|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplementary Table S1. Zircon Hf isotopic analyses from Permian-Triassic granite from the Duobagou area. | | | | | | | | | | | |
| Sample | t | 176Yb/177Hf | 176Lu/177Hf | 2σ | 176Hf/177Hf | 2σ | εHf(0) | εHf(t) | TDM1 | fLu/Hf | TDM2 |
| spot | (Ma) |  |  |  |  |  |  |  | (Ma) |  | (Ma) |
| 16DBG04 |  |  |  |  |  |  |  |  |  |  |  |
| 2 | 250 | 0.053706 | 0.001452 | 0.000006 | 0.282729 | 0.000014 | -1.5 | 3.7 | 750 | -0.96 | 1091 |
| 3 | 250 | 0.024330 | 0.000679 | 0.000004 | 0.282660 | 0.000018 | -4.0 | 1.4 | 831 | -0.98 | 1228 |
| 5 | 244 | 0.034954 | 0.000992 | 0.000001 | 0.282727 | 0.000017 | -1.6 | 3.6 | 744 | -0.97 | 1085 |
| 7 | 245 | 0.040518 | 0.001320 | 0.000012 | 0.282684 | 0.000013 | -3.1 | 2.1 | 811 | -0.96 | 1198 |
| 8 | 246 | 0.028702 | 0.000961 | 0.000026 | 0.282658 | 0.000019 | -4.0 | 1.2 | 840 | -0.97 | 1246 |
| 9 | 256 | 0.037906 | 0.000999 | 0.000016 | 0.282718 | 0.000013 | -1.9 | 3.5 | 757 | -0.97 | 1098 |
| 10 | 247 | 0.022237 | 0.000689 | 0.000004 | 0.282657 | 0.000015 | -4.1 | 1.2 | 836 | -0.98 | 1238 |
| 11 | 243 | 0.025308 | 0.000724 | 0.000022 | 0.282650 | 0.000020 | -4.3 | 0.9 | 846 | -0.98 | 1258 |
| 12 | 247 | 0.063794 | 0.002072 | 0.000005 | 0.282666 | 0.000011 | -3.7 | 1.3 | 854 | -0.94 | 1268 |
| 13 | 243 | 0.036694 | 0.001034 | 0.000010 | 0.282732 | 0.000019 | -1.4 | 3.8 | 737 | -0.97 | 1075 |
| 14 | 246 | 0.039887 | 0.001281 | 0.000035 | 0.282728 | 0.000022 | -1.6 | 3.6 | 748 | -0.96 | 1090 |
| 15 | 248 | 0.031327 | 0.000854 | 0.000003 | 0.282710 | 0.000015 | -2.2 | 3.1 | 765 | -0.97 | 1118 |
| 16 | 243 | 0.048978 | 0.001330 | 0.000019 | 0.282640 | 0.000017 | -4.7 | 0.5 | 874 | -0.96 | 1305 |
| 18 | 248 | 0.043640 | 0.001215 | 0.000011 | 0.282655 | 0.000021 | -4.1 | 1.1 | 850 | -0.96 | 1261 |
| 19 | 247 | 0.043371 | 0.001201 | 0.000015 | 0.282665 | 0.000020 | -3.8 | 1.4 | 836 | -0.96 | 1237 |
| 20 | 249 | 0.056042 | 0.001623 | 0.000022 | 0.282678 | 0.000016 | -3.3 | 1.9 | 827 | -0.95 | 1220 |
| 21 | 246 | 0.045498 | 0.001237 | 0.000003 | 0.282699 | 0.000019 | -2.6 | 2.6 | 788 | -0.96 | 1158 |
| 22 | 244 | 0.040456 | 0.001321 | 0.000040 | 0.282692 | 0.000017 | -2.8 | 2.3 | 800 | -0.96 | 1179 |
| 23 | 244 | 0.060757 | 0.001585 | 0.000017 | 0.282692 | 0.000019 | -2.8 | 2.3 | 806 | -0.95 | 1189 |
| 24 | 247 | 0.027858 | 0.000726 | 0.000005 | 0.282677 | 0.000016 | -3.4 | 1.9 | 809 | -0.98 | 1192 |
