Table A1. *Representative garnet compositions obtained from quantitative electron microprobe analyses*

	DV06-05C [GPS: NO89248874]			DV06-06 [GPS: NO89278901]			DV06-07 [GPS: NO90139138]			DV06-14A [GPS: NO90939237]			DV06-18 [GPS: NO90279097]			DV06-21 [GPS: NO92719474]			DV06-29 [GPS: NO92739535]		
	Spot 1 Core	Spot 2	Spot 3 Rim	Spot 1 Core	Spot 2	Spot 3 Rim	Spot 1 Core	Spot 2	Spot 3 Rim	Spot 1 Core	Spot 2	Spot 3 Rim	Spot 1 Core	Spot 2	Spot 3 Rim	Spot 1 Core	Spot 2	Spot 3 Rim	Spot 1 Core	Spot 2	Spot 3 Rim
Oxide abundance (wt%)																					
SiO_2	36.83	35.62	35.72	35.93	36.05	36.21	36.17	36.13	36.41	36.97	36.82	36.43	36.28	36.44	36.27	36.50	36.66	36.65	36.04	36.33	36.29
TiO_2	0.0915	0.0858	0.0640	0.1299	0.0742	0.0462	1.1142	0.1013	0.0215	0.1185	0.1043	0.0179	0.1303	0.0968	0.0403	0.1745	0.0924	0.1056	0.1058	0.0641	0.1273
Al_2O_3	20.70	20.69	20.73	20.62	20.68	20.96	20.93	20.93	21.13	21.09	21.06	21.11	20.92	20.90	20.99	20.74	20.90	21.01	20.85	20.97	21.17
Fe_2O_3	0.000	2.550	2.406	1.965	1.942	1.799	0.000	1.786	1.372	0.000	0.079	0.940	1.103	1.140	1.657	0.919	0.700	0.796	1.781	1.644	1.471
FeO	29.64	29.05	31.38	28.40	31.83	33.75	30.14	29.59	31.59	25.64	27.66	30.87	29.18	31.72	33.93	30.62	33.27	33.31	29.49	31.21	31.27
MgO	1.107	1.208	1.361	1.179	1.502	2.248	2.130	2.274	2.642	0.946	1.441	2.199	1.528	1.870	2.485	1.303	1.613	1.848	1.891	2.561	2.620
MnO	9.246	8.354	6.144	9.121	5.463	2.771	7.397	6.894	5.063	9.450	9.236	7.149	7.842	5.075	2.665	5.983	3.213	2.604	7.668	5.115	4.810
CaO	2.095	2.340	2.136	2.609	2.440	2.161	1.908	2.083	1.663	5.767	3.543	1.209	2.853	2.703	1.830	3.740	3.526	3.646	2.000	1.977	2.100
Cr_2O_3	0.0206	0.0187	0.0189	0.0202	0.0015	0.0089	0.0116	0.0272	0.0169	0.0086	0.0248	0.0064	0.0202	0.0118	0.0114	0.0114	0.0181	0.0238	0.0294	0.0142	0.0134
Y_2O_3	0.2700	0.0846	0.0450	0.0167	0.0171	0.0474	0.1986	0.1852	0.0870	0.0102	0.0240	0.0767	0.1471	0.0441	0.1242	0.0081	0.0151	0.0124	0.1547	0.1071	0.1323
