.54	43.59	43.42	43.18	43.45	43.89	43.60	43.79	43.69	42.96	43.71	41.54	43.45	42.66	43.28	43.15
Total	97.98	97.95	98.54	98.28	98.02	98.49	99.57	98.88	99.38	99.04	97.34	99.19	98.34	98.76	97.69	98.66	98.42
Formula																	
Mg	0.59	0.59	0.55	0.55	0.54	0.55	0.55	0.55	0.54	0.55	0.55	0.55	0.26	0.52	0.47	0.51	0.51
Ca	0.98	0.98	0.99	0.97	0.97	0.96	0.96	0.96	0.97	0.96	0.97	0.95	0.99	0.99	0.99	0.98	0.97
Mn	0.06	0.05	0.05	0.06	0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.04	0.06	0.06	0.06	0.06
Fe	0.36	0.37	0.40	0.41	0.42	0.42	0.41	0.42	0.42	0.41	0.41	0.43	0.70	0.42	0.46	0.44	0.44
Sr	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.62	0.61	0.58	0.57	0.56	0.57	0.57	0.57	0.56	0.57	0.57	0.56	0.27	0.56	0.51	0.53	0.54

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	A,f	S,f	S,f	S,f	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,l	CB,l	CB,l	CB,l
Sample	Ku-99-02	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14
	6-ank4	1-ank1	2-ank1	2-ank1	2-ank4	2-ank4	2-ank4	2-ank4	2-ank4	2-ank4	2-ank4	2-ank2	2-ank2	2-ank2	2-ank2
	rim	core	core	core	rim	→	→	→	→	→	rim	rim	→	→	→
MgO	9.90	6.05	6.64	7.28	14.23	15.58	15.31	15.43	13.65	12.70	12.52	11.53	15.42	16.32	13.98
CaO	26.82	27.99	29.01	27.69	28.38	28.76	28.21	28.51	28.12	28.10	28.23	26.99	27.88	28.23	27.67
MnO	2.26	2.34	2.54	2.10	0.50	0.54	0.55	0.55	0.51	0.43	0.54	2.18	2.33	0.87	2.34
FeO	16.57	18.60	17.98	18.58	10.17	8.67	9.26	8.42	11.53	11.99	12.61	12.63	6.89	7.69	8.82
SrO	0.71	0.48	0.58	0.51	0.19	0.22	0.20	0.39	0.33	0.35	0.24	0.26	0.07	0.10	0.39
BaO	0.02	0.03	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.07	0.08	0.02	0.00	0.06	0.12
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	43.71	41.63	42.85	42.58	44.44	45.32	44.97	44.88	44.49	43.70	44.01	42.98	44.41	45.28	44.03
Total	99.99	97.11	99.60	98.73	97.93	99.10	98.51	98.18	98.65	97.35	98.22	96.60	97.00	98.55	97.33
Formula															
Mg	0.49	0.32	0.34	0.37	0.70	0.75	0.74	0.75	0.67	0.63	0.62	0.59	0.76	0.79	0.69
Ca	0.96	1.06	1.06	1.02	1.00	1.00	0.98	1.00	0.99	1.01	1.01	0.99	0.99	0.98	0.99
Mn	0.06	0.07	0.07	0.06	0.01	0.01	0.02	0.02	0.01	0.01	0.02	0.06	0.06	0.02	0.07
Fe	0.46	0.55	0.51	0.53	0.28	0.23	0.25	0.23	0.32	0.34	0.35	0.36	0.19	0.21	0.25
Sr	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.52	0.37	0.40	0.41	0.71	0.76	0.75	0.77	0.68	0.65	0.64	0.62	0.80	0.79	0.74

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB	CB	CB	CB,l	CB,l	CB,l
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-56	Ku-98-56	Ku-98-56
	2-ank2	1-ank1	1-ank1	1-ank1	1-ank2	1-ank2	1-ank3	1-ank4	1-ank4	1-ank4	cc9001	cc9001	cc9002	2-ank1	2-ank1	2-ank1
	rim	rim	core	rim	rim	core	rim	rim	core	rim	core	core	core	rim	→	rim
MgO	10.58	11.15	11.95	11.42	11.66	11.79	11.51	10.85	10.97	10.50	11.87	12.17	11.68	13.49	13.89	13.73
CaO	26.84	27.09	28.04	27.81	27.32	26.96	27.24	27.16	26.91	26.78	28.28	28.51	28.57	28.99	29.37	28.69
MnO	2.22	2.21	2.25	2.30	2.44	2.33	2.40	2.60	2.39	3.03	2.55	2.43	2.49	2.07	1.84	1.74
FeO	15.07	12.92	10.85	11.73	12.06	12.06	12.18	12.63	13.01	13.15	13.15	12.44	13.06	10.13	10.10	10.42
SrO	0.56	0.91	0.85	0.82	0.76	0.87	0.75	0.85	0.84	0.88	0.90	0.79	0.74	0.86	0.56	0.64
BaO	0.13	0.00	0.02	0.00	0.02	0.02	0.00	0.05	0.02	0.07	0.03	0.02	0.00	0.00	0.00	0.00
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.07	0.00	0.00	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.00	0.19	0.00	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.01	0.01	0.02	n.a.	n.a.	n.a.
CO_2	43.50	43.11	43.46	43.26	43.40	43.25	43.22	42.88	42.91	42.81	42.41	42.42	42.26	45.34	45.78	45.24
Total	98.91	97.39	97.42	97.34	97.66	97.28	97.31	97.01	97.06	97.22	99.28	99.00	98.83	100.87	101.54	100.45
Formula																
Mg	0.53	0.56	0.60	0.58	0.59	0.60	0.58	0.55	0.56	0.54	0.57	0.59	0.57	0.65	0.66	0.66
Ca	0.97	0.99	1.01	1.01	0.99	0.98	0.99	0.99	0.98	0.98	0.98	0.99	1.00	1.00	1.01	1.00
Mn	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.07	0.09	0.07	0.07	0.07	0.06	0.05	0.05
Fe	0.42	0.37	0.31	0.33	0.34	0.34	0.35	0.36	0.37	0.38	0.36	0.34	0.36	0.27	0.27	0.28
Sr	0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	-	-	-
Ce	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	-	-	-
Na	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.56	0.61	0.66	0.63	0.63	0.64	0.63	0.60	0.60	0.59	0.62	0.64	0.61	0.70	0.71	0.70

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80	Ku-98-80
	4-ank1	4-ank1	4-ank1	6-ank1	6-ank1	6-ank1	6-ank1	6-ank1	6-ank1	6-ank2	6-ank2	6-ank2	6-ank4	6-ank4	6-ank4	7-ank2	7-ank2
	rim	core	rim	rim	→	→	→	→	rim	rim	core	rim	rim	core	rim	rim	core
MgO	11.06	11.34	10.99	12.06	11.91	12.17	12.03	12.33	12.21	12.01	12.60	12.10	12.09	12.36	11.76	12.09	12.53
CaO	28.22	28.23	28.06	27.88	27.87	27.92	27.95	28.15	27.72	27.95	28.02	28.08	28.22	27.81	28.33	27.88	27.68
MnO	1.65	1.60	1.63	1.61	1.62	1.46	1.46	1.56	1.56	1.47	1.58	1.76	1.67	1.63	1.64	1.63	1.42
FeO	14.40	14.31	14.23	13.60	13.38	13.51	13.39	13.18	13.08	13.48	12.26	13.14	13.20	12.11	13.52	13.34	13.24
SrO	0.78	0.81	0.70	0.83	0.85	0.74	0.78	0.76	0.68	0.76	0.71	0.64	0.71	0.65	0.87	0.60	0.65
BaO	0.02	0.00	0.03	0.02	0.02	0.16	0.01	0.09	0.06	0.02	0.00	0.09	0.00	0.11	0.00	0.06	0.00
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	44.41	44.64	44.06	44.74	44.45	44.75	44.52	44.94	44.38	44.55	44.54	44.68	44.77	44.06	44.74	44.54	44.67
Total	100.55	100.92	99.71	100.73	100.11	100.71	100.14	101.01	99.70	100.25	99.70	100.49	100.66	98.73	100.87	100.13	100.19
Formula																	
Mg	0.54	0.55	0.54	0.59	0.59	0.59	0.59	0.60	0.60	0.59	0.62	0.59	0.59	0.61	0.57	0.59	0.61
Ca	1.00	0.99	1.00	0.98	0.98	0.98	0.99	0.98	0.98	0.98	0.99	0.99	0.99	0.99	0.99	0.98	0.97
Mn	0.05	0.04	0.05	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.04
Fe	0.40	0.39	0.40	0.37	0.37	0.37	0.37	0.36	0.36	0.37	0.34	0.36	0.36	0.34	0.37	0.37	0.36
Sr	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.58	0.59	0.58	0.61	0.61	0.62	0.62	0.63	0.62	0.61	0.65	0.62	0.62	0.65	0.61	0.62	0.63

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	CB,so	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-80	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a
	7-ank2	2-ank1	2-ank1	2-ank1	2-ank2	2-ank2	2-ank2	2-ank3	2-ank4	2-ank4	2-ank4	2-ank4	2-ank3	2-ank3	4-ank1	4-ank1
	rim	rim	core	rim	rim	core	rim	core	rim	→	→	rim	core	core	core	core
MgO	12.40	11.34	12.30	5.59	6.90	6.93	7.85	6.10	10.77	10.72	9.55	10.91	6.30	5.40	8.96	9.41
CaO	28.19	28.86	29.05	27.67	27.82	28.59	28.63	27.54	28.00	28.06	28.29	28.45	27.48	26.90	28.58	28.28
MnO	1.67	1.67	1.71	1.57	1.90	1.77	1.66	1.96	1.65	1.71	1.83	1.91	1.27	1.46	1.91	2.03
FeO	12.80	13.92	12.05	22.48	20.09	19.62	18.21	21.48	14.71	14.66	16.26	14.17	22.17	23.07	16.28	16.65
SrO	0.67	0.71	0.56	0.24	0.36	0.44	0.42	0.14	0.69	0.72	0.76	0.68	0.36	0.10	0.45	0.46
BaO	0.00	0.00	0.00	0.05	0.00	0.00	0.02	0.09	0.06	0.00	0.02	0.00	0.00	0.07	0.00	0.00
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	44.83	44.90	44.92	42.68	43.01	43.31	43.41	42.74	44.08	44.07	44.06	44.39	42.98	42.11	43.56	44.12
Total	100.57	101.40	100.60	100.28	100.08	100.66	100.21	100.05	99.97	99.93	100.77	100.51	100.57	99.11	99.73	100.95
Formula																
Mg	0.60	0.55	0.60	0.29	0.35	0.35	0.39	0.31	0.53	0.53	0.47	0.54	0.32	0.28	0.45	0.47
Ca	0.99	1.01	1.02	1.02	1.02	1.04	1.04	1.01	1.00	1.00	1.01	1.01	1.00	1.00	1.03	1.01
Mn	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.05	0.06
Fe	0.35	0.38	0.33	0.65	0.57	0.56	0.51	0.62	0.41	0.41	0.45	0.39	0.63	0.67	0.46	0.46
Sr	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.63	0.59	0.65	0.31	0.38	0.39	0.43	0.34	0.57	0.57	0.51	0.58	0.34	0.29	0.50	0.50

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b
	4-ank2	4-ank2	5-ank1	5-ank1	5-ank1	5-ank1	6-ank1	6-ank1	6-ank1	6-ank2	6-ank2	6-ank2	g-cc-es1	g-cc-es2	g-cc2	e-ree3
	core	core	rim	→	→	rim	rim	→	rim	rim	→	rim	rim	→	rim	core
MgO	10.32	10.99	8.38	8.69	8.56	8.80	9.45	9.47	9.55	9.17	9.43	9.54	10.48	10.51	11.23	10.08
CaO	27.87	28.24	27.91	28.29	28.45	28.01	28.32	28.29	28.46	28.21	28.16	27.96	28.63	28.43	29.01	28.81
MnO	1.82	1.80	1.86	1.88	1.96	1.78	1.89	1.84	2.21	1.78	1.75	1.78	1.38	1.59	1.91	1.85
FeO	15.14	13.66	18.70	17.19	17.20	17.35	16.23	16.26	15.60	16.42	15.84	16.54	15.23	15.37	14.29	15.03
SrO	0.49	0.77	0.13	0.44	0.51	0.38	0.69	0.69	0.57	0.47	0.61	0.56	0.71	0.67	0.73	0.53
BaO	0.02	0.03	0.00	0.12	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.08	0.16	0.02	0.00
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.14	0.00	0.18	0.04
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.00	0.12	0.00	0.07
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	43.76	43.98	43.72	43.61	43.65	43.50	43.94	43.95	43.95	43.51	43.44	43.83	41.74	41.81	42.51	41.53
Total	99.42	99.47	100.71	100.24	100.33	99.83	100.51	100.51	100.40	99.54	99.22	100.20	98.40	98.66	99.88	97.94
Formula																
Mg	0.52	0.55	0.42	0.44	0.43	0.44	0.47	0.47	0.47	0.46	0.47	0.48	0.51	0.52	0.54	0.50
Ca	1.00	1.01	1.00	1.02	1.02	1.01	1.01	1.01	1.02	1.02	1.02	1.00	1.01	1.00	1.00	1.02
Mn	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.04	0.04	0.05	0.05
Fe	0.42	0.38	0.52	0.48	0.48	0.49	0.45	0.45	0.43	0.46	0.45	0.46	0.42	0.42	0.39	0.42
Sr	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
Ce	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.55	0.59	0.44	0.47	0.47	0.47	0.51	0.51	0.52	0.50	0.51	0.51	0.55	0.55	0.58	0.54

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131
	e-cc5001	e-cc5001	a-cc4001	a-cc4001	a-cc4001	a-cc3001	a-cc3001	g-ree1	g-ree1	g-ree1	g-ree1	e-ree4	4-ank1	4-ank1	4-ank1	7-ank1
	core	rim	rim	core	rim	core	core	rim	→	→	rim	core	rim	core	rim	rim
MgO	10.48	10.05	10.06	10.95	9.96	10.60	10.28	10.64	10.77	7.70	9.96	10.82	11.28	11.83	11.26	12.37
CaO	28.80	28.29	28.68	28.81	28.37	28.56	28.71	28.48	28.70	25.98	28.64	28.57	28.86	28.46	28.73	28.08
MnO	1.73	1.83	1.73	1.68	1.88	1.69	1.60	1.62	1.70	1.39	1.56	1.86	1.32	1.17	1.40	1.60
FeO	15.17	15.53	14.71	14.01	15.55	15.07	14.90	14.59	14.60	15.03	15.92	14.24	14.01	13.87	13.77	13.09
SrO	0.43	0.46	0.68	0.74	0.51	0.54	0.49	0.51	0.49	2.29	0.28	0.50	0.47	0.56	0.72	0.68
BaO	0.00	0.00	0.07	0.00	0.00	0.00	0.10	0.07	0.00	0.13	0.08	0.10	0.04	0.06	0.03	0.00
La_2O_3	0.00	0.05	0.04	0.00	0.07	0.13	0.11	0.18	0.00	1.87	0.14	0.00	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	0.00	0.05	0.12	0.12	0.28	0.12	0.02	0.00	0.18	2.19	0.19	0.18	n.a.	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.05	0.05	0.65	0.02	0.04	n.a.	n.a.	n.a.	n.a.
CO_2	41.85	41.38	41.27	41.83	41.48	41.85	41.47	41.56	41.85	39.45	41.63	41.73	44.57	44.74	44.46	44.85
Total	98.46	97.65	97.35	98.15	98.11	98.55	97.67	97.70	98.35	96.68	98.42	98.03	100.54	100.70	100.37	100.67
Formula																
Mg	0.51	0.50	0.50	0.54	0.49	0.52	0.51	0.53	0.53	0.41	0.49	0.53	0.55	0.58	0.55	0.60
Ca	1.01	1.01	1.03	1.02	1.01	1.01	1.02	1.01	1.01	1.00	1.02	1.01	1.02	1.00	1.01	0.98
Mn	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.03	0.04	0.04
Fe	0.42	0.43	0.41	0.39	0.43	0.41	0.41	0.40	0.40	0.45	0.44	0.39	0.38	0.38	0.38	0.36
Sr	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	-	-	-	-
Ce	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	-	-	-	-
Na	-	-	-	-	-	-	-	0.00	0.00	0.02	0.00	0.00	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.55	0.54	0.55	0.58	0.53	0.56	0.55	0.57	0.57	0.48	0.53	0.58	0.59	0.60	0.59	0.63

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05
	7-ank1	7-ank1	7-ank1	7-ank1	7-ank1	2-ank3	2-ank3	2-ank3	1-ank1	1-ank1	1-ank1	1-ank1	1-ank1	1-ank1	1-ank1	1-ank2
	→	→	→	→	rim	rim	core	rim	rim	→	→	→	→	→	rim	rim
MgO	12.27	12.70	12.49	12.58	12.61	10.62	8.98	9.23	7.98	7.88	7.61	7.71	7.77	8.05	8.76	7.52
CaO	27.55	27.89	27.60	27.50	27.77	26.83	26.95	27.65	27.08	26.85	26.99	26.99	26.78	27.00	26.94	27.02
MnO	1.55	1.76	1.54	1.63	1.56	1.97	2.06	2.52	2.18	1.82	2.24	2.20	2.23	2.37	2.64	2.06
FeO	12.51	12.87	12.70	12.87	12.70	14.76	16.59	15.36	17.91	18.80	17.83	17.88	17.91	17.88	16.11	18.12
SrO	0.67	0.72	0.75	0.77	0.69	0.64	0.85	0.59	0.60	0.64	0.70	0.65	0.59	0.66	0.60	0.47
BaO	0.00	0.00	0.09	0.02	0.09	0.09	0.05	0.11	0.00	0.00	0.00	0.00	0.07	0.09	0.05	0.15
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	43.93	45.04	44.38	44.54	44.63	43.22	42.78	43.02	42.55	42.60	42.10	42.19	42.13	42.70	42.48	42.03
Total	98.49	100.97	99.54	99.90	100.05	98.14	98.26	98.46	98.31	98.59	97.46	97.61	97.49	98.75	97.59	97.38
Formula																
Mg	0.61	0.62	0.61	0.62	0.62	0.54	0.46	0.47	0.41	0.40	0.39	0.40	0.40	0.41	0.45	0.39
Ca	0.98	0.97	0.98	0.97	0.98	0.97	0.99	1.01	1.00	0.99	1.01	1.00	1.00	0.99	1.00	1.01
Mn	0.04	0.05	0.04	0.05	0.04	0.06	0.06	0.07	0.06	0.05	0.07	0.06	0.07	0.07	0.08	0.06
Fe	0.35	0.35	0.35	0.35	0.35	0.42	0.48	0.44	0.52	0.54	0.52	0.52	0.52	0.51	0.46	0.53
Sr	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.64	0.64	0.64	0.64	0.64	0.56	0.49	0.52	0.44	0.43	0.43	0.43	0.44	0.45	0.49	0.43

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8
	1-ank2	1-ank2	3-ank1	3-ank1	3-ank1	1-ank3	1-ank3	1-ank3	3-ank5	3-ank5	3-ank5	3-ank5	3-ank5	3-ank5	3-ank5	3-ank5
	→	rim	rim	core	rim	rim	core	rim	rim	→	→	→	→	core	→	→
MgO	7.73	7.54	7.87	7.74	8.27	11.27	11.52	11.14	11.44	11.60	11.70	11.81	11.78	11.82	11.85	11.98
CaO	26.92	26.62	27.36	26.85	27.30	26.63	26.71	26.95	26.67	26.80	27.21	26.76	26.24	26.62	26.59	27.12
MnO	2.10	2.33	2.35	2.23	2.53	2.61	2.32	2.30	2.64	2.75	2.50	2.55	2.25	2.65	2.33	2.54
FeO	18.03	18.23	17.43	17.57	16.38	13.80	13.94	14.29	13.68	13.96	13.69	13.91	13.80	13.71	13.58	13.76
SrO	0.66	0.64	0.29	0.76	0.38	0.67	0.75	0.75	0.62	0.71	0.87	0.84	0.66	0.72	0.72	0.50
BaO	0.00	0.07	0.00	0.00	0.00	0.07	0.00	0.05	0.06	0.09	0.00	0.00	0.00	0.00	0.00	0.00
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	42.20	42.03	42.33	41.99	42.23	43.58	43.84	43.83	43.72	44.27	44.44	44.35	43.58	44.14	43.87	44.58
Total	97.64	97.46	97.64	97.13	97.10	98.62	99.09	99.30	98.83	100.18	100.42	100.21	98.31	99.67	98.94	100.49
Formula																
Mg	0.40	0.39	0.41	0.40	0.43	0.56	0.57	0.55	0.57	0.57	0.57	0.58	0.59	0.58	0.59	0.59
Ca	1.00	0.99	1.01	1.00	1.01	0.96	0.96	0.97	0.96	0.95	0.96	0.95	0.94	0.95	0.95	0.95
Mn	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.07	0.07	0.06	0.07	0.07	0.07
Fe	0.52	0.53	0.50	0.51	0.48	0.39	0.39	0.40	0.38	0.39	0.38	0.38	0.39	0.38	0.38	0.38
Sr	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.43	0.42	0.45	0.44	0.47	0.59	0.60	0.58	0.60	0.60	0.60	0.60	0.60	0.61	0.61	0.61

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV
Sample	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04
	3-ank5	3-ank5	5-ank2	5-ank2	5-ank2	a-cc8001b	a-cc8001b	a-cc8001b	a-cc8001d	a-cc8001d	c-cc-es	c-cc-es	c-cc-es	c-cc-es	c-cc-es	c-cc-es
	→	rim	rim	→	rim	rim	core	rim	rim	rim	rim	→	→	→	→	→
MgO	11.73	11.28	11.36	11.30	11.39	10.23	11.18	11.53	10.59	11.14	10.28	10.16	9.76	8.11	8.13	7.93
CaO	26.78	26.38	26.95	27.05	26.50	28.52	28.92	29.30	28.82	28.53	28.41	28.27	27.98	27.78	27.45	27.35
MnO	2.51	2.40	2.80	2.47	2.50	2.77	2.96	2.96	3.09	2.88	3.03	2.82	2.58	2.30	2.45	2.66
FeO	13.34	13.99	13.76	13.66	13.69	14.51	12.72	12.09	13.64	13.31	14.26	14.68	15.63	18.43	18.21	17.96
SrO	0.63	0.70	0.70	0.75	0.85	0.49	0.60	0.72	0.63	0.59	0.68	0.68	0.63	0.70	0.56	0.53
BaO	0.04	0.08	0.12	0.00	0.07	0.03	0.08	0.00	0.00	0.00	0.00	0.13	0.00	0.04	0.06	0.00
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	0.07	0.00	0.00	0.00	0.00	0.05	0.13	0.00	0.00	0.00	0.21
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	0.00	0.05	0.00	0.31	0.07	0.00	0.00	0.09	0.00	0.00	0.28
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	43.84	43.40	44.05	43.79	43.56	41.68	42.07	42.33	42.06	42.01	41.71	41.66	41.39	40.99	40.70	40.56
Total	98.89	98.23	99.74	99.02	98.56	98.30	98.58	98.93	99.16	98.53	98.42	98.53	98.06	98.35	97.56	97.48
Formula																
Mg	0.58	0.57	0.56	0.56	0.57	0.50	0.54	0.56	0.52	0.54	0.51	0.50	0.48	0.41	0.41	0.40
Ca	0.96	0.95	0.96	0.97	0.96	1.01	1.01	1.02	1.01	1.00	1.00	1.00	1.00	1.00	0.99	1.00
Mn	0.07	0.07	0.08	0.07	0.07	0.08	0.08	0.08	0.09	0.08	0.08	0.08	0.07	0.07	0.07	0.08
Fe	0.37	0.39	0.38	0.38	0.39	0.40	0.35	0.33	0.37	0.36	0.39	0.41	0.43	0.52	0.51	0.51
Sr	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ce	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.61	0.59	0.60	0.60	0.60	0.56	0.61	0.63	0.58	0.60	0.56	0.55	0.53	0.44	0.44	0.44

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	FV	FV	FV	FV	FV	FV	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX
Sample	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a
	c-cc-es	c-cc-es	c-cc-es	c-cc-es	c-cc-es	c-cc-es	3-ank4	3-ank4	3-ank4	3-ank4	3-ank4	4-ank4	4-ank4	4-ank5	4-ank5	4-ank5
	→	→	→	→	→	rim	rim	→	→	→	→	→	core	rim	core	rim
MgO	8.66	7.64	9.66	9.40	9.17	8.82	16.08	16.47	16.59	16.77	16.96	15.24	17.69	14.59	15.66	14.92
CaO	27.82	27.79	27.75	27.72	27.82	27.75	27.90	28.24	28.23	28.39	28.32	28.31	28.49	28.36	28.31	28.35
MnO	2.95	2.52	2.61	2.44	2.68	2.80	0.39	0.39	0.39	0.42	0.50	0.42	0.47	0.60	0.40	0.42
FeO	17.75	18.72	16.59	16.39	16.21	17.68	8.54	8.63	7.91	7.47	7.65	9.76	6.09	10.13	8.45	9.33
SrO	0.34	0.49	0.48	0.56	0.96	0.58	0.34	0.44	0.38	0.33	0.40	0.35	0.37	0.33	0.29	0.36
BaO	0.06	0.00	0.00	0.11	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.05	0.01	0.00	0.11
La_2O_3	0.00	0.18	0.18	0.16	0.00	0.00	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	0.14	0.12	0.12	0.02	0.00	0.00	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	41.46	40.84	41.67	41.22	41.16	41.49	45.07	45.87	45.51	45.58	45.91	45.25	45.88	44.91	44.87	44.70
Total	99.17	98.29	99.05	98.01	97.99	99.15	98.31	100.05	99.00	99.00	99.73	99.32	99.05	98.92	97.98	98.20
Formula																
Mg	0.43	0.38	0.48	0.47	0.46	0.44	0.78	0.78	0.80	0.80	0.81	0.74	0.84	0.71	0.76	0.73
Ca	0.99	1.00	0.98	0.99	1.00	0.98	0.97	0.97	0.97	0.98	0.97	0.98	0.97	0.99	0.99	1.00
Mn	0.08	0.07	0.07	0.07	0.08	0.08	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
Fe	0.49	0.53	0.46	0.46	0.45	0.49	0.23	0.23	0.21	0.20	0.20	0.26	0.16	0.28	0.23	0.26
Sr	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-
Ce	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.47	0.42	0.51	0.51	0.50	0.47	0.77	0.77	0.79	0.80	0.80	0.74	0.84	0.72	0.77	0.74

Table A.5.13 Representative analyses of ankerite-dolomite (continued).

Rock type	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX
Sample	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a
	5-ank4	5-ank4	5-ank4	5-ank4	5-ank4	5-ank4	5-ank4	5-ank4	5-ank4
	rim	→	→	→	→	→	→	→	rim
MgO	16.52	15.80	16.16	16.21	16.50	16.49	16.46	16.53	16.53
CaO	28.47	28.10	28.06	28.46	28.47	28.67	28.62	28.28	28.51
MnO	0.38	0.47	0.32	0.34	0.37	0.37	0.39	0.34	0.35
FeO	8.07	8.42	8.15	8.35	8.07	8.15	7.75	7.37	7.87
SrO	0.41	0.47	0.39	0.36	0.43	0.35	0.46	0.38	0.45
BaO	0.00	0.02	0.00	0.00	0.00	0.00	0.04	0.03	0.00
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	45.74	44.95	45.03	45.51	45.71	45.88	45.63	45.14	45.66
Total	99.59	98.22	98.11	99.22	99.54	99.91	99.36	98.07	99.37
Formula									
Mg	0.79	0.77	0.78	0.78	0.79	0.78	0.79	0.80	0.79
Ca	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Mn	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Fe	0.22	0.23	0.22	0.22	0.22	0.22	0.21	0.20	0.21
Sr	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
La	-	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-	-
Na	-	-	-	-	-	-	-	-	-
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.78	0.77	0.78	0.78	0.78	0.78	0.79	0.80	0.79

Table A.5.14 Representative analyses of calcite.

Rock type	S,f	S,f	S,f	S,f	S,f	S,f	S,f	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-56	Ku-98-56
	16-cc2	16-cc2	17-cc1	17-cc1	17-cc1	17-cc2	17-cc2	cc9002	cc9003	cc9003	cc9003	3-cc1	3-cc1
MgO	0.00	0.00	0.51	0.56	0.49	0.80	0.72	0.00	0.00	0.00	0.00	0.20	0.20
CaO	53.02	53.64	50.65	51.20	51.54	51.13	49.89	53.68	52.67	52.03	53.05	52.52	53.03
MnO	1.63	1.79	1.32	1.23	1.52	1.33	1.42	0.05	0.00	0.06	0.08	1.33	1.55
FeO	0.60	0.72	2.35	2.52	2.15	2.60	3.39	0.14	0.00	0.06	0.20	0.77	0.98
SrO	0.59	0.63	0.61	0.60	0.66	0.46	0.57	2.01	2.07	1.94	1.99	1.02	1.13
BaO	0.00	0.02	0.00	0.09	0.04	0.03	0.15	0.00	0.19	0.04	0.00	0.00	0.05
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.52	0.59	0.77	0.59	n.a.	n.a.
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.66	0.71	0.55	0.95	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.12	1.37	1.34	1.75	n.a.	n.a.
CO_2	43.24	43.92	42.83	43.38	43.54	43.62	43.18	41.43	40.85	40.43	41.39	43.17	43.89
Total	99.08	100.72	98.27	99.57	99.94	99.97	99.32	99.61	98.47	97.21	100.00	99.01	100.83
Formula													
Mg	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.01	0.00
Ca	0.96	0.96	0.93	0.93	0.93	0.92	0.91	0.96	0.96	0.96	0.96	0.95	0.95
Mn	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.02	0.02
Fe	0.01	0.01	0.03	0.04	0.03	0.04	0.05	0.00	0.00	0.00	0.00	0.01	0.01
Sr	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.02	0.02	0.02	0.02	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	-	-	-	-	-	-	-	0.01	0.01	0.01	0.01	-	-
La	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	-	-
Ce	-	-	-	-	-	-	-	0.00	0.00	0.00	0.01	-	-
CO_3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Table A.5.14 Representative analyses of calcite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56
	3-cc1	3-cc1	3-cc2	3-cc2	3-cc2	3-cc2	3-cc2	4-cc1	4-cc1	4-cc1	4-cc1	3-cc4	3-cc4	3-cc4
MgO	0.00	0.00	0.07	0.12	0.04	0.10	0.04	0.03	0.15	0.13	0.09	0.05	0.11	0.08
CaO	53.54	53.82	53.70	53.92	52.92	53.02	53.37	53.56	53.15	53.15	52.81	54.57	53.27	54.16
MnO	1.18	1.34	0.96	1.10	1.20	1.39	1.37	1.03	1.24	1.24	1.07	1.22	1.52	1.09
FeO	0.71	0.75	0.65	0.63	0.72	0.88	0.62	0.48	0.77	0.74	0.50	0.52	0.89	0.64
SrO	1.19	1.02	0.99	0.98	1.13	1.11	0.84	0.63	0.82	0.79	0.87	0.50	1.03	0.67
BaO	0.07	0.00	0.00	0.06	0.10	0.00	0.09	0.09	0.00	0.12	0.06	0.06	0.00	0.03
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	43.72	43.96	43.64	43.95	43.28	43.59	43.54	43.30	43.47	43.44	42.91	44.19	43.85	43.94
Total	100.41	100.88	100.01	100.75	99.39	100.08	99.86	99.13	99.60	99.60	98.31	101.10	100.67	100.60
Formula														
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.96	0.96	0.97	0.96	0.96	0.95	0.96	0.97	0.96	0.96	0.97	0.97	0.95	0.97
Mn	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Fe	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sr	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Table A.5.14 Representative analyses of calcite (continued).

Rock type	CB,so	CB,so	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-80	Ku-98-80	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130b	Ku-98-130b
	7-cc3	7-cc3	1-cc1	1-cc1	1-cc1	1-cc3	1-cc3	1-cc3	1-cc2	1-cc2	a-ree15	e-ree9	e-reea
MgO	0.00	0.00	0.00	0.11	0.00	0.02	0.23	0.00	0.16	0.09	0.96	0.00	0.00
CaO	53.53	53.27	54.69	53.14	52.31	51.50	51.03	54.08	54.26	54.36	49.36	49.96	54.46
MnO	0.02	0.00	0.72	0.87	0.72	0.96	0.92	0.69	0.17	0.29	0.62	0.52	0.45
FeO	0.10	0.13	0.61	2.04	1.91	2.22	3.82	1.01	0.35	0.39	2.11	0.56	0.37
SrO	1.62	1.99	0.40	0.51	0.51	0.87	0.92	0.40	0.78	0.73	1.25	0.00	0.21
BaO	0.00	0.00	0.13	0.06	0.00	0.07	0.15	0.02	0.11	0.17	0.14	0.00	0.02
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.20	0.59	0.03
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.68	0.00	0.00
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.94	0.00	0.33
CO_2	42.77	42.73	43.96	43.85	42.89	42.78	43.64	43.65	43.44	43.54	40.26	38.09	40.87
Total	98.03	98.13	100.52	100.59	98.34	98.42	100.72	99.83	99.28	99.56	96.53	89.72	96.74
Formula													
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00
Ca	0.98	0.98	0.98	0.95	0.96	0.94	0.92	0.97	0.98	0.98	0.91	0.97	0.98
Mn	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01
Fe	0.00	0.00	0.01	0.03	0.03	0.03	0.05	0.01	0.00	0.01	0.03	0.01	0.01
Sr	0.02	0.02	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	-	-	-	-	-	-	-	-	-	-	0.00	0.01	0.00
La	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00
Ce	-	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00
CO_3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Table A.5.14 Representative analyses of calcite (continued).

Rock type	L	L	L	L	L	L	L	L	L	L	L	L	UMX	UMX
Sample	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-97-43a	Ku-97-43a
	1-cc1	1-cc1	1-cc1	1-cc2	1-cc2	1-cc2	1-cc3	1-cc3	3-cc1	4-cc1	4-cc1	4-cc1	1-cc1	1-cc1
MgO	0.00	0.00	0.00	0.00	0.08	0.00	1.11	1.10	1.05	1.01	1.10	1.13	0.05	0.04
CaO	54.30	54.46	54.41	54.85	54.07	55.14	51.06	50.67	50.71	50.95	50.71	50.72	54.53	54.53
MnO	0.00	0.04	0.05	0.00	0.10	0.09	0.74	0.84	0.75	0.85	0.77	0.67	0.27	0.07
FeO	0.13	0.09	0.35	0.09	0.32	0.11	1.92	2.01	1.79	1.92	2.11	1.86	1.16	1.11
SrO	1.90	1.64	1.78	1.66	1.66	2.04	1.99	2.10	2.01	2.14	2.16	2.16	0.49	0.42
BaO	0.00	0.11	0.06	0.00	0.06	0.00	0.00	0.10	0.11	0.01	0.07	0.17	0.01	0.00
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	43.50	43.55	43.72	43.81	43.49	44.27	43.78	43.63	43.38	43.70	43.70	43.57	43.94	43.73
Total	99.83	99.89	100.38	100.40	99.76	101.65	100.61	100.44	99.80	100.58	100.62	100.29	100.44	99.89
Formula														
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.00	0.00
Ca	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.91	0.92	0.92	0.91	0.91	0.97	0.98
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Fe	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02
Sr	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO_3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	39.31	1.00	1.00	1.00
Total	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	98.15	2.00	2.00	2.00

Table A.5.14 Representative analyses of calcite (continued).

Rock type	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX
Sample	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a
	1-cc1	1-cc1	1-cc1	1-cc1	1-cc2	1-cc2	1-cc2	1-cc2
MgO	0.00	0.01	0.00	0.00	0.00	0.05	0.00	0.04
CaO	55.11	53.95	54.86	54.56	54.18	53.53	54.30	54.63
MnO	0.28	0.24	0.15	0.17	0.23	0.07	0.17	0.25
FeO	1.01	1.07	0.99	1.14	1.07	0.84	0.82	1.07
SrO	0.54	0.48	0.65	0.38	0.50	0.51	0.44	0.61
BaO	0.03	0.00	0.00	0.01	0.03	0.05	0.02	0.10
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
La_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ce_2O_3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CO_2	44.28	43.36	44.03	43.79	43.54	42.85	43.42	44.01
Total	101.25	99.11	100.68	100.05	99.55	97.90	99.17	100.71
Formula								
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.97
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01
Sr	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	-	-	-	-	-	-	-	-
La	-	-	-	-	-	-	-	-
Ce	-	-	-	-	-	-	-	-
CO_3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Total	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Table A.5.15 Representative analyses of siderite-magnesite.

Rock type	CB,REE	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX
Sample	Ku-98-130a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a
	1-Cc1	5-K1	5-K1	5-K1	5-K1	5-K1	5-K1	5-K1	5-K1	5-K1	5-K1	5-K2	5-K2	5-K2	5-K2	5-K2
	siderite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite	magnesite
	Cc-aggregates	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling	vein filling
MgO	6.29	26.16	25.97	25.61	26.08	25.06	25.22	25.25	24.79	24.50	24.44	26.56	25.55	26.46	25.91	25.45
CaO	1.35	0.22	0.23	0.26	0.24	0.29	0.28	0.29	0.30	0.22	0.23	0.25	0.20	0.22	0.16	0.21
MnO	3.34	0.84	0.97	0.95	0.86	0.95	0.85	0.99	1.00	1.07	0.79	0.79	0.92	0.84	0.75	0.83
FeO	47.84	26.45	27.23	27.88	27.02	28.00	28.08	28.96	28.85	29.20	29.63	26.76	27.49	27.71	27.20	27.93
SrO	0.00	0.08	0.04	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.02	0.00	0.12	0.00	0.04	0.00
BaO	0.02	0.00	0.00	0.00	0.00	0.07	0.03	0.00	0.00	0.03	0.00	0.07	0.04	0.06	0.04	0.00
CO_2	39.31	45.49	45.84	45.84	45.78	45.36	45.53	46.15	45.60	45.48	45.52	46.10	45.53	46.58	45.57	45.58
Total	98.15	99.24	100.30	100.55	100.05	99.73	100.05	101.64	100.54	100.49	100.63	100.53	99.86	101.88	99.67	100.01
Formula																
Mg	0.35	1.26	1.24	1.22	1.24	1.21	1.21	1.19	1.19	1.18	1.17	1.26	1.23	1.24	1.24	1.22
Ca	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Mn	0.11	0.02	0.03	0.03	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02
Fe	1.49	0.71	0.73	0.75	0.72	0.76	0.76	0.77	0.78	0.79	0.80	0.71	0.74	0.73	0.73	0.75
Sr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.19	0.64	0.63	0.62	0.63	0.61	0.62	0.61	0.60	0.60	0.60	0.64	0.62	0.63	0.63	0.62

Table A.5.15 Representative analyses of siderite-magnesite (continued).

Rock type	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX
Sample	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a
	5-K2 magnesite vein filling	5-K3 magnesite vein filling	5-K3 magnesite vein filling	5-K3 magnesite vein filling	6-K1 magnesite matrix	6-K1 magnesite matrix	6-K1 magnesite matrix	6-K1 magnesite matrix	6-K1 magnesite matrix	6-K2 magnesite matrix	6-K2 magnesite matrix	6-K2 magnesite matrix	6-K2 magnesite matrix	6-K2 magnesite matrix	6-K2 magnesite matrix	6-K2 magnesite matrix	6-K2 magnesite matrix
MgO	27.46	27.43	28.72	24.61	25.06	27.51	27.51	28.47	27.78	24.17	25.81	24.89	25.91	25.67	26.19	26.45	26.57
CaO	0.21	0.32	0.22	0.24	0.25	0.19	0.28	0.22	0.22	0.29	0.33	0.34	0.22	0.26	0.22	0.34	0.27
MnO	0.79	0.85	0.88	1.01	0.96	0.68	1.05	0.77	0.81	0.98	0.88	0.94	0.86	0.87	0.76	0.89	0.82
FeO	25.88	25.65	23.70	29.36	28.58	25.51	25.47	23.71	24.83	29.30	27.81	28.73	27.37	28.00	26.60	26.21	25.87
SrO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.00	0.12	0.02	0.00	0.00	0.00	0.00
BaO	0.02	0.00	0.00	0.04	0.00	0.03	0.06	0.06	0.00	0.00	0.00	0.05	0.00	0.06	0.00	0.09	0.03
CO_2	46.50	46.45	46.59	45.69	45.66	46.24	46.53	46.27	46.21	45.19	46.03	45.70	45.77	45.94	45.54	45.78	45.59
Total	100.86	100.71	100.10	100.95	100.51	100.16	100.89	99.50	99.84	99.95	100.86	100.78	100.15	100.80	99.31	99.75	99.14
Formula																	
Mg	1.29	1.29	1.35	1.18	1.20	1.30	1.29	1.34	1.31	1.17	1.22	1.19	1.24	1.22	1.26	1.26	1.27
Ca	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Mn	0.02	0.02	0.02	0.03	0.03	0.02	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02
Fe	0.68	0.68	0.62	0.79	0.77	0.68	0.67	0.63	0.66	0.79	0.74	0.77	0.73	0.75	0.72	0.70	0.70
Sr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO_3	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Total	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
X_{Mg}	0.65	0.66	0.68	0.60	0.61	0.66	0.66	0.68	0.67	0.60	0.62	0.61	0.63	0.62	0.64	0.64	0.65

Table A.5.16 Representative analyses of carbocernaite. / ***Table A.5.17*** Representative analyses of strontianite.

