

Supplementary II. EPMA results of minerals and inclusions

S-II-Table 1. Major-element concentrations (wt.%) of silicate inclusions in biotite and ulvöspinel, individual grain, and silicate glass in pseudomorphous grains from the Ulleung Island volcanic rocks

Samples	Biotite-hosted coexisting immiscible silicate inclusion						
	ub116-1a- bio13-gls1	ub116-1a- bio13-gls3	ub116-1a- bio13-gls4	ub116-1a- bio13-gls8	ub116-1a- bio13-gls9	ub116-1a- nc1-gls	ub116-1a- nc1-gls
SiO₂	48.93	51.31	50.52	50.37	50.89	48.77	48.65
TiO₂	0.17	0.20	0.24	0.10	0.29	0.18	0.18
Al₂O₃	31.70	29.21	29.62	30.40	29.15	32.83	32.77
Cr₂O₃	0.54	0.25	0.30	0.16	0.06	0.05	0.02
FeO	2.81	3.26	3.12	2.96	3.02	3.07	3.07
MnO	0.04	0.01	0.02	0.02	0.04	0.03	0.02
MgO	1.17	1.80	1.77	1.60	1.83	1.15	1.05
CaO	0.18	0.02	0.06	0.15	0.23	0.17	0.17
Na₂O	0.15	0.03	0.06	0.02	0.02	0.18	0.12
K₂O	9.58	9.80	9.85	9.46	9.71	9.42	10.59
P₂O₅	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F	0.06	0.24	0.38	0.34	0.48	0.00	0.00
Cl	0.00	0.00	0.01	0.01	0.00	0.01	0.00
SO₃	0.01	0.03	0.00	0.00	0.03	0.00	0.02
Total	95.31	96.09	95.84	95.43	95.53	95.85	96.64

Samples	Biotite-hosted coexisting immiscible silicate inclusion						
	ub116-1a- nc4-gls-r1	ub116-1a-nc4- gls-r2	ub116-1a- nc4-gls-r3	ub116-1a- bio13-21	ub116-1a- bio13-22	ub116-1a- bio13-23	ub116-1a- bio13-24
SiO₂	51.09	51.11	50.89	49.46	50.45	51.33	50.04
TiO₂	0.21	0.22	0.35	0.19	0.36	0.13	0.36

Al₂O₃	29.02	29.27	29.19	30.81	29.63	29.96	30.42
Cr₂O₃	0.39	0.48	0.24	0.37	0.40	0.26	0.06
FeO	3.09	2.87	3.46	3.06	3.07	3.17	3.29
MnO	0.05	0.07	0.05	0.03	0.01	0.04	0.03
MgO	1.93	1.80	2.03	1.39	1.81	1.72	1.45
CaO	0.07	0.06	0.06	0.21	0.14	0.08	0.08
Na₂O	0.01	0.02	0.05	0.10	0.03	0.00	0.06
K₂O	9.73	9.48	9.73	9.84	9.91	9.84	10.21
P₂O₅	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F	0.30	0.37	0.36	0.14	0.18	0.08	0.10
Cl	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SO₃	0.00	0.02	0.03	0.03	0.03	0.03	0.01
Total	95.75	95.60	96.31	95.57	95.95	96.60	96.08

Samples	Biotite-hosted coexisting immiscible silicate inclusion						
	ub116-1a- bio13-29	ub116-1a- bio13-30	ub116-1a- bio13-34	ub116-1a- bio13-35	ub116-1a- bio13-36	ub116-1a- bio13-37	ub116-1a- bio13-38
SiO₂	49.22	50.57	49.43	48.80	47.96	48.92	49.71
TiO₂	0.17	0.12	0.26	0.20	0.55	0.22	0.32
Al₂O₃	30.55	30.82	29.64	31.15	30.43	32.42	32.32
Cr₂O₃	0.14	0.02	0.18	0.51	1.33	0.04	0.00
FeO	3.96	3.09	3.51	3.03	3.00	2.58	2.89
MnO	0.05	0.03	0.03	0.03	0.03	0.01	0.02
MgO	1.82	1.56	1.76	1.33	1.28	1.17	1.43
CaO	0.16	0.11	0.08	0.16	0.25	0.03	0.12
Na₂O	0.11	0.03	0.05	0.12	0.09	0.09	0.11
K₂O	8.86	9.85	10.16	9.72	9.31	9.86	9.80
P₂O₅	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F	0.06	0.24	0.20	0.06	0.02	0.28	0.38

Cl	0.01	0.00	0.01	0.00	0.00	0.02	0.01
SO3	0.03	0.01	0.01	0.00	0.03	0.02	0.01
Total	95.09	96.34	95.23	95.08	94.26	95.52	96.98

Samples	Biotite-hosted coexisting immiscible silicate inclusion			
	116-1-1-cir6-Si-04	116-1-1-cir6-Si-05	114.4-cir1-Si-04	114.4-cir1-Si-07
SiO₂	51.80	51.55	54.35	64.70
TiO₂	0.16	0.21	0.00	0.29
Al₂O₃	31.07	30.35	28.70	18.86
Cr₂O₃	0.00	0.01	0.05	0.07
FeO	3.62	2.83	2.00	0.40
MnO	0.08	0.00	0.00	0.03
MgO	1.84	1.57	1.36	0.12
CaO	0.19	0.80	0.71	0.92
Na₂O	0.06	0.10	0.05	5.82
K₂O	9.08	8.97	4.62	6.82
NiO	0.00	0.01	0.00	0.00
Total	97.90	96.38	91.83	98.03

Samples	Biotite-hosted silicate inclusion						
	114.4-cir1-Si-08	114.4-cir1-Si-09	114.4-cir1-Si-10	114.4-cir4-Si-04	114.4-cir4-Si-05	ub116-1a-bio13-26	ub116-1a-bio13-27
SiO₂	55.40	58.27	65.63	63.72	64.80	59.74	57.41
TiO₂	0.37	0.83	0.76	0.11	0.07	0.31	0.19
Cr₂O₃	0.07	0.13	0.19	0.24	0.03	0.00	0.00
Al₂O₃	18.57	18.77	19.21	19.57	20.37	19.86	21.14
FeO	3.55	2.54	0.26	1.99	2.48	0.99	1.28
MnO	0.00	0.03	0.01	0.02	0.00	0.03	0.01

MgO	1.78	1.24	0.06	0.89	1.20	0.28	0.57
CaO	0.64	0.62	0.52	0.36	0.66	0.16	0.42
Na₂O	5.09	4.89	9.30	1.44	5.53	4.93	4.98
K₂O	3.46	5.10	2.23	10.16	4.79	7.58	6.51
P₂O₅	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F						0.00	0.04
Cl						0.03	0.03
SO₃						0.01	0.00
Total	88.94	92.42	98.17	98.53	99.94	93.90	92.58

Samples	Biotite-hosted silicate inclusion				
	114.4-cir4-Si-10	115.4-cir3-Si-14	115.4-cir3-Si-16	115.4-cir3-Si-23	115.4-cir3-Si-15
SiO₂	64.62	58.46	57.29	66.53	52.55
TiO₂	0.05	0.12	0.06	0.04	0.08
Al₂O₃	19.39	26.81	26.72	18.74	30.57
Cr₂O₃	0.00	0.00	0.22	0.00	0.13
FeO	0.16	1.91	2.01	0.20	2.65
MnO	0.00	0.05	0.03	0.02	0.00
MgO	0.00	0.75	0.74	0.01	1.21
CaO	1.41	0.25	0.32	0.25	0.19
Na₂O	9.20	3.96	3.74	2.71	0.06
K₂O	0.20	6.21	6.16	12.44	8.85
NiO	0.00	0.00	0.00	0.01	0.00
Total	95.02	98.52	97.29	100.93	96.29

Samples	Individual silicate grains						
	116-1-1-cir6-Si-01	116-1-1-cir6-Si-02	116-1-1-cir6-Si-03	ub1-1x-mus 1	ub1-1x-mus 2	ub1-1x-mus 5	ub1-1x-mus 8
SiO₂	51.72	51.79	51.94	49.39	50.00	49.16	50.51

TiO₂	0.14	0.15	0.15	0.57	0.15	5.36	0.10
Al₂O₃	32.15	32.07	31.02	29.99	30.38	28.71	31.32
Cr₂O₃	0.03	0.01	0	0.00	0.01	0.03	0.00
FeO	3.18	2.77	3.05	2.97	3.05	2.62	2.76
MnO	0.02	0.05	0.01	0.01	0.03	0.01	0.00
MgO	1.17	1.17	1.49	1.61	1.60	1.29	1.26
CaO	0.1	0.2	0.2	0.09	0.08	0.14	0.10
Na₂O	0.07	0.06	0.07	0.11	0.12	0.07	0.10
K₂O	10.13	10.05	9.3	9.40	9.55	8.67	9.80
P₂O₅				0.00	0.03	0.00	0.00
F				0.08	0.04	0.17	0.37
Cl				0.05	0.00	0.00	0.00
SO₃				0.03	0.04	0.01	0.04
Total	98.7	98.31	97.23	94.28	95.15	96.22	96.23

