附表1 扎兰屯南部花岗质糜棱岩锆石LA-ICP-MS U-Pb定年分析数据

Table 1 Zircon LA-ICP-MS U-Pb data of granitic myolites from southern Zhalantun area

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Th/U | 207Pb/206Pb | 1δ | 207Pb/235U | 1δ | 206Pb/238U | 1δ | 208Pb/232Th | 1δ | 207Pb/206Pb | 1δ | 207Pb/235U | 1δ | 206Pb/238U | 1δ | 208Pb/232Th | 1δ |
| Z10-15-01 | 0.38  | 0.0525  | 0.0037  | 0.4165  | 0.0299  | 0.0576  | 0.0009  | 0.0188  | 0.0003  | 307 | 136 | 354 | 21 | 361 | 5 | 376 | 6 |
| Z10-15-02 | 0.35  | 0.0532  | 0.0048  | 0.4205  | 0.0381  | 0.0573  | 0.0006  | 0.0178  | 0.0004  | 337 | 187 | 356 | 27 | 359 | 4 | 357 | 8 |
| Z10-15-03 | 0.34  | 0.0528  | 0.0050  | 0.4157  | 0.0396 | 0.0571  | 0.0005  | 0.0185  | 0.0003  | 320 | 200 | 353 | 28 | 358 | 3 | 371 | 6 |
| Z10-15-04 | 0.47  | 0.0540  | 0.0014  | 0.4235  | 0.0112  | 0.0569  | 0.0004  | 0.0191  | 0.0004  | 371 | 47 | 359 | 8 | 357 | 2 | 382 | 8 |
| Z10-15-05 | 0.46  | 0.0520  | 0.0028  | 0.4136  | 0.0225  | 0.0577  | 0.0005  | 0.0192  | 0.0006  | 285 | 110 | 351 | 16 | 362 | 3 | 384 | 12 |
| Z10-15-06 | 0.47  | 0.0516  | 0.0011  | 0.4102  | 0.0095  | 0.0576  | 0.0005  | 0.0191  | 0.0001  | 268 | 37 | 349 | 7 | 361 | 3 | 382 | 2 |
| Z10-15-07 | 0.44  | 0.0538  | 0.0014  | 0.4230  | 0.0108  | 0.0570  | 0.0006  | 0.0193  | 0.0002  | 363 | 39 | 358 | 8 | 357 | 4 | 386 | 4 |
| Z10-15-08 | 0.42  | 0.0540  | 0.0009  | 0.4301  | 0.0084  | 0.0578  | 0.0005  | 0.0189  | 0.0001  | 371 | 28 | 363 | 6 | 362 | 3 | 378 | 2 |
| Z10-15-09 | 0.42  | 0.0534  | 0.0017  | 0.4253  | 0.0143  | 0.0577  | 0.0006  | 0.0186  | 0.0002  | 346 | 57 | 360 | 10 | 362 | 4 | 372 | 4 |
| Z10-15-10 | 0.70  | 0.0537  | 0.0008  | 0.4094  | 0.0070  | 0.0553  | 0.0006  | 0.0188  | 0.0001  | 358 | 20 | 348 | 5 | 347 | 4 | 376 | 2 |
| Z10-15-11 | 0.58  | 0.0542  | 0.0007  | 0.4316  | 0.0074  | 0.0578  | 0.0007  | 0.0191  | 0.0001  | 379 | 19 | 364 | 5 | 362 | 4 | 382 | 2 |
| Z10-15-12 | 0.32  | 0.0531  | 0.0023  | 0.4115  | 0.0181  | 0.0562  | 0.0006  | 0.0190  | 0.0003  | 333 | 81 | 350 | 13 | 352 | 4 | 380 | 6 |
| Z10-15-13 | 0.54  | 0.0527  | 0.0005  | 0.4165  | 0.0056  | 0.0573  | 0.0006  | 0.0189  | 0.0001  | 316 | 14 | 354 | 4 | 359 | 4 | 378 | 2 |
| Z10-15-14 | 0.47  | 0.0540  | 0.0008  | 0.4269  | 0.0078  | 0.0574  | 0.0006  | 0.0182  | 0.0001  | 371 | 23 | 361 | 6 | 360 | 4 | 365 | 2 |
| Z10-15-15 | 0.39  | 0.0527  | 0.0006  | 0.4088  | 0.0059  | 0.0563  | 0.0005  | 0.0192  | 0.0001  | 316 | 17 | 348 | 4 | 353 | 3 | 384 | 2 |
| Z10-15-16 | 0.75  | 0.0531  | 0.0015  | 0.4274  | 0.0140  | 0.0584  | 0.0009  | 0.0183  | 0.0004  | 333 | 47 | 361 | 10 | 366 | 5 | 367 | 8 |
| Z10-15-17 | 0.39  | 0.0544  | 0.0022  | 0.4294  | 0.0176  | 0.0572  | 0.0006  | 0.0186  | 0.0003  | 388 | 73 | 363 | 13 | 359 | 4 | 372 | 6 |
| Z10-15-18 | 0.44  | 0.0556  | 0.0013  | 0.4301  | 0.0101  | 0.0561  | 0.0006  | 0.0187  | 0.0001  | 436 | 33 | 363 | 7 | 352 | 4 | 374 | 2 |
