附表1 样品SQH06N锆石U-Pb U-Th-Pb同位素定年结果

Table 1 U-Th-Pb isotope composition of zircons for sample SQH06N

|  |  |  |  |
| --- | --- | --- | --- |
| 点号 | 含量(10-6) | 同位素比值 | 年龄（ Ma） |
| Th | U | Th/U | 207Pb/235U | 1*σ* | 206Pb/238U | 1*σ* | 207Pb/235U | 1*σ* | 206Pb/238U | 1*σ* |
| SQH06N 寄主石英闪长岩 |  |  |  |  |  |  |  |  |
| 1 | 2 375 | 1 037 | 2.29 | 0.175 6 | 0.015 1 | 0.024 4 | 0.000 5 | 164 | 13.0 | 155 | 3.1 |
| 2 | 2 600 | 1 026 | 2.53 | 0.188 2 | 0.013 8 | 0.025 3 | 0.000 4 | 175 | 11.8 | 161 | 2.6 |
| 3 | 504 | 482 | 1.05 | 0.187 2 | 0.013 6 | 0.025 2 | 0.000 4 | 174 | 11.6 | 161 | 2.5 |
| 4 | 957 | 802 | 1.19 | 0.176 7 | 0.012 3 | 0.024 6 | 0.000 4 | 165 | 10.6 | 157 | 2.4 |
| 5 | 840 | 696 | 1.21 | 0.174 9 | 0.012 2 | 0.025 0 | 0.000 3 | 164 | 10.5 | 159 | 2.0 |
| 6 | 660 | 570 | 1.16 | 0.178 6 | 0.012 6 | 0.025 2 | 0.000 4 | 167 | 10.8 | 160 | 2.2 |
| 7 | 1 116 | 822 | 1.36 | 0.326 7 | 0.034 2 | 0.025 6 | 0.000 6 | 287 | 26.2 | 163 | 3.5 |
| 8 | 761 | 587 | 1.30 | 0.229 7 | 0.027 7 | 0.025 3 | 0.000 7 | 210 | 22.9 | 161 | 4.7 |
| 9 | 437 | 379 | 1.15 | 0.196 4 | 0.019 1 | 0.026 3 | 0.000 4 | 182 | 16.2 | 167 | 2.8 |
| 10 | 825 | 611 | 1.35 | 0.187 6 | 0.015 4 | 0.026 2 | 0.000 4 | 175 | 13.2 | 167 | 2.8 |
| 11 | 519 | 561 | 0.92 | 0.164 7 | 0.024 7 | 0.025 8 | 0.001 0 | 155 | 21.5 | 164 | 6.1 |
| 12 | 513 | 400 | 1.28 | 0.250 8 | 0.028 2 | 0.026 0 | 0.000 6 | 227 | 22.9 | 165 | 3.5 |
| 13 | 472 | 607 | 0.78 | 0.195 1 | 0.012 9 | 0.025 8 | 0.000 4 | 181 | 11.0 | 164 | 2.5 |
| 14 | 255 | 234 | 1.09 | 0.195 9 | 0.035 2 | 0.026 0 | 0.000 8 | 182 | 29.9 | 165 | 5.0 |
| 15 | 442 | 321 | 1.38 | 0.261 0 | 0.027 4 | 0.025 7 | 0.000 7 | 235 | 22.1 | 164 | 4.3 |
| 16 | 2 002 | 1 547 | 1.29 | 0.175 6 | 0.010 5 | 0.024 8 | 0.000 3 | 164 | 9.1 | 158 | 2.0 |
| 17 | 565 | 519 | 1.09 | 0.425 2 | 0.032 6 | 0.026 0 | 0.000 6 | 360 | 23.2 | 165 | 3.9 |
| 18 | 272 | 249 | 1.10 | 0.184 0 | 0.026 7 | 0.025 1 | 0.000 6 | 172 | 22.9 | 160 | 3.6 |
| 19 | 381 | 388 | 0.98 | 0.193 2 | 0.018 8 | 0.025 8 | 0.000 6 | 179 | 16.0 | 164 | 3.6 |
| 20 | 710 | 551 | 1.29 | 0.158 9 | 0.012 9 | 0.025 8 | 0.000 4 | 150 | 11.3 | 164 | 2.6 |
| 21 | 386 | 285 | 1.36 | 0.609 4 | 0.062 0 | 0.028 7 | 0.000 7 | 483 | 39.1 | 183 | 4.2 |