Atoms per formula unit (for 24 oxygens)																					
Si	6.0124	5.8908	5.8981	5.9197	5.9267	5.9188	5.8736	5.9102	5.9262	5.9775	5.9708	5.9393	5.9310	5.9429	5.9217	5.9552	5.9630	5.9514	5.9123	5.9234	5.9058
Ti	0.0112	0.0107	0.0079	0.0161	0.0092	0.0057	0.1361	0.0125	0.0026	0.0144	0.0127	0.0022	0.0160	0.0119	0.0049	0.0214	0.0113	0.0129	0.0131	0.0079	0.0156
Al	3.9818	4.0334	4.0352	4.0046	4.0073	4.0378	4.0059	4.0349	4.0535	4.0183	4.0254	4.0556	4.0304	4.0177	4.0388	3.9892	4.0067	4.0207	4.0308	4.0309	4.0604
Fe^{3+}	0.0000	0.1587	0.1495	0.1218	0.1202	0.1106	0.0000	0.1099	0.0840	0.0000	0.0048	0.0577	0.0678	0.0700	0.1018	0.0565	0.0429	0.0486	0.1099	0.1009	0.0901
Fe^{2+}	4.0463	4.0185	4.3336	3.9131	4.3771	4.6145	4.0929	4.0479	4.3000	3.4663	3.7510	4.2086	3.9891	4.3266	4.6330	4.1788	4.5258	4.5241	4.0457	4.2568	4.2564
Mg	0.2693	0.2980	0.3351	0.2895	0.3682	0.5479	0.5156	0.5545	0.6409	0.2281	0.3484	0.5345	0.3724	0.4548	0.6049	0.3169	0.3911	0.4475	0.4625	0.6226	0.6358
Mn	1.2784	1.1704	0.8594	1.2727	0.7607	0.3837	1.0173	0.9552	0.6980	1.2941	1.2686	0.9872	1.0858	0.7011	0.3685	0.8270	0.4427	0.3582	1.0655	0.7065	0.6630
Ca	0.3665	0.4146	0.3780	0.4605	0.4299	0.3784	0.3320	0.3651	0.2899	0.9990	0.6156	0.2112	0.4998	0.4723	0.3202	0.6539	0.6146	0.6345	0.3516	0.3454	0.3662
Cr	0.0013	0.0012	0.0012	0.0013	0.0001	0.0006	0.0007	0.0018	0.0011	0.0005	0.0016	0.0004	0.0013	0.0008	0.0007	0.0007	0.0012	0.0015	0.0019	0.0009	0.0009
Y	0.0117	0.0037	0.0020	0.0007	0.0007	0.0021	0.0086	0.0081	0.0038	0.0004	0.0010	0.0033	0.0064	0.0019	0.0054	0.0004	0.0007	0.0005	0.0068	0.0046	0.0057

	DV06-37			DV06-40							DV06-42			DV06-43B			DV06-47B		
	[GPS: NO93669629]			[GPS: NO94439741]							[GPS: NO55907847]			[GPS: NO45647802]			[GPS: NO57877438]		
					Grain 1			Grain 2											
	Spot 1	Spot 2	Spot 3	Spot 1	Spot 2	Spot 3	Spot 1	Spot 2	Spot 3	Spot 4	Spot 1	Spot 2	Spot 3	Spot 1	Spot 2	Spot 3	Spot 1	Spot 2	Spot 3
	Core		Rim	Core		Rim	Core			Rim	Core		Rim	Core		Rim	Core		Rim
Oxide abundance (wt%)																			