| Z10-15-19 | 0.58  | 0.0544  | 0.0006  | 0.4276  | 0.0063  | 0.0570  | 0.0005  | 0.0182  | 0.0001  | 388 | 18 | 361 | 4 | 357 | 3 | 365 | 2 |
| Z10-15-20 | 0.54  | 0.0530  | 0.0010  | 0.4224  | 0.0098  | 0.0578  | 0.0008  | 0.0185  | 0.0002  | 329 | 29 | 358 | 7 | 362 | 5 | 371 | 4 |
| Z10-15-21 | 1.13  | 0.0540  | 0.0010  | 0.4288  | 0.0084  | 0.0576  | 0.0007  | 0.0183  | 0.0001  | 371 | 23 | 362 | 6 | 361 | 4 | 367 | 2 |
| Z10-15-22 | 0.51  | 0.0541  | 0.0013  | 0.4332  | 0.0108  | 0.0581  | 0.0006  | 0.0183  | 0.0002  | 375 | 37 | 365 | 8 | 364 | 4 | 367 | 4 |
| Z10-15-23 | 0.47  | 0.0545  | 0.0013  | 0.4270  | 0.0103  | 0.0568  | 0.0005  | 0.0185  | 0.0001  | 392 | 38 | 361 | 7 | 356 | 3 | 371 | 2 |
| Z10-15-24 | 0.26  | 0.0529  | 0.0011  | 0.4113  | 0.0094  | 0.0563  | 0.0006  | 0.0191  | 0.0002  | 325 | 33 | 350 | 7 | 353 | 4 | 382 | 4 |
| Z10-15-25 | 0.40  | 0.0535  | 0.0009  | 0.4215  | 0.0082  | 0.0572  | 0.0005  | 0.0187  | 0.0002  | 350 | 28 | 357 | 6 | 359 | 3 | 374 | 4 |
| Z10-35-01 | 0.58  | 0.0542  | 0.0020  | 0.4243  | 0.0163  | 0.0568  | 0.0004  | 0.0181  | 0.0001  | 379 | 74 | 359 | 12 | 356 | 2 | 363 | 3 |
| Z10-35-02 | 0.52  | 0.0522  | 0.0024  | 0.4104  | 0.0194  | 0.0570  | 0.0006  | 0.0188  | 0.0002  | 294 | 90 | 349 | 14 | 357 | 3 | 377 | 4 |
| Z10-35-04 | 0.78  | 0.0549  | 0.0016  | 0.4436  | 0.0133  | 0.0586  | 0.0005  | 0.0181  | 0.0002  | 407 | 53 | 373 | 9 | 367 | 3 | 362 | 4 |
| Z10-35-05 | 0.68  | 0.0547  | 0.0014  | 0.4295  | 0.0115  | 0.0569  | 0.0006  | 0.0170  | 0.0003  | 402 | 43 | 363 | 8 | 357 | 3 | 341 | 6 |
| Z10-35-06 | 0.77  | 0.0546  | 0.0021  | 0.4375  | 0.0168  | 0.0581  | 0.0005  | 0.0188  | 0.0002  | 396 | 71 | 368 | 12 | 364 | 3 | 377 | 3 |
| Z10-35-07 | 0.78  | 0.0542  | 0.0016  | 0.4384  | 0.0131  | 0.0586  | 0.0005  | 0.0167  | 0.0002  | 381 | 53 | 369 | 9 | 367 | 3 | 335 | 3 |
| Z10-35-08 | 0.78  | 0.0550  | 0.0026  | 0.4477  | 0.0216  | 0.0590  | 0.0007  | 0.0174  | 0.0003  | 412 | 88 | 376 | 15 | 370 | 4 | 349 | 6 |
| Z10-35-09 | 0.64  | 0.0557  | 0.0027  | 0.4528  | 0.0218  | 0.0589  | 0.0005  | 0.0177  | 0.0003  | 441 | 94 | 379 | 15 | 369 | 3 | 355 | 6 |
| Z10-35-10 | 0.60  | 0.0528  | 0.0026  | 0.4232  | 0.0213  | 0.0581  | 0.0006  | 0.0180  | 0.0002  | 320 | 98 | 358 | 15 | 364 | 3 | 361 | 4 |
| Z10-35-12 | 0.59  | 0.0559  | 0.0043  | 0.4506  | 0.0354  | 0.0585  | 0.0007  | 0.0188  | 0.0007  | 446 | 157 | 378 | 25 | 367 | 4 | 376 | 15 |
| Z10-35-13 | 0.51  | 0.0564  | 0.0044  | 0.4537  | 0.0352  | 0.0584  | 0.0010  | 0.0188  | 0.0016  | 467 | 144 | 380 | 25 | 366 | 6 | 377 | 32 |
| Z10-35-14 | 0.61  | 0.0550  | 0.0027  | 0.4353  | 0.0226  | 0.0574  | 0.0009  | 0.0189  | 0.0002  | 412 | 88 | 367 | 16 | 360 | 5 | 378 | 4 |
| Z10-35-15 | 0.78  | 0.0531  | 0.0024  | 0.4285  | 0.0195  | 0.0585  | 0.0006  | 0.0172  | 0.0001  | 334 | 84 | 362 | 14 | 366 | 4 | 344 | 2 |
