表1哈日扎-那更康切尔地区花岗岩、花岗斑岩锆石LA-ICP-MS测年结果

Table 1. Zircon LA-ICP-MS isotopic data for the granite and porphyritic granite at Harizha-Nagengkangqieer

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 点号 | 含量（ppm） | Th/U | 同位素比值 | 年龄（Ma） |
| Pb | Th | U | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ |
| HI5-N1 |
| 01 | 18.2 | 215 | 369  | 0.58  | 0.05195  | 0.00109  | 0.28793  | 0.00649  | 0.04016  | 0.00037  | 283.0  | 48.2  | 256.9  | 5.1  | 253.8  | 2.3  |
| 02 | 14.9  | 220  | 279 | 0.79  | 0.05205  | 0.00136  | 0.29011  | 0.00745  | 0.04051  | 0.00046  | 287.8  | 59.7  | 258.6  | 5.9  | 256.0  | 2.8  |
| 03 | 8.02  | 74.8 | 163 | 0.46  | 0.05080  | 0.00127  | 0.28141  | 0.00694  | 0.04034  | 0.00033  | 231.8  | 57.5  | 251.8  | 5.5  | 255.0  | 2.0  |
| 04 | 18.2 | 208  | 355  | 0.59  | 0.05210  | 0.00120  | 0.29149  | 0.00743  | 0.04057  | 0.00037  | 289.7  | 52.5  | 259.7  | 5.8  | 256.3  | 2.3  |
| 05 | 19.1  | 250  | 383  | 0.65  | 0.05086  | 0.00103  | 0.28440  | 0.00630  | 0.04051  | 0.00034  | 234.4  | 46.9  | 254.1  | 5.0  | 256.0  | 2.1  |
| 06 | 19.2 | 253 | 380  | 0.66  | 0.05062  | 0.00089  | 0.28450  | 0.00591  | 0.04068  | 0.00038  | 223.5  | 40.8  | 254.2  | 4.7  | 257.0  | 2.4  |
| 07 | 14.0 | 220 | 264 | 0.83  | 0.05351  | 0.00117  | 0.29786  | 0.00745  | 0.04035  | 0.00038  | 350.4  | 49.2  | 264.7  | 5.8  | 255.0  | 2.4  |
| 08 | 14.2  | 194  | 275  | 0.71  | 0.05112  | 0.00103  | 0.28462  | 0.00622  | 0.04044  | 0.00034  | 246.4  | 46.6  | 254.3  | 4.9  | 255.6  | 2.1  |
| 09 | 7.72  | 79.7  | 154 | 0.52  | 0.05173  | 0.00202  | 0.28807  | 0.01245  | 0.04062  | 0.00081  | 273.5  | 89.3  | 257.0  | 9.8  | 256.7  | 5.0  |
| 10 | 13.3 | 200 | 262  | 0.76  | 0.05085  | 0.00138  | 0.28355  | 0.00851  | 0.04063  | 0.00064  | 233.9  | 62.6  | 253.5  | 6.7  | 256.7  | 4.0  |
| 11 | 13.0  | 176  | 258  | 0.68  | 0.05132  | 0.00094  | 0.28578  | 0.00557  | 0.04046  | 0.00042  | 255.1  | 42.1  | 255.2  | 4.4  | 255.7  | 2.6  |
| 12 | 12.8 | 195 | 237 | 0.82  | 0.05215  | 0.00177  | 0.28925  | 0.00915  | 0.04024  | 0.00059  | 292.0  | 77.5  | 258.0  | 7.2  | 254.3  | 3.7  |
| 13 | 12.9  | 210 | 243 | 0.86  | 0.05534  | 0.00158  | 0.31081  | 0.00944  | 0.04071  | 0.00050  | 425.9  | 63.5  | 274.8  | 7.3  | 257.2  | 3.1  |
| 14 | 17.8  | 249  | 350  | 0.71  | 0.04993  | 0.00089  | 0.27207  | 0.00544  | 0.03941  | 0.00026  | 191.8  | 41.5  | 244.3  | 4.3  | 249.2  | 1.6  |
| 15 | 15.4  | 224 | 292  | 0.77  | 0.05186  | 0.00144  | 0.28903  | 0.00813  | 0.04035  | 0.00045  | 279.1  | 63.5  | 257.8  | 6.4  | 255.0  | 2.8  |
| 16 | 12.6 | 173 | 242 | 0.72  | 0.05101  | 0.00124  | 0.28510  | 0.00712  | 0.04068  | 0.00033  | 241.4  | 55.9  | 254.7  | 5.6  | 257.0  | 2.0  |
| 17 | 17.4 | 249 | 339 | 0.73  | 0.05225  | 0.00090  | 0.29070  | 0.00589  | 0.04026  | 0.00031  | 296.5  | 39.5  | 259.1  | 4.6  | 254.4  | 1.9  |
| 18 | 17.8  | 198 | 355 | 0.56  | 0.05171  | 0.00094  | 0.28987  | 0.00601  | 0.04052  | 0.00035  | 272.7  | 41.6  | 258.5  | 4.7  | 256.1  | 2.2  |
| 19 | 11.4  | 178  | 222  | 0.80  | 0.05227  | 0.00115  | 0.29040  | 0.00657  | 0.04037  | 0.00044  | 297.4  | 50.1  | 258.9  | 5.2  | 255.1  | 2.7  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 点号 | 含量（ppm） | Th/U | 同位素比值 | 年龄（Ma） |
| Pb | Th | U | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ |
| HI5-N1 |
| 20 | 11.8 | 153 | 224  | 0.68  | 0.05066  | 0.00152  | 0.28358  | 0.00871  | 0.04048  | 0.00046  | 225.4  | 69.6  | 253.5  | 6.9  | 255.8  | 2.8  |
| 21 | 19.4  | 234  | 381 | 0.62  | 0.05097  | 0.00125  | 0.28581  | 0.00634  | 0.04066  | 0.00052  | 239.6  | 56.4  | 255.3  | 5.0  | 256.9  | 3.2  |
| 22 | 15.2  | 207  | 303  | 0.68  | 0.05092  | 0.00122  | 0.28708  | 0.00640  | 0.04092  | 0.00056  | 237.3  | 55.4  | 256.3  | 5.1  | 258.5  | 3.5  |
| 23 | 17.4 | 197  | 351 | 0.56  | 0.05170  | 0.00085  | 0.28788  | 0.00517  | 0.04047  | 0.00038  | 272.0  | 37.6  | 256.9  | 4.1  | 255.7  | 2.4  |
| 24 | 20.9 | 279 | 405 | 0.69  | 0.05070  | 0.00102  | 0.29200  | 0.00568  | 0.04185  | 0.00051  | 227.0  | 46.4  | 260.1  | 4.5  | 264.3  | 3.2  |
| 25 | 7.62  | 71.7  | 157 | 0.46  | 0.05077  | 0.00159  | 0.28445  | 0.00930  | 0.04065  | 0.00061  | 230.2  | 72.4  | 254.2  | 7.4  | 256.9  | 3.8  |
| 26 | 8.45  | 105 | 168  | 0.62  | 0.05175  | 0.00136  | 0.28838  | 0.00772  | 0.04041  | 0.00045  | 274.2  | 60.3  | 257.3  | 6.1  | 255.4  | 2.8  |
| 27 | 15.4  | 219 | 311  | 0.70  | 0.05121  | 0.00120  | 0.28541  | 0.00722  | 0.04062  | 0.00070  | 250.4  | 53.9  | 254.9  | 5.7  | 256.7  | 4.3  |
| 28 | 10.8  | 98.0  | 218 | 0.45  | 0.05116  | 0.00124  | 0.28598  | 0.00686  | 0.04063  | 0.00045  | 248.2  | 55.8  | 255.4  | 5.4  | 256.7  | 2.8  |