Samples

Ulvöspinel-hosted silicate melt inclusion

	112.6-cir1-Si-01	112.6-cir1-Si-02	112.6-cir1-Si-03	112.6-cir5-Si-05	112.6-cir6-Si-02	112.6-cir6-Si-03	112.6-cir6-Si-04
SiO₂	50.04	48.14	49.21	51.35	53.32	50.43	50.83
TiO₂	0.17	0.45	0.45	0.49	0.40	0.59	0.48
Al₂O₃	27.41	27.20	29.16	22.89	28.57	29.11	24.71
Cr₂O₃	0.10	0.05	0.36	0.44	0.04	0.03	0.06
FeO	1.79	6.41	4.26	2.54	2.41	5.33	4.10
MnO	0.00	0.08	0.06	0.00	0.00	0.06	0.05
MgO	1.19	2.85	2.20	1.50	1.51	2.38	2.85
CaO	0.79	0.56	1.02	0.85	0.91	0.51	1.14
Na₂O	0.03	0.01	0.01	1.57	0.04	0.03	0.10
K₂O	2.75	4.61	0.99	2.44	3.38	4.43	1.94
NiO	0.01	0.00	0.00	0.01	0.01	0.01	0.00

Total	84.28	90.36	87.72	84.08	90.58	92.91	86.26
Samples	Ulvöspinel-hosted silicate melt inclusion						
	112.6-cir1-Si-04	112.6-cir4-Si-01	112.6-cir4-Si-02	112.6-cir4-Si-03	112.6-cir4-Si-04	112.6-cir5-Si-02	112.6-cir5-Si-03
SiO₂	42.94	41.50	42.24	43.05	42.53	50.44	47.41
TiO₂	0.24	0.65	0.58	0.70	0.54	0.38	0.35
Al₂O₃	21.19	20.90	20.31	21.11	21.42	26.33	24.60
Cr₂O₃	0.62	0.23	0.23	0.24	0.37	0.08	0.27
FeO	2.35	13.80	11.13	13.14	13.65	4.00	3.04
MnO	0.01	0.12	0.13	0.12	0.17	0.04	0.00
MgO	1.86	7.83	6.38	6.98	7.96	2.37	1.85
CaO	2.77	1.01	0.89	1.05	0.84	1.11	1.13
Na₂O	0.06	0.03	0.01	0.02	0.03	0.10	0.07
K₂O	2.26	0.50	0.30	0.38	0.27	2.05	1.84
NiO	0.00	0.00	0.02	0.00	0.00	0.00	0.00
Total	74.29	86.57	82.22	86.79	87.78	86.88	80.56
Samples	Ulvöspinel-hosted silicate melt inclusion						
	112.6-cir5-Si-04						
SiO₂	49.58						
TiO₂	0.57						
Al₂O₃	27.59						
Cr₂O₃	0.32						
FeO	5.22						
MnO	0.09						
MgO	2.60						
CaO	1.02						
Na₂O	0.02						

K₂O	2.23					
NiO	0.00					
Total	89.23					
Samples	Silicate in pseudomorph ankerite grains					
	106.2-cir4-Si-01	106.2-cir4-Si-02	106.2-cir4-Si-05	106.2-cir4-Si-06	106.2-cir4-Si-07	106.2-cir4-Si-08
SiO₂	44.65	42.89	44.60	46.73	43.56	43.16
TiO₂	2.25	2.24	1.60	1.60	4.00	0.49
Al₂O₃	18.94	18.81	20.05	18.70	19.70	17.55
Cr₂O₃	0.36	0.19	0.25	0.28	0.37	0.36
FeO	13.25	13.36	12.84	14.28	13.19	16.14
MnO	0.08	0.05	0.10	0.10	0.07	0.02
MgO	8.44	9.12	7.35	9.56	9.62	10.65
CaO	0.92	1.43	1.04	1.00	0.99	1.01
Na₂O	0.00	0.03	0.02	0.03	0.02	0.04
K₂O	3.91	2.82	4.77	2.47	3.01	1.41
NiO	0.02	0.03	0.01	0.02	0.03	0.05
Total	92.81	90.98	92.64	94.76	94.55	90.88

S-II-Table 2. Major-element concentrations (wt.%) of the different types of carbonate components in the Ulleung Island trachytic rocks

Samples	Biotite-hosted carbonate melt inclusion							
	116-1-2-cir2- dol-01	116-1-2-cir2- dol-03	116-1-2-cir2- dol-05	116-1-2-cir2- dol-06	116-1-2-cir2- dol-07	116-1-2-cir2- dol-08	116-1-2-cir2- dol-09	116-1-2-cir2- dol-10
SiO₂	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.09
TiO₂	0.02	0.00	0.02	0.04	0.05	0.01	0.00	0.06
Al₂O₃	0.09	0.17	0.07	0.09	0.01	0.04	0.10	0.19
FeO	11.41	11.18	11.62	11.57	11.28	9.29	8.53	11.01
MnO	0.45	0.59	0.45	0.50	0.86	0.92	0.85	0.60
MgO	12.07	11.01	12.63	12.50	12.00	11.70	12.69	12.19
CaO	26.79	28.41	26.62	25.87	26.68	29.24	30.18	26.93
Na₂O	0.01	0.02	0.00	0.02	0.00	0.00	0.03	0.00
K₂O	0.04	0.03	0.02	0.05	0.04	0.00	0.06	0.08
P₂O₅	0.04	0.03	0.00	0.00	0.02	0.04	0.01	0.04
SrO	0.06	0.04	0.01	0.04	0.04	0.04	0.07	0.04
CO₂[*]	45.95	45.70	45.88	46.06	45.90	45.94	45.81	45.97
Total	96.91	97.29	97.32	96.74	96.89	97.23	98.33	97.20

Samples	Biotite-hosted carbonate melt inclusion							
	116-1-2-cir2- dol-11	116-1-2-cir2- dol-12	116-1-2-cir2- dol-13	116-1-2-cir2- dol-14	116-1-2-cir2- dol-15	116-1-2-cir2- dol-16	116-1-1-cir4- dol-01	116-1-1-cir4- dol-02
SiO₂	2.39	0.00	0.00	0.49	0.07	0.00	0.00	0.00
TiO₂	0.70	0.09	0.04	0.09	0.07	0.00	0.08	0.00
Al₂O₃	2.09	0.04	0.02	0.44	0.12	0.04	0.08	0.08
FeO	10.90	12.15	11.63	12.13	12.82	11.91	13.14	12.98
MnO	0.53	0.56	0.68	0.65	0.62	0.64	0.50	0.44
MgO	10.53	12.20	12.01	11.36	12.09	12.63	12.47	11.63

CaO	23.90	25.48	27.36	26.47	25.89	28.06	28.52	29.87
Na₂O	0.02	0.00	0.02	0.01	0.00	0.00	0.01	0.02
K₂O	0.13	0.10	0.02	0.05	0.06	0.03	0.09	0.02
P₂O₅	0.04	0.02	0.05	0.05	0.02	0.05	0.00	0.03
SrO	0.04	0.06	0.06	0.03	0.07	0.06	0.00	0.02
CO₂ *	46.92	45.96	45.67	45.82	45.64	45.34	44.89	44.75
Total	98.19	96.66	97.55	97.59	97.47	98.77	99.78	99.83

Samples	Biotite-hosted carbonate melt inclusion							
	116-1-1-cir4- dol-03	116-1-1-cir4- dol-04	116-1-1-cir4- dol-05	116-1-1-cir4- dol-06	116-1-1-cir4- dol-07	116-1-1-cir4- dol-08	114.4-cir4- dol-01	114.4-cir4- dol-02
SiO₂	0.00	0.00	0.00	0.00	0.00	1.02	0.00	0.00
TiO₂	0.03	0.04	0.04	0.04	0.00	0.01	0.00	0.12
Al₂O₃	0.07	0.09	0.08	0.08	0.10	0.86	0.06	0.04
FeO	13.49	12.51	13.38	12.77	12.90	14.94	13.34	13.87
MnO	0.47	0.49	0.50	0.56	0.54	0.80	1.03	0.82
MgO	12.30	12.81	12.38	12.31	12.09	11.18	12.92	12.61
CaO	28.78	28.94	28.66	29.30	29.25	27.77	27.78	27.54
Na₂O	0.00	0.00	0.00	0.02	0.00	0.01	0.02	0.00
K₂O	0.03	0.07	0.06	0.03	0.07	0.02	0.00	0.05
P₂O₅	0.00	0.03	0.03	0.02	0.00	0.02	0.04	0.03
SrO	0.05	0.02	0.09	0.05	0.05	0.05	0.00	0.01
CO₂ *	44.76	44.96	44.78	44.82	44.82	44.61	44.83	44.80
Total	99.97	99.95	99.99	99.99	99.82	101.28	100.02	99.88

Samples	Biotite-hosted carbonate melt inclusion							
	114.4-cir4- dol-04	114.4-cir4-dol- 05	116-2-1-cir7- dol-01	116-2-1-cir7- dol-02	116-2-1-cir7- dol-04	116-2-1-cir7- dol-05	116-2-1-cir7- dol-06	116-2-1-cir7- dol-07
SiO₂	0.89	0.81	0.90	0.07	0.00	0.00	0.04	0.00
TiO₂	0.12	0.68	0.46	0.19	0.00	0.00	0.00	0.04