| Z10-35-16 | 0.64  | 0.0496  | 0.0037  | 0.4012  | 0.0297  | 0.0587  | 0.0005  | 0.0176  | 0.0002  | 176 | 151 | 342 | 21 | 367 | 3 | 353 | 4 |
| Z10-35-17 | 0.81  | 0.0530  | 0.0015  | 0.4347  | 0.0131  | 0.0595  | 0.0008  | 0.0177  | 0.0001  | 327 | 46 | 366 | 9 | 373 | 5 | 354 | 1 |
| Z10-35-18 | 0.66  | 0.0553  | 0.0034  | 0.4508  | 0.0282  | 0.0592  | 0.0007  | 0.0175  | 0.0002  | 422 | 118 | 378 | 20 | 371 | 4 | 352 | 4 |
| Z10-35-19 | 0.82  | 0.0548  | 0.0042  | 0.4422  | 0.0338  | 0.0585  | 0.0006  | 0.0184  | 0.0002  | 405 | 154 | 372 | 24 | 366 | 4 | 368 | 5 |
| Z10-35-20 | 0.62  | 0.0541  | 0.0021  | 0.4295  | 0.0178  | 0.0576  | 0.0009  | 0.0186  | 0.0002  | 374 | 65 | 363 | 13 | 361 | 5 | 372 | 3 |
| Z10-35-21 | 0.70  | 0.0547  | 0.0023  | 0.4446  | 0.0197  | 0.0589  | 0.0007  | 0.0181  | 0.0002  | 400 | 79 | 373 | 14 | 369 | 4 | 362 | 4 |
| Z10-35-22 | 0.51  | 0.0512  | 0.0015  | 0.4131  | 0.0131  | 0.0585  | 0.0006  | 0.0186  | 0.0001  | 251 | 53 | 351 | 9 | 366 | 4 | 372 | 3 |
| Z10-35-23 | 0.75  | 0.0531  | 0.0017  | 0.4287  | 0.0144  | 0.0586  | 0.0005  | 0.0180  | 0.0001  | 333 | 61 | 362 | 10 | 367 | 3 | 360 | 2 |
| Z10-35-24 | 0.61  | 0.0573  | 0.0038  | 0.4619  | 0.0313  | 0.0585  | 0.0006  | 0.0182  | 0.0006  | 501 | 133 | 386 | 22 | 367 | 4 | 365 | 11 |
| Z10-35-25 | 0.92  | 0.0552  | 0.0019  | 0.4415  | 0.0158  | 0.0581  | 0.0004  | 0.0178  | 0.0001  | 419 | 67 | 371 | 11 | 364 | 3 | 356 | 2 |
| Z11-56-01 | 1.08  | 0.0546  | 0.0008  | 0.4680  | 0.0064  | 0.0622  | 0.0005  | 0.0173  | 0.0007  | 394 | 16 | 390 | 4 | 389 | 3 | 348 | 13 |
| Z11-56-02 | 0.87  | 0.0572  | 0.0014  | 0.4906  | 0.0120  | 0.0622  | 0.0006  | 0.0076  | 0.0003  | 500 | 38 | 405 | 8 | 389 | 3 | 153 | 7 |
| Z11-56-03 | 0.73  | 0.0545  | 0.0014  | 0.4710  | 0.0123  | 0.0627  | 0.0005  | 0.0065  | 0.0003  | 392 | 43 | 392 | 9 | 392 | 3 | 131 | 7 |
| Z11-56-04 | 0.50  | 0.0575  | 0.0010  | 0.5060  | 0.0080  | 0.0638  | 0.0005  | 0.0377  | 0.0014  | 511 | 20 | 416 | 5 | 399 | 3 | 748 | 28 |
| Z11-56-05 | 0.63  | 0.0562  | 0.0009  | 0.5041  | 0.0074  | 0.0650  | 0.0006  | 0.0128  | 0.0005  | 461 | 18 | 414 | 5 | 406 | 3 | 256 | 10 |
| Z11-56-06 | 0.56  | 0.0566  | 0.0010  | 0.5103  | 0.0083  | 0.0654  | 0.0005  | 0.0344  | 0.0013  | 476 | 21 | 419 | 6 | 408 | 3 | 684 | 25 |
| Z11-56-07 | 0.56  | 0.0543  | 0.0010  | 0.4773  | 0.0079  | 0.0638  | 0.0005  | 0.0401  | 0.0015  | 382 | 23 | 396 | 5 | 399 | 3 | 794 | 29 |
| Z11-56-08 | 0.63  | 0.0579  | 0.0009  | 0.5209  | 0.0075  | 0.0653  | 0.0005  | 0.0125  | 0.0005  | 525 | 18 | 426 | 5 | 408 | 3 | 251 | 10 |
| Z11-56-09 | 0.69  | 0.0586  | 0.0009  | 0.5254  | 0.0076  | 0.0650  | 0.0005  | 0.0135  | 0.0005  | 553 | 18 | 429 | 5 | 406 | 3 | 271 | 11 |
| Z11-56-11 | 2.09  | 0.0568  | 0.0008  | 0.5039  | 0.0074  | 0.0643  | 0.0006  | 0.0144  | 0.0006  | 485 | 18 | 414 | 5 | 402 | 3 | 288 | 12 |
