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Supplement of

Île Dumet (Armorican Massif, France) and its glaucophane eclogites: the little sister of Île de Groix

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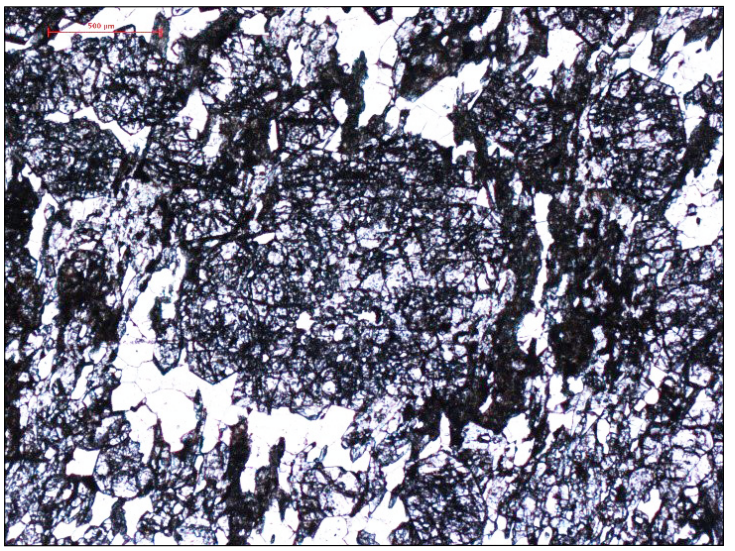
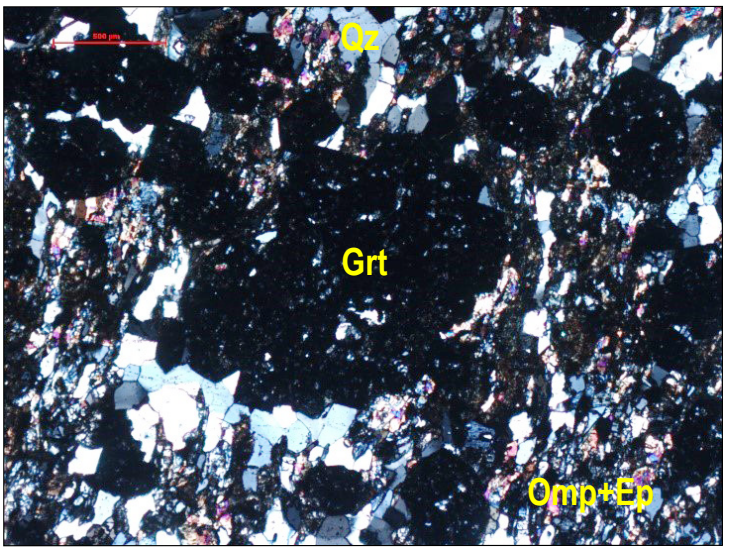
Supplementary material

Figure S1: Representative thin section images of the various rock types showing their texture and mineralogy
Plane-polarised light (left) and cross-polarised light (right); see Figure 4 and text for the details.



