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# **Table S1.** The modal mineralogic compositions of the studied pluton.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | Quartz | Plagioclase | Orthoclase | Hornblende | Augite | Biotite | Chlorite | Sericite | Opaques | Total |
| *Quartz diorite* | | | | | | | | | | |
| C-19 | 17.2 | 42.8 | 20.9 | 6.9 | 0.3 | 8.9 | 0.7 | 0 | 2.3 | 100.1 |
| C-4 | 14.5 | 62.1 | 8.8 | 4.7 | 0 | 6.4 | 2.5 | 0 | 1 | 100 |
| C-4b | 15.9 | 62.6 | 9.1 | 3.1 | 0 | 6.5 | 0.6 | 0.4 | 1.8 | 100 |
| K16\* | 15.3 | 60.3 | 6.7 | 8.9 | 0 | 6.7 | 0 | 0 | 2 | 100 |
| K20\* | 12.5 | 59.7 | 8.6 | 12.9 | 0 | 4.7 | 0 | 0 | 2.6 | 101 |
| K22\* | 14.4 | 58.7 | 7.1 | 9.9 | 0 | 6.9 | 0 | 0 | 3 | 100 |
| K40\* | 10.7 | 56.9 | 5.6 | 16.6 | 0 | 6 | 0 | 0 | 4.2 | 100 |
| K47\* | 10.4 | 63.4 | 7.1 | 10.7 | 0 | 5.5 | 0 | 0 | 2.9 | 100 |
| *Granodiorite* | | | | | | | | | | |
| C-9 | 20.5 | 35.4 | 32.3 | 5.5 | 0 | 3.6 | 0.6 | 0 | 2 | 99.9 |
| K21\* | 25.6 | 46.5 | 11.9 | 7.2 | 0 | 5.6 | 0 | 0 | 3.2 | 100 |
| K11\* | 31.9 | 38.6 | 17.8 | 7.2 | 0 | 0.9 | 0 | 0 | 3.5 | 100 |
| K41\* | 29.1 | 40.6 | 17.6 | 8.8 | 0 | 2.8 | 0 | 0 | 1.1 | 100 |
| K46\* | 17.3 | 45.2 | 21.3 | 12.1 | 0 | 2.5 | 0 | 0 | 1.6 | 100 |
| K49\* | 17.3 | 45.2 | 20.4 | 14.4 | 0 | 0.9 | 0 | 0 | 1.8 | 100 |
| K51\* | 30.1 | 43.3 | 16.8 | 4.6 | 0 | 3 | 0 | 0 | 2.2 | 100 |
| K55\* | 32.5 | 41.9 | 10.6 | 7.2 | 0 | 5.7 | 0 | 0 | 2.1 | 100 |
| K81\* | 29.4 | 46.6 | 21.1 | 0.9 | 0 | 0.4 | 0 | 0 | 1.6 | 100 |
| *Granite* | | | | | | | | | | |
| K45\* | 16.4 | 40.2 | 23.7 | 8.2 | 0 | 9.4 | 0 | 0 | 2.1 | 100 |
| K33\* | 33.7 | 35.5 | 25.7 | 1.6 | 0 | 1.9 | 0 | 0 | 1.6 | 100 |
| K19\* | 32.6 | 38.3 | 21.7 | 3.5 | 0 | 0.8 | 0 | 0 | 3.1 | 100 |
| TK36\* | 48.6 | 22.9 | 23.1 | 1.9 | 0 | 3 | 0 | 0 | 0.6 | 100 |
| K43\* | 26 | 24.6 | 43.3 | 1.6 | 0 | 3.6 | 0 | 0 | 0.9 | 100 |
| *\*Modal analysis results from Sipahi et al. (2018b)* | | | | | | | | | | |

# **Table S2.** Selected mineral chemistry analyses of amphibole, plagioclase, K-feldspar, biotite, and magnetite of the studied rocks.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | K55-10 | K55-11 | K55-28 | K55-29 | K55-30 | K55-31 | K55-54 | K55-56 | K55-57 |
| Amphibole | core | rim | core | rim | core | rim | core | core | rim |
| SiO2 (wt.%) | 48.99 | 48.60 | 46.42 | 47.97 | 49.29 | 52.35 | 48.29 | 45.93 | 47.66 |
| TiO2 | 1.17 | 1.31 | 1.56 | 1.19 | 1.19 | 0.20 | 1.08 | 2.03 | 1.19 |
| Al2O3 | 5.53 | 6.25 | 6.13 | 5.91 | 5.02 | 2.22 | 4.70 | 8.07 | 5.84 |
| FeOt | 12.90 | 13.71 | 12.35 | 12.14 | 11.88 | 10.48 | 11.75 | 12.04 | 13.41 |
| MnO | 0.81 | 0.68 | 0.55 | 0.58 | 0.76 | 0.69 | 0.75 | 0.37 | 0.65 |
| MgO | 14.51 | 14.47 | 13.64 | 13.11 | 15.24 | 15.10 | 14.38 | 13.70 | 13.67 |
| CaO | 11.28 | 11.43 | 11.34 | 10.96 | 11.44 | 12.23 | 11.52 | 11.25 | 11.30 |
| Na2O | 1.19 | 1.34 | 1.31 | 1.10 | 1.06 | 0.34 | 0.96 | 1.58 | 1.18 |
| K2O | 0.52 | 0.62 | 0.63 | 0.80 | 0.47 | 0.12 | 0.47 | 0.80 | 0.60 |
| F | 0.49 | 0.53 | 0.47 | 0.53 | 0.45 | 0.37 | 0.40 | 0.51 | 0.47 |
| Cl | 0.11 | 0.11 | 0.07 | 0.09 | 0.10 | 0.03 | 0.11 | 0.06 | 0.11 |
| Total | 99.26 | 100.81 | 96.17 | 96.08 | 98.68 | 95.96 | 96.17 | 98.07 | 97.82 |
| H2O | 1.77 | 1.77 | 1.72 | 1.69 | 1.79 | 1.82 | 1.75 | 1.74 | 1.73 |
| *Number of cations on the basis of 23 oxygens* | | | | | | | | | |
| Si | 7.19 | 7.05 | 7.07 | 7.27 | 7.24 | 7.80 | 7.31 | 6.86 | 7.15 |
| Al4 | 0.81 | 0.95 | 0.93 | 0.73 | 0.76 | 0.20 | 0.69 | 1.14 | 0.85 |
| Al6 | 0.14 | 0.12 | 0.17 | 0.33 | 0.11 | 0.19 | 0.15 | 0.28 | 0.18 |
| Fe3+ | 0.17 | 0.21 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.05 |
| Ti | 0.13 | 0.14 | 0.18 | 0.14 | 0.13 | 0.02 | 0.12 | 0.23 | 0.13 |
| Fe2+ | 1.41 | 1.46 | 1.57 | 1.54 | 1.32 | 1.31 | 1.49 | 1.50 | 1.63 |
| Mn | 0.10 | 0.08 | 0.07 | 0.07 | 0.09 | 0.09 | 0.10 | 0.05 | 0.08 |
| Mg | 3.17 | 3.13 | 3.10 | 2.96 | 3.34 | 3.36 | 3.24 | 3.05 | 3.06 |
| Ca | 1.77 | 1.78 | 1.85 | 1.78 | 1.80 | 1.95 | 1.87 | 1.80 | 1.82 |
| Na | 0.34 | 0.38 | 0.39 | 0.32 | 0.30 | 0.10 | 0.28 | 0.46 | 0.34 |
| K | 0.10 | 0.11 | 0.12 | 0.15 | 0.09 | 0.02 | 0.09 | 0.15 | 0.11 |
| Total | 15.24 | 15.30 | 15.33 | 15.15 | 15.23 | 15.02 | 15.25 | 15.36 | 15.29 |
| Mg/(Mg+Fe2+) | 0.69 | 0.68 | 0.66 | 0.66 | 0.72 | 0.72 | 0.69 | 0.67 | 0.65 |

\*Fe2+ and Fe3+ estimations from Droop (1987) and Yavuz (1999).

Table S2 (continued)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Quartz diorite | K40-58 | K40-59 | K40-65 | K40-66 | K40-68 |
| Amphibole | core | rim | core | rim | rim |
| SiO2 | 52.38 | 49.52 | 47.19 | 49.14 | 47.71 |
| TiO2 | 0.88 | 0.85 | 1.58 | 0.97 | 1.18 |
| Al2O3 | 3.83 | 4.05 | 6.49 | 6.11 | 6.45 |
| FeOt | 11.00 | 13.52 | 12.66 | 14.32 | 13.90 |
| MnO | 0.27 | 0.78 | 0.52 | 0.74 | 0.71 |
| MgO | 15.93 | 14.06 | 13.75 | 13.7 | 13.40 |
| CaO | 11.24 | 11.03 | 11.18 | 10.56 | 10.81 |
| Na2O | 0.99 | 0.97 | 1.34 | 1.32 | 1.20 |
| K2O | 0.31 | 0.31 | 0.55 | 0.49 | 0.45 |
| F | 0.55 | 0.39 | 0.42 | 0.43 | 0.32 |
| Cl | 0.05 | 0.04 | 0.10 | 0.05 | 0.05 |
| Total | 99.24 | 97.31 | 97.56 | 99.64 | 97.99 |
| H2O | 1.79 | 1.80 | 1.77 | 1.81 | 1.83 |
| *Number of cations on the basis of 23 oxygens* | | | | | |
| Si | 7.56 | 7.38 | 7.08 | 7.15 | 7.09 |
| Al4 | 0.44 | 0.62 | 0.92 | 0.85 | 0.91 |
| Al6 | 0.21 | 0.09 | 0.22 | 0.20 | 0.22 |
| Fe3+ | 0.04 | 0.28 | 0.00 | 0.48 | 0.30 |
| Ti | 0.10 | 0.10 | 0.18 | 0.11 | 0.13 |
| Fe2+ | 1.29 | 1.40 | 1.59 | 1.27 | 1.43 |
| Mn | 0.03 | 0.10 | 0.07 | 0.09 | 0.09 |
| Mg | 3.43 | 3.12 | 3.07 | 2.97 | 2.97 |
| Ca | 1.74 | 1.76 | 1.80 | 1.65 | 1.72 |
| Na | 0.28 | 0.28 | 0.39 | 0.37 | 0.35 |
| K | 0.06 | 0.06 | 0.11 | 0.09 | 0.09 |
| Total | 15.11 | 15.14 | 15.31 | 15.12 | 15.20 |
| Mg/(Mg+Fe2+) | 0.73 | 0.69 | 0.66 | 0.70 | 0.67 |

\*Fe2+ and Fe3+ estimations from Droop (1987) and Yavuz (1999).

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C3-30 | C3-31 | C3-32 | C3-33 | C3-66 | C3-67 | C3-83 | C3-85 | C3-86 |
| Amphibole | core | rim | core | rim | low | hi | core | rim | core |
| SiO2 (wt.%) | 54.00 | 48.43 | 52.71 | 47.92 | 54.29 | 48.25 | 53.33 | 50.06 | 54.59 |
| TiO2 | 0.19 | 1.25 | 0.29 | 1.26 | 0.20 | 1.19 | 0.21 | 0.98 | 0.11 |
| Al2O3 | 2.03 | 6.31 | 2.89 | 5.92 | 1.92 | 6.07 | 2.30 | 5.42 | 1.91 |
| FeOt | 9.92 | 13.20 | 10.72 | 13.12 | 10.25 | 13.05 | 10.50 | 12.44 | 9.88 |
| MnO | 0.91 | 0.98 | 0.80 | 0.93 | 0.98 | 0.98 | 0.90 | 1.08 | 0.77 |
| MgO | 17.57 | 14.31 | 16.60 | 13.82 | 17.40 | 14.41 | 17.31 | 15.26 | 17.73 |
| CaO | 12.41 | 11.47 | 12.62 | 11.82 | 12.35 | 11.96 | 12.52 | 11.70 | 12.78 |
| Na2O | 0.37 | 1.25 | 0.46 | 1.01 | 0.41 | 1.11 | 0.43 | 1.05 | 0.32 |
| K2O | 0.11 | 0.39 | 0.18 | 0.49 | 0.10 | 0.51 | 0.13 | 0.36 | 0.09 |
| F | 0.25 | 0.24 | 0.28 | 0.27 | 0.26 | 0.29 | 0.26 | 0.28 | 0.23 |
| Cl | 0.03 | 0.05 | 0.05 | 0.07 | 0.03 | 0.06 | 0.04 | 0.04 | 0.02 |
| Total | 99.76 | 99.79 | 99.54 | 98.50 | 100.13 | 99.76 | 99.90 | 100.60 | 100.43 |
| H2O | 1.97 | 1.91 | 1.93 | 1.86 | 1.97 | 1.88 | 1.95 | 1.92 | 1.99 |
| *Number of cations on the basis of 23 oxygens* | | | | | | | | | |
| Si | 7.66 | 7.07 | 7.57 | 7.11 | 7.68 | 7.07 | 7.59 | 7.19 | 7.70 |
| Al4 | 0.34 | 0.93 | 0.43 | 0.89 | 0.32 | 0.93 | 0.39 | 0.81 | 0.30 |
| Al6 | 0.000 | 0.154 | 0.060 | 0.146 | 0.000 | 0.118 | 0.000 | 0.107 | 0.016 |
| Fe3+ | 0.25 | 0.09 | 0.06 | 0.00 | 0.24 | 0.00 | 0.27 | 0.18 | 0.17 |
| Ti | 0.02 | 0.14 | 0.03 | 0.14 | 0.02 | 0.13 | 0.02 | 0.11 | 0.01 |
| Fe2+ | 0.93 | 1.52 | 1.23 | 1.63 | 0.98 | 1.60 | 0.98 | 1.31 | 1.00 |
| Mn | 0.11 | 0.12 | 0.10 | 0.12 | 0.12 | 0.12 | 0.11 | 0.13 | 0.09 |
| Mg | 3.72 | 3.11 | 3.55 | 3.06 | 3.67 | 3.15 | 3.67 | 3.27 | 3.73 |
| Ca | 1.89 | 1.79 | 1.94 | 1.88 | 1.87 | 1.88 | 1.91 | 1.80 | 1.93 |
| Na | 0.10 | 0.35 | 0.13 | 0.29 | 0.11 | 0.32 | 0.12 | 0.29 | 0.09 |
| K | 0.02 | 0.07 | 0.03 | 0.09 | 0.02 | 0.10 | 0.02 | 0.07 | 0.02 |
| Total | 15.01 | 15.29 | 15.10 | 15.26 | 15.00 | 15.31 | 15.05 | 15.19 | 15.03 |
| Mg/(Mg+Fe) | 0.69 | 0.76 | 0.66 | 0.73 | 0.65 | 0.75 | 0.66 | 0.66 | 0.69 |

\*Fe2+ and Fe3+ estimations from Droop (1987) and Yavuz (1999).

