

Table S1 LA-ICP-MS zircon U-Pb dating results for the intrusive rocks (DBT01, DBT02, XLT01 and SQT01) in Ulanhot area.

| Analysis | | Isotopic ratios | | | | | | Apparent ages (Ma) | | | |
|----------|------|-----------------|-------------------------------------|---------|-------------------------------------|---------|-------------------------------------|--------------------|-------------------------------------|-------|-------------------------------------|
| | | Th/U | ²⁰⁶ Pb/ ²³⁸ U | 1σ | ²⁰⁷ Pb/ ²³⁵ U | 1σ | ²⁰⁷ Pb/ ²⁰⁶ U | 1σ | ²⁰⁶ Pb/ ²³⁸ U | 1σ | ²⁰⁷ Pb/ ²³⁵ U |
| DBT01 | | | | | | | | | | | |
| DBT01-1 | 0.45 | 0.01949 | 0.00025 | 0.13181 | 0.00336 | 0.04285 | 0.00099 | 124.5 | 1.61 | 125.7 | 3.02 |
| DBT01-2 | 0.62 | 0.01981 | 0.00026 | 0.13392 | 0.00348 | 0.0423 | 0.00099 | 126.5 | 1.64 | 127.6 | 3.12 |
| DBT01-3 | 0.68 | 0.01972 | 0.00025 | 0.13078 | 0.00222 | 0.04511 | 0.00065 | 125.9 | 1.58 | 124.8 | 2 |
| DBT01-4 | 0.62 | 0.02102 | 0.00027 | 0.14134 | 0.0027 | 0.04489 | 0.00074 | 134.1 | 1.69 | 134.2 | 2.4 |
| DBT01-5 | 0.64 | 0.01958 | 0.00025 | 0.13407 | 0.00255 | 0.04834 | 0.0008 | 125 | 1.59 | 127.8 | 2.29 |
| DBT01-6 | 0.67 | 0.02009 | 0.00026 | 0.13537 | 0.00239 | 0.04634 | 0.0007 | 128.2 | 1.62 | 128.9 | 2.14 |
| DBT01-7 | 0.59 | 0.02081 | 0.00027 | 0.13931 | 0.00249 | 0.04598 | 0.0007 | 132.7 | 1.68 | 132.4 | 2.22 |
| DBT01-8 | 0.51 | 0.01829 | 0.00024 | 0.1234 | 0.00297 | 0.04963 | 0.00109 | 116.8 | 1.52 | 118.1 | 2.69 |
| DBT01-9 | 0.71 | 0.02124 | 0.00028 | 0.1425 | 0.00358 | 0.04692 | 0.00107 | 135.5 | 1.76 | 135.3 | 3.18 |
| DBT01-10 | 0.70 | 0.01944 | 0.00025 | 0.13135 | 0.00266 | 0.0504 | 0.0009 | 124.1 | 1.59 | 125.3 | 2.38 |
| DBT01-11 | 0.49 | 0.01964 | 0.00026 | 0.13194 | 0.003 | 0.04711 | 0.00097 | 125.4 | 1.62 | 125.8 | 2.69 |
| DBT01-12 | 0.86 | 0.01953 | 0.00025 | 0.13077 | 0.00237 | 0.04963 | 0.00079 | 124.7 | 1.59 | 124.8 | 2.13 |
| DBT01-13 | 0.47 | 0.01969 | 0.00026 | 0.13379 | 0.00272 | 0.04901 | 0.00088 | 125.7 | 1.62 | 127.5 | 2.44 |
| DBT01-14 | 0.63 | 0.01996 | 0.00026 | 0.13284 | 0.00314 | 0.0432 | 0.00093 | 127.4 | 1.65 | 126.6 | 2.81 |
| DBT01-15 | 0.45 | 0.01983 | 0.00026 | 0.13441 | 0.0025 | 0.05065 | 0.00083 | 126.6 | 1.62 | 128.1 | 2.24 |
| DBT01-16 | 0.57 | 0.02613 | 0.00036 | 0.17791 | 0.00563 | 0.05222 | 0.00152 | 166.3 | 2.23 | 166.3 | 4.85 |
| DBT01-17 | 0.58 | 0.01905 | 0.00025 | 0.12716 | 0.00273 | 0.04699 | 0.00091 | 121.6 | 1.58 | 121.5 | 2.46 |
| DBT01-18 | 0.65 | 0.02084 | 0.00027 | 0.13685 | 0.00258 | 0.04778 | 0.0008 | 132.9 | 1.71 | 130.2 | 2.31 |
| DBT01-19 | 0.77 | 0.01941 | 0.00026 | 0.1296 | 0.00424 | 0.05248 | 0.00162 | 123.9 | 1.67 | 123.7 | 3.81 |
| DBT01-20 | 0.74 | 0.02056 | 0.00027 | 0.13782 | 0.00263 | 0.05204 | 0.00088 | 131.2 | 1.69 | 131.1 | 2.35 |
| DBT01-21 | 0.85 | 0.02059 | 0.00027 | 0.13767 | 0.00245 | 0.04821 | 0.00075 | 131.4 | 1.68 | 131 | 2.19 |

