Приложение. Таблица 1. Составы сосуществующих фаз в системе пироп-энстатит + H2O-KCl (PEH)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Р*, *Т* | XKCl | Компоненты \ Фазы | SiO2 | Al2O3 | MgO | K2O | Cl | Сумма | Si | Al | Mg | K | Cl | Сумма кат. |
| 5 ГПа, 900°C | 0 | *Grt* | 45.13 | 31.36 | 23.22 | - | - | 99.71 | 3.093 | 2.536 | 2.371 | - | - | 8.000 |
| *En* | 58.70 | 4.95 | 36.03 | - | - | 99.68 | 1.985 | 0.197 | 1.817 | - | - | 4.000 |
| *Ky* | 37.73 | 61.52 | 0.57 | - | - | 99.82 | 1.019 | 1.958 | 0.023 | - | - | 3.000 |
| 0.05 | *Grt* | 44.52 | 31.70 | 23.33 | - | - | 99.56 | 3.054 | 2.566 | 2.380 | - | - | 8.000 |
| *En* | 58.32 | 4.00 | 37.62 | - | - | 99.94 | 1.959 | 0.159 | 1.882 | - | - | 4.000 |
| 0.1 | *Grt* | 45.88 | 30.84 | 23.12 | - | - | 99.84 | 3.147 | 2.491 | 2.362 | - | - | 8.000 |
| *En* | 58.96 | 4.42 | 36.22 | - | - | 99.59 | 1.996 | 0.176 | 1.828 | - | - | 4.000 |
| *Phl* | 54.35 | 15.10 | 18.36 | 6.61 | 0.34 | 94.75 | 4.033 | 1.326 | 2.013 | 0.629 | 0.043 | 8.001 |
| *Ky* | 36.77 | 62.45 | 0.47 | - | - | 99.69 | 1.004 | 1.976 | 0.020 | - | - | 3.000 |
| 0.2 | *Grt* | 46.81 | 27.83 | 24.45 | - | - | 99.09 | 3.228 | 2.258 | 2.515 | - | - | 8.000 |
| *En* | 59.04 | 04.01 | 36.92 | - | - | 99.97 | 1.988 | 0.159 | 1.853 | - | - | 4.000 |
| *Phl* | 50.57 | 9.60 | 27.46 | 5.28 | 0.94 | 93.85 | 3.693 | 0.827 | 2.988 | 0.492 | 0.117 | 8.000 |
| 0.4 | *Phl* | 47.08 | 9.85 | 24.37 | 9.35 | 3.69 | 94.35 | 3.526 | 0.869 | 2.708 | 0.898 | 0.472 | 8.000 |

Приложение. Таблица 1 (окончание)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Р*, *Т* | XKCl | Компоненты \ Фазы | SiO2 | Al2O3 | MgO | K2O | Cl | Сумма | Si | Al | Mg | K | Cl | Сумма кат. |
| 5 ГПа, 1000°C | 0 | *Grt* | 42.24 | 33.81 | 23.54 | - | - | 99.59 | 2.885 | 2.717 | 2.398 | - | - | 8.000 |
| *En* | 57.88 | 3.39 | 37.61 | - | - | 98.88 | 1.965 | 0.135 | 1.901 | - | - | 4.000 |
| 0.05 | *Grt* | 44.43 | 31.80 | 23.24 | - | - | 99.46 | 3.050 | 2.572 | 2.377 | - | - | 8.000 |
| *En* | 58.05 | 4.69 | 37.37 | - | - | 100.11 | 1.948 | 0.185 | 1.867 | - | - | 4.000 |
| 0.1 | *Grt* | 43.86 | 33.36 | 22.26 | - | - | 99.48 | 3.015 | 2.705 | 2.280 | - | - | 8.000 |
| *En* | 59.36 | 3.46 | 37.44 | - | - | 100.26 | 1.991 | 0.136 | 1.873 | - | - | 4.000 |