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C9-59 | C9-61 | C9-62 | C9-63 | C9-64 | C9-65 | C9-66 | C9-67 | C9-68 | C9-69 | C9-70 | C9-71 | C9-73 | C9-74 | C9-76 |
| Amphibole | core |  | rim | core |  | rim | core |  | | | rim | core | rim | core | core |
| SiO2 (wt.%) | 49.84 | 49.21 | 50.51 | 49.77 | 48.66 | 49.34 | 47.96 | 48.40 | 48.58 | 51.19 | 47.46 | 51.03 | 50.00 | 50.50 | 50.25 |
| TiO2 | 1.13 | 1.24 | 0.88 | 1.15 | 1.25 | 1.18 | 1.04 | 1.17 | 1.28 | 0.71 | 1.39 | 0.81 | 0.87 | 0.80 | 0.83 |
| Al2O3 | 4.90 | 4.89 | 4.44 | 4.70 | 5.28 | 4.88 | 5.76 | 5.60 | 5.42 | 3.58 | 5.77 | 3.66 | 4.44 | 4.23 | 4.26 |
| FeOt | 14.38 | 15.31 | 14.94 | 15.03 | 15.41 | 14.60 | 16.20 | 17.30 | 15.65 | 14.85 | 17.14 | 15.07 | 15.59 | 15.63 | 15.30 |
| MnO | 0.56 | 0.73 | 0.66 | 0.67 | 0.73 | 0.60 | 0.74 | 0.92 | 0.67 | 0.60 | 0.74 | 0.77 | 0.75 | 0.84 | 0.69 |
| MgO | 14.58 | 13.68 | 14.41 | 14.44 | 13.69 | 14.35 | 13.10 | 12.67 | 13.45 | 14.13 | 12.24 | 14.13 | 13.79 | 14.15 | 14.19 |
| CaO | 11.30 | 10.85 | 11.10 | 11.02 | 11.33 | 11.26 | 10.66 | 10.33 | 11.06 | 11.57 | 10.82 | 11.24 | 10.95 | 11.02 | 11.05 |
| Na2O | 1.06 | 1.13 | 1.02 | 1.14 | 1.00 | 0.99 | 1.28 | 1.29 | 1.27 | 0.73 | 1.59 | 0.79 | 0.96 | 0.95 | 1.00 |
| K2O | 0.44 | 0.49 | 0.42 | 0.45 | 0.54 | 0.48 | 0.63 | 0.56 | 0.53 | 0.39 | 0.57 | 0.35 | 0.41 | 0.40 | 0.40 |
| F | 0.38 | 0.40 | 0.38 | 0.39 | 0.36 | 0.36 | 0.39 | 0.30 | 0.41 | 0.34 | 0.49 | 0.32 | 0.33 | 0.31 | 0.36 |
| Cl | 0.17 | 0.17 | 0.26 | 0.15 | 0.19 | 0.15 | 0.21 | 0.27 | 0.17 | 0.19 | 0.19 | 0.19 | 0.27 | 0.29 | 0.27 |
| Total | 100.57 | 99.87 | 100.82 | 100.74 | 100.25 | 100.01 | 99.73 | 100.60 | 100.29 | 100.09 | 100.12 | 100.21 | 100.16 | 100.95 | 100.39 |
| H2O | 1.82 | 1.79 | 1.80 | 1.82 | 1.80 | 1.82 | 1.77 | 1.80 | 1.78 | 1.83 | 1.72 | 1.84 | 1.80 | 1.82 | 1.80 |
| *Number of cations on the basis of 23 oxygens* | | | | | | | | | | | | | | | |
| Si | 7.21 | 7.21 | 7.27 | 7.19 | 7.12 | 7.19 | 7.05 | 7.06 | 7.12 | 7.44 | 7.05 | 7.40 | 7.27 | 7.27 | 7.27 |
| Al4 | 0.79 | 0.79 | 0.73 | 0.80 | 0.88 | 0.81 | 0.95 | 0.94 | 0.88 | 0.56 | 0.95 | 0.60 | 0.73 | 0.72 | 0.73 |
| Al6 | 0.05 | 0.05 | 0.03 | 0.00 | 0.03 | 0.03 | 0.05 | 0.02 | 0.06 | 0.06 | 0.06 | 0.02 | 0.03 | 0.00 | 0.00 |
| Fe3+ | 0.15 | 0.16 | 0.29 | 0.29 | 0.14 | 0.17 | 0.37 | 0.50 | 0.09 | 0.10 | 0.00 | 0.25 | 0.35 | 0.46 | 0.35 |
| Ti | 0.12 | 0.14 | 0.10 | 0.12 | 0.14 | 0.13 | 0.11 | 0.13 | 0.14 | 0.08 | 0.16 | 0.09 | 0.10 | 0.09 | 0.09 |
| Fe2+ | 1.59 | 1.72 | 1.50 | 1.53 | 1.75 | 1.60 | 1.62 | 1.61 | 1.83 | 1.70 | 2.13 | 1.58 | 1.54 | 1.42 | 1.50 |
| Mn | 0.07 | 0.09 | 0.08 | 0.08 | 0.09 | 0.07 | 0.09 | 0.11 | 0.08 | 0.07 | 0.09 | 0.09 | 0.09 | 0.10 | 0.08 |
| Mg | 3.14 | 2.99 | 3.09 | 3.11 | 2.99 | 3.12 | 2.87 | 2.75 | 2.94 | 3.06 | 2.71 | 3.05 | 2.99 | 3.03 | 3.06 |
| Ca | 1.75 | 1.70 | 1.71 | 1.71 | 1.78 | 1.76 | 1.68 | 1.61 | 1.74 | 1.80 | 1.72 | 1.75 | 1.70 | 1.70 | 1.71 |
| Na | 0.30 | 0.32 | 0.28 | 0.32 | 0.28 | 0.28 | 0.36 | 0.36 | 0.36 | 0.21 | 0.46 | 0.22 | 0.27 | 0.26 | 0.28 |
| K | 0.08 | 0.09 | 0.08 | 0.08 | 0.10 | 0.09 | 0.12 | 0.10 | 0.10 | 0.07 | 0.11 | 0.06 | 0.08 | 0.07 | 0.07 |
| Total | 15.17 | 15.16 | 15.09 | 15.15 | 15.20 | 15.17 | 15.16 | 15.11 | 15.24 | 15.09 | 15.32 | 15.06 | 15.07 | 15.05 | 15.09 |
| Mg/(Mg+Fe) | 0.64 | 0.61 | 0.63 | 0.63 | 0.61 | 0.64 | 0.59 | 0.57 | 0.61 | 0.63 | 0.56 | 0.63 | 0.61 | 0.62 | 0.62 |

\*Fe2+ and Fe3+ estimations from Droop (1987) and Yavuz (1999).

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Diorite | C19-21 | C19-22 | C19-23 | C19-24 | C19-25 | C19-26 | C19-28 | C19-29 | C19-68 | C19-69 | C19-70 | C19-72 | C19-74 | C19-86 |
| Amphibole | rim | core | rim | low | core | rim | core | rim | core |  | rim | hi | hi | core |
| SiO2 (wt.%) | 49.87 | 49.47 | 49.42 | 54.41 | 49.91 | 49.68 | 50.67 | 49.71 | 50.61 | 49.78 | 49.87 | 50.56 | 49.90 | 49.74 |
| TiO2 | 0.86 | 1.19 | 0.84 | 0.10 | 1.07 | 0.80 | 0.72 | 0.91 | 0.68 | 0.84 | 0.82 | 0.90 | 0.88 | 0.90 |
| Al2O3 | 5.03 | 5.01 | 5.61 | 1.58 | 4.74 | 4.89 | 4.58 | 4.95 | 4.64 | 5.35 | 4.95 | 4.40 | 4.83 | 5.48 |
| FeOt | 14.05 | 14.44 | 14.29 | 11.74 | 14.22 | 13.92 | 13.55 | 13.86 | 13.29 | 14.22 | 13.60 | 13.52 | 13.82 | 14.10 |
| MnO | 0.56 | 0.66 | 0.58 | 0.53 | 0.59 | 0.59 | 0.58 | 0.51 | 0.59 | 0.57 | 0.58 | 0.53 | 0.55 | 0.60 |
| MgO | 14.79 | 14.7 | 14.58 | 17.01 | 14.93 | 14.97 | 15.53 | 14.71 | 15.72 | 14.87 | 15.24 | 15.12 | 14.88 | 14.81 |
| CaO | 11.54 | 11.31 | 11.42 | 12.67 | 11.40 | 11.55 | 11.45 | 11.74 | 11.13 | 11.39 | 11.41 | 11.99 | 11.64 | 11.25 |
| Na2O | 1.01 | 1.01 | 1.06 | 0.25 | 0.97 | 0.99 | 0.90 | 1.02 | 0.90 | 1.15 | 0.93 | 0.79 | 0.89 | 1.05 |
| K2O | 0.45 | 0.42 | 0.52 | 0.07 | 0.43 | 0.47 | 0.41 | 0.45 | 0.40 | 0.49 | 0.46 | 0.39 | 0.47 | 0.51 |
| F | 0.19 | 0.22 | 0.22 | 0.24 | 0.25 | 0.22 | 0.25 | 0.24 | 0.19 | 0.27 | 0.21 | 0.22 | 0.20 | 0.27 |
| Cl | 0.07 | 0.17 | 0.08 | 0.02 | 0.15 | 0.06 | 0.06 | 0.06 | 0.05 | 0.08 | 0.07 | 0.11 | 0.06 | 0.08 |
| Total | 100.37 | 100.5 | 100.54 | 100.59 | 100.57 | 100.06 | 100.62 | 100.07 | 100.16 | 100.92 | 100.06 | 100.46 | 100.06 | 100.69 |
| H2O | 1.94 | 1.9 | 1.93 | 1.98 | 1.89 | 1.92 | 1.93 | 1.92 | 1.96 | 1.91 | 1.94 | 1.93 | 1.94 | 1.91 |
| *Number of cations on the basis of 23 oxygens* | | | | | | | | | | | | | | |
| Si | 7.20 | 7.15 | 7.12 | 7.70 | 7.20 | 7.18 | 7.24 | 7.22 | 7.22 | 7.14 | 7.18 | 7.30 | 7.22 | 7.14 |
| Al4 | 0.80 | 0.85 | 0.88 | 0.26 | 0.80 | 0.82 | 0.76 | 0.78 | 0.78 | 0.86 | 0.82 | 0.70 | 0.78 | 0.86 |
| Al6 | 0.05 | 0.01 | 0.07 | 0.00 | 0.00 | 0.02 | 0.01 | 0.07 | 0.00 | 0.05 | 0.02 | 0.05 | 0.05 | 0.07 |
| Fe3+ | 0.34 | 0.32 | 0.40 | 0.27 | 0.31 | 0.39 | 0.50 | 0.16 | 0.67 | 0.40 | 0.47 | 0.13 | 0.29 | 0.42 |
| Ti | 0.09 | 0.13 | 0.09 | 0.01 | 0.12 | 0.09 | 0.08 | 0.10 | 0.07 | 0.09 | 0.09 | 0.10 | 0.10 | 0.10 |
| Fe2+ | 1.36 | 1.43 | 1.32 | 1.12 | 1.40 | 1.29 | 1.12 | 1.52 | 0.92 | 1.31 | 1.17 | 1.50 | 1.38 | 1.27 |
| Mn | 0.07 | 0.08 | 0.07 | 0.06 | 0.07 | 0.07 | 0.07 | 0.06 | 0.07 | 0.07 | 0.07 | 0.06 | 0.07 | 0.07 |
| Mg | 3.18 | 3.17 | 3.13 | 3.59 | 3.21 | 3.23 | 3.31 | 3.19 | 3.34 | 3.18 | 3.27 | 3.25 | 3.21 | 3.17 |
| Ca | 1.78 | 1.75 | 1.76 | 1.92 | 1.76 | 1.79 | 1.75 | 1.83 | 1.70 | 1.75 | 1.76 | 1.85 | 1.81 | 1.73 |
| Na | 0.28 | 0.28 | 0.30 | 0.07 | 0.27 | 0.28 | 0.25 | 0.29 | 0.25 | 0.32 | 0.26 | 0.22 | 0.25 | 0.29 |
| K | 0.08 | 0.08 | 0.10 | 0.01 | 0.08 | 0.09 | 0.07 | 0.08 | 0.07 | 0.09 | 0.08 | 0.07 | 0.09 | 0.09 |
| Total | 15.16 | 15.16 | 15.15 | 15.00 | 15.15 | 15.15 | 15.08 | 15.22 | 15.03 | 15.16 | 15.11 | 15.18 | 15.15 | 15.12 |
| Mg/(Mg+Fe) | 0.65 | 0.64 | 0.65 | 0.72 | 0.65 | 0.66 | 0.67 | 0.65 | 0.68 | 0.65 | 0.67 | 0.71 | 0.72 | 0.71 |

\*Fe2+ and Fe3+ estimations from Droop (1987) and Yavuz (1999).