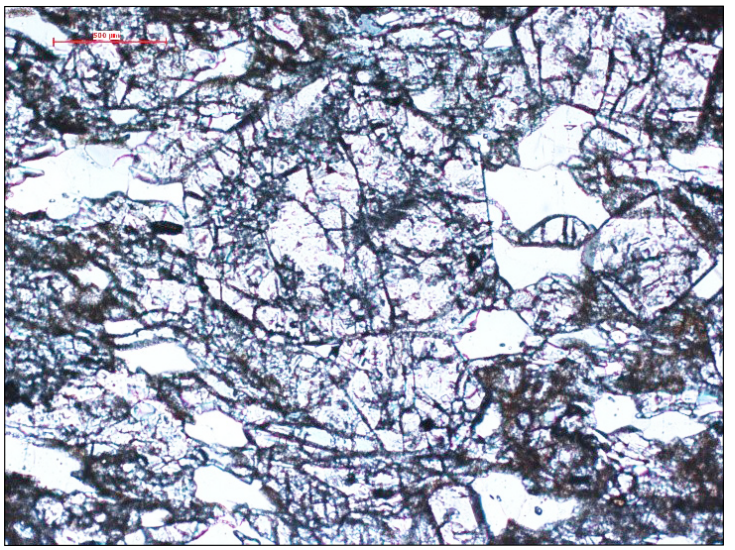
a



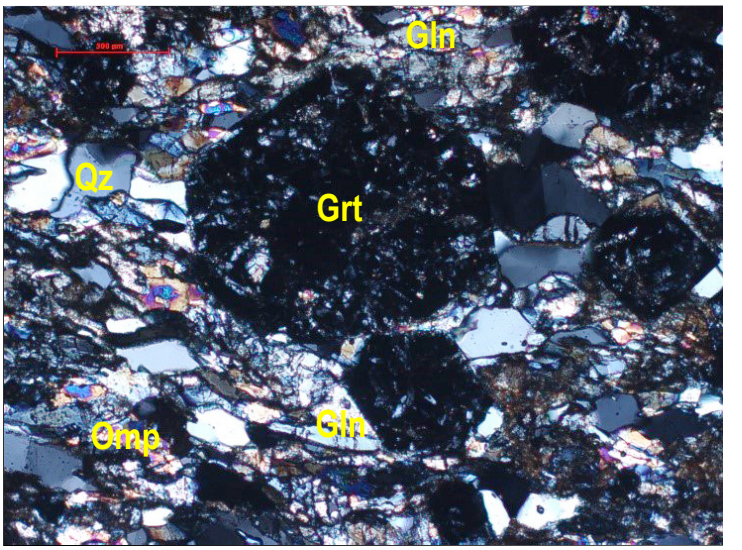
sample ID25a

500 µm

a: Eclogite band with abundant subhedral garnets containing microinclusions, surrounded by a foliated matrix of omphacite, epidote and quartz, with rare amphibole and rutile.