| Z11-56-12 | 1.57  | 0.0612  | 0.0036  | 0.5330  | 0.0315  | 0.0632  | 0.0007  | 0.0027  | 0.0004  | 645 | 109 | 434 | 21 | 395 | 4 | 55 | 7 |
| Z11-56-13 | 0.77  | 0.0591  | 0.0004  | 0.5154  | 0.0044  | 0.0632  | 0.0005  | 0.0529  | 0.0020  | 571 | 8 | 422 | 3 | 395 | 3 | 1042 | 38 |
| Z11-56-14 | 0.66  | 0.0548  | 0.0017  | 0.4822  | 0.0154  | 0.0639  | 0.0006  | 0.0059  | 0.0004  | 402 | 55 | 400 | 11 | 399 | 4 | 120 | 7 |
| Z11-56-15 | 0.81  | 0.0548  | 0.0014  | 0.4862  | 0.0121  | 0.0644  | 0.0005  | 0.0080  | 0.0004  | 403 | 41 | 402 | 8 | 402 | 3 | 160 | 7 |
| Z11-56-16 | 0.77  | 0.0577  | 0.0021  | 0.5132  | 0.0191  | 0.0645  | 0.0006  | 0.0051  | 0.0003  | 519 | 66 | 421 | 13 | 403 | 3 | 102 | 7 |
| Z11-56-17 | 0.15  | 0.0593  | 0.0004  | 0.5249  | 0.0045  | 0.0642  | 0.0005  | 0.0436  | 0.0017  | 578 | 8 | 428 | 3 | 401 | 3 | 862 | 32 |
| Z11-56-18 | 0.61  | 0.0550  | 0.0007  | 0.4773  | 0.0060  | 0.0630  | 0.0005  | 0.0196  | 0.0008  | 412 | 14 | 396 | 4 | 394 | 3 | 392 | 15 |
| Z11-56-19 | 0.76  | 0.0569  | 0.0012  | 0.5111  | 0.0111  | 0.0652  | 0.0005  | 0.0082  | 0.0004  | 486 | 34 | 419 | 7 | 407 | 3 | 164 | 8 |
| Z11-56-20 | 0.52  | 0.0615  | 0.0020  | 0.5270  | 0.0171  | 0.0621  | 0.0005  | 0.0062  | 0.0007  | 657 | 55 | 430 | 11 | 389 | 3 | 126 | 13 |
| Z11-56-21 | 0.76  | 0.0551  | 0.0009  | 0.4912  | 0.0072  | 0.0646  | 0.0005  | 0.0130  | 0.0005  | 417 | 18 | 406 | 5 | 404 | 3 | 261 | 10 |
| Z11-56-22 | 0.55  | 0.0604  | 0.0055  | 0.5200  | 0.0366  | 0.0625  | 0.0007  | 0.0025  | 0.0009  | 617 | 134 | 425 | 24 | 391 | 4 | 50 | 18 |
| Z11-56-23 | 0.68  | 0.0598  | 0.0031  | 0.5140  | 0.0271  | 0.0623  | 0.0006  | 0.0052  | 0.0004  | 597 | 99 | 421 | 18 | 390 | 3 | 104 | 8 |
| Z11-56-24 | 0.65  | 0.0560  | 0.0011  | 0.4941  | 0.0083  | 0.0639  | 0.0006  | 0.0318  | 0.0012  | 454 | 22 | 408 | 6 | 400 | 3 | 633 | 23 |
| Z11-56-25 | 0.66  | 0.0551  | 0.0011  | 0.4741  | 0.0102  | 0.0625  | 0.0008  | 0.0116  | 0.0005  | 414 | 27 | 394 | 7 | 391 | 5 | 232 | 10 |
| Z11-56-26 | 0.72  | 0.0568  | 0.0009  | 0.5083  | 0.0079  | 0.0649  | 0.0005  | 0.0113  | 0.0005  | 484 | 20 | 417 | 5 | 405 | 3 | 227 | 9 |
| Z11-57-01 | 0.66  | 0.0546  | 0.0023  | 0.4412  | 0.0185  | 0.0586  | 0.0005  | 0.0170  | 0.0007  | 395 | 80 | 371 | 13 | 367 | 3 | 341 | 15 |
| Z11-57-02 | 0.79  | 0.0574  | 0.0023  | 0.4599  | 0.0186  | 0.0581  | 0.0005  | 0.0201  | 0.0008  | 508 | 74 | 384 | 13 | 364 | 3 | 402 | 16 |
| Z11-57-03 | 0.75  | 0.0570  | 0.0042  | 0.4528  | 0.0335  | 0.0576  | 0.0007  | 0.0231  | 0.0012  | 493 | 145 | 379 | 23 | 361 | 4 | 461 | 24 |
| Z11-57-04 | 1.10  | 0.0564  | 0.0020  | 0.4441  | 0.0161  | 0.0572  | 0.0005  | 0.0183  | 0.0008  | 466 | 64 | 373 | 11 | 358 | 3 | 366 | 15 |
| Z11-57-05 | 0.76  | 0.0544  | 0.0030  | 0.4363  | 0.0239  | 0.0582  | 0.0005  | 0.0176  | 0.0008  | 387 | 108 | 368 | 17 | 365 | 3 | 353 | 15 |
