Table 1 Whole rock major (wt%) , rare earth and trace elements (×10-6) compositions of Liemai granites

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | LM1 | LM2 | LM3 | LM4 | LM5 | LM6 | LM7 | LM8 | LM9 | LM10 |
| Major element (wt.%) | |  |  |  |  |  |  |  |  |  |
| SiO2 | 70.87 | 71.34 | 70.45 | 72.08 | 71.18 | 71.98 | 71.08 | 71.21 | 71.1 | 71.49 |
| TiO2 | 0.19 | 0.23 | 0.18 | 0.32 | 0.18 | 0.25 | 0.21 | 0.21 | 0.21 | 0.21 |
| Al2O3 | 16.08 | 15.7 | 15.42 | 16.5 | 15.58 | 16.26 | 15.58 | 15.6 | 15.72 | 15.55 |
| Fe2O3 | 0.2 | 0.36 | 0.58 | 0.56 | 0.56 | 0.55 | 0.33 | 0.32 | 0.36 | 0.41 |
| FeO | 0.97 | 1.18 | 1.33 | 1.18 | 0.17 | 0.25 | 1.08 | 1.1 | 1.13 | 1.03 |
| MnO | 0.03 | 0.01 | 0.02 | 0.01 | 0.01 | 0.005 | 0.02 | 0.02 | 0.03 | 0.02 |
| MgO | 0.23 | 0.24 | 0.2 | 0.24 | 0.19 | 0.24 | 0.55 | 0.59 | 0.58 | 0.56 |
| CaO | 1.09 | 0.85 | 0.23 | 0.2 | 0.24 | 0.21 | 0.92 | 1.12 | 0.88 | 0.89 |
| Na2O | 3.78 | 3.86 | 3.14 | 3.95 | 4.71 | 2.98 | 3.92 | 3.96 | 3.93 | 3.92 |
| K2O | 3.9 | 4.75 | 4.39 | 2.92 | 4.62 | 3.35 | 4.47 | 4.32 | 4.53 | 4.57 |
| P2O5 | 0.13 | 0.09 | 0.28 | 0.09 | 0.25 | 0.08 | 0.12 | 0.11 | 0.11 | 0.11 |
| LOI | 0.78 | 1.76 | 0.62 | 1.38 | 1.52 | 0.93 | 1.50 | 0.98 | 1.05 | 0.96 |
| TOTAL | 100.42 | 101.95 | 99.09 | 101.02 | 99.02 | 99.04 | 99.81 | 99.59 | 99.74 | 99.8 |
| A/CNK | 1.30 | 1.20 | 1.49 | 1.65 | 1.18 | 1.83 | 1.20 | 1.18 | 1.21 | 1.20 |
| Trace element (ppm) | |  |  |  |  |  |  |  |  |  |
| Sc | 1.35 | 1.34 | 1.25 | 1.49 | 1.28 | 1.27 | 2.9 | 2.81 | 3.01 | 2.76 |
| V | 4.38 | 4.52 | 4.35 | 4.23 | 3.99 | 4.16 | 19.61 | 18.78 | 19.26 | 18.59 |
| Cr | 2.99 | 3.37 | 3.81 | 3.56 | 3.29 | 3.35 | 8.61 | 11.45 | 12.14 | 12.65 |
| Co | 0.59 | 0.44 | 0.62 | 0.53 | 0.52 | 0.6 | 2.45 | 2.95 | 5.35 | 2.89 |
| Ni | 1.52 | 1.71 | 1.9 | 2.14 | 2.14 | 2.74 | 9.79 | 9.66 | 11.69 | 9.66 |
| Rb | 229 | 198.8 | 186 | 221.7 | 166.6 | 248.9 | 293.8 | 288.3 | 213.4 | 204.1 |
| Sr | 44.6 | 50.3 | 53.1 | 60.3 | 119.8 | 53.3 | 133.6 | 131.6 | 131.7 | 134.5 |