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | K55-05 | K55-08 | K55-09 | K55-13 | K55-16 | K55-19 | K55-19 | K55-44 | K55-45 | K55-46 | K55-63 | K55-66 | K55-67 | K55-68 |
| Plagioclase | rim | core | | core | rim | core | core | rim | core | rim | rim |  | | core |
| SiO2 (wt.%) | 66.41 | 60.60 | 54.60 | 57.86 | 62.24 | 55.39 | 55.39 | 63.95 | 60.39 | 58.40 | 64.09 | 56.41 | 54.51 | 55.88 |
| Al2O3 | 20.00 | 23.80 | 27.60 | 25.70 | 23.13 | 26.84 | 26.84 | 22.34 | 24.26 | 25.70 | 21.68 | 26.58 | 28.45 | 27.34 |
| FeOt | 0.13 | 0.19 | 0.28 | 0.27 | 0.15 | 0.29 | 0.29 | 0.07 | 0.24 | 0.40 | 0.12 | 0.34 | 0.36 | 0.36 |
| CaO | 3.39 | 5.08 | 9.93 | 7.72 | 4.67 | 9.16 | 9.16 | 3.95 | 5.91 | 7.41 | 3.06 | 8.66 | 10.60 | 9.51 |
| Na2O | 8.26 | 7.90 | 5.44 | 6.73 | 8.68 | 6.10 | 6.10 | 9.17 | 7.89 | 7.06 | 9.39 | 6.29 | 5.13 | 5.90 |
| K2O | 0.18 | 0.49 | 0.13 | 0.29 | 0.24 | 0.26 | 0.26 | 0.13 | 0.27 | 0.21 | 0.12 | 0.23 | 0.18 | 0.25 |
| SrO | 0.06 | 0.06 | 0.13 | 0.03 | 0.03 | 0.11 | 0.11 | 0.04 | 0.07 | 0.01 | 0.04 | 0.05 | 0.03 | 0.07 |
| BaO | 0.01 | 0.01 | 0.04 | 0.06 | 0.03 | 0.05 | 0.05 | 0.02 | 0.03 | 0.03 | 0.02 | 0.02 | 0.05 | 0.06 |
| Total | 98.44 | 98.10 | 98.20 | 98.67 | 99.16 | 98.20 | 98.20 | 99.67 | 99.06 | 99.21 | 98.52 | 98.59 | 99.31 | 99.37 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | | | | | |
| Si | 2.95 | 2.74 | 2.51 | 2.62 | 2.78 | 2.54 | 2.54 | 2.83 | 2.71 | 2.63 | 2.86 | 2.57 | 2.48 | 2.53 |
| Al | 1.05 | 1.27 | 1.49 | 1.37 | 1.22 | 1.46 | 1.45 | 1.17 | 1.28 | 1.37 | 1.14 | 1.43 | 1.52 | 1.46 |
| Fe2+ | 0.015 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.003 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 |
| Ca | 0.16 | 0.25 | 0.49 | 0.38 | 0.22 | 0.45 | 0.45 | 0.19 | 0.28 | 0.36 | 0.15 | 0.42 | 0.52 | 0.46 |
| Na | 0.71 | 0.69 | 0.48 | 0.59 | 0.75 | 0.54 | 0.54 | 0.79 | 0.69 | 0.62 | 0.81 | 0.56 | 0.45 | 0.52 |
| K | 0.01 | 0.03 | 0.01 | 0.02 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Sr | 0.002 | 0 | 0 | 0.001 | 0.001 | 0.003 | 0.003 | 0.001 | 0.002 | 0.0003 | 0.001 | 0.001 | 0.001 | 0.002 |
| Ba | 0.0002 | 0 | 0 | 0.001 | 0.001 | 0.001 | 0.001 | 0.0003 | 0.001 | 0.001 | 0.0004 | 0.0004 | 0.001 | 0.001 |
| Total | 4.89 | 4.98 | 4.99 | 4.99 | 4.99 | 5.01 | 5.01 | 4.98 | 4.99 | 5.00 | 4.98 | 5.00 | 4.99 | 5.00 |
| An | 18.27 | 25.50 | 49.80 | 38.14 | 22.60 | 44.67 | 44.67 | 19.08 | 28.82 | 36.26 | 15.15 | 42.63 | 52.74 | 46.43 |
| Ab | 80.57 | 71.60 | 49.40 | 60.16 | 76.02 | 53.83 | 53.83 | 80.17 | 69.62 | 62.52 | 84.14 | 56.03 | 46.19 | 52.12 |
| Or | 1.16 | 2.92 | 0.78 | 1.70 | 1.38 | 1.50 | 1.50 | 0.75 | 1.56 | 1.22 | 0.71 | 1.34 | 1.07 | 1.45 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C3-04 | C3-05 | C3-06 | C3-07 | C3-08 | C3-09 | C3-10 | C3-11 | C3-38 | C3-39 | C3-40 | C3-41 | C3-42 | C3-43 |
| Plagioclase | core | rim | incl.core | core | rim | core | core | rim | core | rim | core | rim | core | rim |
| SiO2 (wt.%) | 57.52 | 58.27 | 58.91 | 59.42 | 68.13 | 56.38 | 53.99 | 63.76 | 56.22 | 63.96 | 52.24 | 64.93 | 54.20 | 63.36 |
| Al2O3 | 26.04 | 26.03 | 25.54 | 25.36 | 19.83 | 26.57 | 28.73 | 22.43 | 27.33 | 22.54 | 30.07 | 21.69 | 28.42 | 22.51 |
| FeO | 0.25 | 0.23 | 0.13 | 0.30 | 0.08 | 0.27 | 0.26 | 0.14 | 0.13 | 0.17 | 0.29 | 0.17 | 0.25 | 0.16 |
| CaO | 8.10 | 7.83 | 7.26 | 6.98 | 2.05 | 8.92 | 11.33 | 3.51 | 9.48 | 3.89 | 12.62 | 2.85 | 10.86 | 3.72 |
| Na2O | 6.92 | 7.10 | 7.54 | 7.51 | 9.75 | 6.44 | 5.07 | 9.63 | 6.18 | 9.38 | 4.34 | 9.91 | 5.38 | 9.46 |
| K2O | 0.21 | 0.20 | 0.19 | 0.25 | 0.25 | 0.18 | 0.13 | 0.30 | 0.14 | 0.30 | 0.11 | 0.43 | 0.14 | 0.35 |
| SrO | 0.14 | 0.15 | 0.09 | 0.04 | 0.06 | 0.17 | 0.19 | b.d.l. | 0.13 | b.d.l. | 0.19 | 0.04 | 0.21 | 0.02 |
| BaO | 0.05 | 0.03 | b.d.l. | 0.06 | 0.01 | 0.07 | 0.02 | 0.01 | 0.03 | b.d.l. | 0.02 | 0.01 | 0.01 | 0.01 |
| Total | 99.220 | 99.83 | 99.66 | 99.91 | 100.15 | 98.99 | 99.72 | 99.77 | 99.64 | 100.25 | 99.89 | 100.04 | 99.48 | 99.59 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | | | | | |
| Si | 2.60 | 2.62 | 2.64 | 2.66 | 2.97 | 2.56 | 2.45 | 2.82 | 2.54 | 2.82 | 2.38 | 2.86 | 2.46 | 2.82 |
| Al | 1.39 | 1.38 | 1.35 | 1.34 | 1.02 | 1.42 | 1.54 | 1.17 | 1.45 | 1.17 | 1.61 | 1.13 | 1.52 | 1.18 |
| Fe2+ | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Ca | 0.39 | 0.38 | 0.35 | 0.33 | 0.10 | 0.43 | 0.55 | 0.17 | 0.46 | 0.18 | 0.62 | 0.13 | 0.53 | 0.18 |
| Na | 0.61 | 0.62 | 0.66 | 0.65 | 0.83 | 0.57 | 0.45 | 0.83 | 0.54 | 0.80 | 0.38 | 0.85 | 0.47 | 0.81 |
| K | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 |
| Sr | 0.004 | 0.004 | 0.002 | 0.001 | 0.002 | 0.005 | 0.005 | - | 0.003 | - | 0.01 | 0.001 | 0.01 | 0.001 |
| Ba | 0.001 | 0.001 | - | 0.001 | 0.0002 | 0.001 | 0.0004 | 0.0002 | 0.001 | - | 0.0004 | 0.0002 | 0.0002 | 0.0002 |
| Total | 5.005 | 5.005 | 5.01 | 5.005 | 4.9322 | 5.006 | 5.0054 | 5.0002 | 5.004 | 5.00 | 5.0004 | 5.0012 | 5.0002 | 5.0012 |
| An | 38.81 | 37.44 | 34.36 | 33.45 | 10.25 | 42.91 | 54.84 | 16.48 | 45.51 | 18.33 | 61.25 | 13.38 | 52.31 | 17.50 |
| Ab | 59.99 | 61.43 | 64.57 | 65.13 | 88.26 | 56.06 | 44.41 | 81.84 | 53.69 | 79.99 | 38.12 | 84.21 | 46.89 | 80.54 |
| Or | 1.20 | 1.13 | 1.07 | 1.42 | 1.49 | 1.03 | 0.75 | 1.68 | 0.80 | 1.68 | 0.63 | 2.41 | 0.80 | 1.96 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C3-44 | C3-45 | C3-46 | C3-47 | C3-48 | C3-49 | C3-87 | C3-88 | C3-89 | C3-90 |
| Plagioclase | core |  | | | | rim | core |  | | rim |
| SiO2 (wt.%) | 55.88 | 58.46 | 59.25 | 60.80 | 59.57 | 64.22 | 52.15 | 56.26 | 54.45 | 61.37 |
| Al2O3 | 27.35 | 25.85 | 25.60 | 24.33 | 25.24 | 22.31 | 29.60 | 27.08 | 28.48 | 24.12 |
| FeO | 0.26 | 0.18 | 0.14 | 0.15 | 0.16 | 0.12 | 0.44 | 0.19 | 0.29 | 0.16 |
| CaO | 9.45 | 7.72 | 7.23 | 5.85 | 6.85 | 3.51 | 12.72 | 9.21 | 10.81 | 5.56 |
| Na2O | 6.13 | 7.2 | 7.46 | 8.18 | 7.71 | 9.74 | 4.36 | 6.31 | 5.38 | 8.48 |
| K2O | 0.21 | 0.23 | 0.24 | 0.27 | 0.21 | 0.27 | 0.14 | 0.20 | 0.15 | 0.28 |
| SrO | 0.12 | 0.17 | 0.12 | 0.09 | 0.14 | 0.07 | 0.19 | 0.22 | 0.16 | 0.10 |
| BaO | 0.03 | 0.03 | 0.07 | 0.09 | 0.03 | 0.01 | 0.02 | 0.03 | 0.03 | 0.03 |
| Total | 99.44 | 99.84 | 100.12 | 99.77 | 99.92 | 100.25 | 99.61 | 99.50 | 99.74 | 100.10 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | |
| Si | 2.53 | 2.62 | 2.65 | 2.71 | 2.66 | 2.83 | 2.38 | 2.55 | 2.47 | 2.73 |
| Al | 1.46 | 1.37 | 1.35 | 1.28 | 1.33 | 1.16 | 1.59 | 1.44 | 1.52 | 1.26 |
| Fe2+ | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.004 | 0.02 | 0.01 | 0.01 | 0.01 |
| Ca | 0.46 | 0.37 | 0.35 | 0.28 | 0.33 | 0.17 | 0.62 | 0.45 | 0.53 | 0.26 |
| Na | 0.54 | 0.63 | 0.65 | 0.71 | 0.67 | 0.83 | 0.39 | 0.55 | 0.47 | 0.73 |
| K | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 |
| Sr | 0.003 | 0.004 | 0.003 | 0.002 | 0.004 | 0.002 | 0.01 | 0.01 | 0.004 | 0.003 |
| Ba | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.0002 | 0.0004 | 0.001 | 0.001 | 0.001 |
| Total | 5.014 | 5.005 | 5.004 | 5.004 | 5.005 | 5.0022 | 5.0004 | 5.001 | 5.005 | 5.004 |
| An | 45.45 | 36.72 | 34.40 | 27.89 | 32.54 | 16.36 | 61.22 | 44.14 | 52.16 | 26.18 |
| Ab | 53.35 | 61.98 | 64.24 | 70.58 | 66.27 | 82.14 | 37.98 | 54.72 | 46.98 | 72.25 |
| Or | 1.20 | 1.30 | 1.36 | 1.53 | 1.19 | 1.50 | 0.80 | 1.14 | 0.86 | 1.57 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C9-01 | C9-02 | C9-03 | C9-04 | C9-05 | C9-06 | C9-07 | C9-21 | C9-22 | C9-23 | C9-24 | C9-25 | C9-26 | C9-27 | C9-28 |
| Plagioclase | core |  | | | | | rim | core | rim | core |  | | | | rim |
| SiO2 (wt.%) | 54.57 | 55.02 | 53.51 | 57.68 | 56.43 | 62.29 | 62.92 | 52.06 | 62.14 | 54.90 | 56.32 | 53.99 | 56.96 | 62.19 | 64.31 |
| Al2O3 | 28.55 | 28.34 | 29.58 | 26.98 | 27.69 | 23.88 | 23.46 | 30.29 | 23.81 | 28.36 | 27.37 | 29.32 | 26.99 | 24.19 | 22.70 |
| FeO | 0.51 | 0.52 | 0.43 | 0.41 | 0.40 | 0.21 | 0.19 | 0.43 | 0.24 | 0.48 | 0.47 | 0.45 | 0.41 | 0.24 | 0.19 |
| CaO | 10.89 | 10.37 | 11.57 | 8.44 | 9.60 | 4.93 | 4.58 | 12.46 | 5.07 | 10.44 | 9.53 | 11.45 | 8.72 | 5.34 | 3.54 |
| Na2O | 5.28 | 5.50 | 4.80 | 6.68 | 6.01 | 8.74 | 8.88 | 4.13 | 8.57 | 5.28 | 5.93 | 4.89 | 6.31 | 8.39 | 9.56 |
| K2O | 0.15 | 0.20 | 0.12 | 0.19 | 0.21 | 0.29 | 0.35 | 0.15 | 0.34 | 0.35 | 0.23 | 0.27 | 0.31 | 0.48 | 0.34 |
| SrO | 0.16 | 0.14 | 0.10 | 0.06 | 0.11 | 0.06 | 0.05 | 0.12 | 0.06 | 0.13 | 0.14 | 0.13 | 0.15 | 0.13 | 0.02 |
| BaO | 0.04 | 0.06 | 0.04 | 0.06 | 0.05 | 0.03 | b.d.l. | 0.03 | 0.01 | 0.05 | 0.07 | 0.05 | 0.08 | 0.01 | b.d.l. |
| Total | 100.15 | 100.15 | 100.16 | 100.49 | 100.50 | 100.44 | 100.43 | 99.67 | 100.23 | 99.99 | 100.06 | 100.54 | 99.93 | 100.96 | 100.65 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | | | | | | |
| Si | 2.47 | 2.48 | 2.42 | 2.58 | 2.53 | 2.75 | 2.78 | 2.37 | 2.75 | 2.48 | 2.54 | 2.43 | 2.56 | 2.7399 | 2.82 |
| Al | 1.52 | 1.51 | 1.58 | 1.42 | 1.46 | 1.24 | 1.22 | 1.63 | 1.24 | 1.51 | 1.45 | 1.56 | 1.43 | 1.256 | 1.17 |
| Fe2+ | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.0088 | 0.01 |
| Ca | 0.53 | 0.50 | 0.56 | 0.40 | 0.46 | 0.23 | 0.22 | 0.61 | 0.24 | 0.51 | 0.46 | 0.55 | 0.42 | 0.252 | 0.17 |
| Na | 0.46 | 0.48 | 0.42 | 0.58 | 0.522 | 0.75 | 0.76 | 0.36 | 0.74 | 0.46 | 0.52 | 0.43 | 0.55 | 0.7166 | 0.82 |
| K | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | 0.027 | 0.02 |
| Sr | 0.004 | 0.004 | 0.003 | 0.002 | 0.003 | 0.002 | 0.001 | 0.003 | 0.002 | 0.003 | 0.004 | 0.0034 | 0.004 | 0.003 | 0.001 |
| Ba | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | b.d.l. | 0.001 | 0.0002 | 0.002 | 0.001 | 0.0009 | 0.001 | 0.0002 | - |
| Total | 5.005 | 5.005 | 5.004 | 5.005 | 5.004 | 5.003 | 5.001 | 4.994 | 5.0022 | 4.995 | 4.995 | 5.0044 | 4.995 | 5.0032 | 5.001 |
| An | 52.80 | 50.44 | 56.72 | 40.67 | 46.32 | 23.38 | 21.74 | 61.95 | 24.16 | 51.15 | 46.41 | 55.527 | 42.52 | 25.32 | 16.66 |
| Ab | 46.33 | 48.41 | 42.58 | 58.24 | 52.48 | 74.99 | 76.28 | 37.16 | 73.91 | 46.81 | 52.26 | 42.914 | 55.68 | 71.86 | 81.43 |
| Or | 0.87 | 1.15 | 0.70 | 1.09 | 1.21 | 1.63 | 1.978 | 0.89 | 1.93 | 2.04 | 1.33 | 1.559 | 1.80 | 2.71 | 1.91 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C9-35 | C9-36 | C9-37 | C9-38 | C9-39 | C9-40 | C9-41 | C9-42 | C9-54 | C9-55 | C9-84 | C9-85 | C9-86 | C9-87 |
| Plagioclase | core | rim | core | rim | core | rim | core | rim | core | rim | core |  | | rim |
| SiO2 (wt.%) | 58.7 | 68.89 | 53.97 | 62.21 | 55.48 | 64.86 | 55.73 | 65.13 | 54.89 | 64.17 | 53.19 | 54.79 | 55.15 | 63.52 |
| Al2O3 | 26.51 | 20.04 | 29.14 | 23.68 | 28.29 | 22.51 | 28.19 | 22.26 | 28.59 | 22.59 | 29.40 | 28.53 | 28.75 | 23.15 |
| FeOt | 0.30 | 0.07 | 0.46 | 0.25 | 0.40 | 0.20 | 0.36 | 0.10 | 0.45 | 0.33 | 0.46 | 0.41 | 0.37 | 0.19 |
| CaO | 7.86 | 2.60 | 11.27 | 4.97 | 10.13 | 3.31 | 10.16 | 3.33 | 10.50 | 3.69 | 11.77 | 10.4 | 10.44 | 4.17 |
| Na2O | 7.03 | 9.12 | 4.93 | 8.75 | 5.61 | 9.71 | 5.74 | 9.69 | 5.44 | 9.51 | 4.59 | 5.32 | 5.50 | 9.26 |
| K2O | 0.20 | 0.09 | 0.17 | 0.26 | 0.15 | 0.28 | 0.15 | 0.17 | 0.12 | 0.30 | 0.12 | 0.15 | 0.15 | 0.27 |
| SrO | 0.08 | 0.08 | 0.16 | 0.06 | 0.12 | 0.02 | 0.11 | 0.04 | 0.13 | 0.02 | 0.11 | 0.14 | 0.14 | 0.07 |
| BaO | 0.07 | 0.01 | 0.04 | 0.01 | 0.06 | b.d.l. | 0.05 | 0.01 | 0.04 | b.d.l. | 0.03 | 0.05 | 0.04 | 0.01 |
| Total | 100.74 | 100.89 | 100.15 | 100.19 | 100.24 | 100.88 | 100.48 | 100.72 | 100.16 | 100.61 | 99.67 | 99.79 | 100.53 | 100.64 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | | | | | |
| Si | 2.61 | 2.98 | 2.44 | 2.76 | 2. 05 | 2.84 | 2.50 | 2.85 | 2.48 | 2.82 | 2.42 | 2.48 | 2.48 | 2.80 |
| Al | 1.39 | 1.02 | 1.55 | 1.24 | 1.50 | 1.16 | 1.49 | 1.15 | 1.52 | 1.17 | 1.58 | 1.52 | 1.52 | 1.20 |
| Fe2+ | 0.01 | 0.003 | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.004 | 0.02 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 |
| Ca | 0.37 | 0.12 | 0.55 | 0.24 | 0.49 | 0.16 | 0.49 | 0.16 | 0.51 | 0.17 | 0.57 | 0.50 | 0.50 | 0.20 |
| Na | 0.61 | 0.76 | 0.43 | 0.75 | 0.49 | 0.82 | 0.50 | 0.82 | 0.48 | 0.81 | 0.40 | 0.47 | 0.48 | 0.79 |
| K | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.03 | 0.01 | 0.01 | 0.01 | 0.02 |
| Sr | 0.002 | 0.002 | 0.004 | 0.002 | 0.003 | 0.001 | 0.003 | 0.001 | 0.003 | 0.001 | 0.003 | 0.004 | 0.004 | 0.002 |
| Ba | 0.001 | 0.0002 | 0.001 | 0.0002 | 0.001 | - | 0.001 | 0.0002 | 0.001 | - | 0.001 | 0.001 | 0.001 | 0.0002 |
| Total | 5.003 | 4.9022 | 5.005 | 5.004 | 5.004 | 5.001 | 5.004 | 4.9912 | 5.004 | 5.001 | 5.003 | 4.995 | 5.005 | 5.0022 |
| An | 37.75 | 13.53 | 55.26 | 23.54 | 49.51 | 15.60 | 49.02 | 15.81 | 51.25 | 17.36 | 58.21 | 51.47 | 50.75 | 19.63 |
| Ab | 61.11 | 85.91 | 43.75 | 74.99 | 49.62 | 82.83 | 50.12 | 83.23 | 48.05 | 80.96 | 41.08 | 47.65 | 48.38 | 78.86 |
| Or | 1.14 | 0.56 | 0.99 | 1.47 | 0.87 | 1.57 | 0.86 | 0.96 | 0.70 | 1.68 | 0.71 | 0.88 | 0.87 | 1.51 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Diorite | C19-01 | C19-02 | C19-03 | C19-04 | C19-05 | C19-06 | C19-07 | C19-08 | C19-37 | C19-38 | C19-39 | C19-40 |
| Plagioclase | core | rim | core | rim | core | rim | core | rim | core | rim | core | rim |
| SiO2 (wt.%) | 55.05 | 57.78 | 54.63 | 62.24 | 55.84 | 62.29 | 54.21 | 62.77 | 54.14 | 60.98 | 54.09 | 62.70 |
| Al2O3 | 28.41 | 26.45 | 28.84 | 23.95 | 27.99 | 24.27 | 28.76 | 23.17 | 28.63 | 24.53 | 28.93 | 23.35 |
| FeOt | 0.41 | 0.37 | 0.40 | 0.37 | 0.38 | 0.22 | 0.41 | 0.20 | 0.52 | 0.26 | 0.44 | 0.32 |
| CaO | 10.28 | 7.96 | 10.66 | 4.93 | 9.86 | 5.28 | 10.81 | 4.39 | 10.75 | 5.87 | 10.93 | 4.56 |
| Na2O | 5.45 | 6.74 | 5.30 | 8.52 | 5.75 | 8.37 | 5.18 | 9.07 | 5.02 | 8.06 | 5.14 | 8.92 |
| K2O | 0.17 | 0.15 | 0.13 | 0.33 | 0.21 | 0.41 | 0.12 | 0.28 | 0.31 | 0.27 | 0.12 | 0.22 |
| SrO | 0.14 | 0.06 | 0.16 | 0.05 | 0.14 | 0.05 | 0.16 | 0.02 | 0.07 | 0.08 | 0.15 | 0.08 |
| BaO | 0.05 | 0.04 | 0.03 | b.d.l. | 0.04 | 0.01 | 0.03 | b.d.l. | 0.04 | 0.06 | 0.04 | b.d.l. |
| Total | 99.97 | 99.57 | 100.15 | 100.38 | 100.20 | 100.90 | 99.69 | 99.90 | 99.48 | 100.13 | 99.84 | 100.15 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | | | |
| Si | 2.49 | 2.60 | 2.46 | 2.75 | 2.51 | 2.74 | 2.46 | 2.78 | 2.46 | 2.71 | 2.45 | 2.78 |
| Al | 1.51 | 1.40 | 1.53 | 1.25 | 1.48 | 1.26 | 1.54 | 1.21 | 1.53 | 1.29 | 1.54 | 1.22 |
| Fe2+ | 0.02 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 |
| Ca | 0.50 | 0.38 | 0.52 | 0.23 | 0.48 | 0.25 | 0.53 | 0.21 | 0.52 | 0.28 | 0.53 | 0.22 |
| Na | 0.48 | 0.59 | 0.46 | 0.73 | 0.50 | 0.71 | 0.46 | 0.78 | 0.44 | 0.69 | 0.45 | 0.77 |
| K | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 |
| Sr | 0.004 | 0.002 | 0.004 | 0.001 | 0.004 | 0.001 | 0.004 | 0.001 | 0.002 | 0.002 | 0.004 | 0.002 |
| Ba | 0.001 | 0.001 | 0.001 | - | 0.001 | 0.0002 | 0.001 | - | 0.001 | 0.001 | 0.001 | - |
| Total | 5.00 | 4.993 | 4.995 | 4.991 | 4.995 | 4.9912 | 4.9992 | 5.001 | 5.003 | 5.003 | 5.005 | 5.002 |
| An | 50.53 | 39.144 | 52.24 | 23.77 | 48.06 | 25.25 | 53.18 | 20.77 | 53.21 | 28.25 | 53.65 | 21.75 |
| Ab | 48.48 | 59.978 | 47.00 | 74.34 | 50.72 | 72.42 | 46.12 | 77.65 | 44.96 | 70.20 | 45.65 | 77.00 |