| 22 | 640 | 545 | 1.17 | 0.169 2 | 0.017 1 | 0.025 2 | 0.000 4 | 159 | 14.9 | 161 | 2.7 |
| 23 | 330 | 323 | 1.02 | 0.183 8 | 0.029 6 | 0.025 1 | 0.000 6 | 171 | 25.4 | 160 | 4.0 |
| 24 | 817 | 2347 | 0.35 | 0.427 8 | 0.014 0 | 0.023 1 | 0.000 3 | 362 | 9.9 | 147 | 2.0 |
| SQH06-1N 闪长质包体 |  |  |  |  |  |  |  |
| 1 | 322 | 339 | 0.95 | 0.154 3 | 0.018 5 | 0.025 2 | 0.000 5 | 146 | 16.2 | 160 | 3.0 |
| 2 | 788 | 817 | 0.96 | 0.162 8 | 0.010 7 | 0.024 8 | 0.000 3 | 153 | 9.3 | 158 | 1.9 |
| 3 | 682 | 531 | 1.28 | 0.166 9 | 0.020 4 | 0.025 3 | 0.000 6 | 157 | 17.8 | 161 | 3.7 |
| 4 | 277 | 285 | 0.97 | 0.182 7 | 0.019 4 | 0.025 8 | 0.000 5 | 170 | 16.7 | 164 | 3.4 |
| 5 | 424 | 417 | 1.02 | 0.178 7 | 0.015 0 | 0.025 1 | 0.000 4 | 167 | 12.9 | 160 | 2.7 |
| 6 | 514 | 400 | 1.28 | 0.158 0 | 0.017 5 | 0.025 1 | 0.000 4 | 149 | 15.3 | 160 | 2.8 |
| 7 | 376 | 333 | 1.13 | 0.187 3 | 0.020 3 | 0.024 9 | 0.000 5 | 174 | 17.4 | 159 | 3.3 |
| 8 | 776 | 655 | 1.19 | 0.178 7 | 0.015 6 | 0.026 0 | 0.000 4 | 167 | 13.4 | 166 | 2.5 |
| 9 | 843 | 577 | 1.46 | 0.165 1 | 0.012 9 | 0.024 7 | 0.000 4 | 155 | 11.2 | 157 | 2.6 |
| 10 | 432 | 421 | 1.03 | 0.231 9 | 0.018 5 | 0.025 6 | 0.000 6 | 212 | 15.2 | 163 | 3.7 |
| 11 | 403 | 383 | 1.05 | 0.167 5 | 0.029 7 | 0.025 8 | 0.000 8 | 157 | 25.9 | 164 | 5.2 |
| 12 | 1 083 | 587 | 1.84 | 0.194 3 | 0.020 0 | 0.025 8 | 0.000 5 | 180 | 17.0 | 164 | 3.2 |
| 13 | 571 | 520 | 1.10 | 0.174 9 | 0.012 9 | 0.025 4 | 0.000 4 | 164 | 11.1 | 162 | 2.4 |
| 14 | 450 | 377 | 1.19 | 0.172 3 | 0.026 3 | 0.025 1 | 0.000 7 | 161 | 22.8 | 160 | 4.4 |
| 15 | 514 | 539 | 0.95 | 0.177 8 | 0.015 1 | 0.025 4 | 0.000 5 | 166 | 13.0 | 162 | 2.9 |
| 16 | 658 | 565 | 1.17 | 0.183 3 | 0.016 9 | 0.024 9 | 0.000 5 | 171 | 14.5 | 158 | 3.1 |
| 17 | 292 | 282 | 1.03 | 0.202 8 | 0.022 2 | 0.025 4 | 0.000 6 | 188 | 18.7 | 162 | 3.5 |
| 18 | 1 103 | 676 | 1.63 | 0.155 2 | 0.013 7 | 0.023 6 | 0.000 4 | 147 | 12.1 | 150 | 2.8 |
| 19 | 627 | 637 | 0.98 | 0.197 7 | 0.037 9 | 0.025 6 | 0.001 0 | 183 | 32.1 | 163 | 6.1 |
| 20 | 194 | 436 | 0.45 | 0.411 0 | 0.048 0 | 0.025 9 | 0.000 6 | 350 | 34.5 | 165 | 3.8 |
| 21 | 617 | 422 | 1.46 | 0.156 7 | 0.016 3 | 0.025 2 | 0.000 5 | 148 | 14.3 | 161 | 2.9 |
