**Supp. Table 3:** The major (wt.%) and trace element (ppm) analysis results for the Nanwenhe gneissic granites.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Samples** | MD-003-A | MD-003-B | zk10746-b47 | zk10746-b49 | 2238b-21z | 2238b-32z | 2238b-41z | 2238b-52.1z | 89-1-b6z | MLT-1 | MP002 | 2238b-6z | 2238b-9z | 2238b-17z | 2238b-19z | MLP158-Q21 | MLP158-Q14 | GSR1 | Detection limits |
| **SiO2** | 73.62  | 72.59  | 76.78  | 77.57  | 74.42  | 74.01  | 73.89  | 73.43  | 71.04  | 75.73  | 76.32  | 74.46  | 74.67  | 72.89  | 73.35  | 69.94  | 73.06  | 72.8  | 0.04  |
| **Al2O3** | 13.72  | 15.25  | 13.08  | 12.44  | 13.99  | 14.19  | 13.85  | 14.31  | 14.25  | 12.67  | 12.81  | 13.12  | 12.87  | 13.98  | 13.73  | 14.57  | 13.97  | 13.45  | 0.05  |
| **Fe2O3** | 1.23  | 1.11  | 0.21  | 0.18  | 0.56  | 0.29  | 0.48  | 0.45  | 0.46  | 0.48  | 0.46  | 0.44  | 0.27  | 0.46  | 0.29  | 0.66  | 0.19  | 1.09 | - |
| **FeO** | 1.45  | 0.56  | 0.88  | 1.20  | 0.88  | 1.08  | 1.51  | 1.52  | 2.68  | 0.88  | 0.92  | 1.92  | 1.97  | 2.31  | 1.76  | 2.71  | 0.53  | 0.96  | 0.06  |
| **MgO** | 0.71  | 0.36  | 0.45  | 0.26  | 0.34  | 0.31  | 0.47  | 0.49  | 1.06  | 0.48  | 0.64  | 0.62  | 0.63  | 0.67  | 0.52  | 1.44  | 0.82  | 0.45  | 0.03  |
| **CaO** | 1.79  | 3.09  | 0.98  | 0.80  | 0.67  | 0.68  | 1.30  | 0.96  | 2.06  | 0.27  | 0.71  | 1.55  | 1.23  | 1.39  | 1.19  | 2.52  | 0.49  | 1.58  | 0.03  |
| **Na2O** | 6.04  | 6.02  | 6.30  | 5.73  | 2.57  | 2.66  | 3.32  | 3.20  | 2.80  | 2.41  | 3.08  | 3.22  | 2.89  | 3.23  | 2.92  | 2.60  | 2.81  | 3.40  | 0.27  |
| **K2O** | 0.42  | 0.13  | 0.57  | 0.80  | 5.20  | 5.59  | 4.00  | 4.32  | 4.25  | 5.91  | 3.27  | 3.46  | 4.31  | 3.56  | 5.07  | 4.33  | 5.29  | 4.97  | 0.04  |
| **MnO** | 0.02  | 0.01  | 0.02  | 0.03  | 0.04  | 0.04  | 0.08  | 0.06  | 0.06  | 0.01  | 0.03  | 0.06  | 0.05  | 0.08  | 0.05  | 0.07  | 0.02  | 0.06  | 0.00  |
| **P2O5** | 0.12  | 0.10  | 0.05  | 0.17  | 0.20  | 0.16  | 0.17  | 0.20  | 0.17  | 0.15  | 0.18  | 0.19  | 0.15  | 0.19  | 0.16  | 0.12  | 0.18  | 0.10  | 0.00  |
| **TiO2** | 0.482  | 0.351  | 0.14  | 0.11  | 0.14  | 0.14  | 0.21  | 0.23  | 0.44  | 0.17  | 0.22  | 0.30  | 0.29  | 0.34  | 0.25  | 0.47  | 0.27  | 0.287  | 0.00  |
| **LOI** | 0.24  | 0.37  | 0.48  | 0.62  | 0.89  | 0.80  | 0.59  | 0.75  | 0.57  | 0.76  | 1.21  | 0.58  | 0.56  | 0.77  | 0.55  | 0.41  | 1.82  | 0.77  | 0.07  |
