**Data for electronic repository**

Appendix 1. Standards and detection limits (ppm) of electron microprobe analyses of garnets.

|  |  |  |
| --- | --- | --- |
| **element** | **standard** | **detection limit of oxide (ppm)** |
| Na | Jadeite | 269 |
| K | Potassium Bromide | 240 |
| Ca | Wollastonite | 246 |
| Sc | Scandium Phosphate | 146 |
| V | Vanadite | 196 |
| Cr | Chromium Oxide | 222 |
| Zr | Zircon | 444 |
| La | Lanthanum Glass | 331 |
| Ce | Cerium Glass | 415 |
| Pr | Praesodymium Glass | 680 |
| Nd | Neodymium Glass | 362 |
| Sm | Samarium Glass | 607 |
| Gd | Gadolinium Glass | 741 |
| Dy | Dysprosium Glass | 673 |
| Er | Erbium Glass | 520 |
| Yb | Ytterbium Glass | 536 |
| Si | Fayalite | 133 |
| Al | Corundum | 135 |
| Mg | Forsterite | 114 |
| Y | Yttrium Glass | 282 |
| Ti | Manganese Titanium Oxide | 235 |
| Mn | Manganese Titanium Oxide | 470 |
| Fe | Haematite | 481 |

Appendix 2. Representative compositions of garnets determined by EPMA.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Kleivmyr, Froland** | | | | | | | | | | | | |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.04 | 35.86 | 35.76 | 35.81 | 35.76 | 35.83 | 35.84 | 36.03 | 35.94 | 35.89 | 36.01 | 36.02 | 36.06 |
| TiO2 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 | <0.02 | 0.02 | 0.02 | 0.04 | <0.02 | <0.02 | <0.02 | <0.02 |
| Al2O3 | 20.42 | 20.48 | 20.38 | 20.47 | 20.42 | 20.43 | 20.49 | 20.47 | 20.55 | 20.55 | 20.46 | 20.51 | 20.54 |
| Na2O | 0.09 | 0.08 | 0.07 | 0.09 | 0.08 | 0.05 | 0.06 | 0.06 | 0.05 | 0.06 | 0.05 | 0.06 | 0.05 |
| CaO | 1.36 | 1.35 | 1.37 | 1.40 | 1.42 | 1.44 | 1.49 | 1.55 | 1.60 | 1.57 | 1.62 | 1.60 | 1.64 |
| FeO | 28.05 | 28.05 | 27.87 | 28.04 | 27.94 | 27.89 | 27.97 | 27.98 | 27.99 | 27.73 | 28.02 | 28.15 | 27.84 |
| MnO | 12.38 | 12.38 | 12.33 | 12.35 | 12.41 | 12.40 | 12.22 | 12.20 | 12.50 | 12.42 | 12.35 | 12.55 | 12.52 |
| MgO | 0.53 | 0.54 | 0.52 | 0.53 | 0.54 | 0.51 | 0.51 | 0.51 | 0.51 | 0.53 | 0.50 | 0.51 | 0.51 |
| Sc2O3 | 0.02 | 0.03 | 0.03 | 0.03 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.05 | 0.04 | 0.04 |
| Y2O3 | 1.35 | 1.40 | 1.40 | 1.31 | 1.24 | 1.17 | 1.13 | 0.99 | 1.03 | 1.17 | 0.86 | 0.79 | 0.76 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | 0.30 | 0.31 | 0.25 | 0.30 | 0.30 | 0.25 | 0.26 | 0.24 | 0.24 | 0.25 | 0.25 | 0.20 | 0.19 |
| Yb2O3 | 0.40 | 0.42 | 0.44 | 0.39 | 0.38 | 0.30 | 0.28 | 0.25 | 0.23 | 0.32 | 0.21 | 0.19 | 0.21 |
| total | 101.04 | 100.99 | 100.51 | 100.81 | 100.63 | 100.40 | 100.38 | 100.41 | 100.79 | 100.62 | 100.47 | 100.71 | 100.45 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.965 | 2.953 | 2.959 | 2.952 | 2.952 | 2.961 | 2.960 | 2.971 | 2.953 | 2.958 | 2.967 | 2.958 | 2.968 |
| IVAl | 0.035 | 0.047 | 0.041 | 0.048 | 0.048 | 0.039 | 0.040 | 0.029 | 0.047 | 0.042 | 0.033 | 0.042 | 0.032 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.945 | 1.941 | 1.946 | 1.941 | 1.939 | 1.951 | 1.955 | 1.961 | 1.944 | 1.954 | 1.954 | 1.943 | 1.960 |
| Ti | 0.002 | 0.001 | 0.001 | 0.001 | 0.002 | 0.000 | 0.001 | 0.001 | 0.002 | 0.001 | 0.000 | 0.001 | 0.000 |
| Sc | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.004 | 0.003 | 0.003 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 |
| V | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Fe3+ | 0.039 | 0.052 | 0.041 | 0.060 | 0.060 | 0.041 | 0.039 | 0.028 | 0.056 | 0.043 | 0.046 | 0.070 | 0.044 |
| Fe2+ | 0.012 | 0.003 | 0.010 | 0.000 | 0.000 | 0.005 | 0.002 | 0.007 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| total Y | 2.000 | 2.000 | 2.000 | 2.004 | 2.004 | 2.000 | 2.000 | 2.000 | 2.006 | 2.000 | 2.003 | 2.016 | 2.007 |
| Fe2+ | 1.879 | 1.877 | 1.878 | 1.873 | 1.869 | 1.882 | 1.891 | 1.895 | 1.867 | 1.868 | 1.885 | 1.863 | 1.872 |
| Mn2+ | 0.863 | 0.864 | 0.864 | 0.862 | 0.868 | 0.868 | 0.855 | 0.852 | 0.870 | 0.867 | 0.862 | 0.873 | 0.873 |
| Mg | 0.065 | 0.066 | 0.064 | 0.065 | 0.066 | 0.063 | 0.063 | 0.063 | 0.062 | 0.065 | 0.061 | 0.062 | 0.063 |
| Ca | 0.120 | 0.119 | 0.121 | 0.124 | 0.126 | 0.128 | 0.132 | 0.137 | 0.141 | 0.139 | 0.143 | 0.141 | 0.145 |
| Na | 0.014 | 0.013 | 0.011 | 0.014 | 0.013 | 0.008 | 0.010 | 0.010 | 0.008 | 0.010 | 0.008 | 0.010 | 0.008 |
| Y | 0.059 | 0.061 | 0.062 | 0.057 | 0.054 | 0.051 | 0.050 | 0.043 | 0.045 | 0.051 | 0.038 | 0.035 | 0.033 |
| total X | 3.000 | 3.000 | 3.000 | 2.996 | 2.996 | 3.000 | 3.000 | 3.000 | 2.994 | 3.000 | 2.997 | 2.984 | 2.993 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 1.2 | 1.6 | 1.4 | 1.6 | 1.6 | 1.3 | 1.3 | 1.0 | 1.5 | 1.4 | 1.1 | 1.2 | 1.1 |
| schorlomite-Al | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| morimotoite | 0.2 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sc garnet | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 |
| spessartine | 28.8 | 28.8 | 28.8 | 28.7 | 28.9 | 28.9 | 28.5 | 28.4 | 29.0 | 28.9 | 28.7 | 29.1 | 29.1 |
| pyrope | 2.2 | 2.2 | 2.1 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.1 | 2.1 | 2.1 |
| almandine | 62.6 | 62.6 | 62.6 | 62.4 | 62.3 | 62.7 | 63.0 | 63.2 | 62.3 | 62.3 | 62.8 | 62.1 | 62.4 |
| grossular | 2.5 | 2.0 | 2.4 | 2.1 | 1.9 | 2.5 | 2.8 | 3.4 | 2.4 | 2.9 | 3.0 | 2.7 | 3.4 |
| andradite | 1.2 | 1.8 | 1.4 | 1.9 | 2.1 | 1.6 | 1.3 | 0.9 | 2.1 | 1.5 | 1.6 | 1.8 | 1.3 |
| skiagite | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Kleivmyr, Froland** | | | | | | | | | | | |
|  | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | |
| SiO2 | 36.1 | 36.12 | 36.13 | 36.15 | 36.16 | 36.19 | 36.2 | 36.4 | 36.48 | 36.4 | 36.46 | 36.44 |
| TiO2 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.02 | <0.02 | <0.02 | 0.02 | <0.02 |
| Al2O3 | 20.55 | 20.58 | 20.55 | 20.63 | 20.64 | 20.69 | 20.62 | 20.50 | 20.45 | 20.38 | 20.50 | 20.62 |
| Na2O | 0.06 | 0.05 | 0.05 | 0.04 | 0.06 | 0.05 | 0.05 | <0.03 | <0.03 | 0.03 | <0.03 | <0.03 |
| CaO | 1.67 | 1.66 | 1.67 | 1.67 | 1.69 | 1.78 | 1.81 | 2.09 | 2.25 | 2.15 | 2.08 | 2.01 |
| FeO | 28.02 | 27.85 | 27.87 | 27.91 | 28.05 | 28.02 | 27.83 | 28.18 | 28.00 | 28.23 | 28.11 | 27.86 |
| MnO | 12.26 | 12.43 | 12.37 | 12.47 | 12.43 | 12.44 | 12.40 | 12.39 | 12.47 | 12.44 | 12.40 | 12.88 |
| MgO | 0.50 | 0.50 | 0.50 | 0.51 | 0.49 | 0.49 | 0.51 | 0.50 | 0.49 | 0.50 | 0.48 | 0.40 |
| Sc2O3 | 0.04 | 0.04 | 0.04 | 0.03 | 0.03 | 0.03 | 0.04 | 0.01 | 0.01 | 0.03 | <0.01 | 0.01 |
| Y2O3 | 0.77 | 0.75 | 0.78 | 0.74 | 0.72 | 0.65 | 0.65 | 0.33 | 0.24 | 0.21 | 0.20 | 0.15 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | 0.22 | 0.22 | 0.21 | 0.20 | 0.19 | 0.22 | 0.21 | 0.15 | 0.16 | 0.11 | 0.12 | 0.11 |
| Yb2O3 | 0.15 | 0.19 | 0.18 | 0.22 | 0.14 | 0.13 | 0.17 | 0.10 | 0.07 | 0.07 | 0.09 | 0.05 |
| total | 100.43 | 100.48 | 100.44 | 100.66 | 100.69 | 100.78 | 100.58 | 100.77 | 100.74 | 100.64 | 100.57 | 100.65 |
| **cation proportions (12 O)** | | | | | | | | | | | | |
| Si | 2.970 | 2.971 | 2.973 | 2.969 | 2.965 | 2.965 | 2.971 | 2.976 | 2.982 | 2.977 | 2.984 | 2.981 |
| IVAl | 0.030 | 0.029 | 0.027 | 0.031 | 0.035 | 0.035 | 0.029 | 0.024 | 0.018 | 0.023 | 0.016 | 0.019 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.963 | 1.966 | 1.966 | 1.965 | 1.960 | 1.963 | 1.966 | 1.952 | 1.952 | 1.941 | 1.961 | 1.968 |
| Ti | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.000 |
| Sc | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.001 | 0.001 | 0.002 | 0.000 | 0.001 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 |
| V | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 |
| Fe3+ | 0.040 | 0.034 | 0.031 | 0.037 | 0.048 | 0.050 | 0.038 | 0.058 | 0.055 | 0.074 | 0.046 | 0.046 |
| Fe2+ | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| total Y | 2.006 | 2.003 | 2.001 | 2.005 | 2.011 | 2.015 | 2.008 | 2.011 | 2.008 | 2.018 | 2.009 | 2.015 |
| Fe2+ | 1.888 | 1.882 | 1.887 | 1.880 | 1.876 | 1.870 | 1.872 | 1.869 | 1.859 | 1.857 | 1.878 | 1.860 |
| Mn2+ | 0.854 | 0.866 | 0.862 | 0.867 | 0.863 | 0.863 | 0.862 | 0.858 | 0.863 | 0.862 | 0.860 | 0.892 |
| Mg | 0.061 | 0.061 | 0.061 | 0.062 | 0.060 | 0.060 | 0.062 | 0.061 | 0.060 | 0.061 | 0.059 | 0.049 |
| Ca | 0.147 | 0.146 | 0.147 | 0.147 | 0.148 | 0.156 | 0.159 | 0.183 | 0.197 | 0.188 | 0.182 | 0.176 |
| Na | 0.010 | 0.008 | 0.008 | 0.006 | 0.010 | 0.008 | 0.008 | 0.003 | 0.002 | 0.005 | 0.003 | 0.002 |
| Y | 0.034 | 0.033 | 0.034 | 0.032 | 0.031 | 0.028 | 0.028 | 0.014 | 0.010 | 0.009 | 0.009 | 0.007 |