| Or | 0.99 | 0.8783 | 0.76 | 1.89 | 1.22 | 2.33 | 0.70 | 1.58 | 1.83 | 1.55 | 0.70 | 1.25 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Diorite | C19-41 | C19-42 | C19-43 | C19-44 | C19-45 | C19-47 | C19-48 | C19-49 | C19-50 | C19-51 | C19-52 | C19-53 |
| Plagioclase | core |  | | | rim | core | rim | core |  | | | rim |
| SiO2 (wt.%) | 56.07 | 55.80 | 55.89 | 55.74 | 62.52 | 53.87 | 61.43 | 50.28 | 56.46 | 55.45 | 55.25 | 62.14 |
| Al2O3 | 27.70 | 27.85 | 27.62 | 27.84 | 23.41 | 29.28 | 24.18 | 31.38 | 27.43 | 27.97 | 28.39 | 23.75 |
| FeOt | 0.43 | 0.41 | 0.43 | 0.41 | 0.20 | 0.45 | 0.23 | 0.51 | 0.52 | 0.45 | 0.36 | 0.26 |
| CaO | 9.77 | 9.82 | 9.70 | 9.90 | 4.67 | 11.15 | 5.35 | 14.03 | 9.32 | 10.08 | 10.49 | 5.22 |
| Na2O | 5.81 | 5.77 | 5.84 | 5.77 | 8.76 | 4.94 | 8.37 | 3.29 | 6.06 | 5.69 | 5.44 | 8.54 |
| K2O | 0.26 | 0.17 | 0.23 | 0.19 | 0.34 | 0.17 | 0.30 | 0.08 | 0.22 | 0.15 | 0.13 | 0.25 |
| SrO | 0.17 | 0.11 | 0.11 | 0.07 | 0.08 | 0.15 | 0.09 | 0.11 | 0.10 | 0.17 | 0.12 | 0.04 |
| BaO | 0.06 | 0.05 | 0.06 | 0.06 | 0.02 | 0.02 | 0.01 | 0.01 | 0.06 | 0.08 | 0.07 | b.d.l. |
| Total | 100.27 | 99.98 | 99.89 | 99.98 | 100.00 | 100.02 | 99.96 | 99.70 | 100.18 | 100.04 | 100.25 | 100.20 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | | | |
| Si | 2.52 | 2.52 | 2.52 | 2.51 | 2.77 | 2.44 | 2.72 | 2.30 | 2.54 | 2.50 | 2.49 | 2.75 |
| Al | 1.47 | 1.48 | 1.47 | 1.48 | 1.22 | 1.56 | 1.27 | 1.69 | 1.45 | 1.49 | 1.51 | 1.24 |
| Fe2+ | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 |
| Ca | 0.47 | 0.47 | 0.47 | 0.48 | 0.22 | 0.54 | 0.25 | 0.69 | 0.45 | 0.49 | 0.51 | 0.25 |
| Na | 0.51 | 0.50 | 0.51 | 0.50 | 0.75 | 0.43 | 0.72 | 0.29 | 0.53 | 0.50 | 0.47 | 0.73 |
| K | 0.02 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | 0.005 | 0.01 | 0.01 | 0.01 | 0.01 |
| Sr | 0.004 | 0.003 | 0.003 | 0.002 | 0.002 | 0.004 | 0.002 | 0.003 | 0.003 | 0.004 | 0.003 | 0.001 |
| Ba | 0.001 | 0.001 | 0.001 | 0.001 | 0.0003 | 0.0004 | 0.0002 | 0.0002 | 0.001 | 0.001 | 0.001 | - |
| Total | 5.015 | 5.004 | 5.004 | 4.993 | 4.9923 | 4.9944 | 5.0022 | 5.0032 | 5.004 | 5.005 | 5.004 | 4.991 |
| An | 47.44 | 47.99 | 47.22 | 48.13 | 22.32 | 54.95 | 25.66 | 69.87 | 45.36 | 49.04 | 51.20 | 24.89 |
| Ab | 51.05 | 51.02 | 51.45 | 50.77 | 75.75 | 44.05 | 72.63 | 29.65 | 53.37 | 50.09 | 48.05 | 73.69 |
| Or | 1.51 | 0.99 | 1.33 | 1.10 | 1.94 | 1.00 | 1.71 | 0.48 | 1.28 | 0.87 | 0.75 | 1.42 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | K55-22 | K55-23 | K55-24 | K55-26 | K55-27 | K55-38 | K55-39 | K55-40 | C3-02 | C3-03 | C3-22 | C3-23 | C3-24 |
| K-feldspar | core | rim | core | core | rim | core rim | | | core | rim | core | rim | core |
| SiO2 (wt.%) | 64.49 | 63.67 | 63.60 | 63.82 | 64.40 | 64.15 | 63.83 | 63.96 | 64.07 | 63.12 | 64.83 | 64.87 | 64.93 |
| Al2O3 | 19.38 | 18.86 | 18.99 | 18.98 | 18.80 | 18.90 | 19.05 | 18.97 | 19.20 | 19.45 | 18.97 | 18.97 | 18.71 |
| FeOt | 0.09 | 0.10 | 0.14 | 0.09 | 0.13 | 0.06 | 0.07 | 0.07 | 0.09 | 0.11 | 0.18 | 0.07 | 0.14 |
| CaO | 0.11 | 0.04 | 0.09 | 0.09 | 0.05 | 0.04 | 0.24 | 0.06 | 0.05 | 0.06 | 0.04 | 0.01 | 0.01 |
| Na2O | 1.52 | 1.25 | 1.64 | 1.65 | 1.14 | 1.05 | 1.24 | 1.31 | 1.80 | 1.58 | 1.55 | 1.13 | 1.36 |
| K2O | 14.50 | 14.85 | 14.29 | 14.16 | 14.90 | 15.25 | 14.70 | 14.94 | 14.10 | 13.98 | 14.92 | 15.39 | 15.04 |
| SrO | 0.03 | 0.05 | 0.04 | b.d.l. | 0.03 | 0.05 | 0.03 | 0.04 | 0.07 | 0.06 | 0.07 | 0.06 | 0.01 |
| BaO | 0.37 | 0.24 | 0.31 | 0.38 | 0.12 | 0.35 | 0.27 | 0.24 | 1.01 | 2.22 | 0.06 | 0.10 | 0.06 |
| Total | 100.49 | 99.06 | 99.10 | 99.17 | 99.50 | 99.84 | 99.43 | 99.60 | 100.4 | 100.57 | 100.62 | 100.61 | 100.27 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | | | | |
| Si | 2.96 | 2.97 | 2.96 | 2.97 | 2.98 | 2.97 | 2.96 | 2.97 | 2.96 | 2.93 | 2.97 | 2.98 | 2.99 |
| Al | 1.05 | 1.04 | 1.04 | 1.04 | 1.03 | 1.03 | 1.04 | 1.04 | 1.04 | 1.07 | 1.03 | 1.03 | 1.01 |
| Fe2+ | 0.004 | 0.004 | 0.01 | 0.003 | 0.01 | 0.002 | 0.003 | 0.003 | 0.004 | 0.004 | 0.01 | 0.00 | 0.01 |
| Ca | 0.01 | 0.002 | 0.004 | 0.004 | a.s.a. | 0.002 | 0.01 | 0.003 | 0.003 | 0.003 | 0.00 | 0.00 | 0.00 |
| Na | 0.14 | 0.11 | 0.15 | 0.15 | 0.10 | 0.09 | 0.11 | 0.12 | 0.16 | 0.14 | 0.14 | 0.10 | 0.12 |
| K | 0.85 | 0.88 | 0.85 | 0.84 | 0.88 | 0.90 | 0.87 | 0.88 | 0.83 | 0.83 | 0.87 | 0.90 | 0.88 |
| Sr | 0.001 | 0.001 | 0.001 | - | 0 | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 | 0.00 | 0.00 | 0.00 |
| Ba | 0.01 | 0.004 | 0.01 | 0.01 | 0 | 0.01 | 0.01 | 0.004 | 0.02 | 0.04 | 0.00 | 0.00 | 0.00 |
| Total | 5.00 | 5.01 | 5.01 | 5.00 | 5.00 | 5.00 | 5.00 | 5.01 | 5.00 | 4.98 | 5.02 | 5.01 | 5.01 |
| An | 0.55 | 0.20 | 0.45 | 0.45 | 0.25 | 0.20 | 1.20 | 0.30 | 0.25 | 0.31 | 0.19 | 0.05 | 0.05 |
| Ab | 13.67 | 11.32 | 14.79 | 14.98 | 10.40 | 9.45 | 11.23 | 11.72 | 16.21 | 14.61 | 13.61 | 10.03 | 12.08 |
| Or | 85.78 | 88.48 | 84.77 | 84.57 | 89.40 | 90.35 | 87.57 | 87.98 | 83.54 | 85.08 | 86.20 | 89.92 | 87.87 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C3-25 | C3-26 | C3-27 | C3-59 | C3-60 | C3-61 | C3-62 | C3-68 | C3-69 | C3-70 | C3-71 | C3-72 | C3-73 | C3-74 | C3-75 |
| K-feldspar | rim | core | rim | core |  | | rim | core |  | | | rim | core |  | rim |
| SiO2 (wt.%) | 64.26 | 64.58 | 64.93 | 64.58 | 64.58 | 64.65 | 64.91 | 64.42 | 64.81 | 64.51 | 64.34 | 64.21 | 63.09 | 63.05 | 63.62 |
| Al2O3 | 18.48 | 18.77 | 18.83 | 19.00 | 18.95 | 19.22 | 19.04 | 19.04 | 18.93 | 18.91 | 19.14 | 19.19 | 19.49 | 19.46 | 19.29 |
| FeOt | 0.14 | 0.19 | 0.19 | 0.07 | 0.08 | 0.07 | 0.11 | 0.09 | 0.10 | 0.06 | 0.10 | 0.09 | 0.10 | 0.10 | 0.11 |
| CaO | b.d.l. | b.d.l. | 0.02 | 0.04 | 0.01 | 0.01 | 0.01 | 0.04 | 0.02 | 0.03 | 0.03 | 0.03 | 0.05 | 0.04 | 0.03 |
| Na2O | 1.27 | 1.24 | 1.31 | 1.58 | 1.47 | 1.50 | 1.37 | 1.60 | 1.50 | 1.77 | 1.74 | 1.45 | 1.71 | 1.71 | 1.77 |
| K2O | 15.21 | 15.39 | 15.23 | 14.61 | 14.97 | 14.95 | 15.01 | 14.77 | 15.07 | 14.44 | 14.51 | 14.71 | 13.79 | 13.83 | 13.92 |
| SrO | b.d.l. | 0.04 | 0.02 | 0.08 | 0.04 | 0.02 | 0.10 | 0.08 | 0.02 | 0.06 | 0.05 | 0.11 | 0.07 | 0.07 | 0.05 |
| BaO | 0.06 | 0.06 | 0.14 | 0.50 | 0.38 | 0.39 | 0.42 | 0.25 | 0.11 | 0.38 | 0.63 | 0.81 | 2.12 | 2.13 | 1.63 |
| Total | 99.40 | 100.26 | 100.66 | 100.46 | 100.48 | 100.82 | 100.99 | 100.27 | 100.56 | 100.16 | 100.53 | 100.61 | 100.42 | 100.38 | 100.40 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | | | | | | |
| Si | 2.98 | 2.98 | 2.98 | 2.97 | 2.97 | 2.96 | 2.97 | 2.97 | 2.98 | 2.97 | 2.96 | 2.96 | 2.93 | 2.93 | 2.95 |
| Al | 1.01 | 1.02 | 1.02 | 1.03 | 1.03 | 1.04 | 1.03 | 1.03 | 1.02 | 1.03 | 1.04 | 1.04 | 1.07 | 1.07 | 1.05 |
| Fe2+ | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.004 | 0.004 | 0.002 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 |
| Ca | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.002 | 0.001 | 0.0015 | 0.002 | 0.002 | 0.003 | 0.002 | 0.002 |
| Na | 0.11 | 0.11 | 0.12 | 0.14 | 0.13 | 0.13 | 0.12 | 0.14 | 0.13 | 0.16 | 0.16 | 0.13 | 0.15 | 0.15 | 0.16 |
| K | 0.90 | 0.90 | 0.89 | 0.86 | 0.88 | 0.87 | 0.88 | 0.87 | 0.88 | 0.85 | 0.85 | 0.86 | 0.82 | 0.82 | 0.82 |
| Sr | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.002 | 0.001 | 0.002 | 0.001 | 0.003 | 0.002 | 0.002 | 0.001 |
| Ba | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.002 | 0.01 | 0.01 | 0.02 | 0.04 | 0.04 | 0.03 |
| Total | 5.02 | 5.02 | 5.01 | 5.00 | 5.01 | 5.01 | 5.00 | 5.02 | 5.019 | 5.01 | 5.011 | 5.00 | 4.98 | 4.98 | 4.99 |
| An | 0.00 | 0.00 | 0.10 | 0.20 | 0.05 | 0.05 | 0.05 | 0.19 | 0.10 | 0.15 | 0.15 | 0.15 | 0.26 | 0.20 | 0.15 |
| Ab | 11.26 | 10.91 | 11.55 | 14.09 | 12.98 | 13.22 | 12.18 | 14.11 | 13.13 | 15.68 | 15.39 | 13.01 | 15.82 | 15.79 | 16.17 |
| Or | 88.74 | 89.09 | 88.352 | 85.71 | 86.97 | 86.73 | 87.77 | 85.70 | 86.77 | 84.17 | 84.46 | 86.84 | 83.93 | 84.01 | 83.68 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C3-76 | C3-77 | C9-12 | C9-29 | C9-44 | C9-45 | C9-46 | C9-80 | C9-81 | C9-82 | C9-83 |
| K-felspar | core | rim | rim | core | core |  | rim | alb incl | core |  | rim |
| SiO2 (wt.%) | 63.66 | 64.36 | 64.93 | 64.71 | 64.33 | 64.57 | 64.38 | 67.29 | 64.44 | 63.95 | 64.37 |
| Al2O3 | 19.19 | 19.37 | 19.15 | 18.99 | 18.88 | 19.19 | 18.95 | 21.13 | 19.12 | 19.14 | 19.26 |
| FeOt | 0.10 | 0.07 | 0.03 | 0.04 | 0.07 | 0.04 | 0.18 | 0.07 | 0.07 | 0.05 | 0.13 |
| CaO | 0.03 | 0.02 | 0.01 | 0.08 | 0.03 | 0.02 | 0.03 | 1.09 | 0.04 | 0.01 | 0.10 |
| Na2O | 1.60 | 1.54 | 0.99 | 1.08 | 0.79 | 0.95 | 0.88 | 11.16 | 1.15 | 1.13 | 1.11 |
| K2O | 14.42 | 14.38 | 15.62 | 15.48 | 15.89 | 15.70 | 15.64 | 0.21 | 15.10 | 15.01 | 15.07 |
| SrO | 0.07 | 0.02 | 0.06 | b.d.l. | b.d.l. | 0.04 | 0.10 | 0.02 | b.d.l. | 0.04 | 0.06 |
| BaO | 1.39 | 1.03 | 0.16 | 0.11 | 0.15 | 0.34 | 0.38 | b.d.l. | 0.82 | 0.85 | 0.81 |
| Total | 100.45 | 100.78 | 100.94 | 100.48 | 100.14 | 100.86 | 100.53 | 100.96 | 100.74 | 100.19 | 100.90 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | | |
| Si | 2.95 | 2.96 | 2.97 | 2.97 | 2.97 | 2.97 | 2.97 | 2.92 | 2.97 | 2.96 | 2.96 |
| Al | 1.05 | 1.05 | 1.03 | 1.03 | 1.03 | 1.04 | 1.03 | 1.08 | 1.04 | 1.04 | 1.04 |
| Fe2+ | 0.004 | 0.003 | 0.001 | 0.002 | 0.003 | 0.002 | 0.01 | 0.003 | 0.003 | 0.002 | 0.01 |
| Ca | 0.002 | 0.001 | 0.001 | 0.004 | 0.002 | 0.001 | 0.002 | 0.05 | 0.002 | 0.001 | 0.01 |
| Na | 0.14 | 0.14 | 0.09 | 0.10 | 0.07 | 0.08 | 0.08 | 0.94 | 0.10 | 0.10 | 0.10 |
| K | 0.85 | 0.84 | 0.91 | 0.91 | 0.94 | 0.92 | 0.92 | 0.01 | 0.89 | 0.89 | 0.88 |
| Sr | 0.002 | 0.001 | 0.002 | - | - | 0.001 | 0.003 | 0.001 | - | 0.001 | 0.002 |
| Ba | 0.03 | 0.02 | 0.003 | 0.002 | 0.003 | 0.01 | 0.01 | - | 0.01 | 0.02 | 0.01 |
| Total | 5.00 | 4.99 | 5.01 | 5.01 | 5.01 | 5.01 | 5.01 | 5.01 | 5.00 | 5.00 | 5.00 |
| An | 0.1493 | 0.1004 | 0.05 | 0.39 | 0.15 | 0.10 | 0.15 | 5.06 | 0.20 | 0.05 | 0.50 |
| Ab | 14.409 | 13.984 | 8.78 | 9.55 | 7.02 | 8.41 | 7.87 | 93.78 | 10.35 | 10.26 | 10.02 |
| Or | 85.442 | 85.916 | 91.17 | 90.06 | 92.84 | 91.49 | 91.98 | 1.16 | 89.45 | 89.69 | 89.48 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Diorite | C19-09 | C19-11 | C19-12 | C19-54 | C19-55 | C19-76 | C19-78 | C19-79 | C19-83 | C19-84 |
| K-feldspar | core | core | rim | core | rim | core | core |  | rim | core |
| SiO2 (wt.%) | 65.11 | 65.07 | 65.30 | 64.88 | 65.02 | 65.12 | 64.87 | 64.87 | 64.91 | 64.34 |
| Al2O3 | 19.14 | 18.78 | 18.76 | 19.14 | 19.00 | 18.72 | 19.05 | 18.98 | 18.98 | 19.17 |
| FeOt | 0.17 | 0.13 | 0.15 | 0.07 | 0.12 | 0.16 | 0.09 | 0.13 | 0.11 | 0.06 |
| CaO | 0.03 | b.d.l. | 0.01 | 0.05 | 0.03 | 0.01 | 0.05 | 0.05 | 0.07 | 0.04 |
| Na2O | 1.52 | 1.29 | 1.27 | 1.27 | 1.34 | 0.99 | 1.51 | 1.44 | 1.59 | 0.92 |
| K2O | 14.88 | 15.01 | 15.15 | 15.03 | 14.92 | 15.51 | 14.87 | 15.04 | 14.75 | 15.72 |
| SrO | 0.04 | 0.03 | b.d.l. | 0.08 | 0.04 | 0.03 | 0.07 | 0.08 | 0.08 | 0.04 |
| BaO | 0.01 | 0.00 | b.d.l. | 0.09 | 0.01 | 0.18 | 0.22 | 0.17 | 0.22 | 0.57 |
| Total | 100.90 | 100.32 | 100.64 | 100.61 | 100.48 | 100.71 | 100.72 | 100.76 | 100.7 | 100.86 |
| *Number of cations on the basis of 8 oxygens* | | | | | | | | | | |
| Si | 2.97 | 2.99 | 2.99 | 2.97 | 2.98 | 2.99 | 2.97 | 2.97 | 2.97 | 2.96 |
| Al | 1.03 | 1.02 | 1.01 | 1.03 | 1.03 | 1.01 | 1.03 | 1.03 | 1.02 | 1.04 |
| Fe2+ | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Ca | 0.00 | - | 0.001 | 0.00 | 0.00 | 0.001 | 0.00 | 0.00 | 0.00 | 0.00 |
| Na | 0.13 | 0.11 | 0.11 | 0.11 | 0.12 | 0.09 | 0.13 | 0.13 | 0.14 | 0.08 |
| K | 0.87 | 0.88 | 0.88 | 0.88 | 0.87 | 0.91 | 0.87 | 0.88 | 0.86 | 0.92 |
| Sr | 0.001 | 0.001 | - | 0.002 | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 | 0.001 |
| Ba | 0.0002 | 0.00 | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| Total | 5.012 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.01 | 5.01 | 5.01 | 5.01 |
| An | 0.15 | 0.00 | 0.05 | 0.25 | 0.15 | 0.05 | 0.24 | 0.24 | 0.34 | 0.20 |
| Ab | 13.42 | 11.55 | 11.30 | 11.35 | 11.99 | 8.84 | 13.34 | 12.67 | 14.03 | 8.15 |
| Or | 86.43 | 88.45 | 88.66 | 88.40 | 87.86 | 91.11 | 86.42 | 87.08 | 85.63 | 91.65 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Quartz diorite | K40-06 | K40-16 | K40-17 | K40-20 | K40-21 | K40-22 | K40-31 | K40-32 | K40-34 | K40-35 | K40-36 | K55-01 |
| Biotite | core; sl alt. | core; sl alt. | rim; sl alt. | rim |  | core | core; sl alt. | rim | rim |  | core | core; sl alt. |
| SiO2 (wt.%) | 36.42 | 36.92 | 37.39 | 36.37 | 36.35 | 36.53 | 36.63 | 38.02 | 37.33 | 36.77 | 36.96 | 36.92 |
| TiO2 | 3.68 | 3.74 | 4.20 | 3.46 | 3.77 | 3.71 | 3.73 | 4.05 | 3.89 | 3.86 | 3.78 | 4.33 |
| Al2O3 | 13.59 | 13.58 | 13.18 | 13.45 | 13.36 | 13.45 | 13.50 | 13.87 | 13.30 | 13.67 | 13.81 | 13.14 |
| FeOt | 17.27 | 17.13 | 16.41 | 16.7 | 16.95 | 17.18 | 17.15 | 16.47 | 17.09 | 16.81 | 17.06 | 16.91 |
| MnO | 0.34 | 0.38 | 0.30 | 0.35 | 0.31 | 0.33 | 0.35 | 0.32 | 0.33 | 0.39 | 0.38 | 0.4 |
| MgO | 13.33 | 12.95 | 12.48 | 13.91 | 12.93 | 12.96 | 13.14 | 13.31 | 13.28 | 12.95 | 13.10 | 12.73 |
| CaO | 0.15 | 0.08 | 0.11 | 0.15 | 0.02 | 0.01 | 0.09 | 0.12 | 0.12 | 0.08 | 0.06 | 0.06 |
| Na2O | 0.13 | 0.16 | 0.09 | 0.08 | 0.11 | 0.10 | 0.14 | 0.11 | 0.11 | 0.10 | 0.09 | 0.1 |
| K2O | 8.59 | 8.94 | 8.92 | 8.40 | 9.39 | 9.32 | 8.78 | 8.76 | 9.01 | 9.25 | 9.08 | 9.17 |
| F | 0.36 | 0.30 | 0.30 | 0.35 | 0.30 | 0.28 | 0.29 | 0.33 | 0.39 | 0.38 | 0.38 | 0.4 |
| Cl | 0.08 | 0.07 | 0.13 | 0.12 | 0.08 | 0.15 | 0.08 | 0.14 | 0.11 | 0.14 | 0.14 | 0.22 |
| Total | 97.63 | 97.97 | 97.21 | 97.01 | 97.26 | 97.74 | 97.62 | 99.28 | 98.66 | 98.08 | 98.52 | 98.02 |
| H2O | 3.68 | 3.73 | 3.70 | 3.67 | 3.69 | 3.70 | 3.72 | 3.78 | 3.71 | 3.67 | 3.69 | 3.63 |
| *Number of cations on the basis of 22 oxygens* | | | | | | | | | | | | |
| Si | 5.59 | 5.64 | 5.73 | 5.60 | 5.62 | 5.62 | 5.62 | 5.69 | 5.66 | 5.62 | 5.62 | 5.65 |
| Ti | 0.42 | 0.43 | 0.48 | 0.40 | 0.44 | 0.43 | 0.43 | 0.46 | 0.44 | 0.44 | 0.43 | 0.50 |
| Al | 2.46 | 2.45 | 2.38 | 2.44 | 2.43 | 2.44 | 2.44 | 2.45 | 2.38 | 2.46 | 2.47 | 2.37 |
| Fe2+ | 2.22 | 2.19 | 2.10 | 2.15 | 2.19 | 2.21 | 2.20 | 2.06 | 2.17 | 2.15 | 2.17 | 2.16 |
| Mn | 0.04 | 0.05 | 0.04 | 0.05 | 0.04 | 0.04 | 0.05 | 0.04 | 0.04 | 0.05 | 0.05 | 0.05 |
| Mg | 3.05 | 2.95 | 2.85 | 3.19 | 2.98 | 2.97 | 3.01 | 2.97 | 3.00 | 2.95 | 2.97 | 2.90 |
| Ca | 0.02 | 0.01 | 0.02 | 0.02 | 0.00 | 0.00 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 |
| Na | 0.04 | 0.05 | 0.03 | 0.02 | 0.03 | 0.03 | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| K | 1.68 | 1.74 | 1.74 | 1.65 | 1.85 | 1.83 | 1.72 | 1.67 | 1.74 | 1.80 | 1.76 | 1.79 |
| F- | 0.17 | 0.15 | 0.15 | 0.17 | 0.15 | 0.14 | 0.14 | 0.16 | 0.19 | 0.18 | 0.18 | 0.19 |
| Cl- | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 |
| Mg/(Mg+Fe2+) | 0.58 | 0.57 | 0.58 | 0.60 | 0.58 | 0.57 | 0.58 | 0.59 | 0.58 | 0.58 | 0.58 | 0.57 |
| Fe2+/(Fe2++Mg) | 0.42 | 0.43 | 0.42 | 0.40 | 0.42 | 0.43 | 0.42 | 0.41 | 0.42 | 0.42 | 0.42 | 0.43 |
| Al/(Al+Si) | 0.31 | 0.30 | 0.29 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.31 | 0.30 |

