**Appendix 3** Trace element geochemistry in olivine reported in ppm.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **Li** | **2SE** | | **Na** | | **2SE** | | **Al** | | **2SE** | | **P** | | **2SE** | **Ca** | | **2SE** | | **Sc** | | **2SE** | | **Ti** | | **2SE** | **V** | | **2SE** | | **Cr** | | **2SE** | | |
| 10CXAL249 (UTM 545100.0E, 7370000.0N)  dunite xenolith in ca. 2.72 Ga granitoid gneiss | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| L249\_1 | 3.35 | 0.63 | | - | | - | | 12.6 | | 2.6 | | 8.4 | | 5.1 | 480 | | 340 | | 17.33 | | 0.27 | | 11.3 | | 1.3 | 1.60 | | 0.31 | | 530 | | 100 | | |
| L249\_2 | 4.95 | 0.51 | | 48 | | 18 | | 5.6 | | 1.5 | | 24.7 | | 5.9 | 540 | | 350 | | 16.59 | | 0.32 | | 9.1 | | 1.1 | 0.28 | | 0.09 | | 36 | | 16 | | |
| L249\_3 | 3.19 | 0.66 | | 710 | | 110 | | 65.5 | | 7.0 | | 24.2 | | 6.3 | 460 | | 430 | | 15.97 | | 0.34 | | 10.9 | | 1.6 | 1.17 | | 0.30 | | 318 | | 94 | | |
| L249\_4 | 2.82 | 0.72 | | - | | - | | 2.0 | | 1.1 | | 11.5 | | 6.6 | 310 | | 370 | | 15.31 | | 0.30 | | 7.5 | | 1.5 | 0.17 | | 0.08 | | 24 | | 5 | | |
| L249\_5 | 3.47 | 0.84 | | - | | - | | 1.8 | | 0.9 | | 14.8 | | 6.2 | 320 | | 440 | | 14.82 | | 0.33 | | 6.9 | | 1.5 | 0.22 | | 0.08 | | 23 | | 8 | | |
| L249\_6 | 3.85 | 0.63 | | - | | - | | 1.1 | | 1.1 | | 19.8 | | 5.3 | 660 | | 390 | | 13.86 | | 0.28 | | 7.5 | | 1.1 | 0.11 | | 0.08 | | 20 | | 11 | | |
| L249\_7 | 4.02 | 0.63 | | - | | - | | 1.8 | | 1.0 | | 15.9 | | 5.8 | 210 | | 380 | | 13.60 | | 0.28 | | 5.9 | | 1.5 | 0.06 | | 0.07 | | 6.6 | | 0.3 | | |
| L249\_8 | 3.89 | 0.75 | | - | | - | | 1.6 | | 1.2 | | 26.5 | | 6.5 | 370 | | 410 | | 13.73 | | 0.28 | | 5.4 | | 1.4 | 0.11 | | 0.06 | | 5.7 | | 0.3 | | |
| L249\_9 | 4.70 | 0.62 | | - | | - | | 1.7 | | 1.2 | | 22.1 | | 5.3 | 430 | | 350 | | 13.00 | | 0.31 | | 7.7 | | 1.3 | 0.18 | | 0.09 | | 53 | | 14 | | |
| L249\_10 | 4.43 | 0.75 | | - | | - | | 7.4 | | 2.7 | | 23.4 | | 6.5 | 260 | | 380 | | 12.80 | | 0.30 | | 6.0 | | 1.3 | 0.94 | | 0.38 | | 260 | | 130 | | |
|  |  |  | |  | |  | |  | |  | |  | |  |  | |  | |  | |  | |  | |  |  | |  | |  | |  | | |
| **Sample** | **Mn** | | **2SE** | | **Co** | | **2SE** | | **Ni** | | **2SE** | | **Zn** | | | **2SE** | | **Y** | | **2SE** | | **Zr** | | **2SE** | | | **Nb** | | **2SE** | |
| L249\_1 | 1515 | | 10 | | 164 | | 2 | | 3768 | | 28 | | 174.1 | | | 5.0 | | 0.071 | | 0.010 | | - | | - | | | 0.017 | | 0.014 | |  | | |  | | |  | |  | |
| L249\_2 | 1540 | | 11 | | 164 | | 2 | | 3738 | | 32 | | 151.6 | | | 2.9 | | 0.058 | | 0.008 | | 0.05 | | 0.02 | | | 0.015 | | 0.013 | |  | | |  | | |  | |  | |
| L249\_3 | 1592 | | 15 | | 163 | | 2 | | 3823 | | 44 | | 158.5 | | | 5.5 | | 0.077 | | 0.010 | | 0.97 | | 0.15 | | | 0.005 | | 0.015 | |  | | |  | | |  | |  | |
| L249\_4 | 1656 | | 17 | | 162 | | 2 | | 3804 | | 43 | | 162.2 | | | 4.1 | | 0.035 | | 0.007 | | - | | - | | | 0.002 | | 0.014 | |  | | |  | | |  | |  | |
| L249\_5 | 1532 | | 16 | | 162 | | 2 | | 3806 | | 48 | | 161.4 | | | 4.1 | | 0.047 | | 0.007 | | - | | - | | | - | | - | |  | | |  | | |  | |  | |
| L249\_6 | 1621 | | 8 | | 165 | | 2 | | 3859 | | 26 | | 165.3 | | | 2.9 | | 0.069 | | 0.011 | | - | | - | | | 0.045 | | 0.014 | |  | | |  | | |  | |  | |
| L249\_7 | 1723 | | 15 | | 163 | | 2 | | 3895 | | 27 | | 160.7 | | | 3.5 | | 0.074 | | 0.011 | | - | | - | | | 0.022 | | 0.014 | |  | | |  | | |  | |  | |
| L249\_8 | 1613 | | 9 | | 165 | | 1 | | 3916 | | 29 | | 165.9 | | | 3.6 | | 0.062 | | 0.011 | | - | | - | | | 0.024 | | 0.016 | |  | | |  | | |  | |  | |
| L249\_9 | 1634 | | 10 | | 165 | | 1 | | 3865 | | 27 | | 163.6 | | | 3.5 | | 0.059 | | 0.009 | | - | | - | | | 0.028 | | 0.013 | |  | | |  | | |  | |  | |
| L249\_10 | 1654 | | 20 | | 162 | | 2 | | 3774 | | 56 | | 173.5 | | | 7.1 | | 0.055 | | 0.009 | | - | | - | | | 0.023 | | 0.015 | |  | |  | | |  | |  | |