| 25 | 250 | 0.029944 | 0.000827 | 0.000004 | 0.282671 | 0.000016 | -3.6 | 1.8 | 819 | -0.98 | 1208 |
| 26 | 245 | 0.038292 | 0.001135 | 0.000002 | 0.282701 | 0.000015 | -2.5 | 2.7 | 783 | -0.97 | 1151 |
| 27 | 242 | 0.021997 | 0.000616 | 0.000003 | 0.282672 | 0.000019 | -3.5 | 1.7 | 813 | -0.98 | 1203 |
| 28 | 247 | 0.038255 | 0.001067 | 0.000028 | 0.282681 | 0.000017 | -3.2 | 2.0 | 810 | -0.97 | 1194 |
| 30 | 248 | 0.042151 | 0.001263 | 0.000006 | 0.282703 | 0.000016 | -2.4 | 2.8 | 783 | -0.96 | 1148 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| 16DBG06 |  |  |  |  |  |  |  |  |  |  |  |
| 2 | 277 | 0.035049 | 0.001077 | 0.000011 | 0.282576 | 0.000022 | -6.9 | -1.0 | 959 | -0.97 | 1424 |
| 3 | 275 | 0.031693 | 0.000981 | 0.000020 | 0.282544 | 0.000017 | -8.1 | -2.2 | 1001 | -0.97 | 1497 |
| 5 | 275 | 0.018971 | 0.001032 | 0.000094 | 0.282598 | 0.000027 | -6.2 | -0.3 | 926 | -0.97 | 1371 |
| 6 | 277 | 0.035489 | 0.001068 | 0.000005 | 0.282602 | 0.000014 | -6.0 | -0.1 | 922 | -0.97 | 1362 |
| 8 | 278 | 0.028309 | 0.000904 | 0.000001 | 0.282626 | 0.000013 | -5.2 | 0.8 | 884 | -0.97 | 1298 |
| 10 | 272 | 0.041264 | 0.001310 | 0.000012 | 0.282506 | 0.000021 | -9.4 | -3.7 | 1064 | -0.96 | 1604 |
| 11 | 272 | 0.019443 | 0.000627 | 0.000014 | 0.282527 | 0.000017 | -8.7 | -2.8 | 1016 | -0.98 | 1523 |
| 12 | 276 | 0.039282 | 0.001229 | 0.000006 | 0.282597 | 0.000017 | -6.2 | -0.3 | 933 | -0.96 | 1381 |
| 13 | 275 | 0.015116 | 0.000484 | 0.000010 | 0.282576 | 0.000018 | -6.9 | -1.0 | 944 | -0.99 | 1401 |
| 17 | 278 | 0.031906 | 0.000976 | 0.000008 | 0.282549 | 0.000017 | -7.9 | -2.0 | 994 | -0.97 | 1483 |
| 18 | 277 | 0.032912 | 0.001013 | 0.000013 | 0.282538 | 0.000017 | -8.3 | -2.4 | 1010 | -0.97 | 1511 |
| 19 | 276 | 0.022921 | 0.000719 | 0.000005 | 0.282548 | 0.000015 | -7.9 | -2.0 | 989 | -0.98 | 1475 |
| 20 | 277 | 0.031720 | 0.000943 | 0.000020 | 0.282486 | 0.000016 | -10.1 | -4.2 | 1081 | -0.97 | 1631 |
| 21 | 275 | 0.022593 | 0.000725 | 0.000004 | 0.282557 | 0.000016 | -7.6 | -1.7 | 976 | -0.98 | 1455 |
| 24 | 272 | 0.022132 | 0.000695 | 0.000002 | 0.282455 | 0.000016 | -11.2 | -5.4 | 1118 | -0.98 | 1695 |
| 25 | 276 | 0.030680 | 0.000964 | 0.000004 | 0.282515 | 0.000016 | -9.1 | -3.2 | 1041 | -0.97 | 1564 |
| 26 | 276 | 0.028969 | 0.000932 | 0.000004 | 0.282498 | 0.000014 | -9.7 | -3.8 | 1064 | -0.97 | 1602 |
| 27 | 280 | 0.035298 | 0.001088 | 0.000005 | 0.282493 | 0.000014 | -9.9 | -3.9 | 1076 | -0.97 | 1619 |