| **TOTAL** | 99.86  | 99.93  | 99.95  | 99.91  | 99.89  | 99.94  | 99.88  | 99.89  | 99.87  | 99.92  | 99.86  | 99.93  | 99.90  | 99.85  | 99.86  | 99.85  | 99.92  | 99.89  | - |
| **TFe2O3** | 2.84  | 1.73  | 1.19  | 1.51  | 1.54  | 1.49  | 2.15  | 2.14  | 3.44  | 1.46  | 1.48  | 2.57  | 2.46  | 3.02  | 2.25  | 3.67  | 0.70  | 2.16  | 0.02  |
| **FeOT** | 2.56  | 1.55  | 1.07  | 1.36  | 1.38  | 1.34  | 1.94  | 1.92  | 3.10  | 1.32  | 1.34  | 2.32  | 2.21  | 2.72  | 2.03  | 3.30  | 0.63  | 1.94  | 0.02  |
| **Cs** | 2.56  | 0.90  | 8.83  | 11.54  | 28.07  | 22.98  | 36.51  | 25.88  | 23.05  | 14.05  | 20.20  | 25.42  | 31.90  | 31.56  | 37.04  |  |  | 38.2  | 0.20  |
| **Rb** | 21.00  | 4.70  | 40.90  | 56.00  | 274.50  | 268.10  | 270.80  | 228.60  | 172.90  | 192.4 | 211.6 | 195.60  | 225.70  | 231.9 | 266.80  | 103.00  | 356.00  | 463.9  | 2.10  |
| **Ba** | 103.10  | 14.80  | 92.00  | 91.90  | 136.20  | 126.50  | 176.90  | 187.40  | 381.80  | 222.8 | 125.0 | 193.50  | 203.70  | 114.6 | 261.80  | 555.00  | 312.00  | 304  | 39.20  |
| **Th** | 38.17  | 34.22  | 16.82  | 13.99  | 9.29  | 9.44  | 13.55  | 10.21  | 20.08  | 11.24  | 15.52  | 18.71  | 13.14  | 18.54  | 20.82  | 18.70  | 17.50  | 54.9  | 0.88  |
| **U** | 7.28  | 6.24  | 11.69  | 13.79  | 11.19  | 4.69  | 12.37  | 9.48  | 7.68  | 5.08  | 11.65  | 11.41  | 8.20  | 8.41  | 14.05  | 6.84  | 9.16  | 19.85  | 1.05  |
| **Nb** | 12.76  | 9.38  | 15.73  | 13.44  | 13.41  | 10.39  | 13.94  | 14.42  | 15.00  | 9.31  | 18.48  | 12.71  | 11.03  | 15.14  | 18.27  | 13.00  | 17.10  | 39.4  | 0.58  |
| **Ta** | 1.33  | 1.22  | 5.08  | 3.84  | 2.69  | 1.93  | 3.28  | 2.73  | 1.81  | 1.68  | 4.28  | 2.09  | 2.03  | 2.64  | 3.54  | 1.48  | 2.32  | 7.48  | 0.28  |
| **La** | 47.79  | 37.33  | 20.34  | 13.17  | 14.79  | 14.38  | 24.25  | 18.08  | 37.33  | 16.16  | 17.38  | 36.76  | 24.59  | 31.15  | 26.17  | 31.90  | 27.50  | 57.7  | 3.66  |
| **Ce** | 91.82  | 67.30  | 41.74  | 26.01  | 31.03  | 30.98  | 45.92  | 36.68  | 74.11  | 32.58  | 36.94  | 75.74  | 50.58  | 64.26  | 54.72  | 60.00  | 56.50  | 112.5  | 4.50  |
| **Pb** | 3.75  | 4.74  | 11.62  | 5.38  | 29.36  | 37.98  | 21.89  | 28.23  | 26.63  | 31.70  | 17.08  | 24.35  | 31.73  | 27.50  | 22.99  | 41.60  | 26.90  | 31.7  | 0.71  |
| **Pr** | 10.20  | 7.72  | 4.89  | 3.00  | 3.76  | 3.75  | 5.18  | 4.39  | 8.55  | 3.98  | 4.54  | 8.91  | 5.98  | 7.48  | 6.45  | 6.88  | 6.63  | 12.81  | 0.11  |
| **Sr** | 111.80  | 219.90  | 95.60  | 59.10  | 28.60  | 31.60  | 52.70  | 46.50  | 69.50  | 33.60  | 39.60  | 44.10  | 62.00  | 35.40  | 50.50  | 93.00  | 51.20  | 108  | 1.70  |
