

Table S1. Representative chemical compositions of garnet

Sample No.	Garnet											
	2806A			2904B			2905			2902		
Anal. No.	56	52	61	101	99	113	18	15	39	102	78	119
note:	Grt c	Grt r	Grt c	grt m	grt r	grt r	grt c	grt r	grt c	grt	grt r	grt c
SiO ₂	38.62	38.60	38.12	38.74	38.49	38.59	38.81	38.28	38.54	37.64	37.45	37.42
TiO ₂	0.03	0.03	0.06	0.03	0.06	0.00	0.06	0.03	0.01	0.02	0.01	0.00
Al ₂ O ₃	21.87	21.71	21.40	21.84	21.74	21.71	21.93	21.63	21.91	21.24	21.77	21.57
Cr ₂ O ₃	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.03	0.00	0.00	0.04	0.00
FeO ^T	28.50	29.62	29.12	28.38	29.69	30.39	28.95	30.50	30.28	37.96	37.46	38.06
MnO	1.49	0.92	1.34	1.10	0.92	0.95	1.42	1.45	1.60	1.82	1.51	1.70
MgO	2.56	2.96	2.24	4.22	4.08	4.13	4.62	3.82	4.42	2.09	2.02	2.12
CaO	8.66	7.71	8.89	7.21	6.07	5.28	5.43	5.93	4.97	0.82	0.83	0.81
Na ₂ O	0.00	0.00	0.04	0.04	0.03	0.01	0.00	0.01	0.00	0.05	0.00	0.07
K ₂ O	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	101.73	101.56	101.17	101.51	101.07	101.09	101.23	101.67	101.73	101.59	101.09	101.68
O	12	12	12	12	12	12	12	12	12	12	12	12
Si	3.01	3.01	3.00	3.00	3.00	3.01	3.01	2.98	2.99	3.01	3.00	2.99
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	2.01	2.00	1.98	1.99	2.00	2.00	2.01	1.99	2.01	2.00	2.05	2.03
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⁺	-	-	0.03	-	-	-	-	0.04	-	-	-	-
Fe ²⁺	1.86	1.93	1.89	1.84	1.94	1.99	1.88	1.95	1.97	2.54	2.51	2.54
Mn	0.10	0.06	0.09	0.07	0.06	0.06	0.09	0.10	0.11	0.12	0.10	0.11
Mg	0.30	0.34	0.26	0.49	0.48	0.48	0.53	0.44	0.51	0.25	0.24	0.25
Ca	0.72	0.64	0.75	0.60	0.51	0.44	0.45	0.50	0.41	0.07	0.07	0.07
Na	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	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
Total cation	7.99	7.99	8.00	8.00	7.99	7.99	7.98	8.00	8.00	8.00	7.98	8.00
X _{Mg}	0.14	0.15	0.12	0.21	0.20	0.19	0.22	0.19	0.21	0.36	0.41	0.38
almandine	0.62	0.65	0.63	0.61	0.65	0.67	0.64	0.65	0.66	0.27	0.25	0.26
pyrope	0.10	0.12	0.09	0.16	0.16	0.16	0.18	0.15	0.17	0.16	0.17	0.15
grossular	0.24	0.22	0.25	0.20	0.17	0.15	0.15	0.17	0.14	0.02	0.00	0.02
spessartine	0.03	0.02	0.03	0.02	0.02	0.02	0.03	0.03	0.04	0.55	0.58	0.56

Fe³⁺ calculated after charge balance. c=core, r=rim, m=mantle.