| 29 | 14.9 | 227 | 286  | 0.79  | 0.05122  | 0.00099  | 0.28617  | 0.00565  | 0.04058  | 0.00036  | 250.8  | 44.6  | 255.5  | 4.5  | 256.4  | 2.2  |
| 30 | 13.0  | 166  | 249  | 0.67  | 0.05383  | 0.00109  | 0.29862  | 0.00594  | 0.04030  | 0.00040  | 364.0  | 45.7  | 265.3  | 4.6  | 254.7  | 2.5  |
| HI9-N1 |
| 01 | 15.4 | 200 | 291 | 0.69  | 0.05275  | 0.00142  | 0.29608  | 0.00895  | 0.04063  | 0.00054  | 318.2  | 61.3  | 263.3  | 7.0  | 256.7  | 3.3  |
| 02 | 11.6  | 170 | 226  | 0.75  | 0.05257  | 0.00108  | 0.29128  | 0.00606  | 0.04041  | 0.00054  | 310.4  | 46.9  | 259.6  | 4.8  | 255.4  | 3.3  |
| 03 | 14.7  | 203  | 295 | 0.69  | 0.05060  | 0.00112  | 0.28047  | 0.00678  | 0.04035  | 0.00056  | 222.5  | 51.4  | 251.0  | 5.4  | 255.0  | 3.4  |
| 04 | 16.4  | 261 | 307 | 0.85  | 0.05166  | 0.00119  | 0.28931  | 0.00848  | 0.04048  | 0.00061  | 270.3  | 52.7  | 258.0  | 6.7  | 255.8  | 3.8  |
| 05 | 12.4 | 190 | 244  | 0.78  | 0.05069  | 0.00123  | 0.28261  | 0.00764  | 0.04051  | 0.00057  | 226.6  | 56.1  | 252.7  | 6.1  | 256.0  | 3.5  |
| 06 | 8.23  | 97.2 | 164  | 0.59  | 0.05228  | 0.00137  | 0.29141  | 0.00777  | 0.04051  | 0.00041  | 297.8  | 59.9  | 259.7  | 6.1  | 256.0  | 2.6  |
| 07 | 12.6 | 183 | 252  | 0.73  | 0.05152  | 0.00101  | 0.27832  | 0.00542  | 0.03931  | 0.00039  | 264.3  | 45.1  | 249.3  | 4.3  | 248.5  | 2.4  |
| 08 | 15.0 | 227  | 280 | 0.81  | 0.05176  | 0.00104  | 0.28774  | 0.00539  | 0.04049  | 0.00043  | 275.0  | 46.2  | 256.8  | 4.2  | 255.9  | 2.7  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 点号 | 含量（ppm） | Th/U | 同位素比值 | 年龄（Ma） |
| Pb | Th | U | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ |
| HI9-N1 |
| 09 | 17.6 | 282  | 339  | 0.83  | 0.05162  | 0.00096  | 0.28789  | 0.00552  | 0.04041  | 0.00036  | 268.7  | 42.7  | 256.9  | 4.4  | 255.4  | 2.2  |
| 10 | 15.2  | 209 | 291  | 0.72  | 0.05141  | 0.00118  | 0.28685  | 0.00641  | 0.04066  | 0.00071  | 259.4  | 52.6  | 256.1  | 5.1  | 256.9  | 4.4  |
| 11 | 27.8  | 372 | 562 | 0.66  | 0.05073  | 0.00078  | 0.28173  | 0.00481  | 0.04029  | 0.00035  | 228.4  | 35.3  | 252.0  | 3.8  | 254.6  | 2.2  |
| 12 | 8.05  | 93.3  | 158 | 0.59  | 0.05229  | 0.00128  | 0.29596  | 0.00665  | 0.04146  | 0.00045  | 298.3  | 56.0  | 263.2  | 5.2  | 261.9  | 2.8  |
| 13 | 27.1  | 382 | 516 | 0.74  | 0.05151  | 0.00095  | 0.28575  | 0.00495  | 0.04025  | 0.00034  | 263.8  | 42.5  | 255.2  | 3.9  | 254.4  | 2.1  |
| 14 | 10.6 | 166 | 208 | 0.80  | 0.05474  | 0.00136  | 0.29915  | 0.00726  | 0.03977  | 0.00040  | 401.6  | 55.5  | 265.7  | 5.7  | 251.4  | 2.5  |
| 15 | 7.77  | 91.7  | 166 | 0.55  | 0.05226  | 0.00195  | 0.28877  | 0.01091  | 0.04041  | 0.00075  | 296.8  | 84.9  | 257.6  | 8.6  | 255.4  | 4.6  |
| 16 | 12.1 | 184  | 236  | 0.78  | 0.05282  | 0.00124  | 0.29279  | 0.00685  | 0.04035  | 0.00051  | 321.0  | 53.2  | 260.8  | 5.4  | 255.0  | 3.2  |
| 17 | 16.5  | 235  | 319 | 0.74  | 0.05162  | 0.00133  | 0.28806  | 0.00708  | 0.04075  | 0.00060  | 268.8  | 59.2  | 257.0  | 5.6  | 257.5  | 3.7  |
| 18 | 11.3 | 177 | 226  | 0.78  | 0.05232  | 0.00153  | 0.28914  | 0.00862  | 0.04032  | 0.00068  | 299.5  | 66.8  | 257.9  | 6.8  | 254.8  | 4.2  |
| 19 | 14.1 | 234 | 264  | 0.88  | 0.05257  | 0.00102  | 0.29189  | 0.00574  | 0.04027  | 0.00035  | 310.2  | 44.0  | 260.0  | 4.5  | 254.5  | 2.2  |
| 20 | 18.3  | 176 | 362  | 0.49  | 0.05295  | 0.00185  | 0.29428  | 0.00954  | 0.04054  | 0.00058  | 326.6  | 79.5  | 261.9  | 7.5  | 256.2  | 3.6  |
| 21 | 15.9 | 267 | 310 | 0.86  | 0.07377  | 0.00396  | 0.41182  | 0.02311  | 0.04053  | 0.00076  | 1035.2  | 108.4  | 350.2  | 16.6  | 256.1  | 4.7  |
| 22 | 11.9 | 177 | 241 | 0.74  | 0.05140  | 0.00096  | 0.27699  | 0.00509  | 0.03918  | 0.00033  | 258.6  | 42.7  | 248.3  | 4.0  | 247.8  | 2.1  |
| 23 | 11.9  | 186  | 236  | 0.79  | 0.05101  | 0.00137  | 0.28243  | 0.00770  | 0.04034  | 0.00064  | 241.4  | 61.9  | 252.6  | 6.1  | 254.9  | 3.9  |
| 24 | 10.1  | 141  | 199  | 0.71  | 0.05235  | 0.00110  | 0.28874  | 0.00584  | 0.04019  | 0.00036  | 300.6  | 47.9  | 257.6  | 4.6  | 254.0  | 2.2  |
| 25 | 12.7 | 169  | 250  | 0.68  | 0.05341  | 0.00100  | 0.29763  | 0.00559  | 0.04046  | 0.00035  | 346.4  | 42.4  | 264.5  | 4.4  | 255.7  | 2.1  |
| 26 | 12.6 | 150  | 256 | 0.59  | 0.05207  | 0.00107  | 0.29082  | 0.00628  | 0.04049  | 0.00037  | 288.5  | 46.8  | 259.2  | 4.9  | 255.9  | 2.3  |
| 27 | 13.2 | 232  | 253 | 0.92  | 0.05622  | 0.00160  | 0.31282  | 0.01006  | 0.04057  | 0.00079  | 461.2  | 63.1  | 276.4  | 7.8  | 256.4  | 4.9  |