Al₂O₃	0.44	0.28	0.74	0.16	0.04	0.05	0.17	0.04
FeO	13.30	13.61	15.07	15.26	11.92	8.79	7.28	10.50
MnO	0.85	1.04	0.84	0.76	1.04	0.77	0.64	1.29
MgO	11.66	10.80	10.17	12.31	11.00	12.88	14.44	11.45
CaO	26.99	28.20	27.79	27.80	29.85	33.33	31.35	31.15
Na₂O	0.04	0.11	0.07	0.01	0.00	0.00	0.01	0.00
K₂O	0.04	0.03	0.09	0.04	0.00	0.03	0.02	0.04
P₂O₅	0.02	0.83	0.04	0.05	0.03	0.03	0.02	0.03
SrO	0.00	0.00	0.04	0.03	0.03	0.00	0.02	0.10
CO₂[*]	45.23	44.88	44.57	44.34	44.98	45.00	45.82	44.94
Total	99.58	101.25	100.78	101.03	98.89	100.88	99.81	99.57

Samples	Biotite-hosted carbonate melt inclusion							
	116-2-1-cir7-	116-2-1-cir7-	116-1-2-cir2-	116-1-2-cir2-	116-1-1-cir4-	116-2-1-cir7-	116-2-1-cir7-	116-2-1-cir7-
	dol-09	dol-10	dol-02	dol-04	dol-09	dol-03	dol-08	dol-11
SiO₂	0.00	0.00	0.00	0.11	0.40	0.29	0.23	0.00
TiO₂	0.00	0.00	0.01	0.02	0.01	0.03	0.00	0.00
Al₂O₃	0.03	0.03	0.06	0.13	0.25	0.37	0.21	0.10
FeO	11.65	9.36	15.48	14.71	15.37	15.85	15.31	3.63
MnO	1.79	2.80	0.32	0.34	1.22	1.17	1.35	2.32
MgO	10.69	11.29	9.30	10.07	9.75	10.10	8.86	15.33
CaO	30.67	31.01	26.33	26.11	29.02	28.48	29.06	32.54
Na₂O	0.04	0.03	0.02	0.01	0.00	0.04	0.05	0.02
K₂O	0.00	0.00	0.04	0.02	0.03	0.01	0.00	0.02
P₂O₅	0.00	0.00	0.01	0.04	0.02	0.02	0.03	0.02
SrO	0.06	0.02	0.04	0.01	0.01	0.04	0.00	0.09
CO₂ *	44.64	44.92	45.10	45.34	44.20	44.13	44.25	46.02
Total	99.58	99.47	96.70	96.91	100.27	100.51	99.35	100.10

Samples	Biotite-hosted carbonate melt inclusion
----------------	---

SiO₂	0.09	0.03	0.01	0.29	0.54
TiO₂	0.04	0.00	0.03	0.08	0.07
Al₂O₃	0.22	0.17	0.15	0.31	0.51
Cr₂O₃	0.66	0.17	0.03	0.03	0.00
FeO	5.16	13.02	9.26	13.99	13.62
MnO	0.53	1.73	2.29	1.14	1.24
MgO	15.74	10.74	12.27	11.97	11.73
CaO	29.92	29.34	30.55	27.61	27.62
Na₂O	0.05	0.04	0.01	0.02	0.01
K₂O	0.01	0.00	0.02	0.00	0.03
P₂O₅	0.00	0.00	0.00	0.03	0.00
F	0.27	0.08	0.09	0.16	0.00
Cl	0.00	0.00	0.00	0.00	0.01
SO₃	0.08	0.02	0.07	0.05	0.03
BaO	0.00	0.00	0.00	0.00	0.03
La₂O₃	0.09	0.00	0.00	0.02	0.04
Ce₂O₃	0.01	0.03	0.03	0.01	0.07
Total	52.75	55.34	54.77	55.63	55.56

Samples	Carbonate grains among biotite							
	ub116-2a-16	ub116-2a-17	ub116-2a-18	ub116-2a-19	ub116-2a-20	ub116-2a-21	ub116-2a-22	ub116-2a-23
SiO₂	0.84	0.13	0.01	0.76	0.16	0.02	0.04	0.00
TiO₂	0.03	0.00	0.02	3.14	0.05	0.02	0.02	0.01
Al₂O₃	0.67	0.13	0.06	0.27	0.19	0.05	0.17	0.04
Cr₂O₃	0.02	0.03	0.05	0.00	0.01	0.01	0.04	0.03
FeO	13.74	11.27	7.96	42.29	10.41	9.04	10.82	7.71
MnO	1.93	1.51	1.37	0.19	1.18	1.89	1.17	1.17
MgO	11.02	12.56	14.13	10.83	12.67	13.02	12.24	13.61

CaO	28.01	30.08	29.73	2.48	30.38	30.02	29.89	31.33
Na₂O	0.02	0.00	0.00	0.00	0.02	0.02	0.02	0.03
K₂O	0.00	0.01	0.01	0.05	0.01	0.00	0.03	0.00
P₂O₅	0.02	0.00	0.00	0.54	0.00	0.01	0.03	0.00
F	0.00	0.00	0.02	0.00	0.00	0.02	0.09	0.09
Cl	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.01
SO₃	0.02	0.00	0.02	0.03	0.10	0.01	0.08	0.13
BaO	0.01	0.00	0.02	0.04	0.00	0.00	0.04	0.00
La₂O₃	0.00	0.06	0.06	0.00	0.04	0.05	0.05	0.00
Ce₂O₃	0.00	0.03	0.07	0.00	0.01	0.00	0.06	0.09
Total	56.35	55.80	53.53	60.62	55.23	54.17	54.75	54.20
<hr/>								
Samples	Carbonate grains among biotite							
	ub116-1a- bio13-gls5	ub116-1a- bio13-gls6	ub116-1a- bio13-gls7	ub116-1a- bio13-cc1	ub116-1a- bio13-cc2	ub116-1a- bio13-cc3	ub116-1a- bio13-cc4	ub116-1a- bio13-cc5
SiO₂	0.02	0.00	0.02	0.08	0.12	0.41	0.00	0.53
TiO₂	0.35	0.08	0.04	0.02	0.00	0.00	0.00	0.02
Al₂O₃	0.06	0.08	0.09	0.07	0.14	0.37	0.02	0.40
Cr₂O₃	0.02	0.05	0.02	0.00	0.03	0.03	0.43	0.17
FeO	11.86	11.32	13.06	10.93	10.70	12.99	12.90	13.43
MnO	0.44	0.50	1.20	0.62	0.46	0.95	0.83	1.01
MgO	13.16	11.93	10.23	13.07	12.72	11.47	11.05	11.14
CaO	28.34	30.29	30.30	29.61	30.09	28.97	29.64	28.49
Na₂O	0.01	0.03	0.02	0.04	0.01	0.00	0.00	0.03
K₂O	0.07	0.06	0.02	0.02	0.04	0.00	0.00	0.02
P₂O₅	0.15	0.08	0.04	0.05	0.08	0.10	0.05	0.01
F	0.00	0.06	0.00	0.00	0.00	0.04	0.00	0.08
Cl	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
SO₃	0.02	0.06	0.03	0.00	0.03	0.02	0.05	0.02

Total	54.50	54.51	55.05	54.53	54.40	55.34	55.03	55.32
Samples	Carbonate grains among biotite							
	ub116-1a- bio13-gls5	ub116-1a- bio13-gls6	ub116-1a- bio13-gls7	ub116-1a- bio13-cc1	ub116-1a- bio13-cc2	ub116-1a- bio13-cc3	ub116-1a- bio13-cc4	ub116-1a- bio13-cc5
SiO ₂	0.02	0.00	0.02	0.08	0.12	0.41	0.00	0.53
TiO ₂	0.35	0.08	0.04	0.02	0.00	0.00	0.00	0.02
Al ₂ O ₃	0.06	0.08	0.09	0.07	0.14	0.37	0.02	0.40
Cr ₂ O ₃	0.02	0.05	0.02	0.00	0.03	0.03	0.43	0.17
FeO	11.86	11.32	13.06	10.93	10.70	12.99	12.90	13.43
MnO	0.44	0.50	1.20	0.62	0.46	0.95	0.83	1.01
MgO	13.16	11.93	10.23	13.07	12.72	11.47	11.05	11.14
CaO	28.34	30.29	30.30	29.61	30.09	28.97	29.64	28.49
Na ₂ O	0.01	0.03	0.02	0.04	0.01	0.00	0.00	0.03
K ₂ O	0.07	0.06	0.02	0.02	0.04	0.00	0.00	0.02
P ₂ O ₅	0.15	0.08	0.04	0.05	0.08	0.10	0.05	0.01
F	0.00	0.06	0.00	0.00	0.00	0.04	0.00	0.08
Cl	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00
SO ₃	0.02	0.06	0.03	0.00	0.03	0.02	0.05	0.02
Total	54.50	54.51	55.05	54.53	54.40	55.34	55.03	54.50
Samples	Carbonate included in plagioclase			Irregular shape carbonate grains in matrix				
	ub116-2a-39	ub116-2a-40	ub116-2a-43		ub116-2a-31	ub116-2a-32	ub116-2a-33	ub116-2a-34
SiO ₂	0.00	1.54	0.00		0.54	0.00	0.00	0.02
TiO ₂	0.01	0.00	0.00		0.00	0.00	0.00	0.00
Al ₂ O ₃	0.03	0.78	0.02		0.46	0.02	0.08	0.01
Cr ₂ O ₃	0.00	0.00	0.00		0.01	0.00	0.00	0.02
FeO	11.63	14.83	10.41		14.32	7.79	13.57	2.96
MnO	0.49	0.37	0.55		1.34	0.29	0.70	0.33
MgO	12.85	11.79	14.41		11.08	16.72	11.69	16.86