| total X | 2.994 | 2.997 | 2.999 | 2.995 | 2.989 | 2.985 | 2.992 | 2.989 | 2.992 | 2.982 | 2.991 | 2.985 |
| **end members (mol%)b** | | | | | | | | | | | | |
| yttrogarnet | 1.0 | 1.0 | 0.9 | 1.1 | 1.1 | 0.9 | 1.0 | 0.5 | 0.4 | 0.3 | 0.3 | 0.2 |
| schorlomite-Al | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| morimotoite | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sc garnet | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| spessartine | 28.5 | 28.9 | 28.7 | 28.9 | 28.8 | 28.8 | 28.7 | 28.6 | 28.8 | 28.7 | 28.7 | 29.7 |
| pyrope | 2.0 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 1.6 |
| almandine | 62.9 | 62.7 | 62.9 | 62.7 | 62.5 | 62.3 | 62.4 | 62.3 | 62.0 | 61.9 | 62.6 | 62.0 |
| grossular | 3.7 | 3.7 | 3.7 | 3.6 | 3.7 | 4.1 | 4.1 | 4.2 | 4.5 | 4.1 | 4.6 | 4.8 |
| andradite | 1.1 | 1.0 | 1.0 | 1.2 | 1.1 | 1.0 | 1.0 | 1.8 | 2.0 | 2.0 | 1.4 | 1.0 |
| skiagite | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Bjortjørn, Froland** | | | | | | | | | | | | |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.05 | 35.96 | 35.90 | 35.96 | 35.96 | 35.97 | 35.90 | 35.85 | 35.95 | 35.92 | 35.94 | 35.84 | 35.86 |
| TiO2 | 0.08 | 0.10 | 0.12 | 0.11 | 0.13 | 0.13 | 0.13 | 0.10 | 0.11 | 0.11 | 0.12 | 0.12 | 0.12 |
| Al2O3 | 19.77 | 19.78 | 19.80 | 19.73 | 19.82 | 19.76 | 19.73 | 19.71 | 19.77 | 19.72 | 19.71 | 19.75 | 19.76 |
| Na2O | 0.08 | 0.09 | 0.10 | 0.09 | 0.07 | 0.10 | 0.06 | 0.11 | 0.10 | 0.09 | 0.10 | 0.11 | 0.10 |
| CaO | 2.57 | 2.64 | 2.73 | 2.81 | 2.80 | 2.82 | 2.79 | 2.83 | 2.81 | 2.83 | 2.79 | 2.88 | 2.79 |
| FeO | 17.97 | 17.96 | 17.90 | 18.05 | 17.74 | 17.96 | 17.95 | 17.78 | 17.88 | 17.83 | 17.59 | 17.65 | 17.61 |
| MnO | 20.89 | 20.82 | 20.56 | 20.61 | 20.67 | 20.75 | 20.69 | 20.69 | 20.78 | 20.48 | 20.64 | 20.71 | 20.70 |
| MgO | 0.93 | 0.92 | 0.90 | 0.90 | 0.89 | 0.90 | 0.90 | 0.92 | 0.92 | 0.90 | 0.90 | 0.88 | 0.91 |
| Sc2O3 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Y2O3 | 1.82 | 1.81 | 1.80 | 1.75 | 1.74 | 1.73 | 1.74 | 1.72 | 1.76 | 1.72 | 1.72 | 1.69 | 1.74 |
| Dy2O3 | 0.11 | 0.14 | 0.11 | 0.08 | 0.10 | 0.09 | 0.09 | 0.10 | 0.08 | 0.16 | 0.10 | 0.13 | 0.12 |
| Er2O3 | 0.19 | 0.14 | 0.19 | 0.16 | 0.16 | 0.18 | 0.15 | 0.22 | 0.19 | 0.15 | 0.17 | 0.17 | 0.13 |
| Yb2O3 | 0.17 | 0.13 | 0.16 | 0.16 | 0.12 | 0.15 | 0.18 | 0.15 | 0.13 | 0.15 | 0.18 | 0.15 | 0.16 |
| total | 100.64 | 100.50 | 100.28 | 100.42 | 100.21 | 100.55 | 100.32 | 100.19 | 100.49 | 100.07 | 99.97 | 100.09 | 100.01 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.961 | 2.955 | 2.957 | 2.956 | 2.961 | 2.954 | 2.956 | 2.954 | 2.953 | 2.964 | 2.967 | 2.955 | 2.958 |
| IVAl | 0.039 | 0.045 | 0.043 | 0.044 | 0.039 | 0.046 | 0.044 | 0.046 | 0.047 | 0.036 | 0.033 | 0.045 | 0.042 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.875 | 1.871 | 1.879 | 1.868 | 1.885 | 1.866 | 1.871 | 1.868 | 1.866 | 1.881 | 1.885 | 1.875 | 1.878 |
| Ti | 0.005 | 0.006 | 0.007 | 0.007 | 0.008 | 0.008 | 0.008 | 0.006 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 |
| Sc | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 |
| V | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Fe3+ | 0.087 | 0.096 | 0.086 | 0.100 | 0.072 | 0.105 | 0.091 | 0.107 | 0.106 | 0.081 | 0.073 | 0.099 | 0.085 |
| Fe2+ | 0.033 | 0.026 | 0.027 | 0.025 | 0.035 | 0.021 | 0.031 | 0.018 | 0.021 | 0.031 | 0.034 | 0.019 | 0.027 |
| total Y | 2.000 | 2.000 | 1.999 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 1.999 |
| Fe2+ | 1.114 | 1.112 | 1.120 | 1.116 | 1.115 | 1.107 | 1.115 | 1.100 | 1.102 | 1.118 | 1.107 | 1.099 | 1.103 |
| Mn2+ | 1.453 | 1.449 | 1.434 | 1.435 | 1.442 | 1.443 | 1.443 | 1.444 | 1.446 | 1.431 | 1.443 | 1.446 | 1.446 |
| Mg | 0.114 | 0.113 | 0.110 | 0.110 | 0.109 | 0.110 | 0.110 | 0.113 | 0.113 | 0.111 | 0.111 | 0.108 | 0.112 |
| Ca | 0.226 | 0.232 | 0.241 | 0.248 | 0.247 | 0.248 | 0.246 | 0.250 | 0.247 | 0.250 | 0.247 | 0.254 | 0.247 |
| Na | 0.013 | 0.014 | 0.016 | 0.014 | 0.011 | 0.016 | 0.010 | 0.018 | 0.016 | 0.014 | 0.016 | 0.018 | 0.016 |
| Y | 0.080 | 0.079 | 0.079 | 0.077 | 0.076 | 0.076 | 0.076 | 0.075 | 0.077 | 0.076 | 0.076 | 0.074 | 0.076 |
| total X | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 1.3 | 1.5 | 1.4 | 1.5 | 1.3 | 1.6 | 1.5 | 1.5 | 1.6 | 1.2 | 1.1 | 1.5 | 1.4 |
| schorlomite-Al | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| morimotoite | 0.5 | 0.6 | 0.7 | 0.7 | 0.8 | 0.8 | 0.8 | 0.6 | 0.7 | 0.7 | 0.8 | 0.7 | 0.7 |
| Sc garnet | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| spessartine | 48.4 | 48.3 | 47.8 | 47.8 | 48.1 | 48.1 | 48.1 | 48.1 | 48.2 | 47.7 | 48.1 | 48.2 | 48.2 |
| pyrope | 3.8 | 3.8 | 3.7 | 3.7 | 3.6 | 3.7 | 3.7 | 3.8 | 3.8 | 3.7 | 3.7 | 3.6 | 3.7 |
| almandine | 37.1 | 37.1 | 37.3 | 37.2 | 37.2 | 36.9 | 37.2 | 36.7 | 36.7 | 37.3 | 36.9 | 36.6 | 36.8 |
| grossular | 3.1 | 3.0 | 3.7 | 3.2 | 4.1 | 3.1 | 3.1 | 3.3 | 3.1 | 4.2 | 4.5 | 3.8 | 3.8 |
| andradite | 4.0 | 4.2 | 3.6 | 4.3 | 3.4 | 4.4 | 4.3 | 4.4 | 4.5 | 3.5 | 3.0 | 4.0 | 3.6 |
| skiagite | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Bjortjørn, Froland** | | | | | | | | | | |
|  | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | |
| SiO2 | 35.87 | 35.89 | 36.56 | 35.78 | 35.93 | 35.85 | 35.98 | 35.80 | 35.84 | 35.81 | 36.16 |
| TiO2 | 0.10 | 0.09 | 0.11 | 0.11 | 0.09 | 0.10 | 0.09 | 0.14 | 0.08 | 0.08 | 0.02 |
| Al2O3 | 19.78 | 19.83 | 20.18 | 19.68 | 19.83 | 19.94 | 19.95 | 19.85 | 19.77 | 19.82 | 19.91 |
| Na2O | 0.08 | 0.10 | 0.08 | 0.09 | 0.11 | 0.11 | 0.11 | 0.07 | 0.09 | 0.05 | 0.06 |
| CaO | 2.82 | 2.83 | 2.79 | 2.77 | 2.70 | 2.57 | 2.54 | 2.48 | 2.27 | 1.86 | 1.46 |
| FeO | 17.77 | 17.79 | 17.66 | 17.70 | 17.69 | 17.56 | 17.78 | 17.60 | 17.60 | 18.00 | 18.33 |
| MnO | 20.79 | 20.95 | 20.68 | 20.77 | 20.77 | 20.97 | 21.02 | 20.85 | 21.06 | 21.51 | 21.50 |
| MgO | 0.91 | 0.91 | 0.95 | 0.91 | 0.92 | 0.90 | 0.90 | 0.91 | 0.92 | 0.95 | 0.93 |
| Sc2O3 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Y2O3 | 1.72 | 1.73 | 1.79 | 1.79 | 1.70 | 1.59 | 1.57 | 1.79 | 1.77 | 1.62 | 1.07 |
| Dy2O3 | 0.11 | 0.09 | 0.07 | 0.10 | 0.09 | 0.07 | 0.17 | 0.15 | 0.13 | 0.08 | 0.03 |
| Er2O3 | 0.14 | 0.19 | 0.18 | 0.15 | 0.13 | 0.16 | 0.17 | 0.16 | 0.14 | 0.18 | 0.14 |
| Yb2O3 | 0.14 | 0.18 | 0.14 | 0.13 | 0.14 | 0.13 | 0.11 | 0.16 | 0.12 | 0.13 | 0.10 |
| total | 100.24 | 100.59 | 101.20 | 99.99 | 100.11 | 99.96 | 100.40 | 99.97 | 99.80 | 100.10 | 99.72 |
| **cation proportions (12 O)** | | | | | | | | | | | |
| Si | 2.953 | 2.946 | 2.978 | 2.954 | 2.959 | 2.955 | 2.957 | 2.959 | 2.966 | 2.957 | 2.988 |
| IVAl | 0.047 | 0.054 | 0.022 | 0.046 | 0.041 | 0.045 | 0.043 | 0.041 | 0.034 | 0.043 | 0.012 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.872 | 1.865 | 1.915 | 1.868 | 1.884 | 1.892 | 1.889 | 1.892 | 1.894 | 1.886 | 1.927 |
| Ti | 0.006 | 0.006 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.009 | 0.005 | 0.005 | 0.001 |
| Sc | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 |
| V | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 |
| Fe3+ | 0.100 | 0.118 | 0.029 | 0.099 | 0.089 | 0.085 | 0.092 | 0.062 | 0.067 | 0.083 | 0.045 |
| Fe2+ | 0.022 | 0.011 | 0.049 | 0.025 | 0.022 | 0.015 | 0.014 | 0.036 | 0.034 | 0.025 | 0.027 |
| total Y | 1.999 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 |
| Fe2+ | 1.102 | 1.092 | 1.124 | 1.098 | 1.108 | 1.111 | 1.117 | 1.119 | 1.117 | 1.135 | 1.195 |
| Mn2+ | 1.450 | 1.457 | 1.427 | 1.452 | 1.449 | 1.464 | 1.463 | 1.459 | 1.476 | 1.504 | 1.505 |
| Mg | 0.112 | 0.111 | 0.115 | 0.112 | 0.113 | 0.111 | 0.110 | 0.112 | 0.113 | 0.117 | 0.115 |
| Ca | 0.249 | 0.249 | 0.243 | 0.245 | 0.238 | 0.227 | 0.224 | 0.220 | 0.201 | 0.165 | 0.129 |
| Na | 0.013 | 0.016 | 0.013 | 0.014 | 0.018 | 0.018 | 0.018 | 0.011 | 0.014 | 0.008 | 0.010 |
| Y | 0.075 | 0.076 | 0.078 | 0.079 | 0.075 | 0.070 | 0.069 | 0.079 | 0.078 | 0.071 | 0.047 |
| total X | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| **end members (mol%)b** | | | | | | | | | | | |
| yttrogarnet | 1.6 | 1.8 | 0.7 | 1.5 | 1.4 | 1.5 | 1.4 | 1.4 | 1.1 | 1.4 | 0.4 |
| schorlomite-Al | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| morimotoite | 0.6 | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.9 | 0.5 | 0.5 | 0.1 |