| 22 | 496 | 468 | 1.06 | 0.168 8 | 0.016 1 | 0.025 4 | 0.000 5 | 158 | 14.0 | 162 | 2.8 |
| 23 | 922 | 533 | 1.73 | 0.143 0 | 0.026 2 | 0.025 0 | 0.000 6 | 136 | 23.3 | 159 | 3.7 |
| 24 | 780 | 597 | 1.31 | 0.180 2 | 0.014 5 | 0.024 1 | 0.000 4 | 168 | 12.5 | 154 | 2.8 |
| SQH06-2N 闪长质包体 |  |  |  |  |  |  |  |
| 1 | 1 404 | 732 | 1.92 | 0.196 9 | 0.014 9 | 0.024 1 | 0.000 4 | 182 | 12.7 | 153 | 2.8 |
| 2 | 692 | 611 | 1.13 | 0.179 2 | 0.015 2 | 0.024 2 | 0.000 5 | 167 | 13.1 | 154 | 3.1 |
| 3 | 769 | 763 | 1.01 | 0.154 6 | 0.011 7 | 0.024 1 | 0.000 3 | 146 | 10.3 | 153 | 2.2 |
| 4 | 403 | 333 | 1.21 | 0.171 7 | 0.021 7 | 0.024 6 | 0.000 6 | 161 | 18.8 | 157 | 3.7 |
| 5 | 617 | 572 | 1.08 | 0.159 7 | 0.015 8 | 0.024 8 | 0.000 8 | 150 | 13.8 | 158 | 4.9 |
| 6 | 415 | 406 | 1.02 | 0.182 3 | 0.019 0 | 0.024 2 | 0.000 5 | 170 | 16.3 | 154 | 3.4 |
| 7 | 825 | 581 | 1.42 | 0.174 3 | 0.012 7 | 0.025 0 | 0.000 4 | 163 | 11.0 | 159 | 2.4 |
| 8 | 559 | 454 | 1.23 | 0.381 0 | 0.026 7 | 0.025 2 | 0.000 5 | 328 | 19.6 | 160 | 3.0 |
| 9 | 664 | 665 | 1.00 | 0.196 0 | 0.034 2 | 0.024 5 | 0.001 0 | 182 | 29.0 | 156 | 6.0 |
| 10 | 558 | 462 | 1.21 | 0.154 7 | 0.015 9 | 0.025 1 | 0.000 4 | 146 | 14.0 | 160 | 2.7 |
| 11 | 340 | 281 | 1.21 | 0.136 2 | 0.027 9 | 0.023 8 | 0.000 7 | 130 | 24.9 | 152 | 4.4 |
| 12 | 551 | 432 | 1.28 | 0.855 6 | 0.104 4 | 0.031 2 | 0.001 0 | 628 | 57.1 | 198 | 6.2 |
| 13 | 786 | 664 | 1.18 | 0.170 4 | 0.020 8 | 0.023 8 | 0.000 5 | 160 | 18.0 | 152 | 3.1 |
| 14 | 560 | 521 | 1.07 | 0.277 6 | 0.018 1 | 0.025 6 | 0.000 5 | 249 | 14.4 | 163 | 2.9 |
| 15 | 773 | 603 | 1.28 | 0.153 9 | 0.012 8 | 0.025 0 | 0.000 3 | 145 | 11.3 | 159 | 2.2 |
| 16 | 420 | 455 | 0.92 | 0.160 0 | 0.014 6 | 0.025 4 | 0.000 4 | 151 | 12.8 | 162 | 2.8 |
| 17 | 898 | 681 | 1.32 | 0.179 5 | 0.015 7 | 0.024 8 | 0.000 4 | 168 | 13.5 | 158 | 2.7 |
| 18 | 458 | 348 | 1.31 | 0.204 2 | 0.022 2 | 0.024 6 | 0.000 6 | 189 | 18.8 | 157 | 3.7 |
| 19 | 357 | 332 | 1.08 | 0.182 6 | 0.019 8 | 0.024 9 | 0.000 5 | 170 | 17.0 | 159 | 3.2 |
| 20 | 484 | 465 | 1.04 | 0.759 3 | 0.049 2 | 0.052 1 | 0.002 4 | 574 | 28.4 | 327 | 14.8 |
| 21 | 526 | 506 | 1.04 | 0.171 3 | 0.015 0 | 0.025 0 | 0.000 4 | 161 | 13.0 | 159 | 2.5 |
| 22 | 823 | 627 | 1.31 | 0.175 5 | 0.026 8 | 0.025 0 | 0.000 8 | 164 | 23.2 | 159 | 5.2 |