| *Phl* | 54.42 | 6.72 | 29.35 | 3.66 | 0.18 | 94.33 | 3.933 | 0.573 | 3.156 | 0.339 | 0.022 | 8.000 |
| 0.2 | *En* | 57.55 | 5.76 | 36.16 | - | - | 99.47 | 1.950 | 0.230 | 1.821 | - | - | 4.000 |
| *Phl* | 48.95 | 10.63 | 27.49 | 7.74 | 0.65 | 95.46 | 3.491 | 0.892 | 2.910 | 0.706 | 0.080 | 8.000 |
| *Ky* | 36.52 | 62.56 | - | - | - | 99.47 | 1.004 | 1.996 | - | - | - | 3.000 |
| 0.4 | *Phl* | 48.97 | 10.84 | 26.18 | 7.72 | 0.53 | 94.24 | 3.541 | 0.925 | 2.820 | 0.714 | 0.065 | 8.000 |

Приложение. Таблица 2. Составы сосуществующих фаз в системе гроссуляр-пироп-энстатит + H2O-KCl (GPEH)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Р*, *Т* | XKCl | Компоненты \ Фазы | SiO2 | Al2O3 | MgO | CaO | K2O | Cl | Сумма | Si | Al | Mg | Ca | K | Cl | Сумма кат. |
| 5 ГПа, 1000°C | 0 | *Grt* | 45.47 | 28.72 | 23.98 | 1.40 | - | - | 99.57 | 3.119 | 2.324 | 2.453 | 0.103 | - | - | 8.000 |
| *En* | 56.64 | 11.07 | 32.72 | 0.18 | - | - | 100.61 | 1.910 | 0.440 | 1.644 | 0.006 | - | - | 4.000 |
| *Di* | 56.94 | 1.46 | 18.84 | 24.58 | - | - | 101.82 | 2.014 | 0.056 | 0.993 | 0.932 | - | - | 4.000 |
| 0.05 | *Grt* | 43.31 | 23.95 | 21.79 | 10.50 | - | - | 99.55 | 3.006 | 1.959 | 2.254 | 0.781 | - | - | 8.000 |
| *En* | 63.20 | 03.01 | 34.00 | 0.46 | - | - | 100.67 | 2.186 | 0.124 | 1.673 | 0.017 | - | - | 4000 |
| 0.1 | *Grt* | 43.55 | 23.88 | 21.97 | 10.75 | - | - | 100.15 | 3.004 | 1.942 | 2.260 | 0.794 | - | - | 8.000 |
| *En* | 59.98 | 2.34 | 39.11 | 0.29 | - | - | 101.72 | 1.977 | 0.091 | 1.921 | 0.010 | - | - | 4.000 |
| *Phl* | 49.41 | 10.07 | 27.65 | 0.32 | 6.74 | 0.17 | 94.99 | 3.525 | 0.899 | 2.937 | 0.025 | 0.614 | 0.02 | 8.000 |
| *Di* | 56.23 | 1.31 | 19.87 | 23.14 | - | - | 100.56 | 2.005 | 0.055 | 1.055 | 0.886 | - | - | 4.000 |
| 0.2 | *Grt* | 43.99 | 24.49 | 23.85 | 7.91 | - | - | 102.25 | 3.010 | 1.976 | 2.433 | 0.581 | - | - | 8.000 |
| *En* | 59.11 | 2.18 | 38.95 | 0.23 | - | - | 100.47 | 1.971 | 0.086 | 1.935 | 0.008 | - | - | 4.000 |
| *Phl* | 50.71 | 13.30 | 22.03 | 0.26 | 8.25 | 0.61 | 95.17 | 3.686 | 1.134 | 2.394 | 0.020 | 0.765 | 0.075 | 8.000 |
| *Di* | 56.25 | 1.94 | 19.96 | 22.73 | - | - | 100.88 | 1.997 | 0.081 | 1.056 | 0.866 | - | - | 4.000 |
| 0.4 | *Phl* | 47.21 | 11.23 | 24.90 | 0.56 | 9.17 | 2.71 |  95.79 | 3.439 | 0.964 | 2.698 | 0.044 | 0.856 | 0.336 | 8.000 |