| 28 | 11.1 | 156 | 207 | 0.75  | 0.05162  | 0.00137  | 0.28839  | 0.00810  | 0.04041  | 0.00040  | 268.8  | 61.1  | 257.3  | 6.4  | 255.4  | 2.5  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 点号 | 含量（ppm） | Th/U | 同位素比值 | 年龄（Ma） |
| Pb | Th | U | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ |
| HI9-N1 |
| 29 | 13.1  | 214  | 260 | 0.83  | 0.05309  | 0.00098  | 0.28323  | 0.00491  | 0.03886  | 0.00033  | 332.6  | 41.8  | 253.2  | 3.9  | 245.7  | 2.0  |
| 30 | 21.3 | 359 | 409  | 0.88  | 0.05301  | 0.00082  | 0.29475  | 0.00467  | 0.04041  | 0.00048  | 329.2  | 35.2  | 262.3  | 3.7  | 255.4  | 3.0  |
| HV3-N2 |
| 01 | 11.1  | 133  | 213  | 0.62  | 0.05034  | 0.00115  | 0.27388  | 0.00712  | 0.03936  | 0.00059  | 210.7  | 53.0  | 245.8  | 5.7  | 248.9  | 3.7  |
| 02 | 10.0  | 140  | 202 | 0.70  | 0.05148  | 0.00168  | 0.27695  | 0.00806  | 0.03945  | 0.00068  | 262.4  | 75.0  | 248.2  | 6.4  | 249.4  | 4.2  |
| 03 | 28.9  | 340  | 601 | 0.57  | 0.05067  | 0.00062  | 0.27207  | 0.00356  | 0.03889  | 0.00028  | 225.7  | 28.5  | 244.3  | 2.8  | 246.0  | 1.7  |
| 04 | 24.9  | 304 | 524 | 0.58  | 0.05286  | 0.00084  | 0.28541  | 0.00584  | 0.03895  | 0.00046  | 322.8  | 36.0  | 254.9  | 4.6  | 246.3  | 2.9  |
| 05 | 11.7 | 200 | 260  | 0.77  | 0.05111  | 0.00100  | 0.23932  | 0.00502  | 0.03397  | 0.00034  | 246.0  | 45.2  | 217.9  | 4.1  | 215.4  | 2.1  |
| 06 | 9.65  | 131  | 221 | 0.59  | 0.05147  | 0.00144  | 0.24961  | 0.00701  | 0.03545  | 0.00051  | 262.0  | 64.0  | 226.3  | 5.7  | 224.6  | 3.2  |
| 07 | 15.1 | 203  | 301  | 0.67  | 0.05125  | 0.00123  | 0.27893  | 0.00646  | 0.03945  | 0.00046  | 252.0  | 55.4  | 249.8  | 5.1  | 249.4  | 2.9  |
| 08 | 243  | 1124  | 1795 | 0.63  | 0.16841  | 0.00372  | 1.86540  | 0.02596  | 0.08002  | 0.00199  | 2541.9  | 37.0  | 1068.9  | 9.2  | 496.2  | 11.9  |
| 09 | 8.01  | 88.6  | 214  | 0.41  | 0.04972  | 0.00235  | 0.24061  | 0.01292  | 0.03519  | 0.00100  | 181.8  | 110.0  | 218.9  | 10.6  | 223.0  | 6.2  |
| 10 | 12.3  | 152 | 322  | 0.47  | 0.05034  | 0.00138  | 0.24436  | 0.00784  | 0.03519  | 0.00079  | 210.9  | 63.5  | 222.0  | 6.4  | 223.0  | 4.9  |
| 11 | 26.9  | 546 | 526 | 1.04  | 0.06032  | 0.00102  | 0.29699  | 0.00469  | 0.03576  | 0.00044  | 615.1  | 36.5  | 264.0  | 3.7  | 226.5  | 2.7  |
| 12 | 16.6  | 255  | 368 | 0.69  | 0.05332  | 0.00195  | 0.26192  | 0.00807  | 0.03588  | 0.00094  | 342.5  | 82.6  | 236.2  | 6.5  | 227.2  | 5.8  |
| 13 | 59.5 | 610  | 1257  | 0.49  | 0.05205  | 0.00111  | 0.27636  | 0.00461  | 0.03854  | 0.00066  | 287.8  | 48.9  | 247.8  | 3.7  | 243.8  | 4.1  |
| 14 | 30.9  | 422  | 656  | 0.64  | 0.05773  | 0.00081  | 0.30804  | 0.00551  | 0.03857  | 0.00049  | 519.4  | 30.8  | 272.7  | 4.3  | 244.0  | 3.0  |
| 15 | 9.01  | 157 | 210  | 0.74  | 0.05150  | 0.00171  | 0.24784  | 0.00841  | 0.03511  | 0.00091  | 263.5  | 76.2  | 224.8  | 6.8  | 222.5  | 5.7  |
| 16 | 10.3  | 100  | 216  | 0.46  | 0.05486  | 0.00167  | 0.29472  | 0.00826  | 0.03913  | 0.00056  | 406.5  | 68.0  | 262.3  | 6.5  | 247.4  | 3.5  |
| 17 | 40.5 | 524 | 1020  | 0.51  | 0.06207  | 0.00164  | 0.29952  | 0.00821  | 0.03516  | 0.00098  | 676.5  | 56.6  | 266.0  | 6.4  | 222.8  | 6.1  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 点号 | 含量（ppm） | Th/U | 同位素比值 | 年龄（Ma） |
| Pb | Th | U | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ |
| HV3-N2 |
| 18 | 42.4  | 258 | 237 | 1.09  | 0.43576  | 0.01568  | 4.05701  | 0.21385  | 0.06667  | 0.00175  | 4037.3  | 53.7  | 1645.7  | 42.9  | 416.1  | 10.6  |
| 19 | 71.3  | 633  | 726  | 0.87  | 0.27602  | 0.00587  | 1.90711  | 0.04619  | 0.04993  | 0.00120  | 3340.5  | 33.3  | 1083.6  | 16.1  | 314.1  | 7.4  |
| 20 | 21.2 | 234 | 401 | 0.58  | 0.12998  | 0.00319  | 0.70785  | 0.01979  | 0.03914  | 0.00104  | 2097.7  | 43.2  | 543.5  | 11.8  | 247.5  | 6.5  |
| 21 | 18.9  | 199  | 358 | 0.56  | 0.05242  | 0.00086  | 0.31641  | 0.00485  | 0.04369  | 0.00042  | 303.8  | 37.5  | 279.1  | 3.7  | 275.7  | 2.6  |
| 22 | 20.3  | 260  | 461 | 0.56  | 0.05165  | 0.00091  | 0.25243  | 0.00500  | 0.03537  | 0.00022  | 270.1  | 40.6  | 228.5  | 4.1  | 224.1  | 1.4  |
| 23 | 19.6  | 237 | 499 | 0.47  | 0.05024  | 0.00148  | 0.25123  | 0.00749  | 0.03600  | 0.00079  | 206.2  | 68.3  | 227.6  | 6.1  | 228.0  | 4.9  |
| 24 | 13.7 | 234 | 330 | 0.71  | 0.04996  | 0.00159  | 0.24602  | 0.00675  | 0.03564  | 0.00083  | 193.2  | 73.9  | 223.3  | 5.5  | 225.7  | 5.2  |
| 25 | 24.6  | 275 | 575 | 0.48  | 0.05060  | 0.00068  | 0.24879  | 0.00389  | 0.03561  | 0.00026  | 222.6  | 31.2  | 225.6  | 3.2  | 225.6  | 1.6  |