| Z11-57-06 | 0.88  | 0.0586  | 0.0016  | 0.4541  | 0.0118  | 0.0562  | 0.0005  | 0.0188  | 0.0007  | 553 | 42 | 380 | 8 | 352 | 3 | 376 | 15 |
| Z11-57-07 | 1.48  | 0.0562  | 0.0017  | 0.4415  | 0.0137  | 0.0570  | 0.0005  | 0.0194  | 0.0008  | 459 | 53 | 371 | 10 | 357 | 3 | 389 | 15 |
| Z11-57-08 | 1.09  | 0.0553  | 0.0016  | 0.4404  | 0.0130  | 0.0577  | 0.0005  | 0.0193  | 0.0008  | 426 | 50 | 371 | 9 | 362 | 3 | 386 | 15 |
| Z11-57-09 | 0.71  | 0.0544  | 0.0022  | 0.4313  | 0.0179  | 0.0575  | 0.0005  | 0.0177  | 0.0008  | 387 | 78 | 364 | 13 | 361 | 3 | 355 | 15 |
| Z11-57-10 | 0.57  | 0.0561  | 0.0034  | 0.4365  | 0.0271  | 0.0564  | 0.0006  | 0.0198  | 0.0011  | 458 | 121 | 368 | 19 | 354 | 3 | 396 | 22 |
| Z11-57-11 | 0.66  | 0.0538  | 0.0044  | 0.4197  | 0.0351  | 0.0566  | 0.0006  | 0.0210  | 0.0011  | 363 | 170 | 356 | 25 | 355 | 4 | 420 | 21 |
| Z11-57-12 | 0.59  | 0.0593  | 0.0025  | 0.4588  | 0.0204  | 0.0561  | 0.0006  | 0.0224  | 0.0010  | 579 | 79 | 383 | 14 | 352 | 3 | 447 | 20 |
| Z11-57-13 | 1.01  | 0.0552  | 0.0010  | 0.4428  | 0.0078  | 0.0582  | 0.0005  | 0.0155  | 0.0006  | 421 | 25 | 372 | 5 | 364 | 3 | 311 | 12 |
| Z11-57-14 | 0.65  | 0.0547  | 0.0018  | 0.4343  | 0.0144  | 0.0576  | 0.0005  | 0.0183  | 0.0007  | 399 | 58 | 366 | 10 | 361 | 3 | 366 | 15 |
| Z11-57-15 | 0.70  | 0.0561  | 0.0015  | 0.4598  | 0.0123  | 0.0594  | 0.0005  | 0.0185  | 0.0007  | 458 | 45 | 384 | 9 | 372 | 3 | 371 | 14 |
| Z11-57-16 | 1.11  | 0.0562  | 0.0027  | 0.4381  | 0.0213  | 0.0566  | 0.0005  | 0.0186  | 0.0008  | 459 | 92 | 369 | 15 | 355 | 3 | 372 | 15 |
| Z11-57-17 | 0.72  | 0.0556  | 0.0017  | 0.4511  | 0.0135  | 0.0589  | 0.0005  | 0.0196  | 0.0008  | 436 | 52 | 378 | 9 | 369 | 3 | 393 | 15 |
| Z11-57-18 | 1.63  | 0.0577  | 0.0010  | 0.4606  | 0.0081  | 0.0579  | 0.0005  | 0.0161  | 0.0006  | 517 | 24 | 385 | 6 | 363 | 3 | 324 | 12 |
| Z11-57-19 | 0.92  | 0.0537  | 0.0022  | 0.4237  | 0.0173  | 0.0572  | 0.0005  | 0.0182  | 0.0008  | 360 | 76 | 359 | 12 | 359 | 3 | 365 | 15 |
| Z11-57-20 | 0.69  | 0.0559  | 0.0017  | 0.4339  | 0.0131  | 0.0563  | 0.0005  | 0.0202  | 0.0009  | 448 | 52 | 366 | 9 | 353 | 3 | 404 | 17 |
| Z11-57-21 | 0.65  | 0.0546  | 0.0016  | 0.4247  | 0.0127  | 0.0564  | 0.0005  | 0.0179  | 0.0007  | 395 | 53 | 359 | 9 | 354 | 3 | 359 | 15 |
| Z11-57-22 | 1.10  | 0.0557  | 0.0018  | 0.4479  | 0.0149  | 0.0583  | 0.0005  | 0.0184  | 0.0007  | 441 | 59 | 376 | 10 | 365 | 3 | 369 | 14 |
| Z11-57-23 | 1.71  | 0.0561  | 0.0016  | 0.4375  | 0.0125  | 0.0566  | 0.0005  | 0.0165  | 0.0006  | 456 | 49 | 368 | 9 | 355 | 3 | 331 | 12 |
| Z11-57-24 | 0.67  | 0.0583  | 0.0011  | 0.4541  | 0.0091  | 0.0565  | 0.0005  | 0.0200  | 0.0009  | 542 | 30 | 380 | 6 | 354 | 3 | 400 | 17 |
| Z11-57-25 | 0.90  | 0.0562  | 0.0020  | 0.4358  | 0.0155  | 0.0562  | 0.0005  | 0.0170  | 0.0007  | 462 | 64 | 367 | 11 | 353 | 3 | 342 | 13 |