CaO	29.30	26.91	28.86		27.98	28.81	28.54	31.87
Na ₂ O	0.00	0.17	0.00		0.04	0.00	0.00	0.01
K ₂ O	0.00	0.02	0.00		0.00	0.02	0.00	0.00
P ₂ O ₅	0.00	0.00	0.00		0.00	0.01	0.03	0.00
F	0.04	0.00	0.19		0.00	0.23	0.00	0.00
Cl	0.00	0.00	0.00		0.00	0.02	0.00	0.00
SO ₃	0.01	0.00	0.03		0.03	0.00	0.05	0.19
BaO	0.01	0.03	0.03		0.00	0.01	0.01	0.01
La ₂ O ₃	0.05	0.01	0.00		0.05	0.00	0.00	0.00
Ce ₂ O ₃	0.06	0.06	0.00		0.06	0.02	0.01	0.00
Total	54.47	56.51	54.42		55.92	53.82	54.68	52.28
Samples	Irregular shape carbonate grains in matrix							
	ub1-1x-sid-4	ub1-1x-sid-5	ub1-1x-sid-6	ub1-1x-sid-7	ub1-1x-sid-8	ub1-1x-sid-9	ub1-1x-mtCc 2	ub1-1x-mtCc 7
SiO ₂	0.00	0.00	0.00	0.25	0.04	0.34	0.13	0.17
TiO ₂	0.00	0.00	0.00	0.04	0.03	0.02	0.01	0.01
Al ₂ O ₃	0.06	0.05	0.02	0.23	0.04	0.22	0.19	0.14
Cr ₂ O ₃	0.02	0.00	0.00	0.01	0.00	0.03	0.00	0.01
FeO	12.55	8.84	8.09	10.79	43.65	43.25	8.21	43.95
MnO	0.45	0.76	0.80	1.19	0.94	0.68	0.82	0.67
MgO	10.77	11.90	11.95	12.37	10.81	11.32	12.01	10.84
CaO	30.56	32.63	32.98	28.96	1.13	1.43	32.90	1.56
Na ₂ O	0.00	0.00	0.03	0.00	0.00	0.01	0.02	0.01
K ₂ O	0.07	0.03	0.01	0.03	0.06	0.05	0.03	0.03
P ₂ O ₅	0.01	0.03	0.02	0.01	0.01	0.02	0.03	0.00
F	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Cl	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
SO ₃	0.13	0.14	0.06	0.04	0.03	0.00	0.02	0.02

BaO	0.00	0.02	0.02	0.02	0.01	0.05	0.00	0.00
La₂O₃	0.05	0.00	0.00	0.05	0.01	0.01	0.03	0.00
Ce₂O₃	0.00	0.03	0.00	0.00	0.02	0.08	0.00	0.08
Total	54.66	54.43	53.97	54.14	56.83	57.49	54.45	57.48
<hr/>								
Samples	Irregular shape carbonate grains in matrix							
<hr/>								
	ub1-1x-mtCc	ub1-1x-mtCc	ub1-1x-mtCc	ub1-1x-mtCc				
	9	10	11	14	ub1-1b 6	ub1-1b 7		
SiO₂	0.21	0.00	0.00	0.00	0.08	0.00		
TiO₂	0.04	0.01	0.00	0.00	0.07	0.00		
Al₂O₃	0.13	0.02	0.01	0.04	0.02	0.03		
Cr₂O₃	0.01	0.00	0.00	0.01	0.00	0.01		
FeO	43.55	10.10	11.94	9.72	44.38	7.62		
MnO	0.40	1.93	0.86	1.92	0.33	0.78		
MgO	11.37	10.83	12.20	13.98	11.53	13.11		
CaO	1.30	31.37	28.91	28.47	0.90	32.18		
Na₂O	0.03	0.04	0.00	0.00	0.01	0.00		
K₂O	0.02	0.00	0.00	0.03	0.01	0.00		
P₂O₅	0.01	0.02	0.03	0.00	0.00	0.02		
F	0.06	0.00	0.02	0.08	0.00	0.00		
Cl	0.00	0.00	0.00	0.00	0.03	0.00		
SO₃	0.02	0.04	0.03	0.03	0.01	0.11		
BaO	0.03	0.05	0.00	0.00	0.00	0.01		
La₂O₃	0.02	0.00	0.00	0.02	0.00	0.02		
Ce₂O₃	0.00	0.06	0.00	0.00	0.00	0.03		
Total	57.19	54.49	54.01	54.28	57.36	53.94		
<hr/>								
Samples	Ulvöspinel-hosted carbonate melt inclusion							
	112.6-cir8- dol-01	112.6-cir8-dol- 02	112.6-cir8- dol-03	112.6-cir8- dol-04	112.6-cir8-dol- 05	112.6-cir8- dol-06	112.6-cir8- dol-07	112.6-cir8- dol-08

SiO₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TiO₂	0.00	0.00	0.05	0.00	0.02	0.05	0.01	0.00
Al₂O₃	0.01	0.03	0.00	0.00	0.02	0.00	0.03	0.01
FeO_T	17.17	16.04	16.51	15.51	18.22	16.42	17.65	16.78
MnO	0.64	0.62	0.65	0.58	0.70	0.59	0.41	0.63
MgO	10.25	10.31	10.12	10.62	9.35	10.46	9.60	10.42
CaO	28.32	28.46	28.51	28.95	27.93	28.61	28.13	28.46
Na₂O	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.01
K₂O	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01
P₂O₅	0.03	0.02	0.00	0.01	0.02	0.02	0.01	0.00
SrO	0.02	0.00	0.03	0.07	0.00	0.08	0.03	0.02
CO₂[*]	43.92	44.24	44.08	44.24	43.76	44.04	43.94	43.99
Total	100.37	99.72	99.94	99.98	100.02	100.28	99.82	100.32

Samples	Ulvöspinel-hosted carbonate melt inclusion							
	112.6-cir8- dol-09	112.6-cir8-dol- 10	112.6-cir9- dol-01	112.6-cir9- dol-02	112.6-cir9-dol- 03	112.6-cir9- dol-04	112.6-cir9- dol-05	112.6-cir9- dol-06
SiO₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TiO₂	0.01	0.04	0.03	0.04	0.00	0.01	0.11	0.01
Al₂O₃	0.02	0.01	0.01	0.01	0.04	0.03	0.06	0.01
FeO_T	16.54	18.16	16.89	17.97	16.48	17.56	16.01	16.12
MnO	0.62	0.44	0.57	0.69	0.38	0.65	0.51	0.62
MgO	10.15	9.58	10.28	9.75	10.00	9.38	9.79	10.32
CaO	28.26	27.94	28.38	28.11	28.64	28.37	28.09	28.81
Na₂O	0.02	0.01	0.02	0.01	0.00	0.01	0.01	0.01
K₂O	0.02	0.00	0.00	0.00	0.00	0.02	0.00	0.00
P₂O₅	0.03	0.02	0.02	0.03	0.03	0.02	0.00	0.00
SrO	0.03	0.04	0.01	0.00	0.02	0.00	0.05	0.06
CO₂[*]	44.12	43.82	44.01	43.76	44.16	43.87	44.39	44.10

Total	99.82	100.04	100.21	100.35	99.74	99.91	99.01	100.06
Samples	Al-ulvöspinel-hosted carbonate melt inclusion			Hexagonal shape carbonate inclusion in biotite				
	112.6-cir9-dol-07	112.6-cir9-dol-08	112.6-cir9-dol-09	116-1-1-cir6-dol-01	116-1-1-cir6-dol-02	116-1-1-cir6-dol-03	116-1-1-cir6-dol-04	
SiO ₂	0.00	0.00	0.00	0.47	0.00	0.00	0.00	
TiO ₂	0.00	0.09	0.04	0.10	0.11	0.08	0.08	
Al ₂ O ₃	0.03	0.03	0.01	0.55	0.35	0.02	0.30	
FeO _T	17.40	16.87	14.27	12.63	12.33	10.68	12.20	
MnO	0.72	0.74	0.72	0.31	0.19	1.53	0.25	
MgO	9.40	10.73	11.94	13.15	13.21	14.34	13.12	
CaO	28.60	27.78	28.14	29.35	30.50	29.13	30.25	
Na ₂ O	0.02	0.00	0.02	0.07	0.04	0.00	0.05	
K ₂ O	0.00	0.01	0.01	0.09	0.10	0.06	0.06	
P ₂ O ₅	0.01	0.03	0.04	0.02	0.01	0.03	0.02	
SrO	0.02	0.00	0.03	0.06	0.06	0.05	0.09	
CO ₂ *	43.84	44.06	44.64	44.81	44.64	44.99	44.74	
Total	100.03	100.32	99.87	101.61	101.55	100.90	101.15	
Samples	Hexagonal shape carbonate inclusion in biotite							
	116-1-1-cir6-dol-05	116-1-1-cir6-dol-06	116-1-1-cir6-dol-07	116-1-1-cir6-dol-08	116-1-1-cir6-dol-09	116-1-1-cir6-dol-10	116-1-1-cir6-dol-11	116-1-1-cir6-dol-12
SiO ₂	0.66	0.00	0.07	0.52	0.07	0.08	0.00	0.00
TiO ₂	0.06	0.06	0.07	0.01	0.07	0.05	0.08	0.01
Al ₂ O ₃	0.83	0.18	0.35	0.42	0.17	0.16	0.20	0.12
FeO _T	12.29	12.11	12.67	11.39	9.71	10.64	12.88	9.08
MnO	0.31	0.30	0.25	0.74	1.65	1.24	0.20	0.31
MgO	12.84	12.79	12.89	13.90	14.43	13.86	12.86	14.52
CaO	29.44	29.64	30.07	28.47	28.62	28.56	29.55	30.83

