

Supplementary Information

Table DR1: Composition of phases in the sample of garnet peridotite from the Wesselton kimberlite used in this study.

wt% in:	Garnet (core)	Garnet (rim)	Olivine	Orthopyroxene	Clinopyroxene
SiO ₂	42.40	41.17	40.85	57.15	54.66
TiO ₂	0.01	0.75	0.02	0.11	0.44
Al ₂ O ₃	19.52	17.29	0.02	0.88	2.89
Cr ₂ O ₃	5.81	6.76	0.03	0.43	2.96
FeO	5.86	8.47	7.29	5.14	2.51
MnO	0.24	0.26	0.09	0.09	0.08
MgO	22.79	19.52	51.37	34.84	16.04
NiO	0.00	0.03	0.38	0.12	0.05
CaO	4.12	5.89	0.05	0.70	17.70
Na ₂ O	0.01	0.08	0.02	0.01	2.75
K ₂ O	0.00	0.00	0.00	0.16	0.02
P ₂ O ₅	0.02	0.01	0.01	0.01	0.02
Total	100.80	100.22	100.11	99.64	100.12
Cations					
based on:	12 O	12 O	4 O	3 O	6 O
Si	2.999	2.996	0.991	0.986	1.971
Ti	0.001	0.041	0.000	0.001	0.012
Al	1.626	1.484	0.000	0.018	0.123
Cr	0.325	0.389	0.001	0.006	0.084
Fe	0.346	0.515	0.148	0.074	0.076
Mn	0.015	0.016	0.002	0.001	0.003
Mg	2.398	2.117	1.857	0.896	0.862
Ni	0.000	0.001	0.007	0.002	0.001
Ca	0.313	0.459	0.001	0.013	0.684
Na	0.002	0.012	0.001	0.006	0.192
K	0.000	0.000	0.000	0.000	0.001
P	0.001	0.001	0.000	0.000	0.001
Sum	8.024	8.032	3.009	2.003	4.009