SiO_2	36.36	36.34	36.38	37.26	37.33	37.29	36.47	37.30	36.42	36.62	36.57	36.43	36.16	37.02	37.24	37.28	35.92	35.94	35.87
TiO_2	0.0893	0.0464	0.0657	0.0488	0.0526	0.0527	0.0260	0.0056	0.0513	0.0421	0.0231	0.0786	0.0081	0.0626	0.0392	0.0116	0.0724	0.0749	0.0442
Al_2O_3	20.94	20.89	21.00	21.34	21.35	21.32	21.19	21.39	21.15	21.28	21.07	21.16	21.01	20.87	21.10	21.21	20.80	20.72	20.77
Fe_2O_3	1.039	1.525	1.563	0.000	0.000	0.000	0.842	0.000	1.027	0.885	1.653	1.829	2.357	0.000	0.000	0.000	1.748	2.206	2.431
FeO	30.15	30.56	32.07	30.95	31.07	30.80	30.76	31.30	31.47	32.24	32.77	33.33	33.62	31.62	33.45	35.27	28.52	29.44	30.65
MgO	1.698	1.855	2.572	1.607	1.594	1.674	1.746	1.765	1.801	2.348	3.035	3.044	3.144	0.893	1.902	2.827	1.426	1.531	1.640
MnO	6.612	5.960	4.255	5.602	5.400	5.330	5.583	5.371	4.728	3.567	2.448	1.295	2.050	4.100	1.550	0.956	8.725	7.135	5.364
CaO	2.880	2.797	2.028	3.113	3.045	3.292	3.242	2.818	3.257	2.984	2.377	2.781	1.588	5.413	4.689	2.393	2.434	2.842	3.057
Cr_2O_3	0.0155	0.0023	0.0172	0.0136	0.0153	0.0166	0.0242	-0.0032	0.0160	0.0142	0.0309	0.0309	0.0202	0.0252	0.0208	0.0268	0.0150	0.0355	0.0302
Y_2O_3	0.2122	0.0206	0.0604	0.0684	0.1428	0.2304	0.1121	0.0535	0.0737	0.0243	0.0154	0.0156	0.0359	0.0080	0.0073	0.0238	0.3381	0.0756	0.1437
Atoms per formula unit (for 24 oxygens)																			
Si	5.9371	5.9357	5.9266	6.0131	6.0231	6.0165	5.9337	6.0151	5.9287	5.9338	5.9330	5.9097	5.9003	5.9995	5.9978	5.9971	5.9115	5.9109	5.9012
Ti	0.0110	0.0057	0.0081	0.0059	0.0064	0.0064	0.0032	0.0007	0.0063	0.0051	0.0028	0.0096	0.0010	0.0076	0.0047	0.0014	0.0090	0.0093	0.0055
Al	4.0298	4.0225	4.0313	4.0593	4.0597	4.0546	4.0640	4.0654	4.0586	4.0633	4.0287	4.0466	4.0412	3.9858	4.0057	4.0218	4.0351	4.0176	4.0280
Fe^{3+}	0.0638	0.0937	0.0958	0.0000	0.0000	0.0000	0.0515	0.0000	0.0629	0.0540	0.1009	0.1116	0.1447	0.0000	0.0000	0.0000	0.1083	0.1365	0.1505
Fe^{2+}	4.1165	4.1756	4.3688	4.1765	4.1929	4.1556	4.1853	4.2221	4.2846	4.3686	4.4462	4.5226	4.5883	4.2853	4.5064	4.7454	3.9251	4.0497	4.2179