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b
	e-REE1	e-REE1	e-REE1	e-REE1	e-REE1	e-REE1	e-REE1	e-REE1	e-REE1	e-REEa	e-REEa	e-REEa	e-REEa
MgO	0.04	0.10	0.03	0.02	0.00	0.14	0.04	0.03	0.08	0.00	0.00	0.04	0.01
CaO	18.12	17.98	16.39	16.82	15.29	15.91	17.00	18.11	15.26	14.69	15.81	16.23	25.39
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.04	0.00	0.03	0.21
FeO	0.12	0.11	0.06	0.00	0.00	0.03	0.05	0.35	0.05	0.00	0.00	0.23	0.40
SrO	13.63	16.55	17.15	17.79	18.59	16.27	17.88	14.90	15.24	18.74	18.76	18.40	12.86
BaO	1.22	2.18	2.51	2.49	4.40	2.84	2.88	1.85	3.08	2.74	2.44	2.45	2.02
Na_2O	1.53	1.70	1.57	1.35	1.55	1.62	1.65	1.81	1.74	1.26	1.18	2.03	1.66
La_2O_3	12.65	11.23	12.28	11.66	11.05	11.57	10.72	12.02	12.82	11.55	11.08	10.65	8.21
Ce_2O_3	18.16	15.52	15.58	16.40	15.32	17.39	15.10	15.90	18.54	17.05	16.20	15.08	11.83
CO_2	31.93	31.90	31.30	31.71	30.93	31.22	31.43	31.87	31.30	30.78	30.97	31.30	33.51
Total	97.39	97.27	96.85	98.25	97.13	96.99	96.74	96.89	98.10	96.87	96.44	96.43	96.11
Formula (CO_3=6)													
Ca	3.14	3.03	2.85	2.87	2.66	2.79	2.90	3.09	2.72	2.61	2.76	2.79	3.86
Na	0.24	0.26	0.25	0.21	0.24	0.26	0.25	0.28	0.28	0.20	0.19	0.32	0.23
Mg	0.01	0.02	0.01	0.00	0.00	0.03	0.01	0.01	0.02	0.00	0.00	0.01	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.03
Fe	0.02	0.01	0.01	0.00	0.00	0.00	0.01	0.05	0.01	0.00	0.00	0.03	0.05
Sr	1.28	1.51	1.61	1.64	1.75	1.55	1.65	1.38	1.47	1.80	1.77	1.71	1.06
Ba	0.08	0.13	0.16	0.16	0.28	0.18	0.18	0.12	0.20	0.18	0.16	0.15	0.11
La	0.38	0.33	0.37	0.34	0.33	0.35	0.31	0.35	0.39	0.35	0.33	0.32	0.21
Ce	0.54	0.45	0.46	0.48	0.46	0.52	0.44	0.46	0.57	0.52	0.48	0.44	0.31
sum	5.67	5.74	5.71	5.69	5.73	5.69	5.75	5.74	5.66	5.67	5.68	5.78	5.86
CO_3	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Total	11.67	11.74	11.71	11.69	11.73	11.69	11.75	11.74	11.66	11.67	11.68	11.78	11.86

Rock type	CB,REE
Sample	Ku-98-130a
	d-REE14
MgO	0.00
CaO	18.25
MnO	0.09
FeO	0.02
SrO	46.77
BaO	0.01
La_2O_3	0.10
Ce_2O_3	0.64
CO_2	32.51
Total	98.50
Formula (CO_3=1)	
Ca	0.42
Mg	0.00
Mn	0.00
Fe	0.00
Sr	0.58
Ba	0.00
La	0.00
Ce	0.00
sum	1.00
CO_3	1.00
Total	2.00

Table A.5.18 Representative analyses of nepheline.

Rock type	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne
Sample	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a
	4-ne1	4-ne1	4-ne1	4-ne1	4-ne1	2-ne1	2-ne1	2-ne1	2-ne1	1-ne1	1-ne1	1-ne2	2-ne1	2-ne1	2-ne1
	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline
	rim	→	→	→	rim	rim	→	→	→	→	crack	core	rim	→	→
SiO_2	42.62	42.63	42.35	42.92	43.15	39.75	39.11	39.89	39.24	47.95	39.75	41.36	42.76	42.76	42.42
Al_2O_3	33.36	33.55	33.54	33.44	33.60	34.10	33.67	34.71	34.19	31.60	34.54	35.09	34.23	34.13	34.10
MgO	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.03	0.00	0.00	0.00	0.01
CaO	0.02	0.01	0.00	0.00	0.01	0.02	0.02	0.00	0.01	0.05	0.06	4.50	0.00	0.00	0.01
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.04	0.00	0.05	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.01	0.02	0.01
BaO	0.00	0.01	0.00	0.00	0.04	0.06	0.00	0.00	0.00	0.00	0.04	0.00	0.03	0.01	0.00
Na_2O	16.00	15.75	15.65	15.72	16.00	24.52	25.37	25.16	25.05	18.27	24.96	19.16	15.97	15.88	15.93
K_2O	6.76	6.62	6.61	6.42	6.39	0.45	0.02	0.02	0.00	0.26	0.18	0.26	6.83	6.83	7.20
Total	98.80	98.57	98.20	98.52	99.21	98.91	98.19	99.83	98.48	98.12	99.58	100.38	99.84	99.62	99.66
Formula	(O=24)														
Si	8.31	8.31	8.29	8.36	8.35	7.76	7.71	7.71	7.69	9.04	7.71	7.86	8.25	8.26	8.22
Al	7.67	7.71	7.74	7.68	7.67	7.85	7.82	7.91	7.90	7.03	7.89	7.86	7.78	7.77	7.79
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.92	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	6.05	5.96	5.94	5.94	6.00	9.28	9.69	9.43	9.52	6.68	9.39	7.06	5.97	5.95	5.98
K	1.68	1.65	1.65	1.60	1.58	0.11	0.00	0.01	0.00	0.06	0.04	0.06	1.68	1.68	1.78
Total	23.72	23.63	23.63	23.57	23.61	25.01	25.23	25.05	25.12	22.82	25.06	23.77	23.69	23.67	23.77

Table A.5.18 Representative analyses of nepheline (continued).

Rock type	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne
Sample	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a
	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1	2-ne1
	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline	nepheline
	→	→	crack	→	→	→	crack	→	→	→	→	→	→	→	→	→
SiO_2	43.87	43.53	41.58	42.04	42.76	43.04	41.84	43.19	39.61	43.10	42.08	43.29	43.03	42.70	43.10	43.41
Al_2O_3	32.41	33.44	35.01	34.33	33.36	33.82	33.14	33.52	33.60	33.68	34.06	33.46	33.41	33.61	33.48	33.55
MgO	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
CaO	0.58	0.00	3.05	0.07	0.22	0.06	0.91	0.00	4.52	0.05	1.04	0.00	0.11	0.28	0.00	0.00
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.04	0.00	0.01	0.04	0.00	0.00	0.02	0.03	0.03	0.02	0.00	0.00	0.01	0.42	0.07	0.03
BaO	0.03	0.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.07	0.01
Na_2O	16.75	16.12	17.22	15.84	15.63	16.17	16.70	16.26	18.40	16.37	16.71	16.19	16.32	15.06	16.44	16.16
K_2O	5.21	6.15	3.66	7.05	6.33	6.34	5.63	6.36	2.01	6.28	5.47	6.06	6.02	6.40	6.01	6.05
Total	98.88	99.27	100.52	99.39	98.31	99.44	98.24	99.35	98.17	99.50	99.37	99.00	98.93	98.49	99.17	99.18
Formula	(O=24)															
Si	8.49	8.40	7.95	8.16	8.35	8.31	8.21	8.35	7.79	8.32	8.15	8.38	8.35	8.32	8.34	8.38
Al	7.40	7.61	7.89	7.86	7.67	7.70	7.67	7.64	7.79	7.67	7.78	7.64	7.64	7.72	7.64	7.64
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Ca	0.12	0.00	0.63	0.02	0.05	0.01	0.19	0.00	0.95	0.01	0.22	0.00	0.02	0.06	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.01	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	6.29	6.04	6.38	5.97	5.91	6.06	6.35	6.09	7.02	6.13	6.28	6.08	6.14	5.69	6.17	6.05
K	1.29	1.51	0.89	1.75	1.58	1.56	1.41	1.57	0.50	1.55	1.35	1.50	1.49	1.59	1.48	1.49
Total	23.59	23.57	23.74	23.76	23.56	23.65	23.84	23.66	24.07	23.68	23.77	23.59	23.65	23.43	23.66	23.57

Table A.5.18 Representative analyses of nepheline (continued).

Rock type	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	NS	S,ne	S,ne	S,ne	S,ne	S,ne
Sample	Ku-99-15a 2-ne1 nepheline rim	Ku-99-15a 3-ne1 nepheline rim	Ku-99-15a 3-ne1 nepheline →	Ku-99-15a 3-ne1 nepheline →	Ku-99-15a 3-ne1 nepheline →	Ku-99-15a 3-ne1 nepheline →	Ku-99-15a 3-ne1 nepheline →	Ku-99-15a 3-ne1 nepheline crack	Ku-99-15a 3-ne1 nepheline crack	Ku-99-15a 3-ne1 nepheline core	Ku-99-15a 6-ne1 nepheline rim	Ku-99-15a 6-ne1 nepheline →	Ku-99-15a 6-ne1 nepheline crack	Ku-99-15a 6-ne1 nepheline →	Ku-99-15a 6-ne1 nepheline →
SiO_2	43.41	40.52	40.61	40.57	43.72	41.20	40.90	40.20	40.58	43.21	43.32	43.53	40.06	42.45	43.56
Al_2O_3	33.47	35.36	35.58	34.67	32.10	34.15	34.13	33.62	35.64	33.55	33.35	33.82	34.58	33.38	33.24
MgO	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01
CaO	0.00	0.37	3.32	5.45	4.90	0.76	0.78	1.12	5.05	0.19	0.12	0.19	7.07	0.00	0.04
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.00	0.00	0.05	0.01	0.02	0.06	0.00	0.04	0.01	0.02	0.00	0.03	0.03	0.02	0.02
BaO	0.00	0.10	0.00	0.00	0.01	0.05	0.00	0.01	0.00	0.00	0.04	0.00	0.01	0.00	0.00
Na_2O	16.14	24.38	21.25	18.62	17.43	16.02	16.66	19.87	18.20	15.82	15.42	15.28	17.63	15.71	16.08
K_2O	6.06	0.04	0.40	0.25	0.72	6.45	6.52	3.48	1.28	5.93	5.88	6.02	0.21	6.61	6.08
Total	99.09	100.77	101.21	99.57	98.90	98.71	99.01	98.34	100.75	98.75	98.13	98.87	99.58	98.16	99.03
Formula	(O=24)														
Si	8.39	7.73	7.71	7.80	8.39	8.07	8.01	7.91	7.73	8.37	8.43	8.40	7.72	8.31	8.42
Al	7.63	7.96	7.96	7.86	7.26	7.89	7.88	7.80	8.00	7.67	7.65	7.70	7.85	7.71	7.58
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.08	0.68	1.12	1.01	0.16	0.16	0.24	1.03	0.04	0.02	0.04	1.46	0.00	0.01
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	6.05	9.02	7.82	6.94	6.48	6.09	6.33	7.58	6.72	5.95	5.82	5.72	6.58	5.97	6.03
K	1.50	0.01	0.10	0.06	0.17	1.61	1.63	0.87	0.31	1.47	1.46	1.48	0.05	1.65	1.50
Total	23.57	24.81	24.27	23.78	23.31	23.83	24.02	24.41	23.79	23.50	23.38	23.35	23.67	23.64	23.55

Table A.5.18 Representative analyses of nepheline (continued).

Rock type	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne
Sample	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a	Ku-99-15a
	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline →	6-ne1 nepheline rim	3-cane nepheline rim	3-cane nepheline →	3-cane nepheline rim
SiO_2	43.57	43.28	43.48	43.14	43.46	43.44	43.38	43.42	42.38	42.99	43.24	43.20	43.44	40.57	43.72	40.06
Al_2O_3	33.37	33.64	33.57	34.13	33.40	33.27	33.33	33.33	33.38	33.34	33.34	33.48	34.03	34.67	32.10	34.58
MgO	0.00	0.00	0.03	0.02	0.00	0.01	0.00	0.00	0.01	0.02	0.01	0.00	0.02	0.00	0.00	0.00
CaO	0.05	0.03	0.02	1.15	0.01	0.00	0.04	0.03	0.54	0.02	0.05	0.09	0.00	5.45	4.90	7.07
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.00	0.03	0.00	0.24	0.01	0.04	0.06	0.06	0.01	0.05	0.02	0.00	0.03	0.01	0.02	0.03
BaO	0.02	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00
Na_2O	15.80	15.63	16.04	14.91	15.64	15.89	15.98	16.10	16.02	15.76	15.68	16.09	16.08	18.62	17.43	17.63
K_2O	6.08	5.98	6.18	4.87	6.15	6.18	6.09	6.13	5.78	5.96	6.18	5.79	6.06	0.25	0.72	0.21
Total	98.88	98.60	99.32	98.45	98.71	98.82	98.88	99.06	98.15	98.16	98.55	98.66	99.65	99.57	98.89	99.57
Formula	(O=24)															
Si	8.43	8.39	8.39	8.33	8.42	8.42	8.40	8.40	8.29	8.38	8.40	8.38	8.35	7.80	8.39	7.72
Al	7.61	7.69	7.63	7.77	7.63	7.60	7.61	7.60	7.70	7.66	7.64	7.66	7.71	7.86	7.26	7.85
Mg	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
Ca	0.01	0.01	0.00	0.24	0.00	0.00	0.01	0.01	0.11	0.00	0.01	0.02	0.00	1.12	1.01	1.46
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.00	0.00	0.00	0.03	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	5.93	5.88	6.00	5.58	5.88	5.97	6.00	6.04	6.07	5.96	5.91	6.05	5.99	6.94	6.48	6.58
K	1.50	1.48	1.52	1.20	1.52	1.53	1.50	1.51	1.44	1.48	1.53	1.43	1.49	0.06	0.17	0.05
Total	23.48	23.44	23.56	23.16	23.46	23.53	23.54	23.57	23.62	23.51	23.50	23.54	23.54	23.78	23.31	23.67

Table A.5.19 Representative analyses of sodalite.

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-97-15 a-sdl1	Ku-97-15a a-sdl1	Ku-97-15a a-sdl1	Ku-97-15a a-sdl1	Ku-97-15a a-sdl1	Ku-97-15a a-sdl1	Ku-97-15a a-sdl1	Ku-97-15a a-sdl1	Ku-97-15a c-sdl1	Ku-97-15a c-sdl1	Ku-97-15a c-sdl1	Ku-97-15a e-sdl1	Ku-97-15a e-sdl1	Ku-97-15e a-sdl1	Ku-97-15e a-sdl1	Ku-97-15e a-sdl1	Ku-97-15e a-sdl1	Ku-97-15e a-sdl1
SiO_2	38.16	38.17	38.29	38.26	38.16	37.76	38.37	37.97	37.52	38.23	38.02	38.38	38.14	38.20	38.01	37.56	37.99	37.84
Al_2O_3	33.08	32.63	32.68	32.79	33.30	33.03	33.50	33.54	32.68	33.10	32.81	32.89	32.81	33.23	33.05	32.47	32.60	32.47
Fe_2O_3	0.07	0.06	0.12	0.03	0.03	0.02	0.05	0.02	0.00	0.01	0.03	0.08	0.05	0.00	0.03	0.04	0.00	0.00
CaO	0.00	0.01	0.04	0.05	0.03	0.01	0.02	0.00	0.01	0.01	0.04	0.05	0.00	0.01	0.02	0.00	0.00	0.01
Na_2O	24.78	24.54	24.37	24.42	24.43	24.28	23.89	24.22	24.24	23.99	24.35	24.03	24.21	24.59	24.21	24.58	24.17	24.78
K_2O	0.03	0.03	0.05	0.00	0.00	0.06	0.06	0.02	0.00	0.01	0.00	0.05	0.00	0.01	0.02	0.00	0.02	0.02
Cl	7.56	7.44	7.35	7.35	7.50	7.23	7.27	7.29	7.30	7.34	7.17	7.28	7.21	7.43	7.52	7.58	7.46	7.42
F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.05	0.04	0.04	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.07	0.06
Sum	103.68	102.87	102.90	102.89	103.46	102.42	103.18	103.11	101.74	102.69	102.42	102.78	102.42	103.47	102.85	102.22	102.31	102.58
O-Cl,S,F	1.71	1.68	1.66	1.66	1.69	1.71	1.70	1.70	1.65	1.66	1.62	1.67	1.63	1.68	1.71	1.71	1.78	1.76
Total	101.97	101.19	101.24	101.23	101.77	100.71	101.48	101.40	100.09	101.03	100.81	101.11	100.79	101.79	101.14	100.51	100.53	100.82
Formula (O=24)																		
Si	6.00	6.04	6.05	6.04	6.00	5.99	6.02	5.97	6.00	6.03	6.02	6.05	6.03	6.00	6.02	6.01	6.05	6.02
Al	6.14	6.09	6.08	6.10	6.17	6.17	6.19	6.22	6.16	6.16	6.12	6.11	6.12	6.16	6.17	6.12	6.12	6.09
Sum	12.14	12.13	12.13	12.14	12.17	12.16	12.21	12.19	12.15	12.19	12.14	12.17	12.15	12.16	12.18	12.13	12.17	12.11
Fe	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Na	7.56	7.53	7.46	7.47	7.45	7.47	7.26	7.39	7.51	7.34	7.47	7.35	7.43	7.49	7.43	7.63	7.46	7.65
K	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Sum	7.58	7.55	7.49	7.49	7.46	7.48	7.28	7.40	7.52	7.35	7.48	7.38	7.43	7.50	7.44	7.63	7.47	7.65
Cl	2.02	2.00	1.97	1.97	2.00	1.94	1.93	1.94	1.98	1.96	1.92	1.95	1.93	1.98	2.02	2.05	2.02	2.00
F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Sum	2.02	2.00	1.97	1.97	2.00	1.96	1.94	1.96	1.98	1.96	1.92	1.95	1.93	1.98	2.02	2.05	2.04	2.02
Total	21.73	21.67	21.59	21.59	21.63	21.60	21.44	21.55	21.65	21.50	21.54	21.49	21.52	21.63	21.65	21.82	21.68	21.78

Table A.5.19 Representative analyses of sodalite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-97-15e d-sdl1	Ku-97-15e d-sdl1	Ku-97-15e d-sdl1	Ku-97-15e d-sdl1	Ku-97-15e d-sdl1	Ku-97-15e d-sdl1	Ku-97-15e d-sdl1	Ku-97-15e d-sdl1	Ku-97-15e d-sdl1	Ku-97-43a 1-sdl1	Ku-97-43a 1-sdl1	Ku-97-43a 1-sdl1	Ku-98-130a 5-sdl1	Ku-98-130a 5-sdl2	Ku-98-130a 5-sdl2	Ku-98-130a 5-sdl2	Ku-98-130a 5-sdl2	Ku-98-130a 5-sdl2
SiO_2	38.03	38.14	38.07	37.74	38.35	38.07	37.62	38.25	37.67	39.18	37.77	38.73	39.07	39.08	39.13	39.27	38.92	39.25
Al_2O_3	32.63	32.89	32.33	33.20	32.98	33.43	32.21	32.86	32.96	32.87	32.73	32.59	33.96	33.66	33.78	33.74	33.99	33.51
Fe_2O_3	0.00	0.02	0.05	0.03	0.00	0.01	0.03	0.09	0.00	0.00	0.01	0.06	0.02	0.03	0.00	0.05	0.04	0.04
CaO	0.06	0.00	0.02	0.00	0.00	0.01	0.01	0.03	0.00	0.03	0.05	0.07	0.03	0.00	0.03	0.00	0.03	0.05
Na_2O	24.34	24.33	24.29	24.11	24.16	24.23	24.37	24.12	24.06	22.01	22.80	22.22	20.93	21.55	21.16	21.45	22.04	21.29
K_2O	0.01	0.01	0.03	0.00	0.00	0.00	0.02	0.02	0.01	0.04	0.02	0.02	0.04	0.06	0.02	0.05	0.02	0.01
Cl	7.08	7.19	7.23	7.31	7.12	7.13	7.21	7.06	7.17	7.14	7.29	7.24	7.54	7.54	7.49	7.47	7.43	7.31
F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.02	0.00	0.06	0.17	0.00
S	0.12	0.02	0.00	0.02	0.00	0.06	0.00	0.02	0.00	0.04	0.00	0.01	0.01	0.03	0.03	0.01	0.00	0.01
Sum	102.27	102.60	102.02	102.41	102.62	102.93	101.46	102.44	101.87	101.31	100.67	101.13	101.60	101.96	101.63	102.10	102.63	101.46
O-Cl,S,F	1.78	1.66	1.64	1.68	1.61	1.70	1.63	1.62	1.62	1.67	1.65	1.72	1.72	1.75	1.74	1.72	1.75	1.66
Total	100.49	100.94	100.38	100.73	101.02	101.23	99.84	100.82	100.25	99.65	99.02	99.41	99.88	100.21	99.90	100.38	100.88	99.81
Formula (O=24)																		
Si	6.03	6.03	6.06	5.98	6.04	5.99	6.03	6.03	5.99	6.20	6.07	6.18	6.16	6.16	6.17	6.17	6.11	6.19
Al	6.10	6.12	6.06	6.20	6.12	6.19	6.08	6.11	6.18	6.13	6.20	6.13	6.31	6.26	6.28	6.25	6.29	6.22
Sum	12.13	12.15	12.12	12.19	12.16	12.18	12.11	12.14	12.17	12.32	12.26	12.31	12.48	12.42	12.45	12.43	12.40	12.41
Fe	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
Ca	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01
Na	7.49	7.45	7.50	7.41	7.38	7.39	7.57	7.38	7.42	6.75	7.10	6.88	6.40	6.59	6.47	6.54	6.71	6.51
K	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00
Sum	7.50	7.46	7.51	7.41	7.38	7.39	7.58	7.40	7.42	6.76	7.11	6.90	6.42	6.61	6.48	6.56	6.72	6.52
Cl	1.90	1.93	1.95	1.96	1.90	1.90	1.96	1.89	1.93	1.91	1.98	1.96	2.02	2.02	2.00	1.99	1.98	1.95
F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.01	0.00	0.03	0.08	0.00
S	0.04	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Sum	1.94	1.93	1.95	1.97	1.90	1.92	1.96	1.89	1.93	1.92	1.99	2.05	2.02	2.03	2.01	2.02	2.06	1.96
Total	21.57	21.54	21.59	21.57	21.44	21.49	21.65	21.43	21.53	21.01	21.36	21.27	20.91	21.06	20.94	21.00	21.19	20.89

Table A.5.19 Representative analyses of sodalite (continued).

Rock type	CB,REE	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-130a	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-57a
	5-sdl2	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	2-sdl1
SiO_2	38.80	38.88	39.26	39.17	38.82	38.78	38.65	37.51	38.92	39.26	38.62	38.90	39.06	38.65	39.39	39.01	39.20	38.35
Al_2O_3	33.52	33.87	33.95	34.01	33.21	33.55	33.59	32.98	33.59	34.25	34.10	33.35	33.56	33.70	34.05	33.72	33.69	32.84
Fe_2O_3	0.02	0.00	0.00	0.00	0.00	0.00	0.78	0.01	0.01	0.00	0.02	0.00	0.01	0.02	0.02	0.04	0.03	0.03
CaO	0.03	0.05	0.00	0.00	0.02	0.02	0.05	0.00	0.04	0.01	0.02	0.02	0.02	0.04	0.01	0.03	0.04	0.00
Na_2O	21.06	20.70	20.80	21.18	21.59	21.10	21.16	24.82	20.91	20.95	20.68	20.75	20.81	21.15	20.71	20.95	21.03	22.72
K_2O	0.03	0.01	0.01	0.01	0.00	0.00	0.12	0.02	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.03	0.00	0.02
Cl	7.50	7.47	7.33	7.42	7.41	7.59	7.41	7.21	7.54	7.43	7.30	7.27	7.46	7.49	7.55	7.29	7.50	7.38
F	0.01	0.00	0.06	0.18	0.00	0.06	0.00	0.00	0.07	0.00	0.06	0.00	0.00	0.00	0.09	0.00	0.00	0.00
S	0.00	0.00	0.02	0.01	0.02	0.02	0.01	0.02	0.00	0.06	0.01	0.03	0.01	0.06	0.00	0.03	0.03	0.02
Sum	100.97	100.98	101.43	101.98	101.07	101.12	101.79	102.57	101.08	101.97	100.80	100.33	100.94	101.11	101.81	101.10	101.52	101.37
O-Cl,S,F	1.69	1.69	1.71	1.77	1.70	1.77	1.69	1.65	1.73	1.77	1.69	1.68	1.70	1.78	1.74	1.69	1.73	1.69
Total	99.27	99.30	99.72	100.21	99.36	99.35	100.10	100.91	99.35	100.20	99.11	98.65	99.24	99.33	100.07	99.41	99.79	99.68
Formula (O=24)																		
Si	6.17	6.16	6.18	6.17	6.17	6.17	6.11	5.95	6.18	6.16	6.13	6.20	6.19	6.14	6.20	6.17	6.19	6.11
Al	6.28	6.33	6.30	6.31	6.22	6.29	6.25	6.17	6.29	6.33	6.37	6.26	6.27	6.31	6.31	6.28	6.27	6.17
Sum	12.45	12.49	12.49	12.48	12.39	12.46	12.36	12.12	12.47	12.49	12.50	12.45	12.47	12.45	12.51	12.45	12.45	12.28
Fe	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
Na	6.49	6.36	6.35	6.46	6.65	6.51	6.48	7.63	6.44	6.37	6.36	6.41	6.40	6.52	6.32	6.42	6.44	7.02
K	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Sum	6.50	6.37	6.35	6.47	6.66	6.52	6.61	7.64	6.45	6.37	6.37	6.41	6.40	6.53	6.32	6.44	6.45	7.03
Cl	2.02	2.01	1.96	1.98	2.00	2.05	1.98	1.94	2.03	1.97	1.96	1.96	2.00	2.02	2.01	1.95	2.01	1.99
F	0.00	0.00	0.03	0.09	0.00	0.03	0.00	0.00	0.04	0.00	0.03	0.00	0.00	0.00	0.04	0.00	0.00	0.00
S	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.02	0.00	0.01	0.01	0.00
Sum	2.02	2.01	1.99	2.07	2.00	2.08	1.99	1.94	2.07	1.99	1.99	1.97	2.01	2.04	2.06	1.96	2.01	2.00
Total	20.97	20.87	20.83	21.02	21.05	21.06	20.95	21.70	20.99	20.85	20.86	20.84	20.88	21.01	20.89	20.84	20.91	21.31

Table A.5.19 Representative analyses of sodalite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-57a 2-sdl1	Ku-98-57a 2-sdl1	Ku-98-57a 7-sdl1	Ku-98-57a 7-sdl1	Ku-98-57a 7-sdl1	Ku-98-57a 6-sdl1	Ku-98-57a 5-sdl1	Ku-98-57a 3-sdl1	Ku-98-57a 3-sdl1	Ku-98-58a 4-sdl1	Ku-98-58a 4-sdl1	Ku-98-58a 4-sdl1	Ku-98-58a 3-sdl1	Ku-98-58a 3-sdl1	Ku-98-58a 3-sdl1	Ku-98-59b 2-sdl1	Ku-98-59b 2-sdl1	Ku-98-80 1-sdl1
SiO_2	37.64	38.12	38.16	38.02	37.90	37.52	37.94	38.10	38.74	37.94	38.18	38.44	37.94	38.10	38.35	38.94	38.42	38.79
Al_2O_3	32.24	32.21	33.02	32.50	32.36	31.88	32.70	33.24	33.92	33.87	33.18	33.58	33.32	33.28	33.27	33.52	33.65	33.58
Fe_2O_3	0.07	0.01	0.02	0.04	0.00	0.04	0.03	0.09	0.02	0.66	0.41	0.43	0.17	0.11	0.07	0.14	0.20	0.00
CaO	0.02	0.04	0.01	0.01	0.01	0.04	0.03	0.05	0.02	0.04	0.03	0.00	0.03	0.00	0.02	0.03	0.00	0.00
Na_2O	23.97	23.20	23.02	22.84	23.32	23.94	23.06	23.44	21.89	22.68	22.88	22.73	22.82	22.38	22.63	24.90	21.00	21.05
K_2O	0.01	0.01	0.01	0.04	0.01	0.01	0.01	0.01	0.01	0.04	0.05	0.00	0.04	0.04	0.05	0.02	0.04	0.03
Cl	7.55	7.63	7.40	7.24	7.44	7.53	7.49	7.37	7.53	7.40	7.53	7.55	7.36	7.51	7.49	7.23	7.37	7.54
F	0.22	0.00	0.00	0.00	0.12	0.00	0.00	0.13	0.05	0.06	0.00	0.00	0.15	0.08	0.02	0.10	0.00	0.00
S	0.00	0.03	0.02	0.00	0.00	0.00	0.01	0.00	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Sum	101.72	101.27	101.66	100.68	101.16	100.97	101.25	102.42	102.23	102.72	102.25	102.72	101.83	101.52	101.90	104.86	100.69	101.01
O-Cl,S,F	1.80	1.77	1.70	1.63	1.73	1.70	1.70	1.71	1.77	1.74	1.70	1.70	1.72	1.73	1.70	1.67	1.70	1.73
Total	99.93	99.50	99.95	99.05	99.43	99.27	99.55	100.70	100.45	100.98	100.55	101.02	100.10	99.78	100.21	103.19	98.99	99.29
Formula (O=24)																		
Si	6.07	6.13	6.08	6.10	6.10	6.07	6.08	6.04	6.11	5.98	6.05	6.05	6.04	6.08	6.09	6.02	6.12	6.17
Al	6.13	6.10	6.19	6.15	6.14	6.08	6.18	6.21	6.30	6.30	6.20	6.23	6.25	6.26	6.22	6.11	6.32	6.29
Sum	12.19	12.23	12.27	12.25	12.24	12.15	12.26	12.25	12.41	12.28	12.26	12.29	12.30	12.34	12.31	12.13	12.44	12.46
Fe	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.08	0.05	0.05	0.02	0.01	0.01	0.02	0.02	0.00
Ca	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Na	7.49	7.23	7.11	7.11	7.28	7.51	7.16	7.20	6.69	6.94	7.03	6.94	7.05	6.92	6.96	7.47	6.49	6.49
K	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01
Sum	7.51	7.24	7.11	7.12	7.28	7.52	7.17	7.23	6.70	7.03	7.10	6.99	7.08	6.95	6.99	7.49	6.52	6.50
Cl	2.06	2.08	2.00	1.97	2.03	2.06	2.03	1.98	2.01	1.98	2.02	2.01	1.99	2.03	2.01	1.89	1.99	2.03
F	0.11	0.00	0.00	0.00	0.06	0.00	0.00	0.06	0.02	0.03	0.00	0.00	0.08	0.04	0.01	0.05	0.00	0.00
S	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Sum	2.18	2.09	2.00	1.97	2.09	2.06	2.04	2.04	2.04	2.02	2.02	2.01	2.06	2.07	2.02	1.94	2.00	2.04
Total	21.88	21.57	21.38	21.33	21.61	21.74	21.47	21.52	21.15	21.33	21.38	21.30	21.44	21.36	21.32	21.56	20.95	20.99

Table A.5.19 Representative analyses of sodalite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-80 1-sdl1	Ku-98-80 1-sdl1	Ku-98-80 1-sdl1	Ku-98-80 1-sdl1	Ku-98-80 1-sdl1	Ku-98-80 1-sdl1	Ku-98-80 1-sdl1	Ku-98-80 1-sdl1	Ku-98-80 1-sdl1	Ku-98-80 2-sdl1	Ku-98-80 2-sdl1	Ku-98-80 2-sdl1	Ku-98-80 2-sdl1	Ku-98-80 2-sdl1	Ku-98-80 2-sdl1	Ku-98-80 2-sdl1	Ku-98-80 2-sdl1	Ku-98-80 2-sdl1	Ku-98-80 2-sdl1
SiO_2	38.52	38.29	38.12	37.71	38.15	38.72	37.40	37.59	37.66	38.73	39.02	39.05	39.11	39.12	39.04	38.99	39.30	39.35	38.42
Al_2O_3	33.59	33.24	33.50	32.22	33.53	33.34	32.27	32.22	32.51	33.06	34.53	33.74	33.61	33.98	34.29	34.06	33.97	34.60	33.14
Fe_2O_3	0.06	0.00	0.00	0.00	0.03	0.02	0.05	0.03	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03
CaO	0.00	0.01	0.03	0.00	0.00	0.01	0.02	0.02	0.00	0.02	0.01	0.00	0.00	0.01	0.02	0.01	0.01	0.03	0.08
Na_2O	22.39	22.00	23.19	23.73	22.83	21.73	23.98	23.20	23.61	21.65	20.73	21.28	20.91	20.74	20.66	20.53	20.85	21.05	22.12
K_2O	0.01	0.01	0.02	0.01	0.03	0.00	0.03	0.00	0.02	0.03	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.04
Cl	7.66	7.54	7.59	7.66	7.42	7.59	7.60	7.57	7.56	7.63	7.48	7.63	7.25	7.53	7.61	7.57	7.59	7.31	7.69
F	0.09	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.10	0.03	0.07	0.00	0.11	0.00	0.00	0.16	0.13	0.00	0.00
S	0.03	0.01	0.00	0.01	0.02	0.00	0.03	0.03	0.02	0.04	0.01	0.00	0.01	0.01	0.02	0.02	0.00	0.02	0.01
Sum	102.35	101.11	102.46	101.36	102.02	101.41	101.38	100.66	101.51	101.20	101.85	101.72	101.02	101.40	101.66	101.36	101.88	102.37	101.52
O-Cl,S,F	1.80	1.72	1.72	1.75	1.70	1.72	1.76	1.75	1.78	1.79	1.73	1.72	1.69	1.71	1.75	1.80	1.77	1.67	1.75
Total	100.54	99.39	100.74	99.61	100.32	99.70	99.61	98.91	99.73	99.41	100.12	100.00	99.33	99.69	99.91	99.56	100.10	100.70	99.77
Formula (O=24)																			
Si	6.10	6.11	6.04	6.08	6.05	6.15	6.04	6.09	6.06	6.18	6.13	6.17	6.19	6.17	6.15	6.18	6.20	6.13	6.13
Al	6.27	6.26	6.25	6.12	6.26	6.24	6.14	6.15	6.17	6.22	6.39	6.28	6.27	6.32	6.37	6.36	6.31	6.35	6.23
Sum	12.37	12.37	12.29	12.20	12.31	12.40	12.17	12.23	12.23	12.40	12.53	12.45	12.46	12.50	12.52	12.54	12.51	12.48	12.36
Fe	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Na	6.87	6.81	7.12	7.42	7.01	6.69	7.50	7.28	7.37	6.70	6.32	6.52	6.42	6.35	6.31	6.31	6.37	6.36	6.84
K	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Sum	6.88	6.82	7.13	7.42	7.03	6.70	7.52	7.29	7.37	6.71	6.32	6.52	6.42	6.35	6.32	6.31	6.38	6.36	6.87
Cl	2.06	2.04	2.04	2.09	1.99	2.04	2.08	2.08	2.06	2.06	1.99	2.04	1.95	2.01	2.03	2.03	2.03	1.93	2.08
F	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.03	0.00	0.06	0.00	0.00	0.08	0.07	0.00	0.00
S	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Sum	2.11	2.05	2.04	2.10	2.00	2.05	2.09	2.09	2.12	2.09	2.03	2.04	2.00	2.02	2.04	2.12	2.09	1.93	2.08
Total	21.36	21.23	21.46	21.72	21.33	21.14	21.78	21.61	21.73	21.20	20.87	21.01	20.89	20.86	20.88	20.97	20.98	20.78	21.30

Table A.5.19 Representative analyses of sodalite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-05	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8
	3-sdl1	3-sdl1	3-sdl1	3-sdl1	3-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1	1-sdl1
SiO_2	37.47	37.33	37.55	37.31	37.71	38.34	37.92	38.28	38.19	37.94	37.85	38.14	38.07	38.22	38.36	38.22	38.26	38.07
Al_2O_3	32.07	32.34	32.16	32.16	33.10	33.37	33.08	33.13	32.52	32.66	33.12	33.78	33.26	33.07	33.31	32.87	32.91	32.70
Fe_2O_3	0.02	0.00	0.05	0.07	0.01	0.07	0.00	0.09	0.03	0.09	0.05	0.03	0.06	0.06	0.03	0.04	0.00	0.05
CaO	0.03	0.00	0.00	0.01	0.00	0.01	0.04	0.02	0.03	0.03	0.04	0.03	0.02	0.04	0.00	0.04	0.01	0.03
Na_2O	23.09	23.39	22.95	22.82	21.72	22.29	21.95	22.68	22.78	22.78	23.20	22.08	22.49	22.72	22.54	22.39	22.50	22.43
K_2O	0.07	0.04	0.05	0.08	0.06	0.03	0.02	0.04	0.02	0.03	0.03	0.05	0.04	0.03	0.03	0.03	0.04	0.03
Cl	7.19	7.45	7.33	7.22	7.10	7.44	7.36	7.36	7.51	7.47	7.38	7.22	7.17	7.29	7.11	7.28	7.37	7.53
F	0.15	0.16	0.04	0.10	0.06	0.00	0.00	0.00	0.06	0.00	0.09	0.19	0.00	0.00	0.10	0.00	0.00	0.04
S	0.00	0.01	0.00	0.02	0.02	0.02	0.03	0.00	0.02	0.03	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.02
Sum	100.07	100.71	100.12	99.77	99.79	101.57	100.40	101.60	101.16	101.03	101.75	101.52	101.10	101.42	101.48	100.88	101.10	100.91
O-Cl,S,F	1.68	1.76	1.67	1.69	1.66	1.70	1.70	1.66	1.75	1.73	1.70	1.72	1.62	1.64	1.65	1.66	1.67	1.75
Total	98.39	98.95	98.45	98.08	98.13	99.86	98.70	99.94	99.41	99.30	100.05	99.81	99.48	99.77	99.83	99.23	99.43	99.16
Formula (O=24)																		
Si	6.08	6.06	6.09	6.07	6.08	6.09	6.09	6.08	6.13	6.09	6.04	6.06	6.06	6.08	6.08	6.11	6.11	6.12
Al	6.14	6.18	6.15	6.17	6.29	6.25	6.26	6.20	6.15	6.18	6.23	6.32	6.24	6.20	6.23	6.19	6.19	6.19
Sum	12.22	12.24	12.23	12.24	12.36	12.34	12.36	12.29	12.28	12.27	12.26	12.38	12.30	12.28	12.31	12.30	12.30	12.31
Fe	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.01
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00
Na	7.27	7.36	7.22	7.20	6.79	6.87	6.84	6.99	7.09	7.09	7.18	6.80	6.94	7.01	6.93	6.94	6.97	6.99
K	0.01	0.01	0.01	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sum	7.29	7.37	7.23	7.23	6.80	6.88	6.85	7.01	7.10	7.11	7.19	6.82	6.96	7.02	6.94	6.96	6.98	7.01
Cl	1.98	2.05	2.01	1.99	1.94	2.00	2.00	1.98	2.04	2.03	1.99	1.94	1.93	1.96	1.91	1.97	1.99	2.05
F	0.08	0.08	0.02	0.05	0.03	0.00	0.00	0.00	0.03	0.00	0.04	0.09	0.00	0.00	0.05	0.00	0.00	0.02
S	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Sum	2.05	2.13	2.03	2.05	1.98	2.01	2.01	1.98	2.08	2.04	2.04	2.04	1.93	1.96	1.96	1.97	2.00	2.08
Total	21.57	21.74	21.50	21.52	21.14	21.23	21.22	21.28	21.46	21.43	21.50	21.24	21.19	21.27	21.21	21.23	21.28	21.40

Table A.5.19 Representative analyses of sodalite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1
SiO_2	38.19	38.00	38.19	37.63	38.09	37.92	38.35	39.19	38.61	37.94	37.23	38.05	38.24	38.18	37.73	38.04	37.85	37.95
Al_2O_3	33.37	33.01	32.76	32.89	33.26	33.00	33.20	33.13	33.31	33.26	32.55	32.82	32.88	33.05	32.86	33.12	33.00	32.65
Fe_2O_3	0.03	0.08	0.03	0.06	0.00	0.01	0.00	0.04	0.06	0.02	0.00	0.09	0.08	0.00	0.01	0.00	0.00	0.03
CaO	0.03	0.02	0.00	0.02	0.02	0.00	0.00	0.01	0.00	0.03	0.01	0.03	0.02	0.04	0.02	0.04	0.02	0.00
Na_2O	21.90	22.36	22.92	22.77	22.50	22.65	22.43	21.52	21.69	22.06	22.97	22.87	22.06	22.35	22.54	22.37	22.87	22.24
K_2O	0.03	0.01	0.03	0.05	0.03	0.03	0.03	0.03	0.03	0.01	0.02	0.03	0.02	0.02	0.02	0.02	0.03	0.03
Cl	7.27	7.42	7.41	7.45	7.41	7.52	7.39	7.51	7.13	7.52	7.39	7.49	7.46	7.33	7.45	7.28	7.20	7.34
F	0.00	0.00	0.02	0.00	0.00	0.12	0.00	0.07	0.00	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.09
S	0.01	0.01	0.00	0.02	0.00	0.00	0.02	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.02	0.02
Sum	100.83	100.91	101.36	100.87	101.32	101.25	101.42	101.50	100.85	100.94	100.17	101.40	100.76	100.98	100.61	100.87	100.99	100.36
O-Cl,S,F	1.66	1.69	1.68	1.70	1.68	1.75	1.70	1.74	1.61	1.75	1.67	1.72	1.68	1.66	1.68	1.65	1.66	1.73
Total	99.17	99.22	99.68	99.17	99.64	99.51	99.73	99.77	99.24	99.18	98.50	99.68	99.08	99.32	98.93	99.22	99.33	98.63
Formula (O=24)																		
Si	6.09	6.09	6.10	6.05	6.07	6.08	6.10	6.21	6.13	6.09	6.04	6.09	6.13	6.10	6.07	6.08	6.05	6.12
Al	6.27	6.23	6.17	6.23	6.25	6.24	6.22	6.19	6.23	6.29	6.22	6.19	6.21	6.22	6.23	6.24	6.22	6.20
Sum	12.36	12.32	12.27	12.28	12.32	12.32	12.32	12.40	12.36	12.37	12.26	12.27	12.34	12.32	12.30	12.32	12.27	12.32
Fe	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
Na	6.77	6.94	7.10	7.10	6.96	7.04	6.92	6.61	6.68	6.86	7.22	7.09	6.85	6.92	7.03	6.93	7.09	6.95
K	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01
Sum	6.78	6.96	7.11	7.12	6.97	7.05	6.93	6.63	6.69	6.87	7.23	7.11	6.87	6.93	7.04	6.94	7.10	6.96
Cl	1.96	2.01	2.01	2.03	2.00	2.05	1.99	2.02	1.92	2.04	2.03	2.03	2.03	1.98	2.03	1.97	1.95	2.01
F	0.00	0.00	0.01	0.00	0.00	0.06	0.00	0.04	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.04
S	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01
Sum	1.97	2.02	2.02	2.04	2.00	2.10	2.00	2.06	1.92	2.09	2.03	2.04	2.03	1.99	2.03	1.97	1.96	2.06
Total	21.11	21.29	21.39	21.44	21.29	21.48	21.25	21.08	20.97	21.33	21.51	21.43	21.23	21.24	21.37	21.23	21.32	21.34

Table A.5.19 Representative analyses of sodalite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	S,ne	S,ne	S,ne	S,ne	S,ne
Sample	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-SA8 1-sdl1	Ku-99-15a 1-sdl1	Ku-99-15a 1-sdl1	Ku-99-15a 2-sdl1	Ku-99-15a 2-sdl1	Ku-99-15a 2-sdl1
SiO_2	38.06	37.38	37.89	37.31	37.81	37.57	37.57	38.37	38.31	38.42	38.20	37.79	37.70	37.89	38.08	38.13
Al_2O_3	32.73	33.24	33.30	32.43	32.76	33.17	33.17	34.21	33.73	33.68	33.28	33.36	34.04	32.79	32.41	32.79
Fe_2O_3	0.04	0.03	0.06	0.00	0.02	0.03	0.03	0.02	0.05	0.03	0.00	0.02	0.00	0.00	0.00	0.03
CaO	0.00	0.01	0.02	0.01	0.00	0.00	0.00	0.03	0.02	0.01	0.04	0.08	0.02	0.04	0.00	0.03
Na_2O	22.56	22.80	22.21	23.16	23.35	22.71	22.71	21.91	22.31	22.68	22.40	23.75	23.20	23.19	23.28	22.59
K_2O	0.03	0.02	0.02	0.05	0.03	0.00	0.00	0.02	0.02	0.02	0.00	0.01	0.02	0.00	0.02	0.00
Cl	7.32	7.24	7.26	7.32	7.32	7.50	7.50	7.50	7.55	7.25	7.48	7.42	7.34	7.49	7.45	7.42
F	0.00	0.03	0.00	0.13	0.00	0.00	0.00	0.13	0.00	0.10	0.00	0.00	0.04	0.16	0.00	0.00
S	0.00	0.02	0.01	0.02	0.00	0.00	0.00	0.03	0.03	0.00	0.02	0.03	0.00	0.00	0.02	0.02
Sum	100.75	100.77	100.78	100.43	101.30	100.98	100.98	102.21	102.00	102.17	101.42	102.45	102.36	101.56	101.26	101.01
O-Cl,S,F	1.65	1.67	1.66	1.74	1.65	1.69	1.69	1.78	1.74	1.68	1.71	1.71	1.67	1.76	1.72	1.70
Total	99.10	99.09	99.12	98.69	99.65	99.29	99.29	100.42	100.26	100.49	99.70	100.74	100.69	99.80	99.54	99.31
Formula (O=24)																
Si	6.10	6.00	6.06	6.05	6.05	6.03	6.03	6.06	6.07	6.06	6.09	5.99	5.96	6.08	6.10	6.11
Al	6.18	6.29	6.28	6.20	6.18	6.28	6.28	6.37	6.30	6.26	6.25	6.23	6.34	6.20	6.12	6.19
Sum	12.29	12.29	12.33	12.25	12.23	12.31	12.31	12.43	12.36	12.32	12.34	12.23	12.30	12.27	12.23	12.29
Fe	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00
Na	7.01	7.10	6.88	7.28	7.24	7.07	7.07	6.71	6.85	6.94	6.92	7.30	7.11	7.21	7.23	7.01
K	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	7.02	7.11	6.90	7.29	7.25	7.07	7.07	6.72	6.86	6.95	6.93	7.32	7.12	7.22	7.24	7.02
Cl	1.99	1.97	1.97	2.01	1.99	2.04	2.04	2.01	2.03	1.94	2.02	1.99	1.97	2.04	2.02	2.01
F	0.00	0.02	0.00	0.07	0.00	0.00	0.00	0.06	0.00	0.05	0.00	0.00	0.02	0.08	0.00	0.00
S	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00
Sum	1.99	1.99	1.97	2.08	1.99	2.04	2.04	2.08	2.03	1.99	2.02	2.00	1.98	2.12	2.03	2.02
Total	21.30	21.39	21.20	21.62	21.46	21.42	21.42	21.23	21.26	21.26	21.29	21.54	21.40	21.61	21.50	21.33

Table A.5.20 Representative analyses of Ca-Na feldspathoids.