| *Di* | 55.93 | 2.24 | 20.29 | 21.68 | - | - | 100.14 | 1.996 | 0.095 | 1.080 | 0.829 | - | - | 4.000 |

Приложение. Таблица 2 (окончание)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Р*, *Т* | XKCl | Компоненты \ Фазы | SiO2 | Al2O3 | MgO | CaO | K2O | Cl | Сумма | Si | Al | Mg | Ca | K | Cl | Сумма кат. |
| 3 ГПа, 900°C    | 0 | *Grt* | 43.86 | 24.04 | 22.36 | 9.38 | - | - | 99.63 | 3.035 | 1.965 | 2.304 | 0.696 | - | - | 8.000 |
| *En* | 55.47 | 6.59 | 35.59 | 0.61 | - | - | 100.25 | 1.932 | 0.261 | 1.784 | 0.022 | - | - | 4.000 |
| *Di* | 55.40 | 3.91 | 19.09 | 21.40 | - | - | 99.80 | 1.989 | 0.158 | 1.022 | 0.823 | - | - | 4.000 |
| 0.05 | *Grt* | 45.35 | 21.15 | 24.32 | 08.10 | - | - | 98.92 | 3.152 | 1.726 | 2.521 | 0.601 | - | - | 8.000 |
| *En* | 59.07 | 06.04 | 34.85 | 0.67 | - | - | 100.62 | 1.988 | 0.239 | 1.749 | 0.024 | - | - | 4.000 |
| *Di* | 55.83 | 04.10 | 19.83 | 20.30 | - | - | 100.06 | 1.995 | 0.173 | 1.055 | 0.778 | - | - | 4.000 |
| 0.1 | *Grt* | 43.27 | 23.69 | 20.43 | 12.34 | - | - | 99.73 | 3.013 | 1.945 | 2.121 | 0.921 | - | - | 8.000 |
| *En* | 57.58 | 5.69 | 36.32 | 0.63 | - | - | 100.22 | 1.935 | 0.227 | 1.815 | 0.023 | - | - | 4.000 |
| *Di* | 55.27 | 04.07 | 20.81 | 20.73 | - | - | 100.88 | 1.951 | 0.140 | 1.095 | 0.785 | - | - | 4.000 |
| *Phl* | 45.37 | 14.53 | 27.02 | 0.34 | 8.91 | 0.14 | 96.31 | 3.170 | 1.195 | 2.813 | 0.025 | 0.796 | 0.017 | 8.000 |
| 0.2 | *Grt* | 43.81 | 23.92 | 23.04 | 09.09 | - | - | 99.85 | 3.019 | 1.943 | 2.367 | 0.671 | - | - | 8.000 |
| *En* | 57.53 | 5.55 | 35.17 | 0.72 | - | - | 98.97 | 1.962 | 0.223 | 1.788 | 0.026 | - | - | 4.000 |
| *Di* | 55.32 | 4.87 | 20.58 | 19.38 | - | - | 100.15 | 1.967 | 0.204 | 1.086 | 0.744 | - | - | 4.000 |
| *Phl* | 46.18 | 15.93 | 25.18 | 0.40 | 9.22 | 0.40 | 97.31 | 3.222 | 1.309 | 2.618 | 0.030 | 0.821 | 0.047 | 8.000 |
| 0.4 | *Di* | 56.83 | 2.80 | 19.96 | 21.59 | - | - | 101.18 | 2.011 | 0.118 | 1.052 | 0.818 | - | - | 4.000 |
| *Phl* | 45.03 | 14.24 | 24.57 | 0.14 | 10.25 | 1.01 | 95.24 | 3.226 | 1.202 | 2.624 | 0.011 | 0.937 | 0.123 | 8.000 |

Приложение. Таблица 3. Составы сосуществующих фаз в системе кноррингит-пироп-энстатит + H2O-KCl (KPEH)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Р*, *Т* | XKCl | Компоненты \ Фазы | SiO2 | Al2O3 | Cr2O3 | MgO | K2O | Cl | Сумма | Si | Al | Cr | Mg | K | Cl | Сумма кат. |