Na₂O	0.04	0.03	0.03	0.02	0.00	0.00	0.06	0.00
K₂O	0.15	0.10	0.12	0.06	0.08	0.06	0.07	0.07
P₂O₅	0.00	0.00	0.01	0.01	0.00	0.03	0.05	0.03
SrO	0.04	0.06	0.05	0.07	0.00	0.01	0.02	0.00
CO₂[*]	44.93	44.94	44.66	45.23	45.38	45.30	44.76	45.46
Total	101.58	100.21	101.24	100.81	100.18	99.99	100.72	100.44

Samples	Coexisting immiscible carbonate in crystalized silicate-carbonate melt inclusion in biotite							
	116-1-1-cir6- dol-13	116-1-1-cir6- dol-14	116-1-1-cir6- dol-15	116-1-1-cir6- dol-16	116-1-1-cir6- dol-17	116-1-1-cir6- dol-18	116-1-1-cir6- dol-19	116-1-1-cir6- dol-20
SiO₂	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TiO₂	0.04	0.08	0.07	0.03	0.17	0.03	0.06	0.07
Al₂O₃	0.13	0.08	0.19	0.02	0.04	0.16	0.03	0.08
FeO_T	13.27	12.69	12.83	20.01	12.57	12.19	16.00	17.00
MnO	0.40	0.57	0.43	0.71	0.90	0.59	0.98	0.42
MgO	12.85	12.45	11.31	6.86	12.69	12.86	10.59	10.01
CaO	28.26	28.78	30.08	29.22	28.73	29.33	28.02	28.12
Na₂O	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
K₂O	0.04	0.05	0.05	0.05	0.06	0.10	0.03	0.10
P₂O₅	0.04	0.04	0.06	0.04	0.04	0.01	0.03	0.04
SrO	0.01	0.07	0.11	0.09	0.04	0.01	0.05	0.02
CO₂[*]	44.93	44.95	44.74	43.12	44.86	44.92	44.18	44.06
Total	100.01	99.74	99.85	100.14	100.09	100.20	99.96	99.92

Samples	Coexisting immiscible carbonate in crystalized silicate-carbonate melt inclusion in biotite							
	116-1-1-cir6- dol-21	116-1-1-cir6- dol-22	116-1-1-cir6- dol-23	116-1-1-cir6- dol-24	116-1-1-cir6- dol-25	116-1-1-cir6- dol-26	116-1-1-cir6- dol-27	116-1-1-cir6- dol-28
SiO₂	0.00	0.00	0.00	0.00	0.46	0.10	0.12	0.00
TiO₂	0.03	0.01	0.04	0.02	0.04	0.03	0.07	0.05
Al₂O₃	0.04	0.04	0.03	0.17	0.43	0.19	0.20	0.13

FeO_T	11.24	8.68	14.81	11.90	17.94	15.16	12.29	8.66
MnO	2.18	1.13	1.29	0.73	1.02	0.76	2.24	0.86
MgO	11.04	12.86	10.27	13.01	7.79	11.53	10.80	12.62
CaO	30.50	32.63	29.43	31.55	29.67	28.66	30.75	32.42
Na₂O	0.00	0.00	0.02	0.00	0.02	0.02	0.00	0.00
K₂O	0.02	0.08	0.10	0.06	0.04	0.04	0.07	0.11
P₂O₅	0.02	0.02	0.00	0.00	0.03	0.03	0.02	0.01
SrO	0.02	0.05	0.03	0.02	0.00	0.04	0.06	0.05
CO₂[*]	44.68	45.06	44.13	44.44	43.51	44.26	44.27	45.21
Total	99.75	100.55	100.15	101.91	100.96	100.81	100.87	100.12

Samples	Coexisting immiscible carbonate in crystalized silicate-carbonate melt inclusion in biotite					
	116-1-1-cir6- dol-29	116-1-1-cir6- dol-30	116-1-1-cir6- dol-31	116-1-1-cir6- dol-32	116-1-1-cir6- dol-33	116-1-1-cir6- dol-34
SiO₂	0.00	0.07	0.02	0.00	0.89	0.09
TiO₂	0.01	0.04	0.04	0.12	0.04	0.12
Al₂O₃	0.03	0.17	0.12	0.00	0.68	0.18
FeO_T	17.19	17.33	15.93	17.03	11.74	16.38
MnO	1.49	1.52	1.39	1.33	0.53	0.57
MgO	9.14	8.92	9.95	8.66	12.47	10.13
CaO	28.20	28.43	28.81	28.14	28.46	27.66
Na₂O	0.00	0.00	0.00	0.00	0.00	0.00
K₂O	0.04	0.04	0.09	0.06	0.17	0.04
P₂O₅	0.00	0.01	0.01	0.04	0.00	0.00
SrO	0.03	0.02	0.00	0.06	0.02	0.02
CO₂[*]	43.77	43.70	43.96	43.91	45.33	44.33
Total	99.90	100.24	100.33	99.33	100.33	99.51

Samples	Euhedral pseudomorphitic ankerite grains, Mg-rich ankerite							
	ub1-1 10	ub1-1 11	ub1-1 12	ub1-1 13	ub1-1 14	ub1-1 15	ub1-1 16	ub1-1 17

SiO₂	0.00	0.00	0.00	0.00	0.00	0.48	0.00	0.00
TiO₂	0.00	0.02	0.00	0.00	0.02	0.04	0.03	0.01
Al₂O₃	0.01	0.05	0.03	0.03	0.04	0.36	0.04	0.02
FeO_T	7.65	7.50	7.44	7.67	8.11	7.74	7.48	7.56
MnO	0.81	0.79	0.81	0.77	0.67	0.83	0.81	0.74
MgO	12.04	12.48	12.76	12.65	13.06	12.03	12.45	12.42
CaO	33.03	32.11	31.53	32.51	31.42	32.95	33.05	32.09
Na₂O	0.03	0.00	0.00	0.02	0.00	0.02	0.01	0.00
K₂O	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01
P₂O₅	0.03	0.01	0.01	0.00	0.04	0.03	0.00	0.00
F	0.06	0.00	0.00	0.21	0.06	0.08	0.06	0.10
Cl	0.01	0.00	0.03	0.01	0.00	0.03	0.00	0.00
SO₃	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.04
La₂O₃	0.00	0.01	0.00	0.00	0.00	0.02	0.00	0.02
Ce₂O₃	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00
Total	53.80	53.07	52.77	53.90	53.48	54.69	54.12	53.15

Samples	Mg-rich, pseudomorphitic ankerite			Fe-rich, pseudomorphitic ankerite			
	ub1-2 14	ub1-2 15	ub1-2 16	ub1-1 5	ub1-1 6	ub1-1 7	ub1-1 8
SiO₂	0.00	0.00	0.00	0.00	0.00	0.00	0.68
TiO₂	0.03	0.02	0.00	0.02	0.05	0.01	0.00
Al₂O₃	0.02	0.01	0.06	0.08	0.11	0.10	0.60
FeO_T	7.45	9.41	2.34	13.32	12.49	12.46	11.50
MnO	0.92	0.88	0.96	0.45	0.53	0.47	0.45
MgO	12.79	13.20	16.99	10.27	10.66	10.18	11.43
CaO	32.22	30.44	31.41	30.16	30.40	30.90	29.99
Na₂O	0.00	0.03	0.07	0.00	0.00	0.03	0.00
K₂O	0.00	0.00	0.01	0.00	0.01	0.00	0.00
P₂O₅	0.01	0.00	0.01	0.02	0.02	0.02	0.04

F	0.00	0.14	0.00	0.00	0.04	0.08	0.00
Cl	0.00	0.00	0.00	0.01	0.01	0.00	0.00
SO₃	0.00	0.08	0.00	0.12	0.12	0.10	0.10
La₂O₃	0.01	0.05	0.04	0.00	0.00	0.00	0.00
Ce₂O₃	0.03	0.00	0.00	0.01	0.04	0.00	0.00
Total	53.62	54.27	52.00	54.53	54.49	54.37	54.85

Samples	Fe-rich, pseudomorphitic ankerite	
	ub1-1 9	ub1-2 17
SiO₂	0.43	0.37
TiO₂	0.03	0.00
Al₂O₃	0.43	0.39
FeO_T	12.20	10.87
MnO	0.40	2.50
MgO	10.78	11.00
CaO	30.21	30.21
Na₂O	0.00	0.02
K₂O	0.01	0.01
P₂O₅	0.03	0.01
F	0.00	0.10
Cl	0.00	0.00
SO₃	0.11	0.00
La₂O₃	0.02	0.00
Ce₂O₃	0.03	0.00
Total	54.70	55.47

[illegible]

TiO₂	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.00
Al₂O₃	0.02	0.00	0.02	0.00	0.00	0.00	0.01	0.02
FeO_T	9.69	9.81	10.23	9.56	9.65	9.45	10.45	10.71
MnO	0.83	1.11	1.06	1.10	1.05	1.40	0.88	0.99
MgO	13.73	12.96	12.33	12.74	12.49	12.48	15.01	13.01
CaO	29.29	31.27	30.30	30.94	30.69	30.71	27.68	29.82
Na₂O	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00
K₂O	0.00	0.02	0.01	0.01	0.00	0.01	0.02	0.01
P₂O₅	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.01
SrO	0.00	0.04	0.12	0.00	0.00	0.07	0.00	0.07
CO₂*	45.60	45.05	45.21	45.26	45.34	45.26	45.58	45.15
Total	99.16	100.27	99.28	99.62	99.23	99.41	99.68	99.78