Table S2. Representative chemical compositions of hornblende

Sample No.	Hornblende											
	2806A				2904B				2905			
Anal. No.	32	42	83	44	103	110	120	127	26	27	57	58
note:	Hbl	Hbl	Hbl r	Hbl r	Hbl	Hbl	Hbl	Hbl r	Hbl	Hbl r	Hbl	Hbl r
SiO ₂	42.02	42.23	42.62	41.86	44.93	44.96	44.34	44.99	44.84	45.45	44.55	46.06
TiO ₂	0.86	0.93	0.77	0.82	0.87	0.97	0.87	0.90	0.88	1.16	1.11	0.89
Al ₂ O ₃	15.17	13.62	14.28	15.00	12.29	12.33	12.76	12.46	12.11	12.21	12.05	11.95
Cr ₂ O ₃	0.06	0.01	0.02	0.06	0.01	0.00	0.03	0.07	0.00	0.06	0.02	0.00
FeO ^T	19.19	18.41	18.07	18.54	14.73	13.94	15.08	14.19	13.81	14.19	14.69	14.13
MnO	0.11	0.04	0.08	0.13	0.10	0.04	0.06	0.09	0.09	0.00	0.09	0.10
MgO	7.31	8.00	7.95	7.77	11.19	11.31	10.44	10.90	11.59	11.60	11.18	11.59
CaO	11.63	11.73	11.72	11.66	11.71	11.53	11.21	11.31	11.33	11.03	10.92	11.30
Na ₂ O	1.37	1.22	1.16	1.20	1.26	1.23	1.35	1.20	1.26	1.42	1.45	1.46
K ₂ O	1.03	0.99	0.89	0.90	0.70	0.58	0.69	0.67	0.57	0.62	0.65	0.57
Total	98.76	97.18	97.58	97.95	97.78	96.89	96.83	96.77	96.48	97.74	96.71	98.05
O	23	23	23	23	23	23	23	23	23	23	23	23
Si	6.237	6.36	6.36	6.23	6.55	6.58	6.53	6.60	6.57	6.57	6.53	6.65

Al ^{IV}	1.763	1.64	1.64	1.77	1.45	1.42	1.47	1.40	1.43	1.43	1.47	1.35
Al ^{VI}	0.89	0.78	0.88	0.86	0.66	0.71	0.74	0.76	0.67	0.65	0.62	0.69
Ti	0.10	0.10	0.09	0.09	0.10	0.11	0.10	0.10	0.10	0.13	0.12	0.10
Cr	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
Fe ³⁺	0.39	0.33	0.33	0.49	0.45	0.41	0.48	0.41	0.54	0.59	0.63	0.45
Fe ²⁺	1.99	1.99	1.93	1.81	1.35	1.29	1.38	1.33	1.15	1.13	1.17	1.25
Mn	0.01	0.01	0.01	0.02	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.01
Mg	1.62	1.80	1.77	1.72	2.43	2.47	2.29	2.38	2.53	2.50	2.44	2.50
Ca	1.85	1.89	1.88	1.86	1.83	1.81	1.77	1.78	1.78	1.71	1.72	1.75
Na	0.39	0.36	0.34	0.35	0.36	0.35	0.38	0.34	0.36	0.40	0.41	0.41
K	0.20	0.19	0.17	0.17	0.13	0.11	0.13	0.13	0.11	0.11	0.12	0.11
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
Cl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OH*	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 cation	17.44	17.44	17.38	17.37	17.32	17.27	17.28	17.25	17.24	17.22	17.25	17.26
XMg	0.45	0.47	0.48	0.49	0.64	0.66	0.62	0.64	0.69	0.69	0.68	0.67
Na/(Na+Ca)x100	17.57	15.82	15.22	15.71	16.30	16.21	17.83	16.11	16.75	18.90	19.37	18.95
Al/(Al+Si)x100	29.85	27.55	28.31	29.69	24.39	24.43	25.32	24.60	24.14	24.05	24.17	23.42
A-site occupa	0.44	0.44	0.38	0.37	0.32	0.27	0.28	0.25	0.24	0.22	0.25	0.26