Mg	0.4133	0.4517	0.6247	0.3867	0.3834	0.4027	0.4235	0.4243	0.4370	0.5672	0.7339	0.7362	0.7649	0.2158	0.4568	0.6779	0.3499	0.3755	0.4022
Mn	0.9144	0.8246	0.5872	0.7658	0.7380	0.7284	0.7693	0.7337	0.6519	0.4895	0.3364	0.1780	0.2834	0.5629	0.2114	0.1303	1.2162	0.9940	0.7475
Ca	0.5039	0.4895	0.3540	0.5383	0.5264	0.5692	0.5651	0.4870	0.5681	0.5181	0.4132	0.4833	0.2777	0.9400	0.8091	0.4125	0.4292	0.5009	0.5390
Cr	0.0010	0.0001	0.0011	0.0009	0.0010	0.0011	0.0016	-0.0002	0.0010	0.0009	0.0020	0.0020	0.0013	0.0016	0.0013	0.0017	0.0010	0.0023	0.0020
Y	0.0092	0.0009	0.0026	0.0029	0.0061	0.0099	0.0049	0.0023	0.0032	0.0010	0.0007	0.0007	0.0016	0.0003	0.0003	0.0010	0.0148	0.0033	0.0063

	DV06-48						DV06-49A			DV06-50						DV06-64		
	DV06-48 [NO57947521]						[GPS: NO56207575]			[GPS: NO55657765]						[GPS: NO91449323]		
	Grain 1			Grain 2						Grain 1			Grain 2					
	Spot 1	Spot 2	Spot 3	Spot 1	Spot 2	Spot 3	Spot 1	Spot 2	Spot 3	Spot 1	Spot 2	Spot 3	Spot 1	Spot 2	Spot 3	Spot 1	Spot 2	Spot 3
	Core		Rim	Core		Rim	Core		Rim	Core		Rim	Core		Rim	Core		Rim
Oxide abundance (wt%)																		
SiO_2	36.81	36.84	36.72	36.63	36.50	36.45	36.94	36.69	36.50	36.67	37.01	36.64	36.71	36.70	36.68	36.82	36.02	36.20
TiO_2	0.1466	0.1668	0.1006	0.2672	0.1042	0.0452	0.1237	0.2116	0.1071	0.1616	0.0677	0.0911	0.1118	0.0514	0.0362	0.1101	0.0410	0.0222
Al_2O_3	21.00	20.96	21.09	21.71	21.01	21.02	21.13	21.08	21.14	20.78	21.01	20.90	20.73	20.85	21.00	20.84	21.15	21.16
Fe_2O_3	0.000	0.000	0.218	0.000	0.700	1.090	0.054	0.517	1.361	0.938	0.687	1.117	1.028	1.280	1.536	0.218	1.930	1.482
FeO	27.29	30.25	32.59	27.36	30.37	32.36	27.38	29.15	31.62	31.79	33.23	30.17	28.83	31.82	33.69	33.70	33.88	35.05
MgO	1.232	1.551	1.892	1.290	1.660	2.119	1.281	1.609	2.095	1.738	2.695	1.716	1.306	2.263	2.985	1.964	2.213	2.341
MnO	9.841	7.145	5.157	9.403	7.096	4.869	7.910	6.395	2.942	3.802	1.897	4.872	5.801	3.373	1.300	4.107	2.735	2.191