| Sc garnet | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| spessartine | 48.3 | 48.6 | 47.6 | 48.4 | 48.3 | 48.8 | 48.8 | 48.7 | 49.2 | 50.2 | 50.2 |
| pyrope | 3.7 | 3.7 | 3.8 | 3.7 | 3.8 | 3.7 | 3.7 | 3.7 | 3.8 | 3.9 | 3.8 |
| almandine | 36.7 | 36.4 | 37.5 | 36.6 | 36.9 | 37.0 | 37.2 | 37.3 | 37.2 | 37.8 | 39.8 |
| grossular | 3.2 | 2.8 | 6.1 | 3.2 | 3.8 | 3.6 | 3.4 | 3.5 | 3.3 | 1.0 | 2.1 |
| andradite | 4.4 | 5.0 | 1.3 | 4.3 | 3.5 | 3.3 | 3.6 | 2.9 | 2.9 | 4.0 | 2.1 |
| skiagite | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Steli, Evje-Iveland** | | | | | | | | | | | | |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.59 | 36.29 | 36.47 | 36.06 | 36.16 | 35.51 | 35.74 | 35.78 | 35.68 | 35.49 | 35.47 | 35.13 | 35.26 |
| TiO2 | 0.09 | 0.05 | 0.09 | 0.07 | 0.08 | 0.04 | 0.06 | 0.04 | 0.08 | 0.06 | 0.07 | 0.05 | 0.07 |
| Al2O3 | 20.53 | 20.49 | 20.51 | 20.22 | 20.34 | 20.35 | 20.17 | 20.17 | 20.11 | 20.03 | 20.03 | 20.11 | 20.07 |
| Na2O | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 |
| CaO | 0.48 | 0.52 | 0.49 | 0.57 | 0.58 | 0.56 | 0.59 | 0.58 | 0.61 | 0.60 | 0.59 | 0.58 | 0.56 |
| FeO | 28.76 | 28.57 | 28.00 | 27.17 | 26.82 | 27.37 | 26.46 | 26.29 | 26.13 | 25.98 | 26.35 | 26.36 | 26.71 |
| MnO | 13.90 | 14.07 | 14.39 | 15.19 | 15.56 | 14.98 | 15.55 | 15.72 | 15.57 | 15.64 | 15.47 | 15.19 | 14.81 |
| MgO | 0.66 | 0.61 | 0.63 | 0.60 | 0.60 | 0.61 | 0.58 | 0.59 | 0.58 | 0.59 | 0.59 | 0.60 | 0.61 |
| Sc2O3 | 0.02 | <0.01 | 0.02 | 0.02 | <0.01 | 0.02 | 0.03 | 0.02 | 0.02 | <0.01 | 0.02 | 0.02 | <0.01 |
| Y2O3 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | 0.11 | 0.11 | 0.09 | 0.12 | 0.09 | 0.10 | 0.07 | 0.08 | 0.09 | 0.07 | 0.10 | 0.08 | 0.09 |
| Yb2O3 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| total | 101.32 | 100.90 | 100.87 | 100.20 | 100.42 | 99.72 | 99.43 | 99.45 | 99.05 | 98.65 | 98.87 | 98.30 | 98.37 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.981 | 2.970 | 2.983 | 2.972 | 2.973 | 2.940 | 2.967 | 2.969 | 2.973 | 2.969 | 2.962 | 2.949 | 2.958 |
| IVAl | 0.019 | 0.030 | 0.017 | 0.028 | 0.027 | 0.060 | 0.033 | 0.031 | 0.027 | 0.031 | 0.038 | 0.051 | 0.042 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.952 | 1.946 | 1.961 | 1.937 | 1.943 | 1.926 | 1.940 | 1.942 | 1.948 | 1.943 | 1.933 | 1.938 | 1.943 |
| Ti | 0.006 | 0.003 | 0.006 | 0.004 | 0.005 | 0.002 | 0.004 | 0.002 | 0.005 | 0.004 | 0.004 | 0.003 | 0.004 |
| Sc | 0.001 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.002 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.000 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| V | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Fe3+ | 0.054 | 0.078 | 0.043 | 0.081 | 0.074 | 0.128 | 0.084 | 0.082 | 0.068 | 0.080 | 0.094 | 0.106 | 0.090 |
| Fe2+ | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| total Y | 2.013 | 2.027 | 2.011 | 2.023 | 2.023 | 2.058 | 2.030 | 2.028 | 2.022 | 2.028 | 2.034 | 2.048 | 2.037 |
| Fe2+ | 1.905 | 1.878 | 1.872 | 1.792 | 1.769 | 1.767 | 1.753 | 1.742 | 1.753 | 1.737 | 1.746 | 1.745 | 1.784 |
| Mn2+ | 0.959 | 0.975 | 0.997 | 1.061 | 1.083 | 1.050 | 1.093 | 1.105 | 1.099 | 1.108 | 1.094 | 1.080 | 1.052 |
| Mg | 0.080 | 0.074 | 0.077 | 0.074 | 0.074 | 0.075 | 0.072 | 0.073 | 0.072 | 0.074 | 0.073 | 0.075 | 0.076 |
| Ca | 0.042 | 0.046 | 0.043 | 0.050 | 0.051 | 0.050 | 0.052 | 0.052 | 0.054 | 0.054 | 0.053 | 0.052 | 0.050 |
| Na | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Y | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| total X | 2.987 | 2.973 | 2.989 | 2.977 | 2.977 | 2.942 | 2.970 | 2.972 | 2.978 | 2.972 | 2.966 | 2.952 | 2.963 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| schorlomite-Al | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.1 | 0.2 | 0.1 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 |
| morimotoite | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sc garnet | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 |
| spessartine | 32.0 | 32.5 | 33.2 | 35.4 | 36.1 | 35.0 | 36.4 | 36.8 | 36.6 | 36.9 | 36.5 | 36.0 | 35.1 |
| pyrope | 2.7 | 2.5 | 2.6 | 2.5 | 2.5 | 2.5 | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 |
| almandine | 63.0 | 62.3 | 62.2 | 59.0 | 58.6 | 58.8 | 58.2 | 57.8 | 58.4 | 57.8 | 57.8 | 58.2 | 59.5 |
| grossular | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.1 |
| andradite | 1.1 | 1.4 | 1.1 | 1.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.6 | 1.5 | 1.3 | 1.4 |
| skiagite | 0.5 | 0.3 | 0.2 | 0.7 | 0.4 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.5 | 0.0 | 0.0 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Steli, Evje-Iveland** | | | | | | | | | | | | |
|  | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 35.27 | 35.25 | 35.41 | 35.34 | 35.37 | 35.39 | 35.33 | 35.44 | 35.60 | 35.26 | 35.46 | 35.68 | 35.64 |
| TiO2 | 0.10 | 0.13 | 0.09 | 0.11 | 0.08 | 0.07 | 0.06 | 0.07 | 0.06 | 0.05 | 0.04 | 0.04 | 0.06 |
| Al2O3 | 20.15 | 20.06 | 20.26 | 20.09 | 20.06 | 20.04 | 20.07 | 20.07 | 20.33 | 20.16 | 20.19 | 20.31 | 20.28 |
| Na2O | <0.03 | <0.03 | <0.03 | 0.04 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.03 | <0.03 | 0.04 | <0.03 |
| CaO | 0.58 | 0.52 | 0.48 | 0.57 | 0.54 | 0.54 | 0.50 | 0.48 | 0.47 | 0.46 | 0.39 | 0.41 | 0.40 |
| FeO | 27.06 | 27.12 | 26.79 | 26.69 | 26.49 | 26.39 | 26.26 | 26.25 | 26.57 | 26.32 | 26.50 | 26.86 | 27.00 |
| MnO | 14.67 | 14.40 | 14.77 | 14.79 | 15.05 | 15.23 | 15.28 | 15.45 | 15.32 | 15.27 | 14.99 | 14.91 | 14.79 |
| MgO | 0.62 | 0.63 | 0.59 | 0.58 | 0.58 | 0.54 | 0.56 | 0.55 | 0.56 | 0.55 | 0.55 | 0.55 | 0.55 |
| Sc2O3 | <0.01 | <0.01 | <0.01 | <0.01 | 0.02 | 0.02 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Y2O3 | <0.03 | <0.03 | <0.03 | <0.03 | 0.04 | <0.03 | <0.03 | 0.07 | <0.03 | 0.12 | 0.14 | 0.27 | 0.25 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | 0.14 | 0.07 | 0.08 | 0.10 | 0.10 | 0.12 | 0.10 | 0.10 | 0.10 | 0.12 | 0.14 | 0.09 | 0.07 |
| Yb2O3 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| total | 98.78 | 98.37 | 98.66 | 98.47 | 98.48 | 98.52 | 98.35 | 98.64 | 99.20 | 98.47 | 98.56 | 99.29 | 99.20 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.948 | 2.957 | 2.961 | 2.960 | 2.964 | 2.967 | 2.966 | 2.967 | 2.962 | 2.956 | 2.972 | 2.967 | 2.968 |
| IVAl | 0.052 | 0.043 | 0.039 | 0.040 | 0.036 | 0.033 | 0.034 | 0.033 | 0.038 | 0.044 | 0.028 | 0.033 | 0.032 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.933 | 1.940 | 1.958 | 1.944 | 1.945 | 1.947 | 1.951 | 1.947 | 1.956 | 1.947 | 1.966 | 1.957 | 1.958 |
| Ti | 0.006 | 0.008 | 0.006 | 0.007 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 0.004 |
| Sc | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| V | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Fe3+ | 0.105 | 0.086 | 0.070 | 0.088 | 0.077 | 0.076 | 0.075 | 0.074 | 0.074 | 0.090 | 0.051 | 0.066 | 0.056 |
| Fe2+ | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| total Y | 2.046 | 2.035 | 2.033 | 2.039 | 2.029 | 2.029 | 2.031 | 2.025 | 2.034 | 2.041 | 2.019 | 2.025 | 2.018 |
| Fe2+ | 1.787 | 1.817 | 1.804 | 1.781 | 1.780 | 1.774 | 1.768 | 1.764 | 1.775 | 1.755 | 1.807 | 1.801 | 1.824 |
| Mn2+ | 1.039 | 1.023 | 1.046 | 1.049 | 1.068 | 1.081 | 1.086 | 1.096 | 1.080 | 1.084 | 1.064 | 1.050 | 1.043 |
| Mg | 0.077 | 0.079 | 0.074 | 0.072 | 0.072 | 0.067 | 0.070 | 0.069 | 0.069 | 0.069 | 0.069 | 0.068 | 0.068 |
| Ca | 0.052 | 0.047 | 0.043 | 0.051 | 0.048 | 0.049 | 0.045 | 0.043 | 0.042 | 0.041 | 0.035 | 0.037 | 0.036 |
| Na | 0.000 | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.006 | 0.000 |
| Y | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.003 | 0.000 | 0.005 | 0.006 | 0.012 | 0.011 |
| total X | 2.954 | 2.965 | 2.967 | 2.961 | 2.971 | 2.971 | 2.969 | 2.975 | 2.966 | 2.959 | 2.981 | 2.975 | 2.982 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.2 | 0.2 | 0.4 | 0.4 |
| schorlomite-Al | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 |
| morimotoite | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sc garnet | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| spessartine | 34.6 | 34.1 | 34.9 | 35.0 | 35.6 | 36.1 | 36.2 | 36.5 | 36.0 | 36.1 | 35.5 | 35.0 | 34.8 |
| pyrope | 2.6 | 2.6 | 2.5 | 2.4 | 2.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| almandine | 59.5 | 60.3 | 60.1 | 59.4 | 59.2 | 59.0 | 58.9 | 58.5 | 59.2 | 58.5 | 60.2 | 60.1 | 60.5 |