Probe-Amph 3.0 (Tindle and Webb, 1994) were used for calculation. r=r_{rim}

Table S3. Representative chemical compositions of plagioclase

Sample No. Anal. No. note:	Plagioclase 2806A			2904B			2905			2902		
	66 Pl	75 Pl in Hbl	120 Pl in Hbl	87 Pl c mtx	90 Pl r mtx	108 Pl in Hbl	1 Pl c	3 Pl r	21 Pl c	99 Pl mtx	136 Pl mtx	99 Pl mtx
SiO ₂	58.01	59.52	57.39	53.96	47.70	48.59	55.15	47.64	56.13	64.64	64.03	64.64
TiO ₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01
Al ₂ O ₃	27.24	25.97	26.86	29.27	33.60	33.48	28.68	33.30	27.99	22.47	22.54	22.47
Cr ₂ O ₃	0.00	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.04	0.00	0.01	0
FeO ^T	0.00	0.25	0.17	0.06	0.01	0.11	0.00	0.00	0.01	0.07	0.04	0.07
MnO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.07	0.01	0.07
MgO	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.01	0.01	0.00	0.00	0
CaO	8.87	7.41	8.90	11.60	16.76	16.23	11.03	16.91	10.12	3.59	4.04	3.59
Na ₂ O	6.49	7.43	6.43	4.99	2.01	2.43	5.39	2.00	5.86	9.50	9.49	9.5
K ₂ O	0.09	0.07	0.06	0.02	0.02	0.03	0.06	0.02	0.06	0.14	0.12	0.14
Total	100.70	100.63	99.82	99.95	100.12	100.87	100.31	99.92	100.22	100.49	100.28	100.49
O	8	8	8	8	8	8	8	8	8	8	8	8
Si	2.58	2.64	2.58	2.44	2.18	2.21	2.48	2.19	2.52	2.82	2.821	2.84
Ti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00
Al	1.43	1.36	1.42	1.56	1.81	1.79	1.52	1.80	1.48	1.19	1.171	1.16
Cr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00
Fe ³⁺	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001	0.00
Mn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00
Mg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00
Ca	0.42	0.35	0.43	0.56	0.82	0.79	0.53	0.83	0.49	0.17	0.191	0.17
Na	0.56	0.64	0.56	0.44	0.18	0.21	0.47	0.18	0.51	0.80	0.811	0.81
K	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.007	0.01
Total cation	4.99	5.00	5.00	5.00	5.00	5.01	5.00	5.00	5.00	0.00	0.00	0.00
An	0.43	0.35	0.43	0.56	0.82	0.79	0.53	0.82	0.49	0.18	0.19	0.17

c=core, mtx=matrix, r=r_{rim}

Table S4. Representative chemical compositions of biotite and muscovite

		Biotite							
Sample No.	2902								
Anal. No.	84	133	103	76	72	75	83	85	
note:	Bt	Bt r	Bt rep grt	Bt rep grt	Ms	Ms	Ms	Ms	
SiO ₂	35.16	35.58	35.14	35.27	46.73	46.75	47.07	46.71	
TiO ₂	3.21	3.76	1.95	2.38	0.79	0.55	0.86	0.81	
Al ₂ O ₃	18.38	18.11	18.55	18.13	33.94	34.25	34.65	34.98	
Cr ₂ O ₃	0.03	0.08	0.01	0	0.00	0.07	0.05	0.03	
FeO ^T	23.35	23.63	23.61	24.14	2.12	1.81	1.79	1.97	
MnO	0.00	0.13	0.08	0.01	0.00	0.00	0.00	0.00	
MgO	6.31	6.35	6.78	5.94	0.79	0.62	0.65	0.68	
CaO	0.02	0.00	0.00	0	0.02	0.02	0.01	0.03	
Na ₂ O	0.13	0.11	0.07	0.09	0.33	0.43	0.37	0.42	
K ₂ O	9.39	9.57	9.19	9.46	10.11	9.96	10.62	10.07	
H ₂ O*	3.89	3.97	3.90	3.88	4.69	4.69	4.75	4.74	
Total	99.87	101.29	99.28	99.30	99.52	99.15	100.82	100.44	
O	22	22	22	22	22	22	22	22	
Si	5.42	5.37	5.41	5.45	5.97	5.98	5.94	5.91	
Ti	0.37	0.43	0.23	0.28	0.08	0.05	0.08	0.08	
Al	3.34	3.22	3.37	3.30	5.11	5.16	5.15	5.22	
Cr	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	
Fe	3.01	2.98	3.04	3.12	0.23	0.19	0.19	0.21	
Mn	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	
Mg	1.45	1.43	1.56	1.37	0.15	0.12	0.12	0.13	
Ca	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Na	0.04	0.03	0.02	0.03	0.08	0.11	0.09	0.10	
K	1.85	1.84	1.80	1.86	1.65	1.63	1.71	1.63	
Total	15.48	15.33	15.43	15.40	13.27	13.25	13.29	13.28	
OH*	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	
X _{Mg}	0.33	0.32	0.34	0.30	-	-	-	-	

H₂O* and OH calculated according to stoichiometry.