| 26 | 6.36  | 83.3 | 141 | 0.59  | 0.05045  | 0.00143  | 0.24630  | 0.00739  | 0.03545  | 0.00032  | 215.8  | 65.9  | 223.6  | 6.0  | 224.6  | 2.0  |
| 27 | 7.06  | 91.1  | 160  | 0.57  | 0.05169  | 0.00134  | 0.24949  | 0.00671  | 0.03521  | 0.00037  | 271.9  | 59.2  | 226.2  | 5.5  | 223.0  | 2.3  |
| 28 | 12.9 | 293 | 264  | 1.11  | 0.05036  | 0.00101  | 0.24425  | 0.00538  | 0.03512  | 0.00043  | 211.8  | 46.7  | 221.9  | 4.4  | 222.5  | 2.6  |
| 29 | 20.4  | 171 | 485 | 0.35  | 0.05120  | 0.00145  | 0.24674  | 0.00682  | 0.03491  | 0.00043  | 250.0  | 65.3  | 223.9  | 5.6  | 221.2  | 2.7  |
| 30 | 13.6  | 148  | 314  | 0.47  | 0.05043  | 0.00121  | 0.24178  | 0.00576  | 0.03480  | 0.00040  | 214.9  | 55.7  | 219.9  | 4.7  | 220.5  | 2.5  |
| HV7-N1 |
| 01 | 21.9 | 273  | 524 | 0.52  | 0.05060  | 0.00085  | 0.24513  | 0.00501  | 0.03505  | 0.00042  | 222.7  | 38.9  | 222.6  | 4.1  | 222.1  | 2.6  |
| 02 | 151 | 986  | 2560  | 0.39  | 0.12702  | 0.00382  | 0.73525  | 0.02925  | 0.04178  | 0.00073  | 2057.2  | 53.0  | 559.6  | 17.1  | 263.9  | 4.5  |
| 03 | 25.5 | 352  | 556  | 0.63  | 0.05104  | 0.00086  | 0.25178  | 0.00424  | 0.03586  | 0.00031  | 242.7  | 38.7  | 228.0  | 3.4  | 227.1  | 2.0  |
| 04 | 15.6  | 244 | 338 | 0.72  | 0.05105  | 0.00108  | 0.24723  | 0.00560  | 0.03520  | 0.00031  | 243.1  | 48.8  | 224.3  | 4.6  | 223.0  | 1.9  |
| 05 | 18.8 | 236 | 441  | 0.53  | 0.05088  | 0.00085  | 0.24657  | 0.00390  | 0.03523  | 0.00032  | 235.4  | 38.6  | 223.8  | 3.2  | 223.2  | 2.0  |
| 06 | 18.2 | 242  | 445 | 0.54  | 0.05078  | 0.00102  | 0.24560  | 0.00627  | 0.03519  | 0.00059  | 230.9  | 46.2  | 223.0  | 5.1  | 222.9  | 3.7  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 点号 | 含量（ppm） | Th/U | 同位素比值 | 年龄（Ma） |
| Pb | Th | U | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ |
| HV7-N1 |
| 07 | 6.65  | 53.2 | 88.6 | 0.60  | 0.20134  | 0.00750  | 1.22319  | 0.04385  | 0.04458  | 0.00120  | 2837.1  | 60.7  | 811.2  | 20.0  | 281.2  | 7.4  |
| 08 | 12.0 | 169 | 285  | 0.59  | 0.05124  | 0.00124  | 0.24589  | 0.00536  | 0.03524  | 0.00049  | 251.6  | 55.9  | 223.2  | 4.4  | 223.3  | 3.1  |
| 09 | 18.6 | 176 | 459  | 0.38  | 0.05080  | 0.00090  | 0.24642  | 0.00499  | 0.03519  | 0.00036  | 231.6  | 40.7  | 223.7  | 4.1  | 222.9  | 2.2  |
| 10 | 20.0  | 286 | 494 | 0.58  | 0.05146  | 0.00156  | 0.24714  | 0.00887  | 0.03525  | 0.00073  | 261.5  | 69.6  | 224.3  | 7.2  | 223.3  | 4.5  |
| 11 | 26.9  | 297  | 675 | 0.44  | 0.05327  | 0.00096  | 0.26095  | 0.00577  | 0.03574  | 0.00065  | 340.5  | 40.6  | 235.4  | 4.6  | 226.4  | 4.1  |
| 12 | 20.7  | 331  | 474  | 0.70  | 0.05072  | 0.00091  | 0.24466  | 0.00390  | 0.03510  | 0.00043  | 227.9  | 41.5  | 222.2  | 3.2  | 222.4  | 2.7  |
| 13 | 23.3  | 226  | 566 | 0.40  | 0.05282  | 0.00080  | 0.25631  | 0.00445  | 0.03519  | 0.00034  | 321.2  | 34.5  | 231.7  | 3.6  | 222.9  | 2.1  |
| 14 | 8.91  | 109  | 201  | 0.54  | 0.05161  | 0.00226  | 0.24775  | 0.01033  | 0.03510  | 0.00056  | 268.4  | 100.4  | 224.7  | 8.4  | 222.4  | 3.5  |
| 15 | 17.0 | 206 | 419  | 0.49  | 0.05123  | 0.00107  | 0.24723  | 0.00562  | 0.03518  | 0.00072  | 251.0  | 48.3  | 224.3  | 4.6  | 222.9  | 4.5  |
| 16 | 32.5  | 10.1 | 441  | 0.02  | 0.05592  | 0.00086  | 0.52447  | 0.01078  | 0.06791  | 0.00073  | 449.3  | 34.3  | 428.1  | 7.2  | 423.6  | 4.4  |
| 17 | 30.3  | 449 | 701 | 0.64  | 0.05074  | 0.00093  | 0.24464  | 0.00432  | 0.03499  | 0.00043  | 229.1  | 42.5  | 222.2  | 3.5  | 221.7  | 2.7  |
| 18 | 9.93  | 108 | 246  | 0.44  | 0.05130  | 0.00146  | 0.24557  | 0.00654  | 0.03498  | 0.00046  | 254.2  | 65.5  | 223.0  | 5.3  | 221.6  | 2.9  |
| 19 | 10.3 | 141  | 226  | 0.62  | 0.05130  | 0.00111  | 0.24805  | 0.00547  | 0.03517  | 0.00031  | 254.2  | 49.6  | 225.0  | 4.4  | 222.8  | 2.0  |
| 20 | 25.5  | 256  | 620  | 0.41  | 0.05053  | 0.00095  | 0.24535  | 0.00464  | 0.03512  | 0.00039  | 219.4  | 43.5  | 222.8  | 3.8  | 222.5  | 2.4  |
| 21 | 11.0  | 174  | 242  | 0.72  | 0.05096  | 0.00130  | 0.24539  | 0.00612  | 0.03504  | 0.00041  | 238.9  | 58.7  | 222.8  | 5.0  | 222.0  | 2.6  |
| 22 | 21.0 | 197 | 510  | 0.39  | 0.05059  | 0.00088  | 0.24600  | 0.00462  | 0.03517  | 0.00038  | 222.1  | 40.1  | 223.3  | 3.8  | 222.8  | 2.4  |
| 23 | 32.1 | 276  | 767  | 0.36  | 0.05081  | 0.00069  | 0.24598  | 0.00376  | 0.03511  | 0.00029  | 232.1  | 31.3  | 223.3  | 3.1  | 222.5  | 1.8  |
| 24 | 22.2  | 260 | 514 | 0.51  | 0.05097  | 0.00145  | 0.24561  | 0.00757  | 0.03493  | 0.00034  | 239.4  | 65.6  | 223.0  | 6.2  | 221.3  | 2.1  |
| 25 | 26.6  | 300 | 641 | 0.47  | 0.05090  | 0.00089  | 0.24650  | 0.00525  | 0.03510  | 0.00054  | 236.3  | 40.5  | 223.7  | 4.3  | 222.4  | 3.3  |