| grossular | 0.0 | 0.0 | 0.4 | 0.4 | 0.0 | 0.0 | 0.1 | 0.0 | 0.3 | 0.3 | 0.1 | 0.1 | 0.0 |
| andradite | 1.4 | 1.2 | 0.7 | 0.9 | 1.2 | 1.3 | 1.2 | 1.2 | 0.9 | 1.0 | 0.9 | 1.0 | 1.0 |
| skiagite | 0.1 | 0.3 | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Steli** | | **Li gruve, Evje Iveland** | | | | | | | | | | |
|  | 27 | 28 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.38 | 36.73 | 36.02 | 35.92 | 35.92 | 35.86 | 36.03 | 36.14 | 36.14 | 36.36 | 36.14 | 36.33 | 36.23 |
| TiO2 | 0.05 | 0.04 | 0.23 | 0.08 | 0.09 | 0.08 | 0.07 | 0.09 | 0.11 | 0.40 | 0.20 | 0.20 | 0.18 |
| Al2O3 | 20.48 | 20.69 | 20.26 | 20.20 | 20.31 | 20.23 | 20.27 | 20.32 | 20.22 | 20.21 | 20.20 | 20.34 | 20.25 |
| Na2O | <0.03 | <0.03 | 0.04 | <0.03 | 0.03 | <0.03 | 0.04 | 0.04 | 0.03 | 0.04 | 0.03 | <0.03 | <0.03 |
| CaO | 0.39 | 0.39 | 0.55 | 0.53 | 0.49 | 0.54 | 0.54 | 0.52 | 0.53 | 0.56 | 0.54 | 0.56 | 0.55 |
| FeO | 27.26 | 27.96 | 21.77 | 21.71 | 21.61 | 21.78 | 21.77 | 21.83 | 21.90 | 21.97 | 21.96 | 22.20 | 22.21 |
| MnO | 14.76 | 14.36 | 19.74 | 19.81 | 19.94 | 19.84 | 19.93 | 20.15 | 20.06 | 19.98 | 20.24 | 20.03 | 20.00 |
| MgO | 0.56 | 0.58 | 0.92 | 0.89 | 0.90 | 0.90 | 0.89 | 0.88 | 0.86 | 0.85 | 0.84 | 0.81 | 0.81 |
| Sc2O3 | <0.01 | <0.01 | 0.06 | 0.06 | 0.07 | 0.08 | 0.06 | 0.09 | 0.06 | 0.06 | 0.05 | 0.04 | 0.05 |
| Y2O3 | 0.17 | 0.24 | 0.68 | 0.72 | 0.69 | 0.65 | 0.42 | 0.34 | 0.21 | 0.02 | 0.06 | 0.07 | 0.10 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | 0.12 | 0.08 | 0.07 | 0.13 | 0.11 | 0.11 | 0.09 | 0.08 | 0.07 | 0.05 | 0.09 | 0.08 | 0.14 |
| Yb2O3 | <0.05 | <0.05 | 0.07 | 0.08 | 0.06 | <0.05 | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| total | 100.33 | 101.23 | 100.48 | 100.23 | 100.29 | 100.22 | 100.23 | 100.60 | 100.31 | 100.62 | 100.47 | 100.81 | 100.67 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.994 | 2.995 | 2.957 | 2.959 | 2.955 | 2.953 | 2.961 | 2.959 | 2.967 | 2.975 | 2.963 | 2.968 | 2.967 |
| IVAl | 0.006 | 0.005 | 0.043 | 0.041 | 0.045 | 0.047 | 0.039 | 0.041 | 0.033 | 0.025 | 0.037 | 0.032 | 0.033 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.981 | 1.984 | 1.917 | 1.921 | 1.924 | 1.916 | 1.925 | 1.920 | 1.924 | 1.923 | 1.915 | 1.927 | 1.922 |
| Ti | 0.003 | 0.002 | 0.014 | 0.005 | 0.006 | 0.005 | 0.004 | 0.006 | 0.007 | 0.025 | 0.012 | 0.012 | 0.011 |
| Sc | 0.000 | 0.000 | 0.004 | 0.004 | 0.005 | 0.006 | 0.004 | 0.006 | 0.004 | 0.004 | 0.004 | 0.003 | 0.004 |
| Zr | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 |
| V | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 |
| Fe3+ | 0.011 | 0.006 | 0.069 | 0.076 | 0.078 | 0.090 | 0.088 | 0.092 | 0.086 | 0.054 | 0.096 | 0.076 | 0.083 |
| Fe2+ | 0.005 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| total Y | 2.000 | 2.000 | 2.005 | 2.006 | 2.013 | 2.017 | 2.022 | 2.026 | 2.022 | 2.006 | 2.027 | 2.019 | 2.020 |
| Fe2+ | 1.860 | 1.893 | 1.425 | 1.420 | 1.409 | 1.409 | 1.409 | 1.403 | 1.418 | 1.449 | 1.410 | 1.441 | 1.438 |
| Mn2+ | 1.029 | 0.992 | 1.372 | 1.382 | 1.389 | 1.384 | 1.387 | 1.398 | 1.395 | 1.385 | 1.406 | 1.386 | 1.387 |
| Mg | 0.069 | 0.071 | 0.113 | 0.109 | 0.110 | 0.110 | 0.109 | 0.107 | 0.105 | 0.104 | 0.103 | 0.099 | 0.099 |
| Ca | 0.034 | 0.034 | 0.048 | 0.047 | 0.043 | 0.048 | 0.048 | 0.046 | 0.047 | 0.049 | 0.047 | 0.049 | 0.048 |
| Na | 0.000 | 0.000 | 0.006 | 0.003 | 0.005 | 0.003 | 0.006 | 0.006 | 0.005 | 0.006 | 0.005 | 0.003 | 0.003 |
| Y | 0.007 | 0.010 | 0.030 | 0.032 | 0.030 | 0.028 | 0.018 | 0.015 | 0.009 | 0.001 | 0.003 | 0.003 | 0.004 |
| total X | 3.000 | 3.000 | 2.995 | 2.994 | 2.987 | 2.983 | 2.978 | 2.974 | 2.978 | 2.994 | 2.973 | 2.981 | 2.980 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 0.2 | 0.2 | 1.0 | 1.1 | 1.0 | 1.0 | 0.6 | 0.5 | 0.3 | 0.0 | 0.1 | 0.1 | 0.2 |
| schorlomite-Al | 0.0 | 0.0 | 0.7 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 1.2 | 0.6 | 0.6 | 0.6 |
| morimotoite | 0.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sc garnet | 0.0 | 0.0 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 |
| spessartine | 34.3 | 33.1 | 45.8 | 46.1 | 46.3 | 46.1 | 46.3 | 46.6 | 46.5 | 46.2 | 46.9 | 46.2 | 46.2 |
| pyrope | 2.3 | 2.4 | 3.8 | 3.6 | 3.7 | 3.7 | 3.6 | 3.6 | 3.5 | 3.5 | 3.4 | 3.3 | 3.3 |
| almandine | 62.0 | 63.1 | 45.3 | 45.3 | 45.2 | 45.0 | 45.8 | 45.4 | 45.9 | 46.5 | 45.4 | 46.8 | 46.4 |
| grossular | 0.3 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| andradite | 0.6 | 0.3 | 0.7 | 1.1 | 0.9 | 1.0 | 1.1 | 0.9 | 1.0 | 0.2 | 0.8 | 0.8 | 0.9 |
| skiagite | 0.0 | 0.0 | 2.2 | 2.1 | 1.8 | 2.0 | 1.2 | 1.4 | 1.4 | 1.8 | 1.6 | 1.3 | 1.5 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Li gruve, Evje-Iveland** | | | | | | | | | | | | |
|  | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.31 | 36.35 | 36.37 | 36.33 | 36.44 | 36.47 | 36.33 | 36.32 | 36.20 | 36.49 | 36.46 | 36.41 | 36.44 |
| TiO2 | 0.19 | 0.21 | 0.21 | 0.22 | 0.21 | 0.22 | 0.20 | 0.19 | 0.15 | 0.18 | 0.20 | 0.22 | 0.19 |
| Al2O3 | 20.24 | 20.25 | 20.28 | 20.18 | 20.28 | 20.36 | 20.40 | 20.29 | 20.32 | 20.33 | 20.33 | 20.26 | 20.28 |
| Na2O | 0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | <0.03 | 0.03 | 0.03 | 0.03 | <0.03 | <0.03 | <0.03 |
| CaO | 0.52 | 0.55 | 0.53 | 0.56 | 0.56 | 0.54 | 0.55 | 0.54 | 0.54 | 0.51 | 0.52 | 0.57 | 0.53 |
| FeO | 22.19 | 22.26 | 22.10 | 22.41 | 22.68 | 22.72 | 22.95 | 23.34 | 23.34 | 22.96 | 22.60 | 22.95 | 23.00 |
| MnO | 20.28 | 20.01 | 20.11 | 20.02 | 19.90 | 19.72 | 19.50 | 19.44 | 19.60 | 19.60 | 19.83 | 19.68 | 19.65 |
| MgO | 0.80 | 0.78 | 0.77 | 0.77 | 0.75 | 0.74 | 0.71 | 0.62 | 0.52 | 0.63 | 0.68 | 0.74 | 0.70 |
| Sc2O3 | 0.06 | 0.04 | 0.05 | 0.05 | 0.04 | 0.05 | 0.05 | 0.04 | 0.06 | 0.03 | 0.03 | 0.03 | 0.03 |
| Y2O3 | 0.08 | 0.08 | 0.07 | 0.09 | 0.07 | 0.08 | 0.06 | 0.08 | 0.30 | 0.07 | 0.07 | 0.08 | 0.08 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | 0.09 | 0.09 | 0.11 | 0.10 | 0.08 | 0.14 | 0.11 | 0.07 | 0.09 | 0.14 | 0.07 | 0.08 | 0.14 |
| Yb2O3 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| total | 100.91 | 100.77 | 100.75 | 100.88 | 101.16 | 101.19 | 101.01 | 101.08 | 101.27 | 101.09 | 100.94 | 101.17 | 101.19 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.965 | 2.974 | 2.976 | 2.970 | 2.970 | 2.973 | 2.966 | 2.965 | 2.955 | 2.978 | 2.978 | 2.969 | 2.972 |
| IVAl | 0.035 | 0.026 | 0.024 | 0.030 | 0.030 | 0.027 | 0.034 | 0.035 | 0.045 | 0.022 | 0.022 | 0.031 | 0.028 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.913 | 1.927 | 1.932 | 1.914 | 1.918 | 1.928 | 1.930 | 1.917 | 1.910 | 1.934 | 1.935 | 1.917 | 1.921 |
| Ti | 0.012 | 0.013 | 0.013 | 0.014 | 0.013 | 0.013 | 0.012 | 0.012 | 0.009 | 0.011 | 0.012 | 0.013 | 0.012 |
| Sc | 0.004 | 0.003 | 0.004 | 0.004 | 0.003 | 0.004 | 0.004 | 0.003 | 0.004 | 0.002 | 0.002 | 0.002 | 0.002 |
| Zr | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| V | 0.001 | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.002 |
| Fe3+ | 0.093 | 0.066 | 0.060 | 0.079 | 0.083 | 0.067 | 0.075 | 0.092 | 0.104 | 0.064 | 0.060 | 0.082 | 0.077 |
| Fe2+ | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| total Y | 2.023 | 2.009 | 2.009 | 2.013 | 2.017 | 2.014 | 2.020 | 2.024 | 2.027 | 2.012 | 2.010 | 2.014 | 2.014 |
| Fe2+ | 1.423 | 1.457 | 1.452 | 1.453 | 1.463 | 1.481 | 1.492 | 1.501 | 1.489 | 1.504 | 1.484 | 1.484 | 1.492 |
| Mn2+ | 1.403 | 1.387 | 1.394 | 1.386 | 1.374 | 1.361 | 1.349 | 1.344 | 1.355 | 1.355 | 1.372 | 1.359 | 1.357 |
| Mg | 0.097 | 0.095 | 0.094 | 0.094 | 0.091 | 0.090 | 0.086 | 0.075 | 0.063 | 0.077 | 0.083 | 0.090 | 0.085 |
| Ca | 0.045 | 0.048 | 0.046 | 0.049 | 0.049 | 0.047 | 0.048 | 0.047 | 0.047 | 0.045 | 0.046 | 0.050 | 0.046 |
| Na | 0.005 | 0.000 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.005 | 0.005 | 0.005 | 0.003 | 0.000 | 0.002 |
| Y | 0.003 | 0.003 | 0.003 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.013 | 0.003 | 0.003 | 0.003 | 0.003 |
| total X | 2.976 | 2.991 | 2.991 | 2.987 | 2.983 | 2.986 | 2.980 | 2.976 | 2.973 | 2.988 | 2.990 | 2.986 | 2.986 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 0.1 | 0.1 |
| schorlomite-Al | 0.6 | 0.7 | 0.7 | 0.7 | 0.6 | 0.7 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.7 | 0.6 |