| 23 | 745 | 791 | 0.94 | 0.160 2 | 0.010 0 | 0.024 8 | 0.000 3 | 151 | 8.7 | 158 | 2.1 |
| 24 | 1 154 | 774 | 1.49 | 0.202 8 | 0.012 7 | 0.024 1 | 0.000 3 | 187 | 10.7 | 153 | 2.0 |

附表 2 狮泉河地区样品主量（%）、微量元素（10-6）含量

Table 2 Major element (%) and trace element (10-6) compositions of samples in the Shiquanhe area

|  |  |  |
| --- | --- | --- |
| 样品编号 | 寄主岩 | 包体 |
| SQH06-1H | SQH06-2H | SQH06-3H | SQH06-4H | SQH06-5H | SQH06-6H | SQH06-7H | SQH06-8H |
| SiO2 | 62.75 | 62.8 | 62.36 | 62.35 | 54.99 | 55.88 | 58.19 | 57.37 |
| TiO2 | 0.58 | 0.61 | 0.58 | 0.6 | 0.71 | 0.72 | 0.69 | 0.66 |
| Al2O3 | 15.42 | 15.08 | 15.88 | 15 | 16.94 | 16.43 | 16.14 | 16.85 |
| TFe2O3 | 2.65 | 2.52 | 2.53 | 2.36 | 3.04 | 3.18 | 2.86 | 2.66 |
| FeO | 3.11 | 3.5 | 3.23 | 3.61 | 5.03 | 5 | 4.51 | 4.6 |
| MnO | 0.12 | 0.12 | 0.12 | 0.12 | 0.18 | 0.18 | 0.16 | 0.16 |
| MgO | 2.92 | 3.1 | 2.98 | 3.09 | 4.55 | 4.59 | 4.29 | 4.13 |
| CaO | 5.64 | 5.8 | 5.96 | 5.67 | 8.03 | 8 | 7.42 | 7.72 |
| Na2O | 2.27 | 2.26 | 2.34 | 2.17 | 2.51 | 2.46 | 2.37 | 2.53 |
| K2O | 2.79 | 2.54 | 2.55 | 2.55 | 1.86 | 1.82 | 1.77 | 1.8 |
| P2O5 | 0.14 | 0.12 | 0.13 | 0.13 | 0.13 | 0.14 | 0.13 | 0.13 |
| LOI | 1.17 | 1.06 | 0.91 | 1.25 | 0.97 | 0.86 | 0.91 | 0.92 |
| Total | 99.56 | 99.51 | 99.57 | 98.9 | 98.94 | 99.26 | 99.44 | 99.53 |
| A/CNK | 0.91  | 0.89  | 0.91  | 0.90  | 0.82  | 0.80  | 0.84  | 0.84  |
| A/Nk | 2.28  | 2.33  | 2.40  | 2.37  | 2.76  | 2.73  | 2.78  | 2.76  |
| Li | 26.6  | 25.2  | 26.1  | 28.1  | 26.4  | 28.1  | 26.9  | 28.1  |
| Be | 1.92  | 2.03  | 2.05  | 1.90  | 2.04  | 2.25  | 1.89  | 2.08  |
| Sc | 18.8  | 19.0  | 18.5  | 19.7  | 27.8  | 28.7  | 24.2  | 25.6  |
| V | 135  | 134  | 136  | 139  | 195  | 198  | 181  | 188  |
| Cr | 24.0  | 24.2  | 27.2  | 25.0  | 24.2  | 25.5  | 23.2  | 25.5  |
| Co | 19.7  | 25.4  | 24.9  | 25.0  | 21.9  | 25.8  | 23.0  | 26.6  |
| Ni | 7.14  | 7.33  | 7.97  | 7.15  | 8.85  | 9.05  | 8.08  | 9.16  |
| Cu | 27.8  | 8.88  | 10.8  | 9.15  | 16.2  | 8.05  | 35.3  | 9.82  |
| Zn | 70.5  | 65.7  | 67.0  | 70.2  | 91.0  | 92.9  | 84.9  | 92.2  |
| Ga | 17.4  | 17.5  | 17.6  | 16.7  | 20.1  | 20.3  | 18.9  | 19.4  |
| Rb | 115  | 105  | 109  | 112  | 87.1  | 91.7  | 88.0  | 90.4  |