| 26 | 11.2  | 149  | 247 | 0.60  | 0.05050  | 0.00133  | 0.24434  | 0.00701  | 0.03507  | 0.00036  | 218.1  | 61.0  | 222.0  | 5.7  | 222.2  | 2.2  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 点号 | 含量（ppm） | Th/U | 同位素比值 | 年龄（Ma） |
| Pb | Th | U | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ |
| HV7-N1 |
| 27 | 14.1  | 149 | 350.27  | 0.43  | 0.05069  | 0.00128  | 0.24475  | 0.00766  | 0.03506  | 0.00071  | 226.9  | 58.6  | 222.3  | 6.3  | 222.2  | 4.5  |
| 28 | 19.2  | 323  | 408.45  | 0.79  | 0.04999  | 0.00132  | 0.24354  | 0.00675  | 0.03524  | 0.00042  | 194.3  | 61.2  | 221.3  | 5.5  | 223.3  | 2.6  |
| 29 | 30.0  | 288  | 748.28  | 0.38  | 0.05071  | 0.00075  | 0.24629  | 0.00553  | 0.03517  | 0.00054  | 227.5  | 34.3  | 223.6  | 4.5  | 222.8  | 3.4  |
| 30 | 15.8  | 213  | 368.64  | 0.58  | 0.05080  | 0.00097  | 0.24612  | 0.00531  | 0.03509  | 0.00037  | 231.9  | 44.0  | 223.4  | 4.3  | 222.4  | 2.3  |
| N372N1 |
| 01 | 7.01 | 115 | 151 | 0.76 | 0.05139 | 0.00276 | 0.24368 | 0.01222 | 0.03491 | 0.00075 | 258.6 | 123.4 | 221.4 | 10.0 | 221.2 | 4.6 |
| 02 | 6.54 | 110 | 151 | 0.73 | 0.05150 | 0.00238 | 0.24325 | 0.00958 | 0.03500 | 0.00059 | 263.4 | 105.9 | 221.1 | 7.8 | 221.8 | 3.7 |
| 03 | 9.67 | 207 | 193 | 1.08 | 0.05055 | 0.00190 | 0.24136 | 0.00876 | 0.03470 | 0.00043 | 220.4 | 87.1 | 219.5 | 7.2 | 219.9 | 2.7 |
| 04 | 5.34 | 89.3 | 130 | 0.69 | 0.05091 | 0.00206 | 0.24118 | 0.01028 | 0.03470 | 0.00075 | 236.8 | 93.3 | 219.4 | 8.4 | 219.9 | 4.7 |
| 05 | 6.92 | 126 | 148 | 0.85 | 0.05142 | 0.00192 | 0.24260 | 0.00860 | 0.03457 | 0.00043 | 259.9 | 85.6 | 220.5 | 7.0 | 219.1 | 2.7 |
| 06 | 6.04 | 94.2 | 140 | 0.67 | 0.05088 | 0.00194 | 0.24023 | 0.00887 | 0.03423 | 0.00046 | 235.2 | 87.9 | 218.6 | 7.3 | 217.0 | 2.9 |
| 07 | 5.80 | 108 | 141 | 0.76 | 0.05109 | 0.00268 | 0.24088 | 0.01367 | 0.03443 | 0.00084 | 245.0 | 121.0 | 219.1 | 11.2 | 218.2 | 5.2 |
| 08 | 5.76 | 91.3 | 136 | 0.67 | 0.05108 | 0.00196 | 0.24328 | 0.01069 | 0.03466 | 0.00067 | 244.5 | 88.2 | 221.1 | 8.7 | 219.7 | 4.2 |
| 09 | 9.77 | 196 | 212 | 0.92 | 0.05153 | 0.00228 | 0.24667 | 0.01151 | 0.03519 | 0.00080 | 264.6 | 101.4 | 223.9 | 9.4 | 223.0 | 5.0 |
| 10 | 6.23 | 106 | 141 | 0.75 | 0.05084 | 0.00182 | 0.24296 | 0.00875 | 0.03471 | 0.00038 | 233.4 | 82.8 | 220.8 | 7.1 | 220.0 | 2.4 |
| 11 | 5.07 | 79.1 | 117 | 0.67 | 0.05035 | 0.00203 | 0.23833 | 0.00970 | 0.03452 | 0.00057 | 211.3 | 93.3 | 217.1 | 8.0 | 218.8 | 3.5 |
| 12 | 7.07 | 120 | 157 | 0.76 | 0.05080 | 0.00204 | 0.24404 | 0.00987 | 0.03497 | 0.00049 | 231.7 | 92.8 | 221.7 | 8.1 | 221.6 | 3.0 |
| 13 | 26.9 | 632 | 472 | 1.34 | 0.05107 | 0.00087 | 0.26710 | 0.00462 | 0.03797 | 0.00033 | 244.0 | 39.1 | 240.4 | 3.7 | 240.3 | 2.1 |
| 14 | 15.4 | 351 | 317 | 1.11 | 0.05070 | 0.00136 | 0.24324 | 0.00583 | 0.03489 | 0.00037 | 227.3 | 61.8 | 221.1 | 4.8 | 221.1 | 2.3 |
| 15 | 6.92  | 126 | 148  | 0.85  | 0.05108  | 0.00140  | 0.24011  | 0.00631  | 0.03442  | 0.00035  | 244.4  | 63.0  | 218.5  | 5.2  | 218.1  | 2.2  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 点号 | 含量（ppm） | Th/U | 同位素比值 | 年龄（Ma） |
| Pb | Th | U | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ | 207Pb/206Pb | 1σ | 207Pb/235U | 1σ | 206Pb/238U | 1σ |
| N372N1 |
| 16 | 5.27  | 90.9 | 121 | 0.75  | 0.05041  | 0.00346  | 0.23116  | 0.01626  | 0.03334  | 0.00072  | 214.0  | 158.9  | 211.2  | 13.4  | 211.4  | 4.5  |
| 17 | 6.64  | 110.9 | 153 | 0.73  | 0.05047  | 0.00140  | 0.23289  | 0.00642  | 0.03361  | 0.00037  | 216.6  | 64.0  | 212.6  | 5.3  | 213.1  | 2.3  |
| 18 | 11.9 | 341  | 221 | 1.55  | 0.05052  | 0.00112  | 0.24015  | 0.00535  | 0.03462  | 0.00032  | 218.8  | 51.4  | 218.5  | 4.4  | 219.4  | 2.0  |
| 19 | 5.55  | 97.5 | 136  | 0.72  | 0.05050  | 0.00235  | 0.24116  | 0.01256  | 0.03486  | 0.00087  | 217.9  | 107.7  | 219.4  | 10.3  | 220.9  | 5.5  |
| 20 | 5.57  | 109  | 132 | 0.83  | 0.05099  | 0.00267  | 0.24096  | 0.01392  | 0.03474  | 0.00083  | 240.5  | 120.9  | 219.2  | 11.4  | 220.2  | 5.2  |
| 21 | 6.19  | 129 | 133 | 0.97  | 0.05135  | 0.00172  | 0.24310  | 0.00756  | 0.03467  | 0.00038  | 256.7  | 76.8  | 221.0  | 6.2  | 219.7  | 2.4  |
| 22 | 5.86  | 93.0 | 132  | 0.70  | 0.05145  | 0.00206  | 0.24356  | 0.00937  | 0.03455  | 0.00049  | 261.2  | 91.9  | 221.3  | 7.6  | 219.0  | 3.0  |
| 23 | 7.03  | 106 | 159  | 0.66  | 0.05102  | 0.00135  | 0.24355  | 0.00599  | 0.03483  | 0.00034  | 241.6  | 61.1  | 221.3  | 4.9  | 220.7  | 2.1  |
| 24 | 4.82  | 101 | 108  | 0.93  | 0.04979  | 0.00248  | 0.24219  | 0.01461  | 0.03490  | 0.00094  | 185.4  | 116.1  | 220.2  | 11.9  | 221.1  | 5.9  |