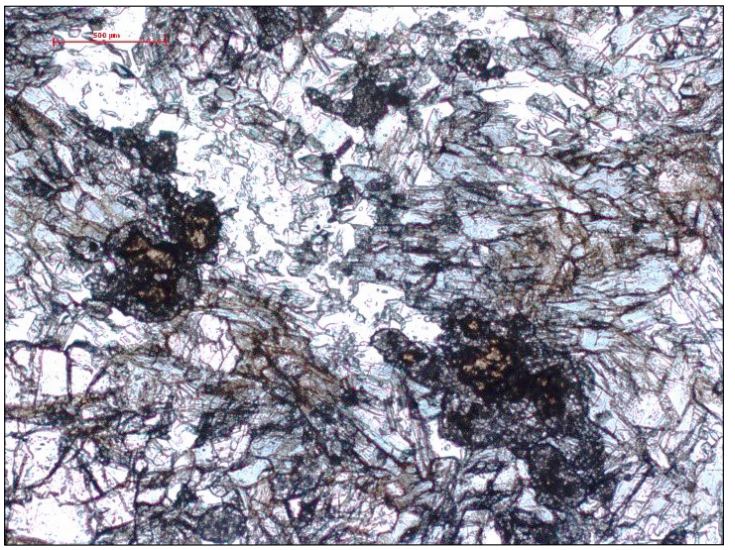
b



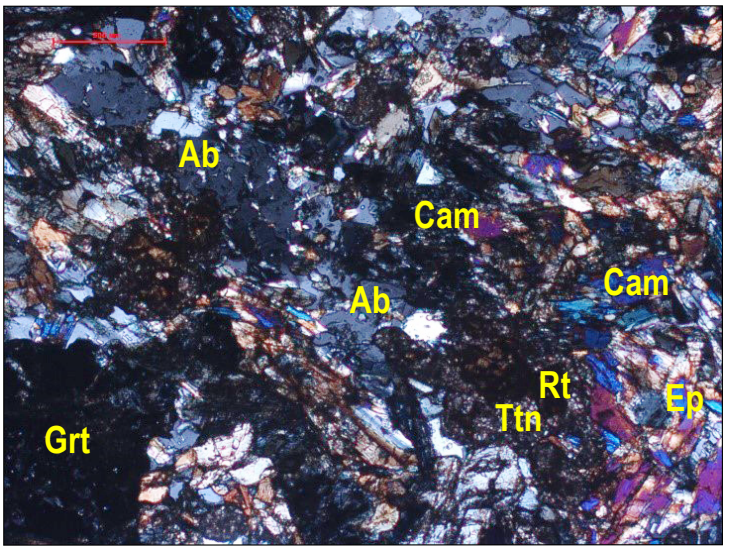
sample ID25b

500 µm

b: Garnet glaucophanite band with abundant euhedral garnets full of microinclusions, surrounded by a foliated matrix of glaucophane, quartz, minor omphacite, paragonite and rutile.