Rock type	CB,l	CB,l	CB,l	CB,l	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	S,ne	S,ne	S,ne
Sample	Ku-98-48 a-pl4 rim	Ku-98-48 a-pl4 core	Ku-98-48 a-pl4 core	Ku-98-48 a-pl4 rim	Ku-98-80 1-ca1 rim	Ku-98-80 1-ca1 →	Ku-98-80 1-ca1 →	Ku-98-80 1-ca1 →	Ku-98-80 1-ca1 →	Ku-98-80 1-ca1 →	Ku-98-80 1-ca1 →	Ku-98-80 1-ca1 →	Ku-98-80 1-ca1 rim	Ku-99-15a 3-ccn1 rim	Ku-99-15a 3-so core	Ku-99-15a 3-so core
SiO_2	42.92	42.86	43.13	42.54	40.78	40.37	39.85	40.33	40.31	40.25	39.91	40.84	38.93	38.17	37.50	37.14
Al_2O_3	33.91	34.74	34.49	34.57	32.89	33.68	33.40	33.56	33.10	33.11	33.43	32.28	32.59	32.88	32.49	32.03
Fe_2O_3	0.03	0.04	0.08	0.02	0.00	0.01	0.05	0.02	0.01	0.00	0.03	0.01	0.01	0.07	0.01	0.00
CaO	5.94	5.70	6.01	5.95	5.88	6.32	6.50	6.12	6.09	6.29	6.16	5.34	6.05	5.48	5.96	6.06
Na_2O	7.58	6.82	7.22	6.96	8.45	8.02	8.47	8.31	7.84	8.13	8.01	10.93	10.92	13.20	13.83	14.77
K_2O	0.06	0.13	0.04	0.03	0.02	0.03	0.03	0.02	0.03	0.00	0.02	0.01	0.00	0.93	0.10	0.05
Cl	0.00	0.00	0.00	0.02	0.00	0.00	0.61	0.01	0.00	0.03	0.02	0.01	0.01	0.02	0.01	0.01
F	0.00	0.07	0.00	0.05	0.09	0.07	0.13	0.00	0.29	0.17	0.02	0.00	0.10	0.00	0.00	0.09
SO_3	0.00	0.00	0.00	0.00	0.50	0.48	0.48	0.52	0.45	0.37	0.43	0.38	0.44	0.00	0.00	0.04
Summe	90.43	90.35	90.95	90.15	88.60	88.98	89.52	88.89	88.11	88.36	88.04	89.80	89.05	90.74	89.90	90.17
O-Cl,F	0.00	0.03	0.00	0.03	0.04	0.03	0.19	0.00	0.12	0.08	0.01	0.00	0.04	0.00	0.00	0.04
Total	90.43	90.33	90.95	90.12	88.56	88.95	89.33	88.89	87.99	88.28	88.02	89.80	89.01	90.74	89.90	90.13
Formula (O=24)																
Si	6.45	6.43	6.44	6.41	6.35	6.26	6.21	6.26	6.31	6.29	6.25	6.32	6.12	5.96	5.91	5.87
Al	6.01	6.14	6.07	6.14	6.03	6.15	6.13	6.14	6.11	6.09	6.17	5.89	6.04	6.05	6.03	5.97
Sum	12.47	12.57	12.51	12.54	12.38	12.41	12.34	12.40	12.42	12.38	12.41	12.21	12.17	12.00	11.94	11.84
Fe^{3+}	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Ca	0.96	0.92	0.96	0.96	0.98	1.05	1.09	1.02	1.02	1.05	1.03	0.89	1.02	0.92	1.01	1.03
Na	2.21	1.98	2.09	2.03	2.55	2.41	2.56	2.50	2.38	2.46	2.43	3.28	3.33	3.99	4.23	4.53
K	0.01	0.03	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.18	0.02	0.01
Sum	3.18	2.93	3.07	3.00	3.53	3.47	3.66	3.53	3.41	3.52	3.47	4.17	4.35	5.10	5.25	5.57
Cl	0.00	0.00	0.00	0.01	0.00	0.00	0.16	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
F	0.00	0.03	0.00	0.02	0.04	0.03	0.06	0.00	0.14	0.08	0.01	0.00	0.05	0.00	0.00	0.04
S	0.00	0.00	0.00	0.00	0.06	0.06	0.06	0.06	0.05	0.04	0.05	0.04	0.05	0.00	0.00	0.00
Total	15.65	15.50	15.57	15.54	15.97	15.93	16.06	15.98	15.88	15.94	15.94	16.42	16.57	17.10	17.20	17.41

Table A.5.21 Representative analyses of analcite.

Rock type	S,f	S,f	S,f	S,f
Sample	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b
	3-anl1	3-anl1	3-anl1	3-anl1
SiO_2	58.48	56.11	58.99	54.68
Al_2O_3	20.48	23.89	23.41	24.83
MgO	0.01	0.02	0.00	0.02
CaO	0.04	0.02	0.03	0.02
MnO	0.00	0.00	0.00	0.00
FeO	0.21	0.08	0.08	0.04
BaO	0.05	0.03	0.03	0.05
Na_2O	13.32	12.88	11.97	16.52
K_2O	0.07	0.02	0.03	0.05
H_2O	7.81	7.55	6.01	5.90
Total	100.46	100.60	100.56	102.12
Formula (O=7)				
Si	2.13	2.04	2.12	1.99
Al	0.88	1.03	0.99	1.07
Mg	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00
Fe	0.01	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00
Na	0.94	0.91	0.84	1.17
K	0.00	0.00	0.00	0.00
OH	1.88	1.82	1.67	1.64
Total	5.84	5.81	5.63	5.87

Table A.5.22 Representative analyses of aegirine.

Rock type	UMX	UMX	UMX	UMX	UMX	UMX	UMX	UMX
Sample	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a	Ku-97-43a
	3-aeg1	3-aeg1	3-aeg1	3-aeg1	3-aeg1	4-aeg1	4-aeg1	4-aeg1
SiO_2	51.33	51.60	51.68	50.99	51.49	52.01	50.87	51.45
TiO_2	0.06	0.07	0.10	0.05	0.02	0.17	0.11	0.08
Al_2O_3	0.69	1.04	0.96	0.56	0.66	0.83	0.81	0.80
Cr_2O_3	0.00	0.03	0.03	0.01	0.01	0.02	0.00	0.05
Fe_2O_3	33.97	33.69	33.49	34.15	33.88	33.45	33.20	33.53
FeO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NiO	0.01	0.00	0.00	0.00	0.03	0.01	0.00	0.00
MnO	0.00	0.00	0.04	0.08	0.08	0.08	0.05	0.03
MgO	0.21	0.23	0.16	0.44	0.19	0.24	0.29	0.50
CaO	0.32	0.34	0.39	0.42	0.45	0.41	0.48	0.43
Na_2O	12.76	12.91	13.33	12.73	13.12	12.92	12.66	12.53
K_2O	0.01	0.00	0.00	0.00	0.00	0.04	0.02	0.00
BaO	0.00	0.01	0.06	0.04	0.00	0.03	0.06	0.01
Total	99.36	99.91	100.25	99.48	99.93	100.20	98.54	99.42
Formula (O=6)								
Si	1.98	1.98	1.98	1.97	1.98	1.99	1.98	1.98
Al^{IV}	0.02	0.02	0.02	0.03	0.02	0.01	0.02	0.02
Sum	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Al^{VI}	0.01	0.03	0.02	0.00	0.01	0.03	0.02	0.02
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{3+}	0.99	0.97	0.97	0.99	0.98	0.96	0.97	0.97
Fe^{2+}	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mg	0.01	0.01	0.01	0.03	0.01	0.01	0.02	0.03
Ca	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02
Na	0.96	0.96	0.99	0.95	0.98	0.96	0.96	0.94
K	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	1.98	1.99	2.01	1.99	2.00	1.99	1.99	1.98
Total	3.98	3.99	4.01	3.99	4.00	3.99	3.99	3.98

Table A.5.23 Representative analyses of white mica.

Rock type	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,qtz	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne
Sample	Ku-98-07 1-ms1	Ku-98-07 1-ms1	Ku-98-07 1-ms1	Ku-98-07 1-ms1	Ku-98-07 1-ms1	Ku-98-07 1-ms1	Ku-98-07 1-ms1	Ku-99-15a 3-ms1	Ku-99-15a 3-ms1	Ku-99-15a 3-ms1	Ku-99-15a 3-ms1	Ku-99-15a 3-ms1	Ku-99-15a 3-ms1	Ku-99-15a 3-ms2	Ku-99-15a 3-ms2	Ku-99-15a 3-ms2	Ku-99-15a 3-ms2	Ku-99-15a 3-ms2	Ku-99-15a 3-ms2
SiO_2	45.07	44.50	44.87	45.18	44.71	45.26	45.04	45.69	45.22	45.58	45.55	45.61	45.05	46.41	46.33	46.37	46.42	46.28	45.83
TiO_2	0.02	0.02	0.02	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.04	0.01	0.00	0.00	0.05
Al_2O_3	38.23	38.77	37.90	37.83	38.31	36.76	38.36	39.27	38.74	38.62	39.20	38.96	39.02	39.86	39.46	39.75	40.15	39.93	39.78
Cr_2O_3	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00
FeO	0.21	0.23	0.21	0.25	0.16	0.76	0.21	0.25	0.85	0.57	0.53	0.54	0.63	0.58	0.61	0.57	0.45	0.46	0.50
MnO	0.01	0.03	0.00	0.00	0.06	0.08	0.02	0.08	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.03	0.00	0.00
MgO	0.21	0.22	0.15	0.29	0.11	0.69	0.26	0.01	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.02	0.02	0.01	0.03
CaO	0.00	0.04	0.04	0.03	0.02	0.05	0.02	0.06	0.03	0.09	0.03	0.00	0.02	0.03	0.02	0.05	0.09	0.09	0.01
Na_2O	0.15	0.12	0.22	0.21	0.25	0.23	0.17	0.19	0.22	0.36	0.22	0.23	0.31	0.26	0.27	0.32	0.32	0.32	0.32
K_2O	11.29	10.94	11.20	10.97	11.19	10.81	11.27	11.23	11.01	10.88	11.21	10.95	11.00	10.94	10.90	10.96	10.75	10.48	10.87
BaO	0.00	0.04	0.01	0.06	0.01	0.00	0.08	0.00	0.03	0.00	0.00	0.01	0.08	0.00	0.07	0.00	0.04	0.02	0.00
F	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cl	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sum	95.22	94.90	94.62	94.84	94.82	94.64	95.46	96.79	96.11	96.10	96.77	96.38	96.12	98.10	97.71	98.06	98.26	97.60	97.40
O=F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O=Cl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	95.22	94.90	94.62	94.84	94.82	94.64	95.46	96.79	96.11	96.10	96.77	96.38	96.12	98.10	97.71	98.06	98.26	97.60	97.40
Formula (O=22)																			
Si	5.99	5.92	6.00	6.02	5.97	6.06	5.97	5.96	5.96	5.99	5.96	5.98	5.93	5.97	5.99	5.97	5.95	5.97	5.94
Al^{IV}	2.01	2.08	2.00	1.98	2.03	1.94	2.03	2.04	2.04	2.01	2.04	2.02	2.07	2.03	2.01	2.03	2.05	2.03	2.06
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	3.97	4.01	3.97	3.96	3.99	3.85	3.97	4.01	3.98	3.98	3.99	4.00	3.99	4.01	4.00	4.00	4.02	4.03	4.01
Cr	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	0.02	0.03	0.02	0.03	0.02	0.08	0.02	0.03	0.09	0.06	0.06	0.06	0.07	0.06	0.07	0.06	0.05	0.05	0.05
Mn	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mg	0.04	0.04	0.03	0.06	0.02	0.14	0.05	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Sum VI	4.04	4.08	4.02	4.04	4.03	4.08	4.05	4.05	4.07	4.04	4.06	4.07	4.07	4.07	4.07	4.07	4.08	4.08	4.08
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
Na	0.04	0.03	0.06	0.05	0.06	0.06	0.04	0.05	0.05	0.09	0.06	0.06	0.08	0.07	0.07	0.08	0.08	0.08	0.08
K	1.91	1.86	1.91	1.86	1.91	1.85	1.91	1.87	1.85	1.83	1.87	1.83	1.85	1.79	1.80	1.80	1.76	1.72	1.80
Sum XII	1.95	1.90	1.97	1.93	1.97	1.91	1.96	1.93	1.91	1.93	1.93	1.89	1.93	1.86	1.87	1.89	1.85	1.82	1.88
Total	13.99	13.98	14.00	13.97	14.01	14.00	14.00	13.97	13.98	13.97	13.99	13.96	14.00	13.94	13.94	13.95	13.93	13.90	13.96
paragonite	1.88	1.63	2.87	2.75	3.26	2.94	2.17	2.52	2.87	4.73	2.91	3.03	4.11	3.53	3.59	4.21	4.23	4.44	4.29
muscovite	96.07	95.90	95.42	94.13	95.56	90.04	95.15	96.91	96.79	94.58	96.79	96.70	95.63	96.27	96.21	95.18	94.95	94.77	95.29
celadonite	2.06	2.21	1.45	2.88	1.05	6.67	2.52	0.14	0.11	0.00	0.11	0.27	0.14	0.00	0.06	0.22	0.18	0.12	0.32
margarite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00

Table A.5.23 Representative analyses of white mica (continued).

Rock type	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,ne	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f
Sample	Ku-99-15a 1-ms1	Ku-99-15a 1-ms1	Ku-99-15a 1-ms1	Ku-99-15a 1-ms1	Ku-99-15a 1-ms1	Ku-99-15a 1-ms1	Ku-99-15a 1-ms1	Ku-99-15a 1-ms1	Ku-99-15a 1-ms1	Ku-98-59b 5-ms1	Ku-98-59b 5-ms1	Ku-98-59b 5-ms1	Ku-98-59b 5-ms1	Ku-98-59b 5-ms1	Ku-98-59b 5-ms1	Ku-98-59b 5-ms1	Ku-98-59b 5-ms1	Ku-98-59b 5-ms1	Ku-98-59b 5-ms1
SiO_2	45.66	45.41	45.65	45.54	45.16	45.50	45.53	45.72	45.49	41.51	41.35	41.64	43.55	40.77	42.53	41.96	42.05	42.22	41.89
TiO_2	0.06	0.00	0.00	0.01	0.03	0.03	0.01	0.04	0.00	0.02	0.02	0.02	0.05	0.05	0.00	0.00	0.00	0.03	0.00
Al_2O_3	39.73	39.72	39.75	39.17	39.39	39.21	39.43	39.81	39.27	35.66	36.77	36.23	36.24	36.15	36.51	36.89	36.88	36.37	36.07
Cr_2O_3	0.01	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.01	0.04
FeO	0.21	0.17	0.06	0.18	0.14	0.26	0.29	0.25	0.27	1.59	0.98	1.44	0.90	0.95	1.01	1.07	1.16	1.32	0.94
MnO	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.04	0.05	0.05	0.00	0.00	0.00	0.00
MgO	0.01	0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.00	0.06	0.05	0.05	0.18	0.16	0.13	0.16	0.03	0.07	0.10
CaO	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.04	0.05	0.05	0.02	0.12	1.44	0.04	0.06	0.02	0.44	0.21
Na_2O	0.15	0.14	0.13	0.19	0.19	0.18	0.16	0.17	0.25	0.11	0.07	0.07	0.69	0.20	0.26	0.16	0.19	0.16	0.20
K_2O	11.29	11.08	11.26	11.19	11.10	11.27	11.24	11.32	11.01	10.68	10.75	10.76	10.23	10.37	10.57	10.65	10.84	10.58	11.00
BaO	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.02	0.00	0.79	0.81	0.65	0.09	0.13	0.01	0.08	0.00	0.03	0.05
F	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.10	0.00	0.14	0.00	0.07	0.00	0.11	0.19	0.11	0.13
Cl	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.02	0.02	0.02
Sum	97.13	96.52	96.86	96.29	96.03	96.49	96.70	97.32	96.34	90.59	90.85	91.02	92.16	90.33	91.18	91.19	91.38	91.33	90.68
O=F	-	-	-	-	-	-	-	-	-	-0.04	0.00	-0.06	0.00	-0.03	0.00	-0.05	-0.08	-0.05	-0.05
O=Cl	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	97.13	96.52	96.86	96.29	96.03	96.49	96.70	97.32	96.34	90.55	90.85	90.95	92.15	90.30	91.18	91.14	91.30	91.28	90.62
Formula (O=22)																			
Si	5.94	5.93	5.94	5.97	5.93	5.96	5.95	5.93	5.96	5.89	5.83	5.87	6.00	5.78	5.93	5.86	5.86	5.89	5.90
Al^{IV}	2.06	2.07	2.06	2.03	2.07	2.04	2.05	2.07	2.04	2.11	2.17	2.13	2.00	2.22	2.07	2.14	2.14	2.11	2.10
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	4.02	4.05	4.05	4.02	4.03	4.01	4.02	4.03	4.02	3.86	3.95	3.89	3.88	3.83	3.93	3.93	3.93	3.88	3.89
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	0.02	0.02	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.19	0.12	0.17	0.10	0.11	0.12	0.12	0.13	0.15	0.11
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.04	0.03	0.03	0.03	0.01	0.01	0.02
Sum VI	4.06	4.07	4.05	4.04	4.06	4.05	4.06	4.06	4.05	4.07	4.08	4.07	4.04	3.98	4.09	4.09	4.07	4.05	4.03
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.02	0.22	0.01	0.01	0.00	0.07	0.03
Na	0.04	0.04	0.03	0.05	0.05	0.05	0.04	0.04	0.06	0.03	0.02	0.02	0.18	0.05	0.07	0.04	0.05	0.04	0.05
K	1.87	1.85	1.87	1.87	1.86	1.88	1.87	1.87	1.84	1.93	1.93	1.93	1.80	1.88	1.88	1.90	1.93	1.88	1.98
Sum XII	1.91	1.88	1.90	1.92	1.91	1.93	1.92	1.92	1.91	2.02	2.01	1.99	2.00	2.16	1.96	1.95	1.98	1.99	2.06
Total	13.97	13.95	13.96	13.96	13.97	13.98	13.97	13.97	13.96	14.08	14.08	14.06	14.04	14.14	14.04	14.05	14.05	14.05	14.09
paragonite	1.92	1.90	1.78	2.53	2.49	2.36	2.17	2.22	3.29	1.57	0.97	0.90	9.07	2.46	3.49	2.17	2.62	2.19	2.56
muscovite	97.95	98.09	98.15	97.41	97.37	97.41	97.83	97.69	96.42	97.43	98.16	98.45	88.25	85.95	94.88	95.72	96.91	93.86	94.91
celadonite	0.12	0.00	0.07	0.00	0.05	0.22	0.00	0.00	0.01	0.63	0.48	0.48	1.84	1.56	1.33	1.66	0.29	0.69	1.01
margarite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.10	0.00	0.00	0.00	0.03	0.02

Table A.5.23 Representative analyses of white mica (continued).

Rock type	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f
Sample	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b
	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1
SiO_2	42.43	41.50	42.73	42.17	42.35	41.87	42.16	42.51	41.41	43.35	41.66	42.22	42.17	41.53	41.82	41.28	41.52	41.94	41.80	41.61
TiO_2	0.00	0.02	0.06	0.02	0.04	0.00	0.00	0.01	0.01	0.11	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.03	0.00	0.00
Al_2O_3	36.56	36.70	36.78	36.57	37.24	37.07	36.93	37.31	37.07	35.45	37.02	36.78	36.95	37.00	37.86	37.05	37.65	36.57	37.01	37.50
Cr_2O_3	0.00	0.00	0.02	0.00	0.02	0.02	0.00	0.00	0.02	0.00	0.03	0.00	0.02	0.04	0.00	0.00	0.00	0.00	0.04	0.02
FeO	1.31	1.10	1.15	0.88	0.88	0.88	0.85	0.89	1.45	1.05	0.86	0.84	0.96	1.02	0.84	0.90	0.81	1.02	0.97	0.90
MnO	0.03	0.08	0.03	0.04	0.03	0.04	0.04	0.01	0.00	0.02	0.04	0.00	0.02	0.03	0.01	0.02	0.00	0.05	0.00	0.02
MgO	0.06	0.03	0.06	0.08	0.11	0.01	0.00	0.00	0.22	0.06	0.01	0.01	0.02	0.08	0.03	0.02	0.04	0.02	0.05	0.00
CaO	0.01	0.00	0.00	0.09	0.01	0.00	0.03	0.00	0.02	0.13	0.04	0.04	0.07	0.00	0.00	0.04	0.00	0.01	0.00	0.00
Na_2O	0.23	0.22	0.25	0.31	0.21	0.18	0.20	0.21	0.20	1.08	0.30	0.27	0.30	0.21	0.17	0.18	0.22	0.24	0.22	0.22
K_2O	10.98	11.08	10.87	10.92	11.07	11.01	11.18	11.02	10.78	10.47	10.26	10.54	10.79	11.02	11.04	10.93	10.89	11.19	11.02	11.01
BaO	0.02	0.06	0.00	0.00	0.03	0.00	0.00	0.00	0.06	0.02	0.03	0.03	0.06	0.00	0.00	0.01	0.05	0.00	0.05	0.03
F	0.05	0.10	0.13	0.00	0.21	0.14	0.00	0.00	0.22	0.06	0.10	0.30	0.10	0.18	0.16	0.00	0.18	0.13	0.02	0.26
Cl	0.02	0.00	0.02	0.05	0.00	0.02	0.02	0.01	0.00	0.02	0.05	0.04	0.04	0.01	0.00	0.01	0.00	0.00	0.00	0.01
Sum	91.72	90.92	92.10	91.13	92.18	91.26	91.40	91.99	91.46	91.81	90.39	91.09	91.52	91.10	91.95	90.44	91.39	91.20	91.16	91.57
O=F	-0.02	-0.04	-0.05	0.00	-0.09	-0.06	0.00	0.00	-0.09	-0.03	-0.04	-0.13	-0.04	-0.07	-0.07	0.00	-0.07	-0.05	-0.01	-0.11
O=Cl	-0.01	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	91.70	90.88	92.04	91.12	92.09	91.20	91.39	91.99	91.36	91.78	90.33	90.95	91.47	91.02	91.88	90.44	91.31	91.15	91.16	91.46
Formula (O=22)																				
Si	5.91	5.84	5.91	5.90	5.85	5.85	5.88	5.88	5.79	6.02	5.85	5.89	5.87	5.82	5.79	5.82	5.79	5.87	5.85	5.79
Al^{IV}	2.09	2.16	2.09	2.10	2.15	2.15	2.12	2.12	2.21	1.98	2.15	2.11	2.13	2.18	2.21	2.18	2.21	2.13	2.15	2.21
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	3.90	3.92	3.91	3.93	3.92	3.95	3.95	3.97	3.89	3.82	3.98	3.93	3.93	3.93	3.97	3.98	3.97	3.91	3.95	3.95
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	0.15	0.13	0.13	0.10	0.10	0.10	0.10	0.10	0.17	0.12	0.10	0.10	0.11	0.12	0.10	0.11	0.09	0.12	0.11	0.10
Mn	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Mg	0.01	0.01	0.01	0.02	0.02	0.00	0.00	0.00	0.05	0.01	0.00	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.00
Sum VI	4.07	4.07	4.06	4.05	4.06	4.06	4.06	4.07	4.11	3.96	4.09	4.04	4.06	4.07	4.08	4.09	4.08	4.04	4.08	4.06
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Na	0.06	0.06	0.07	0.08	0.06	0.05	0.05	0.06	0.06	0.29	0.08	0.07	0.08	0.06	0.04	0.05	0.06	0.06	0.06	0.06
K	1.95	1.99	1.92	1.95	1.95	1.96	1.99	1.94	1.92	1.85	1.84	1.87	1.92	1.97	1.95	1.97	1.94	2.00	1.97	1.96
Sum XII	2.01	2.05	1.98	2.04	2.01	2.01	2.05	2.00	1.98	2.16	1.93	1.95	2.01	2.03	2.00	2.02	2.00	2.06	2.03	2.02
Total	14.09	14.12	14.05	14.10	14.07	14.07	14.10	14.08	14.10	14.13	14.02	13.99	14.07	14.10	14.08	14.11	14.08	14.11	14.11	14.08
paragonite	3.10	2.95	3.31	4.11	2.78	2.47	2.60	2.87	2.73	13.31	4.25	3.76	4.05	2.85	2.21	2.38	2.92	3.10	2.97	2.88
muscovite	96.22	96.76	96.07	94.51	96.09	97.44	97.18	97.09	94.89	85.23	95.32	95.86	95.24	96.39	97.47	97.14	96.69	96.69	96.57	97.12
celadonite	0.62	0.30	0.62	0.76	1.08	0.08	0.00	0.04	2.22	0.59	0.10	0.09	0.21	0.77	0.32	0.21	0.37	0.16	0.46	0.00
margarite	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A.5.23 Representative analyses of white mica (continued).

Rock type	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,f	CB,l	CB,l
Sample	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-59b	Ku-98-14	Ku-98-14
	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	5-ms1	1-ms1	1-ms1
SiO_2	42.08	41.49	41.50	41.14	40.95	41.73	41.15	42.11	42.35	41.84	40.98	41.53	40.85	41.62	42.14	41.70	41.56	42.42	43.02
TiO_2	0.01	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.06	0.00	0.05	0.00	0.00	0.00	0.03	0.04
Al_2O_3	36.34	36.55	36.65	37.28	37.47	36.85	37.72	38.15	37.76	36.77	37.64	36.72	37.67	36.63	37.20	36.99	36.41	38.50	39.02
Cr_2O_3	0.04	0.02	0.01	0.03	0.08	0.00	0.06	0.01	0.01	0.00	0.00	0.00	0.00	0.05	0.08	0.00	0.03	0.00	0.00
FeO	0.96	0.97	0.96	0.82	0.79	1.07	0.81	0.91	0.72	0.96	0.84	0.90	0.96	0.94	0.80	0.83	1.15	0.60	0.53
MnO	0.00	0.05	0.10	0.00	0.05	0.00	0.00	0.01	0.09	0.00	0.03	0.00	0.00	0.02	0.04	0.04	0.00	0.00	0.01
MgO	0.16	0.11	0.04	0.02	0.03	0.15	0.01	0.23	0.03	0.04	0.00	0.02	0.03	0.01	0.05	0.00	0.01	0.16	0.11
CaO	0.10	0.05	0.00	0.01	0.02	0.03	0.04	0.04	0.04	0.07	0.00	0.04	0.05	0.01	0.00	0.02	0.03	0.45	0.01
Na_2O	0.56	0.24	0.29	0.34	0.32	0.24	0.16	0.27	0.19	0.33	0.22	0.27	0.25	0.27	0.19	0.22	0.32	3.90	4.44
K_2O	10.30	10.58	11.13	11.04	10.94	10.82	10.75	10.81	10.75	10.87	11.00	11.06	11.00	11.12	11.04	11.22	10.91	4.70	4.34
BaO	0.04	0.02	0.03	0.00	0.03	0.07	0.05	0.12	0.13	0.00	0.00	0.02	0.00	0.00	0.00	0.09	0.00	1.81	1.68
F	0.05	0.05	0.21	0.00	0.26	0.05	0.10	0.25	0.06	0.34	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.11	0.03
Cl	0.07	0.01	0.00	0.00	0.00	0.01	0.03	0.04	0.00	0.07	0.03	0.04	0.01	0.04	0.00	0.02	0.07	0.01	0.01
Sum	90.74	90.20	91.02	90.70	90.94	91.02	90.88	92.95	92.18	91.32	90.75	90.65	91.18	90.75	91.53	91.14	90.53	92.68	93.26
O=F	-0.02	-0.02	-0.09	0.00	-0.11	-0.02	-0.04	-0.11	-0.03	-0.14	0.00	0.00	-0.14	0.00	0.00	0.00	0.00	-0.05	-0.01
O=Cl	-0.02	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	-0.01	-0.01	-0.01	0.00	-0.01	0.00	0.00	-0.02	0.00	0.00
Total	90.70	90.18	90.93	90.70	90.83	91.00	90.84	92.83	92.15	91.17	90.74	90.64	91.04	90.74	91.53	91.14	90.51	92.63	93.25
Formula (O=22)																			
Si	5.90	5.86	5.83	5.79	5.75	5.85	5.77	5.77	5.84	5.84	5.76	5.85	5.72	5.86	5.86	5.84	5.87	5.77	5.79
Al^{IV}	2.10	2.14	2.17	2.21	2.25	2.15	2.23	2.23	2.16	2.16	2.24	2.15	2.28	2.14	2.14	2.16	2.13	2.23	2.21
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	3.91	3.94	3.90	3.97	3.95	3.93	4.00	3.94	3.98	3.90	4.00	3.94	3.94	3.93	3.96	3.95	3.92	3.94	3.98
Cr	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	0.11	0.11	0.11	0.10	0.09	0.13	0.10	0.10	0.08	0.11	0.10	0.11	0.11	0.11	0.09	0.10	0.14	0.07	0.06
Mn	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mg	0.03	0.02	0.01	0.00	0.01	0.03	0.00	0.05	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.03	0.02
Sum VI	4.06	4.09	4.05	4.08	4.06	4.09	4.10	4.09	4.09	4.02	4.10	4.06	4.06	4.06	4.08	4.06	4.07	4.04	4.07
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.09
Ca	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.07	0.00
Na	0.15	0.06	0.08	0.09	0.09	0.07	0.04	0.07	0.05	0.09	0.06	0.07	0.07	0.07	0.05	0.06	0.09	1.03	1.16
K	1.84	1.91	2.00	1.98	1.96	1.93	1.92	1.89	1.89	1.94	1.97	1.99	1.97	2.00	1.96	2.01	1.96	0.82	0.75
Sum XII	2.01	1.98	2.08	2.08	2.05	2.01	1.97	1.97	1.95	2.04	2.03	2.07	2.04	2.07	2.01	2.07	2.06	2.00	1.99
Total	14.07	14.07	14.12	14.15	14.11	14.10	14.07	14.07	14.04	14.06	14.13	14.12	14.11	14.13	14.09	14.13	14.12	14.04	14.06
paragonite	7.42	3.23	3.80	4.48	4.20	3.23	2.18	3.55	2.64	4.41	2.99	3.50	3.32	3.50	2.57	2.94	4.20	52.95	60.09
muscovite	90.20	95.21	95.75	95.28	95.30	95.02	97.45	93.87	96.82	94.63	97.00	96.04	96.02	96.35	96.93	96.94	95.51	42.02	38.67
celadonite	1.67	1.16	0.44	0.19	0.34	1.57	0.10	2.29	0.27	0.45	0.01	0.16	0.30	0.11	0.46	0.00	0.07	1.67	1.16
margarite	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00

Table A.5.23 Representative analyses of white mica (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-58a	Ku-98-58a	Ku-98-58a	Ku-98-58a	Ku-98-58a	Ku-98-58a	Ku-98-58a	Ku-98-131	Ku-98-131	Ku-98-131
	1-ms1	1-ms1	1-ms1	1-ms1	3-ms1	3-ms1	3-ms2	3-ms2	3-ms2	4-ms1	4-ms1	4-ms1	4-ms2	4-ms2	3-ms1	3-ms1	2-ms1	2-ms1	2-ms1
SiO_2	42.11	42.24	42.47	42.92	45.04	45.23	45.13	45.25	44.70	45.11	44.57	44.79	44.61	44.04	44.16	44.24	45.22	45.73	45.24
TiO_2	0.07	0.03	0.05	0.03	0.08	0.05	0.05	0.02	0.04	0.01	0.06	0.10	0.02	0.04	0.09	0.09	0.04	0.03	0.02
Al_2O_3	39.27	39.37	39.32	39.30	36.61	36.76	36.80	37.68	37.14	37.00	36.50	36.95	36.76	35.89	35.87	36.45	37.80	38.90	38.98
Cr_2O_3	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.03	0.02	0.01	0.00	0.00	0.04	0.00	0.00	0.01	0.01	0.00	0.00
FeO	0.60	0.42	0.66	0.51	2.32	2.82	2.69	2.15	2.39	2.17	2.06	2.14	2.23	2.74	2.32	2.05	1.49	1.01	0.80
MnO	0.01	0.00	0.05	0.00	0.00	0.00	0.00	0.03	0.02	0.10	0.03	0.01	0.07	0.02	0.00	0.00	0.00	0.05	0.00
MgO	0.18	0.13	0.10	0.10	0.21	0.29	0.47	0.14	0.27	0.19	0.18	0.21	0.21	0.29	0.33	0.25	0.18	0.05	0.06
CaO	0.06	0.06	0.03	0.04	0.13	0.10	0.06	0.09	0.09	0.01	0.03	0.00	0.02	0.00	0.01	0.01	0.01	0.03	0.01
Na_2O	4.46	5.38	4.55	5.20	0.62	0.73	0.80	0.74	1.08	1.32	1.14	1.17	1.04	0.91	0.87	1.01	0.22	0.15	0.14
K_2O	3.97	2.79	3.91	3.22	10.61	10.22	10.39	10.23	9.65	9.66	9.80	9.64	9.83	10.10	9.99	9.83	10.87	11.19	11.15
BaO	2.01	1.20	1.88	1.25	0.10	0.06	0.03	0.05	0.04	0.01	0.02	0.02	0.07	0.05	0.00	0.07	0.77	0.37	0.60
F	0.12	0.29	0.00	0.03	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cl	0.04	0.03	0.00	0.02	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sum	92.93	91.99	93.04	92.60	95.77	96.27	96.42	96.41	95.45	95.59	94.37	95.05	94.91	94.07	93.65	94.01	96.60	97.49	97.00
O=F	-0.05	-0.12	0.00	-0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O=Cl	-0.01	-0.01	0.00	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	92.87	91.86	93.04	92.59	95.77	96.27	96.42	96.41	95.45	95.59	94.37	95.05	94.91	94.07	93.65	94.01	96.60	97.49	97.00
Formula (O=22)																			
Si	5.70	5.71	5.73	5.77	6.01	6.01	5.99	5.98	5.96	6.00	6.01	5.99	5.99	5.99	6.01	5.99	5.98	5.96	5.94
Al^{IV}	2.30	2.29	2.27	2.23	1.99	1.99	2.01	2.02	2.04	2.00	1.99	2.01	2.01	2.01	1.99	2.01	2.02	2.04	2.06
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	3.97	3.98	3.99	4.00	3.77	3.76	3.74	3.84	3.81	3.81	3.81	3.82	3.81	3.75	3.77	3.81	3.87	3.94	3.96
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00
Fe^{2+}	0.07	0.05	0.07	0.06	0.26	0.31	0.30	0.24	0.27	0.24	0.23	0.24	0.25	0.31	0.26	0.23	0.16	0.11	0.09
Mn	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00
Mg	0.04	0.03	0.02	0.02	0.04	0.06	0.09	0.03	0.05	0.04	0.04	0.04	0.04	0.06	0.07	0.05	0.04	0.01	0.01
Sum VI	4.08	4.07	4.10	4.08	4.09	4.14	4.14	4.12	4.13	4.10	4.09	4.11	4.11	4.13	4.11	4.10	4.08	4.07	4.07
Ba	0.11	0.06	0.10	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.03
Ca	0.01	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	1.17	1.41	1.19	1.36	0.16	0.19	0.20	0.19	0.28	0.34	0.30	0.30	0.27	0.24	0.23	0.27	0.06	0.04	0.04
K	0.69	0.48	0.67	0.55	1.81	1.73	1.76	1.72	1.64	1.64	1.68	1.65	1.68	1.75	1.73	1.70	1.83	1.86	1.87
Sum XII	1.97	1.97	1.97	1.98	1.99	1.93	1.97	1.93	1.94	1.98	1.99	1.95	1.96	1.99	1.97	1.97	1.93	1.92	1.93
Total	14.05	14.03	14.07	14.06	14.08	14.07	14.11	14.04	14.07	14.08	14.08	14.06	14.08	14.12	14.08	14.07	14.01	13.99	14.00
paragonite	61.60	73.19	63.12	70.13	7.91	9.38	9.91	9.72	14.05	16.85	14.78	15.27	13.56	11.65	11.30	13.17	2.86	1.98	1.85
muscovite	36.12	25.01	35.64	28.53	89.10	87.00	85.15	88.26	82.56	81.23	83.27	82.60	84.17	85.51	85.32	84.27	95.20	97.32	97.46
celadonite	1.86	1.33	1.03	1.07	2.04	2.92	4.54	1.39	2.72	1.82	1.77	2.13	2.13	2.84	3.33	2.48	1.87	0.47	0.61
margarite	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A.5.23 Representative analyses of white mica (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131
	2-ms1	2-ms1	2-ms1	2-ms1	2-ms1	2-ms1	2-ms2	2-ms2	2-ms2	2-ms2	2-ms2	2-ms2
SiO_2	45.93	45.94	45.65	44.98	45.07	45.69	45.62	45.73	44.91	45.11	45.91	46.26
TiO_2	0.00	0.04	0.00	0.01	0.03	0.00	0.00	0.00	0.02	0.00	0.02	0.00
Al_2O_3	39.67	39.47	39.49	38.52	38.46	39.31	39.54	39.80	39.11	38.70	39.38	38.88
Cr_2O_3	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.02	0.00	0.01
FeO	0.63	0.41	0.50	0.66	0.60	0.60	0.29	0.22	0.52	0.95	0.77	0.55
MnO	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.02	0.01	0.00
MgO	0.04	0.03	0.05	0.02	0.06	0.05	0.03	0.01	0.07	0.13	0.02	0.15
CaO	0.01	0.01	0.05	0.04	0.00	0.04	0.01	0.04	0.00	0.00	0.00	0.00
Na_2O	0.12	0.13	0.21	0.31	0.33	0.29	0.41	0.39	0.37	0.28	0.13	0.07
K_2O	11.27	11.15	11.01	10.34	10.77	10.71	10.83	10.68	10.63	10.90	11.27	11.35
BaO	0.28	0.24	0.38	0.56	0.68	0.73	0.77	0.86	1.29	1.17	0.46	0.24
F	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cl	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sum	97.99	97.42	97.34	95.44	96.02	97.41	97.49	97.78	96.92	97.28	97.96	97.51
O=F	-	-	-	-	-	-	-	-	-	-	-	-
O=Cl	-	-	-	-	-	-	-	-	-	-	-	-
Total	97.99	97.42	97.34	95.44	96.02	97.41	97.49	97.78	96.92	97.28	97.96	97.51
Formula (O=22)												
Si	5.94	5.96	5.94	5.97	5.96	5.95	5.94	5.93	5.91	5.93	5.95	6.01
Al^{IV}	2.06	2.04	2.06	2.03	2.04	2.05	2.06	2.07	2.09	2.07	2.05	1.99
Sum T	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Al^{VI}	3.99	4.00	4.00	3.99	3.96	3.99	4.00	4.01	3.98	3.93	3.97	3.96
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe^{2+}	0.07	0.04	0.05	0.07	0.07	0.07	0.03	0.02	0.06	0.10	0.08	0.06
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mg	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.03	0.00	0.03
Sum VI	4.07	4.06	4.06	4.07	4.05	4.06	4.04	4.05	4.05	4.06	4.06	4.05
Ba	0.01	0.01	0.02	0.03	0.04	0.04	0.04	0.04	0.07	0.06	0.02	0.01
Ca	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Na	0.03	0.03	0.05	0.08	0.08	0.07	0.10	0.10	0.10	0.07	0.03	0.02
K	1.86	1.85	1.83	1.75	1.82	1.78	1.80	1.77	1.78	1.83	1.87	1.88
Sum XII	1.91	1.89	1.91	1.86	1.94	1.89	1.94	1.91	1.95	1.96	1.92	1.91
Total	13.98	13.95	13.97	13.93	13.98	13.96	13.98	13.96	13.99	14.02	13.98	13.96
paragonite	1.57	1.77	2.73	4.34	4.37	3.90	5.37	5.22	5.03	3.73	1.67	0.97
muscovite	97.96	97.87	96.33	95.16	94.98	95.30	94.29	94.35	94.26	94.94	98.09	97.52
celadonite	0.38	0.28	0.55	0.22	0.63	0.52	0.27	0.14	0.72	1.32	0.23	1.52
margarite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table A.5.24 Representative analyses of apatite.