| Analysis | Isotopic ratios | | | | | | | Apparent ages (Ma) | | | | |
|----------|-----------------|------|-------------------------------------|---------|-------------------------------------|---------|-------------------------------------|--------------------|-------------------------------------|------|-------------------------------------|-------|
| | Spot | Th/U | ²⁰⁶ Pb/ ²³⁸ U | 1σ | ²⁰⁷ Pb/ ²³⁵ U | 1σ | ²⁰⁷ Pb/ ²⁰⁶ U | 1σ | ²⁰⁶ Pb/ ²³⁸ U | 1σ | ²⁰⁷ Pb/ ²³⁵ U | 1σ |
| | DBT01-22 | 0.60 | 0.02665 | 0.00035 | 0.20598 | 0.00482 | 0.05608 | 0.00115 | 169.5 | 2.23 | 190.2 | 4.06 |
| | DBT01-23 | 0.62 | 0.01928 | 0.00026 | 0.09017 | 0.00283 | 0.03561 | 0.00106 | 123.1 | 1.62 | 87.7 | 2.63 |
| | DBT01-24 | 0.44 | 0.02015 | 0.00027 | 0.13279 | 0.00436 | 0.04604 | 0.00142 | 128.6 | 1.73 | 126.6 | 3.91 |
| | DBT01-25 | 0.79 | 0.01955 | 0.00026 | 0.13149 | 0.00283 | 0.04878 | 0.00095 | 124.8 | 1.63 | 125.4 | 2.54 |
| DBT02 | | | | | | | | | | | | |
| | DBT02-1 | 0.64 | 0.03528 | 0.00042 | 2.30505 | 0.03421 | 0.53185 | 0.00643 | 223.5 | 2.62 | 1213.8 | 14.76 |
| | DBT02-2 | 0.76 | 0.01557 | 0.00021 | 0.10473 | 0.006 | 0.04674 | 0.00262 | 99.6 | 1.31 | 101.1 | 2.36 |
| | DBT02-3 | 0.45 | 0.01981 | 0.00026 | 0.10666 | 0.00523 | 0.0444 | 0.00212 | 126.5 | 1.62 | 102.9 | 2.7 |
| | DBT02-4 | 0.39 | 0.02015 | 0.00024 | 0.13601 | 0.00269 | 0.05158 | 0.00094 | 128.6 | 1.54 | 129.5 | 1.72 |
| | DBT02-5 | 0.87 | 0.04251 | 0.00052 | 0.32295 | 0.00656 | 0.05822 | 0.00103 | 268.4 | 3.2 | 284.2 | 3.24 |
| | DBT02-6 | 0.53 | 0.02014 | 0.00028 | 0.43006 | 0.01191 | 0.17692 | 0.0043 | 128.6 | 1.76 | 363.2 | 5.37 |
| | DBT02-7 | 0.99 | 0.04323 | 0.00052 | 0.30296 | 0.00481 | 0.05474 | 0.00075 | 272.8 | 3.23 | 268.7 | 3.14 |
| | DBT02-8 | 0.57 | 0.0185 | 0.00024 | 0.1252 | 0.0038 | 0.05105 | 0.00147 | 118.2 | 1.49 | 119.8 | 2.01 |
| | DBT02-9 | 0.48 | 0.03981 | 0.00049 | 0.38624 | 0.00601 | 0.06973 | 0.00091 | 251.7 | 3.01 | 331.6 | 2.22 |
| | DBT02-10 | 0.88 | 0.02132 | 0.00027 | 0.34134 | 0.00603 | 0.11842 | 0.00183 | 136 | 1.67 | 298.2 | 2.43 |
| | DBT02-11 | 0.58 | 0.02006 | 0.00027 | 0.24128 | 0.00622 | 0.10169 | 0.00238 | 128.1 | 1.68 | 219.5 | 2.57 |
| | DBT02-12 | 0.93 | 0.04117 | 0.00051 | 0.31335 | 0.00523 | 0.05707 | 0.0008 | 260.1 | 3.18 | 276.8 | 2.91 |
| | DBT02-13 | 0.60 | 0.02016 | 0.0003 | 0.23422 | 0.01044 | 0.09246 | 0.00385 | 128.7 | 1.9 | 213.7 | 4.44 |
| | DBT02-14 | 0.43 | 0.03856 | 0.00049 | 2.21456 | 0.03668 | 0.43931 | 0.00533 | 243.9 | 3.07 | 1185.7 | 19.7 |
| | DBT02-15 | 0.84 | 0.02015 | 0.00026 | 0.12524 | 0.00301 | 0.04838 | 0.00107 | 128.6 | 1.64 | 119.8 | 1.68 |
| | DBT02-16 | 0.47 | 0.01989 | 0.00026 | 0.13377 | 0.00382 | 0.05611 | 0.00149 | 127 | 1.67 | 127.5 | 1.93 |
| | DBT02-17 | 0.63 | 0.02017 | 0.00026 | 0.13369 | 0.00341 | 0.04749 | 0.00112 | 128.7 | 1.66 | 127.4 | 1.7 |
| | DBT02-18 | 0.61 | 0.02021 | 0.00028 | 0.13966 | 0.00497 | 0.04913 | 0.00165 | 129 | 1.74 | 132.7 | 1.99 |

| Analysis | Isotopic ratios | | | | | | | Apparent ages (Ma) | | | | |
|----------|-----------------|-------|-------------------------------------|---------|-------------------------------------|---------|-------------------------------------|--------------------|-------------------------------------|------|-------------------------------------|------|
| | Spot | Th/U | ²⁰⁶ Pb/ ²³⁸ U | 1σ | ²⁰⁷ Pb/ ²³⁵ U | 1σ | ²⁰⁷ Pb/ ²⁰⁶ U | 1σ | ²⁰⁶ Pb/ ²³⁸ U | 1σ | ²⁰⁷ Pb/ ²³⁵ U | 1σ |
| | DBT02-19 | 0.41 | 0.10514 | 0.00134 | 1.19624 | 0.01893 | 0.0767 | 0.0009 | 644.5 | 7.83 | 798.8 | 7.67 |
| | DBT02-20 | 0.505 | 0.01977 | 0.00028 | 0.1327 | 0.00529 | 0.05451 | 0.00206 | 126.2 | 1.76 | 126.5 | 2.79 |
| | DBT02-21 | 0.67 | 0.04942 | 0.00065 | 0.3682 | 0.00592 | 0.05482 | 0.0007 | 311 | 3.96 | 318.3 | 3.43 |
| | DBT02-22 | 0.61 | 0.02018 | 0.00027 | 0.13526 | 0.00331 | 0.05247 | 0.00117 | 128.8 | 1.71 | 128.8 | 1.86 |
| XLT01 | | | | | | | | | | | | |
| | XLT01-1 | 0.46 | 0.01962 | 0.00025 | 0.13283 | 0.00259 | 0.05163 | 0.0009 | 125.3 | 1.61 | 126.6 | 2.32 |
| | XLT01-2 | 0.71 | 0.01969 | 0.00025 | 0.13042 | 0.00205 | 0.05146 | 0.0007 | 125.7 | 1.59 | 124.5 | 1.84 |
| | XLT01-3 | 0.50 | 0.01958 | 0.00025 | 0.12762 | 0.0021 | 0.0485 | 0.0007 | 125 | 1.59 | 122 | 1.89 |
| | XLT01-4 | 0.58 | 0.01959 | 0.00025 | 0.1385 | 0.00197 | 0.05254 | 0.00063 | 125 | 1.58 | 131.7 | 1.76 |
| | XLT01-5 | 0.54 | 0.01973 | 0.00025 | 0.12647 | 0.00187 | 0.04725 | 0.0006 | 126 | 1.59 | 120.9 | 1.69 |
| | XLT01-6 | 0.45 | 0.02002 | 0.00026 | 0.13353 | 0.00242 | 0.05323 | 0.00085 | 127.8 | 1.63 | 127.3 | 2.17 |
| | XLT01-7 | 0.54 | 0.01958 | 0.00025 | 0.13046 | 0.00217 | 0.04992 | 0.00072 | 125 | 1.59 | 124.5 | 1.95 |
| | XLT01-8 | 0.48 | 0.01944 | 0.00025 | 0.12376 | 0.002 | 0.04747 | 0.00067 | 124.1 | 1.58 | 118.5 | 1.81 |
| | XLT01-9 | 0.56 | 0.02864 | 0.00037 | 0.94454 | 0.01261 | 0.22889 | 0.00243 | 182 | 2.29 | 675.3 | 6.58 |
| | XLT01-10 | 0.58 | 0.01962 | 0.00025 | 0.13304 | 0.0021 | 0.04972 | 0.00068 | 125.2 | 1.59 | 126.8 | 1.88 |
| | XLT01-11 | 0.50 | 0.01919 | 0.00025 | 0.12661 | 0.00208 | 0.04864 | 0.00069 | 122.5 | 1.56 | 121 | 1.87 |
| | XLT01-12 | 0.49 | 0.01962 | 0.00025 | 0.13278 | 0.00209 | 0.05054 | 0.00069 | 125.3 | 1.59 | 126.6 | 1.87 |
| | XLT01-13 | 0.53 | 0.01961 | 0.00025 | 0.13148 | 0.00204 | 0.04843 | 0.00065 | 125.2 | 1.59 | 125.4 | 1.83 |
| | XLT01-14 | 0.45 | 0.01971 | 0.00025 | 0.13196 | 0.00227 | 0.04924 | 0.00074 | 125.8 | 1.6 | 125.9 | 2.04 |
| | XLT01-15 | 0.44 | 0.01967 | 0.00025 | 0.13275 | 0.00246 | 0.05016 | 0.00082 | 125.6 | 1.61 | 126.6 | 2.2 |
| | XLT01-16 | 0.50 | 0.01897 | 0.00024 | 0.13402 | 0.00222 | 0.05399 | 0.00078 | 121.1 | 1.54 | 127.7 | 1.99 |
| | XLT01-17 | 0.52 | 0.02061 | 0.00026 | 0.13775 | 0.00223 | 0.05228 | 0.00073 | 131.5 | 1.67 | 131 | 1.99 |
| | XLT01-18 | 0.37 | 0.01957 | 0.00025 | 0.13025 | 0.00232 | 0.05269 | 0.00083 | 124.9 | 1.59 | 124.3 | 2.08 |