\*The Fe in the FeOt was accepted as Fe2+.

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | K55-03 | K55-04 | K55-20 | K55-21 | K55-33 | K55-36 | K55-37 | K55-48 | K55-49 | K55-50 | C3-17 | C3-28 |
| Biotite | core; sl alt. | rim; sl alt. | core; sl alt. | rim; sl alt. | rim; sl alt. | core | rim | core |  | rim | core | core |
| SiO2 (wt.%) | 37.04 | 36.9 | 37.06 | 38.26 | 36.95 | 37.14 | 37.24 | 36.84 | 36.61 | 36.34 | 36.19 | 36.84 |
| TiO2 | 4.46 | 4.37 | 4.66 | 4.21 | 5.42 | 4.62 | 4.69 | 4.69 | 4.75 | 4.75 | 3.83 | 4.15 |
| Al2O3 | 13.19 | 13.12 | 12.73 | 12.91 | 13.21 | 13.16 | 13.38 | 12.93 | 12.66 | 12.80 | 13.17 | 13.70 |
| FeOt | 16.6 | 15.86 | 16.31 | 15.51 | 16.45 | 16.7 | 16.65 | 15.79 | 15.98 | 16.10 | 16.87 | 17.37 |
| MnO | 0.37 | 0.39 | 0.43 | 0.36 | 0.42 | 0.44 | 0.41 | 0.35 | 0.38 | 0.38 | 0.65 | 0.57 |
| MgO | 13.15 | 13.16 | 12.48 | 13.89 | 12.27 | 12.38 | 12.53 | 13.11 | 13.03 | 12.95 | 13.43 | 13.26 |
| CaO | 0.03 | 0.11 | 0.1 | 0.06 | 0.18 | 0.08 | 0.07 | 0.02 | 0.03 | b.d.l. | 0.08 | 0.05 |
| Na2O | 0.13 | 0.12 | 0.11 | 0.06 | 0.07 | 0.1 | 0.08 | 0.14 | 0.15 | 0.13 | 0.08 | 0.10 |
| K2O | 9.32 | 8.94 | 9.01 | 9.38 | 9.45 | 9.13 | 9.24 | 9.45 | 9.38 | 9.32 | 9.19 | 9.46 |
| F | 0.42 | 0.44 | 0.37 | 0.48 | 0.37 | 0.43 | 0.34 | 0.41 | 0.40 | 0.43 | 0.52 | 0.50 |
| Cl | 0.21 | 0.17 | 0.23 | 0.19 | 0.18 | 0.2 | 0.21 | 0.21 | 0.23 | 0.24 | 0.22 | 0.23 |
| Total | 98.56 | 97.2 | 97.12 | 98.99 | 98.67 | 98.00 | 98.53 | 97.56 | 97.20 | 97.01 | 97.78 | 99.86 |
| H2O | 3.65 | 3.62 | 3.62 | 3.67 | 3.69 | 3.63 | 3.69 | 3.62 | 3.60 | 3.57 | 3.55 | 3.64 |
| *Number of cations on the basis of 22 oxygens* | | | | | | | | | | | | |
| Si | 5.63 | 5.66 | 5.70 | 5.74 | 5.61 | 5.67 | 5.65 | 5.64 | 5.64 | 5.61 | 5.56 | 5.55 |
| Ti | 0.51 | 0.50 | 0.54 | 0.47 | 0.62 | 0.53 | 0.54 | 0.54 | 0.55 | 0.55 | 0.44 | 0.47 |
| Al | 2.36 | 2.37 | 2.31 | 2.28 | 2.36 | 2.37 | 2.39 | 2.33 | 2.30 | 2.33 | 2.39 | 2.43 |
| Fe2+ | 2.11 | 2.03 | 2.10 | 1.95 | 2.09 | 2.13 | 2.11 | 2.02 | 2.06 | 2.08 | 2.17 | 2.19 |
| Mn | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.08 | 0.07 |
| Mg | 2.98 | 3.01 | 2.86 | 3.11 | 2.78 | 2.82 | 2.84 | 2.99 | 2.99 | 2.98 | 3.08 | 2.98 |
| Ca | 0.00 | 0.02 | 0.02 | 0.01 | 0.03 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.01 |
| Na | 0.04 | 0.04 | 0.03 | 0.02 | 0.02 | 0.03 | 0.02 | 0.04 | 0.04 | 0.04 | 0.02 | 0.03 |
| K | 1.81 | 1.75 | 1.77 | 1.79 | 1.83 | 1.78 | 1.79 | 1.85 | 1.84 | 1.84 | 1.80 | 1.82 |
| F- | 0.20 | 0.21 | 0.18 | 0.23 | 0.18 | 0.21 | 0.16 | 0.20 | 0.19 | 0.21 | 0.25 | 0.241 |
| Cl- | 0.05 | 0.04 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.06 |
| Mg/(Mg+Fe2+) | 0.59 | 0.60 | 0.58 | 0.61 | 0.57 | 0.57 | 0.57 | 0.60 | 0.59 | 0.59 | 0.59 | 0.58 |
| Fe2+/(Fe2++Mg) | 0.41 | 0.40 | 0.42 | 0.39 | 0.43 | 0.43 | 0.43 | 0.40 | 0.41 | 0.41 | 0.41 | 0.42 |
| Al/(Al+Si) | 0.30 | 0.30 | 0.29 | 0.28 | 0.30 | 0.29 | 0.30 | 0.29 | 0.29 | 0.29 | 0.30 | 0.30 |

\*The Fe in the FeOt was accepted as Fe2+.

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C3-29 | C3-34 | C3-35 | C3-36 | C3-37 | C3-50 | C3-51 | C3-52 | C3-53 | C3-55 | C3-57 | C3-58 |
| Biotite | rim | core | rim | core | rim | core |  | | | core | core | rim |
| SiO2 (wt.%) | 36.96 | 36.82 | 36.84 | 36.84 | 36.32 | 36.96 | 37.00 | 36.81 | 36.69 | 36.32 | 36.61 | 37.46 |
| TiO2 | 4.02 | 4.09 | 4.14 | 4.05 | 3.94 | 4.04 | 4.12 | 4.01 | 3.95 | 3.84 | 3.84 | 3.47 |
| Al2O3 | 13.50 | 13.70 | 13.68 | 13.63 | 13.56 | 13.58 | 13.65 | 13.67 | 13.54 | 13.45 | 13.85 | 13.65 |
| FeOt | 16.83 | 17.04 | 16.93 | 16.94 | 16.77 | 16.95 | 17.04 | 16.96 | 16.98 | 16.96 | 16.87 | 16.24 |
| MnO | 0.57 | 0.49 | 0.48 | 0.49 | 0.49 | 0.48 | 0.49 | 0.51 | 0.51 | 0.48 | 0.48 | 0.46 |
| MgO | 13.21 | 13.58 | 13.57 | 13.58 | 13.57 | 13.54 | 13.73 | 13.60 | 13.62 | 13.40 | 13.50 | 14.18 |
| CaO | 0.07 | 0.02 | 0.04 | 0.04 | 0.04 | 0.02 | 0.02 | 0.03 | 0.05 | 0.06 | 0.05 | 0.10 |
| Na2O | 0.09 | 0.11 | 0.12 | 0.13 | 0.13 | 0.13 | 0.12 | 0.13 | 0.12 | 0.13 | 0.10 | 0.11 |
| K2O | 9.09 | 9.62 | 9.53 | 9.51 | 9.43 | 9.53 | 9.54 | 9.52 | 9.53 | 9.69 | 9.62 | 9.32 |
| F | 0.49 | 0.52 | 0.52 | 0.50 | 0.49 | 0.50 | 0.50 | 0.52 | 0.51 | 0.55 | 0.50 | 0.59 |
| Cl | 0.23 | 0.22 | 0.22 | 0.23 | 0.23 | 0.22 | 0.22 | 0.23 | 0.23 | 0.19 | 0.22 | 0.21 |
| Total | 98.67 | 99.85 | 99.68 | 99.59 | 98.56 | 99.58 | 100.09 | 99.61 | 99.34 | 98.63 | 99.26 | 99.40 |
| H2O | 3.61 | 3.63 | 3.63 | 3.63 | 3.59 | 3.63 | 3.65 | 3.62 | 3.61 | 3.56 | 3.62 | 3.60 |
| *Number of cations on the basis of 22 oxygens* | | | | | | | | | | | | |
| Si | 5.61 | 5.54 | 5.55 | 5.55 | 5.54 | 5.57 | 5.55 | 5.55 | 5.55 | 5.54 | 5.54 | 5.62 |
| Ti | 0.46 | 0.46 | 0.47 | 0.46 | 0.45 | 0.46 | 0.46 | 0.45 | 0.45 | 0.44 | 0.44 | 0.39 |
| Al | 2.41 | 2.43 | 2.43 | 2.42 | 2.44 | 2.41 | 2.41 | 2.43 | 2.41 | 2.42 | 2.47 | 2.41 |
| Fe2+ | 2.14 | 2.14 | 2.13 | 2.14 | 2.14 | 2.141 | 2.14 | 2.14 | 2.15 | 2.16 | 2.13 | 2.04 |
| Mn | 0.07 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.06 | 0.06 | 0.06 |
| Mg | 2.99 | 3.05 | 3.05 | 3.05 | 3.08 | 3.04 | 3.07 | 3.06 | 3.07 | 3.05 | 3.05 | 3.17 |
| Ca | 0.01 | 0.003 | 0.01 | 0.01 | 0.01 | 0.003 | 0.003 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 |
| Na | 0.03 | 0.03 | 0.04 | 0.01 | 0.04 | 0.04 | 0.03 | 0.04 | 0.04 | 0.04 | 0.03 | 0.03 |
| K | 1.76 | 1.85 | 1.83 | 1.83 | 1.83 | 1.83 | 1.83 | 1.83 | 1.84 | 1.89 | 1.86 | 1.78 |
| F- | 0.24 | 0.25 | 0.25 | 0.24 | 0.24 | 0.24 | 0.24 | 0.25 | 0.24 | 0.27 | 0.24 | 0.28 |
| Cl- | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.05 | 0.06 | 0.05 |
| Mg/(Mg+Fe2+) | 0.58 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | 0.58 | 0.59 | 0.61 |
| Fe2+/(Fe2++Mg) | 0.42 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.42 | 0.41 | 0.39 |
| Al/(Al+Si) | 0.30 | 0.30 | 0.30 | 0.30 | 0.31 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.31 | 0.30 |

\*The Fe in the FeOt was accepted as Fe2+.