| Z11-57-26 | 1.16  | 0.0584  | 0.0014  | 0.4525  | 0.0114  | 0.0562  | 0.0005  | 0.0175  | 0.0007  | 543 | 41 | 379 | 8 | 353 | 3 | 351 | 14 |
| Z11-57-27 | 1.06  | 0.0554  | 0.0026  | 0.4318  | 0.0199  | 0.0565  | 0.0005  | 0.0146  | 0.0006  | 429 | 87 | 364 | 14 | 354 | 3 | 293 | 12 |
| Z12-95-01 | 0.78  | 0.0520  | 0.0022  | 0.4050  | 0.0163  | 0.0565  | 0.0011  | 0.0148  | 0.0004  | 283 | 57 | 345 | 12 | 355 | 7 | 297 | 8 |
| Z12-95-02 | 0.64  | 0.0533  | 0.0020  | 0.4053  | 0.0145  | 0.0552  | 0.0010  | 0.0156  | 0.0004  | 341 | 48 | 346 | 11 | 346 | 6 | 312 | 7 |
| Z12-95-03 | 0.60  | 0.0535  | 0.0029  | 0.4155  | 0.0219  | 0.0563  | 0.0012  | 0.0167  | 0.0006  | 350 | 82 | 353 | 16 | 353 | 7 | 336 | 11 |
| Z12-95-05 | 0.70  | 0.0545  | 0.0022  | 0.4199  | 0.0157  | 0.0558  | 0.0011  | 0.0149  | 0.0004  | 393 | 50 | 356 | 11 | 350 | 6 | 299 | 8 |
| Z12-95-06 | 0.57  | 0.0530  | 0.0046  | 0.4161  | 0.0345  | 0.0569  | 0.0015  | 0.0166  | 0.0009  | 330 | 139 | 353 | 25 | 357 | 9 | 332 | 18 |
| Z12-95-07 | 0.19  | 0.0518  | 0.0019  | 0.4065  | 0.0139  | 0.0569  | 0.0011  | 0.0161  | 0.0006  | 278 | 45 | 346 | 10 | 357 | 6 | 322 | 11 |
| Z12-95-08 | 0.56  | 0.0534  | 0.0016  | 0.4160  | 0.0115  | 0.0565  | 0.0010  | 0.0170  | 0.0003  | 347 | 32 | 353 | 8 | 354 | 6 | 341 | 7 |
| Z12-95-09 | 0.65  | 0.0531  | 0.0025  | 0.4062  | 0.0183  | 0.0555  | 0.0011  | 0.0161  | 0.0005  | 333 | 67 | 346 | 13 | 348 | 7 | 324 | 9 |
| Z12-95-10 | 0.48  | 0.0532  | 0.0019  | 0.4087  | 0.0137  | 0.0557  | 0.0010  | 0.0171  | 0.0004  | 337 | 44 | 348 | 10 | 350 | 6 | 342 | 8 |
| Z12-95-11 | 0.35  | 0.0532  | 0.0028  | 0.4182  | 0.0207  | 0.0570  | 0.0012  | 0.0192  | 0.0009  | 339 | 75 | 355 | 15 | 357 | 7 | 385 | 18 |
| Z12-95-12 | 0.81  | 0.0534  | 0.0021  | 0.4129  | 0.0152  | 0.0561  | 0.0011  | 0.0172  | 0.0004  | 345 | 49 | 351 | 11 | 352 | 7 | 344 | 8 |
| Z12-95-13 | 0.45  | 0.0533  | 0.0029  | 0.4170  | 0.0214  | 0.0567  | 0.0012  | 0.0176  | 0.0006  | 343 | 79 | 354 | 15 | 356 | 7 | 352 | 13 |
| Z12-95-14 | 0.50  | 0.0530  | 0.0017  | 0.4081  | 0.0124  | 0.0558  | 0.0010  | 0.0167  | 0.0004  | 331 | 38 | 347 | 9 | 350 | 6 | 336 | 8 |
| Z12-95-15 | 0.56  | 0.0524  | 0.0015  | 0.4047  | 0.0109  | 0.0560  | 0.0010  | 0.0153  | 0.0003  | 304 | 31 | 345 | 8 | 351 | 6 | 308 | 6 |
| Z12-95-16 | 0.56  | 0.0534  | 0.0018  | 0.4132  | 0.0132  | 0.0561  | 0.0010  | 0.0169  | 0.0004  | 347 | 40 | 351 | 9 | 352 | 6 | 340 | 8 |
| Z12-95-17 | 0.39  | 0.0536  | 0.0018  | 0.4115  | 0.0125  | 0.0557  | 0.0010  | 0.0168  | 0.0004  | 353 | 37 | 350 | 9 | 350 | 6 | 337 | 8 |
| Z12-95-19 | 0.53  | 0.0536  | 0.0021  | 0.4135  | 0.0149  | 0.0560  | 0.0011  | 0.0177  | 0.0005  | 353 | 48 | 351 | 11 | 351 | 7 | 355 | 9 |
| Z12-95-20 | 0.47  | 0.0541  | 0.0020  | 0.4174  | 0.0143  | 0.0560  | 0.0010  | 0.0176  | 0.0005  | 374 | 44 | 354 | 10 | 351 | 6 | 352 | 9 |