Samples	Fe-dominated ankerite in the rim in Spherical shape carbonate globules		Mg-dominated ankerite in the core in Spherical shape carbonate globules				
	107.4-2-cir3-dol-19	107.4-2-cir3-dol-20	107.4-2-cir2-dol-05	107.4-2-cir2-dol-06	107.4-2-cir2-dol-07	107.4-2-cir2-dol-08	107.4-2-cir2-dol-09
SiO ₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TiO ₂	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Al ₂ O ₃	0.03	0.01	0.01	0.02	0.03	0.03	0.05
FeO _T	9.86	9.88	5.30	6.70	4.49	3.67	5.66
MnO	0.91	0.85	0.13	0.29	0.10	0.18	0.37
MgO	14.03	13.52	17.46	15.81	18.40	19.31	17.18
CaO	28.96	28.99	30.12	30.11	32.91	32.00	31.45
Na ₂ O	0.00	0.02	0.00	0.00	0.00	0.00	0.00
K ₂ O	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P ₂ O ₅	0.00	0.00	0.02	0.00	0.01	0.00	0.01
SrO	0.00	0.00	0.00	0.00	0.06	0.04	0.00

CO₂[*]	45.57	45.62		46.59	46.28	46.02	46.38	46.09
Total	99.35	98.90		99.63	99.23	102.02	101.60	100.81

Samples	Mg-dominated ankerite in the core in Spherical shape carbonate globules							
	107.4-2-cir2- dol-10	107.4-2-cir2- dol-11	107.4-2-cir2- dol-12	107.4-2-cir2- dol-13	107.4-2-cir2- dol-14	107.4-2-cir2- dol-15	107.4-2-cir2- dol-16	107.4-2-cir2- dol-17
SiO₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TiO₂	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.01
Al₂O₃	0.04	0.03	0.03	0.05	0.03	0.03	0.03	0.01
FeO_T	7.36	4.55	6.10	5.27	3.59	4.88	6.31	5.37
MnO	0.53	0.32	0.26	0.16	0.11	0.26	0.40	0.26
MgO	15.41	18.06	17.07	17.96	19.25	18.60	16.36	17.96
CaO	30.25	30.67	30.83	31.94	32.38	32.23	30.41	31.56
Na₂O	0.00	0.00	0.01	0.00	0.02	0.00	0.01	0.05
K₂O	0.00	0.03	0.00	0.00	0.01	0.00	0.00	0.01
P₂O₅	0.04	0.02	0.01	0.02	0.00	0.00	0.02	0.02
SrO	0.00	0.06	0.05	0.01	0.05	0.00	0.03	0.04
CO₂[*]	46.01	46.51	46.13	46.06	46.32	46.01	46.22	46.06
Total	99.64	100.27	100.49	101.47	101.77	102.02	99.79	101.36

Samples	Mg-dominated ankerite in the core in Spherical shape carbonate globules							
	107.4-2-cir2- dol-18	107.4-2-cir2- dol-19	107.4-2-cir2- dol-20	107.4-2-cir3- dol-01	107.4-2-cir3- dol-02	107.4-2-cir3- dol-03	107.4-2-cir3- dol-04	107.4-2-cir3- dol-05
SiO₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TiO₂	0.00	0.02	0.01	0.01	0.02	0.01	0.01	0.03
Al₂O₃	0.02	0.01	0.03	0.03	0.04	0.06	0.02	0.03
FeO_T	7.81	7.42	7.24	6.83	4.40	5.41	4.25	3.77
MnO	0.50	0.42	0.33	0.24	0.17	0.18	0.23	0.12
MgO	15.64	15.51	15.36	15.59	17.89	17.10	18.10	18.62
CaO	31.24	30.27	30.25	30.64	30.56	30.27	30.99	31.44

Na₂O	0.03	0.01	0.02	0.00	0.00	0.01	0.02	0.01
K₂O	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00
P₂O₅	0.00	0.00	0.00	0.00	0.01	0.04	0.01	0.00
SrO	0.09	0.05	0.09	0.06	0.02	0.00	0.08	0.06
CO₂[*]	45.55	45.98	46.06	46.13	46.68	46.54	46.56	46.57
Total	100.89	99.68	99.42	99.52	99.81	99.62	100.25	100.67

Samples	Mg-dominated ankerite in the core in Spherical shape carbonate globules							
	107.4-2-cir3- dol-06	107.4-2-cir3- dol-07	107.4-2-cir3- dol-08	107.4-2-cir3- dol-09	107.4-2-cir3- dol-10	107.4-2-cir3- dol-12	107.4-2-cir3- dol-13	107.4-2-cir3- dol-14
SiO₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TiO₂	0.02	0.00	0.00	0.03	0.04	0.04	0.00	0.02
Al₂O₃	0.00	0.01	0.02	0.03	0.06	0.02	0.05	0.01
FeO_T	4.46	1.91	2.37	4.73	3.70	4.03	4.44	4.25
MnO	0.18	0.14	0.18	0.34	0.25	0.22	0.25	0.28
MgO	16.70	20.95	19.52	17.84	19.17	19.19	18.18	18.72
CaO	30.92	30.15	29.56	31.86	30.99	32.40	31.11	32.76
Na₂O	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01
K₂O	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00
P₂O₅	0.03	0.01	0.00	0.02	0.05	0.00	0.03	0.03
SrO	0.02	0.08	0.02	0.02	0.01	0.01	0.08	0.00
CO₂[*]	46.73	47.20	47.41	46.20	46.62	46.16	46.46	46.06
Total	99.06	100.46	99.09	101.07	100.89	102.09	100.58	102.13

Samples	Mg-dominated ankerite in the core in Spherical shape carbonate globules		Dumbbell shape carbonate globules				
	107.4-2-cir3- dol-15	107.4-2-cir3- dol-16	107.4-2-cir1- dol-01	107.4-2-cir1- dol-02	107.4-2-cir1- dol-03	107.4-2-cir1- dol-04	116-2-1-cir1- dol-01
SiO₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TiO₂	0.01	0.00	0.00	0.00	0.00	0.01	0.00

Al₂O₃	0.08	0.02	0.01	0.00	0.02	0.00	0.04
FeO_T	2.66	6.02	1.98	11.74	5.67	11.64	2.12
MnO	0.17	0.26	0.16	0.81	0.66	0.55	0.27
MgO	20.98	16.70	19.51	13.89	17.85	13.60	19.70
CaO	31.20	31.58	29.87	27.25	30.86	29.01	29.69
Na₂O	0.00	0.00	0.00	0.00	0.00	0.01	0.01
K₂O	0.03	0.01	0.00	0.01	0.01	0.01	0.02
P₂O₅	0.02	0.00	0.00	0.03	0.00	0.02	0.02
SrO	0.00	0.00	0.04	0.06	0.05	0.00	0.00
CO₂[*]	46.70	46.03	47.46	45.41	46.04	45.14	47.41
Total	101.85	100.62	99.03	99.20	101.16	100.01	99.25

Samples	Dumbbell shape carbonate globules				
	116-2-1-cir1- dol-02	116-2-1-cir1- dol-03	116-2-1-cir1- dol-04	116-2-1-cir1- dol-05	116-2-1-cir1- dol-06
SiO₂	0.00	0.00	0.00	0.00	0.00
TiO₂	0.01	0.00	0.00	0.00	0.00
Al₂O₃	0.02	0.02	0.04	0.03	0.04
FeO_T	8.89	9.84	3.72	7.77	10.45
MnO	1.10	0.84	1.72	0.91	1.10
MgO	15.34	14.47	18.02	15.34	13.60
CaO	29.17	29.42	29.10	29.45	29.98
Na₂O	0.00	0.01	0.00	0.03	0.03
K₂O	0.00	0.00	0.00	0.02	0.00
P₂O₅	0.02	0.00	0.02	0.04	0.05
SrO	0.08	0.03	0.00	0.00	0.00
CO₂[*]	45.58	45.42	46.78	45.95	45.11
Total	100.21	100.04	99.40	99.52	100.37

*CO₂ was calculated based on stoichiometric balance

S-II-Table 3. Major-element concentrations (wt.%) of feldspars in carbonate-silicate inclusions

Samples	sanidine						In matrix
	116-1-1-cir6-Si-09	116-1-1-cir6-Si-10	116-1-1-cir6-Si-11	115.4-cir3-Si-22	115.4-cir3-Si-18	115.4-cir3-Si-19	
SiO₂	64.47	64.61	65.88	64.54	63.83	65.02	63.75
TiO₂	0.12	0.09	0.04	0.06	0.06	0.05	0.05
Al₂O₃	18.14	18.03	18.46	18.97	18.24	18.23	18.87
Cr₂O₃	0.03	0.25	0.02	0.03	0.00	0.02	0.00
FeO_T	0.24	0.64	0.20	0.51	0.33	0.27	0.07
MnO	0.00	0.00	0.02	0.00	0.02	0.07	0.03
MgO	0.05	0.16	0.01	0.12	0.03	0.02	0.00
CaO	0.24	0.13	0.01	0.12	0.52	0.03	0.08
Na₂O	0.51	0.86	0.48	0.70	0.70	0.38	0.92
K₂O	15.37	14.57	15.91	14.51	14.85	15.66	15.03
Total	99.17	99.35	101.02	99.56	98.59	99.73	99.23