CaO	3.635	3.047	2.193	3.301	2.520	1.992	5.160	4.341	4.220	4.102	3.401	4.470	5.434	3.632	2.774	2.157	1.965	1.450
Cr_2O_3	0.0205	0.0357	0.0176	0.0284	0.0245	0.0231	0.0133	0.0124	0.0163	0.0093	0.0147	0.0145	0.0161	0.0241	0.0075	0.0189	0.0332	0.0171
Y_2O_3	0.0211	0.0018	0.0193	0.0049	0.0165	0.0290	0.0013	-0.0043	0.0070	0.0132	-0.0093	0.0168	0.0314	0.0054	-0.0065	0.0618	0.0280	0.0924
Atoms per formula unit (for 24 oxygens)																		
Si	5.9745	5.9762	5.9618	5.9255	5.9477	5.9408	5.9704	5.9455	5.9234	5.9602	5.9724	5.9527	5.9677	5.9584	5.9434	5.9825	5.8943	5.9128
Ti	0.0179	0.0204	0.0123	0.0325	0.0128	0.0055	0.0150	0.0258	0.0131	0.0198	0.0082	0.0111	0.0137	0.0063	0.0044	0.0135	0.0050	0.0027
Al	4.0165	4.0083	4.0365	4.1391	4.0339	4.0377	4.0249	4.0252	4.0427	3.9815	3.9965	4.0024	3.9720	3.9906	4.0104	3.9908	4.0791	4.0732
Fe^{3+}	0.0000	0.0000	0.0133	0.0000	0.0429	0.0669	0.0033	0.0315	0.0831	0.0574	0.0417	0.0683	0.0629	0.0782	0.0937	0.0133	0.1188	0.0911
Fe^{2+}	3.7043	4.1043	4.4253	3.7008	4.1379	4.4114	3.7008	3.9511	4.2913	4.3209	4.4847	4.0993	3.9197	4.3211	4.5666	4.5796	4.6359	4.7879
Mg	0.2980	0.3752	0.4580	0.3111	0.4033	0.5149	0.3085	0.3888	0.5069	0.4212	0.6485	0.4157	0.3165	0.5479	0.7212	0.4756	0.5398	0.5701
Mn	1.3528	0.9819	0.7092	1.2883	0.9793	0.6722	1.0827	0.8778	0.4045	0.5234	0.2593	0.6705	0.7988	0.4639	0.1785	0.5652	0.3790	0.3031
Ca	0.6321	0.5296	0.3815	0.5721	0.4399	0.3478	0.8934	0.7537	0.7338	0.7145	0.5882	0.7783	0.9464	0.6319	0.4816	0.3755	0.3446	0.2537
Cr	0.0013	0.0023	0.0011	0.0018	0.0016	0.0015	0.0008	0.0008	0.0010	0.0006	0.0009	0.0009	0.0010	0.0015	0.0005	0.0012	0.0021	0.0011
Y	0.0009	0.0001	0.0008	0.0002	0.0007	0.0013	0.0001	-0.0002	0.0003	0.0006	-0.0004	0.0007	0.0014	0.0002	-0.0003	0.0027	0.0012	0.0040

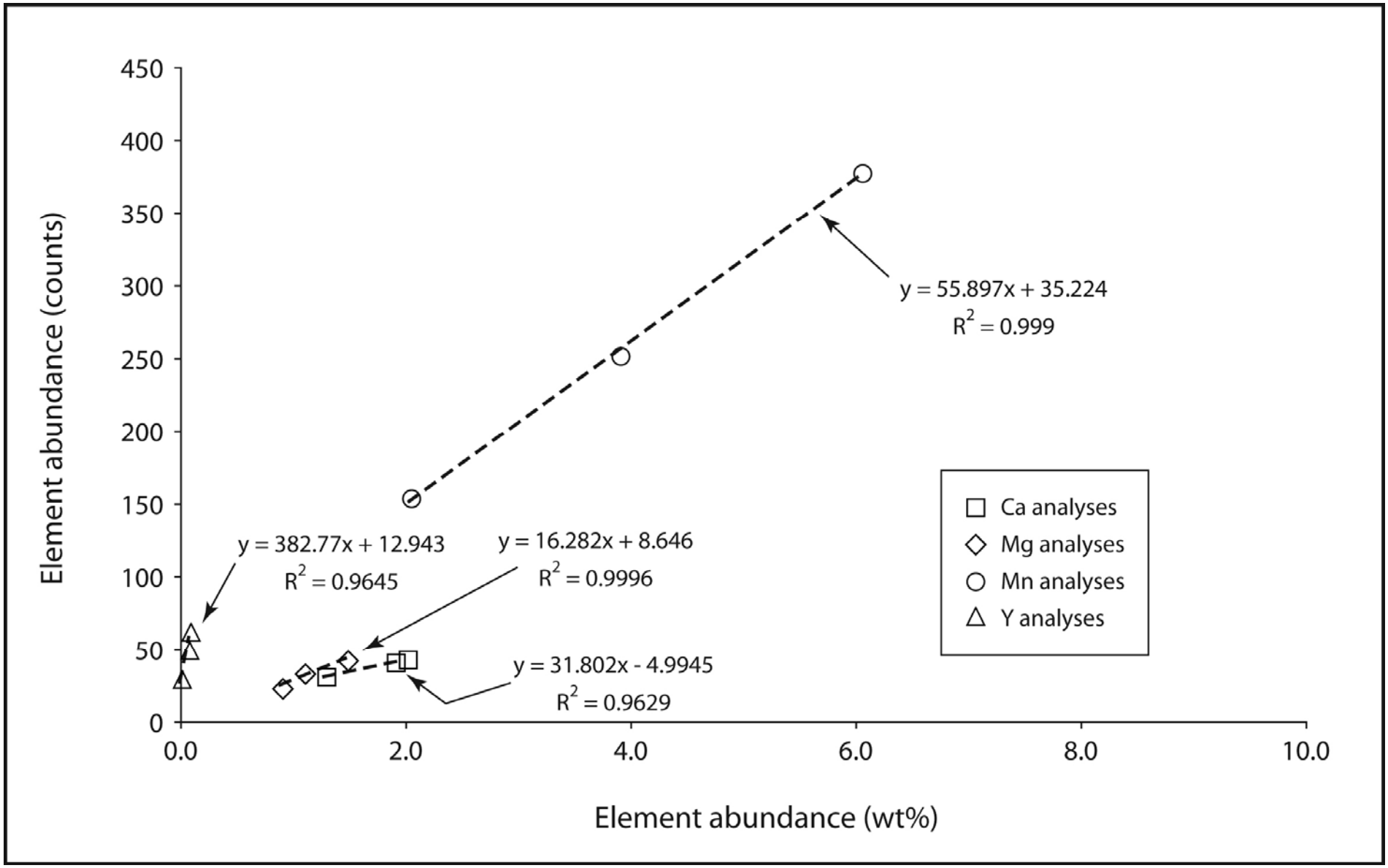

Fig. A1. Representative plot for the calibration of garnet composition maps by relating electron microprobe count values to absolute element abundance from quantitative electron microprobe analyses.