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14
	2-ap1	2-ap1	2-ap1	2-ap2	2-ap2	2-ap2	2-ap3	2-ap3	2-ap3	2-ap3	2-ap3	2-ap3	2-ap3	2-ap3
	rim	→	rim	rim	core	rim	rim	→	→	→	→	→	→	core
P_2O_5	41.08	41.09	41.44	41.73	41.44	41.58	41.82	41.45	41.61	41.22	41.22	41.84	41.67	41.64
SiO_2	0.03	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.03	0.04	0.06	0.05	0.00	0.04
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	52.18	51.85	50.90	51.19	51.97	51.40	51.97	51.94	51.52	51.93	51.55	51.62	51.20	51.76
MnO	0.16	0.06	0.11	0.08	0.01	0.12	0.09	0.06	0.00	0.12	0.06	0.03	0.03	0.01
FeO	0.23	0.12	0.00	0.05	0.04	0.09	0.20	0.13	0.04	0.05	0.05	0.05	0.05	0.00
SrO	2.17	2.46	2.35	1.88	1.88	2.04	1.73	1.85	1.83	1.73	1.82	1.85	1.68	1.84
BaO	0.02	0.02	0.00	0.00	0.00	0.06	0.01	0.00	0.05	0.00	0.07	0.09	0.05	0.05
Na_2O	0.44	0.42	0.69	0.60	0.54	0.76	0.55	0.59	0.60	0.59	0.50	0.55	0.65	0.64
H_2O	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00
F	3.89	4.18	3.53	4.13	3.49	3.71	4.42	3.20	4.26	4.26	3.61	3.74	4.05	4.00
Cl	0.02	0.02	0.00	0.00	0.00	0.00	0.01	0.03	0.02	0.03	0.00	0.03	0.00	0.02
Total	100.23	100.21	99.02	99.65	99.40	99.76	100.82	99.40	99.93	99.96	98.94	99.85	99.38	99.98
O-F	1.64	1.76	1.49	1.74	1.47	1.56	1.86	1.35	1.79	1.80	1.52	1.58	1.70	1.68
O-Cl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00
Total	98.59	98.45	97.53	97.91	97.93	98.20	98.96	98.05	98.14	98.16	97.42	98.27	97.68	98.30
Formula (O=25)														
P	6.00	6.02	6.07	6.09	6.05	6.06	6.06	6.04	6.07	6.03	6.05	6.08	6.09	6.06
Si	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	9.64	9.61	9.44	9.46	9.59	9.48	9.53	9.58	9.52	9.61	9.57	9.49	9.47	9.54
Mn	0.02	0.01	0.02	0.01	0.00	0.02	0.01	0.01	0.00	0.02	0.01	0.00	0.00	0.00
Fe	0.03	0.02	0.00	0.01	0.01	0.01	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.00
Sr	0.22	0.25	0.24	0.19	0.19	0.20	0.17	0.18	0.18	0.17	0.18	0.18	0.17	0.18
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Na	0.15	0.14	0.23	0.20	0.18	0.25	0.18	0.20	0.20	0.20	0.17	0.18	0.22	0.21
F	2.12	2.28	1.93	2.25	1.90	2.02	2.39	1.74	2.32	2.33	1.98	2.03	2.21	2.17
Cl	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00
Total	18.20	18.34	17.93	18.21	17.92	18.05	18.39	17.79	18.31	18.38	17.98	18.00	18.18	18.19

Table A.5.24 Representative analyses of apatite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48
	2-ap3	2-ap3	2-ap3	2-ap3	3-ap1	3-ap1	3-ap1	6-ap1	6-ap1	6-ap1	a-ap1	a-ap1	a-ap1	a-ap1
	→	→	→	rim	rim	core	rim	rim	core	rim	rim	→	→	→
P_2O_5	41.11	41.50	41.93	41.06	41.56	41.68	41.00	41.68	41.37	41.78	43.23	42.41	42.93	42.64
SiO_2	0.00	0.03	0.02	0.22	0.02	0.00	0.00	0.02	0.04	0.00	0.00	0.03	0.00	0.12
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	51.73	51.34	51.55	52.20	51.16	50.34	51.79	51.75	51.72	52.09	53.63	53.03	53.07	53.06
MnO	0.15	0.04	0.03	0.03	0.08	0.00	0.04	0.08	0.03	0.06	0.00	0.00	0.06	0.05
FeO	0.03	0.04	0.03	0.11	0.00	0.03	0.00	0.05	0.08	0.00	0.10	0.06	0.00	0.02
SrO	1.90	1.73	1.86	1.91	1.96	1.88	1.94	2.29	1.81	1.80	1.29	1.29	1.36	1.26
BaO	0.00	0.02	0.07	0.00	0.00	0.06	0.00	0.02	0.00	0.04	0.03	0.00	0.00	0.07
Na_2O	0.62	0.61	0.73	0.53	0.75	0.76	0.48	0.71	0.66	0.60	0.58	0.76	0.65	0.74
H_2O	0.10	0.05	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06
F	3.31	3.41	3.55	4.16	3.50	4.14	3.85	4.33	4.78	4.63	3.65	3.61	3.49	3.47
Cl	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.03	0.05	0.00	0.02	0.03	0.05	0.05
Total	98.94	98.79	99.77	100.22	99.03	98.88	99.12	100.95	100.55	101.01	102.53	101.22	101.67	101.55
O-F	1.39	1.44	1.50	1.75	1.47	1.74	1.62	1.82	2.01	1.95	1.54	1.52	1.47	1.46
O-Cl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01
Total	97.55	97.35	98.27	98.47	97.56	97.14	97.49	99.12	98.52	99.06	100.99	99.70	100.19	100.08
Formula (O=25)														
P	6.03	6.08	6.08	5.99	6.08	6.12	6.03	6.05	6.04	6.06	6.08	6.06	6.09	6.06
Si	0.00	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	9.60	9.51	9.47	9.64	9.47	9.36	9.64	9.50	9.56	9.56	9.55	9.59	9.53	9.55
Mn	0.02	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01
Fe	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.00
Sr	0.19	0.17	0.19	0.19	0.20	0.19	0.20	0.23	0.18	0.18	0.12	0.13	0.13	0.12
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.21	0.20	0.24	0.18	0.25	0.26	0.16	0.24	0.22	0.20	0.19	0.25	0.21	0.24
F	1.82	1.86	1.92	2.27	1.91	2.27	2.12	2.35	2.61	2.51	1.92	1.93	1.85	1.84
Cl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.02	0.01
Total	17.87	17.85	17.92	18.33	17.92	18.21	18.15	18.40	18.66	18.52	17.89	17.97	17.83	17.86

Table A.5.24 Representative analyses of apatite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-48
	a-ap1	a-ap1	a-ap1	a-ap1	a-ap1	a-ap1	a-ap1	a-ap1	a-ap1	a-ap1	a-ap1	a-ap2	a-ap2	a-ap2
	→	→	→	core	→	→	→	→	→	→	rim	rim	core	rim
P_2O_5	42.30	42.72	42.80	43.19	42.83	42.38	42.15	42.80	42.61	42.98	42.26	42.56	42.46	42.79
SiO_2	0.05	0.06	0.09	0.03	0.05	0.01	0.07	0.00	0.00	0.01	0.08	0.03	0.07	0.02
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	52.82	52.75	53.29	53.52	53.24	52.97	52.75	53.69	53.41	53.15	52.72	52.87	52.85	52.94
MnO	0.00	0.00	0.08	0.01	0.07	0.00	0.01	0.14	0.02	0.08	0.00	0.01	0.00	0.05
FeO	0.07	0.13	0.02	0.00	0.11	0.02	0.03	0.00	0.12	0.04	0.00	0.06	0.03	0.00
SrO	1.31	1.15	1.21	1.14	1.25	1.15	1.21	1.17	1.22	1.25	1.26	1.27	1.14	1.31
BaO	0.04	0.00	0.00	0.00	0.00	0.00	0.09	0.02	0.01	0.00	0.00	0.01	0.05	0.04
Na_2O	0.80	0.75	0.65	0.61	0.63	0.56	0.70	0.79	0.58	0.56	0.70	0.66	0.62	0.62
H_2O	0.27	0.35	0.25	0.19	0.60	0.02	0.00	0.10	0.21	0.16	0.25	0.20	0.15	0.26
F	3.03	2.91	3.09	3.25	2.40	3.54	3.72	3.45	3.19	3.30	3.04	3.18	3.26	3.06
Cl	0.04	0.00	0.06	0.02	0.03	0.02	0.10	0.00	0.01	0.00	0.08	0.02	0.05	0.05
Total	100.72	100.83	101.54	101.96	101.20	100.65	100.82	102.15	101.38	101.54	100.40	100.87	100.68	101.14
O-F	1.28	1.22	1.30	1.37	1.01	1.49	1.57	1.45	1.34	1.39	1.28	1.34	1.37	1.29
O-Cl	0.01	0.00	0.01	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.01	0.01
Total	99.44	99.61	100.22	100.58	100.18	99.16	99.23	100.70	100.03	100.15	99.10	99.52	99.30	99.84
Formula (O=25)														
P	6.06	6.09	6.07	6.09	6.07	6.07	6.06	6.05	6.06	6.09	6.06	6.08	6.07	6.09
Si	0.01	0.01	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	9.57	9.51	9.56	9.55	9.55	9.61	9.59	9.61	9.61	9.54	9.57	9.55	9.57	9.53
Mn	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.01
Fe	0.01	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.00
Sr	0.13	0.11	0.12	0.11	0.12	0.11	0.12	0.11	0.12	0.12	0.12	0.12	0.11	0.13
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Na	0.26	0.24	0.21	0.20	0.20	0.18	0.23	0.25	0.19	0.18	0.23	0.22	0.20	0.20
F	1.62	1.55	1.64	1.71	1.27	1.89	2.00	1.82	1.70	1.75	1.63	1.70	1.74	1.63
Cl	0.01	0.00	0.02	0.01	0.01	0.01	0.03	0.00	0.00	0.00	0.02	0.00	0.02	0.01
Total	17.67	17.53	17.64	17.68	17.27	17.88	18.04	17.87	17.70	17.70	17.66	17.69	17.74	17.61

Table A.5.24 Representative analyses of apatite (continued).

Rock type	CB,l	CB,l	CB,l	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-48	Ku-98-48	Ku-98-48	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131
	a-ap3	a-ap3	a-ap3	6-2-ap1	6-2-ap1	6-2-ap1	6-2-ap2	6-2-ap2	6-2-ap2	6-2-ap3	6-2-ap3	6-2-ap3	6-2-ap3	6-2-ap3
	rim	core	rim	rim	core	rim	rim	core	rim	rim	→	→	→	→
P_2O_5	41.73	42.33	41.58	42.42	42.56	42.20	42.13	42.90	42.98	43.09	42.87	42.98	42.74	42.35
SiO_2	0.03	0.03	0.00	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.05	0.00
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	53.36	53.82	52.35	53.53	52.76	52.73	53.37	53.53	53.87	53.38	53.60	53.18	53.72	53.33
MnO	0.04	0.00	0.03	0.02	0.06	0.08	0.00	0.05	0.04	0.01	0.00	0.02	0.05	0.00
FeO	0.07	0.00	0.00	0.09	0.05	0.09	0.14	0.06	0.05	0.08	0.12	0.19	0.19	0.14
SrO	1.20	1.31	1.20	1.36	1.36	1.30	1.29	1.33	1.29	1.25	1.30	1.37	1.33	1.38
BaO	0.02	0.00	0.00	0.00	0.03	0.10	0.08	0.01	0.01	0.00	0.03	0.01	0.04	0.08
Na_2O	0.59	0.63	0.72	0.45	0.62	0.54	0.54	0.54	0.43	0.44	0.46	0.49	0.64	0.63
H_2O	0.03	0.17	0.00	0.07	0.00	0.38	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.27
F	3.51	3.21	4.30	3.46	4.34	2.82	3.46	3.71	3.60	4.78	4.13	4.09	4.04	3.04
Cl	0.02	0.11	0.01	0.03	0.01	0.00	0.00	0.00	0.03	0.03	0.01	0.01	0.00	0.02
Total	100.60	101.61	100.19	101.43	101.86	100.23	101.07	102.12	102.31	103.05	102.54	102.35	102.79	101.25
O-F	1.48	1.35	1.81	1.46	1.83	1.19	1.46	1.56	1.52	2.01	1.74	1.72	1.70	1.28
O-Cl	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
Total	99.12	100.24	98.37	99.97	100.03	99.05	99.61	100.56	100.78	101.03	100.79	100.62	101.09	99.96
Formula (O=25)														
P	6.01	6.03	6.05	6.05	6.08	6.06	6.03	6.07	6.07	6.10	6.07	6.09	6.04	6.04
Si	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	9.73	9.70	9.64	9.66	9.53	9.59	9.67	9.59	9.63	9.56	9.60	9.53	9.61	9.63
Mn	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00
Fe	0.01	0.00	0.00	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.03	0.03	0.02
Sr	0.12	0.13	0.12	0.13	0.13	0.13	0.13	0.13	0.12	0.12	0.13	0.13	0.13	0.13
Ba	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Na	0.19	0.21	0.24	0.15	0.20	0.18	0.18	0.17	0.14	0.14	0.15	0.16	0.21	0.21
F	1.89	1.71	2.34	1.84	2.31	1.51	1.85	1.96	1.90	2.52	2.19	2.16	2.13	1.62
Cl	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01
Total	17.97	17.80	18.39	17.85	18.29	17.51	17.89	17.94	17.88	18.46	18.16	18.11	18.17	17.66

Table A.5.24 Representative analyses of apatite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131	Ku-98-131
	6-2-ap3	6-2-ap3	6-2-ap4	6-2-ap4	6-2-ap4	6-2-ap4	6-2-ap4	6-2-ap4	6-2-ap4	6-2-ap4	6-2-ap5	6-2-ap5	6-2-ap5	6-2-ap5
	→	rim	rim	→	→	→	→	→	→	rim	rim	→	→	rim
P_2O_5	42.95	42.85	43.46	43.30	43.09	42.66	43.15	43.05	43.09	42.70	42.69	43.05	43.06	42.68
SiO_2	0.00	0.00	0.04	0.07	0.00	0.03	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	53.73	53.39	53.76	53.93	52.26	52.89	53.27	52.84	52.87	51.68	53.08	52.88	52.99	53.20
MnO	0.00	0.04	0.03	0.01	0.00	0.12	0.05	0.04	0.00	0.06	0.06	0.00	0.06	0.04
FeO	0.12	0.18	0.18	0.17	0.26	0.12	0.25	0.15	0.21	0.20	0.25	0.13	0.18	0.21
SrO	1.26	1.34	1.28	1.29	1.71	1.50	1.50	1.46	1.51	1.54	1.59	1.55	1.54	1.47
BaO	0.07	0.00	0.08	0.03	0.00	0.00	0.06	0.04	0.00	0.05	0.12	0.00	0.00	0.03
Na_2O	0.57	0.52	0.59	0.53	0.66	0.67	0.62	0.60	0.66	0.95	0.72	0.64	0.59	0.66
H_2O	0.42	0.18	0.66	0.82	0.22	0.53	0.98	0.22	0.44	0.00	0.04	0.36	0.14	0.29
F	2.78	3.27	2.34	2.01	3.18	2.54	1.67	3.17	2.74	3.74	3.54	2.89	3.35	3.03
Cl	0.02	0.01	0.02	0.00	0.00	0.01	0.00	0.02	0.01	0.11	0.03	0.03	0.02	0.03
Total	101.92	101.77	102.44	102.14	101.37	101.06	101.53	101.58	101.53	101.03	102.11	101.52	101.92	101.62
O-F	1.17	1.38	0.98	0.85	1.34	1.07	0.70	1.33	1.15	1.57	1.49	1.22	1.41	1.27
O-Cl	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.01	0.00	0.01
Total	100.74	100.39	101.45	101.29	100.03	99.99	100.83	100.24	100.38	99.43	100.61	100.30	100.50	100.34
Formula (O=25)														
P	6.06	6.07	6.08	6.07	6.12	6.07	6.08	6.10	6.10	6.12	6.06	6.10	6.09	6.06
Si	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	9.60	9.58	9.53	9.57	9.39	9.53	9.50	9.48	9.47	9.37	9.53	9.48	9.49	9.56
Mn	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01
Fe	0.02	0.02	0.02	0.02	0.04	0.02	0.03	0.02	0.03	0.03	0.04	0.02	0.03	0.03
Sr	0.12	0.13	0.12	0.12	0.17	0.15	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.14
Ba	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Na	0.18	0.17	0.19	0.17	0.21	0.22	0.20	0.19	0.21	0.31	0.23	0.21	0.19	0.21
F	1.47	1.73	1.22	1.05	1.69	1.35	0.88	1.68	1.45	2.00	1.88	1.53	1.77	1.61
Cl	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.01	0.01	0.01
Total	17.47	17.71	17.19	17.02	17.61	17.35	16.86	17.63	17.41	18.01	17.91	17.49	17.73	17.63

Table A.5.24 Representative analyses of apatite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8
	2-ap1	2-ap1	2-ap1	2-ap1	2-ap1	2-ap1	2-ap1	2-ap1	2-ap1	2-ap1	2-ap1	2-ap1	2-ap2	2-ap2	2-ap2
	rim	→	→	→	→	→	core	→	→	→	→	rim	rim	core	rim
P_2O_5	41.05	40.79	41.71	40.67	41.06	42.03	41.57	42.16	41.50	42.16	41.30	41.11	41.35	42.02	40.91
SiO_2	0.28	0.00	0.00	0.00	0.00	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	52.52	52.87	52.92	52.97	53.01	52.21	52.79	52.58	52.40	52.43	51.90	52.80	53.01	53.47	53.18
MnO	0.03	0.04	0.01	0.14	0.08	0.09	0.02	0.06	0.02	0.04	0.02	0.05	0.03	0.02	0.01
FeO	0.13	0.14	0.04	0.01	0.01	0.05	0.10	0.08	0.03	0.01	0.04	0.01	0.00	0.05	0.02
SrO	1.77	1.93	1.99	1.93	2.00	2.00	1.84	2.05	1.87	1.96	2.39	1.97	1.90	1.81	2.03
BaO	0.01	0.00	0.06	0.05	0.01	0.05	0.03	0.08	0.03	0.00	0.00	0.02	0.00	0.01	0.09
Na_2O	0.55	0.58	0.48	0.46	0.54	0.59	0.52	0.63	0.72	0.66	0.60	0.56	0.53	0.42	0.52
H_2O	1.04	0.83	1.03	0.63	0.98	0.98	0.82	0.65	0.35	0.83	0.45	0.89	0.27	0.61	0.40
F	1.42	1.82	1.48	2.23	1.56	1.58	1.88	2.25	2.82	1.90	2.61	1.72	3.01	2.35	2.72
Cl	0.00	0.05	0.00	0.01	0.00	0.01	0.04	0.02	0.02	0.01	0.01	0.02	0.01	0.02	0.00
Total	98.80	99.04	99.71	99.11	99.25	99.62	99.61	100.58	99.77	99.99	99.33	99.13	100.11	100.77	99.89
O-F	0.60	0.76	0.62	0.94	0.66	0.67	0.79	0.95	1.19	0.80	1.10	0.72	1.27	0.99	1.15
O-Cl	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total	98.20	98.27	99.09	98.16	98.59	98.95	98.80	99.63	98.58	99.19	98.23	98.40	98.85	99.77	98.74
Formula (O=25)															
P	5.98	5.96	6.02	5.96	5.97	6.06	6.02	6.05	6.02	6.06	6.03	5.99	6.00	6.02	5.96
Si	0.05	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	9.67	9.78	9.66	9.82	9.76	9.52	9.67	9.55	9.63	9.54	9.59	9.73	9.73	9.69	9.80
Mn	0.00	0.01	0.00	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Fe	0.02	0.02	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
Sr	0.18	0.19	0.20	0.19	0.20	0.20	0.18	0.20	0.19	0.19	0.24	0.20	0.19	0.18	0.20
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Na	0.18	0.19	0.16	0.16	0.18	0.19	0.17	0.21	0.24	0.22	0.20	0.19	0.18	0.14	0.17
F	0.77	0.99	0.80	1.22	0.85	0.85	1.02	1.21	1.53	1.02	1.42	0.93	1.63	1.26	1.48
Cl	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00
Total	16.85	17.16	16.85	17.37	16.98	16.86	17.09	17.24	17.62	17.04	17.49	17.05	17.72	17.30	17.63

Table A.5.24 Representative analyses of apatite (continued).

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8	Ku-99-SA8
	3-ap1	3-ap1	3-ap1	4-ap1	4-ap1	4-ap1	4-ap1	4-ap1	4-ap1	4-ap1	4-ap1
	rim	core	rim	rim	→	→	→	→	→	→	rim
P_2O_5	41.68	42.59	42.12	42.14	42.45	42.52	42.60	41.70	42.02	42.59	41.84
SiO_2	0.00	0.04	0.00	0.01	0.04	0.08	0.05	0.06	0.01	0.00	0.02
MgO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CaO	52.84	53.20	53.22	52.63	52.55	52.50	52.98	52.23	52.12	52.10	52.80
MnO	0.05	0.06	0.10	0.07	0.06	0.05	0.07	0.11	0.03	0.00	0.07
FeO	0.54	0.05	0.10	0.33	0.28	0.36	0.38	0.23	0.31	0.27	0.28
SrO	1.65	1.76	1.79	1.93	2.01	1.86	1.90	1.98	1.84	1.97	1.85
BaO	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.09	0.03	0.02	0.00
Na_2O	0.50	0.48	0.41	0.55	0.53	0.61	0.53	0.56	0.47	0.56	0.52
H_2O	0.77	0.63	0.80	0.47	0.45	0.53	0.23	0.79	0.67	0.89	0.61
F	2.00	2.34	1.97	2.64	2.70	2.51	3.15	1.96	2.20	1.78	2.33
Cl	0.03	0.03	0.01	0.00	0.00	0.05	0.02	0.00	0.01	0.02	0.01
Total	100.05	101.17	100.51	100.76	101.05	101.06	101.89	99.72	99.72	100.19	100.32
O-F	0.84	0.98	0.83	1.11	1.14	1.06	1.33	0.83	0.92	0.75	0.98
O-Cl	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total	99.20	100.18	99.68	99.65	99.91	99.99	100.56	98.89	98.79	99.44	99.34
Formula (O=25)											
P	6.01	6.06	6.03	6.04	6.06	6.06	6.05	6.03	6.07	6.10	6.02
Si	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ca	9.64	9.58	9.65	9.55	9.50	9.48	9.52	9.56	9.52	9.44	9.62
Mn	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.00	0.00	0.01
Fe	0.08	0.01	0.01	0.05	0.04	0.05	0.05	0.03	0.04	0.04	0.04
Sr	0.16	0.17	0.18	0.19	0.20	0.18	0.18	0.20	0.18	0.19	0.18
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Na	0.16	0.16	0.13	0.18	0.17	0.20	0.17	0.19	0.16	0.18	0.17
F	1.08	1.24	1.06	1.41	1.44	1.34	1.67	1.06	1.18	0.95	1.25
Cl	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Total	17.15	17.23	17.08	17.43	17.43	17.34	17.68	17.10	17.17	16.90	17.30

Table A.5.25 Representative analyses of pyrochlore.

Rock type	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV
Sample	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04
	a-pcla	a-pcla	a-pcla	a-pcla	a-pcla	a-pcla	a-pcla	a-pcla	c-pcl4	c-pcl4	c-pcl4	c-pcl4	c-pcl4	c-pcl4	c-pcl4
	rim	→	→	→	→	→	→	rim	rim	→	→	→	→	→	→
Nb_2O_5	70.73	71.84	71.08	70.41	71.45	69.70	70.17	69.59	68.77	68.25	68.41	70.15	70.00	70.20	68.11
SiO_2	0.21	0.00	0.00	0.00	0.00	0.01	0.00	0.29	0.49	0.72	0.28	0.00	0.00	0.00	1.59
TiO_2	1.76	1.94	1.85	2.02	2.06	2.12	2.31	1.93	1.83	1.90	1.52	1.53	1.80	1.65	1.59
Fe_2O_3	0.30	0.09	0.10	0.11	0.14	0.03	0.17	0.46	0.38	0.27	0.16	0.00	0.05	0.02	0.08
Ce_2O_3	2.07	1.88	1.60	1.33	1.50	1.70	1.92	2.30	1.83	1.45	1.41	1.31	1.18	1.07	1.13
CaO	12.22	13.27	13.32	13.70	13.73	13.47	12.99	12.23	11.49	11.68	12.83	13.76	13.87	13.68	11.54
SrO	1.66	1.72	1.61	1.66	1.22	1.55	1.81	1.55	1.93	2.24	1.82	1.38	1.13	1.38	0.85
BaO	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.26	1.03	0.99	0.71	0.00	0.00	0.06	0.77
Na_2O	7.34	7.63	7.23	7.52	7.41	7.28	7.49	7.50	6.82	6.54	6.54	7.70	7.18	7.40	7.14
F	3.69	1.72	3.11	3.45	2.54	4.13	3.27	3.64	5.72	5.68	6.52	4.68	4.77	4.39	6.97
Total	99.98	100.08	99.89	100.20	100.07	99.99	100.13	99.75	100.30	99.71	100.20	100.50	99.98	99.84	99.75
Formula (Nb+Si+Ti=2)															
Nb	1.91	1.91	1.92	1.91	1.91	1.90	1.90	1.90	1.89	1.87	1.91	1.93	1.92	1.92	1.83
Si	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.04	0.02	0.00	0.00	0.00	0.09
Ti	0.08	0.09	0.08	0.09	0.09	0.10	0.10	0.09	0.08	0.09	0.07	0.07	0.08	0.08	0.07
sum B-site	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
(A)															
Fe^{3+}	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Ce	0.05	0.04	0.03	0.03	0.03	0.04	0.04	0.05	0.04	0.03	0.03	0.03	0.03	0.02	0.02
Ca	0.78	0.84	0.85	0.88	0.87	0.87	0.83	0.79	0.75	0.76	0.85	0.90	0.90	0.89	0.74
Sr	0.06	0.06	0.06	0.06	0.04	0.05	0.06	0.05	0.07	0.08	0.07	0.05	0.04	0.05	0.03
Ba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.00	0.00	0.00	0.02
Na	0.85	0.87	0.84	0.87	0.85	0.85	0.87	0.88	0.80	0.77	0.78	0.91	0.84	0.87	0.82
sum A-site	1.75	1.81	1.78	1.85	1.80	1.82	1.81	1.80	1.70	1.67	1.76	1.88	1.81	1.83	1.64
Total	3.75	3.81	3.78	3.85	3.80	3.82	3.81	3.80	3.70	3.67	3.76	3.88	3.81	3.83	3.64
charge	12.61	12.71	12.69	12.76	12.70	12.72	12.70	12.68	12.54	12.49	12.68	12.82	12.73	12.75	12.31

Table A.5.25 Representative analyses of pyrochlore (continued).

Rock type	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV
Sample	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04
	c-pcl4 →	c-pcl4 →	c-pcl4 →	c-pcl4 →	c-pcl4 →	c-pcl4 →	c-pcl4 →	c-pcl4 →	c-pcl4 →	c-pcl4 →	c-pcl4 rim	b-pcl2 rim	b-pcl2 →	b-pcl2 →	b-pcl2 rim
Nb_2O_5	69.24	67.57	71.46	69.85	69.73	70.26	69.53	69.85	70.32	69.40	69.49	69.05	70.48	68.97	71.36
SiO_2	1.22	1.39	0.12	0.30	0.00	0.00	0.01	0.00	0.07	0.84	2.78	0.54	0.28	0.00	0.00
TiO_2	1.70	1.91	1.75	1.69	2.08	2.12	1.80	1.48	1.60	1.44	1.61	1.62	1.76	1.97	1.78
Fe_2O_3	0.10	0.08	0.00	0.10	0.00	0.00	0.11	0.09	0.29	0.85	0.55	0.55	0.12	0.06	0.02
Ce_2O_3	1.31	1.20	1.12	0.95	1.44	1.48	1.18	1.17	1.37	1.51	2.35	1.81	1.27	1.32	1.41
CaO	12.21	11.97	13.92	13.49	14.25	13.67	13.53	13.45	13.37	11.79	11.44	12.23	13.29	13.68	12.96
SrO	0.96	0.87	1.10	1.14	1.29	1.37	1.14	1.13	1.10	1.15	1.12	1.46	1.33	1.55	1.49
BaO	0.71	0.70	0.00	0.07	0.00	0.00	0.00	0.00	0.11	0.58	0.09	0.40	0.37	0.00	0.04
Na_2O	6.97	7.24	7.62	7.49	7.37	7.51	7.30	7.46	7.33	6.90	7.98	7.28	7.35	7.13	7.51
F	5.63	7.97	3.21	4.76	3.86	3.64	5.47	5.83	4.83	6.12	2.78	5.74	3.75	5.24	3.99
Total	100.05	100.89	100.30	99.83	100.03	100.04	100.06	100.45	100.39	100.56	100.18	100.66	100.01	99.91	100.55
Formula (Nb+Si+Ti=2)															
Nb	1.85	1.83	1.92	1.91	1.91	1.90	1.92	1.93	1.92	1.88	1.77	1.89	1.90	1.91	1.92
Si	0.07	0.08	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.05	0.16	0.03	0.02	0.00	0.00
Ti	0.08	0.09	0.08	0.08	0.09	0.10	0.08	0.07	0.07	0.06	0.07	0.07	0.08	0.09	0.08
sum B-site	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
(A)															
Fe^{3+}	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.04	0.02	0.03	0.01	0.00	0.00
Ce	0.03	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.04	0.03	0.03	0.03
Ca	0.77	0.77	0.88	0.87	0.92	0.88	0.88	0.88	0.87	0.76	0.69	0.79	0.85	0.90	0.83
Sr	0.03	0.03	0.04	0.04	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.06	0.05
Ba	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00
Na	0.80	0.84	0.88	0.88	0.86	0.87	0.86	0.88	0.86	0.80	0.87	0.86	0.85	0.85	0.87
sum A-site	1.66	1.69	1.82	1.81	1.86	1.83	1.82	1.84	1.81	1.69	1.68	1.78	1.79	1.83	1.78
Total	3.66	3.69	3.82	3.81	3.86	3.83	3.82	3.84	3.81	3.69	3.68	3.78	3.79	3.83	3.78
charge	12.40	12.39	12.71	12.68	12.80	12.73	12.72	12.75	12.73	12.53	12.33	12.66	12.67	12.76	12.64

Table A.5.25 Representative analyses of pyrochlore (continued).

Rock type	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV
Sample	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04
	b-pcl3	b-pcl3	b-pcl3	b-pcl3	b-pcl3	b-pcl3	a-pcl501	a-pcl501	a-pcl501	a-pcl501	a-pcl502	a-pcl502	a-pcl503	a-pcl503
	rim	→	→	→	→	rim	rim	→	→	rim	rim	rim	rim	rim
Nb_2O_5	69.92	69.34	69.14	70.62	70.19	70.15	70.37	70.38	67.35	69.04	70.31	69.85	69.46	68.04
SiO_2	0.00	0.32	0.11	0.24	0.00	0.00	0.00	0.00	0.32	0.00	0.26	0.00	0.00	0.08
TiO_2	1.77	1.93	1.85	1.61	1.66	1.71	1.88	2.24	2.03	2.12	1.94	1.59	2.07	1.83
Fe_2O_3	0.00	0.00	0.03	0.12	0.12	0.32	0.25	0.09	0.26	0.19	0.19	0.04	0.10	0.21
Ce_2O_3	1.35	1.75	1.78	1.49	1.43	1.94	2.32	1.44	1.94	2.66	1.83	1.22	1.53	2.03
CaO	13.09	12.25	12.00	12.34	13.12	12.49	12.60	13.74	12.16	12.07	11.66	13.09	13.52	12.21
SrO	1.56	1.31	1.25	1.36	1.53	1.31	1.28	1.15	1.18	1.35	1.06	1.04	1.12	1.18
BaO	0.00	0.04	0.24	0.33	0.09	0.03	0.01	0.00	0.13	0.05	0.44	0.00	0.00	0.10
Na_2O	7.58	6.93	7.23	6.86	7.29	7.90	7.54	7.49	7.36	7.28	7.08	7.27	7.24	7.46
F	4.64	5.33	5.63	4.84	4.25	4.35	3.75	3.58	6.36	5.74	5.62	5.95	5.24	5.96
Total	99.90	99.19	99.24	99.81	99.66	100.19	99.98	100.10	99.10	100.49	100.38	100.05	100.27	99.09
Formula (Nb+Si+Ti=2)														
Nb	1.92	1.89	1.91	1.91	1.92	1.92	1.92	1.90	1.89	1.90	1.90	1.93	1.91	1.91
Si	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00
Ti	0.08	0.09	0.08	0.07	0.08	0.08	0.08	0.10	0.09	0.10	0.09	0.07	0.09	0.09
sum B-site	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
(A)														
Fe^{3+}	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Ce	0.03	0.04	0.04	0.03	0.03	0.04	0.05	0.03	0.04	0.06	0.04	0.03	0.03	0.05
Ca	0.85	0.79	0.78	0.79	0.85	0.81	0.81	0.88	0.81	0.79	0.75	0.86	0.88	0.81
Sr	0.05	0.05	0.04	0.05	0.05	0.05	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04
Ba	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Na	0.89	0.81	0.86	0.80	0.86	0.93	0.88	0.87	0.88	0.86	0.82	0.86	0.85	0.90
sum A-site	1.83	1.69	1.73	1.68	1.80	1.84	1.80	1.82	1.79	1.77	1.66	1.78	1.81	1.81
Total	3.83	3.69	3.73	3.68	3.80	3.84	3.80	3.82	3.79	3.77	3.66	3.78	3.81	3.81
charge	12.71	12.50	12.56	12.52	12.71	12.74	12.70	12.71	12.64	12.64	12.45	12.66	12.71	12.69

Table A.5.26 Representative analyses of rutile.

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	FV	FV	FV	FV	FV
Sample	Ku-97-15 rt1	Ku-97-15 rt2	Ku-97-15 rt3	Ku-97-15 rt4	Ku-97-15 rt5	Ku-97-24 rt1	Ku-01-04 e-rt1	Ku-01-04 e-rt2	Ku-01-04 e-rt1	Ku-01-04 e-rt1	Ku-01-04 e-rt1
SiO_2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.02
TiO_2	97.40	96.47	97.00	99.40	98.60	97.00	95.15	95.03	94.47	94.42	93.40
Al_2O_3	0.17	0.16	0.19	0.20	0.18	0.16	0.09	0.00	0.05	0.12	0.11
Cr_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.05
Fe_2O_3	0.72	2.35	1.02	0.55	0.90	2.01	2.23	2.36	2.31	2.58	3.10
Sum	98.29	98.98	98.21	100.15	99.68	99.17	97.47	97.47	96.92	97.12	96.68
Formula (O=4)											
Si	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ti	0.99	0.98	0.99	1.01	1.00	0.99	0.99	0.99	0.99	0.98	0.98
Al	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.02	0.01	0.01	0.01	0.02	0.03	0.03	0.03	0.03	0.04
Sum	1.00	1.01	1.00	1.02	1.02	1.01	1.02	1.02	1.02	1.01	1.02

(data for samples Ku-97-15 and Ku-97-24 from von Seckendorff et al., 2000)

Table A.5.27 Representative analyses of pyrite.

Rock type	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN
Sample	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03
	py1	py2	py3	py3	py3	py4	py5	py6	py6	py6	py7	py9	py10	py10	py11	py11
	core	core	rim	→	core	core	core	rim	→	core	core	core	core	core	core	core
Cu	0.00	0.02	0.03	0.00	0.03	0.08	0.03	0.05	0.10	0.03	0.05	0.02	0.08	0.00	0.02	0.07
Fe	46.02	46.37	44.93	45.93	45.25	45.71	45.73	46.19	45.63	44.95	45.77	46.76	46.03	46.14	46.20	46.43
Mn	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.03	0.02	0.01
Co	0.10	0.01	0.61	0.26	0.52	0.33	0.21	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.08	0.00
Ni	0.00	0.01	0.17	0.22	0.27	0.07	0.52	0.02	0.64	1.52	1.03	0.00	0.02	0.05	0.00	0.00
As	0.03	0.02	0.03	0.09	0.00	0.05	0.00	0.03	0.02	0.01	0.00	0.05	0.00	0.05	0.10	0.06
Sb	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00
S	53.41	53.27	53.53	53.16	53.34	52.99	53.58	52.87	53.45	53.57	53.09	53.50	53.32	53.44	53.49	53.34
Se	0.00	0.00	0.00	0.06	0.08	0.07	0.03	0.00	0.03	0.00	0.00	0.08	0.00	0.00	0.01	0.06
Te	0.00	0.02	0.04	0.00	0.03	0.00	0.00	0.05	0.02	0.01	0.01	0.09	0.02	0.00	0.05	0.00
Total	99.58	99.74	99.35	99.73	99.52	99.30	100.11	99.26	99.88	100.10	99.95	100.53	99.55	99.76	99.97	99.98
Formula (S=2)																
Cu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.99	1.00	0.96	0.99	0.97	0.99	0.98	1.00	0.98	0.96	0.99	1.00	0.99	0.99	0.99	1.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.03	0.02	0.00	0.00	0.00	0.00	0.00
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.99	3.00	2.98	3.00	2.99	3.00	3.00	3.01	3.00	3.00	3.01	3.00	3.00	2.99	3.00	3.00
Mol.% Fe	99.79	99.96	98.40	99.03	98.37	99.19	98.51	99.95	98.68	96.89	97.90	99.99	99.89	99.81	99.83	100.00
Mol.% Co	0.21	0.02	1.26	0.52	1.07	0.67	0.42	0.00	0.01	0.00	0.00	0.01	0.07	0.08	0.17	0.00
Mol.% Ni	0.00	0.02	0.35	0.45	0.57	0.14	1.07	0.05	1.31	3.11	2.10	0.00	0.04	0.10	0.00	0.00

Table A.5.27 Representative analyses of pyrite (continued).

Rock type	GN	GN	GN	GN	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f
Sample	Ku-97-03	Ku-97-03	Ku-97-03	Ku-97-03	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-78	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79
	py12	py12	py13	py14	py1	py1	py2	py2	py2	py1	py1	py1	py2	py2	py3
	rim	core	core	core	core	core	rim	→	core	rim	core	rim	core	rim	rim
Cu	0.00	0.43	0.02	0.03	0.12	0.02	0.10	0.00	0.00	0.03	0.12	0.01	0.02	0.07	0.02
Fe	45.21	45.43	46.15	44.93	45.85	45.97	46.07	46.54	46.09	43.57	46.75	45.05	46.14	43.44	44.08
Mn	0.01	0.00	0.03	0.00	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Co	0.00	0.02	0.08	0.00	0.08	0.13	0.19	0.07	0.03	3.52	0.14	1.82	0.37	3.23	2.41
Ni	1.09	0.81	0.01	1.64	0.05	0.05	0.14	0.06	0.05	0.00	0.02	0.00	0.00	0.00	0.00
As	0.00	0.05	0.03	0.03	0.03	0.00	0.06	0.02	0.02	0.00	0.12	0.12	0.00	0.11	0.05
Sb	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	53.77	53.16	53.51	53.27	53.12	53.60	53.45	53.42	53.05	53.53	53.48	53.47	53.54	53.35	53.56
Se	0.00	0.00	0.08	0.00	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.08	99.90	99.92	99.89	99.37	99.84	100.03	100.15	99.24	100.65	100.62	100.48	100.12	100.20	100.10
Formula (S=2)															
Cu	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.97	0.98	0.99	0.97	0.99	0.98	0.99	1.00	1.00	0.93	1.00	0.97	0.99	0.93	0.95
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.04	0.01	0.07	0.05
Ni	0.02	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.99	3.01	2.99	3.00	3.00	2.99	3.00	3.00	3.00	3.01	3.01	3.01	3.00	3.00	3.00
Mol.% Fe	97.76	98.30	99.80	96.65	99.73	99.64	99.33	99.74	99.84	92.88	99.68	96.32	99.25	93.41	95.08
Mol.% Co	0.00	0.03	0.17	0.00	0.17	0.26	0.38	0.14	0.06	7.12	0.29	3.68	0.75	6.59	4.92
Mol.% Ni	2.24	1.67	0.03	3.35	0.10	0.10	0.29	0.13	0.11	0.00	0.03	0.00	0.00	0.00	0.00

Table A.5.27 Representative analyses of pyrite (continued).

Rock type	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f	A,f
Sample	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-79	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84
	py3	py4	py4	py4	py5	py5	py8	py8	py9	py9	py1	py1	py3	py3	py3
	core	rim	core	rim	core	rim	rim	core	core	rim	rim	core	rim	core	rim
Cu	0.00	0.09	0.00	0.00	0.06	0.00	0.00	0.01	0.00	0.11	0.10	0.00	0.04	0.06	0.04
Fe	46.67	44.07	45.38	43.39	44.50	43.44	43.76	45.71	44.11	44.28	45.42	45.68	45.13	45.88	45.84
Mn	0.05	0.00	0.00	0.00	0.02	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.01	0.00
Co	0.07	2.55	0.44	3.42	2.03	3.51	2.67	0.34	0.24	1.47	0.42	0.08	0.44	0.10	0.10
Ni	0.07	0.00	0.26	0.00	0.01	0.01	0.00	0.09	1.56	0.00	0.11	0.08	0.59	0.04	0.07
As	0.11	0.06	0.03	0.07	0.00	0.05	0.07	0.06	0.09	0.00	0.04	0.06	0.04	0.08	0.04
Sb	0.02	0.04	0.00	0.03	0.00	0.00	0.05	0.00	0.06	0.05	0.06	0.00	0.00	0.00	0.07
S	53.52	53.16	52.98	53.55	53.48	53.24	53.41	53.19	53.20	53.42	53.14	53.27	52.89	52.91	53.02
Se	0.00	0.00	0.07	0.03	0.00	0.00	0.00	0.02	0.05	0.00	0.00	0.06	0.00	0.01	0.00
Te	0.01	0.00	0.03	0.02	0.08	0.01	0.01	0.00	0.00	0.02	0.00	0.03	0.01	0.00	0.00
Total	100.52	99.96	99.17	100.51	100.19	100.30	99.96	99.41	99.30	99.35	99.29	99.26	99.17	99.09	99.18
Formula (S=2)															
Cu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	1.00	0.95	0.98	0.93	0.96	0.94	0.94	0.99	0.95	0.95	0.98	0.98	0.98	1.00	0.99
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.00	0.05	0.01	0.07	0.04	0.07	0.05	0.01	0.00	0.03	0.01	0.00	0.01	0.00	0.00
Ni	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.00
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	3.01	3.01	3.00	3.00	3.00	3.01	3.00	3.00	2.99	2.98	3.00	2.99	3.00	3.00	3.00
Mol.% Fe	99.71	94.81	98.57	93.05	95.85	92.87	94.54	99.12	96.27	96.96	98.92	99.66	97.88	99.71	99.64
Mol.% Co	0.14	5.19	0.90	6.95	4.14	7.12	5.46	0.69	0.49	3.04	0.86	0.17	0.90	0.20	0.21
Mol.% Ni	0.15	0.00	0.53	0.00	0.01	0.02	0.00	0.19	3.24	0.00	0.22	0.16	1.22	0.09	0.14

Table A.5.27 Representative analyses of pyrite (continued).