| 28 | 277 | 0.039270 | 0.001337 | 0.000041 | 0.282483 | 0.000017 | -10.2 | -4.4 | 1097 | -0.96 | 1656 |
| 29 | 275 | 0.030553 | 0.000905 | 0.000024 | 0.282469 | 0.000018 | -10.7 | -4.8 | 1104 | -0.97 | 1670 |
| 30 | 277 | 0.034649 | 0.000954 | 0.000022 | 0.282660 | 0.000015 | -4.0 | 2.0 | 837 | -0.97 | 1220 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| 16DBG10 |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 279 | 0.036041 | 0.001034 | 0.000005 | 0.282637 | 0.000015 | -4.8 | 1.2 | 872 | -0.97 | 1276 |
| 3 | 273 | 0.056201 | 0.001785 | 0.000064 | 0.282619 | 0.000015 | -5.4 | 0.3 | 915 | -0.95 | 1353 |
| 5 | 277 | 0.033725 | 0.001028 | 0.000005 | 0.282604 | 0.000016 | -5.9 | 0.0 | 918 | -0.97 | 1355 |
| 6 | 274 | 0.035280 | 0.001038 | 0.000007 | 0.282653 | 0.000018 | -4.2 | 1.6 | 849 | -0.97 | 1241 |
| 7 | 273 | 0.028395 | 0.000955 | 0.000015 | 0.282694 | 0.000017 | -2.8 | 3.1 | 789 | -0.97 | 1142 |
| 9 | 275 | 0.037757 | 0.001133 | 0.000012 | 0.282664 | 0.000014 | -3.8 | 2.0 | 836 | -0.97 | 1218 |
| 11 | 276 | 0.040337 | 0.001165 | 0.000021 | 0.282676 | 0.000013 | -3.4 | 2.5 | 819 | -0.96 | 1190 |
| 12 | 272 | 0.018496 | 0.000538 | 0.000009 | 0.282581 | 0.000015 | -6.8 | -0.9 | 938 | -0.98 | 1393 |
| 15 | 274 | 0.028847 | 0.000863 | 0.000005 | 0.282608 | 0.000015 | -5.8 | 0.1 | 908 | -0.97 | 1341 |
| 16 | 270 | 0.037720 | 0.001164 | 0.000015 | 0.282625 | 0.000018 | -5.2 | 0.5 | 892 | -0.96 | 1316 |
| 17 | 273 | 0.037699 | 0.001194 | 0.000022 | 0.282620 | 0.000015 | -5.4 | 0.4 | 899 | -0.96 | 1327 |
| 20 | 271 | 0.023382 | 0.000725 | 0.000009 | 0.282617 | 0.000015 | -5.5 | 0.3 | 892 | -0.98 | 1317 |
| 24 | 273 | 0.032653 | 0.001036 | 0.000017 | 0.282605 | 0.000014 | -5.9 | -0.1 | 917 | -0.97 | 1356 |
| *Note:* TDM is depleted mantle model age. εHf(t) = [({176Hf/177Hf}S – {176Lu/177Hf}S × {eλt – 1})/({176Hf/177Hf}CHUR,0 – {176Lu/177Hf}CHUR × {eλt – 1}) – 1] × 10,000; TDM1(Hf) = 1/λ × ln[1 + ({176Hf/177Hf}S – {176Hf/177Hf}DM)/({176Lu/177Hf}S – {176Lu/177Hf}DM)]; TDM2(Hf) = TDM1(Hf) – [TDM1(Hf) – t][(fCC – fs)/(fCC – fDM)]; TDMc = (1/k) – ln[1+ (176Hf/177HfDM – 176Hf/177HfS)/(176Lu/177HfDM – 176Lu/177HfS)]; fLu/Hf = (176Lu/177Hf)S/(176Hf/177Hf)CHUR – 1; where fCC, fS, and fDM are the fLu/Hf values of the continental crust, sample, and the depleted mantle; t = crystallization age of zircon; subscript S = analyzed sample; CHUR = chondritic uniform reservoir. | | | | | | | | | | | |