| morimotoite | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sc garnet | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| spessartine | 46.8 | 46.2 | 46.5 | 46.2 | 45.8 | 45.4 | 45.0 | 44.8 | 45.2 | 45.2 | 45.7 | 45.3 | 45.3 |
| pyrope | 3.3 | 3.2 | 3.1 | 3.1 | 3.0 | 3.0 | 2.9 | 2.5 | 2.1 | 2.6 | 2.8 | 3.0 | 2.8 |
| almandine | 45.5 | 46.8 | 46.9 | 46.2 | 47.0 | 47.9 | 48.6 | 48.4 | 47.8 | 48.9 | 48.2 | 47.4 | 47.9 |
| grossular | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| andradite | 0.7 | 0.8 | 0.7 | 0.7 | 0.8 | 0.7 | 0.8 | 0.8 | 0.9 | 0.8 | 0.8 | 0.9 | 0.8 |
| skiagite | 1.9 | 1.7 | 1.5 | 2.2 | 1.8 | 1.5 | 1.2 | 1.6 | 1.9 | 1.2 | 1.3 | 2.1 | 1.9 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Li gruve, Evje-Iveland** | | | **Slobrekka, Evje-Iveland** | | | | | | | | | |
|  | 25 | 26 | 27 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.42 | 36.43 | 36.23 | 35.70 | 35.11 | 35.33 | 35.49 | 34.98 | 35.26 | 35.15 | 34.96 | 34.93 | 35.11 |
| TiO2 | 0.21 | 0.17 | 0.13 | 0.07 | 0.08 | 0.06 | 0.05 | 0.07 | 0.08 | 0.10 | 0.11 | 0.10 | 0.09 |
| Al2O3 | 20.27 | 20.22 | 20.23 | 20.21 | 20.04 | 20.26 | 20.27 | 20.28 | 20.30 | 20.33 | 20.30 | 20.39 | 20.31 |
| Na2O | <0.03 | 0.03 | 0.03 | 0.10 | 0.10 | 0.09 | 0.09 | 0.08 | 0.10 | 0.08 | 0.15 | 0.08 | 0.13 |
| CaO | 0.55 | 0.50 | 0.45 | 0.47 | 0.47 | 0.44 | 0.45 | 0.48 | 0.42 | 0.44 | 0.44 | 0.46 | 0.50 |
| FeO | 23.43 | 23.96 | 23.55 | 17.85 | 17.97 | 17.61 | 17.91 | 17.66 | 17.40 | 17.63 | 17.38 | 17.36 | 17.34 |
| MnO | 19.12 | 19.17 | 19.46 | 24.21 | 23.77 | 23.76 | 23.78 | 23.33 | 23.74 | 23.73 | 23.56 | 23.84 | 23.46 |
| MgO | 0.66 | 0.52 | 0.34 | 0.31 | 0.29 | 0.31 | 0.30 | 0.30 | 0.30 | 0.30 | 0.31 | 0.29 | 0.29 |
| Sc2O3 | 0.02 | 0.02 | 0.04 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Y2O3 | 0.10 | 0.06 | 0.28 | 1.65 | 1.92 | 1.95 | 1.83 | 2.45 | 2.25 | 2.30 | 2.98 | 2.69 | 2.86 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | 0.09 | <0.07 | <0.07 | <0.07 | 0.07 | 0.07 | 0.11 |
| Er2O3 | 0.09 | 0.11 | 0.08 | 0.11 | 0.19 | 0.15 | 0.12 | 0.20 | 0.18 | 0.23 | 0.23 | 0.24 | 0.18 |
| Yb2O3 | <0.05 | <0.05 | <0.05 | 0.07 | 0.13 | 0.13 | 0.16 | 0.28 | 0.26 | 0.31 | 0.29 | 0.32 | 0.26 |
| total | 101.02 | 101.31 | 100.94 | 100.83 | 100.15 | 100.17 | 100.55 | 100.19 | 100.37 | 100.68 | 100.79 | 100.78 | 100.65 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.975 | 2.971 | 2.970 | 2.943 | 2.923 | 2.936 | 2.938 | 2.918 | 2.932 | 2.919 | 2.905 | 2.903 | 2.919 |
| IVAl | 0.025 | 0.029 | 0.030 | 0.057 | 0.077 | 0.064 | 0.062 | 0.082 | 0.068 | 0.081 | 0.095 | 0.097 | 0.081 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.926 | 1.915 | 1.925 | 1.907 | 1.889 | 1.920 | 1.916 | 1.912 | 1.922 | 1.908 | 1.893 | 1.900 | 1.908 |
| Ti | 0.013 | 0.010 | 0.008 | 0.004 | 0.005 | 0.004 | 0.003 | 0.004 | 0.005 | 0.006 | 0.007 | 0.006 | 0.006 |
| Sc | 0.001 | 0.001 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| V | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 |
| Fe3+ | 0.070 | 0.093 | 0.078 | 0.085 | 0.109 | 0.063 | 0.072 | 0.063 | 0.052 | 0.070 | 0.080 | 0.078 | 0.055 |
| Fe2+ | 0.000 | 0.000 | 0.000 | 0.004 |  | 0.012 | 0.008 | 0.019 | 0.021 | 0.014 | 0.020 | 0.016 | 0.030 |
| total Y | 2.011 | 2.020 | 2.014 | 2.000 | 2.003 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 |
| Fe2+ | 1.530 | 1.541 | 1.536 | 1.142 | 1.142 | 1.149 | 1.160 | 1.150 | 1.137 | 1.140 | 1.108 | 1.113 | 1.120 |
| Mn2+ | 1.323 | 1.324 | 1.351 | 1.690 | 1.676 | 1.672 | 1.668 | 1.649 | 1.672 | 1.669 | 1.658 | 1.678 | 1.652 |
| Mg | 0.080 | 0.063 | 0.042 | 0.038 | 0.036 | 0.038 | 0.037 | 0.037 | 0.037 | 0.037 | 0.038 | 0.036 | 0.036 |
| Ca | 0.048 | 0.044 | 0.040 | 0.042 | 0.042 | 0.039 | 0.040 | 0.043 | 0.037 | 0.039 | 0.039 | 0.041 | 0.045 |
| Na | 0.003 | 0.005 | 0.005 | 0.016 | 0.016 | 0.015 | 0.014 | 0.013 | 0.016 | 0.013 | 0.024 | 0.013 | 0.021 |
| Y | 0.004 | 0.003 | 0.012 | 0.072 | 0.085 | 0.086 | 0.081 | 0.109 | 0.100 | 0.102 | 0.132 | 0.119 | 0.127 |
| total X | 2.989 | 2.980 | 2.986 | 3.000 | 2.997 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 0.1 | 0.1 | 0.4 | 1.9 | 2.6 | 2.1 | 2.1 | 2.7 | 2.3 | 2.7 | 3.2 | 3.2 | 2.7 |
| schorlomite-Al | 0.7 | 0.5 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| morimotoite | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.4 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.6 | 0.6 |
| Sc garnet | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| spessartine | 44.1 | 44.2 | 45.0 | 56.4 | 55.9 | 55.8 | 55.6 | 55.0 | 55.7 | 55.6 | 55.3 | 55.9 | 55.1 |
| pyrope | 2.7 | 2.1 | 1.4 | 1.3 | 1.2 | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.2 | 1.2 |
| almandine | 49.4 | 49.4 | 49.4 | 35.8 | 34.8 | 36.9 | 36.9 | 36.7 | 36.9 | 35.8 | 35.0 | 34.6 | 36.5 |
| grossular | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| andradite | 0.9 | 0.9 | 0.7 | 1.0 | 1.3 | 0.9 | 1.0 | 1.0 | 0.8 | 0.6 | 0.6 | 0.7 | 0.9 |
| skiagite | 1.6 | 2.0 | 1.8 | 2.2 | 3.3 | 1.4 | 1.7 | 1.6 | 1.0 | 2.2 | 2.0 | 2.5 | 0.9 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Slobrekka, Evje-Iveland** | | | | | | | | | | | | |
|  | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 35.38 | 35.30 | 35.28 | 35.50 | 35.49 | 35.48 | 35.88 | 35.84 | 35.79 | 35.41 | 35.47 | 35.25 | 35.68 |
| TiO2 | 0.12 | 0.08 | 0.09 | 0.08 | 0.11 | 0.08 | 0.04 | 0.08 | 0.06 | 0.07 | 0.12 | 0.12 | 0.10 |
| Al2O3 | 20.29 | 20.33 | 20.25 | 20.34 | 20.34 | 20.29 | 20.44 | 20.33 | 20.39 | 20.41 | 20.32 | 20.31 | 20.40 |
| Na2O | 0.10 | 0.11 | 0.13 | 0.11 | 0.10 | 0.08 | 0.09 | 0.12 | 0.08 | 0.12 | 0.12 | 0.12 | 0.08 |
| CaO | 0.45 | 0.48 | 0.46 | 0.48 | 0.47 | 0.45 | 0.47 | 0.48 | 0.50 | 0.47 | 0.48 | 0.45 | 0.47 |
| FeO | 17.49 | 17.36 | 17.41 | 17.55 | 17.70 | 17.78 | 17.88 | 17.68 | 17.57 | 17.61 | 17.38 | 17.74 | 17.70 |
| MnO | 23.83 | 23.83 | 23.82 | 23.79 | 23.64 | 23.98 | 23.97 | 24.05 | 23.99 | 23.56 | 23.81 | 23.60 | 24.23 |
| MgO | 0.29 | 0.29 | 0.28 | 0.29 | 0.30 | 0.28 | 0.27 | 0.29 | 0.28 | 0.29 | 0.29 | 0.28 | 0.27 |
| Sc2O3 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Y2O3 | 2.17 | 2.64 | 2.64 | 2.47 | 2.57 | 2.11 | 1.94 | 2.24 | 1.99 | 2.76 | 2.66 | 2.76 | 2.06 |
| Dy2O3 | 0.08 | 0.08 | <0.07 | <0.07 | <0.07 | 0.08 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | 0.08 | <0.07 |
| Er2O3 | 0.16 | 0.20 | 0.19 | 0.15 | 0.17 | 0.21 | 0.13 | 0.15 | 0.11 | 0.20 | 0.17 | 0.16 | 0.13 |
| Yb2O3 | 0.22 | 0.29 | 0.25 | 0.19 | 0.23 | 0.22 | 0.13 | 0.13 | 0.15 | 0.25 | 0.23 | 0.26 | 0.14 |
| total | 100.59 | 101.00 | 100.88 | 101.03 | 101.20 | 101.05 | 101.32 | 101.47 | 100.99 | 101.23 | 101.13 | 101.14 | 101.34 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.934 | 2.924 | 2.924 | 2.933 | 2.930 | 2.932 | 2.947 | 2.944 | 2.950 | 2.925 | 2.931 | 2.916 | 2.934 |
| IVAl | 0.066 | 0.076 | 0.076 | 0.067 | 0.070 | 0.068 | 0.053 | 0.056 | 0.050 | 0.075 | 0.069 | 0.084 | 0.066 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.918 | 1.908 | 1.902 | 1.913 | 1.910 | 1.908 | 1.926 | 1.912 | 1.931 | 1.913 | 1.910 | 1.896 | 1.911 |
| Ti | 0.007 | 0.005 | 0.006 | 0.005 | 0.007 | 0.005 | 0.002 | 0.005 | 0.004 | 0.004 | 0.007 | 0.007 | 0.006 |
| Sc | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| V | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.001 | 0.001 |
| Fe3+ | 0.053 | 0.059 | 0.067 | 0.053 | 0.049 | 0.070 | 0.049 | 0.055 | 0.036 | 0.051 | 0.046 | 0.070 | 0.065 |
| Fe2+ | 0.022 | 0.027 | 0.025 | 0.029 | 0.034 | 0.017 | 0.020 | 0.028 | 0.028 | 0.032 | 0.036 | 0.026 | 0.018 |
| total Y | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 |
| Fe2+ | 1.138 | 1.116 | 1.115 | 1.131 | 1.139 | 1.142 | 1.159 | 1.132 | 1.146 | 1.134 | 1.119 | 1.131 | 1.135 |
| Mn2+ | 1.674 | 1.672 | 1.672 | 1.665 | 1.653 | 1.678 | 1.668 | 1.673 | 1.675 | 1.649 | 1.667 | 1.654 | 1.688 |
| Mg | 0.036 | 0.036 | 0.035 | 0.036 | 0.037 | 0.034 | 0.033 | 0.036 | 0.034 | 0.036 | 0.036 | 0.035 | 0.033 |
| Ca | 0.040 | 0.043 | 0.041 | 0.042 | 0.042 | 0.040 | 0.041 | 0.042 | 0.044 | 0.042 | 0.043 | 0.040 | 0.041 |
| Na | 0.016 | 0.018 | 0.021 | 0.018 | 0.016 | 0.013 | 0.014 | 0.019 | 0.013 | 0.019 | 0.019 | 0.019 | 0.013 |
| Y | 0.096 | 0.116 | 0.116 | 0.109 | 0.113 | 0.093 | 0.085 | 0.098 | 0.087 | 0.121 | 0.117 | 0.121 | 0.090 |
| total X | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 2.2 | 2.5 | 2.5 | 2.2 | 2.3 | 2.3 | 1.8 | 1.9 | 1.7 | 2.5 | 2.3 | 2.8 | 2.2 |