Rock type	A,f	A,f	A,f	A,f	A,f	A,f	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-84	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a
	py4	py4	py5	py5	py6	py6	7-py1	7-py1	7-py1	7-py-es	7-py-es	7-py2	7-py2	4-py1	4-py2
	core	rim	rim	core	core	rim	rim	core	rim	core	rim	rim	core	core	core
Cu	0.04	0.08	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.07	0.00	0.03	0.08	0.02	0.07
Fe	45.92	45.08	43.72	45.28	45.99	46.23	45.78	45.56	46.06	46.07	45.67	45.30	45.74	45.24	43.79
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.05
Co	0.29	1.49	2.03	0.70	0.00	0.12	0.76	1.24	0.75	0.94	1.03	0.99	0.68	1.22	2.24
Ni	0.02	0.00	0.00	0.00	0.14	0.01	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00
As	0.04	0.00	0.10	0.09	0.05	0.04	0.04	0.02	0.10	0.00	0.07	0.01	0.05	0.06	0.06
Sb	0.04	0.04	0.04	0.00	0.00	0.05	0.00	0.04	0.00	0.02	0.00	0.06	0.04	0.00	0.00
S	52.96	53.09	53.17	53.03	53.26	53.68	52.35	52.50	52.92	52.50	52.87	52.82	52.98	52.44	52.15
Se	0.00	0.00	0.02	0.00	0.04	0.06	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.02	0.00	0.02	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.03	0.06	0.05
Total	99.31	99.78	99.07	99.12	99.48	100.23	99.06	99.40	99.89	99.72	99.63	99.20	99.60	99.04	98.39
Formula (S=2)															
Cu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	1.00	0.97	0.94	0.98	0.99	0.99	1.00	1.00	1.00	1.01	0.99	0.98	0.99	0.99	0.96
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.01	0.03	0.04	0.01	0.00	0.00	0.02	0.03	0.02	0.02	0.02	0.02	0.01	0.03	0.05
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	3.00	3.01	2.99	3.00	2.99	2.99	3.02	3.02	3.02	3.03	3.01	3.01	3.01	3.02	3.01
Mol.% Fe	99.37	96.97	95.78	98.57	99.71	99.73	98.46	97.48	98.48	97.88	97.91	97.98	98.60	97.50	95.38
Mol.% Co	0.59	3.03	4.22	1.43	0.00	0.25	1.54	2.52	1.52	1.89	2.09	2.02	1.40	2.50	4.62
Mol.% Ni	0.04	0.00	0.01	0.00	0.29	0.02	0.00	0.00	0.01	0.23	0.00	0.00	0.00	0.00	0.00

Table A.5.27 Representative analyses of pyrite (continued).

Rock type	CB,l	L	L	L	L	L	L	L
Sample	Ku-98-56	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25	Ku-98-25
	2-py1	2-py1	2-py1	2-py1	2-py2	2-py2	2-py2	2-py2
	core	rim	→	rim	rim	→	→	rim
Cu	0.10	0.07	0.02	0.00	0.00	0.06	0.00	0.00
Fe	43.96	45.98	45.94	46.32	46.13	46.27	46.12	46.03
Mn	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.03
Co	0.00	0.45	0.42	0.46	0.00	0.00	0.00	0.00
Ni	1.72	0.00	0.10	0.14	0.16	0.08	0.02	0.08
As	0.00	0.00	0.00	0.09	0.03	0.00	0.03	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	52.59	51.69	51.78	51.52	51.74	51.80	52.03	52.47
Se	0.01	0.01	0.02	0.02	0.00	0.03	0.00	0.06
Te	0.00	0.00	0.00	0.07	0.05	0.01	0.00	0.00
Total	98.38	98.23	98.28	98.63	98.11	98.24	98.22	98.67
Formula (S=2)								
Cu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.96	1.02	1.02	1.03	1.02	1.03	1.02	1.01
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Ni	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	3.00	3.03	3.03	3.05	3.03	3.03	3.02	3.01
Mol.% Fe	96.41	99.09	98.95	98.77	99.66	99.84	99.96	99.84
Mol.% Co	0.00	0.91	0.85	0.93	0.00	0.00	0.00	0.00
Mol.% Ni	3.59	0.00	0.20	0.29	0.34	0.16	0.04	0.16

Table A.5.28 Representative analyses of chalcopyrite.

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-130a 7-cpy1	Ku-98-130a 7-cpy1	Ku-98-130a 7-cpy1	Ku-98-130a 7-cpy2	Ku-98-130a 7-cpy2	Ku-98-130a 7-cpy2	Ku-98-130a 3-cpy1	Ku-98-130a 3-cpy1	Ku-98-130a 3-cpy1	Ku-98-130a 3-cpy1	Ku-98-130a 3-cpy1	Ku-98-130a 3-cpy1	Ku-98-130a 3-cpy1	Ku-98-130a 3-cpy2	Ku-98-130a 3-cpy2
Cu	34.40	34.42	34.87	33.98	33.95	33.93	34.48	34.12	34.39	34.06	34.53	34.53	34.68	33.64	33.55
Fe	29.49	29.87	29.26	30.59	30.63	30.50	29.55	29.71	29.79	29.86	29.92	29.92	29.67	30.05	29.98
Mn	0.03	0.02	0.03	0.00	0.04	0.00	0.02	0.00	0.01	0.01	0.02	0.02	0.01	0.00	0.00
Co	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.03	0.03	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.05
As	0.00	0.03	0.07	0.07	0.00	0.09	0.12	0.04	0.04	0.08	0.00	0.00	0.00	0.07	0.06
Sb	0.07	0.05	0.07	0.05	0.00	0.00	0.00	0.07	0.02	0.04	0.01	0.01	0.01	0.06	0.00
S	34.32	34.05	34.16	34.08	34.63	34.02	34.09	34.38	34.45	34.23	34.28	34.28	34.30	34.81	34.44
Se	0.05	0.00	0.00	0.03	0.08	0.03	0.12	0.06	0.04	0.05	0.00	0.00	0.00	0.00	0.08
Te	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.06	0.00	0.06
Total	98.44	98.47	98.46	98.80	99.33	98.56	98.38	98.41	98.78	98.36	98.78	98.78	98.74	98.64	98.21
Formula (S=2)															
Cu	1.01	1.02	1.03	1.01	0.99	1.01	1.02	1.00	1.01	1.00	1.02	1.02	1.02	0.98	0.98
Fe	0.99	1.01	0.98	1.03	1.01	1.03	0.99	0.99	0.99	1.00	1.00	1.00	0.99	0.99	1.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	4.00	4.03	4.02	4.04	4.00	4.04	4.02	4.00	4.00	4.01	4.02	4.02	4.01	3.97	3.98
Mol.% Fe	99.84	100.00	100.00	100.00	100.00	100.00	100.00	99.87	99.87	100.00	99.91	99.91	100.00	100.00	99.85
Mol.% Co	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.09	0.09	0.00	0.00	0.00
Mol.% Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.15

Table A.5.28 Representative analyses of chalcopyrite (continued).

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,l
Sample	Ku-98-130a 3-cpy2	Ku-98-130a 3-cpy2	Ku-98-130a 3-cpy2	Ku-98-130b 2-cpy1	Ku-98-130b 2-cpy1	Ku-98-130b 2-cpy1	Ku-98-130b 2-cpy1	Ku-98-130b 2-cpy1	Ku-98-130b 8-cpy1	Ku-98-130b 8-cpy1	Ku-98-130b 8-cpy1	Ku-98-130b 8-cpy1	Ku-98-130b 8-cpy1	Ku-98-56 2-cpy1
Cu	34.44	34.11	33.84	35.05	35.13	33.83	34.13	33.64	34.91	34.29	34.49	34.76	34.50	34.11
Fe	30.01	29.95	30.30	30.56	30.34	29.69	29.61	29.92	30.08	30.01	29.90	29.65	29.94	30.32
Mn	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03
Co	0.02	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.02
Ni	0.00	0.01	0.00	0.00	0.04	0.03	0.01	0.00	0.00	0.00	0.02	0.03	0.04	0.12
As	0.00	0.00	0.00	0.00	0.11	0.07	0.09	0.09	0.16	0.10	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.05	0.00	0.03	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
S	34.49	34.87	34.82	35.12	34.79	34.99	34.48	34.88	35.22	34.66	34.65	34.04	34.54	34.24
Se	0.01	0.03	0.00	0.00	0.10	0.00	0.00	0.00	0.05	0.06	0.00	0.04	0.00	0.03
Te	0.02	0.00	0.07	0.03	0.00	0.00	0.08	0.00	0.00	0.00	0.05	0.05	0.00	0.00
Total	98.99	98.96	99.08	100.79	100.54	98.65	98.40	98.53	100.45	99.11	99.13	98.58	99.02	98.87
Formula (S=2)														
Cu	1.01	0.99	0.98	1.01	1.02	0.98	1.00	0.97	1.00	1.00	1.00	1.03	1.01	1.00
Fe	1.00	0.99	1.00	1.00	1.00	0.97	0.99	0.98	0.98	0.99	0.99	1.00	1.00	1.02
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	4.01	3.97	3.98	4.01	4.02	3.95	3.99	3.96	3.98	3.99	4.00	4.03	4.00	4.03
Mol.% Fe	99.94	99.96	100.00	99.93	99.87	99.86	99.96	100.00	99.92	99.97	99.90	99.89	99.88	99.56
Mol.% Co	0.06	0.00	0.00	0.07	0.00	0.03	0.00	0.00	0.07	0.03	0.03	0.00	0.00	0.06
Mol.% Ni	0.00	0.04	0.00	0.00	0.13	0.11	0.04	0.00	0.00	0.00	0.08	0.11	0.12	0.38

Table A.5.28 Representative analyses of chalcopyrite (continued).

Rock type	GN	GN	GN	A.f	A.f	A.f	A.f	A.f	A.f
Sample	Ku-97-03 cpy1	Ku-97-03 cpy1	Ku-97-03 cpy2	Ku-98-79 cpy1	Ku-98-79 cpy1	Ku-98-79 cpy2	Ku-98-79 cpy3	Ku-98-79 cpy3	Ku-98-79 cpy3
Cu	33.10	33.21	32.80	31.96	32.36	30.52	33.75	33.26	33.22
Fe	29.91	30.45	29.58	30.44	30.70	31.63	29.15	29.33	29.31
Mn	0.05	0.00	0.00	0.05	0.00	0.02	0.00	0.01	0.00
Co	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00
Ni	0.00	0.01	0.04	0.03	0.00	0.00	0.06	0.00	0.00
As	0.00	0.16	0.10	0.02	0.11	0.02	0.10	0.05	0.00
Sb	0.01	0.00	0.00	0.00	0.05	0.00	0.02	0.00	0.05
S	34.97	34.98	35.09	35.26	35.32	37.26	35.29	34.91	34.95
Se	0.05	0.02	0.01	0.01	0.05	0.06	0.07	0.04	0.12
Te	0.00	0.00	0.04	0.00	0.01	0.00	0.00	0.00	0.00
Total	98.08	98.83	97.66	97.78	98.61	99.67	98.45	97.60	97.65
Formula (S=2)									
Cu	0.95	0.96	0.94	0.91	0.92	0.83	0.96	0.96	0.96
Fe	0.98	1.00	0.97	0.99	1.00	0.97	0.95	0.96	0.96
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	3.94	3.96	3.91	3.91	3.93	3.81	3.92	3.93	3.92
Mol.% Fe	100.00	99.97	99.87	99.90	99.99	99.53	99.81	100.00	100.00
Mol.% Co	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00
Mol.% Ni	0.00	0.03	0.13	0.10	0.01	0.00	0.19	0.00	0.00

Table A.5.29 Representative analyses of pyrrhotite.

Rock type	CB.so	CB.so	CB.so
Sample	Ku-97-24	Ku-97-24	Ku-97-24
Position	inclusion	isolated	isolated
Cu	0.00	0.00	0.00
Fe	58.60	62.20	62.50
Mn	0.00	0.00	0.00
Co	0.00	0.00	0.00
Ni	0.75	0.00	0.08
As	0.00	0.00	0.05
Sb	0.00	0.05	0.00
S	39.10	37.00	37.10
Se	0.00	0.00	0.00
Te	0.00	0.00	0.00
Total	98.45	99.25	99.73
Formula (S=1)			
Cu	0.00	0.00	0.00
Fe	0.86	0.97	0.97
Mn	0.00	0.00	0.00
Co	0.00	0.00	0.00
Ni	0.01	0.00	0.00
As	0.00	0.00	0.00
Sb	0.00	0.00	0.00
S	1.00	1.00	1.00
Se	0.00	0.00	0.00
Te	0.00	0.00	0.00
Total	1.87	1.97	1.97
Mol.% Fe	98.80	100.00	99.88
Mol.% Co	0.00	0.00	0.00
Mol.% Ni	1.20	0.00	0.12

(data from von Seckendorff et al., 2000)

Table A.5.30 Representative analyses of pentlandite.

Rock type	CB.so	CB.so	A.f	A.f
Sample	Ku-97-19	Ku-97-19	Ku-98-79	Ku-98-79
Position	lamellae	lamellae	isolated	isolated
Cu	0.00	0.07	0.10	0.05
Fe	39.80	33.10	25.36	25.41
Mn	0.00	0.00	0.04	0.00
Co	0.31	0.00	2.11	2.14
Ni	25.60	33.70	36.29	36.19
As	0.08	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.02
S	34.40	33.50	32.99	33.21
Se	0.00	0.00	0.00	0.05
Te	0.00	0.00	0.00	0.00
Total	100.19	100.37	96.88	97.07
Formula (S=8)				
Cu	0.00	0.01	0.01	0.01
Fe	5.31	4.54	3.53	3.51
Mn	0.00	0.00	0.01	0.00
Co	0.04	0.00	0.28	0.28
Ni	3.25	4.40	4.81	4.76
As	0.01	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00
S	8.00	8.00	8.00	8.00
Se	0.00	0.00	0.00	0.01
Te	0.00	0.00	0.00	0.00
Total	16.61	16.94	16.63	16.56
Mol.% Fe	61.75	50.80	40.99	41.07
Mol.% Co	0.46	0.00	3.23	3.28
Mol.% Ni	37.79	49.20	55.78	55.64

(data for sample Ku-97-19 from von Seckendorff et al., 2000)

Table A.5.31 Representative analyses of bornite.

Rock type	CB.so
Sample	Ku-97-15d
	bn
Cu	63.10
Fe	11.70
Mn	0.00
Co	0.00
Ni	0.00
As	0.00
Sb	0.00
S	25.80
Se	0.00
Te	0.00
Total	100.60
Formula (S=4)	
Cu	4.94
Fe	1.04
Mn	0.00
Co	0.00
Ni	0.00
As	0.00
Sb	0.00
S	4.00
Se	0.00
Te	0.00
Total	9.98
Mol.% Fe	100.00
Mol.% Co	0.00
Mol.% Ni	0.00

(data from von Seckendorff et al., 2000)

Table A.5.32 Representative analyses of chalcocite-digenite.

Rock type	CB.so	CB.so	CB.so	CB.so
Sample	Ku-97-15d	Ku-97-15d	Ku-97-15d	Ku-97-15d
	cc-dg	cc-dg	cc-dg	cc-dg
Cu	78.40	79.40	77.00	78.00
Fe	0.07	0.05	2.32	1.95
Mn	0.00	0.00	0.00	0.00
Co	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00
As	0.00	0.00	0.05	0.00
Sb	0.00	0.00	0.00	0.00
S	20.70	20.70	20.50	21.00
Se	0.09	0.00	0.13	0.38
Te	0.00	0.00	0.00	0.00
Total	99.26	100.15	100.00	101.33
Formula (S=1)				
Cu	1.91	1.94	1.89	1.86
Fe	0.00	0.00	0.06	0.05
Mn	0.00	0.00	0.00	0.00
Co	0.00	0.00	0.00	0.00
Ni	0.00	0.00	0.00	0.00
As	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00
S	1.00	1.00	1.00	0.99
Se	0.00	0.00	0.00	0.01
Te	0.00	0.00	0.00	0.00
Total	2.91	2.94	2.96	2.91
Mol.% Fe	100.00	100.00	100.00	100.00
Mol.% Co	0.00	0.00	0.00	0.00
Mol.% Ni	0.00	0.00	0.00	0.00

(data from von Seckendorff et al., 2000)

Table A.5.33 Representative analyses of millerite.

Rock type	CB.so	CB.so	CB.so	CB.so	CB.so	CB.l	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE
Sample	Ku-97-24	Ku-97-24	Ku-97-24	Ku-97-24	Ku-97-24	Ku-98-56	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a
	mi1	mi1	mi2	mi2	mi3	1-mi3	8-mi1	8-mi1	8-mi1	9-mi3	9-mi3	9-mi3	1-mi3
Position	lamellae	lamellae	vein filling	vein filling	isolated	lamellae	isolated	isolated	isolated	isolated	isolated	isolated	isolated
	core	core	core	core	core	core	Cpy/rim	core	rim/Cpy	Cpy/rim	core	rim/Cpy	Mag/rim
Cu	0.00	0.00	0.00	0.00	0.00	0.12	0.14	0.04	0.05	0.00	0.00	0.17	0.49
Fe	2.15	3.05	2.72	3.01	0.37	1.41	0.45	0.14	0.32	0.84	0.29	0.70	1.35
Mn	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.02	0.02	0.00	0.04	0.02	0.00
Co	1.41	1.23	0.26	0.27	0.23	1.16	0.13	0.13	0.11	0.10	0.17	0.14	0.51
Ni	62.00	62.60	61.50	63.30	63.50	61.20	64.23	64.46	64.15	63.41	63.87	63.43	62.29
As	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.02	0.00	0.04	0.01	0.06
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.00	0.04	0.02
S	35.60	35.20	35.10	35.80	35.20	36.22	35.70	35.88	35.83	35.43	35.17	35.43	35.38
Se	0.00	0.00	0.05	0.00	0.06	0.07	0.12	0.06	0.14	0.12	0.18	0.07	0.14
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	101.16	102.08	99.63	102.38	99.36	100.29	100.83	100.79	100.65	99.93	99.76	100.01	100.25
Formula (S=1)													
Cu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Fe	0.03	0.05	0.04	0.05	0.01	0.02	0.01	0.00	0.01	0.01	0.00	0.01	0.02
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.02	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Ni	0.95	0.97	0.96	0.97	0.98	0.92	0.98	0.98	0.98	0.98	0.99	0.98	0.96
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.01	2.04	2.01	2.02	1.99	1.97	2.00	1.99	1.99	1.99	2.00	2.00	2.00
Mol.% Fe	3.44	4.78	4.42	4.74	0.61	2.32	0.73	0.23	0.51	1.37	0.48	1.15	2.21
Mol.% Co	2.14	1.83	0.40	0.40	0.36	1.81	0.20	0.20	0.16	0.15	0.26	0.21	0.79
Mol.% Ni	94.42	93.39	95.17	94.86	99.04	95.86	99.07	99.57	99.33	98.47	99.26	98.64	96.99

(data for sample Ku-97-24 from von Seckendorff et al., 2000)

Table A.5.33 Representative analyses of millerite (continued).

Rock type	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE	CB.REE
Sample	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a
	1-mi3	1-mi3	1-mi4	1-mi4	3-mi1	3-mi1	3-mi1	3-mi3	3-mi3	3-mi3	3-mi4	3-mi4	1-mi1
Position	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated	isolated
	core	rim	core	core	rim	core	rim/Pv	rim	core	rim/Pv	rim	core	rim/Pv
Cu	0.55	0.29	0.19	0.05	0.45	0.00	0.10	0.08	0.08	0.44	0.13	0.24	0.34
Fe	1.23	0.67	0.26	0.14	0.33	0.16	0.77	0.21	0.13	0.89	0.25	0.58	0.43
Mn	0.00	0.00	0.03	0.04	0.03	0.00	0.04	0.00	0.01	0.00	0.03	0.00	0.00
Co	0.51	0.48	0.55	0.55	0.57	0.54	0.50	0.58	0.55	0.56	0.62	0.60	0.53
Ni	62.23	63.13	63.02	63.89	63.64	63.40	62.66	63.41	63.73	62.98	62.76	63.35	63.51
As	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.03	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.05	0.00	0.01	0.03
S	35.80	35.72	35.54	35.46	35.46	35.10	35.29	35.48	35.42	35.74	35.33	35.76	35.65
Se	0.16	0.20	0.17	0.04	0.00	0.10	0.07	0.07	0.03	0.19	0.05	0.10	0.12
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.50	100.48	99.75	100.17	100.49	99.30	99.52	99.85	99.98	100.85	99.17	100.64	100.62
Formula (S=1)													
Cu	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Fe	0.02	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Ni	0.95	0.97	0.97	0.98	0.98	0.99	0.97	0.98	0.98	0.96	0.97	0.97	0.97
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.99	1.99	1.99	2.00	2.00	2.00	1.99	1.99	2.00	1.99	1.99	1.99	1.99
Mol.% Fe	2.02	1.10	0.42	0.23	0.54	0.27	1.27	0.34	0.21	1.44	0.40	0.95	0.71
Mol.% Co	0.79	0.75	0.86	0.85	0.88	0.83	0.78	0.90	0.85	0.87	0.96	0.92	0.82
Mol.% Ni	97.20	98.16	98.71	98.92	98.57	98.90	97.95	98.76	98.94	97.69	98.63	98.13	98.48

Table A.5.34 Representative analyses of siegenite.

Rock type	CB.so	CB.so	CB.so
Sample	Ku-97-24	Ku-97-24	Ku-97-24
Cu	0.45	0.00	0.11
Fe	7.88	10.20	12.40
Mn	0.00	0.00	0.00
Co	19.80	17.50	14.10
Ni	30.70	30.80	31.40
As	0.00	0.00	0.00
Sb	0.00	0.06	0.07
S	41.60	42.20	42.40
Se	0.00	0.06	0.12
Te	0.00	0.00	0.00
Total	100.43	100.82	100.60
Formula (S=4)			
Cu	0.02	0.00	0.01
Fe	0.44	0.55	0.67
Mn	0.00	0.00	0.00
Co	1.04	0.90	0.72
Ni	1.61	1.59	1.62
As	0.00	0.00	0.00
Sb	0.00	0.00	0.00
S	4.00	4.00	4.00
Se	0.00	0.00	0.00
Te	0.00	0.00	0.00
Total	7.11	7.05	7.02
Mol.% Fe	14.11	18.19	22.29
Mol.% Co	33.59	29.57	24.02
Mol.% Ni	52.30	52.25	53.70

(data from von Seckendorff et al., 2000)

Table A.5.35 Representative analyses of polydymite-violarite.

Rock type	CB,so	CB,so	CB,so	CB,so	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-97-24	Ku-97-24	Ku-97-24	Ku-97-24	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56	Ku-98-56
	tsp1	tsp2	tsp3	tsp4	2-tspl1	2-tspl1	1-tspl2	1-tspl2	1-tspl2	1-tspl2	1-tspl3	1-tspl3	1-tspl3
Cu	0.00	0.00	0.00	0.08	0.06	0.13	0.15	0.16	0.07	0.08	0.08	0.09	0.02
Fe	2.14	2.87	3.19	2.55	11.05	11.72	8.76	8.63	7.99	8.18	7.34	7.84	8.28
Mn	0.00	0.00	0.00	0.00	0.03	0.00	0.04	0.00	0.00	0.09	0.04	0.06	0.02
Co	0.34	0.40	0.26	0.33	6.57	6.22	7.03	7.37	7.98	7.66	8.39	7.81	7.36
Ni	55.90	55.60	55.50	55.60	39.51	39.57	40.83	40.74	40.58	41.12	41.32	41.51	41.56
As	0.00	0.05	0.08	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.06	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.02	0.00	0.00	0.01	0.07	0.00
S	41.80	42.10	42.20	41.90	41.74	41.58	41.39	42.19	41.54	42.11	42.22	42.93	42.40
Se	0.00	0.14	0.07	0.12	0.00	0.07	0.09	0.06	0.14	0.02	0.00	0.00	0.03
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	99.36	99.36	99.36	99.36	98.95	99.36	98.30	99.15	98.36	99.25	99.46	100.29	99.67
Formula (S=4)													
Cu	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Fe	0.12	0.16	0.17	0.14	0.61	0.65	0.49	0.47	0.44	0.45	0.40	0.42	0.45
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.02	0.02	0.01	0.02	0.34	0.33	0.37	0.38	0.42	0.40	0.43	0.40	0.38
Ni	2.92	2.88	2.87	2.90	2.07	2.08	2.16	2.11	2.13	2.13	2.14	2.11	2.14
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Se	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.06	7.06	7.06	7.06	7.02	7.06	7.02	6.97	7.01	6.99	6.98	6.94	6.97
Mol.% Fe	3.85	5.11	5.67	4.57	20.15	21.21	16.14	15.87	14.76	15.00	13.45	14.32	15.12
Mol.% Co	0.58	0.68	0.44	0.56	11.35	10.66	12.28	12.85	13.96	13.31	14.55	13.52	12.73
Mol.% Ni	95.58	94.21	93.89	94.87	68.50	68.13	71.58	71.28	71.28	71.69	71.99	72.16	72.16

(data for sample Ku-97-24 from von Seckendorff et al., 2000)

Table A.5.35 Representative analyses of polydymite-violarite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3
Cu	0.00	0.07	0.00	0.02	0.10	0.00	0.00	0.01	0.11	0.05	0.00	0.02	0.03	0.01	0.09
Fe	8.41	8.49	8.33	8.22	6.40	7.29	8.29	8.31	8.18	7.82	7.98	7.98	7.05	7.62	8.08
Mn	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	0.03	0.02	0.02	0.02	0.01	0.00	0.00
Co	7.27	7.02	7.06	7.39	8.46	8.12	7.03	7.01	7.22	6.96	7.07	7.16	6.68	7.53	7.02
Ni	41.94	42.05	42.11	41.44	42.57	42.00	41.51	41.61	41.50	41.77	42.54	42.34	43.72	41.91	42.33
As	0.04	0.11	0.05	0.06	0.09	0.08	0.00	0.01	0.06	0.00	0.03	0.00	0.01	0.05	0.00
Sb	0.06	0.02	0.05	0.01	0.05	0.00	0.07	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
S	42.82	42.72	42.87	42.72	41.62	42.76	42.21	42.52	42.95	42.55	42.87	42.72	41.60	42.02	42.25
Se	0.00	0.00	0.00	0.08	0.13	0.09	0.12	0.06	0.06	0.00	0.05	0.07	0.00	0.03	0.06
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	100.54	100.49	100.47	99.94	99.42	100.34	99.23	99.53	100.11	99.17	100.59	100.32	99.09	99.16	99.83
Formula (S=4)															
Cu	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Fe	0.45	0.46	0.45	0.44	0.35	0.39	0.45	0.45	0.44	0.42	0.43	0.43	0.39	0.42	0.44
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.37	0.36	0.36	0.38	0.44	0.41	0.36	0.36	0.37	0.36	0.36	0.36	0.35	0.39	0.36
Ni	2.14	2.15	2.15	2.12	2.23	2.15	2.15	2.14	2.11	2.14	2.17	2.17	2.30	2.18	2.19
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Se	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	6.96	6.97	6.95	6.95	7.05	6.96	6.97	6.95	6.93	6.93	6.96	6.96	7.04	6.99	7.00
Mol.% Fe	15.24	15.40	15.13	15.04	11.65	13.27	15.23	15.23	15.00	14.45	14.47	14.49	12.82	13.95	14.69
Mol.% Co	12.49	12.06	12.15	12.81	14.60	14.01	12.24	12.19	12.55	12.19	12.15	12.33	11.52	13.07	12.09
Mol.% Ni	72.28	72.54	72.72	72.15	73.75	72.73	72.53	72.58	72.45	73.37	73.38	73.17	75.66	72.99	73.22

Table A.5.35 Representative analyses of polydymite-violarite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-56 1-tspl3	Ku-98-56 1-tspl3	Ku-98-56 2-tspl2	Ku-98-56 2-tspl2	Ku-98-56 2-tspl2	Ku-98-56 2-tspl2	Ku-98-56 1-tspl2	Ku-98-56 1-tspl2	Ku-98-56 1-tspl2	Ku-98-56 1-tspl2	Ku-98-56 1-tspl2	Ku-98-56 2-tspl1	Ku-98-56 2-tspl1
Cu	0.08	0.00	0.14	0.28	0.28	0.21	0.22	0.15	0.16	0.07	0.08	0.06	0.13
Fe	8.05	8.05	11.83	8.23	8.41	8.56	5.37	8.76	8.63	7.99	8.18	11.05	11.72
Mn	0.01	0.05	0.03	0.00	0.00	0.01	0.00	0.04	0.00	0.00	0.09	0.03	0.00
Co	7.00	7.33	6.11	8.43	8.42	8.20	5.88	7.03	7.37	7.98	7.66	6.57	6.22
Ni	41.04	41.80	38.83	39.50	39.27	39.23	47.23	40.83	40.74	40.58	41.12	39.51	39.57
As	0.00	0.00	0.06	0.00	0.01	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00
Sb	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.08
S	41.99	42.83	42.36	42.39	42.43	42.09	39.23	41.39	42.19	41.54	42.11	41.74	41.58
Se	0.07	0.07	0.00	0.00	0.17	0.11	0.07	0.09	0.06	0.14	0.02	0.00	0.07
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	98.23	100.14	99.38	98.83	98.98	98.40	98.00	98.30	99.15	98.36	99.25	98.95	99.36
Formula (S=4)													
Cu	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01
Fe	0.44	0.43	0.64	0.45	0.45	0.47	0.31	0.49	0.47	0.44	0.45	0.61	0.65
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.36	0.37	0.31	0.43	0.43	0.42	0.33	0.37	0.38	0.42	0.40	0.34	0.33
Ni	2.14	2.13	2.00	2.04	2.02	2.04	2.63	2.16	2.11	2.13	2.13	2.07	2.08
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Se	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Te	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	6.95	6.94	6.97	6.93	6.93	6.94	7.29	7.02	6.97	7.01	6.99	7.02	7.06
Mol.% Fe	14.99	14.71	21.68	15.31	15.64	15.96	9.61	16.14	15.87	14.76	15.00	20.15	21.21
Mol.% Co	12.34	12.68	10.62	14.85	14.85	14.48	9.97	12.28	12.85	13.96	13.31	11.35	10.66
Mol.% Ni	72.67	72.61	67.71	69.85	69.51	69.56	80.42	71.58	71.28	71.28	71.69	68.50	68.13

Table A.5.36 Representative analyses of fletcherite.

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a
	3-tspl1	3-tspl1	3-tspl1	3-tspl1	1-tspl1	1-tspl1	1-tspl1	1-tspl1	1-tspl1	1-tspl1	1-tspl1	1-tspl2
	rim	→	→	rim/mi	rim	→	→	→	→	→	rim/mi	rim
Cu	9.47	8.65	6.73	9.32	13.41	9.66	11.95	11.12	8.14	4.35	5.38	11.67
Fe	0.98	0.69	0.54	0.33	0.51	0.49	0.41	0.38	0.33	0.36	0.36	0.81
Mn	0.06	0.00	0.01	0.02	0.01	0.03	0.03	0.02	0.03	0.01	0.03	0.02
Co	0.59	0.56	0.66	0.60	0.61	0.58	0.60	0.62	0.58	0.52	0.60	0.60
Ni	47.63	48.76	50.72	48.14	45.02	48.06	46.80	47.79	51.04	54.32	54.15	46.77
As	0.00	0.08	0.00	0.00	0.06	0.00	0.00	0.00	0.02	0.00	0.02	0.00
Sb	0.01	0.10	0.00	0.03	0.10	0.00	0.00	0.00	0.05	0.00	0.00	0.03
S	39.91	39.69	40.64	39.82	39.54	40.63	40.27	40.32	39.75	39.49	39.27	40.15
Se	0.14	0.10	0.06	0.15	0.15	0.12	0.21	0.16	0.15	0.21	0.19	0.20
Total	98.80	98.62	99.36	98.40	99.41	99.57	100.27	100.41	100.10	99.26	99.99	100.24
Formula (S=4)												
Cu	0.48	0.44	0.33	0.47	0.68	0.48	0.60	0.56	0.41	0.22	0.28	0.59
Fe	0.06	0.04	0.03	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.05
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Ni	2.61	2.68	2.73	2.64	2.49	2.58	2.54	2.59	2.81	3.01	3.01	2.55
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Se	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01
Total	7.19	7.20	7.13	7.17	7.25	7.13	7.20	7.21	7.28	7.29	7.35	7.22
Mol.% Fe	2.09	1.44	1.09	0.70	1.16	1.04	0.89	0.81	0.68	0.69	0.68	1.76
Mol.% Co	1.20	1.11	1.26	1.21	1.32	1.18	1.25	1.27	1.12	0.94	1.08	1.23
Mol.% Ni	96.70	97.45	97.65	98.09	97.52	97.78	97.86	97.92	98.21	98.37	98.24	97.01

Table A.5.36 Representative analyses of fletcherite (continued).

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →	Ku-98-130a 1-tspl2 →
Cu	11.90	15.16	13.78	10.96	9.15	8.85	10.38	9.09	8.40	9.28	10.10	11.11	9.92
Fe	0.72	0.74	0.82	0.75	0.74	0.68	0.73	0.72	0.70	0.70	0.63	0.69	0.70
Mn	0.04	0.01	0.02	0.01	0.02	0.00	0.00	0.02	0.02	0.00	0.03	0.04	0.02
Co	0.56	0.56	0.56	0.59	0.56	0.55	0.52	0.56	0.61	0.59	0.56	0.61	0.53
Ni	46.40	44.17	44.95	47.07	48.61	48.80	48.60	49.08	49.12	48.48	47.98	47.59	49.34
As	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.02
Sb	0.04	0.00	0.00	0.06	0.03	0.00	0.00	0.00	0.11	0.06	0.00	0.06	0.04
S	39.88	39.47	39.59	39.78	40.41	40.80	39.83	40.34	40.41	40.41	40.28	40.00	39.46
Se	0.24	0.18	0.17	0.22	0.20	0.21	0.15	0.15	0.17	0.18	0.11	0.17	0.22
Total	99.77	100.28	99.90	99.45	99.79	99.90	100.22	99.96	99.60	99.70	99.68	100.26	100.26
Formula (S=4)													
Cu	0.60	0.78	0.70	0.56	0.46	0.44	0.53	0.45	0.42	0.46	0.51	0.56	0.51
Fe	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Ni	2.54	2.45	2.48	2.59	2.63	2.61	2.67	2.66	2.66	2.62	2.60	2.60	2.73
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Se	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01
Total	7.23	7.30	7.27	7.23	7.17	7.13	7.27	7.19	7.16	7.16	7.18	7.24	7.32
Mol.% Fe	1.59	1.70	1.86	1.63	1.56	1.43	1.54	1.50	1.46	1.47	1.35	1.49	1.45
Mol.% Co	1.18	1.22	1.21	1.22	1.12	1.10	1.03	1.10	1.20	1.18	1.12	1.24	1.05
Mol.% Ni	97.23	97.08	96.93	97.16	97.33	97.48	97.42	97.40	97.34	97.35	97.53	97.27	97.50

Table A.5.36 Representative analyses of fletcherite (continued).

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a
	1-tspl2	1-tspl5	1-tspl5	1-tspl5	8-tspl4	8-tspl4	8-tspl4	8-tspl4	8-tspl4	3-tspl1	3-tspl1	3-tspl1
	rim/mi	rim	→	rim/mi	mi/rim	→	→	→	rim	core	core	core
Cu	8.25	20.31	20.99	13.10	11.67	11.85	14.04	11.97	16.57	8.87	9.64	9.64
Fe	0.75	0.36	0.28	0.27	0.10	0.11	0.11	0.01	0.09	0.59	0.27	0.27
Mn	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.04	0.01	0.00	0.00	0.00
Co	0.60	0.59	0.64	0.54	0.11	0.17	0.09	0.15	0.18	0.56	0.71	0.71
Ni	50.64	39.59	39.36	45.48	46.37	46.41	44.20	46.22	41.91	49.23	48.62	48.62
As	0.00	0.08	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.05	0.00	0.00
Sb	0.07	0.02	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.02	0.05	0.05
S	39.35	39.30	39.21	40.23	40.42	40.26	39.61	39.96	39.27	39.38	39.95	39.95
Se	0.27	0.05	0.03	0.00	0.17	0.15	0.12	0.06	0.03	0.07	0.17	0.17
Total	99.93	100.30	100.50	99.62	98.87	98.98	98.26	98.42	98.05	98.77	99.41	99.41
Formula (S=4)												
Cu	0.42	1.04	1.08	0.66	0.58	0.59	0.72	0.60	0.85	0.45	0.49	0.49
Fe	0.04	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.03	0.02	0.02
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Co	0.03	0.03	0.04	0.03	0.01	0.01	0.01	0.01	0.01	0.03	0.04	0.04
Ni	2.81	2.20	2.19	2.47	2.51	2.52	2.44	2.53	2.33	2.73	2.66	2.66
As	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
S	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Se	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01
Total	7.32	7.30	7.33	7.17	7.11	7.14	7.17	7.15	7.20	7.26	7.21	7.21
Mol.% Fe	1.52	0.93	0.72	0.60	0.23	0.25	0.26	0.03	0.22	1.23	0.58	0.58
Mol.% Co	1.14	1.45	1.58	1.16	0.24	0.35	0.21	0.33	0.43	1.11	1.42	1.42
Mol.% Ni	97.34	97.62	97.70	98.24	99.53	99.40	99.54	99.64	99.35	97.66	98.00	98.00

Table A.5.36 Representative analyses of fletcherite (continued).

Rock type	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a
	3-tspl1	3-tspl1	3-tspl1	3-tspl1
	core	core	core	core
Cu	9.47	8.65	6.73	9.32
Fe	0.98	0.69	0.54	0.33
Mn	0.06	0.00	0.01	0.02
Co	0.59	0.56	0.66	0.60
Ni	47.63	48.76	50.72	48.14
As	0.00	0.08	0.00	0.00
Sb	0.01	0.10	0.00	0.03
S	39.91	39.69	40.64	39.82
Se	0.14	0.10	0.06	0.15
Total	98.80	98.62	99.36	98.40
Formula (S=4)				
Cu	0.48	0.44	0.33	0.47
Fe	0.06	0.04	0.03	0.02
Mn	0.00	0.00	0.00	0.00
Co	0.03	0.03	0.04	0.03
Ni	2.61	2.68	2.73	2.64
As	0.00	0.00	0.00	0.00
Sb	0.00	0.00	0.00	0.00
S	4.00	4.00	4.00	4.00
Se	0.01	0.00	0.00	0.01
Total	7.19	7.20	7.13	7.17
Mol.% Fe	2.09	1.44	1.09	0.70
Mol.% Co	1.20	1.11	1.26	1.21
Mol.% Ni	96.70	97.45	97.65	98.09

Table A.5.37 Representative analyses of barite.

Rock type	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b
	e-REEc	e-REEb	e-REEb	e-REE9
MgO	0.00	0.02	0.01	0.01
CaO	0.58	0.16	0.15	1.39
MnO	0.00	0.00	0.00	0.00
FeO	0.04	0.01	0.02	0.27
SrO	0.11	0.00	0.02	0.00
BaO	61.42	60.73	65.47	62.58
La_2O_3	0.00	0.00	0.01	0.00
Ce_2O_3	2.52	3.75	2.89	3.08
SO_4	33.28	33.16	33.83	34.30
Total	97.94	97.83	102.41	101.64
Formula (SO_4=2)				
Ca	0.05	0.01	0.01	0.11
Mg	0.00	0.00	0.01	0.00
Mn	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.02
Sr	0.00	0.00	0.00	0.00
Ba	1.89	1.90	1.91	1.81
La	0.00	0.00	0.00	0.00
Ce	0.04	0.05	0.04	0.04
SO_4	2.00	2.00	2.00	2.00
Total	3.98	3.97	3.98	3.98

Table A.5.38 Representative analyses of the unspecified Na-Al phase.

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a	Ku-98-130a
	4-NaAl1	4-NaAl2	4-NaAl3	5-NaAl1	5-NaAl2	5-NaAl2
Analyse						
SiO_2	0.29	0.37	0.37	0.17	0.04	0.06
TiO_2	0.02	0.04	0.05	0.00	0.00	0.01
Al_2O_3	75.63	78.05	76.01	80.15	77.89	81.26
Cr_2O_3	0.00	0.00	0.00	0.02	0.00	0.00
MgO	0.04	0.02	0.06	0.03	0.01	0.03
CaO	0.17	0.19	0.22	0.16	0.13	0.08
MnO	0.01	0.00	0.05	0.00	0.02	0.03
FeO	0.03	0.02	0.00	0.03	0.01	0.00
BaO	0.00	0.00	0.00	0.00	0.00	0.03
Na_2O	12.86	12.53	11.74	10.44	10.81	10.22
K_2O	0.01	0.02	0.00	0.01	0.01	0.01
Total	89.05	91.25	88.49	91.01	88.92	91.71

A.5.2 Mineral chemistry – SRXRF analyses

Table A.5.2.1 Representative analyses of calcite and ankerite.

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-14 c-cc9002	Ku-98-14 c-cc9003	Ku-98-14 c-cc9003	Ku-98-14 c-cc9003	98-14-c cc902	Ku-98-14 c-cc9001	Ku-98-14 c-cc9001	Ku-98-14 c-cc9001	Ku-98-130b g-cc2001es	Ku-98-130b g-cc2002es	Ku-98-130b a-cc3001	Ku-98-130b a-cc4001	Ku-98-130b a-cc4001	Ku-98-130b a-cc4001	Ku-98-130b a-cc4001	Ku-98-130b a-cc4001	Ku-98-130b a-cc4001
Mineral	calcite	calcite	calcite	calcite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite
EMP (wt.%)																	
MgO	0.00	0.00	0.00	0.00	11.68	11.87	12.17	10.82	10.48	10.51	10.60	10.06	10.81	10.59	10.96	10.95	10.59
CaO	53.68	52.67	52.03	53.05	28.57	28.28	28.51	28.57	28.63	28.43	28.56	28.68	28.58	28.55	28.94	28.81	29.21
MnO	0.05	0.00	0.06	0.08	2.49	2.55	2.43	1.86	1.38	1.59	1.69	1.73	1.67	1.73	1.96	1.68	1.94
FeO	0.14	0.00	0.06	0.20	13.06	13.15	12.44	14.24	15.23	15.37	15.07	14.71	14.12	13.92	13.71	14.01	14.76
SrO	2.01	2.07	1.94	1.99	0.68	0.90	0.79	0.50	0.71	0.67	0.54	0.68	0.63	0.65	0.71	0.74	0.58
BaO	0.00	0.19	0.04	0.00	0.08	0.03	0.02	0.10	0.08	0.16	0.00	0.07	0.00	0.09	0.00	0.00	0.08
Na_2O	0.52	0.59	0.77	0.59	0.02	0.01	0.01	0.04	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
La_2O_3	0.66	0.71	0.55	0.95	0.00	0.07	0.00	0.00	0.14	0.00	0.13	0.04	0.16	0.05	0.00	0.00	0.00
Ce_2O_3	1.12	1.37	1.34	1.75	0.00	0.00	0.19	0.18	0.00	0.12	0.12	0.12	0.00	0.00	0.05	0.12	0.00
CO_2	41.43	40.85	40.43	41.39	42.26	42.41	42.42	41.73	41.74	41.81	41.85	41.27	41.55	41.24	41.87	41.83	42.20
Total	99.61	98.47	97.21	100.00	98.85	99.28	99.00	98.03	98.40	98.66	98.55	97.35	97.52	96.82	98.19	98.15	99.37
SRXRF (ppm)*																	
Zn	1	1	3	4	6	185	109	118	152	101	149	159	153	141	145	164	128
Kr	1	1	1	1	9	15	8	13	56	43	102	113	103	71	73	74	63
Nb	2	5	5	2	6	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ba	b.d.l.	4	19	20	18	436	1492	349	437	474	407	767	469	425	449	499	392
La	6421	5809	5802	4733	2054	373	215	277	550	814	1080	2684	904	619	632	628	494
Ce	12930	12230	12000	9389	3917	761	389	569	1175	1568	1050	4114	1652	1265	1314	1343	1027
Nd	4861	4999	4777	3507	1386	269	161	194	526	647	388	1188	635	527	562	580	447
Sm	451	553	521	336	134	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Eu	220	253	229	160	64	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Gd	275	366	304	200	85	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tb	30	40	40	22	11	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Dy	151	240	176	118	57	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ho	26	27	9	27	10	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Er	71	94	76	56	24	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tm	9	4	b.d.l.	b.d.l.	1	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Yb	56	78	71	49	33	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Lu	14	26	39	23	13	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sum	25518	24731	24071	18645	7827	6668	7002	6149	7525	8276	7804	13654	8545	7677	7804	7918	7180
ΣREE (wt.%)	2.55	2.47	2.40	1.86	0.78	0.14	0.08	0.10	0.23	0.30	0.25	0.80	0.32	0.24	0.25	0.26	0.20
$(La/Nd)_{CN}$	2.56	2.25	2.35	2.61	2.867	2.69	2.59	2.77	2.02	2.43	5.39	4.37	2.75	2.27	2.18	2.10	2.14
$(La/Yb)_{CN}$	77.79	50.21	55.05	64.59	41.957	-	-	-	-	-	-	-	-	-	-	-	-
$(Eu/Eu^*)_{CN}$	1.91	1.72	1.76	1.88	1.818	-	-	-	-	-	-	-	-	-	-	-	-

*calculated with Sr as internal standard

A.5.2 Mineral chemistry – SRXRF analyses

Table A.5.2.1 Representative analyses of calcite and ankerite.