Samples	Albite phenocryst						
	ub1-1 19	ub1-2 2	ub1-2 23	ub1-2 25	ub1-2 26	ub116-2a-35	ub116-2a-36
SiO₂	67.93	67.52	67.20	68.07	68.53	65.39	67.19
TiO₂	0.01	0.04	0.00	0.00	0.00	1.22	0.03
Al₂O₃	20.05	20.28	20.68	20.20	20.26	20.48	20.60
Cr₂O₃	0.03	0.00	0.01	0.00	0.00	0.01	0.00
FeO_T	0.08	0.12	0.05	0.06	0.11	0.17	0.04
MnO	0.00	0.02	0.00	0.01	0.02	0.02	0.04
MgO	0.00	0.00	0.00	0.00	0.06	0.00	0.00
CaO	0.15	0.69	0.98	0.44	0.29	0.83	0.77
Na₂O	11.40	10.99	11.11	11.68	11.48	10.04	10.65
K₂O	0.33	0.39	0.10	0.06	0.12	1.23	0.09

Total	100.07	100.16	100.24	100.55	100.91	99.53	99.53
Samples	Albite phenocryst				Albite in biotite		
SiO₂	67.44	66.77	65.90	66.47		67.91	67.87
TiO₂	0.02	0.03	0.02	0.06		0.03	0.06
Al₂O₃	20.53	20.90	19.96	20.35		20.35	20.17
Cr₂O₃	0.01	0.03	0.00	0.02		0.03	0.02
FeO_T	0.02	0.06	0.08	0.10		0.12	0.18
MnO	0.03	0.00	0.00	0.01		0.00	0.01
MgO	0.00	0.00	0.00	0.02		0.01	0.00
CaO	0.60	0.95	0.79	0.82		0.36	0.19
Na₂O	11.02	10.89	10.71	10.59		11.13	11.28
K₂O	0.07	0.11	0.52	0.40		0.14	0.08
Total	99.85	99.81	98.04	98.92		100.19	99.88

Samples	Albite in biotite-hosted crystalized silicate melt						
	116-1-1-cir6-Si-15	114.4-cir1-Si-05	114.4-cir1-Si-06	114.4-cir4-Si-08	115.4-cir3-Si-03	115.4-cir3-Si-04	115.4-cir3-Si-08
SiO₂	66.46	68.29	68.02	68.88	69.77	68.65	68.55
TiO₂	0.06	0.00	0.00	0.05	0.00	0.03	0.01
Al₂O₃	19.50	20.42	19.73	19.71	19.63	20.18	20.07
Cr₂O₃	0.03	0.00	0.02	0.00	0.00	0.00	0.00
FeO_T	0.29	0.24	0.20	0.26	0.10	0.14	0.06
MnO	0.01	0.00	0.02	0.01	0.01	0.00	0.00
MgO	0.01	0.01	0.01	0.06	0.00	0.00	0.02
CaO	1.66	0.85	0.55	0.34	0.17	0.66	0.58
Na₂O	10.47	10.82	10.70	10.64	11.10	10.98	10.70
K₂O	0.15	0.10	0.11	0.25	0.11	0.08	0.15
Total	98.67	100.73	99.36	100.20	100.89	100.72	100.15

Samples	Albite in biotite-hosted crystalized silicate melt				Albite in matrix	
	115.4-cir3-Si-09	115.4-cir3-Si-10	115.4-cir3-Si-11	115.4-cir3-Si-12	ub116-2a-59	ub116-2a-60
SiO₂	68.75	70.08	68.19	69.14	66.87	67.70
TiO₂	0.01	0.05	0.02	0.07	0.03	0.01
Al₂O₃	20.14	19.70	20.09	19.94	20.59	19.87
Cr₂O₃	0.00	0.02	0.03	0.00	0.02	0.00
FeO_T	0.17	0.14	0.21	0.22	0.08	0.17
MnO	0.01	0.00	0.00	0.01	0.00	0.00
MgO	0.01	0.00	0.00	0.04	0.00	0.03
CaO	0.55	0.41	0.48	0.58	0.61	0.36
Na₂O	10.69	10.65	10.81	10.60	10.40	11.40
K₂O	0.23	0.12	0.13	0.09	1.14	0.18
Total	100.55	101.15	99.96	100.69	99.82	99.93

Samples	anorthoclase					
	114.4-cir1-Si-07	ub1-1 18	ub1-1 20	ub1-1 21	ub1-2 1	ub1-2 3
SiO₂	64.70	64.88	65.45	65.41	66.18	66.32
TiO₂	0.29	0.06	0.00	0.23	0.00	0.03
Al₂O₃	18.86	20.24	19.76	19.61	20.02	19.69
Cr₂O₃	0.07	0.04	0.00	0.00	0.00	0.00
FeO_T	0.40	0.32	0.17	0.57	0.09	0.12
MnO	0.03	0.03	0.01	0.00	0.01	0.00
MgO	0.12	0.04	0.01	0.03	0.02	0.00
CaO	0.92	1.02	0.46	0.52	0.57	0.33
Na₂O	5.82	8.01	6.89	7.30	7.18	6.15
K₂O	6.82	3.85	7.14	5.30	5.89	8.18
Total	98.03	98.67	100.00	99.21	100.01	100.89

Samples		anorthoclase					
SiO₂	66.09	65.99	66.09	66.17	66.17	65.95	65.71
TiO₂	0.03	0.06	0.07	0.04	0.05	0.05	0.08
Al₂O₃	20.28	20.03	19.54	19.72	19.53	19.47	19.24
Cr₂O₃	0.01	0.00	0.02	0.01	0.00	0.01	0.01
FeO_T	0.31	0.26	0.18	0.14	0.18	0.20	0.22
MnO	0.00	0.00	0.00	0.00	0.01	0.00	0.01
MgO	0.01	0.00	0.00	0.00	0.00	0.00	0.01
CaO	0.86	0.61	0.14	0.07	0.02	0.00	0.08
Na₂O	8.05	7.62	6.57	6.59	6.14	6.24	6.03
K₂O	4.27	5.60	7.35	7.41	7.50	7.68	6.84
Total	100.01	100.17	100.07	100.16	99.76	99.73	98.32

Samples	plagioclase						
	106.2-cir7-Si-02	106.2-cir7-Si-03	106.2-cir7-Si-04	106.2-cir7-Si-05	106.2-cir7-Si-06	106.2-cir7-Si-07	106.2-cir7-Si-08
SiO₂	47.39	47.78	47.26	47.42	47.16	47.83	47.23
TiO₂	0.08	0.08	0.04	0.08	0.05	0.01	0.03
Al₂O₃	33.25	32.84	33.47	33.04	33.40	32.87	33.28
Cr₂O₃	0.00	0.00	0.00	0.00	0.00	0.01	0.04
FeO_T	0.57	0.54	0.52	0.51	0.54	0.48	0.54
MnO	0.00	0.00	0.04	0.00	0.01	0.00	0.00
MgO	0.05	0.07	0.07	0.07	0.07	0.07	0.05
CaO	16.83	16.71	16.66	16.74	17.05	16.61	16.63
Na₂O	1.24	1.36	1.14	1.21	1.14	1.36	1.25
K₂O	0.15	0.21	0.17	0.20	0.15	0.18	0.19
Total	99.55	99.58	99.36	99.27	99.59	99.41	99.27

S-II-Table 4. Major-element concentrations (wt.%) of biotite in carbonate-silicate inclusions

Samples	biotite							
	ub116-2a-1	ub116-2a-2	ub116-2a-3	ub116-2a-4	ub116-2a-5	ub116-2a-6	ub116-2a-7	ub116-2a-8
SiO₂	36.06	35.89	35.83	36.24	36.04	35.93	35.66	36.00
TiO₂	8.59	8.82	9.02	8.70	8.88	8.95	9.39	9.71
Al₂O₃	15.48	15.59	15.72	15.41	15.43	15.54	15.54	15.41
Cr₂O₃	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	13.21	13.31	13.19	13.23	13.27	13.34	13.20	13.35
MnO	0.21	0.16	0.18	0.18	0.18	0.18	0.18	0.17
MgO	13.86	14.11	13.81	14.02	13.91	14.12	13.69	13.98
CaO	0.10	0.09	0.08	0.12	0.08	0.08	0.08	0.08
Na₂O	0.76	0.82	0.83	0.75	0.90	0.92	0.84	0.88
K₂O	8.17	8.23	8.14	8.37	8.27	8.24	8.19	8.28
P₂O₅	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F	0.21	0.26	0.32	0.29	0.32	0.19	0.34	0.38
Cl	0.04	0.04	0.04	0.04	0.06	0.05	0.04	0.06
SO₃	0.08	0.08	0.06	0.09	0.02	0.07	0.07	0.08
BaO	1.42	1.40	1.32	1.03	1.08	1.20	1.41	1.38
Total	98.20	98.89	98.40	98.46	98.33	98.88	98.56	99.72

Samples	biotite						
	ub116-2a-9	ub116-2a-10	ub116-2a-11	ub116-2a-12	ub116-2a-13	ub116-2a-14	ub116-2a-15
SiO₂	35.79	35.76	36.05	36.32	35.74	35.69	36.00
TiO₂	8.61	8.85	8.83	8.95	8.77	8.73	8.73
Al₂O₃	15.14	15.03	15.22	15.22	15.34	15.34	15.33
Cr₂O₃	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	13.06	13.22	12.99	13.07	12.95	12.84	12.81
MnO	0.19	0.19	0.21	0.12	0.17	0.18	0.15
MgO	14.20	14.07	14.32	14.24	14.29	13.96	13.93