| schorlomite-Al | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| morimotoite | 0.8 | 0.5 | 0.6 | 0.5 | 0.7 | 0.5 | 0.3 | 0.5 | 0.4 | 0.4 | 0.8 | 0.8 | 0.6 |
| Sc garnet | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| spessartine | 55.8 | 55.7 | 55.7 | 55.5 | 55.1 | 56.0 | 55.6 | 55.8 | 55.8 | 55.0 | 55.6 | 55.1 | 56.3 |
| pyrope | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 |
| almandine | 36.7 | 36.0 | 35.7 | 36.7 | 36.8 | 36.0 | 37.9 | 36.8 | 37.9 | 37.0 | 36.5 | 35.7 | 36.0 |
| grossular | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| andradite | 0.6 | 0.9 | 0.8 | 0.9 | 0.7 | 0.8 | 1.1 | 0.9 | 1.1 | 1.0 | 0.7 | 0.6 | 0.7 |
| skiagite | 1.2 | 1.2 | 1.5 | 1.0 | 1.2 | 2.0 | 0.8 | 1.0 | 0.3 | 0.8 | 0.8 | 2.0 | 1.8 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Slobrekka, Evje-Iveland** | | | | | | | **Solås, Evje-Iveland** | | | | | |
|  | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 1/1 | 1/2 | 1/3 | 1/4 | 1/5 | 1/6 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 35.51 | 35.19 | 35.35 | 36.20 | 35.93 | 35.82 | 35.64 | 35.32 | 35.30 | 35.15 | 35.36 | 35.32 | 35.24 |
| TiO2 | 0.12 | 0.15 | 0.10 | 0.04 | 0.08 | 0.04 | 0.10 | 0.17 | 0.18 | 0.39 | 0.16 | 0.17 | 0.20 |
| Al2O3 | 20.28 | 20.33 | 20.34 | 20.42 | 20.29 | 20.35 | 20.31 | 20.24 | 20.20 | 20.11 | 20.16 | 20.17 | 20.16 |
| Na2O | 0.09 | 0.09 | 0.11 | 0.08 | 0.08 | 0.09 | 0.09 | 0.08 | 0.09 | 0.06 | 0.09 | 0.05 | 0.06 |
| CaO | 0.48 | 0.45 | 0.49 | 0.46 | 0.47 | 0.45 | 0.48 | 0.59 | 0.59 | 0.61 | 0.60 | 0.54 | 0.59 |
| FeO | 17.60 | 17.53 | 17.52 | 18.00 | 17.78 | 17.72 | 17.60 | 17.53 | 17.77 | 17.65 | 17.87 | 17.75 | 17.60 |
| MnO | 23.82 | 23.47 | 24.01 | 24.46 | 24.07 | 24.18 | 24.01 | 23.07 | 22.98 | 23.05 | 23.10 | 22.97 | 23.11 |
| MgO | 0.27 | 0.29 | 0.27 | 0.25 | 0.27 | 0.26 | 0.26 | 0.46 | 0.44 | 0.46 | 0.46 | 0.47 | 0.46 |
| Sc2O3 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.11 | 0.10 | 0.11 | 0.09 | 0.09 | 0.11 |
| Y2O3 | 2.59 | 2.80 | 2.52 | 1.27 | 2.01 | 1.99 | 2.36 | 2.01 | 1.80 | 1.99 | 1.85 | 2.07 | 1.99 |
| Dy2O3 | 0.07 | 0.07 | <0.07 | <0.07 | <0.07 | 0.09 | 0.06 | <0.07 | <0.07 | <0.07 | 0.07 | <0.07 | 0.09 |
| Er2O3 | 0.12 | 0.17 | 0.16 | 0.13 | 0.20 | 0.19 | 0.18 | 0.17 | 0.17 | 0.16 | 0.21 | 0.21 | 0.21 |
| Yb2O3 | 0.16 | 0.22 | 0.16 | 0.09 | 0.11 | 0.14 | 0.16 | 0.86 | 0.89 | 0.96 | 0.86 | 0.86 | 0.85 |
| total | 101.12 | 100.77 | 101.11 | 101.48 | 101.37 | 101.33 | 101.26 | 100.68 | 100.58 | 100.77 | 100.88 | 100.74 | 100.67 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.933 | 2.921 | 2.919 | 2.962 | 2.954 | 2.947 | 2.938 | 2.939 | 2.939 | 2.927 | 2.937 | 2.941 | 2.935 |
| IVAl | 0.067 | 0.079 | 0.081 | 0.038 | 0.046 | 0.053 | 0.062 | 0.061 | 0.061 | 0.073 | 0.063 | 0.059 | 0.065 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.907 | 1.909 | 1.899 | 1.931 | 1.920 | 1.920 | 1.912 | 1.924 | 1.921 | 1.901 | 1.910 | 1.920 | 1.914 |
| Ti | 0.007 | 0.009 | 0.006 | 0.002 | 0.005 | 0.002 | 0.006 | 0.011 | 0.011 | 0.024 | 0.010 | 0.011 | 0.013 |
| Sc | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.007 | 0.008 | 0.006 | 0.006 | 0.008 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.001 | 0.001 | 0.002 |
| V | 0.000 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 |
| Fe3+ | 0.046 | 0.042 | 0.076 | 0.059 | 0.039 | 0.055 | 0.049 | 0.031 | 0.043 | 0.033 | 0.058 | 0.026 | 0.036 |
| Fe2+ | 0.040 | 0.039 | 0.019 | 0.007 | 0.035 | 0.023 | 0.034 | 0.026 | 0.016 | 0.032 | 0.015 | 0.036 | 0.028 |
| total Y | 2.000 | 2.000 | 2.000 | 1.999 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 |
| Fe2+ | 1.130 | 1.136 | 1.116 | 1.166 | 1.149 | 1.142 | 1.131 | 1.163 | 1.178 | 1.165 | 1.168 | 1.174 | 1.162 |
| Mn2+ | 1.666 | 1.650 | 1.679 | 1.695 | 1.676 | 1.685 | 1.677 | 1.626 | 1.621 | 1.626 | 1.625 | 1.620 | 1.630 |
| Mg | 0.033 | 0.036 | 0.033 | 0.030 | 0.033 | 0.032 | 0.032 | 0.057 | 0.055 | 0.057 | 0.057 | 0.058 | 0.057 |
| Ca | 0.042 | 0.040 | 0.043 | 0.040 | 0.041 | 0.040 | 0.042 | 0.053 | 0.053 | 0.054 | 0.053 | 0.048 | 0.053 |
| Na | 0.014 | 0.014 | 0.018 | 0.013 | 0.013 | 0.014 | 0.014 | 0.013 | 0.015 | 0.010 | 0.014 | 0.008 | 0.010 |
| Y | 0.114 | 0.124 | 0.111 | 0.055 | 0.088 | 0.087 | 0.104 | 0.089 | 0.080 | 0.088 | 0.082 | 0.092 | 0.088 |
| total X | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 2.2 | 2.7 | 2.7 | 1.3 | 1.5 | 1.8 | 2.1 | 2.0 | 2.0 | 2.4 | 2.1 | 2.0 | 2.2 |
| schorlomite-Al | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| morimotoite | 0.8 | 0.9 | 0.6 | 0.3 | 0.5 | 0.3 | 0.6 | 1.1 | 1.1 | 1.8 | 1.0 | 1.1 | 1.3 |
| Sc garnet | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.4 | 0.0 | 0.3 | 0.3 | 0.4 |
| spessartine | 55.5 | 55.0 | 56.0 | 56.5 | 55.9 | 56.2 | 55.9 | 54.2 | 54.0 | 54.1 | 54.2 | 54.0 | 54.3 |
| pyrope | 1.1 | 1.2 | 1.1 | 1.0 | 1.1 | 1.1 | 1.1 | 1.9 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 |
| almandine | 36.4 | 36.6 | 35.2 | 37.8 | 37.5 | 37.0 | 36.6 | 38.1 | 38.2 | 36.6 | 37.3 | 38.1 | 37.3 |
| grossular | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| andradite | 0.7 | 0.4 | 0.8 | 1.0 | 0.9 | 1.1 | 0.8 | 0.3 | 0.2 | 0.0 | 0.5 | 0.2 | 0.1 |
| skiagite | 1.2 | 1.2 | 2.0 | 1.1 | 0.8 | 1.1 | 1.1 | 0.7 | 1.1 | 1.6 | 1.6 | 1.1 | 1.5 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Solås, Evje-Iveland** | | | | | | | | | | | | |
|  | 1/7 | 1/8 | 1/9 | 1/10 | 1/11 | 1/12 | 1/13 | 1/14 | 1/15 | 1/16 | 1/17 | 1/18 | 1/19 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.42 | 36.55 | 36.33 | 36.25 | 36.38 | 36.38 | 36.55 | 36.51 | 36.48 | 36.41 | 36.48 | 36.55 | 36.59 |
| TiO2 | 0.02 | 0.04 | 0.03 | 0.07 | 0.03 | 0.04 | <0.02 | 0.04 | <0.02 | 0.05 | 0.02 | <0.02 | <0.02 |
| Al2O3 | 20.57 | 20.61 | 20.54 | 20.46 | 20.56 | 20.49 | 20.60 | 20.65 | 20.59 | 20.60 | 20.54 | 20.45 | 20.61 |
| Na2O | 0.04 | 0.03 | 0.06 | 0.04 | 0.04 | 0.05 | 0.04 | 0.03 | <0.03 | 0.03 | <0.03 | 0.04 | 0.03 |
| CaO | 0.52 | 0.39 | 0.52 | 0.48 | 0.31 | 0.38 | 0.57 | 0.36 | 0.30 | 0.38 | 0.43 | 0.74 | 0.45 |
| FeO | 18.10 | 18.36 | 18.30 | 18.31 | 18.37 | 18.12 | 18.31 | 18.44 | 18.22 | 18.15 | 17.78 | 17.65 | 17.43 |
| MnO | 23.83 | 24.23 | 23.87 | 23.84 | 24.13 | 24.17 | 24.00 | 24.43 | 24.27 | 24.63 | 24.74 | 24.67 | 25.37 |
| MgO | 0.46 | 0.46 | 0.46 | 0.47 | 0.47 | 0.46 | 0.45 | 0.44 | 0.41 | 0.40 | 0.38 | 0.36 | 0.33 |
| Sc2O3 | 0.03 | 0.04 | 0.03 | 0.02 | 0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Y2O3 | 0.77 | 0.76 | 0.85 | 0.97 | 0.81 | 0.80 | 0.59 | 0.50 | 0.53 | 0.67 | 0.64 | 0.50 | 0.43 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | <0.05 | <0.05 | 0.08 | 0.05 | 0.05 | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Yb2O3 | 0.29 | 0.12 | 0.15 | 0.21 | 0.12 | 0.17 | 0.14 | 0.09 | 0.08 | 0.08 | 0.11 | 0.14 | <0.05 |
| total | 101.17 | 101.71 | 101.29 | 101.24 | 101.35 | 101.19 | 101.40 | 101.62 | 101.06 | 101.53 | 101.28 | 101.25 | 101.44 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.980 | 2.973 | 2.968 | 2.966 | 2.970 | 2.976 | 2.978 | 2.969 | 2.985 | 2.966 | 2.980 | 2.984 | 2.980 |
| IVAl | 0.020 | 0.027 | 0.032 | 0.034 | 0.030 | 0.024 | 0.022 | 0.031 | 0.015 | 0.034 | 0.020 | 0.016 | 0.020 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.964 | 1.949 | 1.946 | 1.940 | 1.947 | 1.951 | 1.957 | 1.948 | 1.970 | 1.944 | 1.957 | 1.951 | 1.959 |
| Ti | 0.001 | 0.002 | 0.002 | 0.004 | 0.002 | 0.002 | 0.001 | 0.002 | 0.001 | 0.003 | 0.001 | 0.001 | 0.001 |
| Sc | 0.002 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Zr | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 |
| V | 0.001 | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 | 0.002 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 |
| Fe3+ | 0.023 | 0.042 | 0.053 | 0.046 | 0.047 | 0.041 | 0.042 | 0.059 | 0.023 | 0.057 | 0.035 | 0.048 | 0.045 |
| Fe2+ | 0.009 | 0.004 | 0.000 | 0.007 | 0.001 | 0.005 | 0.000 | 0.000 | 0.007 | 0.000 | 0.006 | 0.000 | 0.000 |
| total Y | 2.000 | 2.000 | 2.003 | 2.000 | 2.000 | 2.000 | 2.002 | 2.011 | 2.000 | 2.005 | 2.000 | 2.000 | 2.005 |
| Fe2+ | 1.207 | 1.203 | 1.198 | 1.200 | 1.206 | 1.193 | 1.205 | 1.195 | 1.217 | 1.179 | 1.173 | 1.157 | 1.142 |
| Mn2+ | 1.652 | 1.669 | 1.652 | 1.652 | 1.668 | 1.674 | 1.656 | 1.683 | 1.682 | 1.699 | 1.712 | 1.706 | 1.750 |
| Mg | 0.056 | 0.056 | 0.056 | 0.057 | 0.057 | 0.056 | 0.055 | 0.053 | 0.050 | 0.049 | 0.046 | 0.044 | 0.040 |
