**Appendix 2** Trace element geochemistry in pyroxene occurring in Archean enderbite and ultramafic autoliths reported in ppm.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **Si** | **2SE** | **Ca** | **2SE** | **Y** | **2SE** | **Zr** | **2SE** | **Nb** | **2SE** | **La** | **2SE** | **Ce** | **2SE** | **Nd** | **2SE** | **Sm** | **2SE** |
| 10CXAL134B (UTM 639402.2E, 7390775.2N)websterite xenolith in ca. 2.67 Ga enderbite |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| opx1 | 282000 | 1600 | 3400 | 180 | 2.09 | 0.04 | 0.28 | 0.02 | 0.013 | 0.003 | 0.214 | 0.025 | 0.484 | 0.045 | 0.42 | 0.04 | 0.14 | 0.02 |
| cpx1b | 242000 | 1100 | 149250 | 920 | 88.11 | 0.43 | 28.67 | 0.27 | 0.152 | 0.007 | 22.9 | 0.95 | 111 | 1.7 | 103.2 | 0.5 | 27.28 | 0.18 |
| cpx2 | 240000 | 1000 | 161000 | 2000 | 70.66 | 0.85 | 32.25 | 0.40 | 0.024 | 0.003 | 16.26 | 0.35 | 78.84 | 0.97 | 71.9 | 0.9 | 19.64 | 0.27 |
| opx2b | 264000 | 1600 | 5110 | 160 | 3.60 | 0.08 | 0.73 | 0.03 | 0.027 | 0.004 | 0.677 | 0.082 | 2.11 | 0.15 | 1.60 | 0.09 | 0.44 | 0.03 |
| opx3 | 266000 | 2200 | 3101 | 71 | 2.52 | 0.03 | 0.41 | 0.02 | 0.004 | 0.001 | 0.037 | 0.017 | 0.106 | 0.038 | 0.12 | 0.02 | 0.07 | 0.01 |
| opx3b | 267000 | 1700 | 2851 | 99 | 2.32 | 0.04 | 0.50 | 0.02 | 0.006 | 0.002 | 0.138 | 0.013 | 0.251 | 0.024 | 0.26 | 0.03 | 0.10 | 0.01 |
| cpx4 | 244000 | 1100 | 159000 | 1100 | 83.59 | 0.53 | 31.9 | 0.29 | 0.057 | 0.005 | 19.1 | 0.31 | 95.74 | 0.65 | 90.9 | 0.4 | 24.53 | 0.19 |
| opx4b | 265000 | 1600 | 2960 | 110 | 2.46 | 0.03 | 0.31 | 0.08 | 0.005 | 0.001 | 0.094 | 0.022 | 0.35 | 0.11 | 0.18 | 0.03 | 0.08 | 0.01 |
| cpx5 | 234880 | 680 | 146260 | 920 | 67.27 | 0.33 | 26.0 | 1.10 | 0.125 | 0.006 | 20.55 | 0.73 | 90.9 | 1.3 | 80.3 | 0.54 | 20.60 | 0.13 |
| 10CXAL190A (UTM 652515.0E, 7385280.6N; U-Pb concordant age: 2670 ± 11 Ma)Orthopyroxene-clinopyroxene-biotite enderbite |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| opx1 | 250000 | 2500 | 4640 | 150 | 16.25 | 0.08 | 0.55 | 0.05 | 9.06 | 0.11 | 1.524 | 0.068 | 3.33 | 0.15 | 1.59 | 0.07 | 0.46 | 0.03 |  |  |  |  |  |
| cpx1b | 212000 | 1100 | 13960 | 280 | 13.64 | 0.22 | 0.28 | 0.02 | 17.2 | 2.2 | 3.77 | 0.18 | 7.02 | 0.52 | 3.73 | 0.12 | 1.17 | 0.07 |  |  |  |  |  |
| cpx2 | 181000 | 2500 | 13300 | 2100 | 18.45 | 0.20 | 0.40 | 0.04 | 0.056 | 0.010 | 7.5 | 2.5 | 12.60 | 4.00 | 5.1 | 1.3 | 1.04 | 0.16 |  |  |  |  |  |
| opx2b | 270000 | 1400 | 4870 | 130 | 16.22 | 0.12 | 0.20 | 0.01 | 0.008 | 0.002 | 0.703 | 0.085 | 1.34 | 0.12 | 0.70 | 0.05 | 0.32 | 0.02 |  |  |  |  |  |
| opx3 | 269000 | 1400 | 4880 | 110 | 16.68 | 0.12 | 0.36 | 0.03 | 0.016 | 0.003 | 0.284 | 0.013 | 0.78 | 0.03 | 0.59 | 0.04 | 0.36 | 0.03 |  |  |  |  |  |
| opx3b | 270000 | 3300 | 5380 | 210 | 14.90 | 0.09 | 0.24 | 0.01 | 0.005 | 0.002 | 1.262 | 0.087 | 2.07 | 0.11 | 0.90 | 0.05 | 0.33 | 0.02 |  |  |  |  |  |
| opx4 | 249000 | 2000 | 5560 | 160 | 15.84 | 0.10 | 0.19 | 0.01 | 0.033 | 0.004 | 0.246 | 0.013 | 0.57 | 0.04 | 0.39 | 0.04 | 0.29 | 0.02 |  |  |  |  |  |