| Analysis | Isotopic ratios | | | | | | | | Apparent ages (Ma) | | | |
|----------|-----------------|------|-------------------------------------|---------|-------------------------------------|---------|-------------------------------------|---------|-------------------------------------|------|-------------------------------------|------|
| | Spot | Th/U | ²⁰⁶ Pb/ ²³⁸ U | 1σ | ²⁰⁷ Pb/ ²³⁵ U | 1σ | ²⁰⁷ Pb/ ²⁰⁶ U | 1σ | ²⁰⁶ Pb/ ²³⁸ U | 1σ | ²⁰⁷ Pb/ ²³⁵ U | 1σ |
| | XLT01-19 | 0.35 | 0.01961 | 0.00025 | 0.13285 | 0.00253 | 0.05135 | 0.00087 | 125.2 | 1.6 | 126.7 | 2.26 |
| | XLT01-20 | 0.48 | 0.01973 | 0.00025 | 0.13188 | 0.00207 | 0.05014 | 0.00068 | 126 | 1.6 | 125.8 | 1.86 |
| | XLT01-21 | 0.58 | 0.01901 | 0.00024 | 0.13668 | 0.00223 | 0.05215 | 0.00073 | 121.4 | 1.54 | 130.1 | 1.99 |
| | XLT01-22 | 0.57 | 0.01964 | 0.00025 | 0.13071 | 0.00217 | 0.0524 | 0.00076 | 125.4 | 1.6 | 124.7 | 1.95 |
| SQT01 | | | | | | | | | | | | |
| | SQT01-1 | 0.66 | 0.02006 | 0.00026 | 0.13554 | 0.00275 | 0.04918 | 0.00088 | 128.1 | 1.65 | 129.1 | 2.46 |
| | SQT01-2 | 1.07 | 0.01919 | 0.00025 | 0.12912 | 0.00273 | 0.04874 | 0.00092 | 122.5 | 1.58 | 123.3 | 2.45 |
| | SQT01-3 | 0.72 | 0.01882 | 0.00024 | 0.12831 | 0.0027 | 0.04885 | 0.00092 | 120.2 | 1.54 | 122.6 | 2.43 |
| | SQT01-4 | 0.59 | 0.0218 | 0.00031 | 0.14959 | 0.00656 | 0.04947 | 0.00203 | 139 | 1.97 | 141.6 | 5.8 |
| | SQT01-5 | 0.67 | 0.01853 | 0.00025 | 0.12324 | 0.00427 | 0.04497 | 0.00146 | 118.4 | 1.59 | 118 | 3.86 |
| | SQT01-6 | 0.58 | 0.02094 | 0.00027 | 0.14092 | 0.00391 | 0.0469 | 0.0012 | 133.6 | 1.73 | 133.9 | 3.48 |
| | SQT01-7 | 0.80 | 0.02136 | 0.00028 | 0.14513 | 0.00429 | 0.04719 | 0.00129 | 136.3 | 1.79 | 137.6 | 3.8 |
| | SQT01-8 | 0.56 | 0.01988 | 0.00026 | 0.13289 | 0.00349 | 0.05048 | 0.00122 | 126.9 | 1.65 | 126.7 | 3.13 |
| | SQT01-9 | 0.87 | 0.01901 | 0.00025 | 0.12734 | 0.00297 | 0.04249 | 0.00089 | 121.4 | 1.56 | 121.7 | 2.68 |
| | SQT01-10 | 0.79 | 0.02023 | 0.00026 | 0.13761 | 0.00303 | 0.05098 | 0.001 | 129.1 | 1.65 | 130.9 | 2.7 |
| | SQT01-11 | 0.68 | 0.0192 | 0.00024 | 0.12771 | 0.00229 | 0.04519 | 0.0007 | 122.6 | 1.54 | 122 | 2.07 |
| | SQT01-12 | 0.68 | 0.01857 | 0.00025 | 0.12928 | 0.00338 | 0.04942 | 0.00118 | 118.6 | 1.55 | 123.4 | 3.04 |
| | SQT01-13 | 0.57 | 0.02172 | 0.0003 | 0.14595 | 0.00627 | 0.04674 | 0.00189 | 138.5 | 1.91 | 138.3 | 5.55 |
| | SQT01-14 | 0.59 | 0.01943 | 0.00027 | 0.13027 | 0.00607 | 0.03647 | 0.00162 | 124.1 | 1.68 | 124.3 | 5.45 |
| | SQT01-15 | 0.86 | 0.01959 | 0.00025 | 0.13306 | 0.00261 | 0.05043 | 0.00087 | 125.1 | 1.58 | 126.8 | 2.34 |
| | SQT01-16 | 0.56 | 0.01784 | 0.00023 | 0.12695 | 0.00284 | 0.04488 | 0.0009 | 114 | 1.45 | 121.4 | 2.55 |
| | SQT01-17 | 0.73 | 0.01913 | 0.00024 | 0.12863 | 0.00219 | 0.04525 | 0.00066 | 122.2 | 1.52 | 122.9 | 1.97 |
| | SQT01-18 | 0.60 | 0.02009 | 0.00026 | 0.13436 | 0.00306 | 0.04972 | 0.00101 | 128.2 | 1.63 | 128 | 2.74 |