| 25 | 4.12  | 68.5 | 94.6  | 0.72  | 0.05164  | 0.00218  | 0.24379  | 0.01042  | 0.03460  | 0.00057  | 269.7  | 96.9  | 221.5  | 8.5  | 219.3  | 3.6  |
| 26 | 10.4  | 196 | 230 | 0.85  | 0.05068  | 0.00114  | 0.24328  | 0.00569  | 0.03490  | 0.00036  | 226.4  | 52.1  | 221.1  | 4.6  | 221.1  | 2.2  |
| 27 | 6.50  | 120 | 148 | 0.81  | 0.05094  | 0.00159  | 0.24263  | 0.00792  | 0.03457  | 0.00038  | 237.9  | 71.9  | 220.6  | 6.5  | 219.1  | 2.4  |
| 28 | 6.66  | 115  | 155  | 0.74  | 0.05172  | 0.00156  | 0.24359  | 0.00744  | 0.03430  | 0.00056  | 273.2  | 68.9  | 221.4  | 6.1  | 217.4  | 3.5  |
| 29 | 5.71  | 100 | 131 | 0.76  | 0.05045  | 0.00216  | 0.24072  | 0.01075  | 0.03477  | 0.00070  | 215.6  | 99.1  | 219.0  | 8.8  | 220.3  | 4.4  |
| 30 | 16.3 | 167 | 373  | 0.45  | 0.05100  | 0.00137  | 0.27917  | 0.00965  | 0.03989  | 0.00087  | 241.0  | 61.8  | 250.0  | 7.7  | 252.2  | 5.4  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

表2东昆仑哈日扎-那更康切尔矿区花岗岩与花岗斑岩样品主量元素（单位：％）与微量元素（单位：ppm）含量

Table 2．Major (unit:％) and trace elements (unit: ppm) of the granites and porphyritic granites at Harizha-Nagengkangqieer

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 样品号 | HV7Q1-1 | HV7Q1-2 | HV7Q1-3 | HV7Q1-4 | HV7Q1-5 | N372Q1 | N372Q2 | N372Q3 | N372Q4 | N372Q5 | HV3Q2-1 | HV3Q2-2 | HV3Q2-3 |
| 岩性 | 花岗斑岩 |
| SiO2 | 73.44 | 75.01 | 74.67 | 74.04 | 74.08 | 81.75 | 80.20 | 80.45 | 79.07 | 80.78 | 79.72 | 79.59 | 79.61 |
| Al2O3 | 13.63 | 12.84 | 12.86 | 13.41 | 13.06 | 11.86 | 12.41 | 12.00 | 12.88 | 12.45 | 12.66 | 12.89 | 12.78 |
| CaO | 0.79 | 1.24 | 1.17 | 1.00 | 0.90 | 0.06 | 0.04 | 0.04 | 0.05 | 0.05 | 0.10 | 0.13 | 0.07 |
| K2O | 4.68 | 5.67 | 5.36 | 5.31 | 5.18 | 3.76 | 4.65 | 5.07 | 4.99 | 4.54 | 3.91 | 3.75 | 3.83 |
| TFe2O3 | 1.90 | 1.07 | 1.22 | 1.26 | 1.33 | 0.15 | 0.07 | 0.04 | 0.09 | 0.06 | 1.18 | 1.24 | 1.43 |
| FeO | 0.57 | 0.30 | 0.36 | 0.73 | 0.74 | 0.13 | 0.13 | 0.09 | 0.11 | 0.13 | - | 0.24 | 0.12 |
| MgO | 0.22 | 0.19 | 0.23 | 0.30 | 0.31 | 0.24 | 0.21 | 0.18 | 0.21 | 0.23 | 0.21 | 0.21 | 0.24 |
| MnO | 0.03 | 0.02 | 0.03 | 0.05 | 0.04 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 |
| Na2O | 3.77 | 2.09 | 2.99 | 2.64 | 2.90 | 0.11 | 0.14 | 0.15 | 0.14 | 0.11 | 0.08 | 0.09 | 0.07 |
| P2O5 | 0.04 | 0.02 | 0.02 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 |
| TiO2 | 0.16 | 0.12 | 0.10 | 0.12 | 0.13 | 0.12 | 0.13 | 0.12 | 0.12 | 0.13 | 0.02 | 0.02 | 0.03 |
| LOI | 1.41 | 1.84 | 1.28 | 1.25 | 1.28 | 1.83 | 1.72 | 1.57 | 2.18 | 1.16 | 1.75 | 1.88 | 1.52 |
| Total | 100.07 | 100.09 | 99.94 | 99.40 | 99.24 | 100.03 | 99.73 | 99.74 | 99.87 | 99.67 | 99.64 | 99.83 | 99.59 |
| Sc | 2.46  | 2.46  | 2.54  | 2.85  | 2.61  | 3.01  | 3.05  | 2.89  | 3.15  | 3.56  | 2.44  | 2.23  | 2.02  |
| Ti | 637 | 682 | 558  | 708 | 731 |  |  |  |  |  | 141 | 135  | 130 |
| V | 5.34  | 5.81  | 4.81  | 7.45  | 6.85  | 0.79  | 0.76  | 0.68  | 0.75  | 1.02  | 2.69  | 2.99  | 1.10  |
| Mn | 292  | 164  | 249 | 320  | 300 | 37.1  | 39.3 | 44.6 | 40.5  | 47.6 | 119  | 153 | 109 |

续表2

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 样品号 | HV3Q2-4 | HV3Q2-5 | HI5Q1-1 | HI5Q1-2 | HI5Q1-3 | HI5Q1-4 | HI5Q1-5 | HI9Q1-1 | HI9Q1-2 | HI9Q1-3 | HI9Q1-4 | HI9Q1-5 |
| 岩性 | 花岗斑岩 | 花岗岩 |
| SiO2 | 80.61  | 80.52  | 75.16  | 75.08  | 75.81  | 75.18  | 74.75  | 75.99  | 74.59  | 75.71  | 74.43  | 75.35  |
| Al2O3 | 12.41  | 12.65  | 12.31  | 12.55  | 12.32  | 12.50  | 13.02  | 11.64  | 12.75  | 12.60  | 13.08  | 12.53  |
| CaO | 0.05  | 0.05  | 0.71  | 0.63  | 0.68  | 1.17  | 0.70  | 0.63  | 0.97  | 0.74  | 0.73  | 0.55  |
| K2O | 3.91  | 3.77  | 5.25  | 5.48  | 5.30  | 7.14  | 6.36  | 4.66  | 7.34  | 7.11  | 7.18  | 5.39  |
| TFe2O3 | 0.88  | 1.04  | 1.28  | 1.12  | 0.80  | 0.27  | 0.94  | 1.83  | 1.50  | 1.44  | 2.39  | 1.34  |
| FeO | 0.14  | 0.10  | 0.21  | 0.24  | 0.28  | - | 0.11  | 1.07  | 0.90  | 0.78  | 1.47  | 0.66  |
| MgO | 0.19  | 0.21  | 0.14  | 0.19  | 0.14  | 0.15  | 0.20  | 0.12  | 0.16  | 0.17  | 0.17  | 0.15  |
| MnO | 0.02  | 0.02  | 0.01  | 0.02  | 0.01  | 0.01  | 0.01  | 0.05  | 0.02  | 0.01  | 0.01  | 0.01  |
| Na2O | 0.10  | 0.11  | 3.33  | 3.38  | 3.34  | 1.53  | 1.89  | 3.24  | 0.22  | 0.22  | 0.21  | 3.14  |
| P2O5 | 0.01  | 0.01  | 0.01  | 0.01  | 0.01  | 0.01  | 0.01  | 0.01  | 0.01  | 0.01  | 0.01  | 0.01  |
| TiO2 | 0.03  | 0.03  | 0.17  | 0.17  | 0.17  | 0.17  | 0.17  | 0.17  | 0.15  | 0.15  | 0.14  | 0.16  |
| LOI | 1.60  | 1.74  | 1.40  | 1.04  | 1.24  | 1.56  | 1.78  | 1.48  | 2.02  | 1.78  | 0.88  | 1.13  |
| Total | 99.81  | 100.15  | 99.78  | 99.65  | 99.82  | 99.69  | 99.84  | 99.82  | 99.72  | 99.94  | 99.24  | 99.75  |