| Zr | 49.6 | 53 | 50.4 | 52.8 | 52.3 | 51.1 | 74.7 | 82.1 | 80.8 | 78.4 |
| Nb | 5.03 | 5.31 | 5.75 | 5.21 | 4.98 | 4.96 | 6.05 | 5.43 | 5.19 | 5.5 |
| Ba | 255.5 | 284.5 | 233.9 | 325.6 | 203.8 | 293.3 | 217.1 | 264.6 | 289.2 | 261.5 |
| Hf | 3.16 | 2.32 | 1.93 | 2.32 | 3.48 | 3.27 | 3.3 | 3.15 | 3.42 | 3.53 |
| Ta | 0.9 | 0.89 | 1.12 | 0.89 | 0.88 | 0.87 | 0.88 | 0.69 | 0.66 | 0.69 |
| U | 2.34 | 1.98 | 2.69 | 2.13 | 2.85 | 2.34 | 2.14 | 2.83 | 1.96 | 2.75 |
| Th | 10.54 | 9.34 | 10.98 | 9.96 | 11.67 | 10.67 | 11.6 | 10.5 | 9.8 | 11.5 |
| Li | 889.4 | 1130 | 738 | 803.4 | 29.14 | 401.5 | 253.9 | 389.5 | 310.2 | 314.7 |
| Be | 8.53 | 9.34 | 10.01 | 9.79 | 15.88 | 11.53 | 15.82 | 15.21 | 10.12 | 15.83 |
| Cs | 29.19 | 23.42 | 22.26 | 30.83 | 22.03 | 38.94 | 19 | 18.9 | 16.83 | 17.86 |
| La | 17.32 | 18.8 | 16.87 | 18.28 | 18.32 | 18.37 | 24.24 | 24.55 | 25.12 | 24.49 |
| Ce | 34.9 | 37.98 | 33.84 | 36.8 | 37.03 | 36.93 | 47.35 | 48.73 | 50.46 | 48.65 |
| Pr | 4.05 | 4.36 | 3.92 | 4.22 | 4.3 | 4.31 | 5.55 | 5.73 | 5.8 | 5.78 |
| Nd | 14.01 | 15.43 | 13.53 | 14.7 | 15.01 | 15.17 | 19.37 | 19.7 | 20.38 | 20.07 |
| Sm | 3.14 | 3.87 | 3.4 | 3.59 | 3.88 | 3.86 | 4.4 | 4.39 | 4.55 | 4.42 |
| Eu | 0.67 | 0.78 | 0.64 | 0.71 | 0.94 | 0.8 | 1.02 | 1.02 | 1.07 | 1.03 |
| Gd | 2.06 | 3.02 | 2.58 | 2.73 | 2.92 | 2.92 | 3.31 | 3.3 | 3.47 | 3.26 |
| Tb | 0.22 | 0.34 | 0.3 | 0.31 | 0.33 | 0.31 | 0.37 | 0.35 | 0.37 | 0.37 |
| Dy | 0.77 | 1.25 | 1.05 | 1.11 | 1.07 | 1.08 | 1.47 | 1.33 | 1.38 | 1.36 |
| Ho | 0.1 | 0.15 | 0.13 | 0.14 | 0.13 | 0.12 | 0.2 | 0.17 | 0.19 | 0.18 |
| Er | 0.2 | 0.28 | 0.25 | 0.24 | 0.23 | 0.23 | 0.42 | 0.36 | 0.37 | 0.37 |
| Tm | 0.02 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.05 | 0.04 | 0.04 | 0.04 |
| Yb | 0.13 | 0.18 | 0.15 | 0.15 | 0.15 | 0.14 | 0.29 | 0.23 | 0.24 | 0.22 |
| Lu | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.04 | 0.03 | 0.03 | 0.03 |
| Y | 2.63 | 3.91 | 3.44 | 3.64 | 3.24 | 3.52 | 5.58 | 4.8 | 5.04 | 4.85 |
| δEu | 0.76 | 0.67 | 0.63 | 0.67 | 0.82 | 0.70 | 0.78 | 0.79 | 0.79 | 0.79 |