| 5 ГПа, 1000°C | 0 | *Grt* | 44.87 | 27.53 | 3.25 | 23.99 | - | - | 99.64 | 3.105 | 2.243 | 0.178 | 2.474 | - | - | 8.000 |
| *En* | 58.05 | 3.30 | 0.53 | 37.43 | - | - | 99.32 | 1.965 | 0.132 | 0.014 | 1.889 | - | - | 4.000 |
| 0.05 | *Grt* | 44.71 | 27.78 | 3.37 | 23.69 | - | - | 99.56 | 3.106 | 2.267 | 0.187 | 2.442 | - | - | 8.000 |
| *En* | 58.08 | 03.07 | 0.87 | 37.38 | - | - | 100.02 | 1.955 | 0.146 | 0.023 | 1.875 | - | - | 4.000 |
| 0.1 | *Grt* | 45.01 | 27.92 | 3.70 | 22.72 | - | - | 99.34 | 3.146 | 2.293 | 0.206 | 2.355 | - | - | 8.000 |
| *En* | 58.21 | 3.56 | 0.88 | 36.82 | - | - | 99.47 | 1.981 | 0.142 | 0.024 | 1.853 | - | - | 4.000 |
| *Phl* | 54.98 | 17.29 | 1.91 | 11.87 | 8.67 | 0.39 | 95.11 | 4.167 | 1.537 | 0.118 | 1.324 | 0.854 | 0.050 | 8.000 |
| 0.2 | *Grt* | 44.44 | 23.51 | 1.58 | 30.16 | - | - | 99.68 | 3.004 | 1.873 | 0.085 | 3.039 | - | - | 8.000 |
| *En* | 57.85 | 4.37 | 1.42 | 36.97 | - | - | 100.6 | 1.941 | 0.172 | 0.038 | 1.849 | - | - | 4.000 |
| *Phl* | 47.88 | 11.60 | 1.48 | 24.42 | 8.26 | 01.04 | 94.69 | 3.492 | 0.995 | 0.088 | 2.646 | 0.779 | 0.131 | 8.000 |
| *Ky* | 36.39 | 56.18 | 7.39 | - | - | - | 99.95 | 1.007 | 1.832 | 0.162 | - | - | - | 3.000 |
| 0.4 | *Phl* | 47.11 | 9.82 | 1.35 | 24.29 | 9.22 | 03.03 | 94.82 | 3.501 | 0.856 | 0.079 | 2.685 | 0.877 | 0.385 | 8.000 |

Приложение. Таблица 4.Представительные анализы (ф.е.) составов фаз в продуктах опытов по синтезу калиевых титанатов

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| № опыта | Ф.е./Минерал | Ti | Cr | Fe3+ | Fe2+ | Al | K | Mg |
| B1 | *Yim* | 4.76 | 2.87 | 0.25 | 3.30 | 0.35 | 1.01 | 0.47 |
| *Pri*1 | 6.15 | 1.56 | 0.15 | 0.10 | 0.06 | 1.77 | 0.06 |
| *Ilm*1 | 0.93 | - | 0.08 | 0.95 | 0.02 | - | 0.04 |
| *Ilm*2 | 0.98 | 0.01 | 0.03 | 0.70 | - | - | 0.28 |
| *Rt*1 | 0.85 | 0.20 | - | - | - | - | - |
| Sp2 | *Chr*1 | 0.10 | 1.47 | 0.02 | 0.31 | 0.31 | - | 0.79 |
| *Chr*2 | 0.14 | 1.46 | - | 0.46 | 0.26 | - | 0.68 |
| *Pri*2 | 6.23 | 1.47 | 0.11 | - | 0.13 | 1.71 | 0.12 |
| B1-1 | *Yim*1 | 4.34 | 2.99 | 0.68 | 2.61 | 0.69 | 1.00 | 0.67 |
| *Yim*2 | 4.25 | 3.31 | 0.42 | 2.74 | 0.66 | 1.01 | 0.67 |
| *Ilm*3 | 0.97 | 0.02 | 0.04 | 0.74 | - | - | 0.23 |