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	98-14-c	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b
	c-cc9002	c-cc9003	c-cc9003	c-cc9003	cc902	c-cc9001	c-cc9001	c-cc9001	g-cc2001es	g-cc2002es	a-cc3001	a-cc4001	a-cc4001	a-cc4001	a-cc4001	a-cc4001	a-cc4001
Mineral	calcite	calcite	calcite	calcite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite
EMP (wt.%)																	
MgO	0.00	0.00	0.00	0.00	11.68	11.87	12.17	10.82	10.48	10.51	10.60	10.06	10.81	10.59	10.96	10.95	10.59
CaO	53.68	52.67	52.03	53.05	28.57	28.28	28.51	28.57	28.63	28.43	28.56	28.68	28.58	28.55	28.94	28.81	29.21
MnO	0.05	0.00	0.06	0.08	2.49	2.55	2.43	1.86	1.38	1.59	1.69	1.73	1.67	1.73	1.96	1.68	1.94
FeO	0.14	0.00	0.06	0.20	13.06	13.15	12.44	14.24	15.23	15.37	15.07	14.71	14.12	13.92	13.71	14.01	14.76
SrO	2.01	2.07	1.94	1.99	0.68	0.90	0.79	0.50	0.71	0.67	0.54	0.68	0.63	0.65	0.71	0.74	0.58
BaO	0.00	0.19	0.04	0.00	0.08	0.03	0.02	0.10	0.08	0.16	0.00	0.07	0.00	0.09	0.00	0.00	0.08
Na_2O	0.52	0.59	0.77	0.59	0.02	0.01	0.01	0.04	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
La_2O_3	0.66	0.71	0.55	0.95	0.00	0.07	0.00	0.00	0.14	0.00	0.13	0.04	0.16	0.05	0.00	0.00	0.00
Ce_2O_3	1.12	1.37	1.34	1.75	0.00	0.00	0.19	0.18	0.00	0.12	0.12	0.12	0.00	0.00	0.05	0.12	0.00
CO_2	41.43	40.85	40.43	41.39	42.26	42.41	42.42	41.73	41.74	41.81	41.85	41.27	41.55	41.24	41.87	41.83	42.20
Total	99.61	98.47	97.21	100.00	98.85	99.28	99.00	98.03	98.40	98.66	98.55	97.35	97.52	96.82	98.19	98.15	99.37
SRXRF (ppm)*																	
Zn	1	1	3	4	6	185	109	118	152	101	149	159	153	141	145	164	128
Kr	1	1	1	1	9	15	8	13	56	43	102	113	103	71	73	74	63
Nb	2	5	5	2	6	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ba	b.d.l.	4	19	20	18	436	1492	349	437	474	407	767	469	425	449	499	392
La	6421	5809	5802	4733	2054	373	215	277	550	814	1080	2684	904	619	632	628	494
Ce	12930	12230	12000	9389	3917	761	389	569	1175	1568	1050	4114	1652	1265	1314	1343	1027
Nd	4861	4999	4777	3507	1386	269	161	194	526	647	388	1188	635	527	562	580	447
Sm	451	553	521	336	134	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Eu	220	253	229	160	64	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Gd	275	366	304	200	85	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tb	30	40	40	22	11	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Dy	151	240	176	118	57	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ho	26	27	9	27	10	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Er	71	94	76	56	24	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tm	9	4	b.d.l.	b.d.l.	1	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Yb	56	78	71	49	33	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Lu	14	26	39	23	13	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sum	25518	24731	24071	18645	7827	6668	7002	6149	7525	8276	7804	13654	8545	7677	7804	7918	7180
ΣREE (wt.%)	2.55	2.47	2.40	1.86	0.78	0.14	0.08	0.10	0.23	0.30	0.25	0.80	0.32	0.24	0.25	0.26	0.20
$(La/Nd)_{CN}$	2.56	2.25	2.35	2.61	2.867	2.69	2.59	2.77	2.02	2.43	5.39	4.37	2.75	2.27	2.18	2.10	2.14
$(La/Yb)_{CN}$	77.79	50.21	55.05	64.59	41.957	-	-	-	-	-	-	-	-	-	-	-	-
$(Eu/Eu^*)_{CN}$	1.91	1.72	1.76	1.88	1.818	-	-	-	-	-	-	-	-	-	-	-	-

*calculated with Sr as internal standard

Table A.5.2.1 Representative analyses of calcite and ankerite (continued).

Rock type	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	CB,REE	FV	FV	FV
Sample	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-98-130b	Ku-01-04	Ku-01-04	Ku-01-04
	a-cc4001	a-cc4001	a-cc4001	a-cc4001	e-cc5001	e-cc5001	e-cc5001	e-cc5001	e-cc5001	e-cc5001	e-cc5001	e-cc5001	e-cc5001	e-cc5001	a-cc8001	a-cc8001	a-cc8001
Mineral	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite
EMP (wt.%)																	
MgO	10.02	10.22	9.96	10.64	10.58	10.43	10.33	10.48	10.09	9.97	9.13	9.51	10.33	10.05	10.38	11.26	11.26
CaO	28.78	28.11	28.37	28.74	29.01	29.31	29.01	28.80	29.26	28.80	27.82	28.59	28.68	28.29	28.78	28.78	28.94
MnO	1.86	1.45	1.88	1.69	1.62	1.52	1.55	1.73	1.72	1.62	1.88	1.69	1.49	1.83	2.80	3.01	3.00
FeO	15.74	15.97	15.55	15.20	14.48	14.10	14.87	15.17	15.05	15.23	16.58	16.45	15.01	15.53	13.91	12.31	13.62
SrO	0.44	0.45	0.51	0.50	0.51	0.26	0.51	0.43	0.56	0.51	0.39	0.45	0.67	0.46	0.65	0.71	0.65
BaO	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.10	0.01	0.01	b.d.l.	0.07	0.00	0.07
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
La_2O_3	0.00	0.00	0.07	0.00	0.00	0.14	0.25	b.d.l.	0.02	0.13	0.00	0.18	0.18	0.05	0.00	0.00	0.02
Ce_2O_3	0.11	0.00	0.28	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.16	0.05	0.00	0.03	0.00
CO_2	41.80	41.41	41.48	42.01	42.09	41.85	41.86	41.85	41.77	41.41	40.71	41.54	41.61	41.38	41.74	41.87	42.66
Total	98.74	97.62	98.11	98.88	98.29	97.62	98.38	98.46	98.47	97.72	96.60	98.58	98.13	97.65	98.34	97.98	100.23
SRXRF (ppm)*																	
Zn	122	127	145	145	102	54	233	218	294	216	176	192	207	101	161	170	155
Kr	57	64	79	82	39	37	105	94	116	96	87	108	114	54	64	62	89
Nb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	132	129	112
Ba	307	257	295	272	230	135	582	509	616	519	397	437	397	595	353	419	214
La	396	324	345	318	153	102	279	160	209	220	137	200	257	219	232	254	187
Ce	848	683	744	654	442	285	774	427	590	597	384	498	683	588	607	720	524
Nd	401	305	348	318	259	162	459	251	360	347	242	282	371	321	326	393	290
Sm	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Eu	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Gd	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Dy	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ho	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Er	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tm	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Yb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Lu	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sum	6759	6388	6585	6417	5854	5404	7060	6288	6814	6625	6052	6346	6657	6506	6504	6776	6199
ΣREE (wt.%)	0.16	0.13	0.14	0.13	0.09	0.05	0.15	0.08	0.12	0.12	0.08	0.10	0.13	0.11	0.12	0.14	0.10
$(La/Nd)_{CN}$	1.91	2.06	1.92	1.94	1.15	1.22	1.17	1.24	1.12	1.23	1.10	1.37	1.34	1.32	1.38	1.25	1.25
$(La/Yb)_{CN}$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$(Eu/Eu^*)_{CN}$	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*calculated with Sr as internal standard

Table A.5.2.1 Representative analyses of calcite and ankerite (continued).

Rock type	FV	FV	FV	FV	FV	FV	FV	FV
Sample	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04	Ku-01-04
	a-cc8001	a-cc8001	a-cc8002	a-cc8002	a-cc8002	a-cc8002	a-cc8002	a-cc8002
Mineral	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite	ankerite
EMP (wt.%)								
MgO	9.37	10.14	9.99	11.71	10.66	11.42	11.53	11.73
CaO	29.06	29.19	28.78	29.12	28.75	28.95	29.05	28.76
MnO	2.47	2.76	2.82	3.23	3.08	2.99	2.79	3.07
FeO	15.59	14.95	14.36	11.77	13.57	12.11	12.05	11.71
SrO	0.65	0.55	0.63	0.54	0.45	0.62	0.54	0.72
BaO	0.02	0.00	0.00	0.05	0.05	0.00	0.01	0.05
Na_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
La_2O_3	0.16	0.00	0.00	0.00	0.00	0.18	0.04	0.04
Ce_2O_3	0.04	0.00	0.00	0.00	0.00	0.00	0.09	0.00
CO_2	41.87	42.42	41.59	42.37	41.88	42.04	42.03	42.04
Total	99.23	100.01	98.17	98.79	98.44	98.31	98.12	98.12
SRXRF (ppm)*								
Zn	156	151	163	127	94	154	134	170
Kr	59	56	55	48	29	49	53	52
Nb	84	56	15	11	6	8	17	35
Ba	348	286	612	338	318	381	374	733
La	216	174	288	225	139	241	322	269
Ce	571	483	831	569	382	625	911	757
Nd	304	266	487	318	190	336	482	432
Sm	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Eu	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Gd	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Dy	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ho	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Er	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tm	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Yb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Lu	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sum	6367	6100	7079	6265	5786	6423	6922	7077
ΣREE (wt.%)	0.11	0.09	0.16	0.11	0.07	0.12	0.17	0.15
$(La/Nd)_{CN}$	1.37	1.27	1.14	1.37	1.41	1.39	1.29	1.20
$(La/Yb)_{CN}$	-	-	-	-	-	-	-	-
$(Eu/Eu^*)_{CN}$	-	-	-	-	-	-	-	-

*calculated with Sr as internal standard

Table A.5.2.2 Representative analyses of biotite.

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 b-bt1002	Ku-98-14 d-bt2002	Ku-98-14 d-bt2002	Ku-98-14 d-bt2002
EMP (wt.%)															
SiO_2	33.62	34.44	33.94	34.54	33.68	32.73	34.56	32.90	34.71	36.67	36.95	37.64	34.13	34.12	33.37
TiO_2	2.58	2.78	2.29	2.71	4.00	3.40	2.57	2.47	2.63	2.32	2.38	2.13	2.43	2.62	2.52
Al_2O_3	15.23	14.14	15.47	14.29	15.20	15.09	14.94	15.88	15.04	15.61	16.11	17.53	14.06	13.96	14.06
Cr_2O_3	0.00	0.00	0.01	0.01	0.04	0.00	0.00	0.04	0.00	0.03	0.00	0.00	0.07	0.05	0.01
FeO	20.79	21.71	21.75	21.41	20.29	21.28	21.43	22.09	21.08	19.82	17.91	17.84	21.34	21.56	21.97
NiO	0.07	0.00	0.07	0.07	0.00	0.04	0.00	0.05	0.04	0.11	0.00	0.00	0.00	0.02	0.02
MnO	0.07	0.09	0.06	0.06	0.07	0.11	0.08	0.07	0.05	0.10	0.11	0.05	0.08	0.08	0.17
MgO	11.58	10.70	11.55	10.63	11.60	11.85	11.25	11.96	11.57	9.80	9.62	9.76	10.92	11.09	11.08
CaO	0.01	0.00	0.01	0.04	0.02	0.03	0.05	0.02	0.10	0.02	0.01	0.03	0.01	0.02	0.01
Na_2O	0.25	0.05	0.44	0.17	0.30	0.13	0.19	0.20	0.37	1.85	1.24	2.48	0.08	0.15	0.11
K_2O	7.83	9.47	7.72	9.27	7.79	7.50	8.60	7.07	8.51	7.44	7.81	6.30	9.81	9.62	9.62
BaO	0.35	0.15	0.14	0.21	0.08	0.05	0.18	0.26	0.21	0.01	0.09	0.15	0.25	0.03	0.12
F	1.58	1.40	1.67	1.42	1.49	1.48	1.37	1.49	1.82	1.41	1.45	1.45	1.79	1.52	1.68
Cl	0.04	0.02	0.04	0.06	0.00	0.05	0.08	0.05	0.04	0.07	0.01	0.04	0.02	0.00	0.01
Sum	93.99	94.94	95.14	94.86	94.55	93.73	95.31	94.55	96.17	95.22	93.68	95.40	94.98	94.83	94.74
O=F	-0.66	-0.59	-0.70	-0.60	-0.63	-0.62	-0.58	-0.63	-0.77	-0.59	-0.61	-0.61	-0.75	-0.64	-0.71
O=Cl	-0.01	-0.01	-0.01	-0.01	0.00	-0.01	-0.02	-0.01	-0.01	-0.01	0.00	-0.01	-0.01	0.00	0.00
Total	93.32	94.34	94.43	94.25	93.92	93.09	94.71	93.92	95.40	94.61	93.07	94.78	94.22	94.19	94.03
SRXRF (ppm)*															
Zn	1567	1616	1640	1604	1455	1424	1525	1649	1343	1434	1114	1232	1554	1453	1473
Rb	299	344	374	334	315	360	365	389	345	335	282	349	369	507	498
Sr	61	59	59	72	29	37	33	48	35	28	28	47	30	21	18
Nb	360	386	401	426	330	385	357	384	319	353	293	366	896	487	579
Sn	137	135	137	139	108	111	124	124	139	124	98	140	172	244	273
Ta	9137	8953	10480	10700	9155	9723	9215	10160	8832	9350	8031	11990	5040	5416	5680
Total	11561	11493	13090	13275	11392	12040	11618	12754	11013	11624	9847	14124	8060	8127	8521

*calculated with Fe as internal standard

Table A.5.2.2 Representative analyses of biotite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14
	d-bt2002	d-bt2002	d-bt2002	d-bt2002	d-bt2003	d-bt2007	d-bt2007	d-bt2007	d-bt2007	d-bt2007	d-bt2007
EMP (wt.%)											
SiO_2	34.63	34.32	34.07	34.76	33.04	32.49	33.73	34.99	35.06	33.70	33.91
TiO_2	2.63	2.66	2.49	2.61	2.56	2.18	2.59	2.73	2.82	2.45	2.31
Al_2O_3	13.92	13.80	14.28	14.11	14.23	15.75	14.70	14.31	14.57	15.57	15.77
Cr_2O_3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.02
FeO	21.89	21.67	22.26	21.65	21.47	20.59	20.52	20.94	21.09	21.87	21.65
NiO	0.03	0.00	0.05	0.02	0.00	0.06	0.06	0.04	0.02	0.00	0.08
MnO	0.14	0.09	0.10	0.12	0.15	0.01	0.08	0.12	0.11	0.08	0.11
MgO	10.97	11.11	11.66	11.72	11.24	12.51	11.97	11.60	11.50	10.74	11.00
CaO	0.07	0.00	0.05	0.05	0.03	0.01	0.00	0.01	0.00	0.00	0.04
Na_2O	0.13	0.18	0.34	0.29	0.23	0.20	0.14	0.23	0.18	0.04	0.09
K_2O	9.57	9.55	8.27	8.82	8.87	7.85	8.76	9.80	9.50	9.38	9.11
BaO	0.19	0.11	0.10	0.15	0.35	0.09	0.06	0.13	0.23	0.50	0.50
F	1.33	1.88	1.91	1.75	1.72	1.71	2.10	1.89	1.65	1.52	1.45
Cl	0.03	0.02	0.14	0.09	0.03	0.07	0.00	0.00	0.05	0.02	0.01
Sum	95.50	95.38	95.72	96.15	93.91	93.53	94.70	96.79	96.77	95.88	96.02
O=F	-0.56	-0.79	-0.81	-0.74	-0.72	-0.72	-0.88	-0.79	-0.69	-0.64	-0.61
O=Cl	-0.01	-0.01	-0.03	-0.02	-0.01	-0.02	0.00	0.00	-0.01	0.00	0.00
Total	94.94	94.59	94.89	95.39	93.18	92.79	93.82	96.00	96.06	95.23	95.40
SRXRF (ppm)*											
Zn	1368	1318	1429	1379	1406	1031	1373	1369	1370	1304	881
Rb	501	501	524	468	426	359	296	458	459	434	307
Sr	20	13	25	24	48	40	18	25	18	25	22
Nb	620	628	665	607	413	407	223	441	444	119	92
Sn	287	237	253	237	210	146	35	209	221	130	100
Ta	5146	4861	5903	5065	5141	3746	132	4917	4489	4148	2871
Total	7941	7557	8799	7780	7643	5728	2075	7419	7001	6160	4272

*calculated with Sr as internal standard

Table A.5.2.3 Representative analyses of apatite.

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14
	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001
Position	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix	matrix
EMP (wt.%)																			
P_2O_5	42.24	42.40	41.80	42.22	42.13	42.12	41.90	41.53	42.47	42.66	42.82	42.30	41.43	40.35	41.81	42.42	41.79	42.51	43.25
SiO_2	0.02	0.03	0.04	0.00	b.d.l.	0.01	b.d.l.	0.01	b.d.l.	b.d.l.	b.d.l.	0.01	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.00	b.d.l.	b.d.l.
MgO	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
CaO	52.52	54.08	52.56	52.46	52.15	51.77	52.13	52.55	53.72	53.11	52.16	52.89	52.58	50.97	53.02	52.70	52.60	53.14	52.07
MnO	0.07	0.05	0.09	0.06	0.11	b.d.l.	0.03	0.06	0.06	b.d.l.	0.09	0.00	0.03	0.06	0.00	0.05	0.06	0.05	0.03
FeO	0.23	0.12	0.10	0.06	0.04	0.00	0.04	0.02	0.09	0.07	0.09	0.03	0.01	0.02	0.05	0.02	0.00	b.d.l.	0.04
SrO	2.10	2.19	2.08	2.01	2.03	2.01	2.00	1.83	1.84	1.76	1.87	1.99	1.77	1.88	1.77	1.78	1.86	1.82	1.87
BaO	0.05	b.d.l.	0.04	b.d.l.	0.04	0.04	b.d.l.	0.05	0.01	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.02	b.d.l.	b.d.l.	0.03	b.d.l.	0.02
Na_2O	0.64	0.46	0.66	0.73	0.77	0.77	0.78	0.73	0.48	0.60	0.71	0.62	0.67	0.65	0.70	0.63	0.62	0.43	0.71
H_2O	b.d.l.	0.97	0.51	0.37	b.d.l.	0.30	0.35	0.86	0.76	0.31	0.15	0.23	b.d.l.	b.d.l.	1.08	0.00	0.77	0.49	0.75
F	3.80	1.67	2.53	2.81	3.91	2.96	2.84	1.81	2.07	2.98	3.30	3.13	3.69	3.59	3.59	3.59	1.99	2.62	2.09
Cl	0.04	b.d.l.	0.03	0.06	b.d.l.	b.d.l.	0.01	0.01	0.05	0.01	0.03	0.01	b.d.l.	0.00	0.01	0.01	0.02	0.01	0.03
Total	101.69	101.97	100.43	100.77	101.19	99.97	100.09	99.45	101.55	101.50	101.20	101.21	100.19	97.54	99.81	101.19	99.75	101.08	100.87
SRXRF (ppm)*																			
Y	61	26	33	27	28	40	37	36	36	43	40	38	54	64	56	45	39	27	35
Nb	100	1	2	1	1		1	2	2	0	1	2	2	3	3	3			1
Ba	40	16	32	16	37	32	11	43	11	6	5	5	4	5	8	9	30	10	19
La	6122	3586	4239	4427	5253	7198	4927	5087	5098	5283	4451	3435	3495	3996	4140	4558	4682	2492	5440
Ce	11450	5725	7190	7559	9209	13080	8624	9845	9874	10300	8833	6939	7451	8710	8653	9056	8659	4019	10170
Pr	905	469	612	624	789	981	600	883	891	827	802	656	743	876	834	848	615	362	763
Nd	3912	2118	2809	2896	3617	4621	2749	4261	4282	3801	3852	3302	3812	4527	4275	4161	2984	1096	3631
Sm	416	210	297	271	361	576	428	441	456	554	473	398	506	608	536	480	455	126	506
Eu	96	58	75	57	82	97	31	106	98	76	103	100	119	146	144	111	33	45	63
Gd	245	124	166	157	190	277	252	259	259	262	278	264	352	446	362	318	263	222	261
Tb	29	9	10	2	7	21	32	17	10	25	27	16	31	42	18	14	27	45	18
Dy	170	91	122	99	102	113	112	139	160	112	157	171	221	286	250	190	127	64	86
Ho	19	18	29	20	17	20	29	20	29	13	19	27	31	42	34	27	25	42	8
Er	84	55	65	54	62	65	85	69	80	70	82	70	90	122	95	100	77	64	54
Tm	b.d.l.	21	22	6	20	6	17	9	21	4	16	10	17	19	18	17	11	8	4
Yb	95	40	62	28	50	59	22	30	43	47	72	54	68	82	73	40	41	34	41
Lu	43	9	12	23	39		18	27	33	4	9	10	15	6	14		14	37	9
Hf	4	69	28	50	57	56	4	46	66	26	73	46	65	27	42	47	23	7	44
Total	23792	12646	15805	16318	19920	27242	17979	21320	21449	21454	19292	15542	17076	20007	19555	20026	18104	8700	21153
ΣREE (wt.%)	2.36	1.25	1.57	1.62	1.98	2.71	1.79	2.12	2.13	2.14	1.92	1.55	1.70	1.99	1.94	1.99	1.80	0.87	2.11
$(La/Nd)_{CN}$	3.03	3.28	2.92	2.96	2.81	3.01	3.47	2.31	2.30	2.69	2.24	2.01	1.77	1.71	1.87	2.12	3.04	4.40	2.90
$(La/Yb)_{CN}$	43.63	60.15	46.00	105.02	70.25	82.34	150.08	113.29	80.35	75.25	41.50	42.62	34.50	32.66	38.13	75.81	76.66	49.58	89.40
$(Eu/Eu^*)_{CN}$	0.92	1.09	1.03	0.84	0.95	0.74	0.29	0.95	0.87	0.61	0.87	0.94	0.86	0.85	1.00	0.87	0.29	0.82	0.53
$(Ce/Ce^*)_{CN}$	1.17	1.06	1.07	1.09	1.09	1.18	1.21	1.12	1.11	1.18	1.12	1.11	1.11	1.12	1.12	1.11	1.23	1.02	1.20
Y/Ho	3.20	1.45	1.15	1.35	1.60	2.02	1.27	1.78	1.26	3.30	2.10	1.40	1.74	1.54	1.65	1.65	1.57	0.65	4.17

*calculated with Sr as internal standard

Table A.5.2.3 Representative analyses of apatite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14
	ap1001	ap1001	ap1001	ap1001	ap1001	ap1001	ap2001	ap2001	ap2001	ap2001	ap2001	ap2001	ap2001	ap2001	ap2004	ap2004	ap2004	ap2004	ap2004
Position	matrix	matrix	matrix	matrix	matrix	matrix	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion
EMP (wt.%)																			
P_2O_5	42.25	42.96	43.01	42.96	44.86	41.67	42.20	41.81	43.27	43.05	42.13	43.13	43.30	42.62	42.92	42.94	42.16	42.60	43.00
SiO_2	0.02	0.03	b.d.l.	b.d.l.	0.01	b.d.l.	0.00	0.01	b.d.l.	b.d.l.	b.d.l.	0.00	b.d.l.	b.d.l.	0.00	b.d.l.	b.d.l.	b.d.l.	b.d.l.
MgO	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.01	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
CaO	51.82	53.04	53.15	52.51	b.d.l.	52.20	52.36	51.88	52.30	52.55	51.92	51.69	52.74	53.23	51.68	50.94	52.56	52.02	51.98
MnO	0.08	0.02	0.04	0.07	0.05	0.06	0.13	0.08	0.01	0.02	0.06	0.09	0.09	0.08	0.06	0.07	0.09	0.04	0.04
FeO	0.00	0.04	0.07	0.13	b.d.l.	0.18	0.20	0.14	0.15	0.08	0.08	0.09	0.08	0.15	0.17	0.01	0.12	0.06	0.07
SrO	2.05	1.75	1.69	2.13	b.d.l.	2.23	1.98	1.99	2.06	2.10	1.91	2.04	2.02	2.04	2.25	2.34	2.04	1.99	1.94
BaO	0.07	b.d.l.	b.d.l.	b.d.l.	0.01	b.d.l.	0.03	0.11	b.d.l.	0.02	0.02	b.d.l.	b.d.l.	0.02	0.10	b.d.l.	b.d.l.	b.d.l.	0.02
Na_2O	0.89	0.65	0.59	0.54	b.d.l.	0.63	0.62	0.74	0.77	0.70	0.72	0.88	0.48	0.44	0.67	0.73	0.63	0.71	0.68
H_2O	0.38	0.71	1.16	b.d.l.	b.d.l.	0.71	0.85	1.15	0.59	0.38	1.06	0.49	1.10	1.02	0.38	0.34	1.05	0.47	1.24
F	2.82	2.19	1.29	3.64	4.08	2.10	1.85	1.23	2.45	2.86	1.42	2.63	1.41	1.55	2.83	2.91	1.46	2.64	1.08
Cl	b.d.l.	b.d.l.	0.01	b.d.l.	0.05	0.03	0.02	0.00	b.d.l.	b.d.l.	0.00	0.00			0.01	b.d.l.	b.d.l.	b.d.l.	0.03
Total	100.37	101.39	101.00	101.99	49.07	99.81	100.23	99.12	101.59	101.77	99.31	101.03	101.21	101.15	101.07	100.28	100.11	100.52	100.08
SRXRF (ppm)*																			
Y	32	35	43	48	66	68	52	50	45	44	54	51	49	57	109	64	163	92	81
Nb	1	2	2	2	3	3	2	0	1	1	1	2	2	2	7	3	11	4	4
Ba	58	10	10	12	7	11	26	97	36	21	17	26	31	21	92	35	35	30	20
La	5530	5494	5145	4800	4292	4975	6369	6346	5341	5811	5915	6113	6831	5888	5845	6893	5337	6750	6090
Ce	10380	10280	9833	9077	8596	9622	11600	11540	9826	10760	10970	10940	11670	9775	10740	11810	12220	12780	11180
Pr	914	898	878	802	791	871	1003	990	865	937	951	941	970	810	948	978	1331	1161	980
Nd	4345	4335	4232	3908	4019	4275	4577	4520	3966	4308	4378	4319	4301	3644	4503	4494	6888	5553	4692
Sm	428	431	451	409	486	490	440	402	379	398	400	414	376	328	499	394	1038	614	489
Eu	110	104	113	99	122	110	135	120	115	124	137	133	108	109	156	108	265	180	146
Gd	227	230	278	254	342	357	248	249	234	235	253	221	223	211	371	243	799	386	356
Tb	14	22	18	16	26	29	10	8	9	3	6	4	4	7	30	1	35	19	38
Dy	127	151	181	190	254	267	130	132	111	107	143	100	118	132	264	132	434	230	201
Ho	27	25	25	34	42	32	91	83	65	76	90	69	81	85	88	69	65	71	79
Er	56	63	73	84	116	89	123	113	93	85	111	103	111	117	145	106	167	125	119
Tm	17	9	17	15	15	10	10	26	25	31	27	20	22	34	22	17	24	4	13
Yb	43	44	67	79	72	43	37	27	17	8	35	26	35	39	61	27	46	37	42
Lu	5	4	1		4	15	5	21	30	4	16	5	10	5	23	28	16	34	8
Hf	45	54	54	53	69	30	42	48	19	15			44	9	24	11	31	33	6
Total	22358	22192	21420	19882	19322	21295	24900	24772	21175	22968	23504	23487	24985	21272	23927	25413	28904	28103	24543
ΣREE (wt.%)	2.22	2.21	2.13	1.98	1.92	2.12	2.48	2.46	2.11	2.29	2.34	2.34	2.49	2.12	2.37	2.53	2.87	2.79	2.44
$(La/Nd)_{CN}$	2.46	2.45	2.35	2.38	2.07	2.25	2.69	2.72	2.61	2.61	2.61	2.74	3.07	3.13	2.51	2.97	1.50	2.35	2.51
$(La/Yb)_{CN}$	86.96	84.53	51.45	40.79	39.96	77.18	114.41	160.73	212.09	488.21	114.93	161.26	132.92	101.36	64.81	169.42	78.02	122.83	97.61
$(Eu/Eu^*)_{CN}$	1.08	1.01	0.97	0.94	0.92	0.81	1.25	1.16	1.18	1.24	1.31	1.34	1.14	1.26	1.11	1.07	0.89	1.13	1.07
$(Ce/Ce^*)_{CN}$	1.11	1.11	1.11	1.11	1.12	1.11	1.10	1.11	1.10	1.11	1.11	1.10	1.09	1.08	1.10	1.09	1.10	1.10	1.10
Y/Ho	1.17	1.41	1.72	1.41	1.58	2.12	0.57	0.60	0.70	0.59	0.60	0.74	0.61	0.67	1.24	0.94	2.53	1.30	1.03

*calculated with Sr as internal standard

Table A.5.2.3 Representative analyses of apatite (continued).

Rock type	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14	Ku-98-14
	ap2004	ap2004	ap2005	ap2005	ap2005	ap2005	ap2005	ap2005	ap2005	ap2006	ap2006	ap2006
Position	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	inclusion	matrix	matrix	matrix
EMP (wt.%)												
P_2O_5	41.81	41.90	42.14	41.61	42.19	41.86	41.17	42.24	41.67	42.63	42.21	40.79
SiO_2	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.05	0.47	0.04	0.00	b.d.l.	0.01	1.06	b.d.l.
MgO	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
CaO	51.36	51.77	51.52	51.76	52.33	51.55	51.27	52.51	51.92	53.32	51.52	51.62
MnO	0.08	0.04	0.04	0.06	0.06	0.05	0.03	0.03	0.05	0.04	0.10	0.10
FeO	0.11	0.07	0.16	0.04	0.03	0.15	0.49	0.06	0.13	0.05	0.08	0.45
SrO	2.07	1.95	2.09	1.85	1.91	1.84	1.97	2.07	2.26	1.98	1.65	2.11
BaO	b.d.l.	b.d.l.	0.01	b.d.l.	b.d.l.	0.03	0.03	b.d.l.	0.03	b.d.l.	b.d.l.	b.d.l.
Na_2O	0.83	0.72	0.73	0.61	0.73	0.73	0.86	0.66	0.73	0.37	0.54	0.59
H_2O	0.69	0.99	0.43	1.12	0.27	0.05	0.29	0.46	0.07	0.70	0.84	0.19
F	2.14	1.56	2.69	1.27	3.01	3.46	2.93	2.66	3.41	2.21	1.90	3.10
Cl	b.d.l.	b.d.l.	0.02	0.01	0.04	0.02	b.d.l.	0.00	0.00	b.d.l.	b.d.l.	0.01
Total	99.07	98.98	99.83	98.31	100.62	100.20	99.08	100.69	100.26	101.29	99.89	98.96
SRXRF (ppm)*												
Y	117	163	59	54	53	53	56	109	89	83	58	50
Nb	7	51	3	2	2	3	6	7	12	5	4	2
Ba	137	7132	4	32	27	26	28	46	6	46	29	28
La	5094	6918	7289	7333	6786	6766	6835	5047	4764	6529	5035	3931
Ce	10590	13840	13030	13380	12780	12750	12500	9520	9258	11140	8265	6467
Pr	1061	2090	1115	1157	1149	1146	1099	871	1038	945	699	547
Nd	5295	6124	5141	5388	5406	5406	5095	4200	3966	4379	3154	2434
Sm	673	892	464	508	535	544	483	492	537	433	307	240
Eu	181	99	146	142	158	141	148	142	88	123	96	86
Gd	497	432	273	291	322	320	281	370	259	270	206	170
Tb	25	21	8	20	6	13	15	17	16	4	16	15
Dy	277	283	131	137	174	149	146	266	170	185	128	110
Ho	69	21	66	55	60	61	49	59	29	53	41	73
Er	124	167	107	88	101	91	93	130	86	100	89	94
Tm	13	43	10	17	38	11	35	25	22	11	18	23
Yb	86	135	40	20	42	47	23	47	57	36	27	38
Lu	21	34	25	b.d.l.	23	2	37	b.d.l.	38	23	19	29
Hf	42	84	49	b.d.l.	43	27	30	9	62	2	11	14
Total	24309	38530	27959	28625	27703	27555	26957	21358	20497	24367	18202	14351
ΣREE (wt.%)	2.40	3.11	2.78	2.85	2.76	2.74	2.68	2.12	2.03	2.42	1.81	1.43
$(La/Nd)_{CN}$	1.86	2.19	2.74	2.63	2.43	2.42	2.60	2.32	2.32	2.88	3.09	3.12
$(La/Yb)_{CN}$	39.97	34.41	124.21	241.02	110.10	97.07	203.14	71.62	56.19	123.31	127.33	70.24
$(Eu/Eu^*)_{CN}$	0.96	0.49	1.25	1.13	1.16	1.03	1.23	1.02	0.72	1.10	1.16	1.30
$(Ce/Ce^*)_{CN}$	1.09	0.87	1.10	1.10	1.10	1.10	1.10	1.09	1.00	1.08	1.06	1.06
Y/Ho	1.70	7.77	0.89	0.97	0.89	0.87	1.15	1.86	3.07	1.58	1.42	0.68

*calculated with Sr as internal standard

Table A.5.2.4 Representative analyses of pyrochlore.

Rock type	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV
Sample	Ku-01-04 pcl2001	Ku-01-04 pcl2001	Ku-01-04 pcl2001	Ku-01-04 pcl2001	Ku-01-04 pcl2001	Ku-01-04 pcl2001	Ku-01-04 pcl2001	Ku-01-04 pcl2001	Ku-01-04 pcl2001	Ku-01-04 pcl3001	Ku-01-04 pcl3001	Ku-01-04 pcl3001	Ku-01-04 pcl3001	Ku-01-04 pcl3001	Ku-01-04 pcl3001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001
EMP (wt.%)																		
Nb_2O_5	69.05	66.22	70.48	66.13	61.04	62.95	69.01	68.97	71.36	69.34	69.14	70.62	64.77	70.19	70.15	68.77	68.25	68.41
SiO_2	0.54	0.90	0.28	2.40	4.77	3.87	0.47	0.00	0.00	0.32	0.11	0.24	0.00	0.00	0.00	0.49	0.72	0.28
TiO_2	1.62	1.59	1.76	1.71	1.84	1.73	1.82	1.97	1.78	1.93	1.85	1.61	1.45	1.66	1.71	1.83	1.90	1.52
Fe_2O_3	0.55	0.16	0.12	0.34	0.26	0.24	0.00	0.06	0.02	0.00	0.03	0.12	0.04	0.12	0.32	0.38	0.27	0.16
CaO	12.23	11.91	13.29	11.25	7.71	8.34	11.58	13.68	12.96	12.25	12.00	12.34	17.26	13.12	12.49	11.49	11.68	12.83
SrO	1.46	0.96	1.33	1.29	2.01	2.06	1.69	1.55	1.49	1.31	1.25	1.36	1.32	1.53	1.31	1.93	2.24	1.82
BaO	0.40	0.43	0.37	1.04	3.84	3.36	1.37	0.00	0.04	0.04	0.24	0.33	0.05	0.09	0.03	1.03	0.99	0.71
Na_2O	7.28	6.71	7.35	6.73	5.46	5.52	6.06	7.13	7.51	6.93	7.23	6.86	7.07	7.29	7.90	6.82	6.54	6.54
F	2.08	5.17	2.75	4.79	6.57	6.40	3.64	2.33	1.43	2.13	2.39	1.03	4.76	1.58	1.16	1.42	2.97	3.32
Sum	95.19	94.05	97.74	95.67	93.49	94.47	95.65	95.68	96.58	94.25	94.23	94.51	96.71	95.57	95.06	94.17	95.55	95.59
SRXRF (ppm)*																		
Cr	2099	4961	4454	5442	6464	6294	3717	3903	5354	4687	5156	6655	5000	5920	6779	14180	8241	13500
La	6716	3740	5122	5354	5807	6066	5226	5086	5227	6495	6538	5860	5238	5586	7133	6787	6077	6208
Ce	15400	8100	10800	11400	12900	13100	11600	11300	12100	14900	15200	12700	11000	12200	16600	15600	12400	12100
Nd	4286	2127	2873	3122	3720	3677	3356	3312	3614	4434	4613	3557	2926	3301	4769	4553	3525	3391
Er	39	84	115	201	181	197	103	87	103	113	166	167	106	70	112	b.d.l.	9	b.d.l.
Tm	348	243	301	363	418	466	356	381	365	438	472	372	381	331	462	b.d.l.	391	342
Yb	165	60	51	127	79	143	86	121	119	203	65	92	111	76	157	57	78	75
ΣREE (wt.%)	2.70	1.44	1.93	2.06	2.31	2.36	2.07	2.03	2.15	2.66	2.71	2.27	1.98	2.16	2.92	2.70	2.25	2.21
$(La/Nd)_{CN}$	3.03	3.40	3.45	3.32	3.02	3.19	3.01	2.97	2.80	2.83	2.74	3.19	3.46	3.27	2.89	2.88	3.34	3.54
$(La/Yb)_{CN}$	27.45	42.23	67.56	28.37	49.32	28.61	41.04	28.38	29.51	21.55	67.27	43.12	31.69	49.22	30.60	79.73	52.51	55.63
$(Tm/Tm^*)_{CN}$	4.35	3.43	3.93	2.27	3.48	2.78	3.78	3.72	3.29	2.89	4.53	3.01	3.52	4.51	3.49	-	14.47	-

*calculated with Ba as internal standard

Table A.5.2.4 Representative analyses of pyrochlore (continued).

Rock type	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV
Sample	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001
EMP (wt.%)																			
Nb_2O_5	66.13	70.15	70.00	70.20	60.66	68.11	69.24	67.57	65.13	61.56	63.84	71.46	69.85	64.59	64.59	66.65	69.73	70.26	69.53
SiO_2	0.03	0.00	0.00	0.00	0.00	1.59	1.22	1.39	3.77	5.24	3.89	0.12	0.30	3.78	4.05	1.95	0.00	0.00	0.01
TiO_2	1.49	1.53	1.80	1.65	1.29	1.59	1.70	1.91	1.90	1.69	1.92	1.75	1.69	1.86	2.08	1.94	2.08	2.12	1.80
Fe_2O_3	0.15	0.00	0.05	0.02	0.15	0.08	0.10	0.08	0.07	0.01	0.04	0.00	0.10	0.04	0.09	0.13	0.00	0.00	0.11
CaO	15.60	13.76	13.87	13.68	19.15	11.54	12.21	11.97	10.22	9.20	10.64	13.92	13.49	10.30	9.48	11.47	14.25	13.67	13.53
SrO	1.65	1.38	1.13	1.38	1.40	0.85	0.96	0.87	0.32	0.27	0.62	1.10	1.14	0.25	0.07	0.83	1.29	1.37	1.14
BaO	0.00	0.00	0.00	0.06	0.00	0.77	0.71	0.70	1.42	2.72	2.00	0.00	0.07	0.94	0.99	0.69	0.00	0.00	0.00
Na_2O	7.18	7.70	7.18	7.40	6.78	7.14	6.97	7.24	7.22	7.03	7.12	7.62	7.49	7.86	7.96	7.68	7.37	7.51	7.30
F	2.34	1.18	1.79	1.55	5.58	2.22	0.58	2.08	2.77	2.70	2.65	0.91	0.93	3.04	4.51	2.44	0.83	0.60	1.41
Sum	94.56	95.70	95.82	95.94	94.99	93.87	93.69	93.80	92.81	90.40	92.72	96.87	95.06	92.66	93.81	93.79	95.55	95.52	94.82
SRXRF (ppm)*																			
Cr	16390	14840	20650	17810	16620	18770	21820	20180	20620	26520	21470	19770	16900	22520	20350	21530	25950	27160	21370
La	6390	5830	5903	5350	5034	5471	6258	5768	5781	7700	6170	5448	4626	6569	5807	5934	7306	7435	6064
Ce	12300	11100	10000	9100	8600	9600	11200	10300	10200	13700	11000	9600	8100	11500	10200	10300	12300	12600	10100
Nd	3444	3119	2720	2502	2437	2859	3435	3159	3249	4416	3433	3016	2522	3477	3032	3026	3461	3431	2684
Er	b.d.l.	b.d.l.	b.d.l.	6	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tm	396	367	691	597	523	487	517	498	452	713	591	467	461	577	549	615	853	873	592
Yb	147	63	318	190	66	170	193	98	24	205	49	85	73	86	100	119	161	186	125
ΣREE (wt.%)	2.27	2.05	1.96	1.77	1.67	1.86	2.16	1.98	1.97	2.67	2.12	1.86	1.58	2.22	1.97	2.00	2.41	2.45	1.96
$(La/Nd)_{CN}$	3.59	3.62	4.20	4.14	4.00	3.70	3.52	3.53	3.44	3.37	3.48	3.49	3.55	3.66	3.71	3.79	4.08	4.19	4.37
$(La/Yb)_{CN}$	29.36	62.12	12.49	18.97	51.48	21.72	21.80	39.49	161.88	25.31	84.53	43.04	42.57	51.38	39.03	33.61	30.58	26.88	32.80
$(Tm/Tm^*)_{CN}$	-	-	-	17.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*calculated with Ba as internal standard

Table A.5.2.4 Representative analyses of pyrochlore (continued).