| Analysis | | Isotopic ratios | | | | | | Apparent ages (Ma) | | | |
|----------|------|-----------------|----------------------------------|------------|----------------------------------|------------|----------------------------------|--------------------|----------------------------------|------------|----------------------------------|
| | | Th/U | $^{206}\text{Pb}/^{238}\text{U}$ | 1 σ | $^{207}\text{Pb}/^{235}\text{U}$ | 1 σ | $^{207}\text{Pb}/^{206}\text{U}$ | 1 σ | $^{206}\text{Pb}/^{238}\text{U}$ | 1 σ | $^{207}\text{Pb}/^{235}\text{U}$ |
| Spot | | | | | | | | | | | |
| SQT01-19 | 0.59 | 0.02014 | 0.00025 | 0.13474 | 0.00261 | 0.04818 | 0.00082 | 128.5 | 1.61 | 128.3 | 2.33 |
| SQT01-20 | 0.56 | 0.01886 | 0.00025 | 0.12938 | 0.00366 | 0.04607 | 0.0012 | 120.5 | 1.56 | 123.5 | 3.29 |
| SQT01-21 | 0.55 | 0.01985 | 0.00026 | 0.13217 | 0.00417 | 0.0481 | 0.00141 | 126.7 | 1.67 | 126 | 3.74 |
| SQT01-22 | 0.73 | 0.01932 | 0.00026 | 0.20396 | 0.00553 | 0.08159 | 0.00197 | 123.3 | 1.65 | 188.5 | 4.66 |
| SQT01-23 | 0.52 | 0.01884 | 0.00024 | 0.12609 | 0.00235 | 0.04189 | 0.00068 | 120.4 | 1.49 | 120.6 | 2.12 |
| SQT01-24 | 0.78 | 0.01932 | 0.00027 | 0.12945 | 0.00482 | 0.04634 | 0.0016 | 123.4 | 1.68 | 123.6 | 4.33 |
| SQT01-25 | 0.55 | 0.01798 | 0.00024 | 0.11983 | 0.00358 | 0.05138 | 0.00143 | 114.8 | 1.51 | 114.9 | 3.25 |
| SQT01-26 | 0.63 | 0.01935 | 0.00024 | 0.12902 | 0.00254 | 0.04507 | 0.00079 | 123.5 | 1.53 | 123.2 | 2.29 |
| SQT01-27 | 0.68 | 0.01857 | 0.00025 | 0.12333 | 0.00389 | 0.04768 | 0.0014 | 118.6 | 1.55 | 118.1 | 3.51 |

Table S2 Major (wt%) and trace elements (ppm) results of the intrusive samples from Ulanhot area.

| Sample | DBD01 | DBD02 | DBDD03 | DBD04 | DBD06 | DBD07 | DBD08 | DBD09 | XLD03 | XLD04 | SQD11 | SQD12 | SQD13 | SQD14 |
|------------------------------------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| SiO ₂ | 65.65 | 66.15 | 66.32 | 66.95 | 59.27 | 59.69 | 59.01 | 59.83 | 75.96 | 75.26 | 71.22 | 72.03 | 71.98 | 69.44 |
| Al ₂ O ₃ | 15.50 | 15.95 | 15.57 | 15.45 | 17.50 | 17.14 | 18.67 | 17.66 | 11.99 | 12.42 | 14.99 | 14.27 | 14.43 | 16.00 |
| TiO ₂ | 0.47 | 0.45 | 0.46 | 0.45 | 0.88 | 0.84 | 0.93 | 0.88 | 0.28 | 0.30 | 0.35 | 0.25 | 0.25 | 0.33 |
| Fe ₂ O ₃ | 2.18 | 2.07 | 2.41 | 2.53 | 4.12 | 3.72 | 4.53 | 4.13 | 0.85 | 1.36 | 1.65 | 1.82 | 1.61 | 1.42 |
| FeO | 1.66 | 1.52 | 1.30 | 1.14 | 0.70 | 1.25 | 0.87 | 0.93 | 0.94 | 0.55 | 0.50 | 0.37 | 0.39 | 0.66 |
| CaO | 2.75 | 2.82 | 2.39 | 2.49 | 3.64 | 4.49 | 3.10 | 3.04 | 0.66 | 0.97 | 1.33 | 0.51 | 0.60 | 1.66 |
| MgO | 1.17 | 1.11 | 1.13 | 1.06 | 1.18 | 1.43 | 1.09 | 0.98 | 0.45 | 0.43 | 0.47 | 0.30 | 0.30 | 0.50 |
| K ₂ O | 3.56 | 3.47 | 3.69 | 3.52 | 3.48 | 3.08 | 3.33 | 3.59 | 3.81 | 3.27 | 3.29 | 5.79 | 5.38 | 4.16 |
| Na ₂ O | 4.57 | 4.42 | 4.48 | 4.34 | 4.53 | 4.03 | 5.79 | 4.73 | 3.79 | 4.21 | 4.97 | 3.73 | 4.17 | 4.62 |
| MnO | 0.073 | 0.065 | 0.070 | 0.069 | 0.075 | 0.075 | 0.070 | 0.066 | 0.053 | 0.048 | 0.047 | 0.043 | 0.019 | 0.050 |
| P ₂ O ₅ | 0.143 | 0.134 | 0.140 | 0.137 | 0.303 | 0.292 | 0.324 | 0.297 | 0.092 | 0.100 | 0.138 | 0.054 | 0.058 | 0.116 |
| LOI | 1.84 | 1.46 | 1.65 | 1.53 | 3.95 | 3.53 | 1.87 | 3.48 | 0.84 | 0.84 | 0.77 | 0.58 | 0.58 | 0.75 |
| Total | 99.77 | 99.79 | 99.77 | 99.79 | 99.71 | 99.71 | 99.68 | 99.72 | 99.83 | 99.82 | 99.79 | 99.80 | 99.81 | 99.79 |
| K ₂ O+Na ₂ O | 8.13 | 7.89 | 8.17 | 7.85 | 8.01 | 7.11 | 9.12 | 8.32 | 7.61 | 7.48 | 8.26 | 9.52 | 9.55 | 8.78 |
| FeO ^T /MgO | 3.09 | 3.04 | 3.09 | 3.23 | 3.73 | 3.21 | 4.55 | 4.72 | 3.83 | 4.10 | 4.24 | 6.71 | 6.04 | 3.85 |
| Mg [#] | 36.84 | 37.20 | 36.84 | 35.78 | 32.56 | 35.89 | 28.36 | 27.61 | 31.96 | 30.50 | 29.82 | 21.16 | 22.95 | 31.87 |
| σ | 2.92 | 2.69 | 2.86 | 2.57 | 3.94 | 3.03 | 5.19 | 4.11 | 1.76 | 1.73 | 2.42 | 3.12 | 3.15 | 2.92 |
| A/CNK | 0.95 | 0.99 | 0.99 | 1.00 | 0.98 | 0.95 | 0.99 | 1.03 | 1.03 | 1.02 | 1.06 | 1.07 | 1.05 | 1.06 |
| A/NK | 1.36 | 1.44 | 1.37 | 1.41 | 1.56 | 1.72 | 1.42 | 1.51 | 1.16 | 1.19 | 1.28 | 1.15 | 1.14 | 1.32 |
| Y | 15.9 | 14.1 | 14.8 | 15.7 | 14.4 | 14.8 | 16.1 | 15.3 | 10.2 | 10.6 | 12.1 | 21.2 | 22.0 | 12.5 |
| La | 25.1 | 26.0 | 24.6 | 25.0 | 22.9 | 23.0 | 23.2 | 23.4 | 17.9 | 20.2 | 24.1 | 28.7 | 32.1 | 22.1 |
| Ce | 53.3 | 55.5 | 55.1 | 52.0 | 50.3 | 51.7 | 52.1 | 50.7 | 36.3 | 42.4 | 49.4 | 53.3 | 65.5 | 45.7 |
| Pr | 5.67 | 5.88 | 5.57 | 5.55 | 5.95 | 5.93 | 6.08 | 5.92 | 3.98 | 4.55 | 5.52 | 6.43 | 7.14 | 5.14 |
| Nd | 21.1 | 21.9 | 20.5 | 20.6 | 23.7 | 23.6 | 24.1 | 23.8 | 14.2 | 16.7 | 20.7 | 23.6 | 25.9 | 19.3 |