| Ca | 0.046 | 0.034 | 0.046 | 0.042 | 0.027 | 0.033 | 0.050 | 0.031 | 0.026 | 0.033 | 0.038 | 0.065 | 0.039 |
| Na | 0.006 | 0.005 | 0.010 | 0.006 | 0.006 | 0.008 | 0.006 | 0.005 | 0.002 | 0.005 | 0.003 | 0.006 | 0.005 |
| Y | 0.034 | 0.033 | 0.037 | 0.042 | 0.035 | 0.035 | 0.026 | 0.022 | 0.023 | 0.029 | 0.028 | 0.022 | 0.019 |
| total X | 3.000 | 3.000 | 2.997 | 3.000 | 3.000 | 3.000 | 2.998 | 2.989 | 3.000 | 2.994 | 3.000 | 3.000 | 2.995 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 0.7 | 0.9 | 1.1 | 1.1 | 1.0 | 0.8 | 0.7 | 0.7 | 0.5 | 1.0 | 0.7 | 0.5 | 0.6 |
| schorlomite-Al | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 |
| morimotoite | 0.1 | 0.2 | 0.0 | 0.4 | 0.2 | 0.3 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 |
| Sc garnet | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| spessartine | 55.1 | 55.7 | 55.1 | 55.1 | 55.6 | 55.8 | 55.2 | 56.1 | 56.1 | 56.7 | 57.1 | 56.9 | 58.3 |
| pyrope | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.7 | 1.6 | 1.5 | 1.5 | 1.3 |
| almandine | 40.2 | 39.1 | 39.3 | 38.9 | 38.8 | 39.0 | 40.1 | 38.8 | 40.3 | 38.0 | 38.6 | 38.6 | 37.7 |
| grossular | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 |
| andradite | 0.9 | 0.8 | 1.4 | 0.9 | 0.7 | 0.8 | 1.6 | 0.9 | 0.8 | 0.9 | 1.1 | 2.0 | 1.3 |
| skiagite | 0.0 | 1.1 | 0.6 | 1.1 | 1.4 | 0.7 | 0.1 | 1.0 | 0.3 | 1.4 | 0.5 | 0.0 | 0.4 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Solås, Evje-Iveland** | | | | | | | | | | | | |
|  | 1/20 | 1/21 | 1/22 | 1/23 | 1/24 | 1/25 | 2/1 | 2/2 | 2/3 | 2/4 | 2/5 | 2/6 | 2/7 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.48 | 36.64 | 36.59 | 36.49 | 36.48 | 36.54 | 36.61 | 36.49 | 36.59 | 36.56 | 36.44 | 36.54 | 36.49 |
| TiO2 | 0.04 | 0.03 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 0.03 | <0.02 | 0.03 | <0.02 | <0.02 | <0.02 |
| Al2O3 | 20.54 | 20.52 | 20.64 | 20.56 | 20.58 | 20.60 | 20.53 | 20.53 | 20.64 | 20.51 | 20.58 | 20.69 | 20.62 |
| Na2O | 0.03 | 0.05 | <0.03 | 0.03 | <0.03 | <0.03 | 0.03 | <0.03 | 0.03 | 0.04 | 0.03 | 0.05 | 0.03 |
| CaO | 0.51 | 0.44 | 0.44 | 0.41 | 0.57 | 0.47 | 0.34 | 0.36 | 0.58 | 0.37 | 0.41 | 0.43 | 0.37 |
| FeO | 17.21 | 17.22 | 16.98 | 16.45 | 16.33 | 15.77 | 17.36 | 17.24 | 16.73 | 16.93 | 16.45 | 16.01 | 15.30 |
| MnO | 25.40 | 25.91 | 26.25 | 26.37 | 26.64 | 27.34 | 25.41 | 25.42 | 25.67 | 25.70 | 25.98 | 26.35 | 27.29 |
| MgO | 0.31 | 0.28 | 0.26 | 0.24 | 0.21 | 0.18 | 0.26 | 0.24 | 0.22 | 0.20 | 0.17 | 0.14 | 0.16 |
| Sc2O3 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Y2O3 | 0.55 | 0.55 | 0.24 | 0.40 | 0.37 | 0.35 | 0.42 | 0.39 | 0.33 | 0.39 | 0.37 | 0.30 | 0.31 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 |
| Yb2O3 | 0.05 | 0.04 | <0.05 | <0.05 | 0.07 | <0.05 | <0.05 | 0.06 | 0.09 | 0.06 | 0.09 | 0.06 | <0.05 |
| total | 101.25 | 101.81 | 101.63 | 101.15 | 101.43 | 101.48 | 101.17 | 100.90 | 101.02 | 100.91 | 100.67 | 100.71 | 100.77 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.978 | 2.977 | 2.976 | 2.982 | 2.974 | 2.978 | 2.992 | 2.990 | 2.992 | 2.995 | 2.993 | 2.996 | 2.992 |
| IVAl | 0.022 | 0.023 | 0.024 | 0.018 | 0.026 | 0.022 | 0.008 | 0.010 | 0.008 | 0.005 | 0.007 | 0.004 | 0.008 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.954 | 1.941 | 1.955 | 1.962 | 1.952 | 1.957 | 1.970 | 1.973 | 1.981 | 1.975 | 1.985 | 1.996 | 1.984 |
| Ti | 0.002 | 0.002 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.002 | 0.001 | 0.002 | 0.000 | 0.000 | 0.000 |
| Sc | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Zr | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 |
| V | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.001 |
| Fe3+ | 0.042 | 0.062 | 0.060 | 0.042 | 0.060 | 0.053 | 0.023 | 0.019 | 0.015 | 0.016 | 0.010 | 0.002 | 0.013 |
| Fe2+ | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.007 | 0.007 | 0.003 | 0.007 | 0.005 | 0.002 | 0.002 |
| total Y | 2.000 | 2.006 | 2.015 | 2.005 | 2.012 | 2.010 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 |
| Fe2+ | 1.133 | 1.108 | 1.095 | 1.082 | 1.054 | 1.021 | 1.157 | 1.156 | 1.126 | 1.137 | 1.115 | 1.094 | 1.034 |
| Mn2+ | 1.756 | 1.783 | 1.808 | 1.825 | 1.840 | 1.887 | 1.759 | 1.765 | 1.778 | 1.783 | 1.807 | 1.831 | 1.896 |
| Mg | 0.038 | 0.034 | 0.032 | 0.029 | 0.026 | 0.022 | 0.032 | 0.029 | 0.027 | 0.024 | 0.021 | 0.017 | 0.020 |
| Ca | 0.045 | 0.038 | 0.038 | 0.036 | 0.050 | 0.041 | 0.030 | 0.031 | 0.051 | 0.033 | 0.036 | 0.037 | 0.033 |
| Na | 0.005 | 0.008 | 0.002 | 0.005 | 0.003 | 0.003 | 0.004 | 0.002 | 0.004 | 0.006 | 0.004 | 0.008 | 0.004 |
| Y | 0.024 | 0.024 | 0.010 | 0.017 | 0.016 | 0.015 | 0.018 | 0.017 | 0.014 | 0.017 | 0.016 | 0.013 | 0.014 |
| total X | 3.000 | 2.994 | 2.985 | 2.995 | 2.988 | 2.990 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 0.7 | 0.8 | 0.4 | 0.6 | 0.5 | 0.5 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.1 | 0.3 |
| schorlomite-Al | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| morimotoite | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 |
| Sc garnet | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| spessartine | 58.5 | 59.4 | 60.3 | 60.8 | 61.3 | 62.9 | 58.6 | 58.8 | 59.3 | 59.4 | 60.2 | 61.0 | 63.2 |
| pyrope | 1.3 | 1.1 | 1.1 | 1.0 | 0.9 | 0.7 | 1.1 | 1.0 | 0.9 | 0.8 | 0.7 | 0.6 | 0.7 |
| almandine | 37.2 | 35.7 | 36.1 | 35.7 | 34.9 | 33.7 | 38.5 | 38.5 | 37.6 | 37.9 | 37.2 | 36.5 | 34.5 |
| grossular | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 0.4 | 0.9 | 1.3 | 0.6 |
| andradite | 1.4 | 1.3 | 1.3 | 1.2 | 1.6 | 1.4 | 0.9 | 0.9 | 0.5 | 0.5 | 0.3 | 0.0 | 0.4 |
| skiagite | 0.6 | 1.2 | 0.4 | 0.4 | 0.2 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Solås, Evje-Iveland** | | | | | **Hovåsen, Evje-Iveland** | | | | | | | |
|  | 2/8 | 2/9 | 2/10 | 2/11 | 2/12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.54 | 36.56 | 36.55 | 36.52 | 36.57 | 36.10 | 35.86 | 35.88 | 35.84 | 35.83 | 35.72 | 35.71 | 35.66 |
| TiO2 | <0.02 | <0.02 | 0.03 | <0.02 | 0.03 | 0.18 | 0.20 | 0.17 | 0.19 | 0.16 | 0.19 | 0.19 | 0.16 |
| Al2O3 | 20.54 | 20.57 | 20.55 | 20.62 | 20.59 | 20.02 | 20.12 | 20.07 | 20.10 | 20.04 | 20.03 | 20.00 | 20.06 |
| Na2O | 0.05 | 0.04 | 0.04 | <0.03 | 0.04 | <0.03 | 0.06 | 0.04 | 0.05 | 0.04 | 0.03 | 0.04 | 0.03 |
| CaO | 0.61 | 0.60 | 0.42 | 0.40 | 0.41 | 0.32 | 0.28 | 0.33 | 0.31 | 0.30 | 0.33 | 0.32 | 0.31 |
| FeO | 15.27 | 15.08 | 15.03 | 14.47 | 14.28 | 14.96 | 14.79 | 15.04 | 14.97 | 14.93 | 15.16 | 14.98 | 15.07 |
| MnO | 27.03 | 27.30 | 27.68 | 28.22 | 28.41 | 27.10 | 27.02 | 26.85 | 26.76 | 27.04 | 26.49 | 26.49 | 26.74 |
| MgO | 0.13 | 0.13 | 0.12 | 0.12 | 0.08 | 0.58 | 0.58 | 0.57 | 0.59 | 0.60 | 0.61 | 0.59 | 0.58 |
| Sc2O3 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 0.06 | 0.07 | 0.05 | 0.05 | 0.06 | 0.05 | 0.06 | 0.07 |
| Y2O3 | 0.23 | 0.25 | 0.24 | 0.22 | 0.21 | 1.24 | 1.35 | 1.26 | 1.23 | 1.21 | 1.21 | 1.19 | 1.20 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.08 | 0.09 | 0.09 | 0.05 | 0.07 | 0.09 | 0.09 | 0.11 |
| Yb2O3 | 0.06 | 0.06 | 0.05 | <0.05 | 0.08 | 0.13 | 0.14 | 0.11 | 0.13 | 0.08 | 0.10 | 0.15 | 0.07 |
| total | 100.62 | 100.75 | 100.84 | 100.79 | 100.82 | 100.87 | 100.63 | 100.53 | 100.34 | 100.43 | 100.08 | 99.88 | 100.13 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.998 | 2.997 | 2.994 | 2.994 | 2.997 | 2.969 | 2.955 | 2.960 | 2.960 | 2.956 | 2.958 | 2.964 | 2.952 |
| IVAl | 0.002 | 0.003 | 0.006 | 0.006 | 0.003 | 0.031 | 0.045 | 0.040 | 0.040 | 0.044 | 0.042 | 0.036 | 0.048 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.985 | 1.984 | 1.979 | 1.987 | 1.985 | 1.910 | 1.909 | 1.911 | 1.916 | 1.905 | 1.913 | 1.920 | 1.909 |
| Ti | 0.000 | 0.001 | 0.002 | 0.000 | 0.002 | 0.011 | 0.012 | 0.011 | 0.012 | 0.010 | 0.012 | 0.012 | 0.010 |
| Sc | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.005 |
| Zr | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| V | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 |
| Fe3+ | 0.015 | 0.011 | 0.018 | 0.011 | 0.011 | 0.042 | 0.051 | 0.055 | 0.050 | 0.067 | 0.052 | 0.040 | 0.065 |
| Fe2+ | 0.000 | 0.004 | 0.000 | 0.002 | 0.001 | 0.032 | 0.019 | 0.020 | 0.018 | 0.013 | 0.019 | 0.023 | 0.010 |
| total Y | 2.000 | 2.000 | 2.000 | 1.999 | 1.999 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 2.000 | 1.999 | 2.000 |