| Sc | 2.09  | 2.23  | 2.87  | 2.74  | 2.35  | 1.52  | 2.62  | 2.73  | 2.82  | 2.41  | 2.36  | 2.48  |
| Ti | 128 | 132  | 1034  | 1011  | 985 | 1078 | 1016 | 1004  | 1014 | 962 | 901  | 921 |
| V | 0.89  | 2.11  | 2.99  | 3.82  | 2.45  | 3.18  | 2.21  | 2.20  | 3.30  | 1.74  | 1.23  | 1.38  |
| Mn | 124 | 98.3  | 78.0  | 101 | 57.2  | 49.1 | 60.4  | 350  | 97.3 | 80.3 | 86.2 | 113  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED。

续表2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 样品号 | HV7Q1-1 | HV7Q1-2 | HV7Q1-3 | HV7Q1-4 | HV7Q1-5 | N372Q1 | N372Q2 | N372Q3 | N372Q4 | N372Q5 | HV3Q2-1 | HV3Q2-2 | HV3Q2-3 |
| 岩性 | 花岗斑岩 |
| Co | 1.48  | 1.41  | 1.17 | 2.38  | 1.57  | 0.07  | 0.06  | 0.10  | 0.09  | 0.15  | 0.79  | 0.58  | 0.70  |
| Ni | 2.02  | 4.45  | 4.06  | 43.0  | 21.4 | 0.65  | 0.87  | 2.31  | 1.89  | 4.60  | 5.55  | 4.41  | 12.7 |
| Cu  | 11.5 | 8.33  | 17.6  | 15.2  | 11.8  | 1.78  | 1.70  | 1.80  | 3.44  | 1.99  | 169 | 28.2  | 42.6 |
| Zn | 88.0  | 18.1 | 38.8 | 84.4 | 69.1  | 5.84  | 5.32  | 6.04  | 8.54  | 6.62  | 459  | 699 | 627 |
| Ga | 15.4 | 14.0  | 14.1 | 14.9  | 14.9  | 13.9 | 13.9 | 12.4 | 13.8  | 12.7 | 17.2  | 17.1  | 16.6 |
| As | 10.9 | 4.42  | 14.6 | 8.89  | 9.88  | 1.61  | 1.15  | 1.10  | 1.28  | 1.13  | 131  | 122  | 119  |
| Rb | 235 | 263  | 241 | 226 | 228  | 160 | 198 | 186 | 204 | 191  | 233  | 238 | 231  |
| Sr | 90.8 | 63.6  | 82.4 | 97.8 | 78.8 | 39.5  | 40.7  | 41.6  | 42.7 | 47.0 | 7.77  | 5.96  | 6.38  |
| Y | 36.8 | 36.8  | 39.3 | 35.9  | 38.5 | 28.6  | 26.1 | 21.0  | 24.6 | 22.6  | 38.2  | 36.0  | 33.6  |
| Zr | 96.7  | 108 | 112 | 91.9  | 99.1  | 198 | 219  | 208  | 212 | 207  | 69.3  | 66.6  | 66.6 |
| Nb | 12.4  | 12.4 | 12.1 | 11.7 | 12.5  | 15.0  | 16.1 | 16.2  | 16.7  | 16.5 | 14.7 | 14.7 | 13.6 |
| Mo | 0.84  | 0.50  | 1.06  | 1.69  | 1.29  | 0.89  | 0.82  | 0.80  | 0.94  | 0.67  | 3.25  | 2.08  | 2.49  |
| Cd | 2.22  | 0.24  | 0.47  | 1.87  | 0.49  | 1.27 | 1.41  | 1.23  | 1.39  | 1.29  | 71.2  | 3.05  | 4.12  |
| In  | 0.09  | 0.04  | 0.08  | 0.05  | 0.03  | 3.01  | 3.05  | 2.89  | 3.15  | 3.56  | 0.57  | 0.34  | 0.74  |
| Cs | 3.96  | 6.47  | 4.10  | 4.06  | 5.00  | 4.42  | 5.70  | 4.26  | 5.48  | 4.34  | 3.51  | 5.01  | 4.08  |
| Ba | 188 | 235  | 154  | 214  | 168 | 528 | 1115  | 1544  | 1286  | 1398  | 53.2  | 33.2 | 49.1 |
| La | 22.7  | 21.5  | 14.9 | 20.7  | 17.0 | 47.0  | 48.9  | 46.5 | 47.9 | 47.7 | 11.2 | 8.91  | 8.55  |
| Ce | 51.6 | 48.6  | 37.9  | 48.9  | 42.9 | 98.3 | 97.4 | 93.6  | 99.1 | 95.1  | 30.6  | 26.0  | 23.6  |
| Pr | 6.42  | 6.02  | 4.90  | 6.02  | 5.41  | 10.9  | 11.1 | 10.2 | 10.8 | 10.2  | 4.26  | 3.39  | 3.16  |
| Nd | 24.0  | 23.2 | 21.4 | 23.0 | 23.1  | 38.6  | 38.5 | 35.3 | 37.7  | 35.0  | 17.3 | 13.8 | 13.2  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表2

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 样品号 | HV3Q2-4 | HV3Q2-5 | HI5Q1-1 | HI5Q1-2 | HI5Q1-3 | HI5Q1-4 | HI5Q1-5 | HI9Q1-1 | HI9Q1-2 | HI9Q1-3 | HI9Q1-4 | HI9Q1-5 |
| 岩性 | 花岗斑岩 | 花岗岩 |
| Co | 0.63  | 0.55  | 0.39  | 0.47  | 0.48  | 0.36  | 0.57  | 0.20  | 0.58  | 0.56  | 0.31  | 0.35  |
| Ni | 3.17  | 3.35  | 4.43  | 3.79  | 6.69  | 1.06  | 1.79  | 1.72  | 3.68  | 7.05  | 1.11  | 7.43  |
| Cu | 104 | 114  | 31.8  | 32.3  | 25.5  | 17.5  | 38.1 | 3.51  | 38.6  | 32.2  | 36.2  | 14.5 |
| Zn | 450 | 649  | 15.1 | 36.5  | 23.5  | 34.2 | 19.3 | 31.0  | 185 | 160  | 164  | 18.4  |
| Ga | 16.3  | 17.2 | 21.3  | 21.6 | 19.4  | 17.8 | 18.8 | 20.7 | 21.2 | 20.6 | 21.0  | 19.9  |
| As | 40.7  | 75.2 | 24.1 | 21.7 | 9.00  | 22.5 | 38.5 | 5.02  | 7.53  | 6.91  | 11.8  | 4.48  |
| Rb | 226  | 231 | 186 | 194 | 188  | 246 | 231 | 171 | 277  | 267  | 264 | 193  |
| Sr | 7.83  | 6.16  | 53.0 | 50.6 | 53.3 | 112 | 67.3  | 41.2 | 100  | 92.0 | 91.1 | 44.6 |
| Y | 33.2 | 41.1 | 53.1  | 55.0 | 55.9  | 51.7  | 49.7 | 60.2 | 58.0 | 56.5 | 52.1  | 55.4 |
| Zr | 65.4 | 64.2  | 511  | 544  | 615 | 535  | 497  | 549 | 497  | 462  | 496  | 522  |
| Nb | 13.2 | 14.1  | 37.4 | 44.7 | 45.4  | 42.5 | 37.9 | 41.2  | 43.1 | 39.8 | 39.0 | 36.7  |
| Mo | 1.95  | 2.01  | 2.90  | 2.73  | 3.26  | 2.42  | 2.69  | 2.41  | 3.30  | 3.64  | 3.91  | 2.61  |
| Cd | 2.70  | 3.32  | 0.37  | 0.52  | 0.66  | 0.67  | 0.41  | 0.60  | 2.18  | 1.89  | 1.90  | 0.32  |
| In  | 0.26  | 0.44  | 0.05  | 0.07  | 0.08  | 0.05  | 0.05  | 0.11  | 0.08  | 0.09  | 0.09  | 0.07  |
| Cs | 3.79  | 4.02  | 2.38  | 2.34  | 2.43  | 3.68  | 3.78  | 2.58  | 3.33  | 3.41  | 3.34  | 2.13  |
| Ba | 48.8 | 41.6 | 169  | 129  | 158  | 690  | 426 | 67.8 | 459 | 395 | 358  | 97.8  |
| La | 9.61  | 5.61  | 78.2  | 79.5  | 80.5 | 82.4 | 79.0  | 75.1 | 84.5  | 77.3 | 71.6  | 70.6 |