| Sample | DBD01 | DBD02 | DBDD03 | DBD04 | DBD06 | DBD07 | DBD08 | DBD09 | XLD03 | XLD04 | SQD11 | SQD12 | SQD13 | SQD14 |
|--------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Sm | 4.20 | 4.51 | 4.11 | 4.12 | 4.89 | 4.95 | 5.10 | 4.91 | 2.58 | 3.11 | 3.98 | 4.63 | 5.00 | 3.89 |
| Eu | 1.05 | 1.22 | 1.06 | 1.06 | 1.46 | 1.61 | 1.61 | 1.56 | 0.73 | 0.86 | 0.94 | 0.85 | 0.85 | 0.98 |
| Gd | 3.59 | 3.85 | 3.38 | 3.50 | 3.91 | 4.07 | 3.96 | 4.06 | 2.14 | 2.43 | 2.91 | 3.99 | 4.23 | 3.09 |
| Tb | 0.53 | 0.55 | 0.51 | 0.52 | 0.57 | 0.60 | 0.58 | 0.59 | 0.30 | 0.35 | 0.42 | 0.64 | 0.65 | 0.43 |
| Dy | 2.78 | 2.84 | 2.66 | 2.68 | 2.75 | 3.07 | 2.89 | 2.83 | 1.45 | 1.70 | 2.02 | 3.41 | 3.41 | 2.09 |
| Ho | 0.57 | 0.60 | 0.57 | 0.57 | 0.56 | 0.59 | 0.59 | 0.59 | 0.29 | 0.34 | 0.39 | 0.70 | 0.72 | 0.38 |
| Er | 1.65 | 1.69 | 1.59 | 1.58 | 1.54 | 1.66 | 1.62 | 1.58 | 0.87 | 0.98 | 1.08 | 2.06 | 2.17 | 1.10 |
| Tm | 0.27 | 0.29 | 0.26 | 0.29 | 0.23 | 0.26 | 0.27 | 0.25 | 0.14 | 0.17 | 0.18 | 0.36 | 0.36 | 0.16 |
| Yb | 1.75 | 1.83 | 1.71 | 1.73 | 1.53 | 1.68 | 1.67 | 1.61 | 0.96 | 1.16 | 1.19 | 2.36 | 2.35 | 1.08 |
| Lu | 0.29 | 0.29 | 0.28 | 0.29 | 0.25 | 0.27 | 0.27 | 0.24 | 0.16 | 0.18 | 0.17 | 0.37 | 0.37 | 0.17 |
| Li | 28.4 | 31.5 | 29.3 | 22.0 | 31.3 | 51.7 | 22.2 | 24.4 | 13.8 | 11.2 | 13.0 | 6.6 | 7.99 | 10.2 |
| Be | 2.28 | 2.34 | 2.17 | 2.30 | 2.21 | 2.22 | 1.91 | 2.40 | 2.85 | 2.88 | 2.87 | 3.04 | 3.49 | 3.30 |
| Sc | 6.59 | 6.89 | 7.41 | 11.0 | 10.0 | 10.4 | 9.79 | 10.1 | 3.04 | 2.83 | 3.72 | 5.35 | 2.53 | 3.07 |
| V | 51.3 | 49.4 | 46.9 | 47.0 | 124 | 122 | 112 | 120 | 4.80 | 6.31 | 23.2 | 12.0 | 14.1 | 27.0 |
| Cr | 8.23 | 7.24 | 7.36 | 9.23 | 6.55 | 6.21 | 6.70 | 7.29 | 9.94 | 6.69 | 7.95 | 7.09 | 8.99 | 8.24 |
| Co | 7.06 | 6.53 | 6.53 | 6.79 | 9.84 | 10.9 | 9.88 | 8.89 | 1.59 | 1.70 | 2.27 | 1.59 | 1.66 | 2.33 |
| Ni | 4.90 | 2.74 | 3.12 | 3.41 | 3.92 | 8.09 | 3.89 | 2.61 | 1.35 | 2.44 | 2.44 | 3.04 | 2.40 | 1.93 |
| Cu | 7.13 | 7.54 | 9.10 | 7.85 | 9.19 | 7.89 | 7.74 | 7.97 | 3.29 | 2.98 | 5.43 | 2.63 | 14.4 | 3.62 |
| Zn | 61.8 | 59.0 | 58.2 | 62.5 | 94.4 | 90.8 | 99.9 | 77.1 | 61.3 | 56.4 | 37.5 | 29.9 | 22.1 | 51.8 |
| Ga | 19.0 | 19.7 | 18.8 | 19.2 | 21.7 | 21.8 | 22.3 | 22.5 | 13.9 | 16.2 | 21.4 | 17.3 | 17.1 | 23.6 |
| Rb | 103 | 92.1 | 103 | 98.2 | 74.8 | 64.8 | 77.1 | 90.6 | 107 | 85.7 | 103 | 174 | 177 | 152 |
| Sr | 574 | 435 | 511 | 401 | 746 | 813 | 802 | 862 | 278 | 321 | 645 | 242 | 237 | 595 |
| Zr | 104 | 84.1 | 119 | 106 | 185 | 186 | 204 | 194 | 183 | 202 | 67.1 | 198 | 206 | 67.8 |
| Nb | 8.04 | 7.79 | 7.95 | 8.21 | 6.33 | 6.22 | 6.76 | 6.52 | 5.32 | 6.04 | 9.53 | 11.0 | 11.3 | 9.78 |