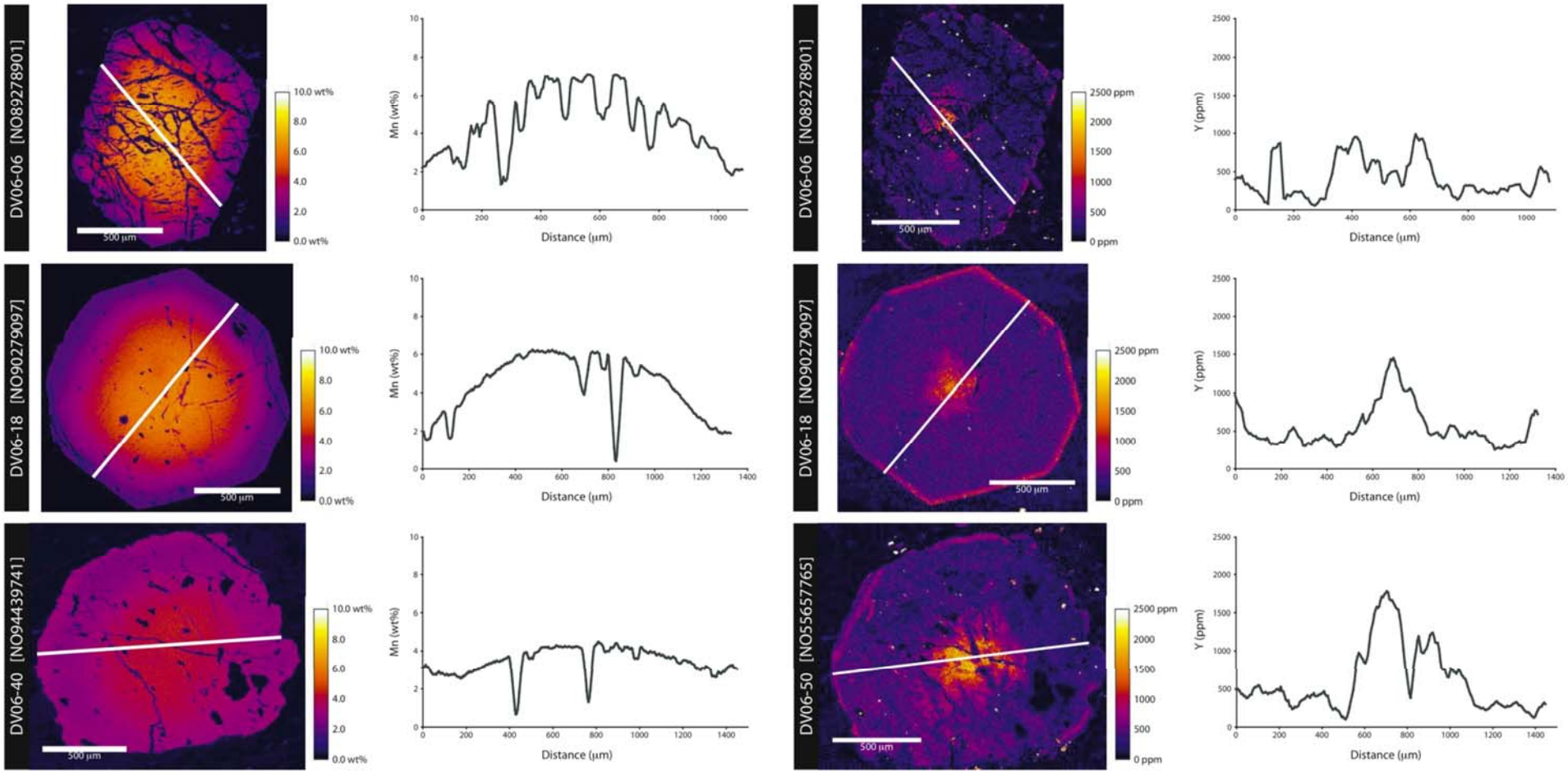

Fig. A2. Electron microprobe Y and Mn concentration maps and profiles for garnets from the staurolite-in isograd (DV06-06), middle of the staurolite zone (DV06-18) and sillimanite zone (DV06-40) on the Stonehaven transect. Concentration profiles for each sample were taken along the transect line displayed on its concentration map.