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C3-63 | C3-64 | C3-78 | C3-81 | C9-14 | C9-15 | C9-16 | C9-18 | C9-19 | C9-20 | C9-56 | C9-58 | C9-78 |
| Biotite | core | rim | core | rim | core | core | rim | rim | core | rim | core | rim | core |
| SiO2 (wt.%) | 37.21 | 37.46 | 36.54 | 36.97 | 35.10 | 36.88 | 36.90 | 36.72 | 36.31 | 36.87 | 37.39 | 37.07 | 37.03 |
| TiO2 | 3.86 | 4.20 | 3.91 | 3.63 | 2.39 | 4.17 | 2.38 | 2.22 | 2.62 | 2.43 | 3.04 | 3.83 | 2.93 |
| Al2O3 | 13.58 | 13.88 | 13.35 | 13.58 | 15.02 | 13.36 | 14.50 | 14.13 | 13.73 | 14.76 | 13.50 | 13.38 | 13.66 |
| FeOt | 16.9 | 16.85 | 17.33 | 16.44 | 20.31 | 20.04 | 19.50 | 19.41 | 19.65 | 18.95 | 19.45 | 19.78 | 19.28 |
| MnO | 0.48 | 0.45 | 0.41 | 0.34 | 0.37 | 0.37 | 0.38 | 0.40 | 0.36 | 0.32 | 0.36 | 0.35 | 0.31 |
| MgO | 13.58 | 13.55 | 13.22 | 13.94 | 11.92 | 11.94 | 12.76 | 13.65 | 13.19 | 13.61 | 13.03 | 12.42 | 12.78 |
| CaO | 0.03 | 0.02 | 0.05 | 0.02 | 0.06 | 0.01 | 0.08 | 0.23 | 0.08 | 0.28 | 0.01 | 0.05 | 0.03 |
| Na2O | 0.10 | 0.10 | 0.11 | 0.08 | 0.07 | 0.09 | 0.04 | 0.05 | 0.06 | 0.04 | 0.06 | 0.08 | 0.08 |
| K2O | 9.57 | 9.43 | 9.38 | 9.49 | 9.62 | 9.24 | 9.54 | 8.03 | 8.52 | 8.32 | 9.44 | 9.33 | 9.42 |
| F | 0.57 | 0.50 | 0.51 | 0.60 | 0.56 | 0.63 | 0.64 | 0.67 | 0.69 | 0.74 | 0.73 | 0.67 | 0.74 |
| Cl | 0.22 | 0.21 | 0.23 | 0.23 | 0.22 | 0.20 | 0.21 | 0.19 | 0.23 | 0.18 | 0.26 | 0.27 | 0.23 |
| Total | 99.72 | 100.34 | 98.61 | 98.89 | 99.16 | 100.49 | 100.48 | 99.24 | 98.91 | 100.04 | 100.78 | 100.75 | 99.95 |
| H2O | 3.60 | 3.68 | 3.58 | 3.56 | 3.51 | 3.56 | 3.56 | 3.53 | 3.47 | 3.53 | 3.51 | 3.53 | 3.48 |
| *Number of cations on the basis of 22 oxygens* | | | | | | | | | | | | | |
| Si | 5.59 | 5.59 | 5.57 | 5.59 | 5.41 | 5.57 | 5.56 | 5.56 | 5.54 | 5.52 | 5.61 | 5.58 | 5.60 |
| Ti | 0.44 | 0.47 | 0.45 | 0.41 | 0.28 | 0.47 | 0.27 | 0.25 | 0.30 | 0.27 | 0.34 | 0.43 | 0.33 |
| Al | 2.41 | 2.44 | 2.40 | 2.42 | 2.73 | 2.38 | 2.57 | 2.52 | 2.47 | 2.61 | 2.39 | 2.37 | 2.43 |
| Fe2+ | 2.12 | 2.10 | 2.21 | 2.08 | 2.62 | 2.53 | 2.46 | 2.46 | 2.51 | 2.37 | 2.44 | 2.49 | 2.44 |
| Mn | 0.06 | 0.06 | 0.05 | 0.04 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.04 | 0.05 | 0.04 | 0.04 |
| Mg | 3.04 | 3.01 | 3.01 | 3.14 | 2.74 | 2.69 | 2.87 | 3.08 | 3.00 | 3.04 | 2.91 | 2.78 | 2.88 |
| Ca | 0.01 | 0.003 | 0.01 | 0.003 | 0.01 | 0.00 | 0.01 | 0.04 | 0.01 | 0.04 | 0.00 | 0.01 | 0.00 |
| Na | 0.03 | 0.029 | 0.03 | 0.02 | 0.02 | 0.03 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 |
| K | 1.84 | 1.79 | 1.82 | 1.83 | 1.89 | 1.78 | 1.83 | 1.55 | 1.66 | 1.59 | 1.81 | 1.79 | 1.82 |
| F- | 0.27 | 0.24 | 0.25 | 0.29 | 0.27 | 0.30 | 0.30 | 0.32 | 0.33 | 0.35 | 0.35 | 0.32 | 0.35 |
| Cl- | 0.06 | 0.05 | 0.06 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.06 | 0.05 | 0.07 | 0.07 | 0.06 |
| Mg/(Mg+Fe2+) | 0.59 | 0.59 | 0.58 | 0.60 | 0.51 | 0.52 | 0.54 | 0.56 | 0.54 | 0.56 | 0.54 | 0.53 | 0.54 |
| Fe2+/(Fe2++Mg) | 0.41 | 0.41 | 0.42 | 0.40 | 0.49 | 0.48 | 0.46 | 0.44 | 0.46 | 0.44 | 0.46 | 0.47 | 0.46 |
| Al/(Al+Si) | 0.30 | 0.30 | 0.30 | 0.30 | 0.34 | 0.30 | 0.32 | 0.31 | 0.31 | 0.32 | 0.30 | 0.30 | 0.30 |

\*The Fe in the FeOt was accepted as Fe2+.

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Diorite | C19-18 | C19-19 | C19-56 | C19-57 | C19-58 | C19-59 | C19-60 | C19-61 | C19-62 | C19-63 | C19-64 | C19-65 | C19-90 |
| Biotite | core | rim | core | core | rim | core | rim | rim | core | core |  | rim | rim |
| SiO2 (wt.%) | 37.43 | 37.26 | 37.55 | 38.44 | 38.07 | 37.35 | 38.35 | 37.85 | 37.76 | 38.25 | 37.88 | 35.27 | 37.96 |
| TiO2 | 4.40 | 4.14 | 3.96 | 4.13 | 4.20 | 4.03 | 4.05 | 4.61 | 4.25 | 4.04 | 3.90 | 3.75 | 4.37 |
| Al2O3 | 13.29 | 12.76 | 13.10 | 12.91 | 13.21 | 13.12 | 13.25 | 13.60 | 12.92 | 12.86 | 13.17 | 14.41 | 13.07 |
| FeOt | 17.83 | 18.40 | 18.12 | 18.20 | 18.14 | 17.89 | 17.45 | 17.35 | 18.42 | 17.97 | 18.73 | 19.12 | 17.75 |
| MnO | 0.32 | 0.34 | 0.29 | 0.30 | 0.29 | 0.32 | 0.30 | 0.28 | 0.32 | 0.31 | 0.33 | 0.33 | 0.28 |
| MgO | 13.36 | 12.93 | 13.33 | 13.21 | 13.02 | 13.08 | 13.52 | 13.05 | 13.04 | 13.29 | 13.51 | 14.27 | 12.92 |
| CaO | 0.02 | 0.07 | 0.03 | 0.08 | 0.05 | 0.10 | 0.37 | 0.09 | 0.04 | 0.11 | 0.08 | 1.13 | 0.04 |
| Na2O | 0.09 | 0.09 | 0.09 | 0.10 | 0.08 | 0.09 | 0.11 | 0.10 | 0.10 | 0.06 | 0.08 | 0.06 | 0.11 |
| K2O | 9.21 | 9.31 | 9.30 | 9.02 | 9.07 | 9.06 | 7.81 | 9.23 | 9.24 | 8.98 | 8.97 | 5.45 | 9.49 |
| F | 0.40 | 0.37 | 0.38 | 0.36 | 0.36 | 0.36 | 0.32 | 0.32 | 0.36 | 0.36 | 0.34 | 0.30 | 0.37 |
| Cl | 0.19 | 0.24 | 0.24 | 0.17 | 0.19 | 0.23 | 0.18 | 0.20 | 0.26 | 0.23 | 0.23 | 0.17 | 0.21 |
| Total | 100.26 | 99.57 | 100.10 | 100.70 | 100.42 | 99.32 | 99.51 | 100.45 | 100.42 | 100.18 | 100.97 | 98.00 | 100.28 |
| H2O | 3.72 | 3.68 | 3.70 | 3.78 | 3.76 | 3.69 | 3.78 | 3.79 | 3.72 | 3.74 | 3.76 | 3.72 | 3.74 |
| *Number of cations on the basis of 22 oxygens* | | | | | | | | | | | | | |
| Si | 5.61 | 5.65 | 5.65 | 5.72 | 5.69 | 5.65 | 5.73 | 5.64 | 5.66 | 5.72 | 5.65 | 5.37 | 5.68 |
| Ti | 0.50 | 0.47 | 0.45 | 0.46 | 0.47 | 0.46 | 0.45 | 0.52 | 0.48 | 0.45 | 0.44 | 0.43 | 0.49 |
| Al | 2.35 | 2.28 | 2.32 | 2.27 | 2.33 | 2.34 | 2.33 | 2.39 | 2.28 | 2.27 | 2.31 | 2.58 | 2.31 |
| Fe2+ | 2.23 | 2.33 | 2.28 | 2.27 | 2.27 | 2.26 | 2.18 | 2.16 | 2.31 | 2.25 | 2.33 | 2.43 | 2.22 |
| Mn | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 | 0.04 |
| Mg | 2.98 | 2.92 | 2.99 | 2.93 | 2.90 | 2.95 | 3.01 | 2.90 | 2.92 | 2.96 | 3.00 | 3.24 | 2.88 |
| Ca | 0.00 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 | 0.06 | 0.01 | 0.01 | 0.02 | 0.01 | 0.18 | 0.01 |
| Na | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.03 |
| K | 1.76 | 1.80 | 1.78 | 1.71 | 1.73 | 1.75 | 1.49 | 1.75 | 1.77 | 1.71 | 1.71 | 1.06 | 1.81 |
| F- | 0.19 | 0.18 | 0.18 | 0.17 | 0.17 | 0.17 | 0.15 | 0.15 | 0.17 | 0.17 | 0.16 | 0.14 | 0.18 |
| Cl- | 0.05 | 0.06 | 0.06 | 0.04 | 0.05 | 0.06 | 0.05 | 0.05 | 0.07 | 0.06 | 0.06 | 0.04 | 0.05 |
| Mg/(Mg+Fe2+) | 0.57 | 0.56 | 0.57 | 0.56 | 0.56 | 0.57 | 0.58 | 0.57 | 0.56 | 0.57 | 0.56 | 0.57 | 0.56 |
| Fe2+/(Fe2++Mg) | 0.43 | 0.44 | 0.43 | 0.44 | 0.44 | 0.43 | 0.42 | 0.43 | 0.44 | 0.43 | 0.44 | 0.43 | 0.44 |
| Al/(Al+Si) | 0.30 | 0.29 | 0.29 | 0.28 | 0.29 | 0.29 | 0.29 | 0.30 | 0.29 | 0.28 | 0.29 | 0.33 | 0.29 |

\*The Fe in the FeOt was accepted as Fe2+.

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C3-12 | C3-13 | C3-14 | C3-15 | C3-18 | C3-19 | C3-20 | C3-21 |
| Magnetite | core | rim | core | rim | core | rim | core | rim |
| SiO2 (wt.%) | 0.37 | 0.21 | 0.2 | 0.21 | 0.25 | 0.29 | 0.21 | 0.30 |
| TiO2 | 0.15 | 0.16 | 0.16 | 0.10 | 0.08 | 0.14 | 0.12 | 0.17 |
| Al2O3 | 0.16 | 0.15 | 0.12 | 0.09 | 0.10 | 0.16 | 0.13 | 0.15 |
| FeOt | 91.83 | 92.01 | 93.27 | 92.08 | 91.70 | 91.43 | 91.81 | 91.42 |
| MnO | 0.25 | 0.27 | 0.27 | 0.18 | 0.27 | 0.29 | 0.29 | 0.19 |
| MgO | 0.03 | 0.02 | b.d.l. | b.d.l. | 0.02 | b.d.l. | 0.01 | b.d.l. |
| CaO | 0.02 | 0.04 | 0.02 | 0.02 | 0.01 | 0.06 | 0.02 | 0.01 |
| Cr2O3 | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | 0.03 | 0.02 | 0.03 |
| Total | 92.85 | 92.89 | 94.08 | 92.71 | 92.47 | 92.42 | 92.63 | 92.29 |
| *Number of cations on the basis of 32 oxygens* | | | | | | | | |
| Si | 0.11 | 0.06 | 0.06 | 0.06 | 0.08 | 0.07 | 0.07 | 0.09 |
| Ti | 0.03 | 0.04 | 0.04 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 |
| Al3+ | 0.06 | 0.05 | 0.04 | 0.03 | 0.04 | 0.05 | 0.05 | 0.05 |
| Fe2+ | 8.06 | 8.01 | 8.02 | 8.03 | 8.01 | 8.01 | 8.01 | 8.08 |
| Fe3+ | 15.64 | 15.73 | 15.75 | 15.79 | 15.77 | 15.76 | 15.76 | 15.67 |
| Fe2+t | 23.70 | 23.74 | 23.78 | 23.82 | 23.78 | 23.77 | 23.77 | 23.75 |
| Mn | 0.07 | 0.07 | 0.07 | 0.05 | 0.07 | 0.08 | 0.08 | 0.05 |
| Mg | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| Ca | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 |
| Cr | 0.01 | 0.01 | 0.01 | 0.005 | 0.005 | 0.007 | 0.005 | 0.01 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Granodiorite | C9-51 | C9-52 | C9-53 | C9-89 | C9-90 | C9-91 | C9-92 |
| Magnetite | rim | core | rim | core | rim | titanite | titanite |
| SiO2 (wt.%) | 0.10 | 0.18 | 0.15 | 0.09 | 0.09 | 30.47 | 30.26 |
| TiO2 | 0.25 | 0.30 | 0.29 | 0.19 | 0.06 | 36.21 | 34.76 |
| Al2O3 | 0.22 | 0.14 | 0.14 | 0.13 | 0.03 | 1.82 | 2.52 |
| FeOt | 92.57 | 92.41 | 92.79 | 92.51 | 93.00 | 2.61 | 2.90 |
| MnO | 0.14 | 0.10 | 0.13 | 0.16 | 0.08 | 0.01 | 0.13 |
| MgO | 0.03 | 0.02 | 0.03 | 0.04 | b.d.l. | b.d.l. | 0.02 |
| CaO | 0.12 | 0.07 | 0.09 | 0.06 | 0.10 | 26.90 | 26.62 |
| Cr2O3 | 0.06 | 0.05 | 0.05 | 0.06 | 0.04 | 0.02 | 0.03 |
| Total | 93.48 | 93.26 | 93.67 | 93.23 | 93.40 | 98.12 | 97.24 |
| *Number of cations on the basis of 32 oxygens* | | | | | | *Number of cations on the basis of 5 oxygens* | |
| Si | 0.03 | 0.06 | 0.05 | 0.03 | 0.03 | 1.02 | 1.02 |
| Ti | 0.06 | 0.07 | 0.07 | 0.04 | 0.01 | 0.91 | 0.88 |
| Al3+ | 0.08 | 0.05 | 0.05 | 0.05 | 0.01 | 0.07 | 0.10 |
| Fe2+ | 8.00 | 8.07 | 8.04 | 7.99 | 7.99 | - | - |
| Fe3+ | 15.73 | 15.69 | 15.71 | 15.80 | 15.90 | - | - |
| Fe2+t | 23.73 | 23.75 | 23.75 | 23.79 | 23.88 | 0.07 | 0.08 |
| Mn | 0.04 | 0.03 | 0.03 | 0.04 | 0.02 | 0.00 | 0.00 |
| Mg | 0.01 | 0.01 | 0.01 | 0.02 | 0.00 | 0.00 | 0.00 |
| Ca | 0.04 | 0.02 | 0.03 | 0.02 | 0.03 | 0.96 | 0.96 |
| Cr | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.00 |