| Sample | DBD01 | DBD02 | DBDD03 | DBD04 | DBD06 | DBD07 | DBD08 | DBD09 | XLD03 | XLD04 | SQD11 | SQD12 | SQD13 | SQD14 |
|----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Mo | 0.33 | 0.65 | 0.69 | 0.54 | 0.42 | 0.60 | 0.32 | 0.48 | 0.073 | 0.057 | 0.076 | 0.25 | 0.19 | 0.97 |
| Cd | 0.063 | 0.072 | 0.065 | 0.063 | 0.069 | 0.075 | 0.055 | 0.056 | 0.046 | 0.054 | 0.058 | 0.022 | 0.046 | 0.068 |
| In | 0.040 | 0.039 | 0.043 | 0.040 | 0.056 | 0.052 | 0.059 | 0.055 | 0.027 | 0.021 | 0.031 | 0.031 | 0.017 | 0.052 |
| Cs | 3.40 | 2.48 | 4.02 | 3.40 | 8.50 | 6.29 | 4.35 | 8.67 | 3.02 | 2.86 | 2.72 | 3.57 | 2.97 | 3.59 |
| Ba | 1032 | 982 | 1060 | 1077 | 1305 | 1331 | 1402 | 1145 | 865 | 981 | 883 | 1152 | 1080 | 994 |
| Hf | 3.71 | 3.47 | 3.92 | 3.67 | 5.44 | 5.52 | 5.55 | 5.34 | 4.65 | 5.29 | 2.44 | 6.03 | 6.58 | 2.67 |
| Ta | 0.72 | 0.56 | 0.56 | 0.51 | 0.56 | 0.57 | 0.45 | 0.50 | 0.64 | 0.92 | 0.63 | 0.58 | 0.66 | 0.68 |
| W | 0.68 | 0.73 | 0.71 | 0.64 | 0.56 | 0.59 | 1.00 | 0.75 | 1.28 | 1.17 | 0.53 | 0.42 | 1.48 | 0.60 |
| Tl | 0.50 | 0.51 | 0.52 | 0.47 | 0.40 | 0.38 | 0.51 | 0.44 | 0.58 | 0.38 | 0.66 | 0.89 | 1.18 | 0.83 |
| Pb | 21.6 | 15.4 | 14.2 | 14.6 | 12.8 | 14.2 | 13.5 | 12.9 | 13.7 | 15.4 | 14.6 | 13.3 | 17.5 | 15.1 |
| Bi | 0.023 | 0.018 | 0.025 | 0.025 | 0.17 | 0.060 | 0.12 | 0.064 | 0.038 | 0.020 | 0.038 | 0.041 | 0.057 | 0.11 |
| Th | 6.32 | 6.97 | 6.61 | 7.07 | 4.69 | 4.70 | 4.61 | 4.65 | 4.98 | 5.54 | 5.16 | 10.7 | 10.4 | 7.35 |
| U | 1.36 | 1.42 | 1.65 | 1.67 | 1.33 | 1.33 | 1.44 | 1.40 | 1.35 | 1.85 | 1.00 | 1.98 | 2.70 | 0.93 |
| ΣREE | 121.88 | 126.99 | 117.99 | 119.46 | 120.45 | 123.1 | 123.99 | 122.09 | 82.02 | 95.16 | 112.93 | 131.38 | 150.75 | 105.7 |
| LREE/HREE | 9.66 | 9.63 | 9.76 | 9.72 | 9.63 | 9.09 | 9.46 | 9.39 | 11.99 | 12.00 | 12.49 | 8.47 | 9.57 | 11.42 |
| (La/Yb) _N | 10.28 | 10.18 | 10.33 | 10.40 | 10.71 | 9.84 | 9.98 | 10.42 | 13.36 | 12.53 | 14.48 | 8.72 | 9.78 | 14.63 |
| δEu | 0.82 | 0.89 | 0.87 | 0.85 | 1.02 | 1.10 | 1.10 | 1.07 | 0.95 | 0.96 | 0.84 | 0.61 | 0.57 | 0.86 |
| T _{Zr} | 751 | 739 | 766 | 759 | 795 | 797 | 802 | 803 | 813 | 821 | 728 | 817 | 819 | 727 |
| Zr+Nb+Ce+Y | 181.31 | 161.52 | 192.51 | 182.37 | 255.57 | 258.35 | 278.79 | 266.24 | 234.74 | 260.63 | 138.11 | 283.90 | 304.63 | 135.80 |
| Ce/Pb | 2.47 | 3.61 | 3.59 | 3.56 | 3.93 | 3.64 | 3.85 | 3.93 | 2.65 | 2.75 | 3.38 | 4.00 | 3.75 | 3.02 |
| Nb/U | 5.92 | 5.50 | 4.82 | 4.92 | 4.74 | 4.69 | 4.68 | 4.66 | 3.93 | 3.26 | 9.48 | 5.55 | 4.19 | 10.49 |
| Zr/Hf | 28.09 | 24.24 | 30.26 | 29.03 | 33.92 | 33.61 | 36.75 | 36.30 | 39.33 | 38.08 | 27.56 | 32.92 | 31.30 | 25.38 |
| Nd/Th | 3.35 | 3.15 | 3.10 | 2.91 | 5.04 | 5.03 | 5.22 | 5.12 | 2.85 | 3.01 | 4.00 | 2.22 | 2.49 | 2.63 |
| La/Nb | 3.12 | 3.34 | 3.10 | 3.05 | 3.62 | 3.70 | 3.44 | 3.59 | 3.37 | 3.35 | 2.53 | 2.61 | 2.84 | 2.26 |

| Sample | DBD01 | DBD02 | DBDD03 | DBD04 | DBD06 | DBD07 | DBD08 | DBD09 | XLD03 | XLD04 | SQD11 | SQD12 | SQD13 | SQD14 |
|--------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Nb/Ta | 11.23 | 13.79 | 14.25 | 16.21 | 11.29 | 10.97 | 14.88 | 13.13 | 8.36 | 6.59 | 15.01 | 18.89 | 17.25 | 14.34 |