| Ce | 25.4  | 15.0 | 161  | 164 | 170  | 167 | 164 | 154  | 172 | 159  | 150  | 145 |
| Pr | 3.48  | 2.28  | 17.6  | 17.6  | 18.0 | 19.7  | 18.4  | 16.6 | 20.2  | 18.4  | 15.7 | 15.1  |
| Nd | 14.3 | 9.14  | 59.4  | 59.0  | 60.2  | 63.3 | 59.7 | 57.5  | 65.0 | 58.4  | 54.0  | 52.1  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 样品号 | HV7Q1-1 | HV7Q1-2 | HV7Q1-3 | HV7Q1-4 | HV7Q1-5 | N372Q1 | N372Q2 | N372Q3 | N372Q4 | N372Q5 | HV3Q2-1 | HV3Q2-2 | HV3Q2-3 |
| 岩性 | 花岗斑岩 |
| Sm | 6.50  | 6.22  | 5.86  | 6.58  | 6.21  | 7.28  | 7.30  | 6.47  | 7.02  | 6.58  | 5.94  | 4.99  | 4.62  |
| Eu  | 0.44  | 0.50  | 0.38  | 0.49  | 0.43  | 0.97  | 1.09  | 1.12  | 1.10  | 1.07  | 0.14  | 0.11  | 0.12  |
| Gd  | 5.18  | 5.13  | 4.55  | 5.05  | 4.77  | 7.36  | 6.90  | 5.93  | 6.72  | 6.04  | 4.64  | 4.03  | 3.76  |
| Tb  | 1.15  | 1.15  | 1.12  | 1.16  | 1.16  | 1.07  | 0.99  | 0.85  | 0.95  | 0.88  | 0.96  | 0.89  | 0.83  |
| Dy  | 7.04  | 6.90  | 7.20  | 6.90  | 7.25  | 5.97  | 5.44  | 4.59  | 5.22  | 4.71  | 6.75  | 6.33  | 6.06  |
| Ho | 1.20  | 1.20  | 1.29  | 1.19  | 1.29  | 1.20  | 1.14  | 0.91  | 1.09  | 0.96  | 1.20  | 1.12  | 1.08  |
| Er | 3.58  | 3.59  | 3.65  | 3.47 | 3.68  | 3.18  | 3.11  | 2.50  | 2.96  | 2.65  | 3.21  | 3.01  | 2.84  |
| Tm | 0.53  | 0.52  | 0.57  | 0.52  | 0.54  | 0.44  | 0.46  | 0.36  | 0.42  | 0.38  | 0.49  | 0.46  | 0.43  |
| Yb  | 3.45  | 3.45  | 3.76  | 3.45  | 3.54  | 2.47  | 2.57  | 2.13  | 2.48  | 2.26  | 3.49  | 3.32  | 3.14  |
| Lu | 0.52  | 0.51  | 0.55  | 0.49  | 0.51  | 0.37  | 0.39  | 0.34  | 0.38  | 0.36  | 0.50  | 0.46  | 0.44  |
| Hf | 4.18  | 4.30  | 4.42  | 3.96  | 4.07  | 6.61  | 7.21  | 6.92  | 7.17  | 6.81  | 4.07  | 3.90  | 3.88  |
| Ta | 2.17  | 2.20  | 2.18  | 2.12  | 2.25  | 1.09  | 1.17  | 1.10  | 1.21  | 1.13  | 1.88  | 1.92  | 1.82  |
| W | 1.70  | 1.50  | 1.25  | 1.88  | 2.24  | 4.51  | 3.62  | 3.78  | 3.85  | 3.59  | 5.80  | 5.23  | 5.54  |
| Tl | 1.53  | 1.69  | 1.58  | 1.30  | 1.32  | 1.55  | 2.14  | 2.33  | 2.17  | 2.34  | 1.46  | 1.27  | 1.40  |
| Pb | 184 | 40.0  | 44.9  | 164 | 58.2 | 2.57  | 4.83  | 3.57  | 6.32  | 3.71  | 554 | 411 | 363  |
| Bi | 0.41  | 0.32  | 0.10  | 0.10  | 0.11  | 0.04  | 0.10  | 0.05  | 0.09  | 0.04  | 2.15  | 1.65  | 1.10  |
| Th  | 33.2 | 33.0  | 33.3  | 31.4 | 31.9  | 11.8 | 12.7  | 11.9 | 12.9  | 12.0 | 20.6 | 19.7 | 18.0  |
| U  | 8.35  | 14.7 | 6.39  | 9.19  | 8.64  | 2.23  | 2.23  | 2.48  | 2.26  | 2.46  | 5.83  | 4.93  | 6.22  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED

续表2

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 样品号 | HV3Q2-4 | HV3Q2-5 | HI5Q1-1 | HI5Q1-2 | HI5Q1-3 | HI5Q1-4 | HI5Q1-5 | HI9Q1-1 | HI9Q1-2 | HI9Q1-3 | HI9Q1-4 | HI9Q1-5 |
| 岩性 | 花岗斑岩 | 花岗岩 |
| Sm | 4.90  | 3.67  | 12.7 | 12.4  | 12.9  | 13.5 | 12.7 | 12.4 | 14.0 | 12.7 | 12.0  | 11.5  |
| Eu  | 0.12  | 0.10  | 0.20  | 0.18  | 0.19  | 0.56  | 0.39  | 0.12  | 0.40  | 0.34  | 0.32  | 0.15  |
| Gd | 3.79  | 3.04  | 12.0 | 12.1 | 12.6  | 13.0 | 12.1  | 11.9  | 13.3  | 12.6  | 11.6 | 11.2  |
| Tb  | 0.81  | 0.87  | 1.79  | 1.75  | 1.87  | 1.93  | 1.83  | 1.82  | 2.09  | 1.95  | 1.79  | 1.76  |
| Dy  | 5.63  | 6.92  | 9.80  | 9.68  | 10.1  | 9.93  | 9.42  | 10.7 | 10.9 | 10.4 | 9.70  | 9.75  |
| Ho | 1.04  | 1.28  | 2.02  | 2.06  | 2.12  | 2.02  | 1.95  | 2.28  | 2.24  | 2.15  | 2.04  | 2.08  |
| Er | 2.72  | 3.33  | 5.75  | 5.73  | 6.03  | 5.82  | 5.57  | 6.32  | 6.38  | 6.14  | 5.61  | 5.86  |
| Tm | 0.41  | 0.53  | 0.76  | 0.80  | 0.82  | 0.73  | 0.73  | 0.91  | 0.85  | 0.81  | 0.76  | 0.78  |
| Yb  | 3.07  | 3.63  | 5.17  | 5.28  | 5.56  | 5.03  | 4.97  | 6.12  | 5.93  | 5.75  | 5.18  | 5.49  |
| Lu | 0.42  | 0.51  | 0.82  | 0.85  | 0.85  | 0.79  | 0.75  | 0.92  | 0.88  | 0.87  | 0.81  | 0.84 |
| Hf | 3.85  | 3.78  | 13.9 | 16.0  | 20.1 | 15.1  | 13.6  | 15.7 | 14.6 | 13.3  | 13.8  | 14.7  |
| Ta | 1.76  | 1.78  | 2.12  | 3.08  | 4.53  | 2.67  | 2.17  | 2.78  | 2.70  | 2.31  | 2.03  | 2.61  |
| W | 4.82  | 5.49  | 4.88  | 4.81  | 4.57  | 4.86  | 5.00  | 4.91  | 4.93  | 4.82 | 4.92  | 4.72  |
| Tl | 1.38  | 1.33  | 1.13  | 1.10  | 1.14  | 1.54  | 1.41  | 1.07  | 1.74  | 1.65  | 1.60 | 1.16  |
| Pb | 90.1  | 154  | 29.5  | 70.1  | 41.4 | 171 | 136 | 17.2  | 228 | 153  | 152  | 17.3 |
| Bi | 1.03  | 0.63  | 0.17  | 0.56  | 0.16  | 0.40  | 0.58  | 0.85  | 0.67  | 0.55  | 0.60  | 0.26  |
| Th  | 17.5 | 18.3  | 29.4 | 28.2 | 32.1  | 28.5 | 29.5 | 42.5 | 28.7  | 22.5 | 24.9 | 32.6 |
| U  | 3.91  | 5.07  | 5.42  | 8.53  | 10.3 | 7.53  | 6.07  | 8.51  | 16.1  | 14.5  | 8.74  | 8.19  |

注：样品号中HV7代表17HRZVZK7902，HV3代表17HRZVZK3505，HI5代表17HRZHVIZK1510，HI9代表17HRZHVIZK1908，N代表17NGKQED