Rock type	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV	FV
Sample	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl4001	Ku-01-04 pcl5001	Ku-01-04 pcl5001	Ku-01-04 pcl5001	Ku-01-04 pcl5001	Ku-01-04 pcl5003	Ku-01-04 pcl5003	Ku-01-04 pcl5002
EMP (wt.%)											
Nb_2O_5	69.85	70.32	69.40	69.49	70.37	70.38	67.35	69.04	69.46	68.04	70.31
SiO_2	0.00	0.07	0.84	2.78	0.00	0.00	0.32	0.00	0.00	0.08	0.26
TiO_2	1.48	1.60	1.44	1.61	1.88	2.24	2.03	2.12	2.07	1.83	1.94
Fe_2O_3	0.09	0.29	0.85	0.55	0.25	0.09	0.26	0.19	0.10	0.21	0.19
CaO	13.45	13.37	11.79	11.44	12.60	13.74	12.16	12.07	13.52	12.21	11.66
SrO	1.13	1.10	1.15	1.12	1.28	1.15	1.18	1.35	1.12	1.18	1.06
BaO	0.00	0.11	0.58	0.09	0.01	0.00	0.13	0.05	0.00	0.10	0.44
Na_2O	7.46	7.33	6.90	7.98	7.54	7.49	7.36	7.28	7.24	7.46	7.08
F	0.38	0.44	0.56	0.60	0.77	0.48	2.26	0.25	1.97	1.87	5.24
Sum	93.83	94.64	93.49	95.65	94.68	95.55	93.06	92.34	95.47	92.97	98.17
SRXRF (ppm)*											
Cr	21350	24980	23760	32640	24770	18400	23790	20350	15780	27280	18970
La	5941	6805	7203	10830	9952	6453	8670	10810	6149	8967	5470
Ce	10000	11700	12900	20100	19800	12300	16600	22700	13100	17300	15600
Nd	2655	3130	3471	5469	5479	3377	4613	6466	3634	4794	7737
Er	b.d.l.	108	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Tm	664	771	754	1308	922	520	814	658	315	709	b.d.l.
Yb	255	152	130	375	204	198	169	139	128	199	b.d.l.
ΣREE (wt.%)	1.95	2.27	2.45	3.81	3.64	2.28	3.09	4.08	2.33	3.20	2.88
$(La/Nd)_{CN}$	4.33	4.21	4.01	3.83	3.51	3.70	3.64	3.23	3.27	3.62	1.37
$(La/Yb)_{CN}$	15.68	30.07	37.29	19.45	32.82	21.94	34.49	52.45	32.45	30.41	-
$(Tm/Tm^*)_{CN}$	-	6.00	-	-	-	-	-	-	-	-	-

*calculated with Ba as internal standard

A.5.3 Mineral chemistry – LA-ICPMS analyses

Table A.5.3.1 Representative analyses of sodalite.

Rock type	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-01-OD3	Ku-01-OD3	Ku-01-OD3	Ku-01-OD3	Ku-98-47	Ku-98-47	Ku-98-47	Ku-98-47
	1	2	3	4	5	6	7	8
ppm*								
Sc	0.281	0.266	0.182	0.195	0.198	0.226	0.224	0.292
Ti	38.000	34.000	57.000	46.000	46.000	47.000	55.000	56.000
V	0.687	0.590	0.710	0.627	0.382	0.443	0.431	0.483
Cr	0.557	0.969	0.000	0.618	0.000	0.406	0.405	0.000
Co	0.000	0.135	0.147	0.082	0.076	0.083	0.085	0.101
Ni	0.451	0.496	0.485	0.890	0.355	0.183	0.322	0.000
Cu	5.700	6.400	4.300	4.000	3.500	3.600	3.700	3.400
Zn	2.500	2.000	3.200	2.800	5.300	3.700	3.500	2.200
Ga	9.200	13.000	4.600	7.200	2.300	3.500	3.500	3.000
Ge	0.510	0.441	0.511	0.424	0.336	0.328	0.412	0.401
As	476.000	422.000	611.000	522.000	652.000	547.000	627.000	657.000
Rb	9.600	9.200	13.000	12.000	13.000	12.000	14.000	13.000
Sr	9.800	13.000	14.000	12.000	13.000	13.000	14.000	14.000
Y	0.418	0.625	0.481	0.458	0.557	0.492	0.542	0.547
Zr	22.000	21.000	32.000	26.000	35.000	33.000	36.000	36.000
Nb	0.112	0.153	0.172	0.124	0.131	0.142	0.141	0.163
Sn	14.000	14.000	17.000	14.000	48.000	47.000	51.000	42.000
Sb	0.164	0.132	0.211	0.111	0.181	0.135	0.157	0.179
Ba	63.000	57.000	92.000	75.000	80.000	80.000	89.000	89.000
La	0.592	0.605	0.755	0.607	0.683	0.684	0.716	0.858
Ce	1.100	1.300	1.300	1.000	1.200	1.200	1.300	1.400
Pr	0.105	0.159	0.131	0.109	0.129	0.131	0.164	0.152
Nd	0.345	0.428	0.515	0.348	0.443	0.466	0.510	0.495
Sm	0.065	0.118	0.098	0.078	0.078	0.084	0.066	0.000
Eu	0.045	0.044	0.065	0.049	0.061	0.051	0.073	0.061
Gd	0.050	0.068	0.071	0.071	0.082	0.068	0.070	0.101
Tb	0.011	0.021	0.009	0.012	0.012	0.012	0.012	0.007
Dy	0.071	0.194	0.087	0.068	0.083	0.094	0.092	0.065
Ho	0.013	0.028	0.015	0.014	0.019	0.017	0.020	0.020
Er	0.021	0.094	0.059	0.043	0.054	0.064	0.063	0.053
Tm	0.007	0.016	0.006	0.006	0.010	0.010	0.090	0.010
Yb	0.067	0.081	0.042	0.080	0.090	0.100	0.058	0.099
Lu	0.008	0.020	0.014	0.007	0.016	0.014	0.014	0.020
Ta	0.012	0.012	0.013	0.010	0.012	0.013	0.014	0.013
W	0.033	0.184	0.060	0.030	0.032	0.037	0.067	0.048
Pb	3.000	4.400	4.000	2.900	3.800	3.800	3.700	3.800
Bi	0.011	0.016	0.011	0.016	0.016	0.018	0.019	0.028
Th	0.154	0.490	0.179	0.156	0.184	0.181	0.197	0.214
U	0.079	0.091	0.104	0.098	0.129	0.117	0.118	0.125
Total	658.769	603.776	858.533	730.231	907.449	799.399	906.782	925.335
ΣREE (ppm)	2.50	3.18	3.17	2.49	2.96	3.00	3.25	3.34
$(La/Nd)_{CN}$	3.32	2.73	2.84	3.37	2.98	2.84	2.72	3.35
$(La/Yb)_{CN}$	5.95	5.03	12.11	5.11	5.11	4.61	8.31	5.84
$(Eu/Eu^*)_{CN}$	2.41	1.50	2.38	2.01	2.33	2.06	3.28	-

*calculated with Si as internal standard

A.5.4 Bulk rock geochemistry

Table A.5.4.1a Major and trace element data of the anorthositic and the felsic suite.

Rock type	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,w	A,px
Sample	Ku-97-08b	Ku-97-33	Ku-97-33aw	Ku-97-33ag	Ku-97-33b	Ku-97-44	Ku-97-99a	Ku-98-45	Ku-98-60	Ku-97-02
wt.%										
SiO_2	46.09	45.33	50.75	59.72	47.51	51.03	48.16	49.22	46.72	49.64
TiO_2	1.78	1.14	0.09	0.05	0.11	0.38	2.42	0.13	0.14	0.11
Al_2O_3	21.10	22.43	26.57	22.40	27.27	25.78	24.09	28.85	27.30	28.07
Fe_2O_3	9.38	4.93	0.84	0.77	0.77	1.53	6.17	0.85	0.84	0.45
FeO	1.38	0.72	0.12	0.11	0.11	0.22	0.91	0.25	0.00	0.98
MnO	0.15	0.13	0.03	0.02	0.03	0.04	0.15	0.03	0.02	0.03
MgO	4.13	2.69	0.34	0.24	0.37	0.59	1.59	0.20	0.26	1.49
CaO	7.62	8.69	8.05	4.32	9.84	10.35	7.23	13.43	10.51	11.61
Na_2O	3.71	5.23	5.37	9.07	4.65	6.13	4.32	4.40	7.76	3.48
K_2O	1.39	1.45	2.80	0.63	2.80	0.71	2.31	0.52	1.20	1.62
P_2O_5	0.05	0.06	0.01	b.d.l.	0.01	0.11	0.08	0.01	0.03	0.01
S	0.07	0.20	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.07	0.02	0.02	b.d.l.
GV	2.97	6.65	4.51	4.08	5.83	3.09	2.42	2.30	5.80	2.14
CO_2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
H_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	99.82	99.65	99.49	101.41	99.31	99.97	99.92	100.22	100.60	99.63
X_{Mg}	0.59	0.64	0.56	0.50	0.61	0.55	0.45	0.37	0.57	0.69
ppm										
Sc	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
V	223	104	12	b.d.l.	17	21	222	22	14	33
Cr	78	26	13	b.d.l.	b.d.l.	13	40	b.d.l.	b.d.l.	44
Co	72	42	44	122	21	53	56	54	12	63
Ni	109	43	b.d.l.	b.d.l.	b.d.l.	26	41	b.d.l.	b.d.l.	36
Zn	101	62	14	18	45	16	98	b.d.l.	19	17
Ga	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	19	29	b.d.l.
Rb	26	36	68	9	69	9	45	b.d.l.	5	97
Sr	635	1250	1025	543	805	805	695	627	549	555
Y	8	9	14	13	13	11	8	b.d.l.	b.d.l.	8
Zr	46	34	112	105	28	59	55	b.d.l.	36	20
Nb	5	8	9	31	10	7	5	b.d.l.	7	5
Mo	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sn	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ba	821	638	1647	169	1510	555	1028	236	290	449
Pb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Th	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	22	b.d.l.
U	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
La	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ce	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Pr	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
CIPW										
Quartz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corundum	0.00	0.00	0.00	0.00	0.00	0.00	1.37	0.00	0.00	0.00
Zircon	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.00
Orthoclase	8.23	8.58	16.58	3.73	16.58	4.20	13.67	3.07	7.09	9.61
Albite	31.39	38.98	25.92	66.97	14.80	47.60	31.18	25.23	53.59	22.84
Anorthite	36.91	33.53	40.29	18.59	45.40	40.80	35.89	57.49	36.16	56.24
Nepheline	0.00	2.86	10.57	5.29	13.30	2.31	2.91	6.50	6.54	3.58
Diopside	0.63	7.17	0.32	1.29	2.00	3.18	0.00	1.08	1.40	1.31
Wollastonite	0.00	0.00	0.00	0.57	0.63	2.48	0.00	3.34	5.80	0.00
Hypersthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Olivine	7.00	2.37	0.49	0.00	0.00	0.00	2.77	0.00	0.00	3.17
Magnetite	0.00	0.00	0.25	0.33	0.15	0.00	0.00	0.55	0.00	0.66
Chromite	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Hematite	9.38	4.93	0.67	0.54	0.67	1.53	6.17	0.47	0.84	0.00
Ilmenite	3.26	1.82	0.17	0.10	0.21	0.58	2.25	0.25	0.05	0.21
Titanite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perovskite	0.11	0.31	0.00	0.00	0.00	0.13	0.00	0.00	0.20	0.00
Rutile	0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.00	0.00
Apatite	0.12	0.14	0.02	0.02	0.02	0.26	0.19	0.02	0.07	0.02
Sum	97.05	100.70	95.31	97.45	93.76	103.09	97.66	98.00	111.74	97.64

Table A.5.4.1a Major and trace element data of the anorthositic and the felsic suite (continued).

Rock type	A,px	A,px	A,px	A,px	A,px	A,px	A,ol	A,ol	A,ol	A,ol
Sample	Ku-97-12	Ku-97-13	Ku-97-31	Ku-97-92A	Ku-97-93	Ku-98-123	Ku-97-28	Ku-97-28a	Ku-97-95	Ku-98-23
wt.%										
SiO_2	49.61	50.41	46.23	53.41	52.27	51.47	49.87	47.78	49.78	49.77
TiO_2	1.25	1.29	2.39	0.13	0.13	0.11	0.12	0.12	0.72	0.19
Al_2O_3	24.29	23.53	22.79	27.70	27.19	30.21	26.27	24.90	24.80	27.77
Fe_2O_3	1.37	1.62	2.25	0.18	0.45	0.69	1.20	1.27	1.64	0.90
FeO	2.97	3.50	4.87	0.39	0.97	0.00	2.59	2.75	3.56	2.05
MnO	0.08	0.08	0.08	0.01	0.02	0.02	0.05	0.05	0.06	0.04
MgO	1.24	1.92	2.57	0.21	1.23	0.21	3.56	3.80	2.78	2.81
CaO	8.39	8.81	8.86	10.52	10.52	12.81	11.08	10.38	9.55	12.03
Na_2O	4.93	4.91	4.62	5.18	4.76	4.14	3.73	3.87	4.24	3.45
K_2O	1.73	1.25	0.60	0.68	0.44	0.50	0.27	0.61	0.65	0.23
P_2O_5	0.13	0.20	0.06	0.02	0.02	0.02	0.01	0.02	0.03	0.03
S	0.04	0.04	0.08	b.d.l.	b.d.l.	0.02	b.d.l.	b.d.l.	b.d.l.	0.02
GV	2.97	1.45	3.61	0.89	1.38	0.93	0.85	3.99	1.46	1.26
CO_2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
H_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	99.01	99.01	99.01	99.32	99.37	101.13	99.60	99.53	99.27	100.54
X_{Mg}	0.38	0.45	0.44	0.45	0.66	0.57	0.67	0.68	0.54	0.68
ppm										
Sc	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
V	79	72	148	16	14	19	16	15	101	23
Cr	15	11	46	20	37	10	12	14	163	15
Co	51	56	56	80	70	39	56	43	55	45
Ni	23	23	70	b.d.l.	20	b.d.l.	94	95	75	75
Zn	467	59	92	b.d.l.	13	5	33	35	65	18
Ga	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	26	b.d.l.	b.d.l.	b.d.l.	29
Rb	30	21	9	5	7	8	5	10	6	b.d.l.
Sr	660	685	642	697	685	610	475	465	628	566
Y	9	10	8	8	8	b.d.l.	8	8	8	b.d.l.
Zr	50	63	48	19	20	b.d.l.	19	19	23	b.d.l.
Nb	55	5	5	5	5	b.d.l.	5	5	5	b.d.l.
Mo	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sn	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ba	821	706	409	363	254	280	121	144	321	134
Pb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Th	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
U	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
La	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ce	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Pr	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
CIPW										
Quartz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corundum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zircon	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orthoclase	10.24	7.40	3.55	4.02	2.60	2.96	1.60	3.61	3.84	1.36
Albite	31.41	41.54	39.09	43.02	40.16	34.06	31.56	31.81	35.87	29.19
Anorthite	39.13	38.55	39.74	50.39	51.59	62.43	54.18	48.81	46.78	59.66
Nepheline	5.58	0.00	0.00	0.44	0.06	0.52	0.00	0.51	0.00	0.00
Diopside	1.74	0.11	0.00	1.13	0.36	0.78	0.61	2.03	0.00	0.00
Wollastonite	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Hypersthene	0.00	0.00	0.00	0.00	0.00	0.00	2.71	0.00	0.72	3.21
Olivine	3.41	3.31	4.49	0.00	2.03	0.11	4.12	5.97	4.35	2.66
Magnetite	1.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromite	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.04	0.00
Hematite	0.00	5.51	7.66	0.61	1.52	0.69	4.08	4.32	5.60	3.17
Ilmenite	2.37	0.19	0.20	0.04	0.06	0.05	0.14	0.14	0.14	0.11
Titanite	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.51	0.06
Perovskite	0.00	2.03	2.04	0.19	0.17	0.14	0.00	0.08	0.00	0.00
Rutile	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.44	0.11
Apatite	0.31	0.48	0.14	0.05	0.05	0.05	0.02	0.05	0.07	0.07
Sum	96.20	99.14	98.01	99.97	98.61	101.80	99.13	97.33	98.37	99.59

Table A.5.4.1a Major and trace element data of the anorthositic and the felsic suite (continued).

Rock type	A,ol	A,ol	A,ol	A,ol	GN	GN	GN	GN	GN	GN
Sample	Ku-98-124	B-98-274a	B-98-274b	B-98-281b	Ku-97-03	Ku-97-03b	Ku-97-03c	Ku-97-04	Ku-97-05	Ku-97-06
wt.%										
SiO_2	50.72	53.75	48.69	50.02	45.59	46.61	47.00	43.91	47.95	47.67
TiO_2	0.17	0.16	0.15	0.19	2.97	3.42	1.88	4.24	2.95	1.44
Al_2O_3	27.66	26.49	26.73	28.20	20.08	18.15	22.37	15.85	18.91	22.11
Fe_2O_3	0.50	0.21	0.62	0.69	2.32	2.62	2.10	4.00	2.60	2.02
FeO	2.27	0.65	2.60	1.68	6.73	7.61	6.09	9.24	7.54	5.85
MnO	0.05	b.d.l.	0.05	0.04	0.21	0.33	0.16	0.25	0.25	0.11
MgO	2.79	0.46	3.16	1.98	3.17	3.72	3.14	4.42	2.82	3.42
CaO	12.15	9.23	12.09	12.36	8.80	8.36	7.19	10.14	8.04	8.46
Na_2O	3.70	5.57	3.55	3.62	3.88	3.88	4.34	3.35	4.47	4.13
K_2O	0.26	0.89	0.28	0.26	1.92	1.90	1.63	1.27	1.78	1.60
P_2O_5	0.01	0.03	0.01	0.03	0.65	0.34	0.06	0.16	0.12	0.09
S	0.02	b.d.l.	b.d.l.	b.d.l.	0.15	0.12	0.09	0.16	0.06	b.d.l.
GV	0.94	1.68	1.40	1.12	2.20	1.88	2.90	1.61	1.68	1.90
CO_2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
H_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	101.25	99.13	99.33	100.19	98.66	98.94	98.94	98.60	99.17	98.80
X_{Mg}	0.67	0.53	0.66	0.64	0.42	0.43	0.45	0.42	0.37	0.48
ppm										
Sc	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
V	32	12	24	16	161	194	193	296	182	160
Cr	44	b.d.l.	18	11	15	23	32	36	25	62
Co	39	82	75	59	56	61	59	62	47	57
Ni	63	b.d.l.	58	49	24	20	84	36	34	59
Zn	19	9	28	21	95	216	91	118	83	75
Ga	32	17	13	22	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Rb	b.d.l.	26	6	b.d.l.	33	34	34	28	33	38
Sr	572	694	544	741	742	630	740	447	510	653
Y	b.d.l.	b.d.l.	b.d.l.	b.d.l.	12	24	8	19	16	9
Zr	b.d.l.	29	b.d.l.	b.d.l.	60	150	46	104	99	109
Nb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	8	24	5	15	17	10
Mo	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sn	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ba	153	383	125	158	1190	1036	829	567	662	575
Pb	b.d.l.	21	8	5	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Th	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
U	b.d.l.	b.d.l.	b.d.l.	7	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
La	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ce	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Pr	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
CIPW										
Quartz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corundum	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00
Zircon	0.00	0.01	0.00	0.00	0.01	0.03	0.01	0.02	0.02	0.02
Orthoclase	1.54	5.27	1.66	1.54	11.36	11.24	9.65	7.52	10.53	9.47
Albite	31.31	46.26	29.67	30.63	32.83	32.83	31.82	28.34	37.82	34.94
Anorthite	58.15	44.72	56.22	59.99	31.79	26.56	35.78	24.49	26.33	37.13
Nepheline	0.00	0.47	0.20	0.00	0.00	0.00	2.66	0.00	0.00	0.00
Diopside	1.53	0.56	2.86	0.78	0.00	2.02	0.00	8.82	3.01	0.08
Wollastonite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypersthene	1.04	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00
Olivine	3.64	0.62	4.59	2.78	5.53	5.84	5.48	4.85	3.94	5.94
Magnetite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromite	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Hematite	3.03	0.94	3.51	2.56	9.79	11.08	8.86	14.27	10.98	8.52
Ilmenite	0.13	0.02	0.14	0.11	0.47	0.72	0.37	0.55	0.55	0.26
Titanite	0.25	0.00	0.00	0.32	0.00	5.56	0.00	6.62	1.37	0.00
Perovskite	0.00	0.25	0.13	0.00	4.02	1.34	0.00	2.14	3.59	2.23
Rutile	0.00	0.00	0.00	0.00	0.37	0.00	1.68	0.00	0.00	0.00
Apatite	0.02	0.07	0.02	0.07	1.55	0.81	0.14	0.38	0.29	0.21
Sum	100.64	99.19	98.99	99.38	97.73	98.03	96.84	98.02	98.44	98.82

Table A.5.4.1a Major and trace element data of the anorthositic and the felsic suite (continued).

Rock type	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN
Sample	Ku-97-08a	Ku-97-30	Ku-97-31b	Ku-98-68	Ku-98-92	Ku-98-126	Ku-98-128	Ku-98-129	Ku-98-222	B-98-101a
wt.%										
SiO_2	48.28	45.85	37.67	51.09	46.07	50.04	48.77	48.03	49.79	45.68
TiO_2	1.85	1.26	7.25	0.27	1.62	0.29	0.15	0.22	0.42	1.34
Al_2O_3	17.94	21.36	17.26	22.41	21.63	26.29	25.00	23.75	24.81	15.90
Fe_2O_3	2.84	2.39	3.92	1.35	2.51	0.88	1.17	1.04	1.05	2.06
FeO	6.55	6.94	11.38	3.95	7.64	2.06	3.08	3.56	3.60	9.01
MnO	0.15	0.12	0.18	0.05	0.10	0.05	0.08	0.08	0.07	0.17
MgO	5.25	5.39	5.25	2.77	4.63	2.90	4.63	5.50	3.34	6.74
CaO	8.60	8.07	7.52	9.42	8.53	12.44	11.43	11.43	10.84	9.70
Na_2O	3.74	3.54	3.05	4.80	3.46	3.56	3.28	3.17	3.43	3.26
K_2O	1.36	0.68	0.44	0.77	0.71	0.29	0.38	0.42	0.28	0.58
P_2O_5	0.09	0.04	0.03	0.45	0.02	0.03	0.01	0.01	0.03	0.19
S	<0,02	0.04	0.19	0.02	0.02	0.02	0.02	0.02	0.02	b.d.l.
GV	2.54	3.42	4.73	2.15	3.10	1.02	2.41	3.17	0.70	4.89
CO_2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
H_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	99.19	99.10	98.88	99.50	100.03	99.87	100.41	100.41	98.38	99.52
X_{Mg}	0.55	0.55	0.42	0.52	0.49	0.68	0.70	0.71	0.60	0.55
ppm										
Sc	b.d.l.	b.d.l.	b.d.l.	15	10	b.d.l.	b.d.l.	14	b.d.l.	28
V	162	142	317	39	200	68	31	63	46	188
Cr	42	156	70	12	45	120	85	182	37	71
Co	58	57	96	46	64	43	57	54	43	75
Ni	63	114	159	36	104	59	131	128	90	120
Zn	107	88	138	44	97	29	30	28	37	99
Ga	b.d.l.	b.d.l.	b.d.l.	17	19	13	24	28	19	33
Rb	33	16	10	12	7	b.d.l.	7	b.d.l.	b.d.l.	24
Sr	560	592	423	979	593	528	551	553	473	378
Y	18	88	8	13	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	12
Zr	217	30	107	39	b.d.l.	25	b.d.l.	16	22	88
Nb	18	55	13	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	8
Mo	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sn	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ba	433	418	355	773	417	143	329	282	228	304
Pb	b.d.l.	b.d.l.	b.d.l.	8	b.d.l.	b.d.l.	6	5	b.d.l.	10
Th	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
U	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
La	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ce	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Pr	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
CIPW										
Quartz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	0.00
Corundum	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zircon	0.04	0.01	0.02	0.01	0.00	0.01	0.00	0.00	0.00	0.02
Orthoclase	8.05	4.03	2.60	4.56	4.20	1.71	2.25	2.48	1.65	3.44
Albite	29.57	28.43	25.81	40.61	29.27	30.12	27.75	26.82	29.02	27.58
Anorthite	28.19	40.11	32.15	37.42	41.46	54.94	52.43	49.39	51.52	27.06
Nepheline	1.12	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diopside	11.53	0.00	0.00	4.86	0.00	4.69	3.40	5.55	0.91	12.55
Wollastonite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypersthene	0.00	0.00	0.00	0.00	5.56	0.74	2.39	0.58	7.90	5.75
Olivine	10.46	16.30	9.16	3.26	4.19	3.02	5.30	7.39	0.00	3.66
Magnetite	4.12	3.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromite	0.01	0.03	0.02	0.00	0.01	0.03	0.02	0.04	0.01	0.02
Hematite	0.00	0.00	16.57	5.74	10.99	3.17	4.59	5.00	5.05	12.07
Ilmenite	3.51	2.39	0.44	0.13	0.25	0.12	0.21	0.19	0.18	0.40
Titanite	0.00	0.00	1.48	0.04	0.75	0.56	0.10	0.29	0.80	2.77
Perovskite	0.00	0.00	1.52	0.32	0.00	0.00	0.00	0.00	0.00	0.00
Rutile	0.00	0.00	5.52	0.00	1.18	0.00	0.00	0.00	0.00	0.00
Apatite	0.21	0.10	0.07	1.07	0.05	0.07	0.02	0.02	0.07	0.45
Sum	96.83	95.81	95.37	98.01	97.91	99.17	98.46	97.76	98.17	95.77

Table A.5.4.1a Major and trace element data of the anorthositic and the felsic suite (continued).

Rock type	T	T	T	T	T	T	T	T	T	T	T
Sample	Ku-97-92	Ku-97-96	Ku-98-41	Ku-98-52	Ku-98-53	Ku-98-94	Ku-98-121	Ku-98-125	Ku-98-228	Ku-98-230	Ku-98-231
wt.%											
SiO_2	49.82	49.16	49.47	49.12	49.58	48.02	48.71	44.73	49.58	49.41	49.54
TiO_2	0.11	0.09	0.13	0.89	0.13	0.11	0.15	2.08	0.10	0.08	0.09
Al_2O_3	22.89	24.78	25.70	23.53	26.43	23.29	25.31	21.43	26.74	26.38	26.29
Fe_2O_3	1.54	1.22	0.86	2.01	1.03	1.75	0.96	2.55	0.81	0.93	1.09
FeO	4.81	3.81	3.80	4.82	3.07	4.11	3.65	8.70	3.02	2.91	2.64
MnO	0.07	0.06	0.07	0.08	0.06	0.07	0.07	0.11	0.05	0.05	0.05
MgO	6.46	5.05	5.43	3.35	4.42	5.18	5.36	5.33	5.40	5.25	4.85
CaO	8.96	10.57	11.22	9.29	11.32	9.81	11.30	8.56	11.75	11.78	11.70
Na_2O	3.80	3.42	3.19	4.07	3.44	3.45	3.20	3.37	3.15	3.14	3.25
K_2O	0.51	0.29	0.27	0.65	0.26	0.41	0.24	0.47	0.17	0.17	0.19
P_2O_5	0.02	b.d.l.	0.01	0.10	0.02	0.02	0.02	0.06	0.01	0.01	0.01
S	b.d.l.	b.d.l.	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
GV	0.42	0.74	0.27	0.52	0.65	3.62	1.56	1.41	0.33	0.31	0.65
CO_2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
H_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	99.42	99.42	100.44	98.44	100.43	99.87	100.55	98.82	101.12	100.44	100.37
X_{Mg}	0.68	0.68	0.70	0.51	0.69	0.66	0.70	0.49	0.74	0.74	0.74
ppm											
Sc	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	11	b.d.l.	b.d.l.	b.d.l.
V	13	12	25	97	16	10	26	285	14	12	17
Cr	24	18	24	39	21	16	32	133	22	27	17
Co	104	72	58	50	67	52	49	85	50	45	45
Ni	187	140	157	47	113	120	156	129	202	185	139
Zn	52	37	33	47	28	45	38	95	30	22	16
Ga	b.d.l.	b.d.l.	25	20	27	27	25	17	26	26	17
Rb	5	5	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sr	535	445	520	642	538	409	511	602	553	543	472
Y	8	8	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Zr	18	17	b.d.l.	27	b.d.l.	b.d.l.	b.d.l.	27	b.d.l.	b.d.l.	b.d.l.
Nb	5	5	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Mo	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sn	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ba	245	155	124	540	157	189	131	358	109	99	112
Pb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Th	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
U	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
La	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ce	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Pr	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
CIPW											
Quartz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corundum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zircon	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Orthoclase	3.01	1.71	1.60	3.84	1.54	2.42	1.42	2.78	1.00	1.00	1.12
Albite	32.15	28.94	26.99	34.44	29.11	29.19	27.07	28.51	26.65	26.57	27.50
Anorthite	43.95	51.45	55.05	44.09	55.96	46.89	54.03	42.02	58.37	57.43	56.63
Nepheline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Diopside	0.50	0.93	0.54	0.00	0.14	1.42	1.53	0.00	0.05	0.92	1.19
Wollastonite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypersthene	5.94	6.00	6.11	3.58	3.48	5.64	3.97	3.83	4.54	4.71	4.50
Olivine	6.95	4.31	5.02	3.34	5.23	4.63	6.07	6.62	6.23	5.56	4.93
Magnetite	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Chromite	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.03	0.00	0.01	0.00
Hematite	6.88	5.44	5.08	7.36	4.44	6.32	5.02	12.22	4.16	4.15	4.02
Ilmenite	0.21	0.17	0.20	0.19	0.17	0.19	0.20	0.27	0.17	0.15	0.15
Titanite	0.00	0.00	0.06	1.22	0.10	0.02	0.11	0.26	0.03	0.00	0.02
Perovskite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rutile	0.00	0.00	0.00	0.29	0.00	0.00	0.00	1.83	0.00	0.00	0.00
Apatite	0.05	0.00	0.02	0.24	0.05	0.05	0.05	0.14	0.02	0.02	0.02
Sum	99.66	98.97	100.68	98.60	100.21	96.77	99.49	98.52	101.22	100.54	100.08

Table A.5.4.1a Major and trace element data of the anorthositic and the felsic suite (continued).

Rock type	T,grt	T,grt	T,grt	T,grt	T,grt	A,f (GN)	A,f (GN)	A,f (T)	A,f (A,px)	A,f (GN)
Sample	Ku-97-104	Ku-97-105	Ku-98-220	Ku-98-221a	Ku-98-221b	Ku-98-71	Ku-98-72	Ku-98-77	Ku-98-78	Ku-98-84
wt.%										
SiO_2	48.93	50.04	49.96	49.64	51.19	42.61	49.15	45.48	53.56	45.63
TiO_2	0.15	0.20	0.24	0.33	0.38	1.46	0.20	1.69	0.35	1.42
Al_2O_3	24.52	26.66	25.88	25.30	24.32	20.38	25.42	21.65	27.73	21.47
Fe_2O_3	1.31	0.90	0.82	2.04	1.43	2.72	0.67	2.52	0.59	2.66
FeO	3.71	2.17	3.48	3.18	3.83	5.36	3.05	6.57	1.11	6.77
MnO	0.07	0.05	0.06	0.07	0.10	0.09	0.06	0.09	0.03	0.10
MgO	5.00	2.97	3.90	3.84	3.55	3.46	3.43	4.22	0.58	4.69
CaO	10.76	11.52	11.23	10.84	10.06	7.66	10.85	7.63	9.41	8.25
Na_2O	3.28	3.58	3.41	3.45	3.72	7.72	3.67	4.23	5.27	3.82
K_2O	0.36	0.28	0.43	0.35	0.43	0.42	0.37	0.52	0.75	0.71
P_2O_5	0.01	0.02	0.03	0.05	0.04	0.06	0.03	0.02	0.04	0.03
S	b.d.l.	b.d.l.	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
GV	1.21	0.60	0.54	0.97	0.84	7.96	3.01	4.07	1.36	3.65
CO_2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
H_2O	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	99.32	98.98	99.99	100.08	99.92	99.92	99.92	98.71	100.80	99.21
X_{Mg}	0.68	0.68	0.65	0.63	0.59	0.49	0.65	0.50	0.43	0.52
ppm										
Sc	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
V	25	30	31	35	48	178	27	154	23	174
Cr	46	22	24	28	38	37	33	54	11	58
Co	64	74	50	47	45	43	35	50	37	54
Ni	119	57	89	88	67	75	70	92	14	100
Zn	39	23	33	36	49	65	29	77	19	80
Ga	b.d.l.	b.d.l.	26	19	26	21	16	17	29	15
Rb	6	5	5	b.d.l.	b.d.l.	b.d.l.	b.d.l.	5	7	7
Sr	470	525	513	495	551	600	501	634	765	622
Y	8	8	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Zr	19	22	18	25	23	34	b.d.l.	17	28	17
Nb	5	5	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Mo	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sn	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ba	164	155	170	188	303	434	195	385	487	428
Pb	b.d.l.	b.d.l.	b.d.l.	6	b.d.l.	b.d.l.	6	b.d.l.	11	b.d.l.
Th	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
U	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
La	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ce	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Pr	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
CIPW										
Quartz	0.00	0.00	0.00	0.00	1.39	0.00	0.00	0.00	0.00	0.00
Corundum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	1.11	0.00
Zircon	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00
Orthoclase	2.13	1.65	2.54	2.07	2.54	2.48	2.19	3.08	4.44	4.20
Albite	27.75	30.29	28.85	29.19	31.47	17.07	30.38	30.65	42.76	27.54
Anorthite	51.16	55.89	54.09	52.56	48.45	19.76	51.84	38.06	46.84	39.41
Nepheline	0.00	0.00	0.00	0.00	0.00	26.14	0.36	2.79	0.99	2.59
Diopside	1.72	0.72	0.88	0.24	0.47	14.83	1.65	0.00	0.00	1.37
Wollastonite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hypersthene	6.38	4.71	5.82	8.04	8.63	0.00	0.00	0.00	0.00	0.00
Olivine	3.70	1.65	2.44	0.99	0.00	4.94	9.14	13.06	1.82	13.96
Magnetite	0.00	0.00	0.00	0.00	0.00	3.95	0.97	3.66	0.86	3.85
Chromite	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01
Hematite	5.44	3.30	4.68	5.57	5.69	0.00	0.00	0.00	0.00	0.00
Ilmenite	0.19	0.14	0.16	0.18	0.24	2.77	0.38	3.21	0.66	2.70
Titanite	0.12	0.31	0.38	0.58	0.63	0.00	0.00	0.00	0.00	0.00
Perovskite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rutile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apatite	0.02	0.05	0.07	0.12	0.10	0.14	0.07	0.05	0.10	0.07
Sum	98.63	98.73	99.93	99.55	99.60	92.09	96.99	94.77	99.59	95.70

Table A.5.4.1a Major and trace element data of the anorthositic and the felsic suite (continued).

Rock type	G	G	G	S,qtz	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs	S,fs
Sample	B-98-170a	B-98-180a	B-99-410	Ku-98-40	Ku-98-93	Ku-99-03	Ku-99-11	Ku-99-12	Ku-99-13	Ku-99-14	Ku-99-16
wt.%											
SiO_2	73.85	75.56	71.33	65.80	58.47	58.55	59.11	57.79	59.78	58.84	59.30
TiO_2	0.29	0.25	0.40	0.25	0.53	1.06	0.50	0.50	0.32	0.34	0.05
Al_2O_3	12.08	11.27	12.80	16.44	18.29	17.49	16.34	15.72	17.25	16.98	24.28
Fe_2O_3	1.47	1.16	1.55	1.87	3.24	4.32	5.69	4.63	4.65	4.20	1.13
FeO	1.75	1.71	2.37	1.02	3.34	2.10	3.56	5.09	3.80	4.95	0.09
MnO	0.07	0.05	0.08	0.05	0.11	0.17	0.13	0.16	0.16	0.17	0.04
MgO	0.22	0.12	0.36	0.30	0.49	0.42	0.29	0.59	0.14	0.14	0.10
CaO	0.30	0.33	1.21	2.00	1.77	2.44	3.11	4.41	1.93	2.35	0.44
Na_2O	3.60	3.11	3.13	6.07	6.05	8.28	6.06	5.75	5.91	5.84	4.42
K_2O	5.16	5.28	5.09	4.33	5.40	2.43	4.06	3.38	5.67	5.52	8.66
P_2O_5	0.02	0.12	0.05	0.05	0.11	0.29	0.08	0.10	0.06	0.06	0.01
S	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
GV	0.57	0.37	0.55	0.95	1.36	1.84	0.87	1.07	0.26	0.21	1.87
CO_2	n.a.	n.a.	n.a.	0.65	0.80	1.53	0.73	0.96	0.08	0.11	0.31
H_2O	n.a.	n.a.	n.a.	0.30	0.56	0.31	0.14	0.12	0.19	0.09	1.57
Total	99.39	99.33	98.92	99.12	99.16	99.39	99.80	99.19	99.93	99.60	100.39
X_{Mg}	0.14	0.09	0.18	0.23	0.16	0.16	0.08	0.13	0.04	0.04	0.24
ppm											
Sc	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	11	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
V	b.d.l.	10	15	b.d.l.	16	45	14	31	11	13	12
Cr	b.d.l.	b.d.l.	b.d.l.	b.d.l.	11	13	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Co	91	71	89	138	76	23	44	33	34	27	18
Ni	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	11	b.d.l.	6	b.d.l.	b.d.l.	b.d.l.
Zn	161	99	62	62	136	64	157	167	201	173	18
Ga	31	34	36	31	25	33	39	40	30	43	45
Rb	141	121	118	116	83	29	56	53	120	119	260
Sr	25	26	170	201	256	385	140	194	52	40	288
Y	139	107	133	79	30	32	40	54	41	50	16
Zr	701	617	860	694	122	2051	248	381	390	750	80
Nb	82	63	60	55	67	34	172	178	155	172	129
Mo	b.d.l.	b.d.l.	5	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sn	b.d.l.	22	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	16
Ba	256	239	1297	1448	1197	2600	500	219	139	99	819
Pb	21	25	8	29	21	19	20	18	20	16	31
Th	19	25	15	13	6	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	13
U	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	7	14	6
La	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ce	b.d.l.	b.d.l.	b.d.l.	150	100	164	207	231	168	245	b.d.l.
Pr	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	b.d.l.	b.d.l.	b.d.l.	70	50	37	82	120	82	111	b.d.l.
CIPW											
Quartz	32.14	36.62	30.47	10.21	0.00	0.00	3.45	4.35	0.63	0.20	0.00
Corundum	0.05	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.75
Zircon	0.14	0.12	0.17	0.14	0.02	0.41	0.05	0.08	0.08	0.15	0.02
Orthoclase	30.55	31.25	30.13	25.64	31.95	14.37	24.02	20.00	33.56	32.67	51.28
Albite	30.46	26.31	26.48	51.36	51.19	69.97	51.27	48.65	50.00	49.41	35.83
Anorthite	1.44	0.92	5.92	4.86	6.87	3.44	5.40	7.11	3.78	3.80	2.45
Nepheline	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.85
Diopside	0.00	0.00	0.00	1.63	0.17	2.30	1.56	3.17	0.75	0.75	0.00
Wollastonite	0.00	0.00	0.00	1.06	0.00	0.68	2.71	3.80	1.68	2.52	0.00
Hypersthene	0.55	0.30	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Olivine	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.17
Magnetite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chromite	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hematite	3.42	3.06	4.18	3.00	6.95	6.65	9.65	10.28	8.87	9.70	1.23
Ilmenite	0.17	0.12	0.19	0.14	0.25	0.37	0.29	0.35	0.35	0.37	0.09
Titanite	0.00	0.00	0.12	0.44	0.00	0.00	0.86	0.77	0.33	0.36	0.00
Perovskite	0.00	0.00	0.00	0.00	0.69	1.52	0.00	0.00	0.00	0.00	0.00
Rutile	0.20	0.18	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Apatite	0.05	0.29	0.12	0.12	0.27	0.72	0.19	0.24	0.14	0.14	0.03
Sum	99.16	99.29	98.94	98.60	99.16	100.48	99.45	98.79	100.18	100.08	98.70

Table A.5.4.1a Major and trace element data of the anorthositic and the felsic suite (continued).

Rock type	S,fs	S,f	S,f	S,f	S,f	S,f	S,f	S,f	S,ne
Sample	Ku-99-20	Ku-98-66	Ku-98-70s	Ku-98-73s	Ku-98-74	Ku-98-103s	Ku-99-09	Ku-99-19s	Ku-99-15a
wt.%									
SiO_2	61.64	54.39	52.62	58.67	51.21	59.37	57.29	60.80	49.54
TiO_2	0.61	1.11	1.62	0.09	2.07	0.23	0.70	0.29	0.01
Al_2O_3	17.52	13.08	16.38	19.32	13.79	18.83	16.67	19.33	28.93
Fe_2O_3	2.08	12.06	3.99	0.75	5.54	1.93	9.30	2.27	0.17
FeO	2.52	2.78	4.36	0.87	7.93	1.64	4.04	1.92	0.20
MnO	0.09	0.23	0.22	0.24	0.24	0.04	0.11	0.13	0.02
MgO	0.80	0.30	1.06	0.41	2.08	0.49	0.21	0.68	b.d.l.
CaO	3.32	2.83	5.25	4.32	6.81	2.86	1.05	1.74	0.60
Na_2O	6.76	7.77	8.48	9.62	6.44	10.48	9.51	8.92	12.92
K_2O	3.34	2.33	0.19	0.60	0.26	0.16	0.10	1.95	5.82
P_2O_5	0.19	0.23	0.48	b.d.l.	0.92	0.05	0.44	0.15	b.d.l.
S	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
GV	0.62	2.17	4.47	4.29	0.85	3.18	0.41	1.67	1.87
CO_2	0.42	1.91	3.90	3.67	0.57	2.41	0.31	0.80	1.03
H_2O	0.20	0.26	0.57	0.61	0.28	0.77	0.10	0.87	0.84
Total	99.49	99.28	99.13	99.18	98.14	99.26	99.83	100.03	100.09
X_{Mg}	0.30	0.07	0.24	0.38	0.27	0.26	0.05	0.30	0.00
ppm									
Sc	17	54	19	b.d.l.	37	b.d.l.	b.d.l.	b.d.l.	b.d.l.
V	19	99	101	b.d.l.	30	45	181	31	b.d.l.
Cr	b.d.l.	15	24	b.d.l.	b.d.l.	b.d.l.	101	b.d.l.	b.d.l.
Co	43	61	36	34	53	61	61	21	32
Ni	6	b.d.l.	12	b.d.l.	b.d.l.	8	30	6	b.d.l.
Zn	54	143	68	75	128	53	67	332	7
Ga	42	24	23	23	32	27	47	28	52
Rb	82	19	6	b.d.l.	b.d.l.	b.d.l.	11	71	178
Sr	266	173	740	898	463	597	209	238	128
Y	84	37	44	b.d.l.	109	55	11	56	19
Zr	1854	2526	3326	134	837	2120	117	1179	19
Nb	34	52	57	497	51	64	72	72	7
Mo	b.d.l.	12	12	b.d.l.	9	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Sn	b.d.l.	18	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	17	b.d.l.
Ba	900	898	476	873	565	1171	205	343	59
Pb	25	11	28	22	38	21	16	22	16
Th	b.d.l.	b.d.l.	b.d.l.	12	b.d.l.	30	b.d.l.	8	b.d.l.
U	b.d.l.	b.d.l.	b.d.l.	10	b.d.l.	13	9	7	b.d.l.
La	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ce	184	100	160	b.d.l.	230	380	265	140	33
Pr	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	91	70	65	b.d.l.	120	130	52	65	b.d.l.
CIPW									
Quartz	3.22	0.00	0.00	0.00	1.83	0.00	0.22	0.00	0.00
Corundum	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.26
Zircon	0.37	0.51	0.67	0.03	0.17	0.43	0.02	0.24	0.00
Orthoclase	19.77	13.78	1.13	3.55	1.54	0.95	0.60	11.52	34.47
Albite	57.20	54.31	70.96	66.98	54.49	85.15	80.46	74.41	1.89
Anorthite	7.63	0.00	6.09	7.81	7.97	3.91	2.45	6.99	3.04
Nepheline	0.00	0.00	0.43	7.81	0.00	1.91	0.00	0.58	58.20
Diopside	4.32	1.62	5.71	2.22	10.80	2.66	0.00	0.30	0.00
Wollastonite	0.27	3.28	2.14	4.77	0.00	2.73	0.00	0.00	0.00
Hypersthene	0.00	0.00	0.00	0.00	0.19	0.00	0.52	0.00	0.00
Olivine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00
Magnetite	0.00	0.00	0.00	0.53	0.00	0.00	0.00	0.00	0.05
Chromite	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.00
Hematite	4.88	11.67	8.84	1.35	14.35	3.75	13.79	4.40	0.37
Ilmenite	0.20	0.50	0.48	0.17	0.52	0.10	0.24	0.28	0.02
Titanite	1.24	0.51	0.00	0.00	4.41	0.00	0.00	0.00	0.00
Perovskite	0.00	1.09	2.34	0.00	0.00	0.30	0.00	0.23	0.00
Rutile	0.00	0.00	0.00	0.00	0.00	0.00	0.57	0.00	0.00
Apatite	0.46	0.55	1.15	0.00	2.19	0.12	1.06	0.35	0.00
Sum	99.56	97.91	99.94	95.22	98.46	102.00	99.98	100.38	98.29

Table A.5.4.1b Major and trace element data of the carbonatitic breccia and the ferrocarbonatite veins.