| Fe2+ | 1.033 | 1.019 | 1.011 | 0.980 | 0.966 | 0.955 | 0.949 | 0.963 | 0.966 | 0.950 | 0.979 | 0.977 | 0.969 |
| Mn2+ | 1.879 | 1.895 | 1.921 | 1.960 | 1.972 | 1.888 | 1.886 | 1.876 | 1.872 | 1.890 | 1.858 | 1.862 | 1.875 |
| Mg | 0.016 | 0.016 | 0.014 | 0.014 | 0.010 | 0.071 | 0.071 | 0.070 | 0.073 | 0.074 | 0.075 | 0.073 | 0.072 |
| Ca | 0.054 | 0.053 | 0.037 | 0.035 | 0.036 | 0.028 | 0.025 | 0.029 | 0.027 | 0.027 | 0.029 | 0.028 | 0.027 |
| Na | 0.008 | 0.006 | 0.006 | 0.002 | 0.006 | 0.003 | 0.010 | 0.006 | 0.008 | 0.006 | 0.005 | 0.006 | 0.005 |
| Y | 0.010 | 0.011 | 0.011 | 0.009 | 0.009 | 0.054 | 0.059 | 0.055 | 0.054 | 0.053 | 0.053 | 0.053 | 0.053 |
| total X | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 1.0 | 1.5 | 1.3 | 1.3 | 1.5 | 1.4 | 1.2 | 1.6 |
| schorlomite-Al | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| morimotoite | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.9 | 0.8 | 1.0 | 0.9 | 0.9 | 1.0 | 1.0 | 0.9 |
| Sc garnet | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| spessartine | 62.6 | 63.2 | 64.0 | 65.3 | 65.7 | 62.9 | 62.8 | 62.5 | 62.4 | 63.0 | 61.9 | 62.0 | 62.4 |
| pyrope | 0.5 | 0.5 | 0.5 | 0.5 | 0.3 | 2.4 | 2.4 | 2.3 | 2.4 | 2.5 | 2.5 | 2.4 | 2.4 |
| almandine | 34.4 | 34.0 | 33.7 | 32.7 | 32.2 | 29.2 | 28.8 | 29.3 | 29.7 | 28.4 | 29.8 | 30.3 | 29.0 |
| grossular | 1.6 | 1.4 | 0.6 | 0.7 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| andradite | 0.2 | 0.3 | 0.6 | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| skiagite | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 2.4 | 2.7 | 2.3 | 3.2 | 2.6 | 2.0 | 3.2 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Hovåsen, Evje-Iveland** | | | | | | | | | | | | |
|  | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| **EPMA analsyes (wt.%)a** | | | | | | | | | | | | | |
| SiO2 | 36.02 | 35.63 | 35.42 | 35.36 | 35.24 | 35.21 | 34.24 | 35.19 | 34.98 | 34.89 | 34.76 | 35.45 | 35.39 |
| TiO2 | 0.21 | 0.21 | 0.20 | 0.20 | 0.21 | 0.20 | 0.19 | 0.19 | 0.17 | 0.20 | 0.18 | 0.11 | 0.15 |
| Al2O3 | 20.32 | 19.97 | 19.83 | 19.84 | 19.85 | 19.81 | 19.89 | 19.77 | 19.91 | 19.89 | 19.86 | 20.46 | 20.07 |
| Na2O | 0.04 | 0.04 | 0.04 | 0.04 | 0.03 | 0.05 | 0.04 | 0.03 | <0.03 | 0.04 | 0.03 | <0.03 | <0.03 |
| CaO | 0.38 | 0.35 | 0.39 | 0.34 | 0.33 | 0.34 | 0.34 | 0.33 | 0.35 | 0.34 | 0.38 | 0.37 | 0.38 |
| FeO | 15.08 | 15.10 | 15.04 | 15.04 | 15.08 | 14.91 | 14.99 | 15.02 | 15.16 | 15.21 | 15.41 | 15.72 | 16.12 |
| MnO | 26.98 | 26.86 | 26.86 | 26.52 | 26.63 | 26.56 | 26.50 | 26.21 | 26.13 | 26.05 | 25.89 | 26.42 | 25.88 |
| MgO | 0.60 | 0.58 | 0.59 | 0.61 | 0.60 | 0.59 | 0.60 | 0.57 | 0.56 | 0.57 | 0.55 | 0.57 | 0.60 |
| Sc2O3 | 0.05 | 0.05 | 0.04 | 0.06 | 0.05 | 0.05 | 0.03 | 0.06 | 0.05 | 0.04 | 0.05 | 0.03 | <0.01 |
| Y2O3 | 1.03 | 1.01 | 1.01 | 1.07 | 1.06 | 1.07 | 1.01 | 1.03 | 1.26 | 1.19 | 1.16 | <0.03 | <0.03 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | 0.09 | 0.09 | 0.05 | 0.09 | 0.05 | 0.09 | 0.07 | 0.09 | 0.09 | 0.07 | 0.09 | 0.07 | <0.05 |
| Yb2O3 | 0.11 | 0.10 | 0.10 | 0.10 | 0.07 | 0.12 | 0.10 | 0.11 | 0.11 | 0.10 | 0.12 | <0.05 | <0.05 |
| total | 100.98 | 100.06 | 99.64 | 99.34 | 99.27 | 99.07 | 98.07 | 98.67 | 98.87 | 98.66 | 98.55 | 99.38 | 98.83 |
| **cation proportions (12 O)** | | | | | | | | | | | | | |
| Si | 2.953 | 2.950 | 2.945 | 2.949 | 2.940 | 2.946 | 2.892 | 2.955 | 2.934 | 2.931 | 2.925 | 2.940 | 2.953 |
| IVAl | 0.047 | 0.050 | 0.055 | 0.051 | 0.060 | 0.054 | 0.108 | 0.045 | 0.066 | 0.069 | 0.075 | 0.060 | 0.047 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.917 | 1.899 | 1.888 | 1.900 | 1.892 | 1.899 | 1.872 | 1.912 | 1.903 | 1.900 | 1.895 | 1.941 | 1.927 |
| Ti | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.012 | 0.012 | 0.011 | 0.013 | 0.011 | 0.007 | 0.009 |
| Sc | 0.004 | 0.004 | 0.003 | 0.004 | 0.004 | 0.004 | 0.002 | 0.004 | 0.004 | 0.003 | 0.004 | 0.002 | 0.000 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 |
| V | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 |
| Fe3+ | 0.061 | 0.082 | 0.101 | 0.080 | 0.093 | 0.087 | 0.170 | 0.062 | 0.082 | 0.094 | 0.106 | 0.102 | 0.103 |
| Fe2+ | 0.005 | 0.002 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| total Y | 2.000 | 2.000 | 2.005 | 2.000 | 2.003 | 2.002 | 2.057 | 2.000 | 2.001 | 2.010 | 2.016 | 2.052 | 2.039 |
| Fe2+ | 0.968 | 0.962 | 0.945 | 0.966 | 0.959 | 0.956 | 0.889 | 0.984 | 0.982 | 0.975 | 0.978 | 0.988 | 1.021 |
| Mn2+ | 1.874 | 1.884 | 1.891 | 1.874 | 1.882 | 1.882 | 1.896 | 1.864 | 1.857 | 1.854 | 1.845 | 1.856 | 1.829 |
| Mg | 0.073 | 0.072 | 0.073 | 0.076 | 0.075 | 0.074 | 0.076 | 0.071 | 0.070 | 0.071 | 0.069 | 0.070 | 0.075 |
| Ca | 0.033 | 0.031 | 0.035 | 0.030 | 0.029 | 0.030 | 0.031 | 0.030 | 0.031 | 0.031 | 0.034 | 0.033 | 0.034 |
| Na | 0.006 | 0.006 | 0.006 | 0.006 | 0.005 | 0.008 | 0.007 | 0.005 | 0.003 | 0.007 | 0.005 | 0.000 | 0.002 |
| Y | 0.045 | 0.045 | 0.045 | 0.047 | 0.047 | 0.048 | 0.045 | 0.046 | 0.056 | 0.053 | 0.052 | 0.000 | 0.000 |
| total X | 3.000 | 3.000 | 2.995 | 3.000 | 2.997 | 2.998 | 2.943 | 3.000 | 2.999 | 2.990 | 2.984 | 2.948 | 2.961 |
| **end members (mol%)b** | | | | | | | | | | | | | |
| yttrogarnet | 1.5 | 1.5 | 1.5 | 1.6 | 1.6 | 1.6 | 1.5 | 1.5 | 1.9 | 1.8 | 1.7 | 0.0 | 0.0 |
| schorlomite-Al | 0.1 | 0.3 | 0.5 | 0.1 | 0.6 | 0.3 | 0.6 | 0.0 | 0.4 | 0.6 | 0.6 | 0.3 | 0.5 |
| morimotoite | 0.5 | 0.2 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Sc garnet | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0 |
| spessartine | 62.5 | 62.8 | 63.1 | 62.5 | 62.7 | 62.7 | 63.2 | 62.1 | 61.9 | 61.8 | 61.5 | 61.9 | 61.0 |
| pyrope | 2.4 | 2.4 | 2.4 | 2.5 | 2.5 | 2.5 | 2.5 | 2.4 | 2.3 | 2.4 | 2.3 | 2.4 | 2.5 |
| almandine | 29.5 | 28.3 | 27.4 | 28.4 | 27.8 | 28.2 | 26.4 | 29.6 | 29.0 | 29.1 | 29.2 | 32.8 | 32.9 |
| grossular | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| andradite | 0.2 | 0.3 | 0.4 | 0.2 | 0.1 | 0.4 | 0.3 | 0.0 | 0.3 | 0.2 | 0.4 | 0.6 | 0.7 |
| skiagite | 2.8 | 3.8 | 4.1 | 3.8 | 4.2 | 3.7 | 3.3 | 3.1 | 3.7 | 3.4 | 3.4 | 0.1 | 1.2 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.

Appendix 2. Continued.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Hovåsen, Evje-Iveland** | | | |
|  | 22 | 23 | 24 | 25 |
| **EPMA analsyes (wt.%)a** | | | | |
| SiO2 | 35.22 | 35.24 | 35.20 | 34.94 |
| TiO2 | 0.17 | 0.02 | 0.03 | 0.03 |
| Al2O3 | 19.98 | 20.29 | 20.34 | 20.17 |
| Na2O | <0.03 | <0.03 | <0.03 | <0.03 |
| CaO | 0.39 | 0.26 | 0.27 | 0.32 |
| FeO | 16.32 | 16.46 | 16.34 | 16.02 |
| MnO | 25.60 | 25.29 | 25.25 | 25.67 |
| MgO | 0.55 | 0.58 | 0.57 | 0.49 |
| Sc2O3 | <0.01 | <0.01 | 0.01 | 0.03 |
| Y2O3 | <0.03 | 0.11 | 0.14 | 0.13 |
| Dy2O3 | <0.07 | <0.07 | <0.07 | <0.07 |
| Er2O3 | 0.10 | 0.07 | 0.09 | 0.07 |
| Yb2O3 | <0.05 | <0.05 | <0.05 | 0.05 |
| total | 98.52 | 98.48 | 98.39 | 98.02 |
| **cation proportions (12 O)** | | | | |
| Si | 2.951 | 2.949 | 2.949 | 2.940 |
| IVAl | 0.049 | 0.051 | 0.051 | 0.060 |
| total Z | 3.000 | 3.000 | 3.000 | 3.000 |
| VI Al | 1.924 | 1.950 | 1.957 | 1.941 |
| Ti | 0.011 | 0.001 | 0.002 | 0.002 |
| Sc | 0.000 | 0.000 | 0.001 | 0.002 |
| Zr | 0.000 | 0.000 | 0.000 | 0.000 |
| V | 0.001 | 0.000 | 0.001 | 0.000 |
| Fe3+ | 0.102 | 0.096 | 0.084 | 0.109 |
| Fe2+ | 0.000 | 0.000 | 0.000 | 0.000 |
| total Y | 2.038 | 2.048 | 2.045 | 2.054 |
| Fe2+ | 1.041 | 1.056 | 1.060 | 1.019 |
| Mn2+ | 1.817 | 1.793 | 1.792 | 1.830 |
| Mg | 0.069 | 0.072 | 0.071 | 0.061 |
| Ca | 0.035 | 0.023 | 0.024 | 0.029 |
| Na | 0.000 | 0.003 | 0.002 | 0.002 |
| Y | 0.000 | 0.005 | 0.006 | 0.006 |
| total X | 2.962 | 2.952 | 2.955 | 2.946 |
| **end members (mol%)b** | | | | |
| yttrogarnet | 0.0 | 0.2 | 0.2 | 0.2 |
| schorlomite-Al | 0.5 | 0.1 | 0.1 | 0.1 |
| morimotoite | 0.0 | 0.0 | 0.0 | 0.0 |
| Sc garnet | 0.0 | 0.0 | 0.0 | 0.1 |
| spessartine | 60.6 | 59.8 | 59.7 | 61.0 |
| pyrope | 2.3 | 2.4 | 2.4 | 2.1 |
| almandine | 33.4 | 35.2 | 35.4 | 33.8 |
| grossular | 0.0 | 0.0 | 0.2 | 0.0 |
| andradite | 0.6 | 0.7 | 0.4 | 0.8 |
| skiagite | 1.4 | 0.0 | 0.0 | 0.2 |

a Elements below the detection limit (V, Cr, K, Zr, La, Ce, Pr, Nd, Sm, Gd) are excluded from the list.

b End-member components of garnets were calculated according to Locock (2008). End-member components with ≤0.1 mol% in all garnets are not shown.