Table S2 (continued)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Diorite | C19-30 | C19-31 | C19-34 | C19-35 | C19-17 | C19-32 | C19-33 | C19-36 |
| Magnetite | core | rim | core | rim | ilmenite | ilm needle | ilmenite | ilmenite |
| SiO2 (wt.%) | 0.14 | 0.08 | 0.05 | 0.06 | 0.03 | 0.06 | 0.06 | 0.04 |
| TiO2 | 0.32 | 0.34 | 0.18 | 0.15 | 47.24 | 48.27 | 48.03 | 46.97 |
| Al2O3 | 0.21 | 0.17 | 0.18 | 0.22 | b.d.l. | 0.02 | b.d.l. | 0.01 |
| FeOt | 92.61 | 92.95 | 93.27 | 92.86 | 48.04 | 45.44 | 46.35 | 47.60 |
| MnO | 0.08 | 0.08 | 0.06 | 0.09 | 3.85 | 4.88 | 4.32 | 4.02 |
| MgO | 0.01 | b.d.l. | 0.02 | 0.03 | 0.23 | 0.24 | 0.08 | 0.13 |
| CaO | 0.01 | 0.02 | 0.01 | 0.07 | 0.01 | 0.03 | 0.05 | 0.02 |
| Cr2O3 | 0.07 | 0.08 | 0.06 | 0.09 | 0.02 | 0.03 | 0.01 | 0.02 |
| Total | 93.45 | 93.73 | 93.85 | 93.58 | 99.42 | 98.97 | 98.90 | 98.80 |
| *Number of cations on the basis of 32 oxygens* | | | | | *Number of cations on the basis of 6 oxygens* | | | |
| Si | 0.04 | 0.02 | 0.02 | 0.02 | 0.002 | 0.003 | 0.003 | 0.00 |
| Ti | 0.07 | 0.08 | 0.04 | 0.03 | 1.79 | 1.84 | 1.83 | 1.79 |
| Al3+ | 0.08 | 0.06 | 0.06 | 0.08 | - | 0.00 | - | 0.00 |
| Fe2+ | 8.09 | 8.08 | 8.03 | 7.99 | 0.41 | 0.31 | 0.33 | 0.41 |
| Fe3+ | 15.67 | 15.71 | 15.81 | 15.79 | 1.61 | 1.61 | 1.64 | 1.61 |
| Fe2+t | 23.76 | 23.79 | 23.84 | 23.79 | 2.03 | 1.92 | 1.97 | 2.02 |
| Mn | 0.02 | 0.02 | 0.02 | 0.02 | 0.16 | 0.21 | 0.19 | 0.17 |
| Mg | 0.00 | - | 0.01 | 0.01 | 0.02 | 0.02 | 0.01 | 0.01 |
| Ca | 0.00 | 0.01 | 0.00 | 0.02 | 0.00 | 0.002 | 0.003 | 0.00 |
| Cr | 0.02 | 0.02 | 0.01 | 0.02 | 0.001 | 0.001 | 0.000 | 0.00 |

# **Table S3.** SHRIMP U-Pb zircon analysis results of granodiorite.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Spot** | **U (ppm)** | **Th (ppm)** | **206Pbc (%)** | **207Pb/206Pb** | **±%** | **206Pb/238U** | **±%** | **232Th/238U** | **±%** | **206Pb/238U**  **Age (1)** | | **206Pb/238U**  **Age (2)** | | **206Pb/238U**  **Age (3)** |  |
| C1\_1.1 | 165 | 168 | 1.47 | 0.0585 | 6.5 | 0.0161 | 2.1 | 1.05 | 0.29 | 43.2 | ±1 | 43.3 | ±1 | 43.6 | ±2 |
| C1\_2.1 | 64 | 49 | -- | 0.0446 | 12.5 | 0.0167 | 3.5 | 0.79 | 0.81 | 41.9 | ±2 | 42.8 | ±2 | 42.1 | ±3 |
| C1\_3.1 | 274 | 353 | 0.78 | 0.0530 | 4.0 | 0.0147 | 3.0 | 1.33 | 0.22 | 43.1 | 0.9 | 44.2 | 0.8 | 44.0 | ±1 |
| C1\_4.1 | 96 | 70 | -- | 0.0414 | 7.7 | 0.0163 | 4.9 | 0.75 | 0.41 | 46.4 | ±2 | 45.0 | ±2 | 44.5 | ±2 |
| C1\_5.1 | 152 | 108 | 0.50 | 0.0509 | 5.6 | 0.0149 | 2.8 | 0.73 | 0.35 | 42.8 | ±1 | 44.7 | ±1 | 44.8 | ±1 |
| C1\_6.1 | 207 | 190 | 0.08 | 0.0476 | 5.2 | 0.0143 | 1.5 | 0.95 | 0.29 | 46.4 | 0.9 | 45.7 | 0.8 | 45.3 | 1.0 |
| C1\_7.1 | 177 | 165 | -- | 0.0450 | 5.6 | 0.0148 | 3.9 | 0.96 | 0.31 | 47.0 | ±2 | 46.0 | ±2 | 45.5 | ±2 |
| C1\_8.1 | 94 | 89 | -- | 0.0454 | 8.4 | 0.0136 | 2.3 | 0.98 | 0.41 | 43.4 | ±2 | 44.2 | ±2 | 44.8 | ±2 |
| C1\_9.1 | 121 | 120 | 0.62 | 0.0518 | 6.7 | 0.0124 | 2.1 | 1.02 | 0.36 | 45.1 | ±1 | 43.7 | 0.9 | 43.4 | ±1 |
| C1\_9.2 | 75 | 43 | 8.16 | 0.1116 | 8.7 | 0.0110 | 4.1 | 0.59 | 0.76 | 12.5 | ±9 | 48.0 | ±2 | 47.2 | ±2 |

(1) Common Pb corrected using measured 204Pb. (2) Common Pb corrected by assuming 206Pb/238U-207Pb/235U age-concordance.

(3) Common Pb corrected by assuming 206Pb/238U-208Pb/232Th age-concordance. Errors are 1-sigma; Pbc and Pb\* indicate the common and radiogenic portions. respectively.

# **Table S4.** Geochemistry of the studied pluton.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **C10** | **C18** | **F4** | **K25** | **C1** | **C7** | **C9** | **C17** | **C23** | **K45** | **K41** | **F1** | **C11** | **C16** | **C19** | **C20** | **K50** | **K47** | **C25** |
|  | **Granite** | | | | **Granodiorite** | | | | | | | | **Diorite** | | | | | | |
| SiO2 | 69.31 | 68.26 | 71.81 | 69.03 | 66.36 | 60.68 | 64.18 | 62.04 | 61.9 | 63.26 | 65.41 | 64.1 | 55.96 | 58.19 | 58.04 | 58.39 | 52.36 | 58.75 | 55.99 |
| TiO2 | 0.35 | 0.47 | 0.28 | 0.35 | 0.53 | 0.73 | 0.55 | 0.65 | 0.71 | 0.60 | 0.56 | 0.48 | 0.75 | 0.74 | 0.80 | 0.80 | 0.69 | 0.73 | 0.67 |
| Al2O3 | 14.71 | 14.50 | 13.99 | 14.83 | 14.75 | 17.4 | 15.84 | 16.21 | 16.74 | 15.79 | 15.36 | 15.78 | 17.04 | 17.43 | 17.15 | 17.41 | 17.80 | 16.81 | 18.18 |
| Fe2O3t | 3.40 | 4.13 | 2.54 | 3.65 | 4.38 | 6.04 | 4.99 | 5.61 | 5.65 | 5.36 | 5.27 | 4.25 | 7.45 | 6.71 | 7.39 | 7.13 | 8.56 | 7.44 | 6.39 |
| MnO | 0.09 | 0.09 | 0.05 | 0.09 | 0.08 | 0.12 | 0.10 | 0.12 | 0.11 | 0.14 | 0.18 | 0.07 | 0.1 | 0.11 | 0.14 | 0.13 | 0.17 | 0.23 | 0.14 |
| MgO | 1.23 | 1.41 | 0.84 | 1.24 | 1.69 | 2.29 | 1.97 | 2.34 | 2.08 | 2.25 | 2.06 | 2.04 | 3.65 | 3.15 | 3.3 | 3.11 | 3.95 | 3.34 | 2.57 |
| CaO | 3.12 | 3.43 | 2.62 | 3.28 | 3.08 | 5.12 | 4.31 | 5.21 | 4.85 | 3.86 | 4.52 | 5.02 | 7.37 | 6.02 | 6.63 | 6.27 | 7.77 | 6.11 | 8.49 |
| Na2O | 3.30 | 3.25 | 3.19 | 3.19 | 3.05 | 3.36 | 3.20 | 3.35 | 3.44 | 3.64 | 3.01 | 3.63 | 3.33 | 3.63 | 3.17 | 3.40 | 1.95 | 2.88 | 2.87 |
| K2O | 3.48 | 3.46 | 4.12 | 3.52 | 4.29 | 2.53 | 3.68 | 3.41 | 2.77 | 4.03 | 2.85 | 3.39 | 2.14 | 2.46 | 2.18 | 2.18 | 1.55 | 2.54 | 1.71 |
| P2O5 | 0.10 | 0.10 | 0.08 | 0.10 | 0.11 | 0.19 | 0.12 | 0.15 | 0.20 | 0.13 | 0.12 | 0.14 | 0.19 | 0.21 | 0.22 | 0.21 | 0.17 | 0.16 | 0.17 |
| Cr2O3 | 0.011 | 0.028 | 0.008 | <0.002 | 0.041 | 0.009 | 0.018 | 0.043 | 0.015 | <0.002 | 0.003 | 0.012 | 0.017 | 0.007 | 0.012 | 0.01 | 0.003 | 0.002 | 0.013 |
| LOI | 0.6 | 0.6 | 0.2 | 0.5 | 1.4 | 1.3 | 0.8 | 0.6 | 1.3 | 0.7 | 0.4 | 0.8 | 1.8 | 1.1 | 0.7 | 0.7 | 4.8 | 0.8 | 2.6 |
| Total | 99.83 | 99.81 | 99.84 | 99.87 | 99.84 | 99.82 | 99.82 | 99.82 | 99.81 | 99.86 | 99.86 | 99.84 | 99.83 | 99.82 | 99.81 | 99.82 | 99.82 | 99.84 | 99.82 |
| Ba | 842 | 769 | 778 | 910 | 694 | 642 | 699 | 660 | 648 | 726 | 681 | 860 | 595 | 581 | 503 | 602 | 335 | 508 | 519 |
| Ni | 36 | 106 | 30 | <20 | 140 | 35 | 74 | 148 | 54 | <20 | <20 | 53 | 53 | 24 | 40 | 41 | <20 | <20 | 41 |
| Sc | 7 | 12 | 5 | 7 | 13 | 16 | 14 | 17 | 15 | 16 | 14 | 11 | 24 | 19 | 21 | 20 | 24 | 22 | 22 |
| Co | 42.4 | 49.5 | 42.1 | 5.6 | 35.3 | 32.6 | 40.3 | 34 | 37.1 | 9.2 | 10.8 | 34.8 | 29 | 33.6 | 39.8 | 31.6 | 21.9 | 22.3 | 24.3 |
| Cs | 2.6 | 3.2 | 3.1 | 3.2 | 0.9 | 1.5 | 1.2 | 0.5 | 2.1 | 0.7 | 1.2 | 1.3 | 0.5 | 1.8 | 2.4 | 2.3 | 1.1 | 1.6 | 3.8 |
| Ga | 12.9 | 13.1 | 11.5 | 13 | 13.5 | 16.4 | 14.3 | 14.3 | 15.1 | 13.8 | 14.1 | 13.7 | 15.2 | 16.7 | 16.4 | 16.5 | 15.5 | 15 | 15.5 |
| Hf | 4.4 | 6.1 | 4 | 4.3 | 6.1 | 5.1 | 5.9 | 5.6 | 5.2 | 6.2 | 5.4 | 4.2 | 3.5 | 4.3 | 4 | 4.6 | 3.1 | 3.8 | 3 |
| Nb | 8.2 | 8.5 | 9.4 | 7.6 | 9.3 | 9.1 | 9 | 8 | 8.9 | 7.4 | 8.7 | 7.6 | 6.7 | 7.9 | 7.5 | 8 | 4.2 | 6.5 | 4.8 |
| Rb | 99.7 | 100.6 | 117 | 109.1 | 109.4 | 71.4 | 116.3 | 87.9 | 76 | 97.8 | 75.3 | 84.4 | 44.2 | 65.4 | 58.3 | 57.6 | 43.7 | 64 | 54.3 |
| Sr | 253.4 | 198.9 | 214 | 270.9 | 244.9 | 372 | 299.1 | 305.7 | 347 | 263.5 | 244.6 | 311.3 | 434.6 | 412.4 | 366.5 | 376.7 | 389.5 | 350.9 | 465 |
| Ta | 0.8 | 0.9 | 1 | 0.8 | 0.8 | 0.7 | 0.9 | 0.5 | 0.7 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.3 | 0.4 | 0.3 |
| Th | 11.7 | 11.2 | 14.3 | 11.6 | 18 | 9.1 | 15 | 10.9 | 9.7 | 12.2 | 10.8 | 9.2 | 6 | 7.5 | 7.2 | 7.5 | 4.4 | 8.1 | 5.3 |
| U | 2.4 | 2.8 | 2.1 | 2.7 | 3.1 | 1.2 | 3.3 | 3 | 1.7 | 3.1 | 2.3 | 1.9 | 0.9 | 1.8 | 2 | 1.4 | 1.4 | 1.6 | 1.6 |

Table S4 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **C10** | **C18** | **F4** | **K25** | **C1** | **C7** | **C9** | **C17** | **C23** | **K45** | **K41** | **F1** | **C11** | **C16** | **C19** | **C20** | **K50** | **K47** | **C25** |
|  | **Granite** | | | | **Granodiorite** | | | | | | | | **Diorite** | | | | | | |
| V | 57 | 79 | 38 | 56 | 98 | 121 | 115 | 142 | 104 | 130 | 103 | 90 | 213 | 153 | 166 | 158 | 220 | 183 | 190 |
| W | 366.5 | 373 | 336.5 | 1.2 | 202.3 | 142.8 | 261 | 185.4 | 251.4 | 1.5 | 1.5 | 228.5 | 101.7 | 160.4 | 206.9 | 158.4 | 1.6 | 55.1 | 72.5 |
| Zr | 150.5 | 223.1 | 136.6 | 161.2 | 212.6 | 186.2 | 211.3 | 211.4 | 202.4 | 226.8 | 203.9 | 151.7 | 116.5 | 155.7 | 144.3 | 174.9 | 102.1 | 137.8 | 105.6 |
| Y | 17.3 | 28.8 | 16.3 | 17.5 | 26.4 | 27.4 | 26.9 | 25.3 | 25.3 | 27.1 | 29.1 | 19.2 | 25.5 | 25.2 | 24.6 | 25.7 | 23 | 25 | 20.5 |
| La | 21.2 | 25.5 | 23.6 | 23.5 | 27 | 28.1 | 21.9 | 20.3 | 27.4 | 19.3 | 25.6 | 19.6 | 22.3 | 19.2 | 22.9 | 20.1 | 14.3 | 17.4 | 15.7 |
| Ce | 38.6 | 50.2 | 42.7 | 40.5 | 51.7 | 55 | 45.2 | 41.4 | 53 | 39.3 | 50.4 | 40.5 | 41.8 | 40 | 44.4 | 40.6 | 28.3 | 35.3 | 30.1 |
| Pr | 4.27 | 6 | 4.53 | 4.4 | 6.18 | 6.68 | 5.78 | 5.27 | 6.39 | 5.04 | 5.96 | 4.93 | 5.25 | 5.4 | 5.58 | 5.22 | 3.61 | 4.51 | 4.07 |
| Nd | 15.2 | 22.3 | 15.6 | 16 | 22.6 | 25 | 22.7 | 20.8 | 23.8 | 20.6 | 23 | 19.2 | 20.9 | 22.1 | 22.2 | 21.2 | 14.6 | 17.9 | 16.3 |
| Sm | 2.67 | 4.65 | 2.63 | 2.73 | 4.33 | 5.32 | 4.51 | 4.34 | 4.61 | 4.42 | 4.53 | 3.54 | 4.57 | 5.11 | 4.56 | 4.5 | 3.37 | 4.11 | 3.35 |
| Eu | 0.65 | 0.87 | 0.58 | 0.68 | 0.79 | 1.28 | 0.92 | 0.92 | 1.2 | 0.9 | 0.96 | 0.87 | 1.08 | 1.26 | 1.14 | 1.28 | 0.91 | 0.98 | 0.98 |
| Gd | 3.02 | 4.87 | 2.68 | 2.8 | 4.49 | 5.38 | 4.86 | 4.48 | 4.99 | 4.61 | 4.94 | 3.57 | 5.2 | 5.12 | 4.71 | 5.01 | 3.76 | 4.33 | 4.03 |
| Tb | 0.41 | 0.75 | 0.4 | 0.42 | 0.68 | 0.79 | 0.74 | 0.68 | 0.74 | 0.73 | 0.78 | 0.55 | 0.75 | 0.75 | 0.72 | 0.75 | 0.59 | 0.67 | 0.57 |
| Dy | 2.75 | 4.85 | 2.59 | 2.77 | 4.27 | 4.64 | 4.39 | 4.34 | 4.39 | 4.74 | 4.77 | 3.23 | 4.58 | 4.67 | 4.17 | 4.66 | 3.71 | 4.06 | 3.59 |
| Ho | 0.54 | 0.99 | 0.58 | 0.59 | 0.9 | 0.98 | 0.98 | 0.95 | 0.87 | 1 | 1.04 | 0.67 | 0.96 | 0.94 | 0.96 | 0.94 | 0.81 | 0.92 | 0.74 |
| Er | 1.8 | 3 | 1.64 | 1.76 | 2.83 | 2.88 | 2.96 | 2.83 | 2.7 | 2.95 | 3.1 | 2.15 | 2.87 | 2.72 | 2.75 | 2.95 | 2.42 | 2.72 | 2.19 |
| Tm | 0.26 | 0.44 | 0.26 | 0.26 | 0.42 | 0.43 | 0.45 | 0.4 | 0.38 | 0.44 | 0.48 | 0.31 | 0.41 | 0.4 | 0.36 | 0.39 | 0.34 | 0.37 | 0.32 |
| Yb | 1.93 | 2.94 | 1.9 | 1.83 | 2.82 | 2.76 | 2.84 | 2.71 | 2.59 | 2.93 | 3.04 | 2.15 | 2.76 | 2.84 | 2.57 | 2.6 | 2.15 | 2.52 | 2.13 |
| Lu | 0.31 | 0.48 | 0.31 | 0.32 | 0.45 | 0.44 | 0.46 | 0.44 | 0.44 | 0.47 | 0.49 | 0.35 | 0.43 | 0.43 | 0.41 | 0.41 | 0.36 | 0.39 | 0.33 |
| Mo | 1.2 | 2.5 | 1.5 | 3 | 1.4 | 1.6 | 2.1 | 2.4 | 2 | 2.4 | 2.6 | 1.3 | 1.6 | 9.6 | 2.5 | 2.6 | 8.4 | 1.5 | 2.7 |
| Cu | 19.4 | 30.6 | 3.8 | 26.7 | 17.1 | 25.7 | 37.1 | 16.3 | 32.1 | 22.1 | 23.6 | 7.6 | 12.7 | 5.2 | 44 | 37.6 | 55.7 | 31.2 | 77.1 |
| Pb | 18.9 | 13.4 | 12.2 | 18.9 | 2 | 3.7 | 7.2 | 4.7 | 7.2 | 2.4 | 10.4 | 30.6 | 1.5 | 3.5 | 5.7 | 6 | 25.6 | 4.6 | 3 |
| Zn | 35 | 39 | 20 | 33 | 27 | 34 | 25 | 18 | 33 | 39 | 55 | 33 | 16 | 32 | 37 | 30 | 235 | 60 | 94 |
| Ni | 48 | 113.9 | 64.6 | 3.4 | 54.2 | 39.3 | 52.2 | 109.2 | 67.8 | 5.1 | 6.7 | 59.5 | 84.9 | 23.4 | 50.9 | 37.7 | 13.4 | 5.7 | 50.5 |
| As | 3.2 | 1.4 | 1.7 | 3.6 | 1.6 | 1.4 | 2.1 | 1.3 | 2 | 1.7 | 2.5 | 14.9 | 1.6 | 1.8 | 1.8 | 2.8 | 2 | 3.7 | 3.7 |
| Au | <0.5 | 2.6 | 0.7 | <0.5 | 2.9 | 2 | 2 | 0.8 | 0.8 | <0.5 | 0.7 | 1 | 0.9 | 0.7 | 3.1 | 1.7 | <0.5 | 1.5 | 0.9 |