CaO	0.03	0.03	0.02	0.04	0.03	0.05	0.03	
Na₂O	0.73	0.79	0.79	0.79	0.81	0.79	0.81	
K₂O	8.41	8.44	8.44	8.51	8.45	8.53	8.46	
P₂O₅	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
F	0.40	0.02	0.38	0.44	0.38	0.27	0.13	
Cl	0.04	0.03	0.05	0.04	0.05	0.05	0.05	
SO₃	0.06	0.05	0.05	0.07	0.06	0.03	0.08	
BaO	1.35	1.29	1.07	1.05	1.05	1.02	1.05	
Total	97.91	97.86	98.24	98.75	98.02	97.45	97.55	

Samples	biotite							
	ub116-1a- bio13-bio	ub116-1a- bio13-cc7	ub116-1a- bio13-bio	ub116-1a- bio13-33	ub1-2 4	ub1-2 5	ub1-2 6	ub1-2 7
SiO₂	35.32	35.23	35.49	35.16	35.98	35.95	35.26	36.44
TiO₂	8.86	8.69	9.01	8.74	6.95	7.73	7.88	7.33
Al₂O₃	15.57	15.47	15.22	15.61	14.77	13.98	15.02	14.81
Cr₂O₃	0.00	0.03	0.00	0.00	0.02	0.02	0.00	0.00
FeO	12.95	12.86	13.12	13.21	13.08	13.44	13.59	13.01
MnO	0.18	0.17	0.22	0.19	0.19	0.18	0.23	0.19
MgO	13.56	13.38	13.70	13.66	13.73	13.40	12.49	13.49
CaO	0.08	0.03	0.03	0.03	0.04	0.04	0.04	0.03
Na₂O	0.80	0.78	0.86	0.80	0.84	0.90	0.79	0.86
K₂O	8.59	8.58	8.50	8.59	8.78	8.67	8.17	8.59
P₂O₅	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00
F	0.50	0.17	0.52	0.23	0.47	0.14	0.31	0.63
Cl	0.05	0.04	0.04	0.04	0.04	0.06	0.00	0.06
SO₃	0.06	0.05	0.07	0.05	0.09	0.06	0.02	0.02
BaO	0.05	0.00	0.00	0.04				
Total	96.35	95.42	96.56	96.25	94.82	94.60	93.76	95.20

S-II-Table 5. Major-element concentrations (wt.%) of apatite in carbonate-silicate inclusions

Samples	apatite							
	ub1-1 22	ub1-1 23	ub1-1 26	ub1-1 27	ub1-2 19	ub1-2 20	ub1-2 21	ub116-2a-48
SiO₂	0.02	0.05	0.10	0.05	0.08	0.03	0.08	0.19
TiO₂	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.07
Al₂O₃	0.01	0.03	0.00	0.00	0.00	0.00	0.02	0.00
Cr₂O₃	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
FeO	0.29	0.33	0.33	0.40	0.26	0.23	0.20	0.41
MnO	0.10	0.07	0.09	0.09	0.13	0.11	0.07	0.08
MgO	0.20	0.17	0.19	0.19	0.18	0.15	0.16	0.20
CaO	53.79	55.57	55.24	55.29	55.40	54.59	55.66	53.88
Na₂O	0.06	0.10	0.06	0.11	0.06	0.10	0.12	0.11
K₂O	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.03
P₂O₅	41.37	41.08	40.53	41.22	41.59	41.66	42.35	41.48
F	2.18	2.55	2.72	3.46	2.62	2.57	2.22	2.88
Cl	0.76	0.75	0.73	0.81	0.78	0.66	0.75	0.80
SO₃	0.06	0.06	0.07	0.03	0.01	0.09	0.05	0.00
La₂O₃	0.10	0.13	0.22	0.18	0.19	0.18	0.20	0.15
Ce₂O₃	0.36	0.33	0.29	0.38	0.41	0.39	0.45	0.50
Pr₂O₃	0.02	0.00	0.03	0.00	0.00	0.04	0.12	
Nd₂O₃	0.08	0.12	0.04	0.19	0.04	0.13	0.16	
Sm₂O₃	0.00	0.00	0.00	0.00	0.02	0.00	0.00	
Total	98.31	100.10	99.31	100.78	100.49	99.69	101.52	99.43

Samples	apatite							
	ub116-2a-49	ub116-2a-50	ub116-2a-51	ub116-2a-52	ub116-2a-53	ub116-2a-54	ub116-2a-44	ub116-2a-45
SiO₂	0.17	0.18	0.15	0.22	0.26	0.21	0.23	0.20
TiO₂	0.01	0.00	0.00	0.03	0.05	0.00	0.00	0.01
Al₂O₃	0.00	0.00	0.02	0.00	0.01	0.01	0.02	0.00

Cr₂O₃	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FeO	0.33	0.39	0.40	0.34	0.47	0.31	0.30	0.38
MnO	0.10	0.13	0.11	0.10	0.10	0.09	0.11	0.13
MgO	0.26	0.19	0.29	0.18	0.23	0.22	0.24	0.23
CaO	53.94	54.14	54.06	54.04	54.08	54.17	53.65	54.10
Na₂O	0.13	0.16	0.13	0.10	0.09	0.18	0.08	0.07
K₂O	0.00	0.00	0.02	0.01	0.08	0.03	0.01	0.00
P₂O₅	41.16	41.79	42.44	41.85	42.10	41.66	40.11	39.69
F	2.18	2.42	2.57	2.33	3.00	2.18	2.30	2.96
Cl	0.77	0.77	0.80	0.78	0.80	0.76	0.73	0.78
SO₃	0.03	0.07	0.06	0.08	0.03	0.20	0.02	0.04
La₂O₃	0.18	0.20	0.18	0.12	0.23	0.09	0.04	0.25
Ce₂O₃	0.42	0.37	0.41	0.53	0.50	0.32	0.53	0.36
Pr₂O₃								
Nd₂O₃								
Sm₂O₃								
Total	98.63	99.62	100.38	99.55	100.60	99.37	97.29	97.82
<hr/>								
Samples	apatite							
	ub116-2a-46	ub116-1a-bio13-ap	ub116-1a-bio13-cc6	ub116-1a-bio13-ap	ub116-1a-nc4 -ap	ub116-1a-bio13-39	ub116-1a-bio13-40	ub116-1a-bio13-41
SiO₂	0.20	0.27	0.29	0.25	0.21	0.23	0.17	0.16
TiO₂	0.02	0.00	0.04	0.07	0.08	0.01	0.02	0.00
Al₂O₃	0.00	0.02	0.02	0.03	0.00	0.00	0.00	0.00
Cr₂O₃	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01
FeO	0.47	0.47	0.50	0.59	0.37	0.50	0.37	0.25
MnO	0.14	0.10	0.10	0.10	0.09	0.12	0.12	0.06
MgO	0.26	0.22	0.15	0.18	0.21	0.21	0.18	0.20
CaO	54.02	54.93	54.72	54.31	54.60	55.64	55.16	54.79

Na₂O	0.09	0.20	0.21	0.23	0.22	0.16	0.12	0.18
K₂O	0.05	0.06	0.11	0.24	0.04	0.09	0.02	0.00
P₂O₅	40.72	41.31	41.22	41.15	40.62	41.07	40.66	41.12
F	2.25	2.06	2.29	2.60	2.39	3.11	2.02	2.41
Cl	0.74	0.68	0.68	0.74	0.66	0.73	0.70	0.76
SO₃	0.03	0.30	0.26	0.16	0.21	0.29	0.22	0.21
La₂O₃	0.18							
Ce₂O₃	0.42							
Pr₂O₃								
Nd₂O₃								
Sm₂O₃								
Total	98.50	99.66	99.51	99.47	98.53	100.69	98.83	99.14

S-II-Table 6. Major-element concentrations (wt.%) of Fe-oxides in carbonate-silicate inclusions

Samples	rutile	Ulvöspinel			Altered ulvöspinel	
	ub116-1a- bio15-rt4	ub116-1a- cc12-ilm	ub116-1a- cc12-ilm	ub116-1a-cc12- ilm	ub116-1a- cc12-ilm	ub116-1a- cc12-ilm
SiO₂	0.61	1.29	1.32	1.31	3.07	3.08
TiO₂	94.61	15.87	15.92	15.75	19.88	22.12
Al₂O₃	0.16	1.68	1.74	1.58	1.82	1.91
Cr₂O₃	0.00	0.09	0.07	0.06	0.03	0.06
FeO	1.23	71.67	71.37	71.17	52.86	45.80
MnO	0.02	0.00	0.03	0.00	0.01	0.02
MgO	0.06	0.02	0.00	0.05	0.18	0.15
CaO	0.15	0.09	0.09	0.09	0.23	0.26
Na₂O	0.00	0.05	0.00	0.04	0.12	0.08
K₂O	0.19	0.02	0.00	0.03	0.01	0.02
P₂O₅	0.00	0.04	0.06	0.05	0.22	0.16
F	0.03	0.00	0.00	0.00	0.00	0.11
Cl	0.00	0.01	0.01	0.00	0.01	0.03
SO₃	0.00	0.05	0.06	0.00	0.01	0.00
Nb₂O₅	0.55	0.00	0.08	0.00	0.08	0.07
Total	97.60	90.87	90.74	90.11	78.52	73.82