Rock type	CB,m	CB,m	CB,m	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l	CB,l
Sample	Ku-98-08	Ku-98-73c	Ku-98-	Ku-98-05	Ku-98-28	Ku-98-56	Ku-98-70c	Ku-98-118	Ku-99-04	Ku-99-17
wt.%										
SiO_2	40.00	41.95	39.33	34.55	37.57	57.30	38.80	22.10	40.06	44.87
TiO_2	2.26	1.18	1.66	2.78	2.21	0.33	2.05	1.47	0.19	2.83
Al_2O_3	16.56	19.99	16.58	9.21	17.44	21.13	17.59	7.59	19.03	15.26
Fe_2O_3	3.24	2.66	2.87	9.99	3.95	1.43	1.84	14.88	2.02	4.02
FeO	7.40	5.55	7.26	n.a.	5.39	0.72	8.30	n.a.	4.25	7.00
MnO	0.24	0.62	0.28	0.18	0.49	0.16	0.39	1.44	0.35	0.18
MgO	4.46	2.37	3.76	5.42	2.71	0.63	3.03	4.53	3.67	3.29
CaO	8.81	8.78	7.94	17.82	10.23	2.24	10.39	16.50	7.48	6.74
Na_2O	5.44	5.42	7.46	2.21	5.70	10.45	4.84	4.77	9.33	6.50
K_2O	0.67	1.44	1.66	0.04	1.11	0.86	1.11	0.01	0.74	0.18
P_2O_5	0.24	0.03	0.51	0.74	0.06	0.01	0.22	0.45	0.07	1.12
S	0.04	b.d.l.	b.d.l.	b.d.l	b.d.l.	b.d.l.	0.06	b.d.l	b.d.l.	0.02
GV	9.99	9.43	10.03	15.90	12.98	5.36	11.04	24.45	12.63	6.74
CO_2	7.80	7.34	8.72	14.63	11.02	2.93	8.60	22.74	9.87	4.82
H_2O	2.19	2.09	1.31	1.27	1.96	2.44	2.44	1.71	2.76	1.92
Cl	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.29	n.a.	n.a.
F	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	b.d.l.	n.a.	n.a.
Total	99.35	99.42	99.35	98.84	99.84	100.62	99.66	98.48	99.81	98.76
X_{Mg}	0.48	0.39	0.44	0.70	0.41	0.46	0.37	0.57	0.56	0.40
ppm										
Sc	15	b.d.l.	22	32	15	b.d.l.	21	19	16	22
V	224	26	165	275	149	20	148	40	43	161
Cr	79	13	44	381	69	11	57	b.d.l	15	99
Co	53	19	39	67	22	29	47	27	35	50
Ni	107	b.d.l.	53	263	28	224	52	19	98	36
Zn	190	212	245	53	98	31	207	97	98	240
Ga	24	17	29	20	20	45	30	b.d.l	16	30
Rb	19	18	41	b.d.l	28	10	24	5	15	13
Sr	1008	1863	896	400	1898	564	1341	4171	1697	499
Y	29	b.d.l.	54	34	b.d.l.	b.d.l.	b.d.l.	b.d.l	16	46
Zr	179	58	146	212	b.d.l.	489	156	38	58	279
Nb	68	94	86	96	28	1114	64	374	55	74
Mo	b.d.l.	b.d.l.	b.d.l.	5	b.d.l.	b.d.l.	b.d.l.	b.d.l	b.d.l.	b.d.l.
Sn	b.d.l.	b.d.l.	b.d.l.	b.d.l	b.d.l.	b.d.l.	b.d.l.	b.d.l	b.d.l.	b.d.l.
Ba	790	2550	1010	170	336	133	665	215	299	201
Pb	41	12	33	b.d.l	11	14	24	9	33	24
Th	60	b.d.l.	b.d.l.	16	b.d.l.	b.d.l.	b.d.l.	7	b.d.l.	7
U	b.d.l.	b.d.l.	b.d.l.	b.d.l	6	28	b.d.l.	b.d.l	b.d.l.	b.d.l.
La	b.d.l.	b.d.l.	b.d.l.	180	b.d.l.	b.d.l.	b.d.l.	734	b.d.l.	b.d.l.
Ce	240	b.d.l.	190	230	58	69	240	1116	80	105
Pr	b.d.l.	b.d.l.	b.d.l.	90	b.d.l.	b.d.l.	b.d.l.	b.d.l	b.d.l.	b.d.l.
Nd	80	b.d.l.	100	51	b.d.l.	b.d.l.	70	228	46	b.d.l.
Ag	n.a.	n.a.	n.a.	1303	n.a.	n.a.	n.a.	1490	n.a.	n.a.
Cd	n.a.	n.a.	n.a.	b.d.l.	n.a.	n.a.	n.a.	b.d.l.	n.a.	n.a.
In	n.a.	n.a.	n.a.	b.d.l.	n.a.	n.a.	n.a.	b.d.l.	n.a.	n.a.
Cs	n.a.	n.a.	n.a.	b.d.l.	n.a.	n.a.	n.a.	b.d.l.	n.a.	n.a.
W	n.a.	n.a.	n.a.	b.d.l.	n.a.	n.a.	n.a.	b.d.l.	n.a.	n.a.

Table A.5.4.1b Major and trace element data of the carbonatitic breccia and the ferrocarbonatite veins (continued).

Rock type	CB,l	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so	CB,so
Sample	Ku-99-19c	Ku-98-17	Ku-98-27	Ku-98-80	Ku-98-83	Ku-98-131	Ku-99-05	Ku-99-07	Ku-99-08
wt.%									
SiO_2	41.35	26.07	38.18	35.71	37.46	34.43	41.76	40.87	40.21
TiO_2	2.64	0.02	1.88	2.23	0.49	3.00	0.13	1.13	1.29
Al_2O_3	14.73	21.47	18.73	14.11	19.33	10.77	20.67	20.09	20.63
Fe_2O_3	5.20	11.67	2.17	3.60	1.21	2.94	2.27	2.97	1.49
FeO	9.65	n.a.	6.11	8.84	3.08	10.22	3.31	3.48	3.62
MnO	0.48	0.61	0.36	0.41	0.44	0.34	0.57	0.28	0.14
MgO	3.36	2.61	2.71	5.17	2.34	7.13	1.78	1.05	0.77
CaO	7.25	11.33	6.81	8.09	8.68	9.32	6.49	7.40	7.55
Na_2O	4.54	7.52	11.02	6.67	12.50	3.95	12.09	11.81	13.01
K_2O	3.25	0.80	0.81	2.19	0.29	3.19	0.45	0.96	0.87
P_2O_5	0.66	0.14	0.06	0.84	0.93	1.45	0.05	0.18	0.16
S	b.d.l.	b.d.l	0.04	b.d.l.	0.03	b.d.l.	b.d.l.	b.d.l.	0.16
GV	5.87	15.59	10.76	11.71	12.47	11.40	10.96	9.47	8.76
CO_2	4.59	13.41	9.18	10.55	10.90	8.84	8.96	7.81	7.11
H_2O	1.28	2.18	1.58	1.15	1.57	2.56	2.01	1.66	1.65
Cl	n.a.	1.10	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
F	n.a.	b.d.l.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	98.99	98.93	99.63	99.57	99.25	98.15	100.54	99.70	98.65
X_{Mg}	0.34	0.49	0.41	0.47	0.54	0.53	0.43	0.29	0.25
ppm									
Sc	24	b.d.l	17	16	10	25	10	11	19
V	167	23	123	157	27	195	16	81	129
Cr	17	b.d.l	50	172	b.d.l.	381	12	136	148
Co	42	33	44	55	18	52	22	23	26
Ni	32	13	95	92	31	158	11	16	22
Zn	458	140	157	278	72	453	53	106	99
Ga	40	22	20	41	16	27	28	22	22
Rb	257	18	29	77	11	95	9	30	21
Sr	261	5800	1899	1858	3695	1475	1801	1846	1059
Y	119	b.d.l	b.d.l.	19	42	73	b.d.l.	26	51
Zr	518	48	75	340	62	34	44	43	120
Nb	184	b.d.l	50	187	143	195	87	58	56
Mo	b.d.l.	14	b.d.l.	b.d.l.	b.d.l.	b.d.l.	43	b.d.l.	7
Sn	b.d.l.	b.d.l	b.d.l.	15	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ba	293	1800	301	609	444	584	443	343	505
Pb	15	22	37	21	73	11	29	31	37
Th	b.d.l.	b.d.l	b.d.l.	b.d.l.	8	b.d.l.	b.d.l.	b.d.l.	16
U	b.d.l.	b.d.l	14	9	6	b.d.l.	7	b.d.l.	b.d.l.
La	b.d.l.	130	b.d.l.	b.d.l.	444	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Ce	370	243	48	226	857	360	195	89	247
Pr	b.d.l.	b.d.l	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	170	36	22	94	252	167	65	25	86
Ag	n.a.	1490	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cd	n.a.	b.d.l.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
In	n.a.	b.d.l.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cs	n.a.	b.d.l.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
W	n.a.	b.d.l.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table A.5.4.1b Major and trace element data of the carbonatitic breccia and the ferrocarbonatite veins (continued).

Rock type	Sdl-separate	Sdl-separate	Sdl-separate	CB,REE	CB,REE	FV	FV	CC	MC
Sample	Ku-98-18	Ku-98-47	Ku-01-OD3	Ku-98-130a	Ku-98-130b	Ku-01-04	Ku-01-05	Ku-01-10	Ku-01-08
wt.%									
SiO_2	36.79	36.34	36.01	4.00	11.00	1.43	b.d.l	1.57	2.10
TiO_2	0.01	b.d.l.	b.d.l.	0.18	0.31	0.04	0.01	0.04	0.02
Al_2O_3	31.45	30.94	30.83	1.60	6.20	0.42	0.16	0.51	b.d.l
Fe_2O_3	0.25	0.18	0.44	3.90	11.40	21.54	21.51	8.45	0.26
FeO	0.20	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
MnO	0.05	b.d.l.	b.d.l.	0.02	0.45	2.43	2.33	2.48	0.02
MgO	0.20	0.03	0.03	2.50	4.10	7.98	7.10	0.40	19.94
CaO	1.20	0.11	0.19	15.60	15.10	27.06	27.31	45.86	30.93
Na_2O	21.19	24.38	24.57	5.90	7.90	0.25	b.d.l	b.d.l	b.d.l
K_2O	0.71	b.d.l.	b.d.l.	0.03	0.05	b.d.l	b.d.l	0.21	0.02
P_2O_5	0.09	b.d.l.	b.d.l.	0.07	0.58	0.01	b.d.l	0.60	b.d.l
S	b.d.l.	b.d.l.	0.04	0.30	0.11	b.d.l	b.d.l	b.d.l	b.d.l
GV	6.42	3.03	3.12	30.63	26.56	36.73	39.60	37.51	45.90
CO_2	1.84	b.d.l.	b.d.l.	29.49	24.90	35.38	38.14	36.12	44.22
H_2O	4.58	b.d.l.	b.d.l.	1.14	1.66	1.35	1.46	1.39	1.68
Cl	n.a.	5.70	5.70	0.17	0.90	b.d.l.	b.d.l.	b.d.l.	b.d.l.
F	n.a.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.530	0.340	b.d.l.
Total	98.56	100.71	100.93	64.90	84.66	97.89	98.55	97.97	99.19
X_{Mg}	0.54	0.42	0.23	0.73	0.61	0.61	0.59	0.17	1.00
ppm									
Sc	b.d.l.	b.d.l.	b.d.l.	26	24	13	15	21	b.d.l
V	b.d.l.	b.d.l.	b.d.l.	b.d.l	73	77	22	16	13
Cr	b.d.l.	b.d.l.	b.d.l.	b.d.l	b.d.l	13	25	b.d.l	b.d.l
Co	23	94	99	15	11	44	30	32	14
Ni	b.d.l.	b.d.l.	b.d.l.	287	86	40	27	18	b.d.l
Zn	b.d.l.	b.d.l.	b.d.l.	40	115	163	120	70	b.d.l
Ga	13	18	17	b.d.l	b.d.l	b.d.l	b.d.l	b.d.l	b.d.l
Rb	7	b.d.l.	b.d.l.	112	62	9	9	29	b.d.l
Sr	388	51	143	89000	38000	5200	4893	1510	71
Y	b.d.l.	b.d.l.	b.d.l.	36	35	30	b.d.l	191	b.d.l
Zr	b.d.l.	29	b.d.l.	b.d.l	b.d.l	31	32	b.d.l	b.d.l
Nb	b.d.l.	b.d.l.	b.d.l.	b.d.l	b.d.l	652	b.d.l	201	b.d.l
Mo	b.d.l.	b.d.l.	b.d.l.	b.d.l	b.d.l	b.d.l	5	5	b.d.l
Sn	b.d.l.	b.d.l.	b.d.l.	54	38	b.d.l	b.d.l	b.d.l	b.d.l
Ba	1154	41	65	22000	8600	234	47	120	b.d.l
Pb	10	b.d.l.	b.d.l.	700	274	22	9	50	b.d.l
Th	b.d.l.	6	16	556	193	6	b.d.l	b.d.l	b.d.l
U	b.d.l.	b.d.l.	b.d.l.	12	17	b.d.l	b.d.l	b.d.l	b.d.l
La	b.d.l.	b.d.l.	90	54000	22000	140	b.d.l	290	90
Ce	24	48	58	79000	33000	290	100	780	b.d.l
Pr	b.d.l.	b.d.l.	b.d.l.	4272	1538	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Nd	b.d.l.	b.d.l.	b.d.l.	30000	11000	100	22	257	b.d.l
Ag	b.d.l.	1207	1300	1210	6237	1583	1303	1396	1396
Cd	b.d.l.	b.d.l.	b.d.l.	963	429	b.d.l.	b.d.l.	b.d.l.	b.d.l.
In	b.d.l.	b.d.l.	b.d.l.	240	174	b.d.l.	b.d.l.	b.d.l.	b.d.l.
Cs	b.d.l.	b.d.l.	b.d.l.	226	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.
W	b.d.l.	2458	2696	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.	b.d.l.

Table A.5.4.2 Rare earth element data.

Rock type	A,w	A,w	A,w	A,px	A,px	A,ol	A,ol
Sample	Ku-97-33b	Ku-97-44	Ku-98-45	Ku-97-13	Ku-97-31	Ku-97-28	Ku-98-23
ppm							
Y	11.00	8.30	1.10	6.10	3.10	1.30	1.20
La	8.10	14.00	3.20	7.40	4.40	2.90	1.90
Ce	17.00	27.00	5.50	16.00	8.70	5.70	3.60
Pr	2.10	3.20	0.62	2.00	1.10	0.64	0.50
Nd	8.30	12.00	2.30	8.20	4.30	2.50	2.00
Sm	2.00	2.50	0.41	1.70	0.89	0.49	0.40
Eu	1.00	1.70	0.91	1.60	1.08	0.63	0.63
Gd	1.90	2.10	0.37	1.60	0.76	0.39	0.35
Tb	0.28	0.30	b.d.l.	0.23	0.12	b.d.l.	b.d.l.
Dy	1.90	1.70	0.21	1.30	0.63	0.28	0.27
Ho	0.36	0.31	b.d.l.	0.21	b.d.l.	0.06	b.d.l.
Er	1.10	0.89	0.08	0.62	0.34	0.14	b.d.l.
Tm	0.16	0.12	b.d.l.	0.09	0.05	b.d.l.	b.d.l.
Yb	0.93	0.75	0.08	0.56	0.30	0.12	0.10
Lu	0.13	0.12	0.02	0.08	0.05	b.d.l.	0.02
Sc	2.10	5.20	0.35	6.00	5.60	1.60	1.70
Total	58.36	80.19	15.15	53.69	31.42	16.75	12.67
ΣREE (ppm)	45.26	66.69	13.70	41.59	22.72	13.85	9.77
$(Eu/Eu^*)_{CN}$	1.57	2.27	7.14	2.96	4.01	4.40	5.15
$(La/Yb)_{CN}$	5.87	12.57	26.94	8.90	9.88	16.28	12.80
$(La/Nd)_{CN}$	1.89	2.26	2.69	1.75	1.98	2.24	1.84

Table A.5.4.2 Rare earth element data (continued).

Rock type	T	T	T	T	GN	GN	GN	GN
Sample	Ku-97-92	Ku-97-104	Ku-98-41	Ku-98-230	Ku-97-04	Ku-97-05	Ku-97-31b	Ku-98-68
ppm								
Y	0.40	1.20	1.20	0.43	19.00	13.00	1.40	15.00
La	2.00	2.20	1.80	1.10	9.30	11.00	3.00	13.00
Ce	3.20	4.20	3.90	2.00	23.00	24.00	5.90	30.00
Pr	0.37	0.43	0.43	0.25	3.20	3.30	0.60	4.10
Nd	1.40	1.80	1.70	1.10	15.00	14.00	2.40	18.00
Sm	0.27	0.38	0.34	0.16	3.90	3.30	0.42	4.00
Eu	0.71	0.69	0.54	0.44	1.70	1.90	0.80	2.00
Gd	0.14	0.34	0.31	0.13	4.10	3.20	0.39	3.30
Tb	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.66	0.50	-	0.54
Dy	0.12	0.27	0.25	0.10	3.80	2.70	0.30	3.20
Ho	b.d.l.	b.d.l.	b.d.l.	b.d.l.	0.75	0.52	-	0.59
Er	0.07	b.d.l.	b.d.l.	b.d.l.	2.10	1.40	0.21	1.60
Tm	b.d.l.	b.d.l.	0.02	b.d.l.	0.32	0.20	0.04	0.24
Yb	0.05	0.12	0.12	0.05	1.90	1.30	0.26	1.40
Lu	0.01	0.02	0.02	b.d.l.	0.29	0.20	0.05	0.21
Sc	1.60	3.30	3.00	1.80	44.00	22.00	13.00	17.00
Total	10.34	14.95	13.63	7.56	133.02	102.52	28.77	114.18
ΣREE (ppm)	8.34	10.45	9.43	5.33	70.02	67.52	24.37	82.18
$(Eu/Eu^*)_{CN}$	11.16	5.87	5.08	9.32	1.30	1.79	6.04	1.68
$(La/Yb)_{CN}$	26.94	12.35	10.10	14.82	3.30	5.70	7.77	6.25
$(La/Nd)_{CN}$	2.76	2.36	2.05	1.93	1.20	1.52	2.42	1.40

Table A.5.4.2 Rare earth element data (continued).

Rock type	S,qtz	S,fs	S,f	S,ne	CB,m	CB,m	CB,l
Sample	Ku-98-40	Ku-99-20	Ku-98-103s	Ku-99-15a	Ku-98-08	Ku-98-103c	Ku-98-118
ppm							
Y	72.00	46.00	46.00	11.00	46.00	61.00	12.30
La	80.00	73.00	227.00	4.00	131.00	94.00	815.00
Ce	145.00	123.00	366.00	11.00	223.00	193.00	1127.00
Pr	18.00	16.00	37.00	1.50	24.00	24.00	95.20
Nd	69.00	63.00	129.00	6.50	84.00	95.00	263.00
Sm	13.00	12.00	18.00	1.80	15.00	19.00	19.90
Eu	4.30	3.80	3.60	0.32	5.20	6.50	4.30
Gd	13.00	10.00	13.00	2.10	12.00	17.00	8.48
Tb	2.20	1.60	2.00	0.32	1.70	2.40	0.90
Dy	13.00	9.00	9.60	2.10	9.10	13.00	3.46
Ho	2.90	1.90	1.60	0.39	1.70	2.20	0.52
Er	8.20	4.90	5.00	1.04	4.40	5.70	1.39
Tm	1.30	0.68	b.d.l.	0.14	0.65	0.86	0.17
Yb	9.20	5.20	5.00	0.80	4.10	5.10	1.21
Lu	1.40	0.80	0.77	0.10	0.56	0.73	0.22
Sc	7.20	5.90	4.80	0.21	9.00	17.00	b.d.l.
Total	459.70	376.78	868.37	43.32	571.41	556.49	2353.05
ΣREE (ppm)	380.50	324.88	817.57	32.11	516.41	478.49	2340.75
$(Eu/Eu^*)_{CN}$	1.01	1.06	0.72	0.50	1.18	1.11	1.01
$(La/Yb)_{CN}$	5.86	9.45	30.58	3.37	21.52	12.41	453.62
$(La/Nd)_{CN}$	2.24	2.24	3.40	1.19	3.02	1.91	6.00

Table A.5.4.2 Rare earth element data (continued).

Rock type	CB,so	CB,REE	CB,REE	FV	FV
Sample	Ku-98-131	Ku-98-130a	Ku-98-130b	Ku-99-04	Ku-01-05
ppm					
Y	68.00	172.00	89.50	35.00	1.17
La	144.00	62314.00	23867.00	123.00	1.82
Ce	353.00	85431.00	33204.00	230.00	3.16
Pr	46.00	7174.00	2751.00	26.00	0.33
Nd	188.00	20001.00	7695.00	86.00	1.29
Sm	35.00	1458.00	579.00	14.00	0.23
Eu	12.00	289.00	112.00	4.70	0.06
Gd	28.00	527.00	206.00	11.00	0.22
Tb	3.90	44.50	17.80	1.60	0.03
Dy	18.00	101.00	42.20	b.d.l.	0.21
Ho	2.70	8.77	4.48	1.30	0.04
Er	6.00	18.40	9.60	3.40	0.11
Tm	0.79	1.06	0.65	0.53	0.02
Yb	3.70	b.d.l.	b.d.l.	3.10	0.11
Lu	0.46	b.d.l.	b.d.l.	0.48	0.01
Sc	11.00	b.d.l.	b.d.l.	16.00	b.d.l.
Total	920.55	177539.73	68578.23	556.11	8.81
ΣREE (ppm)	841.55	177367.73	68488.73	505.11	7.64
$(Eu/Eu^*)_{CN}$	1.17	1.01	0.99	1.16	0.82
$(La/Yb)_{CN}$	26.21	-	-	26.72	11.14
$(La/Nd)_{CN}$	1.48	6.03	6.00	2.77	2.73

A.5.5 Stable isotope data

Table A.5.5.1 Oxygen and carbon isotopic data

Rock type	Sample	Mineral	Textural relationship	$\delta^{18}O_{SMOW}$ mineral	$\delta^{13}C_{PDB}$ mineral
White anorthosite	Ku-97-33	plagioclase	cumulus mineral	5.35	n.a.
	Ku-97-33a	plagioclase	cumulus mineral	6.14	n.a.
	Ku-97-33b	plagioclase	cumulus mineral	7.30	n.a.
	Ku-98-45	plagioclase	cumulus mineral	2.36	n.a.
	Ku-98-60	plagioclase	cumulus mineral	5.54	n.a.
Px-bearing anorthosite	Ku-97-31	plagioclase	cumulus mineral	6.10	n.a.
	Ku-97-92a	plagioclase	cumulus mineral	5.83	n.a.
Leucogabbronorite	Ku-98-128	plagioclase	cumulus mineral	5.61	n.a.
	Ku-98-222	plagioclase	cumulus mineral	5.99	n.a.
Ol-bearing anorthosite	Ku-97-95	plagioclase	cumulus mineral	5.90	n.a.
	Ku-97-95	olivine	interstitial	3.07	n.a.
Leucotroctolite	Ku-97-105	plagioclase	cumulus mineral	3.19	n.a.
	Ku-98-125	plagioclase	cumulus mineral	6.13	n.a.
	Ku-98-220	plagioclase	cumulus mineral	5.63	n.a.
Syenite	Ku-98-40	K-feldspar	cumulus mineral	7.22	n.a.
	Ku-98-40	plagioclase	cumulus mineral	7.20	n.a.
	Ku-99-13	K-feldspar	cumulus mineral	7.50	n.a.
	Ku-99-20	K-feldspar	cumulus mineral	7.92	n.a.
	Ku-99-21	K-feldspar	cumulus mineral	7.36	n.a.
	Ku-99-21	plagioclase	cumulus mineral	7.52	n.a.
Fenitized syenite	Ku-98-70s	albite	replacing feldspar	7.77	n.a.
	Ku-99-19s	albite	replacing feldspar	7.53	n.a.
Nepheline syenite	Ku-99-15a	K-feldspar	cumulus mineral	7.62	n.a.
	Ku-99-15a	nepheline	cumulus mineral	6.93	n.a.
	Ku-99-15°	biotite	interstitial	1.73	n.a.
Carbonatitic breccia	Ku-97-26	ankerite	matrix	8.95	-6.90
	Ku-97-26	magnetite	dispersed in the matrix	-1.82	n.a.
	Ku-98-48	biotite	biotite accumulation	3.41	n.a.
	Ku-99-02	ankerite	matrix	9.07	-6.97
	Ku-99-02	magnetite	dispersed in the matrix	-4.21	n.a.
	Ku-99-05	biotite	biotite accumulation	2.77	n.a.
	Ku-99-SA8	ankerite	matrix	9.34	-6.86
	Ku-99-SA11	ankerite	matrix	9.73	-6.98
	Ku-99-SA11	magnetite	dispersed in the matrix	-1.46	n.a.
Ferrocarbonatite vein	Ku-01-03	ankerite	matrix	8.91	-6.76
	Ku-01-03	magnetite	dispersed in the matrix	-2.63	n.a.

Table A.5.5.2 Sulphur isotopic data

Rock type	Sample	Line No.	Mineral	Textural relationships	$d^{34}S_{V\text{-}CDT}$ gas	$d^{34}S_{V\text{-}CDT}$ mineral
Leucogabbronorite	KU-97-03b	LS5418	pyrite	dispersed	2.47	3.27
	KU-97-03b	LS5419	pyrite	dispersed	2.60	3.40
Syenite	KU-97-05a	LS4685	pyrite	sulphide veinlet	2.74	3.54
	KU-97-05a	LS4742	pyrite	sulphide veinlet	0.37	1.17
Sodalite-rich carbonatitic breccia (Mag-free)	KU-01-OD1	LS5404	pyrite	small euhedral crystals	3.39	4.19
	KU-01-OD1	LS5405	pyrite	small euhedral crystals	2.96	3.76
	KU-01-OD1	LS5406	pyrite	small euhedral crystals	3.49	4.29
Sodalite-rich carbonatitic breccia (Mag-free)	KU-01-OD2	LS5410	pyrite	euhedral crystals	3.30	4.10
	KU-01-OD2	LS5411	pyrite	lamellar, replacing euhedral	3.72	4.52
	KU-01-OD2	LS5412	pyrite	lamellar, replacing euhedral	4.33	5.13
	KU-01-OD2	LS5413	pyrite	euhedral crystals	3.26	4.06
	KU-01-OD2	LS5414	pyrite	euhedral crystals	3.13	3.93
	KU-01-OD2	LS5415	pyrite	lamellar, replacing euhedral	4.08	4.88
REE-rich carbonatitic breccia (Mag-rich)	KU-98-130b	LS4686	pyrite	coarse sulphide veinlet	–2.87	–2.07
	KU-98-130b	LS4687	pyrite	coarse sulphide veinlet	–3.16	–2.36
	KU-98-130b	LS4688	pyrite	coarse sulphide veinlet	–3.23	–2.43
	KU-98-130b	LS4689	chalcopyrite	coarse sulphide veinlet	–3.54	–2.84
	KU-98-130b	LS4690	chalcopyrite	coarse sulphide veinlet	–3.95	–3.25
	KU-98-130b	LS4691	chalcopyrite	coarse sulphide veinlet	–3.84	–3.14
Sodalite-rich carbonatitic breccia (Mag-rich)	KU-99-SA8	LS5407	chalcopyrite	fine sulphide veinlets	–1.08	–0.38
	KU-99-SA8	LS5409	chalcopyrite	fine sulphide veinlets	–2.01	–1.31
	KU-99-SA8	LS5416	chalcopyrite	fine sulphide veinlets	–0.73	–0.03
	KU-99-SA8	LS5417	chalcopyrite	fine sulphide veinlets	–0.76	–0.06

A.5.6 Microthermometric fluid inclusion measurements

Table A.5.6.1 H_2O-rich fluid inclusions in sodalite

Sample	*No.*	*Diameter [µm]*	*No. of phases phases*	*FG [vol.%]*	*Tf [°C]*	*Te [°C]*	*Tmf [°C]*	*Th [°C]*	*Salinity [wt.%]*	*Density [g/cm³]*	*Origin*
Ku-98-130a	1	14.0	3	95	-75.0	-24.8	-22.5	-	24.0	-	primary
	2	10.5	3	95	-59.3	-25.5	-20.6	-	22.8	-	primary
	3	8.8	3	96	-45.1	-29.0	-19.2	301.4	21.8	0.933	primary
	4	21.0	3	95	-63.5	-23.5	-21.0	-	23.0	-	primary
	5	17.5	3	95	-57.4	-24.8	-21.2	315.8	23.2	0.932	primary
	6	3.5	2	96	-53.7	-24.9	-20.8	324.3	22.9	0.920	primary
	7	14.0	3	93	-56.3	-25.8	-20.5	-	22.7	-	primary
	8	5.3	3	96	-50.7	-27.0	-20.0	295.1	22.4	0.942	primary
	9	8.1	2	95	-52.5	-27.5	-21.3	-	23.2	-	primary
	10	14.0	3	95	-56.9	-27.1	-21.5	-	23.4	-	primary
	11	10.5	2	95	-55.6	-26.7	-21.5	273.0	23.4	0.979	primary
	12	8.8	2	96	-59.5	-28.1	-20.9	309.7	23.0	0.937	primary
	13	14.0	2	93	-60.0	-32.7	-	-	30.4	-	primary
	14	3.5	2	95	-57.5	-25.8	-21.5	273.4	23.4	0.979	primary
	15	6.3	2	95	-56.4	-25.7	-21.4	283.9	23.3	0.967	primary
Ku-98-130b	1	12.3	2	94	-69.5	-29.0	-15.5	-	19.0	-	primary
	2	7.0	3	95	-62.5	-28.8	-20.3	-	22.6	-	primary
	3	3.5	3	95	-57.9	-28.8	-20.1	-	22.4	-	primary
	4	6.3	3	95	-58.9	-24.6	-17.3	278.5	20.4	0.946	primary
	5	8.8	2	95	-44.0	-24.4	-15.0	-	18.6	-	primary
	6	4.2	2	95	-55.8	-26.0	-17.4	325.7	20.5	0.902	primary
	7	7.0	3	95	-49.7	-24.7	-17.9	341.7	20.9	0.888	primary
	8	11.2	3	95	-55.0	-26.5	-17.9	367.2	20.9	0.861	primary
	9	7.0	3	95	-49.1	-24.0	-18.1	273.3	21.0	0.954	primary
	10	10.5	3	95	-53.7	-25.2	-21.2	312.1	23.2	0.936	primary
	11	9.8	3	94	-55.0	-26.1	-21.3	-	23.2	-	primary
	12	17.5	3	92	-66.8	-25.7	-21.8	322.7	23.5	0.927	primary
	13	7.0	3	95	-	-25.0	-20.3	314.5	22.6	0.925	primary
Ku-98-131	1	7.0	3	95	-69.1	-25.0	-21.1	-	23.1	-	primary
	2	10.5	2	94	-76.2	-25.9	-21.1	-	23.1	-	primary
	3	6.3	3	94	-70.8	-26.7	-22.4	328.0	23.9	0.925	primary
	4	6.7	3	95	-74.1	-24.9	-20.7	-	22.8	-	primary
	5	4.2	3	95	-70.3	-25.0	-20.5	-	22.7	-	primary
	6	5.3	3	92	-69.8	-24.9	-21.5	352.8	23.4	0.893	primary
	7	10.5	3	94	-71.9	-27.8	-21.3	-	23.3	-	primary
	8	10.5	3	94	-66.2	-26.7	-21.1	-	23.1	-	primary
	9	6.3	3	92	-57.9	-26.0	-21.1	-	23.1	-	primary
	10	7.7	3	95	-66.0	-24.7	-20.5	329.0	22.7	0.913	primary
	11	7.0	3	95	-80.6	-24.1	-22.0	-	23.7	-	primary
	12	7.0	2	92	-70.2	-24.6	-20.8	-	22.9	-	primary
	13	6.3	2	95	-72.8	-26.0	-20.0	327.1	22.4	0.912	primary
	14	10.5	3	95	-70.0	-23.1	-19.8	336.2	22.2	0.902	primary
	15	5.6	3	95	-70.5	-24.3	-19.1	323.8	21.8	0.912	primary
	16	5.3	3	95	-72.7	-24.6	-20.9	348.0	23.0	0.894	primary
	17	10.5	3	95	-75.4	-26.6	-19.6	323.9	22.1	0.914	primary
	18	9.8	2	94	-83.9	-23.8	-19.9	-	22.3	-	primary
	19	3.9	2	92	-67.0	-23.8	-18.9	-	21.6	-	primary
	20	7.4	3	95	-75.8	-25.4	-19.9	-	22.3	-	primary

Table A.5.6.2 H_2O-rich fluid inclusions in ankerite

No.	*Diameter [µm]*	*No. of phases*	*FG [vol.%]*	*Tf [°C]*	*Te [°C]*	*Tmf [°C]*	*Th [°C]*	*Salinity [wt.%]*	*Density [g/cm^3]*	*Origin*
1	17.5	2	94	-40.0	-8.0	-3.0	181.7	5.0	0.925	ps
2	6.3	3	95	-45.7	-7.7	-2.7	183.5	4.5	0.920	ps
3	7.0	3	94	-41.7	-7.3	-2.9	178.4	4.8	0.927	ps
4	7.0	2	94	-43.0	-7.6	-3.1	180.1	5.1	0.927	ps
5	2.8	2	95	-26.0	-7.0	-3.9	172.3	6.3	0.942	ps
6	2.8	3	95	-49.3	-29.3	-20.7	195.5	22.8	1.049	primary
7	12.3	3	94	-45.9	-7.7	-2.8	218.8	4.6	0.883	ps

(*ps* pseudosecondary)

Table A.5.6.3 H_2O-rich fluid inclusions in quartz

No.	*Diameter [µm]*	*No. of phases*	*FG [vol.%]*	*Tf [°C]*	*Te [°C]*	*Tmf [°C]*	*Th [°C]*	*Salinity [wt.%]*	*Density [g/cm3]*	*Origin*
quartz 1										
1	13.3	2	95	-57.0	-32.5	-17.1	141.1	20.3	1.075	secondary
2	14.0	2	95	-64.4	-29.5	-21.8	150.0	23.6	1.095	secondary
3	19.3	2	95	-69.7	-30.9	-21.7	153.7	23.5	1.091	secondary
4	10.5	2	95	-65.6	-33.4	-22.3	148.2	23.9	1.099	secondary
5	11.2	2	95	-69.7	-	-21.5	-	23.4	-	secondary
6	10.5	2	95	-70.4	-29.7	-22.7	140.1	24.1	1.107	secondary
7	7.7	3	95	-54.6	-28.2	-21.1	147.1	23.1	1.093	secondary
8	24.5	3	95	-62.7	-30.2	-22.4	142.4	24.0	1.104	secondary
9	10.5	3	95	-67.0	-31.1	-22.1	148.7	23.8	1.097	secondary
10	7.0	2	95	-72.0	-30.9	-20.4	154.1	22.6	1.083	secondary
11	23.8	3	94	-68.0	-33.9	-21.3	148.7	23.2	1.093	secondary
12	10.5	2	95	-61.1	-33.1	-22.3	156.5	23.9	1.092	secondary
13	9.1	2	95	-60.4	-31.5	-22.4	156.5	24.0	1.093	secondary
14	7.0	2	95	-62.2	-33.1	-22.7	158.7	24.1	1.092	secondary
15	5.3	2	95	-52.8	-24.0	-20.8	162.9	22.9	1.078	secondary
16	7.0	3	95	-57.9	-27.0	-20.9	161.6	23.0	1.080	secondary
17	7.0	2	95	-56.3	-26.7	-18.4	171.3	21.3	1.058	secondary
18	10.5	2	95	-60.0	-28.6	-22.3	163.7	23.9	1.086	secondary
quartz 2										
19	24.5	2	94	-46.1	-20.3	-9.0	201.1	12.8	0.962	secondary
20	14.0	2	94	-37.4	-11.6	-5.9	199.8	9.1	0.935	secondary
21	14.0	2	92	-37.0	-12.0	-6.0	199.6	9.2	0.936	secondary
22	9.8	2	92	-37.4	-12.1	-5.8	200.5	8.9	0.936	secondary
23	24.5	2	92	-41.9	-13.3	-9.4	196.0	13.3	0.972	secondary
24	7.0	2	95	-45.0	-17.9	-13.1	211.5	17.0	0.982	secondary
25	10.5	2	95	-50.4	-18.1	-8.8	179.4	12.6	0.982	secondary
26	6.3	2	95	-45.9	-22.4	-12.1	189.5	16.1	1.000	secondary
27	4.2	2	95	-39.6	-25.0	-10.4	186.7	14.4	0.989	secondary
28	8.4	2	95	-39.7	-24.7	-8.7	193.7	12.5	0.968	secondary
quartz 3										
29	7.7	2	95	-57.4	-31.4	-18.9	210.7	21.6	1.013	secondary
30	18.2	2	95	-48.3	-23.0	-16.6	222.0	19.9	0.992	secondary
31	29.1	2	95	-45.2	-22.1	-16.8	215.4	20.1	0.999	secondary
32	21.0	2	95	-47.6	-23.6	-16.7	215.3	20.0	0.998	secondary
33	15.1	2	95	-54.5	-29.8	-17.7	233.2	20.7	0.987	secondary
34	17.5	2	95	-53.8	-31.0	-19.9	241.8	22.3	0.989	secondary
35	7.0	2	95	-53.9	-25.5	-22.7	199.7	24.1	1.056	secondary
36	5.3	2	95	-51.8	-27.7	-21.4	189.9	23.3	1.058	secondary
37	4.2	2	95	-50.7	-26.7	-21.6	191.1	23.4	1.058	secondary
38	5.3	2	95	-50.6	-24.9	-20.4	202.7	22.6	1.027	secondary
39	5.3	2	95	-53.3	-25.1	-19.7	207.0	22.2	1.020	secondary
40	10.5	2	95	-62.1	-28.2	-22.1	197.2	23.8	1.056	secondary
41	6.0	3	95	-61.9	-29.2	-21.5	210.2	23.4	1.041	secondary
42	15.1	2	95	-64.1	-25.9	-19.7	230.6	22.2	0.999	secondary

Table A.5.6.4 CO_2-rich inclusions in quartz

No.	*Diameter [µm]*	*No. of phases*	*FG [vol.%]*	*Tf [°C]*	*Ti [°C]*	*Tmf [°C]*	*Th [°C]*	*Density [g/cm^3]*	*Origin*
1	6.3	1	100	-95.4	-60.8	-56.7	8.7	0.871	secondary
2	4.2	1	100	-96.7	-75.9	-56.5	16.2	0.811	secondary
3	9.8	1	100	-95.9	-71.7	-56.7	16.5	0.809	secondary
4	6.3	1	100	-96.2	-71.9	-56.6	13.6	0.834	secondary
5	4.2	1	100	-95.8	-70.3	-56.6	14.8	0.844	secondary
6	4.2	1	100	-96.1	-69.6	-56.7	21.3	0.760	secondary
7	7.0	1	100	-96.8	-68.6	-56.6	16.3	0.811	secondary
8	6.0	1	100	-93.7	-69.8	-56.6	15.4	0.810	secondary
9	7.0	1	100	-96.2	-69.9	-56.6	16.6	0.808	secondary
10	10.2	1	100	-92.0	-68.9	-56.6	14.8	0.824	secondary
11	10.5	1	100	-96.3	-69.3	-56.6	15.6	0.817	secondary
12	17.5	1	100	-94.0	-68.0	-56.6	12.8	0.840	secondary
13	14.7	1	100	-95.3	-69.2	-56.6	12.6	0.842	secondary
14	21.0	1	100	-94.4	-	-56.6	16.0	0.813	secondary
15	17.5	1	100	-94.8	-73.1	-56.6	13.0	0.839	secondary
16	8.4	1	100	-76.8	-61.5	-56.6	21.9	0.753	secondary
17	9.1	1	100	-94.2	-70.2	-56.7	14.0	0.830	secondary
18	7.0	1	100	-83.1	-64.7	-56.6	19.9	0.775	secondary
19	6.3	1	100	-96.3	-69.9	-56.6	15.7	0.816	secondary
20	4.2	1	100	-92.7	-64.9	-56.6	11.1	0.854	secondary
21	7.0	1	100	-95.2	-63.3	-56.6	13.3	0.836	secondary
22	7.0	1	100	-98.3	-74.1	-56.6	13.8	0.832	secondary
23	7.0	1	100	-95.2	-70.7	-56.6	23.7	0.730	secondary
24	7.7	1	100	-96.2	-	-56.7	13.0	0.839	secondary
25	9.8	1	100	-76.9	-61.7	-56.6	20.4	0.770	secondary
26	10.5	1	100	-70.2	-64.5	-56.6	12.9	0.839	secondary
27	10.5	1	100	-96.0	-65.6	-56.7	14.0	0.830	secondary