Note: A/CNK, molar ratio of $\text{Al}_2\text{O}_3/(\text{CaO} + \text{Na}_2\text{O} + \text{K}_2\text{O})$; A/NK, molar ratio of $\text{Al}_2\text{O}_3/(\text{Na}_2\text{O} + \text{K}_2\text{O})$; LOI, loss on ignition; $\text{Mg}^\# = 100 \times [(\text{MgO}/40)/(\text{MgO}/40 + 0.8998\text{FeO}^\text{T}/72)]$; $\text{FeO}^\text{T} = \text{FeO} + 0.8998 \times \text{Fe}_2\text{O}_3$; $\delta\text{Eu} = \text{Eu}/\text{Eu}^* = \text{Eu}_\text{N}/\text{Sqrt}(\text{Sm}_\text{N} \times \text{Gd}_\text{N})$; $\text{La}_\text{N}/\text{Yb}_\text{N} = (\text{La}/0.237)/(\text{Yb}/0.17)$; $\text{Tzr} = 12900/[2.95 + 0.85 \times \text{M} + \ln(496000/\text{Zr})] - 273.15$; $\text{M} = [\text{n}(\text{Na}) + \text{n}(\text{K}) + 2 \times \text{n}(\text{Ca})]/[\text{n}(\text{Al}) \times \text{n}(\text{Si})]$ (Watson [136]).

Table S3 Zircon Hf isotopic compositions of the Early Cretaceous Ulanhot intrusive rocks.

| Spot | Ages (Ma) | $^{176}\text{Yb}/^{177}\text{Hf}$ | $^{176}\text{Lu}/^{177}\text{Hf}$ | $^{176}\text{Hf}/^{177}\text{Hf}$ | 2σ | $^{176}\text{Hf}/^{177}\text{Hf}_i$ | $\varepsilon\text{Hf}(0)$ | $\varepsilon\text{Hf}(t)$ | T_{DM1} (Ma) | T_{DM2} (Ma) | $f_{\text{Lu/Hf}}$ |
|----------|-----------|-----------------------------------|-----------------------------------|-----------------------------------|-----------|-------------------------------------|---------------------------|---------------------------|-----------------------|-----------------------|--------------------|
| DBT01-01 | 127 | 0.035383 | 0.001287 | 0.282920 | 0.000018 | 0.282917 | 5.22 | 7.92 | 475 | 679 | -0.96 |
| DBT01-02 | 127 | 0.051181 | 0.001830 | 0.282918 | 0.000017 | 0.282913 | 5.15 | 7.78 | 484 | 685 | -0.94 |
| DBT01-03 | 127 | 0.043111 | 0.001531 | 0.282937 | 0.000017 | 0.282933 | 5.82 | 8.48 | 453 | 641 | -0.95 |
| DBT01-04 | 127 | 0.061152 | 0.002168 | 0.282903 | 0.000025 | 0.282898 | 4.62 | 7.25 | 511 | 722 | -0.93 |
| DBT01-05 | 127 | 0.040038 | 0.001469 | 0.282911 | 0.000015 | 0.282908 | 4.92 | 7.6 | 489 | 698 | -0.96 |
| DBT02-01 | 128 | 0.037573 | 0.001204 | 0.282923 | 0.000014 | 0.28292 | 5.34 | 8.05 | 469 | 670 | -0.96 |
| DBT02-02 | 128 | 0.086665 | 0.003090 | 0.282977 | 0.000018 | 0.28297 | 7.26 | 9.81 | 412 | 557 | -0.91 |
| DBT02-03 | 128 | 0.044863 | 0.001642 | 0.282938 | 0.000015 | 0.282934 | 5.86 | 8.54 | 453 | 639 | -0.95 |
| DBT02-04 | 128 | 0.053233 | 0.002018 | 0.282943 | 0.000017 | 0.282938 | 6.04 | 8.68 | 450 | 629 | -0.94 |
| DBT02-05 | 128 | 0.043762 | 0.001767 | 0.282982 | 0.000022 | 0.282978 | 7.43 | 10.10 | 390 | 538 | -0.95 |
| XLT01-01 | 124 | 0.058346 | 0.001752 | 0.282977 | 0.000017 | 0.282973 | 7.26 | 9.83 | 397 | 552 | -0.95 |
| XLT01-02 | 124 | 0.057268 | 0.001725 | 0.283020 | 0.000016 | 0.283016 | 8.79 | 11.35 | 334 | 453 | -0.95 |
| XLT01-03 | 124 | 0.074166 | 0.002213 | 0.283161 | 0.000021 | 0.283156 | 13.75 | 16.31 | 132 | 136 | -0.93 |
| XLT01-04 | 124 | 0.050377 | 0.001528 | 0.282994 | 0.000016 | 0.282991 | 7.85 | 10.47 | 371 | 513 | -0.95 |
| XLT01-05 | 124 | 0.059458 | 0.001801 | 0.282977 | 0.000016 | 0.282973 | 7.27 | 9.83 | 397 | 551 | -0.95 |
| SQT01-01 | 124 | 0.049845 | 0.001726 | 0.282968 | 0.000016 | 0.282964 | 6.92 | 9.51 | 411 | 574 | -0.95 |
| SQT01-02 | 124 | 0.023884 | 0.000856 | 0.282925 | 0.000016 | 0.282923 | 5.42 | 8.06 | 461 | 665 | -0.97 |
| SQT01-03 | 124 | 0.034198 | 0.001252 | 0.282912 | 0.000018 | 0.282909 | 4.95 | 7.57 | 485 | 697 | -0.96 |
| SQT01-04 | 124 | 0.047549 | 0.001662 | 0.282929 | 0.000017 | 0.282925 | 5.54 | 8.13 | 467 | 663 | -0.95 |
| SQT01-05 | 124 | 0.026088 | 0.000942 | 0.282925 | 0.000015 | 0.282923 | 5.41 | 8.06 | 463 | 667 | -0.97 |

Table S4 Geochronological data of the Late Mesozoic intrusive rocks in the central-southern Great Xing'an Range.