# **Table S5.** Sr, Nd and Pb isotope geochemistry of the pluton.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample No. | Rb (ppm) | Sr (ppm) | 87Sr/86Sr(m) | ±2 σ | 87Rb/86Sr | 87Sr/86Sr(i) | Sm (ppm) | Nd (ppm) | 143Nd/144Nd(m) | ±2 σ | 147Sm/144Nd | 143Nd/144Nd(i) | εNd(i) | *T*DM1  (Ga) | *T*DM2  (Ga) |
| C1 | 104.9 | 244.9 | 0.705974 | 07 | 1.239538 | 0.705182 | 4.33 | 22.6 | 0.512565 | 05 | 0.115830 | 0.512531 | -0.96 | 0.913 | 0.951 |
| C19 | 58.3 | 366.5 | 0.705511 | 07 | 0.460308 | 0.705217 | 4.56 | 22.2 | 0.51262 | 09 | 0.124182 | 0.512583 | 0.07 | 0.904 | 0.866 |
| C9 | 116.3 | 299.1 | 0.705564 | 08 | 1.125173 | 0.704845 | 4.51 | 22.7 | 0.512642 | 18 | 0.120115 | 0.512607 | 0.52 | 0.829 | 0.828 |
| C7 | 71.4 | 372.0 | 0.705746 | 07 | 0.555417 | 0.705391 | 5.32 | 25.0 | 0.512579 | 07 | 0.128651 | 0.512541 | -0.76 | 1.025 | 0.935 |
| C3 | 80.6 | 362.4 | 0.706137 | 08 | 0.643616 | 0.705726 | 4.11 | 21.6 | 0.512626 | 08 | 0.115036 | 0.512592 | 0.23 | 0.811 | 0.852 |
| Note: 87Rb/86Sr= (Rb/Sr)\*(2.6939+0.2832\*87Sr/86Sr); 147Sm/144Nd= (Sm/Nd)\*(0.53151+0.14252\*143Nd/144Nd); 87/86Sr(i)= 87/86Srm-87Rb/86Sr\*(*e*λt-1);  143/144Nd(i)= 143/144Ndm-147Sm/144Nd\*(*e*λt-1). λRb= 1.42x10-11 y-1 (Steiger & Jager, 1977); λSm= 6.54x10-12 y-1 (Lugmair & Marti, 1978). ƐNd(i)= ((143Nd/144Nd)m/(143Nd/144Nd)CHUR -1) x 104, present CHUR values 147Sm/144Nd= 0.1967 and 143Nd/144Nd= 0.512638 (Jacobsen and Wasserburg, 1980). *T*DM = 1/λ\*LN(1 + (143/144Nd/ Nd - 0.513151) / (147Sm/144Nd - 0.219)/1000; *T*DM2=1/λ\*LN(1+(143Nd/144Nd-(*e*λt-1)\*(147Sm/144Nd-0.12)-0.513151)/(0.12-0.219))/1000. 143/144NdDM= 0.513151, 147Sm/144NdDM= 0.2137 ve 147Sm/144NdCC= 0.12 values according to Liew & Hofmann, 1988. ±2σ measurement error data. 45 Ma (U-Pb zircon) age used in the calculation. CHUR: Chondritic Uniform Reservoir, DM: Depleted Mantle; *T*DM1: Single- stage Nd model ages; *T*DM2:Two-stage Nd model ages, i: Initial, m: measured, Ga: Gillion age. | | | | | | | | | | | | | | | |

Table S5 (continued)

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample No | Pb (ppm) | Th (ppm) | U (ppm) | 206/204Pb | 206/204Pb(i) | 207/204Pb | 207/204Pb(i) | 208/204Pb | 208/204Pb(i) | 208/206Pb | 207/206Pb |
| C1 | 2.0 | 18.0 | 3.1 | 18.905 | 18.206 | 15.623 | 15.590 | 39.078 | 37.743 | 2.06712 | 0.82641 |
| C19 | 5.7 | 7.2 | 2.0 | 18.692 | 18.533 | 15.604 | 15.597 | 39.708 | 39.520 | 2.07473 | 0.83477 |
| C9 | 7.2 | 15.0 | 3.3 | 18.732 | 18.526 | 15.630 | 15.620 | 38.840 | 38.533 | 2.07351 | 0.83446 |
| C7 | 3.7 | 9.1 | 1.2 | 18.723 | 18.578 | 15.630 | 15.623 | 38.818 | 38.455 | 2.07326 | 0.83481 |
| C3 | 13.9 | 9.2 | 1.8 | 18.679 | 18.621 | 15.631 | 15.628 | 38.787 | 38.689 | 2.07651 | 0.83681 |

# **Table S6.** Zircon Hf isotope data in the granodiorite of the studied pluton.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample/spot | 176Hf/177Hf | 2σ | 176Lu/177Hf | 2σ | 176Yb/177Hf | 2σ | 178Hf/177Hf | 2σ | 176Hf/177Hf(i) | εHf(0) | εHf(t) | TDM1(Ma) | TDM2(Ma) | ƒLu/Hf |
| C1.1 | 0.282936 | 0.000057 | 0.00127 | 0.00002 | 0.05338 | 0.00042 | 1.46729 | 0.00013 | 0.28294 | 5.80 | 6.68 | 452 | 691 | -0.96 |
| C1-2 | 0.282959 | 0,000050 | 0.00077 | 0.00001 | 0.03122 | 0.00067 | 1.46733 | 0.00015 | 0.28296 | 6.61 | 7.65 | 413 | 634 | -0.98 |
| C1-3 | 0.282949 | 0.000073 | 0.00243 | 0.00001 | 0.10690 | 0.00079 | 1.46728 | 0.00015 | 0.28295 | 6.26 | 7.17 | 447 | 662 | -0.93 |
| C1-4 | 0.282910 | 0.000058 | 0.00106 | 0.00001 | 0.04438 | 0.00023 | 1.46737 | 0.00014 | 0.28291 | 4.88 | 5.93 | 486 | 745 | -0.97 |
| C1-5 | 0.282934 | 0.000055 | 0.00133 | 0.00001 | 0.05470 | 0.00018 | 1.46727 | 0.00012 | 0.28293 | 5.73 | 6.64 | 455 | 695 | -0.96 |
| C1-6 | 0.282921 | 0.000055 | 0.00117 | 0.00001 | 0.05217 | 0.00029 | 1.46724 | 0.00010 | 0.28292 | 5.27 | 6.15 | 472 | 721 | -0.96 |
| C1-7 | 0.283062 | 0.000060 | 0.00212 | 0.00006 | 0.09790 | 0.00200 | 1.46725 | 0.00008 | 0.28306 | 10.26 | 11.26 | 277 | 402 | -0.94 |
| C1-8 | 0.282882 | 0.000052 | 0.00086 | 0.00001 | 0.03785 | 0.00077 | 1.46733 | 0.00008 | 0.28288 | 3.89 | 4.76 | 523 | 813 | -0.97 |
| C1-9-1 | 0.282918 | 0.000058 | 0.00163 | 0.00003 | 0.07330 | 0.00110 | 1.46734 | 0.00010 | 0.28292 | 5.16 | 6.10 | 482 | 731 | -0.95 |
| C1-9-2 | 0.282901 | 0.000063 | 0.00047 | 0.00000 | 0.01771 | 0.00055 | 1.46744 | 0.00013 | 0.28290 | 4.56 | 5.77 | 491 | 760 | -0.99 |
| C4-1 | 0.282952 | 0.000054 | 0.001326 | 0.000017 | 0.043 | 0.002 | 1.46736 | 0.00011 | 0.28295 | 6.37 | 7.33 | 429 | 652 | -0.96 |
| C4-2 | 0.282919 | 0.000042 | 0.001286 | 0.00003 | 0.04045 | 0.00082 | 1.46739 | 0.000092 | 0.28292 | 5.20 | 6.14 | 476 | 728 | -0.96 |
| C4-4-1 | 0.282893 | 0.000054 | 0.001401 | 0.000022 | 0.0383 | 0.00053 | 1.46755 | 0.00013 | 0.28289 | 4.28 | 5.25 | 515 | 786 | -0.96 |
| C4-4-2 | 0.282915 | 0.000045 | 0.001149 | 0.000019 | 0.04002 | 0.00063 | 1.46739 | 0.0001 | 0.28291 | 5.06 | 6.03 | 480 | 736 | -0.97 |
| C4-5 | 0.282867 | 0.000044 | 0.001121 | 0.0000082 | 0.03001 | 0.00057 | 1.46740 | 0.00012 | 0.28287 | 3.36 | 4.36 | 548 | 844 | -0.97 |
| C4-6 | 0.282875 | 0.000042 | 0.001341 | 0.000031 | 0.04482 | 0.00064 | 1.46736 | 0.00009 | 0.28287 | 3.64 | 4.60 | 540 | 827 | -0.96 |
| C4-7 | 0.282867 | 0.000045 | 0.001332 | 0.000018 | 0.04283 | 0.00097 | 1.46745 | 0.00012 | 0.28287 | 3.36 | 4.44 | 551 | 842 | -0.96 |
| C4-8 | 0.282904 | 0.00006 | 0.002035 | 0.00005 | 0.0932 | 0.0024 | 1.46729 | 0.000098 | 0.28290 | 4.67 | 5.56 | 508 | 764 | -0.94 |
| C4-9 | 0.28288 | 0.000046 | 0.001704 | 0.00001 | 0.0619 | 0.0016 | 1.46727 | 0.0001 | 0.28288 | 3.82 | 4.78 | 538 | 816 | -0.95 |
| C4-10 | 0.282864 | 0.000047 | 0.0007653 | 0.0000059 | 0.03119 | 0.00045 | 1.46726 | 0.00015 | 0.28286 | 3.25 | 4.12 | 547 | 854 | -0.98 |
| C4-11 | 0.282859 | 0.00006 | 0.002136 | 0.000069 | 0.0625 | 0.0012 | 1.46731 | 0.00014 | 0.28286 | 3.08 | 4.08 | 575 | 863 | -0.94 |
| C4-12 | 0.28287 | 0.000047 | 0.001252 | 0.000031 | 0.04072 | 0.00034 | 1.46730 | 0.00013 | 0.28287 | 3.47 | 4.40 | 546 | 839 | -0.96 |
| C4-13 | 0.282871 | 0.000048 | 0.001328 | 0.000019 | 0.05199 | 0.00076 | 1.46734 | 0.00012 | 0.28287 | 3.50 | 4.45 | 545 | 837 | -0.96 |
| C4-14 | 0.282814 | 0.000058 | 0.001085 | 0.000025 | 0.04432 | 0.00046 | 1.46747 | 0.00014 | 0.28281 | 1.49 | 2.51 | 623 | 963 | -0.97 |
| C4-15 | 0.282881 | 0.000039 | 0.001445 | 0.000029 | 0.04583 | 0.00055 | 1.46733 | 0.000085 | 0.28288 | 3.85 | 4.99 | 533 | 809 | -0.96 |
| C4-16 | 0.282921 | 0.000059 | 0.001465 | 0.000048 | 0.05708 | 0.0006 | 1.46729 | 0.00013 | 0.28292 | 5.27 | 6.18 | 476 | 724 | -0.96 |
| C4-17 | 0.282776 | 0.000043 | 0.001032 | 0.0000084 | 0.04446 | 0.00073 | 1.46733 | 0.000092 | 0.28278 | 0.14 | 1.07 | 676 | 1052 | -0.97 |

*Note:* εHf(0) = ((176Hf/177Hf)S/(176Hf/177Hf)CHUR,0－1) × 10000, fLu/Hf = (176Lu/177Hf)S/(176Lu/177Hf)CHUR－1; εHf(t) = ((176Hf/177Hf)S－(176Lu/177Hf)S×(eλt－1))/((176Hf/177Hf)CHUR,0－(176Lu/177Hf)CHUR×(eλt－1))－1) × 10000; TDM1(Hf) = 1/l × (1 + ((176Hf/177Hf)S－(176Hf/177Hf)DM)/((176Lu/177Hf)S－(176Lu/177Hf)DM)); TDM2(Hf) = TDM1(Hf) - (TDM1(Hf)-t)((fCC－fS)/(fCC－fDM)); where, (176Lu/177Hf)S and (176Hf/177Hf)S are the measured values of samples; (176Lu/177Hf)CHUR = 0.0332 and (176Hf/177Hf)CHUR,0 = 0.282772 (Blichert-Toft & Albarède, 1997); (176Lu/177Hf)DM = 0.0384 and (176Hf/177Hf)DM = 0.28325 (Griffin *et al.* 2000); fCC = - 0.548 (average continental crust), fDM = 0.16, t = crystallization time of zircon, λ = 1.865×10－11yr－1 (Soderland *et al.* 2004) are used in calculation.

# **Table S7.** Amphibole-plagioclase thermometer (*T*) and pressure (*P*) values for the studied pluton.

|  |  |  |  |
| --- | --- | --- | --- |
| **Sample** | **C3-86-89** | **C9-62(70)-55** | **C19-29-38** |
| **Rock name** | **Granodiorite (*n=1*)** | **Granodiorite (*n=2*)** | **Diorite (*n=1*)** |
| *T*(°C)1 | 744.4 | 625-666.8 | 662.2 |
| *P*(Kb)1 | 0.65 | 0.67-1.84 | 1.08 |
| *P*(Kb)2 | 1.34 | 0.59-1.80 | 1.02 |
| *1 Blundy & Holland (1990), 2 Schmidt (1992)* | | | |

# **Table S8.** Biotite thermometer (*T*) from the studied pluton.

|  |  |  |
| --- | --- | --- |
| **Sample** | ***T*°C (min.)** | ***T*°C (max.)** |
| Granodiorite (*n=36*) | 627 | 762 |
| Diorite (*n=15*) | 735 | 781 |

# **Table S9.** Temperature (*T*) and oxygen fugacity (ƒO2) values of magnetite and ilmenite pairs from Diorite samples

|  |  |  |  |
| --- | --- | --- | --- |
| **Samples** | **T (°C)1** | **log10 ƒO22** | **T (°C)3** |
| C19 (16-17) | 583 | -17.04 | 591 |
| C19 (31-32) | 569 | -18.35 | 577 |
| C19 (35-36) | 561 | -17.46 | 567 |
| References: 1,2Spencer and Lindsley (1981); 3Andersen and Lindsley (1985) | | | |

# **Table S10.** Zircon and apatite temperature (*T*) values calculated from pluton samples.

|  |  |  |
| --- | --- | --- |
| **Rock name** | ***T(°*C) (Zircon)** | ***T*(°C) HW (Apatite)** |
|  | *min-max* | *min-max* |
| Granite (*n=4*) | 767-802 | 886-900 |
| Granodiorite (*n=7*) | 744-797 | 857-890 |
| Diorite (*n=8*) | 699-753 | 740-852 |

# **Table S11.** Temperature and pressure values calculated from hornblendes of the Dağdibi Pluton.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sample** | **C3**  **Granodiorite** | | **C9**  **Granodiorite** | | **K-55**  **Granodiorite** | | **C19**  **Q-diorite** | | **K-40**  **Q-diorite** | |
| *min.* | *max.* | *min.* | *max.* | *min.* | *max.* | *min.* | *max.* | *min.* | *max.* |
| ***T* (oC)** | | | | | | | | | | |
| Ridolfi *et al.* (2010) | 675 | 786 | 693 | 757 | 736 | 785 | 734 | 755 | 703 | 792 |
| ***P* (Kbar)** | | | | | | | | | | |
| Johnson & Rutherford (1989) | 0.35 | 1.06 | 0.32 | 0.73 | 0.14 | 1.14 | 0.10 | 0.84 | 0.91 | 1.37 |
| Hollister *et al.* (1987) | 0.41 | 1.36 | 0.32 | 0.87 | 0.18 | 1.49 | 0.31 | 0.58 | 1.19 | 1.80 |
| Hammarstrom & Zen (1986) | 0.69 | 1.54 | 0.24 | 1.10 | 0.27 | 1.58 | 0.19 | 0.84 | 1.31 | 1.85 |
| Schmidt (1992) | 0.74 | 2.16 | 0.38 | 1.74 | 0.49 | 2.19 | 0.53 | 1.49 | 0.63 | 2.40 |
| Mutch *et al.* (2016) | 0.71 | 2.03 | 1.07 | 1.82 | 1.28 | 2.05 | 1.30 | 1.65 | 1.13 | 2.11 |

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