| cpx4b | 188000 | 1700 | 24540 | 520 | 13.45 | 0.15 | 0.13 | 0.02 | 0.027 | 0.006 | 14 | 1.1 | 16.20 | 1.20 | 6.66 | 0.47 | 1.17 | 0.07 |  |  |  |  |  |
| opx5b | 249000 | 1400 | 4480 | 140 | 17.85 | 0.24 | 0.20 | 0.01 | 0.004 | 0.001 | 0.393 | 0.045 | 0.90 | 0.07 | 0.5 | 0.04 | 0.23 | 0.02 |  |  |  |  |  |
|  |

Appendix 2 continued

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **Eu** | **2SE** | **Gd** | **2SE** | **Dy** | **2SE** | **Er** | **2SE** | **Yb** | **2SE** | **Th** | **2SE** | **U** | **2SE** |
| 10CXAL134B (UTM 639402.2E, 7390775.2N)websterite xenolith in ca. 2.67 Ga enderbite |
| opx1 | 0.009 | 0.003 | 0.16 | 0.02 | 0.29 | 0.01 | 0.29 | 0.02 | 0.57 | 0.03 | 0.025 | 0.004 | 0.025 | 0.003 |  |  |  |  |
| cpx1b | 1.471 | 0.018 | 23.90 | 0.17 | 19.25 | 0.12 | 8.71 | 0.08 | 6.75 | 0.07 | 0.650 | 0.140 | 0.187 | 0.014 |  |  |  |  |
| cpx2 | 1.206 | 0.029 | 17.80 | 0.28 | 15.36 | 0.22 | 7.27 | 0.10 | 5.87 | 0.11 | 0.084 | 0.022 | 0.088 | 0.004 |  |  |  |  |
| opx2b | 0.032 | 0.005 | 0.45 | 0.02 | 0.57 | 0.02 | 0.50 | 0.02 | 0.79 | 0.03 | 0.044 | 0.006 | 0.025 | 0.003 |  |  |  |  |
| opx3 | 0.007 | 0.002 | 0.13 | 0.01 | 0.32 | 0.02 | 0.39 | 0.02 | 0.79 | 0.03 | 0.003 | 0.002 | 0.002 | 0.001 |  |  |  |  |
| opx3b | 0.014 | 0.003 | 0.13 | 0.02 | 0.29 | 0.02 | 0.34 | 0.01 | 0.68 | 0.02 | 0.002 | 0.001 | 0.005 | 0.001 |  |  |  |  |
| cpx4 | 1.403 | 0.027 | 21.91 | 0.21 | 18.12 | 0.14 | 8.40 | 0.09 | 6.71 | 0.08 | 0.156 | 0.020 | 0.108 | 0.004 |  |  |  |  |
| opx4b | 0.009 | 0.002 | 0.15 | 0.01 | 0.31 | 0.01 | 0.37 | 0.01 | 0.77 | 0.03 | 0.017 | 0.008 | 0.011 | 0.002 |  |  |  |  |
| cpx5 | 1.261 | 0.019 | 17.71 | 0.14 | 14.54 | 0.10 | 6.73 | 0.07 | 5.37 | 0.05 | 0.453 | 0.098 | 0.155 | 0.012 |  |  |  |  |
| 10CXAL190A (UTM 652515.0E, 7385280.6N; U-Pb concordant age: 2670 ± 11 Ma)Orthopyroxene-clinopyroxene-biotite enderbite |
| opx1 | 0.030 | 0.004 | 0.84 | 0.04 | 2.42 | 0.06 | 2.59 | 0.04 | 3.99 | 0.07 | - | - | 0.013 | 0.005 |  |  |  |  |
| cpx1b | 0.076 | 0.011 | 1.44 | 0.09 | 2.37 | 0.06 | 2.03 | 0.06 | 2.85 | 0.09 | - | - | 0.004 | 0.001 |  |  |  |  |
| cpx2 | 0.079 | 0.024 | 1.37 | 0.15 | 2.78 | 0.08 | 2.95 | 0.05 | 3.82 | 0.12 | - | - | 0.003 | 0.002 |  |  |  |  |
| opx2b | 0.021 | 0,003 | 0.71 | 0.03 | 2.44 | 0.05 | 2.63 | 0.04 | 3.95 | 0.06 | - | - | - | - |  |  |  |  |
| opx3 | 0.019 | 0.002 | 0.73 | 0.04 | 2.41 | 0.04 | 2.66 | 0.04 | 3.97 | 0.07 | - | - | - | - |  |  |  |  |
| opx3b | 0.025 | 0.004 | 0.67 | 0.05 | 2.09 | 0.04 | 2.38 | 0.04 | 3.75 | 0.07 | - | - | - | - |  |  |  |  |
| opx4 | 0.020 | 0.004 | 0.72 | 0.03 | 2.36 | 0.05 | 2.49 | 0.04 | 3.99 | 0.07 | - | - | - | - |  |  |  |  |
| cpx4b | 0.116 | 0.010 | 1.33 | 0.05 | 2.16 | 0.04 | 1.97 | 0.06 | 2.99 | 0.07 | - | - | 0.003 | 0.001 |  |  |  |  |
| opx5b | 0.025 | 0.004 | 0.63 | 0.04 | 2.43 | 0.05 | 2.86 | 0.07 | 4.43 | 0.09 | - | - | - | - |  |  |  |  |