c

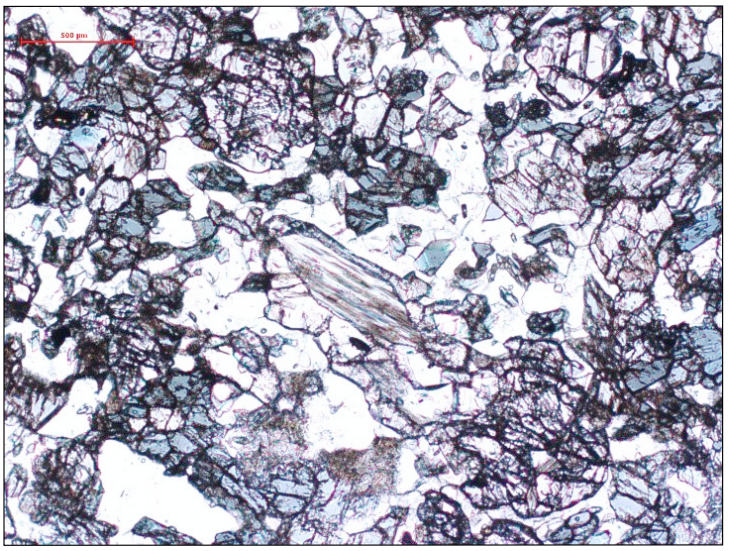


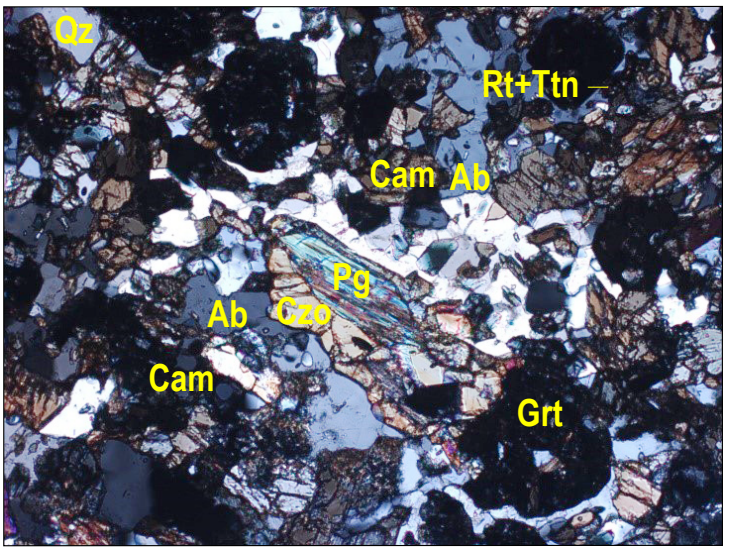
sample ID16

500 µm

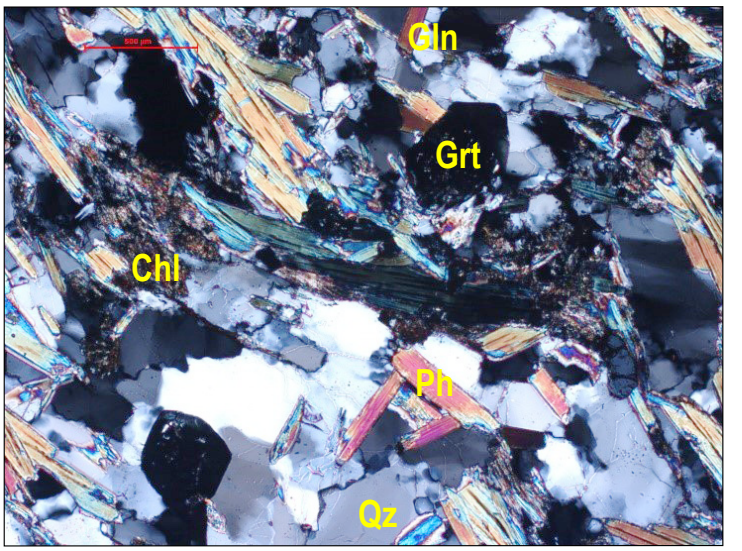
c: Amphibolite (i.e., retrogressed eclogite) with a typical symplectitic matrix of clinoamphibole and albitic plagioclase with epidote; garnet survives in part (e.g., lower left) but not omphacite; relict rutile is enveloped by titanite; relict quartz is rare.

Figure S1: Representative thin section images of the various rock types (continued).