| **Nd** | 38.93  | 29.47  | 18.42  | 11.15  | 14.77  | 14.81  | 19.26  | 17.60  | 33.73  | 15.63  | 17.52  | 34.40  | 23.95  | 28.88  | 25.06  | 27.10  | 24.40  | 48.6  | 1.58  |
| **Zr** | 193.40  | 132.50  | 75.20  | 60.90  | 50.80  | 51.80  | 75.50  | 70.80  | 119.90  | 42.00  | 81.80  | 116.70  | 92.30  | 103.0 | 86.80  | 76.00  | 137.00  | 155  | 11.60  |
| **Hf** | 6.98  | 5.79  | 3.52  | 2.82  | 2.13  | 2.25  | 3.17  | 3.09  | 6.21  | 1.53  | 3.28  | 5.17  | 4.12  | 4.74  | 3.83  | 3.75  | 4.36  | 6.0  | 6.04  |
| **Sm** | 8.11  | 6.15  | 4.37  | 2.67  | 3.40  | 3.62  | 4.20  | 4.00  | 6.85  | 3.66  | 4.16  | 7.18  | 5.10  | 6.10  | 5.62  | 5.22  | 5.72  | 10.12  | 0.42  |
| **Eu** | 1.03  | 0.84  | 0.38  | 0.25  | 0.39  | 0.40  | 0.55  | 0.58  | 0.99  | 0.37  | 0.40  | 0.73  | 0.56  | 0.52  | 0.70  | 0.97  | 0.39  | 0.86  | 0.01  |
| **Gd** | 7.94  | 5.97  | 4.58  | 2.87  | 3.50  | 3.57  | 4.38  | 4.10  | 6.91  | 3.35  | 4.27  | 7.39  | 5.09  | 6.06  | 5.27  | 5.09  | 5.50  | 9.16  | 0.14  |
| **Tb** | 1.41  | 1.02  | 1.04  | 0.65  | 0.60  | 0.69  | 0.87  | 0.75  | 1.17  | 0.60  | 0.82  | 1.34  | 0.93  | 1.11  | 0.94  | 0.84  | 1.07  | 1.72  | 0.07  |
| **Dy** | 8.84  | 6.35  | 6.52  | 4.30  | 3.02  | 3.60  | 5.04  | 4.00  | 6.42  | 3.44  | 4.52  | 7.45  | 5.17  | 6.15  | 5.17  | 4.41  | 5.85  | 10.52  | 0.32  |
| **Y** | 50.98  | 34.57  | 37.62  | 24.57  | 14.55  | 16.65  | 25.35  | 20.00  | 35.46  | 17.43  | 23.74  | 38.02  | 25.77  | 31.51  | 24.48  | 24.60  | 33.60  | 68.5  | 6.51  |
| **Ho** | 1.76  | 1.23  | 1.34  | 0.85  | 0.50  | 0.60  | 0.92  | 0.72  | 1.25  | 0.61  | 0.84  | 1.37  | 0.92  | 1.13  | 0.89  | 0.85  | 1.14  | 2.10  | 0.05  |
| **Er** | 5.07  | 3.46  | 4.09  | 2.63  | 1.25  | 1.54  | 2.51  | 1.92  | 3.41  | 1.61  | 2.25  | 3.59  | 2.35  | 3.19  | 2.38  | 2.47  | 2.97  | 6.47  | 0.03  |
| **Tm** | 0.88  | 0.58  | 0.72  | 0.47  | 0.19  | 0.25  | 0.42  | 0.31  | 0.55  | 0.27  | 0.39  | 0.56  | 0.36  | 0.52  | 0.38  | 0.41  | 0.40  | 1.24  | 0.18  |
| **Yb** | 5.53  | 3.50  | 4.66  | 3.21  | 1.10  | 1.46  | 2.79  | 2.06  | 3.31  | 1.66  | 2.47  | 3.36  | 2.11  | 3.35  | 2.30  | 2.59  | 2.71  | 8.60  | 1.20  |
| **Lu** | 0.77  | 0.49  | 0.68  | 0.47  | 0.15  | 0.20  | 0.39  | 0.29  | 0.47  | 0.23  | 0.34  | 0.47  | 0.29  | 0.45  | 0.32  | 0.39  | 0.35  | 1.3  | 0.12  |

GSR1 is the standard analyzed samples for major and trace elements.