附表1 贡觉火山岩LA-ICP-MS锆石U-Pb年龄分析数据

Table 1 LA-ICP-MS zircon U-Pb age analysis data of Gonjo Volcanic rocks

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 测点 | Pb | Th | U | Th/U | 同位素比值 | | | | | | 同位素年龄（Ma） | | | | | |
| (10-6) | | | 207Pb/206Pb | (±1*σ*) | 207Pb/235U | (±1*σ*) | 206Pb/238U | (±1*σ*) | 207Pb/206Pb | (±1*σ*) | 207Pb/235U | (±1*σ*) | 206Pb/238U | (±1*σ*) |
| D1004-2-01 | 19 | 296 | 408 | 0.73 | 0.050 2 | 0.001 2 | 0.259 2 | 0.006 5 | 0.037 4 | 0.000 3 | 211 | 57 | 234 | 5 | 237 | 2 |
| D1004-2-02 | 30 | 496 | 617 | 0.80 | 0.051 6 | 0.001 2 | 0.262 7 | 0.006 4 | 0.036 9 | 0.000 3 | 333 | 56 | 237 | 5 | 233 | 2 |
| D1004-2-03 | 16 | 196 | 318 | 0.62 | 0.054 0 | 0.002 2 | 0.285 4 | 0.011 5 | 0.038 5 | 0.000 4 | 369 | 91 | 255 | 9 | 243 | 2 |
| D1004-2-04 | 17 | 227 | 356 | 0.64 | 0.052 4 | 0.001 5 | 0.275 8 | 0.007 8 | 0.038 2 | 0.000 3 | 306 | 67 | 247 | 6 | 242 | 2 |
| D1004-2-05 | 39 | 693 | 820 | 0.85 | 0.055 8 | 0.001 2 | 0.295 8 | 0.006 3 | 0.038 3 | 0.000 3 | 456 | 51 | 263 | 5 | 243 | 2 |
| D1004-2-06 | 18 | 245 | 385 | 0.64 | 0.054 2 | 0.001 7 | 0.284 9 | 0.008 4 | 0.038 3 | 0.000 4 | 389 | 70 | 255 | 7 | 242 | 2 |
| D1004-2-07 | 13 | 158 | 271 | 0.58 | 0.055 1 | 0.001 9 | 0.286 6 | 0.009 4 | 0.037 8 | 0.000 4 | 417 | 81 | 256 | 7 | 239 | 2 |
| D1004-2-08 | 14 | 174 | 302 | 0.58 | 0.055 5 | 0.002 0 | 0.289 4 | 0.009 5 | 0.038 0 | 0.000 4 | 432 | 80 | 258 | 7 | 241 | 2 |
| D1004-2-09 | 16 | 212 | 341 | 0.62 | 0.053 1 | 0.001 5 | 0.271 7 | 0.007 3 | 0.037 1 | 0.000 3 | 345 | 32 | 244 | 6 | 235 | 2 |
| D1004-2-10 | 15 | 192 | 341 | 0.56 | 0.054 8 | 0.001 6 | 0.288 3 | 0.008 0 | 0.038 3 | 0.000 4 | 467 | 67 | 257 | 6 | 242 | 2 |
| D1004-2-11 | 18 | 252 | 371 | 0.68 | 0.052 7 | 0.001 5 | 0.276 1 | 0.007 8 | 0.038 1 | 0.000 4 | 317 | 67 | 248 | 6 | 241 | 2 |
| D1004-2-12 | 13 | 157 | 283 | 0.56 | 0.051 4 | 0.001 6 | 0.264 7 | 0.008 0 | 0.037 4 | 0.000 3 | 261 | 70 | 238 | 6 | 237 | 2 |
| D1004-2-13 | 16 | 264 | 354 | 0.75 | 0.052 1 | 0.001 8 | 0.271 6 | 0.008 7 | 0.038 2 | 0.000 4 | 287 | 80 | 244 | 7 | 242 | 3 |
| D1004-2-14 | 14 | 186 | 308 | 0.60 | 0.052 7 | 0.001 6 | 0.273 1 | 0.008 0 | 0.037 6 | 0.000 4 | 317 | 64 | 245 | 6 | 238 | 2 |
| D1004-2-15 | 15 | 201 | 318 | 0.63 | 0.052 2 | 0.001 6 | 0.266 6 | 0.008 2 | 0.037 0 | 0.000 3 | 295 | 66 | 240 | 7 | 234 | 2 |
| D1004-2-16 | 15 | 173 | 327 | 0.53 | 0.055 8 | 0.002 2 | 0.288 1 | 0.010 2 | 0.037 7 | 0.000 4 | 443 | 87 | 257 | 8 | 239 | 2 |
| D1004-2-17 | 14 | 163 | 295 | 0.55 | 0.056 5 | 0.001 6 | 0.291 2 | 0.008 1 | 0.037 4 | 0.000 4 | 472 | 61 | 259 | 6 | 237 | 2 |
| D1004-2-18 | 16 | 219 | 344 | 0.63 | 0.053 0 | 0.001 9 | 0.271 2 | 0.008 6 | 0.037 5 | 0.000 4 | 328 | 75 | 244 | 7 | 238 | 2 |
| D1004-2-19 | 14 | 177 | 306 | 0.58 | 0.055 8 | 0.001 6 | 0.288 8 | 0.008 1 | 0.037 5 | 0.000 3 | 456 | 63 | 258 | 6 | 237 | 2 |