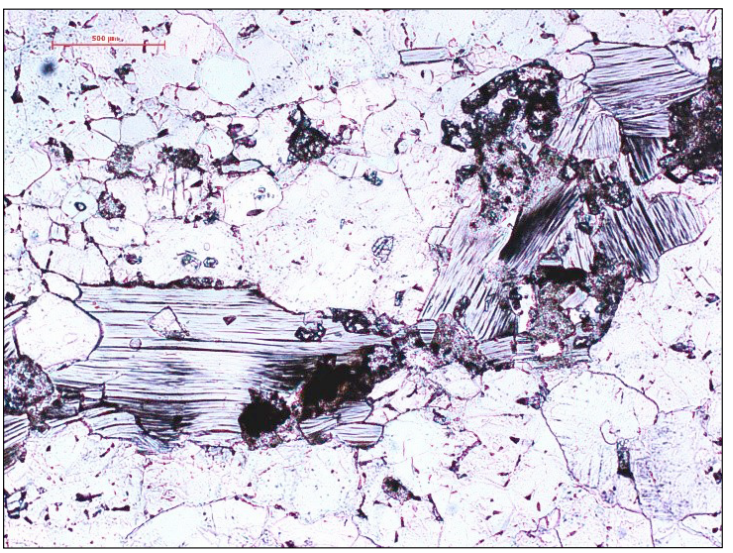


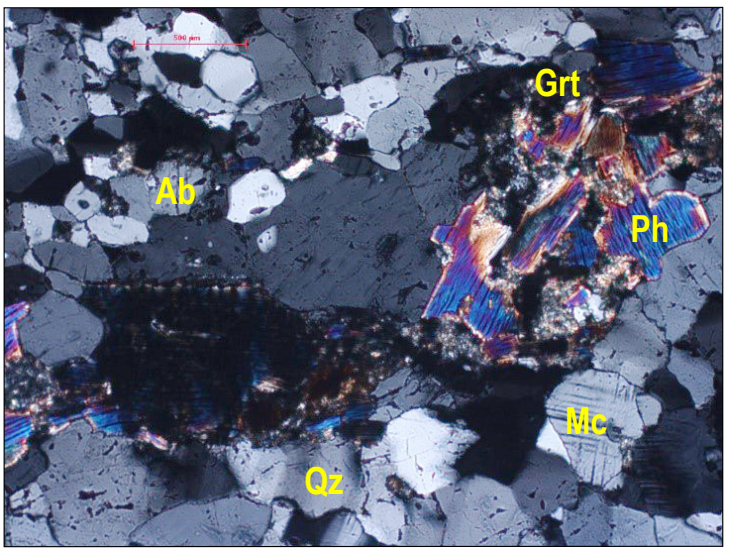


d: Amphibolite (i.e., retrogressed eclogite) showing a typical symplectitic matrix of clinoamphibole and albitic plagioclase together with relict quartz; clinozoisite occurs particularly around micas (centre), where paragonite contains small lamellae of exsolved phengite; garnet survives in places (e.g., bottom right), but not omphacite.



e: Micaschist with isolated euhedral garnets, laths of phengite, clusters of chlorite and small grains of rutile enveloped in later titanite and clinozoisite, in a matrix of quartz with minor albite.





f: Orthogneiss (i.e., leucocratic metagranitoid) showing a dominant quartzofeldspathic matrix (with microcline, albite and quartz) interspersed by laths of phengite and clusters of Fe-oxides and garnet; biotite, chlorite, apatite, monazite and zircon may also occur.

Figure S2: Orthogneiss interlayered with micaschists, at Les Sables Rouges, on the east coast of the island of Groix (to compare with Fig. 3b).