| Z12-95-21 | 0.57  | 0.0527  | 0.0024  | 0.4050  | 0.0172  | 0.0557  | 0.0011  | 0.0180  | 0.0005  | 318 | 61 | 345 | 12 | 349 | 7 | 360 | 10 |
| Z12-95-23 | 0.51  | 0.0525  | 0.0022  | 0.4037  | 0.0162  | 0.0558  | 0.0011  | 0.0170  | 0.0005  | 306 | 56 | 344 | 12 | 350 | 7 | 341 | 10 |
| Z12-95-24 | 0.20  | 0.0553  | 0.0017  | 0.4243  | 0.0119  | 0.0557  | 0.0010  | 0.0185  | 0.0006  | 425 | 32 | 359 | 8 | 349 | 6 | 371 | 12 |
| Z12-95-25 | 0.74  | 0.0554  | 0.0044  | 0.4247  | 0.0328  | 0.0556  | 0.0014  | 0.0172  | 0.0007  | 429 | 128 | 359 | 23 | 349 | 8 | 344 | 14 |
| Z12-95-26 | 0.25  | 0.0542  | 0.0025  | 0.4167  | 0.0179  | 0.0558  | 0.0011  | 0.0189  | 0.0007  | 379 | 61 | 354 | 13 | 350 | 7 | 379 | 14 |
| Z12-95-27 | 0.51  | 0.0560  | 0.0021  | 0.4365  | 0.0152  | 0.0565  | 0.0011  | 0.0176  | 0.0005  | 453 | 44 | 368 | 11 | 354 | 7 | 353 | 9 |
| Z12-95-29 | 0.95  | 0.0520  | 0.0032  | 0.4068  | 0.0240  | 0.0568  | 0.0012  | 0.0172  | 0.0005  | 285 | 97 | 347 | 17 | 356 | 7 | 344 | 10 |
| Z12-95-30 | 0.32  | 0.0541  | 0.0016  | 0.4184  | 0.0114  | 0.0561  | 0.0010  | 0.0171  | 0.0004  | 376 | 31 | 355 | 8 | 352 | 6 | 344 | 8 |

附表2 扎兰屯南部花岗质糜棱岩主量元素(%)、微量元素和稀土元素(10-6)分析结果

Table 2 Major elements (%)，trace and REE elements (10-6) data of the ranitic myronites from southern Zhalantun area

|  |  |  |
| --- | --- | --- |
| 时代 | 泥盆纪 | 石炭纪 |
| 晚泥盆世 | 早泥盆世 | 早石炭世初 |
| 年龄(Ma) | 365.7±1.5 | 398.8±2.7 | 358.0±1.6 | 358.4±2.7 |  |  | 351.6±8.5 |
| 送样号 | Z10-35 | Z11-56 | Z10-15 | Z11-57 | Z12-85 | Z12-94 | Z12-95 |
| SiO2 | 74.60 | 76.56 | 72.60 | 73.70 | 77.90 | 72.80 | 68.20 |
| TiO2 | 0.34 | 0.18 | 0.32 | 0.26 | 0.14 | 0.27 | 0.57 |
| Al2O3 | 13.20 | 12.24 | 13.90 | 13.34 | 11.60 | 14.40 | 15.20 |
| Fe2O3 | 0.77 | 0.88 | 1.26 | 1.04 | 0.67 | 0.29 | 0.95 |
| FeO | 0.95 | 0.43 | 0.98 | 0.38 | 0.60 | 1.17 | 2.49 |
| MnO | 0.07 | 0.11 | 0.08 | 0.07 | 0.06 | 0.08 | 0.12 |
| MgO | 0.44 | 0.27 | 0.56 | 0.61 | 0.22 | 0.48 | 0.97 |
| CaO | 1.25 | 0.37 | 0.94 | 1.15 | 0.46 | 0.98 | 2.18 |
| Na2O | 4.52 | 3.81 | 4.56 | 4.26 | 3.31 | 3.86 | 4.95 |
| K2O | 2.81 | 4.03 | 3.56 | 3.68 | 4.62 | 4.72 | 3.01 |
| P2O5 | 0.06 | 0.03 | 0.07 | 0.05 | 0.06 | 0.11 | 0.22 |
| LOS | 1.12 | 1.08 | 1.14 | 1.58 | 0.32 | 0.80 | 0.83 |
| Total | 100.12 | 99.99 | 99.97 | 100.12 | 99.96 | 99.96 | 99.69 |
| A/CNK | 1.04 | 1.08 | 1.06 | 1.02 | 1.03 | 1.09 | 0.99 |
| A/NK | 1.80 | 1.56 | 1.71 | 1.68 | 1.46 | 1.68 | 1.91 |
| Fe2O3T | 1.83 | 1.36 | 2.35 | 1.46 | 1.34 | 1.59 | 3.72 |
| FeOT | 1.64 | 1.22 | 2.11 | 1.32 | 1.20 | 1.43 | 3.34 |
| AR | 3.06 | 4.29 | 3.42 | 3.42 | 4.84 | 3.52 | 2.69 |
| Mg# | 0.32 | 0.28 | 0.32 | 0.45 | 0.25 | 0.37 | 0.34 |
| R1 | 2646.42 | 2760.88 | 2310.01 | 2487.63 | 2891.35 | 2323.04 | 1963.20 |
| R2 | 414.50 | 293.08 | 401.02 | 414.98 | 287.67 | 411.14 | 579.53 |
| La | 29.60 | 26.36 | 16.00 | 34.13 | 23.40 | 25.40 | 24.40 |
| Ce | 51.90 | 49.22 | 30.80 | 78.58 | 37.30 | 36.90 | 45.50 |