| Sample number | Pluton/District name | Lithology | Method | Age (Ma) | Reference |
|---------------|----------------------|---------------------------------|------------------|-------------|-----------------------|
| DBT01 | Dongbaolidagan | Quartz-monzonite-porphyry | Zircon LA-ICP-MS | 127.47±0.36 | This paper |
| DBT02 | Dongbaolidagan | Monzonite porphyry | Zircon LA-ICP-MS | 128.07±0.62 | This paper |
| XLT01 | Xielin | Quartz porphyry | Zircon LA-ICP-MS | 124.85±0.34 | This paper |
| SQT01 | Shuiquan | Granite porphyry | Zircon LA-ICP-MS | 124.15±0.31 | This paper |
| G02011-4 | Dashizhai | Biotite granite | Zircon LA-ICP-MS | 182±3 | Ge et al. [1] |
| G02013-4 | Jingyang | Biotite granodiorite | Zircon LA-ICP-MS | 174±4 | Ge et al. [1] |
| G0208-1 | Qingshan | gneissoid-biotitic granodiorite | Zircon LA-ICP-MS | 136±3 | Ge et al. [1] |
| G0208-3 | | Biotite granodiorite | Zircon LA-ICP-MS | 134±2 | Ge et al. [1] |
| G0205-4 | Suolunzhen | Biotite alkali feldspar granite | Zircon LA-ICP-MS | 125±2 | Ge et al. [1] |
| G0206-1 | Yonghetun | Monodiorite porphyry | Zircon LA-ICP-MS | 127±2 | Ge et al. [1] |
| G0206-2 | | Granite porphyry | Zircon LA-ICP-MS | 128±3 | Ge et al. [1] |
| Z10-16 | Wuchagou | Alkali-feldspar granite | Zircon LA-ICP-MS | 136.97±0.99 | Shi et al. [156] |
| Z10-17 | | Biotite syenogranite | Zircon LA-ICP-MS | 135.85±0.78 | Shi et al. [156] |
| Z11-62 | | Biotite monzogranite | Zircon LA-ICP-MS | 126.04±0.48 | Shi et al. [156] |
| YL1 | Yili | Granite porphyry | SHRIMP II | 128.10±1.6 | Wu et al. [32] |
| YL3 | Yili | Granite porphyry | SHRIMP II | 129.00±3.5 | Wu et al. [32] |
| BJ-58 | Bianjiadayuan | Quartz porphyry | Zircon LA-ICP-MS | 140.00±1.2 | Wang et al. [109] |
| Z11-63 | | Granite porphyry | Zircon LA-ICP-MS | 135.87±0.49 | Shi et al. [156] |
| | Naoniushan | granodiorite-porphyry | Zircon LA-ICP-MS | 141.2±0.7 | Gu et al. [82] |
| TW03-1 | Duerji | Monzonite granite | Zircon LA-ICP-MS | 131.3±0.3 | Chen and Zhang. [106] |
| TW06-2 | Duerji | Syenogranite | Zircon LA-ICP-MS | 130.5±0.5 | Chen and Zhang. [106] |
| D7075RZ | Baiyinwenduer | Alkali-feldspar granite | Zircon LA-ICP-MS | 166±1 | Song et al. [107] |
| LDK-01-a | Laodaokou | Diorite | SIMS zircon U-Pb | 126.09±0.95 | Liu et al. [155] |

| WS-1 | Wushitun | Quartz diorite | Zircon LA-ICP-MS | 155±1 | Liu et al. [16] |
|---------------|----------------------|-----------------------------|------------------|-------------|------------------|
| XH-1 | Xihuerle | Granite porphyries | Zircon LA-ICP-MS | 155±2 | Liu et al. [16] |
| Sample number | Pluton/District name | Lithology | Method | Age (Ma) | Reference |
| XL-1 | Xilongtun | Quartz-monzodiorite | Zircon LA-ICP-MS | 144±1 | Liu et al. [16] |
| HP-1 | Hepingtun | Syenogranite | Zircon LA-ICP-MS | 132±1 | Liu et al. [16] |
| WB-1 | Wubulin | Granite porphyry | Zircon LA-ICP-MS | 131±1 | Liu et al. [16] |
| WB-2 | Wubulin | Granite porphyry | Zircon LA-ICP-MS | 130±1 | Liu et al. [16] |
| BG-1 | Bagecangxin | Biotite granite | Zircon LA-ICP-MS | 126±1 | Liu et al. [16] |
| P9-48-1 | Taipingshan | Biotite monzogranite | Zircon LA-ICP-MS | 127.4±1.6 | Lu et al. [64] |
| P15-10-2 | | Biotite monzogranite | Zircon LA-ICP-MS | 125.6±1.1 | Lu et al. [64] |
| 15TQ37-2 | Duerji | Syenogranite | Zircon LA-ICP-MS | 148.2±1.0 | Gao et al. [105] |
| 15TQ31-2 | Majiatusun | Granite porphyry | Zircon LA-ICP-MS | 124.6±1.1 | Gao et al. [105] |
| GS1201 | Tuoliela | Syenogranite | Zircon LA-ICP-MS | 142.1±0.7 | Li et al. [5] |
| GS3460 | Wuertu | Syenogranite | Zircon LA-ICP-MS | 141.7±1.0 | Li et al. [5] |
| MP12-5 | Mingshuihe | Alkali-feldspar granite | Zircon LA-ICP-MS | 136±1 | Wang et al. [83] |
| MP15-9 | Suolun Racecourse | Granosyenite | Zircon LA-ICP-MS | 134±1 | Wang et al. [83] |
| MP22-6 | Suolun Town | Granosyenite | Zircon LA-ICP-MS | 128±1 | Wang et al. [83] |
| G012-1 | Dongfu | Monzonite | Zircon LA-ICP-MS | 161.8±1.1 | Du et al. [143] |
| D0044B1 | Ulanhot | Granite porphyry | Zircon LA-ICP-MS | 124.99±0.99 | Li et al. [78] |
| | Xiaokelehe | Monzonite porphyry | Zircon LA-ICP-MS | 139.9±4.3 | Feng et al. [26] |
| TW22 | Mandu | Monzonitic granite | Zircon LA-ICP-MS | 141.2±1.6 | Li. [19] |
| TW37 | Mandu | Monzonitic granite | Zircon LA-ICP-MS | 134.0±1.9 | Li. [19] |
| HLHB-1 | Haliheiba | Biotite granite | Zircon LA-ICP-MS | 139.1±0.7 | Wei et al. [18] |
| HLHB-2 | Haliheiba | Biotite granite | Zircon LA-ICP-MS | 139.6±0.9 | Wei et al. [18] |
| HLHB-3 | Haliheiba | Porphyritic biotite granite | Zircon LA-ICP-MS | 138.4±1.0 | Wei et al. [18] |

| | | | | | |
|-------|------------|--------------------------|------------------|-------|-----------------|
| BD1-1 | Weilasituo | Granite | Zircon LA-ICP-MS | 140±2 | Wu et al. [108] |
| ZK44 | Weilasituo | Alkalic feldspar granite | Zircon LA-ICP-MS | 138±1 | Wu et al. [108] |
| ZK46 | Weilasituo | Alkalic feldspar granite | Zircon LA-ICP-MS | 137±1 | Wu et al. [108] |