Sample	ID1 (glaucophane eclogite)				ID9 (glaucophane eclogite)				ID16 (amphibolitised eclogite)				ID25a (eclogite layer)				ID25b (glaucophanite layer)				ID33 (amphibolitised eclogite)			
	Garnet core		Garnet rim		Garnet core		Garnet rim		Garnet core		Garnet rim		Garnet core		Garnet rim		Garnet core		Garnet rim		Garnet core		Garnet rim	
Weight%	av(4)	±1σ	av(7)	±1σ	av(3)	±1σ	av(5)	±1σ	av(15)	±1σ	av(13)	±1σ	av(7)	±1σ	av(4)	±1σ	av(3)	±1σ	av(6)	±1σ	av(3)	±1σ	av(8)	±1σ
SiO_2	37.15	0.138	37.62	0.433	37.23	0.418	37.52	0.200	36.93	0.529	37.61	0.409	37.71	0.295	38.33	0.413	37.22	0.123	37.38	0.278	37.86	0.342	37.30	0.365
TiO_2	0.27	0.012	0.14	0.031	0.15	0.102	0.10	0.059	0.12	0.054	0.10	0.040	0.14	0.036	0.08	0.022	0.15	0.023	0.16	0.045	0.11	0.032	0.09	0.032
Al_2O_3	21.16	0.052	21.43	0.247	20.93	0.099	21.00	1.078	21.57	0.423	21.80	0.200	21.31	0.184	21.79	0.337	20.97	0.376	21.27	0.248	21.49	0.049	21.39	0.221
Cr_2O_3	0.01	0.007	0.01	0.005	0.00	0.000	0.00	0.000	0.00	0.005	0.01	0.011	0.01	0.019	0.03	0.032	0.02	0.024	0.02	0.018	0.05	0.059	0.03	0.028
Fe_2O_3*	0.00	0.000	0.00	0.071	0.29	0.190	0.43	0.207	0.00	0.000	0.00	0.000	0.08	0.187	0.00	0.012	0.30	0.307	0.00	0.171	0.00	0.000	0.00	0.030
FeO	23.75	0.400	29.47	0.322	24.27	0.717	30.15	0.664	23.28	0.548	27.32	0.678	21.01	0.814	27.02	0.556	24.34	0.469	28.70	0.474	28.01	0.326	30.70	1.073
MnO	7.44	0.424	0.32	0.045	5.86	0.744	0.39	0.102	6.44	0.161	0.61	0.101	8.43	0.934	0.37	0.054	4.62	0.815	0.66	0.295	2.50	0.434	0.46	0.087
MgO	0.92	0.021	1.87	0.154	0.59	0.089	1.96	0.272	0.86	0.118	2.36	0.158	0.42	0.198	2.70	0.421	1.20	0.140	1.46	0.285	1.26	0.077	1.76	0.296
CaO	10.05	0.132	10.33	0.238	11.09	1.026	9.10	0.245	11.08	0.568	11.04	0.432	11.62	0.710	10.49	0.308	11.51	0.323	11.04	0.440	9.47	0.278	8.59	0.522
Na_2O	0.01	0.006	0.01	0.005	0.04	0.011	0.05	0.050	0.02	0.015	0.02	0.017	0.02	0.016	0.01	0.017	0.01	0.008	0.02	0.016	0.01	0.007	0.02	0.018
K_2O	0.00	0.003	0.00	0.003	0.00	0.005	0.01	0.014	0.00	0.002	0.00	0.004	0.01	0.016	0.01	0.015	0.01	0.016	0.01	0.012	0.01	0.009	0.00	0.002
Total	100.77	0.353	101.19	0.685	100.45	0.719	100.70	0.438	100.29	0.860	100.86	0.506	100.76	0.794	100.83	1.125	100.34	0.383	100.71	0.679	100.76	0.090	100.33	1.127
Si	2.963	0.0018	2.968	0.0115	2.979	0.0100	2.983	0.0252	2.949	0.0122	2.957	0.0109	2.993	0.0098	2.996	0.0042	2.970	0.0073	2.966	0.0113	2.999	0.0191	2.975	0.0143
Al	1.989	0.0031	1.993	0.0072	1.974	0.0063	1.968	0.0855	2.030	0.0212	2.020	0.0092	1.994	0.0182	2.007	0.0091	1.972	0.0239	1.989	0.0150	2.006	0.0083	2.010	0.0155