| Sr | 273  | 271  | 284  | 327  | 269  | 274  | 281  | 272  |
| Y | 24.8  | 25.4  | 24.4  | 25.3  | 35.2  | 35.1  | 28.9  | 31.6  |
| Zr | 105  | 100  | 92.5  | 84.0  | 48.7  | 71.7  | 83.2  | 78.0  |
| Nb | 9.93  | 9.87  | 9.82  | 10.3  | 11.0  | 11.2  | 10.3  | 10.7  |
| Sn | 2.45  | 2.45  | 2.34  | 2.49  | 3.49  | 3.59  | 2.85  | 3.03  |
| Cs | 4.25  | 3.87  | 4.02  | 4.10  | 2.72  | 2.85  | 2.52  | 2.72  |
| Ba | 397  | 330  | 403  | 341  | 188  | 195  | 203  | 196  |
| La | 17.1  | 16.0  | 17.1  | 11.7  | 11.2  | 11.4  | 20.5  | 16.7  |
| Ce | 39.1  | 35.3  | 38.5  | 31.3  | 35.4  | 34.9  | 49.8  | 43.5  |
| Pr | 5.03  | 4.49  | 4.90  | 4.42  | 5.60  | 5.50  | 6.57  | 6.05  |
| Nd | 20.2  | 18.5  | 19.9  | 18.9  | 25.9  | 25.1  | 26.8  | 26.0  |
| Sm | 4.36  | 4.44  | 4.50  | 4.52  | 6.33  | 6.15  | 5.39  | 5.77  |
| Eu | 1.05  | 1.01  | 1.06  | 1.05  | 1.38  | 1.41  | 1.27  | 1.29  |
| Gd | 4.52  | 4.39  | 4.26  | 4.48  | 6.04  | 6.09  | 5.11  | 5.60  |
| Tb | 0.72  | 0.73  | 0.69  | 0.71  | 1.01  | 0.99  | 0.80  | 0.90  |
| Dy | 4.24  | 4.24  | 4.22  | 4.38  | 6.18  | 6.06  | 5.03  | 5.48  |
| Ho | 0.84  | 0.87  | 0.81  | 0.88  | 1.21  | 1.17  | 0.98  | 1.08  |
| Er | 2.49  | 2.50  | 2.44  | 2.52  | 3.44  | 3.57  | 2.80  | 3.11  |
| Tm | 0.36  | 0.39  | 0.38  | 0.38  | 0.51  | 0.51  | 0.43  | 0.47  |
| Yb | 2.39  | 2.49  | 2.38  | 2.58  | 3.43  | 3.56  | 2.84  | 3.15  |
| Lu | 0.38  | 0.35  | 0.33  | 0.36  | 0.51  | 0.49  | 0.42  | 0.43  |
| Hf | 3.26  | 2.89  | 2.78  | 2.60  | 1.79  | 2.40  | 2.52  | 2.56  |
| Ta | 0.80  | 0.85  | 0.75  | 0.85  | 0.65  | 0.65  | 0.82  | 0.67  |
| Tl | 0.58  | 0.53  | 0.55  | 0.55  | 0.48  | 0.49  | 0.47  | 0.46  |
| Pb | 20.3  | 13.3  | 14.0  | 14.4  | 14.4  | 13.2  | 17.2  | 14.0  |
| Th | 8.08  | 5.54  | 7.00  | 6.19  | 1.38  | 1.21  | 4.06  | 2.90  |
| U | 1.15  | 0.81  | 0.94  | 0.87  | 0.51  | 0.53  | 0.46  | 0.51  |
| ΣREE | 127.58  | 121.07  | 125.83  | 113.46  | 143.39  | 141.96  | 157.66  | 151.09  |
| Er/Yb | 1.04  | 1.00  | 1.03  | 0.97  | 1.00  | 1.00  | 0.99  | 0.98  |
| Eu/Eu\* | 0.72  | 0.69  | 0.73  | 0.71  | 0.68  | 0.70  | 0.73  | 0.69  |
| (La/Yb)N | 4.82  | 4.33  | 4.84  | 3.04  | 2.20  | 2.17  | 4.86  | 3.57  |