| D1004-2-20 | 17 | 248 | 364 | 0.68 | 0.052 4 | 0.001 5 | 0.271 0 | 0.007 4 | 0.037 6 | 0.000 3 | 302 | 63 | 244 | 6 | 238 | 2 |
| D1004-2-21 | 21 | 288 | 431 | 0.67 | 0.052 5 | 0.001 5 | 0.269 0 | 0.007 8 | 0.037 1 | 0.000 3 | 306 | 65 | 242 | 6 | 235 | 2 |
| D1004-2-22 | 12 | 150 | 258 | 0.58 | 0.058 0 | 0.002 1 | 0.295 5 | 0.009 7 | 0.037 4 | 0.000 4 | 532 | 80 | 263 | 8 | 237 | 3 |
| D1004-2-23 | 17 | 235 | 360 | 0.65 | 0.053 2 | 0.001 6 | 0.274 3 | 0.007 7 | 0.037 5 | 0.000 3 | 339 | 36 | 246 | 6 | 237 | 2 |
| D1004-3-01 | 33.0 | 500 | 774 | 0.65 | 0.051 5 | 0.001 2 | 0.252 3 | 0.006 8 | 0.035 5 | 0.000 5 | 261 | 52 | 228 | 5 | 225 | 3 |
| D1004-3-02 | 56.0 | 1 000 | 1 247 | 0.80 | 0.050 2 | 0.000 8 | 0.245 8 | 0.005 6 | 0.035 4 | 0.000 6 | 203 | 38 | 223 | 5 | 224 | 4 |
| D1004-3-03 | 49.8 | 876 | 1 090 | 0.80 | 0.050 5 | 0.001 0 | 0.244 2 | 0.005 2 | 0.035 0 | 0.000 4 | 219 | 45 | 222 | 4 | 222 | 2 |
| D1004-3-04 | 54.7 | 626 | 1 364 | 0.46 | 0.059 9 | 0.001 2 | 0.271 2 | 0.006 4 | 0.032 6 | 0.000 4 | 601 | 46 | 244 | 5 | 207 | 2 |
| D1004-3-05 | 41.9 | 557 | 898 | 0.62 | 0.052 0 | 0.002 3 | 0.242 3 | 0.010 6 | 0.033 8 | 0.000 3 | 284 | 104 | 220 | 9 | 214 | 2 |
| D1004-3-06 | 119.6 | 977 | 2 976 | 0.33 | 0.047 8 | 0.003 1 | 0.184 6 | 0.011 9 | 0.028 0 | 0.000 2 | 88 | 145 | 172 | 10 | 178 | 1 |
| D1004-3-07 | 96.1 | 1 795 | 2 564 | 0.70 | 0.051 7 | 0.000 9 | 0.232 0 | 0.006 0 | 0.032 5 | 0.000 6 | 271 | 41 | 212 | 5 | 206 | 4 |
| D1004-3-08 | 73.9 | 768 | 1 931 | 0.40 | 0.071 3 | 0.001 6 | 0.312 4 | 0.009 2 | 0.031 3 | 0.000 4 | 967 | 57 | 276 | 7 | 199 | 2 |
| D1004-3-09 | 182.2 | 3 019 | 4 295 | 0.70 | 0.046 1 | 0.002 6 | 0.200 0 | 0.011 0 | 0.031 5 | 0.000 4 |  | 123 | 185 | 9 | 200 | 3 |
| D1004-3-10 | 97.7 | 2 435 | 2 272 | 1.07 | 0.060 5 | 0.002 8 | 0.235 6 | 0.010 8 | 0.028 2 | 0.000 3 | 622 | 104 | 215 | 9 | 179 | 2 |
| D1004-3-11 | 103.1 | 946 | 2 776 | 0.34 | 0.053 4 | 0.000 8 | 0.231 6 | 0.003 6 | 0.031 4 | 0.000 2 | 347 | 33 | 212 | 3 | 199 | 1 |
| D1004-3-12 | 77.3 | 789 | 2 167 | 0.36 | 0.063 7 | 0.001 2 | 0.264 9 | 0.005 9 | 0.030 0 | 0.000 4 | 732 | 41 | 239 | 5 | 190 | 2 |
| D1004-3-13 | 79.7 | 623 | 2 170 | 0.29 | 0.050 3 | 0.001 0 | 0.223 4 | 0.003 7 | 0.031 5 | 0.000 2 | 210 | 37 | 205 | 3 | 200 | 1 |
| D1004-3-14 | 66.8 | 798 | 1 791 | 0.45 | 0.057 9 | 0.001 1 | 0.257 5 | 0.005 8 | 0.032 2 | 0.000 5 | 527 | 39 | 233 | 5 | 204 | 3 |
| D1004-3-15 | 51.8 | 561 | 1 169 | 0.48 | 0.051 1 | 0.002 6 | 0.237 3 | 0.012 0 | 0.033 7 | 0.000 3 | 244 | 120 | 216 | 10 | 214 | 2 |
| D1004-3-16 | 69.8 | 388 | 943 | 0.41 | 0.061 1 | 0.001 3 | 0.302 3 | 0.007 6 | 0.0356 | 0.0004 | 642 | 49 | 268 | 6 | 225 | 3 |

注：D1004-2安山质熔结凝灰岩加权平均年龄为238.3±1.3 Ma（MSWD=1.7，*n*=23）；D1004-3含橄榄石玄武岩年龄谐和度差，加权平均年龄值无意义.