Ti	0.016	0.0008	0.008	0.0018	0.009	0.0062	0.006	0.0035	0.007	0.0032	0.006	0.0024	0.008	0.0022	0.005	0.0013	0.009	0.0014	0.009	0.0027	0.006	0.0019	0.005	0.0019
Cr	0.001	0.0005	0.001	0.0003	0.000	0.0000	0.000	0.0000	0.000	0.0003	0.001	0.0007	0.001	0.0012	0.002	0.0020	0.001	0.0015	0.001	0.0012	0.003	0.0037	0.002	0.0018
Fe^{3+}*	0.000	0.0000	0.000	0.0042	0.018	0.0114	0.026	0.0124	0.000	0.0000	0.000	0.0000	0.000	0.0111	0.000	0.0007	0.018	0.0185	0.000	0.0102	0.000	0.0000	0.000	0.0018
Fe^{2+}	1.584	0.0251	1.944	0.0227	1.624	0.0472	2.005	0.0542	1.555	0.0410	1.796	0.0547	1.400	0.0577	1.766	0.0325	1.624	0.0377	1.905	0.0218	1.855	0.0263	2.047	0.0708
Mg	0.110	0.0024	0.220	0.0164	0.071	0.0104	0.232	0.0327	0.102	0.0144	0.276	0.0180	0.050	0.0235	0.315	0.0478	0.142	0.0158	0.173	0.0332	0.149	0.0088	0.210	0.0341
Mn^{2+}	0.502	0.0286	0.021	0.0028	0.397	0.0525	0.026	0.0068	0.436	0.0117	0.041	0.0067	0.566	0.0603	0.025	0.0036	0.312	0.0535	0.044	0.0200	0.168	0.0288	0.031	0.0058
Ca	0.859	0.0113	0.873	0.0271	0.951	0.0853	0.775	0.0233	0.948	0.0495	0.930	0.0312	0.988	0.0606	0.879	0.0289	0.984	0.0326	0.938	0.0393	0.804	0.0256	0.734	0.0412
Na	0.002	0.0009	0.001	0.0008	0.007	0.0017	0.008	0.0075	0.002	0.0023	0.002	0.0025	0.003	0.0025	0.002	0.0025	0.001	0.0012	0.003	0.0025	0.001	0.0012	0.003	0.0028
K	0.000	0.0003	0.000	0.0003	0.000	0.0005	0.001	0.0014	0.000	0.0002	0.000	0.0004	0.001	0.0016	0.001	0.0015	0.001	0.0016	0.001	0.0012	0.001	0.0009	0.000	0.0002
X_{Alm}	0.519	0.0074	0.636	0.0037	0.534	0.0166	0.660	0.0067	0.511	0.0115	0.590	0.0154	0.466	0.0174	0.592	0.0100	0.530	0.0119	0.622	0.0080	0.624	0.0059	0.678	0.0229
X_{Sps}	0.164	0.0096	0.007	0.0010	0.130	0.0171	0.009	0.0024	0.143	0.0033	0.013	0.0022	0.189	0.0198	0.008	0.0012	0.102	0.0176	0.015	0.0065	0.056	0.0099	0.010	0.0019
X_{Grs}	0.281	0.0037	0.285	0.0063	0.304	0.0248	0.242	0.0128	0.312	0.0163	0.305	0.0115	0.329	0.0240	0.294	0.0103	0.312	0.0047	0.306	0.0121	0.269	0.0060	0.242	0.0132
X_{Prp}	0.036	0.0008	0.072	0.0058	0.023	0.0034	0.076	0.0096	0.034	0.0046	0.091	0.0059	0.017	0.0078	0.106	0.0158	0.046	0.0052	0.057	0.0110	0.050	0.0032	0.069	0.0109
X_{Uv}	0.000	0.0002	0.000	0.0002	0.000	0.0000	0.000	0.0000	0.000	0.0002	0.000	0.0003	0.000	0.0006	0.001	0.0010	0.001	0.0008	0.000	0.0006	0.002	0.0018	0.001	0.0009
X_{Adr}	0.000	0.0000	0.000	0.0021	0.009	0.0057	0.013	0.0062	0.000	0.0000	0.000	0.0000	0.000	0.0056	0.000	0.0003	0.009	0.0093	0.000	0.0051	0.000	0.0000	0.000	0.0009