| Pr | 6.14 | 5.77 | 3.63 | 9.97 | 5.30 | 5.91 | 7.18 |
| Nd | 21.60 | 22.02 | 13.40 | 38.79 | 17.70 | 21.20 | 29.50 |
| Sm | 3.67 | 4.11 | 2.60 | 9.63 | 3.51 | 3.86 | 6.51 |
| Eu | 0.80 | 0.85 | 0.70 | 0.71 | 0.22 | 0.68 | 1.39 |
| Gd | 3.20 | 3.18 | 2.34 | 7.39 | 2.93 | 3.28 | 6.11 |
| Tb | 0.51 | 0.49 | 0.43 | 1.27 | 0.51 | 0.56 | 1.03 |
| Dy | 3.08 | 2.82 | 2.61 | 7.81 | 3.08 | 3.29 | 6.18 |
| Ho | 0.65 | 0.56 | 0.56 | 1.67 | 0.63 | 0.70 | 1.30 |
| Er | 1.89 | 1.48 | 1.72 | 5.03 | 1.90 | 2.09 | 3.85 |
| Tm | 0.29 | 0.24 | 0.28 | 0.81 | 0.31 | 0.32 | 0.56 |
| Yb | 1.89 | 1.65 | 1.96 | 4.86 | 2.13 | 2.20 | 3.80 |
| Lu | 0.28 | 0.23 | 0.32 | 0.71 | 0.37 | 0.38 | 0.61 |
| Y | 17.70 | 15.04 | 15.40 | 46.35 | 15.70 | 17.80 | 33.60 |
| LREE | 113.71 | 108.33 | 67.13 | 171.81 | 87.43 | 93.95 | 114.48 |
| HREE | 11.79 | 10.65 | 10.22 | 29.55 | 11.86 | 12.82 | 23.44 |
| LREE/HREE | 9.64 | 10.17 | 6.57 | 5.81 | 7.37 | 7.33 | 4.88 |
| REE | 125.50 | 118.98 | 77.35 | 201.36 | 99.29 | 106.77 | 137.92 |
| (La/Yb)N | 10.56 | 10.77 | 5.50 | 4.73 | 7.41 | 7.78 | 4.33 |
| (La/Sm)N | 5.07 | 4.03 | 3.87 | 2.23 | 4.19 | 4.14 | 2.36 |
| (Ce/Yb)N | 7.10 | 7.72 | 4.06 | 4.18 | 4.53 | 4.34 | 3.10 |
| δEu | 0.11 | 0.10 | 0.13 | 0.04 | 0.03 | 0.09 | 0.11 |
| δCe | 0.88 | 0.92 | 0.94 | 1.01 | 0.78 | 0.70 | 0.82 |
| Rb | 61.00 | 115.10 | 64.60 | 127.20 | 124.00 | 104.40 | 54.30 |
| Ba | 787.00 | 405.80 | 850.00 | 943.10 | 198.00 | 677.00 | 1100.00 |
| Th | 6.20 | 17.07 | 5.94 | 9.76 | 14.00 | 13.00 | 5.55 |
| U | 2.32 | 1.96 | 1.21 | 1.78 | 1.79 | 3.06 | 2.05 |
| K | 23327.18 | 33454.99 | 29553.29 | 30549.47 | 38352.87 | 39183.01 | 24987.47 |
| Nb | 14.00 | 8.76 | 8.92 | 8.28 | 25.50 | 12.20 | 20.50 |
| Ta | 0.98 | 0.45 | 0.49 | 1.01 | 3.50 | 1.14 | 1.15 |
| La | 29.60 | 26.36 | 16.00 | 34.13 | 23.40 | 25.40 | 24.40 |
| Ce | 51.90 | 49.22 | 30.80 | 78.58 | 37.30 | 36.90 | 45.50 |
| Sr | 266.00 | 103.00 | 194.00 | 212.00 | 66.00 | 193.10 | 325.60 |
| Nd | 21.60 | 22.02 | 13.40 | 38.79 | 17.70 | 21.20 | 29.50 |
| P | 240.01 | 130.91 | 322.92 | 218.19 | 261.83 | 480.02 | 960.04 |
| Sm | 3.67 | 4.11 | 2.60 | 9.63 | 3.51 | 3.86 | 6.51 |
| Zr | 199.00 | 156.30 | 164.00 | 138.40 | 129.00 | 176.00 | 255.00 |
| Hf | 5.46 | 8.04 | 5.05 | 3.55 | 5.14 | 5.62 | 7.54 |
| Ti | 2037.79 | 1078.83 | 1917.92 | 1558.31 | 839.09 | 1618.24 | 3416.29 |
| Tb | 0.51 | 0.49 | 0.43 | 1.27 | 0.51 | 0.56 | 1.03 |
| Y | 17.70 | 15.04 | 15.40 | 46.35 | 15.70 | 17.80 | 33.60 |
| Mo | 0.73 | 0.30 | 0.47 | 0.20 | 0.46 | 0.35 | 0.52 |
| Cr | 12.40 | 4.50 | 13.50 | 1.90 | 5.05 | 13.38 | 8.08 |
| Pb | 26.00 | 29.10 | 20.60 | 9.63 | 25.94 | 24.40 | 17.81 |
| Cu | 16.20 | 7.92 | 4.06 | 3.69 | 2.12 | 5.53 | 9.89 |
| Zn | 31.50 | 40.10 | 47.00 | 27.70 | 22.97 | 31.59 | 48.69 |
| Ga |  |  |  |  | 13.90 | 15.80 | 18.60 |
| Al | 69857.98 | 64777.40 | 73562.57 | 70598.90 | 61390.35 | 76208.71 | 80442.53 |