附表2 贡觉火山岩主量元素（%）、微量元素（10-6）分析结果

Table 2 Analysis results of major element (%) and trace element (10-6) of Gonjo volcanic rocks

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 样品号 | D1003-YQ3 | D1003-YQ4 | D1004-YQ1 | D1004-YQ2 | D1004-YQ3 | D1004-YQ4 | D1004-YQ5 | D1004-YQ6 | D1004-YQ7 | D1004-YQ8 |
| 岩性 | 角闪安山岩 | 辉石安山岩 | 玄武岩 | 玄武岩 | 安山玄武岩 | 安山质熔结凝灰岩 | 安山质熔结凝灰岩 | 含橄榄玄武岩 | 橄榄玄武岩 | 橄榄玄武岩 |
| SiO2 | 54.13 | 53.82 | 48.13 | 47.52 | 49.9 | 47.93 | 47.52 | 44.03 | 41.57 | 40.36 |
| TiO2 | 0.9 | 0.91 | 0.84 | 0.85 | 0.8 | 0.78 | 0.82 | 0.57 | 0.59 | 0.52 |
| Al2O3 | 17.3 | 17.38 | 17.91 | 17.86 | 17.94 | 17.45 | 16.27 | 13.05 | 12.21 | 12.16 |
| Fe2O3T | 7.85 | 7.5 | 11.11 | 10.91 | 9.31 | 9.67 | 10.06 | 7.31 | 6.37 | 6.37 |
| MnO | 0.13 | 0.12 | 0.16 | 0.16 | 0.14 | 0.13 | 0.14 | 0.18 | 0.21 | 0.2 |
| MgO | 3.38 | 3.38 | 6.91 | 6.64 | 5.84 | 7.22 | 7.11 | 5.11 | 4.19 | 3.94 |
| CaO | 4.17 | 4.72 | 5.99 | 7.32 | 7.23 | 8.41 | 9.06 | 14.63 | 18.14 | 19.38 |
| Na2O | 4.52 | 4.66 | 3.63 | 3.74 | 4.64 | 3.8 | 3.67 | 4.63 | 4.16 | 3.94 |
| K2O | 4.05 | 3.84 | 0.95 | 0.41 | 0.22 | 0.53 | 0.59 | 0.11 | 0.093 | 0.15 |
| P2O5 | 0.35 | 0.36 | 0.13 | 0.15 | 0.15 | 0.15 | 0.16 | 0.14 | 0.13 | 0.15 |
| LOI | 3.04 | 3.13 | 4.14 | 4.36 | 3.78 | 3.86 | 4.55 | 10.24 | 12.32 | 12.82 |
| 总量 | 99.82 | 99.82 | 99.90 | 99.92 | 99.95 | 99.93 | 99.95 | 100.00 | 99.98 | 99.99 |
| Mg# | 46.22 | 47.36 | 55.39 | 54.85 | 55.60 | 59.85 | 58.52 | 58.25 | 56.77 | 55.25 |
| La | 54.8 | 52.2 | 10.6 | 12.8 | 12.1 | 9.81 | 10.1 | 6.76 | 5.81 | 6.82 |
| Ce | 99.9 | 95.9 | 24.3 | 25.9 | 25 | 20.8 | 21.6 | 14 | 12.3 | 13.8 |
| Pr | 10.9 | 10.6 | 3.28 | 3.39 | 3.23 | 2.79 | 2.83 | 1.82 | 1.66 | 1.8 |
| Nd | 38.4 | 38 | 14 | 14.4 | 13.8 | 12.1 | 12.1 | 7.76 | 7.17 | 7.75 |
| Sm | 6.71 | 6.61 | 3.14 | 3.27 | 2.98 | 2.78 | 2.8 | 1.83 | 1.76 | 1.75 |
| Eu | 1.52 | 1.69 | 0.79 | 1.14 | 0.79 | 0.89 | 0.88 | 0.62 | 0.6 | 0.63 |