Table S1- Garnet compositions

av(*n*): average of *n* EMP analyses; σ: standard deviation; *: calculated by stoichiometry; *Xem*: molar fraction of end-member *em*.

Sample	ID9				ID14				ID25a		ID25b	
Weight%	av(23)	±1σ	av(51)	±1σ	av(31)	±1σ	av(16)	±1σ	av(29)	±1σ	av(20)	±1σ
SiO_2	55.43	0.648	55.39	0.387	55.91	0.425	56.12	0.524	56.19	0.300	55.29	0.289
TiO_2	0.05	0.048	0.08	0.085	0.04	0.023	0.04	0.015	0.04	0.023	0.07	0.029
Al_2O_3	8.72	1.097	7.89	1.429	9.43	0.304	10.07	0.379	9.81	0.537	9.14	1.071
Cr_2O_3	0.00	0.000	0.00	0.000	0.02	0.036	0.02	0.031	0.02	0.018	0.02	0.015
Fe_2O_3*	4.63	1.121	4.22	0.919	3.88	0.937	3.42	1.124	3.05	1.066	5.41	1.270
FeO	3.07	0.677	3.51	0.901	3.23	0.778	2.79	0.867	3.56	0.550	2.33	0.562
MnO	0.01	0.016	0.01	0.020	0.04	0.047	0.05	0.045	0.02	0.027	0.02	0.021
MgO	8.15	0.545	8.67	0.581	8.03	0.165	8.17	0.210	7.90	0.330	7.83	0.232
CaO	13.06	0.980	13.88	1.078	12.62	0.254	12.92	0.346	13.05	0.527	12.78	0.375
Na_2O	6.89	0.579	6.37	0.681	7.15	0.190	7.15	0.230	7.08	0.316	7.22	0.186
K_2O	0.01	0.008	0.01	0.008	0.00	0.006	0.01	0.010	0.01	0.014	0.01	0.018
Total	100.02	0.537	100.03	0.369	100.35	0.585	100.77	0.660	100.73	0.388	100.10	0.502
Si	1.992	0.0109	1.996	0.0095	1.996	0.0107	1.989	0.0099	1.996	0.0058	1.983	0.0080
Al^{IV}	0.008	0.0101	0.004	0.0079	0.004	0.0077	0.011	0.0093	0.004	0.0043	0.017	0.0080
Al^{VI}	0.361	0.0517	0.331	0.0560	0.392	0.0131	0.409	0.0160	0.407	0.0231	0.369	0.0396
Ti	0.001	0.0013	0.002	0.0023	0.001	0.0006	0.001	0.0004	0.001	0.0006	0.002	0.0008
Cr	0.000	0.0000	0.000	0.0000	0.001	0.0010	0.001	0.0009	0.001	0.0005	0.000	0.0004
Fe^{3+} *	0.125	0.0307	0.114	0.0249	0.104	0.0250	0.091	0.0300	0.081	0.0285	0.146	0.0346
Fe^{2+}	0.092	0.0205	0.106	0.0276	0.096	0.0234	0.083	0.0258	0.106	0.0163	0.070	0.0169
Mg	0.437	0.0313	0.466	0.0336	0.427	0.0093	0.432	0.0110	0.419	0.0177	0.419	0.0121
Mn	0.000	0.0005	0.000	0.0006	0.001	0.0014	0.001	0.0014	0.001	0.0008	0.001	0.0006
Ca	0.503	0.0404	0.536	0.0448	0.483	0.0104	0.491	0.0128	0.497	0.0204	0.491	0.0141
Na	0.480	0.0375	0.445	0.0449	0.494	0.0114	0.491	0.0147	0.488	0.0213	0.502	0.0130
K	0.000	0.0004	0.000	0.0004	0.000	0.0003	0.000	0.0004	0.000	0.0006	0.000	0.0008
Σ cations	4.000		4.000		4.000		4.000		4.000		4.000	
X_{Di}	0.412	0.0429	0.435	0.0377	0.393	0.0190	0.408	0.0213	0.395	0.0205	0.415	0.0188
X_{Hd}	0.087	0.0155	0.099	0.0236	0.088	0.0178	0.078	0.0207	0.100	0.0127	0.069	0.0149
$X_{Cen\text{-}Cfs}$	0.015	0.0102	0.019	0.0103	0.021	0.0103	0.015	0.0118	0.015	0.0079	0.003	0.0069
$X_{Ca\text{-}Tsch}$	0.003	0.0047	0.000	0.0043	0.001	0.0040	0.005	0.0046	0.001	0.0023	0.007	0.0039
X_{Jd}	0.361	0.0510	0.331	0.0562	0.392	0.0128	0.410	0.0156	0.408	0.0228	0.371	0.0402
X_{Acm}	0.121	0.0218	0.116	0.0214	0.104	0.0138	0.084	0.0243	0.082	0.0249	0.136	0.0367

Table S2- Omphacite compositions

av(*n*): average of *n* EMP analyses; σ: standard deviation; *: calculated by stoichiometry, on the basis of 4 cations for 6 oxygens; *Xem*: molar fraction of end-member *em (Cen, Cfs and Ca-Tsch are clinoenstatite, clinoferrosilite and Ca Tschermak, respectively).*