| Gd | 5.19 | 5.38 | 3.31 | 3.44 | 3.04 | 2.88 | 2.9 | 1.97 | 1.89 | 1.91 |
| Tb | 0.75 | 0.75 | 0.52 | 0.54 | 0.49 | 0.45 | 0.45 | 0.31 | 0.31 | 0.3 |
| Dy | 4.15 | 4.05 | 3.08 | 3.36 | 2.89 | 2.63 | 2.71 | 1.85 | 1.92 | 1.84 |
| Ho | 0.82 | 0.81 | 0.65 | 0.73 | 0.62 | 0.55 | 0.57 | 0.4 | 0.41 | 0.38 |
| Er | 2.28 | 2.21 | 1.89 | 2.15 | 1.75 | 1.61 | 1.64 | 1.15 | 1.18 | 1.12 |
| Tm | 0.32 | 0.32 | 0.27 | 0.32 | 0.26 | 0.23 | 0.23 | 0.17 | 0.17 | 0.16 |
| Yb | 2.15 | 2.04 | 1.82 | 2.13 | 1.68 | 1.48 | 1.58 | 1.05 | 1.12 | 1.07 |
| Lu | 0.33 | 0.31 | 0.27 | 0.33 | 0.26 | 0.23 | 0.24 | 0.16 | 0.17 | 0.16 |
| Y | 20 | 19.4 | 16.2 | 19 | 14.5 | 13.2 | 13.4 | 9.55 | 9.9 | 9.48 |
| ∑REE | 248.22 | 240.27 | 84.12 | 92.90 | 83.39 | 72.43 | 74.03 | 49.40 | 46.37 | 48.97 |
| ∑Ce/∑Y | 5.90 | 5.81 | 2.00 | 1.90 | 2.27 | 2.11 | 2.12 | 1.97 | 1.72 | 1.98 |
| LREE/HREE | 13.27 | 12.92 | 4.75 | 4.68 | 5.27 | 4.89 | 4.88 | 4.64 | 4.09 | 4.69 |
| δEu | 0.76 | 0.84 | 0.74 | 1.03 | 0.80 | 0.95 | 0.94 | 0.99 | 1.00 | 1.05 |
| Sc | 21.2 | 22 | 32.8 | 32.3 | 31.3 | 34.4 | 35.8 | 27.5 | 28.6 | 27.5 |
| Ni | 8.07 | 7.65 | 31.3 | 32.7 | 32.3 | 66.7 | 71.2 | 70.9 | 67.6 | 83 |
| Rb | 112 | 114 | 24.9 | 11 | 4.82 | 15.2 | 17 | 1.45 | 1.25 | 2.39 |
| Sr | 375 | 360 | 253 | 290 | 264 | 265 | 275 | 89.1 | 94.3 | 98.1 |
| Zr | 228 | 214 | 72.9 | 77.8 | 60.1 | 54 | 56.4 | 36.2 | 37 | 32 |
| Nb | 24.5 | 22.9 | 4.45 | 4.74 | 4.18 | 3.61 | 3.79 | 2.69 | 2.73 | 2.51 |
| Cs | 0.62 | 0.44 | 0.83 | 0.45 | 0.17 | 1.44 | 1.45 | 0.07 | 0.08 | 0.06 |
| Ba | 1533 | 1558 | 651 | 265 | 133 | 173 | 206 | 30.4 | 24.8 | 19.4 |
| Hf | 5.03 | 4.77 | 1.94 | 2.02 | 1.88 | 1.58 | 1.71 | 1.07 | 1.1 | 0.99 |
| Ta | 1.89 | 1.75 | 0.37 | 0.43 | 0.37 | 0.29 | 0.3 | 0.22 | 0.22 | 0.24 |
| Pb | 51.8 | 31.7 | 4.88 | 4.52 | 7.16 | 3.84 | 3.89 | 2.45 | 2.27 | 2.79 |
| Th | 17.1 | 16.3 | 3.84 | 4.14 | 3.73 | 2.44 | 2.57 | 1.66 | 1.69 | 1.57 |
| U | 3.99 | 3.7 | 1.13 | 1.22 | 1.02 | 0.73 | 0.86 | 0.53 | 0.55 | 0.62 |