**Supplementary Material D**

**Table 1. U-Pb analytical data of the quartz syenite (SOA-01A). The (\*) indicates spots used in the Concordia.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Plesovice - spot** | **176Yb/177Hf a** | **±2s** | **176Lu/177Hf a** | **±2s** | **178Hf/177Hf** | **±2s** | **SigHf b (V)** | **176Hf/177Hf** | **±2s c** | **176Hf/177Hf(t)d** | **eHf(t) d** | **±2s c** | **age** |
| 9 | 0,010284188 | 9 | 0,000157413 | 1 | 1,466262903 |  | 17 | 0,28246482 | 20 | 0,282463826 | -4 | 1 | 337 ± 1 |
| 10 | 0,009385356 | 8 | 0,000142235 | 1 | 1,466275362 |  | 16 | 0,282470808 | 20 | 0,282469911 | -4 | 1 | 337 ± 1 |
| 49 | 0,011993666 | 10 | 0,000182808 | 1 | 1,465860142 |  | 16 | 0,282470504 | 37 | 0,28246935 | -4 | 1 | 337 ± 1 |
| 50 | 0,006531667 | 5 | 9,95202E-05 | 1 | 1,465918107 |  | 17 | 0,282480211 | 32 | 0,282479583 | -3 | 1 | 337 ± 1 |
| 75 | 0,012208149 | 10 | 0,000188704 | 1 | 1,465810015 |  | 16 | 0,28246421 | 22 | 0,282463019 | -4 | 1 | 337 ± 1 |
| 76 | 0,004919652 | 4 | 7,39066E-05 | 0 | 1,466030173 |  | 16 | 0,282470464 | 25 | 0,282469997 | -4 | 1 | 337 ± 1 |
| 77 | 0,006492423 | 6 | 9,97477E-05 | 1 | 1,465999817 |  | 17 | 0,282474415 | 25 | 0,282473786 | -4 | 1 | 337 ± 1 |
| 121 | 0,014581108 | 12 | 0,000222324 | 1 | 1,466437945 |  | 16 | 0,282465711 | 17 | 0,282464308 | -4 | 1 | 337 ± 1 |
| 169 | 0,007177392 | 6 | 0,000109755 | 1 | 1,466717123 |  | 15 | 0,282465698 | 15 | 0,282465005 | -4 | 1 | 337 ± 1 |
| 170 | 0,007990795 | 7 | 0,000122274 | 1 | 1,466730322 |  | 16 | 0,282466147 | 17 | 0,282465375 | -4 | 1 | 337 ± 1 |
| 171 | 0,013114777 | 11 | 0,00020118 | 1 | 1,466819258 |  | 16 | 0,282463886 | 15 | 0,282462616 | -4 | 1 | 337 ± 1 |
| 220 | 0,004370009 | 5 | 6,72365E-05 | 1 | 1,466783264 |  | 16 | 0,282472416 | 16 | 0,282471991 | -4 | 1 | 337 ± 1 |
| 8 | 0,012745411 | 10 | 0,000195521 | 1 | 1,46619164 |  | 16 | 0,282448697 | 28 | 0,282447463 | -4 | 1 | 337 ± 1 |
| 7 | 0,012143122 | 10 | 0,00018514 | 1 | 1,466162741 |  | 16 | 0,282451879 | 25 | 0,28245071 | -4 | 1 | 337 ± 1 |
| 48 | 0,010974397 | 9 | 0,000168753 | 1 | 1,465854422 |  | 17 | 0,282449127 | 31 | 0,282448062 | -4 | 1 | 337 ± 1 |
| 120 | 0,012331024 | 10 | 0,000191054 | 1 | 1,466437841 |  | 17 | 0,282450226 | 13 | 0,28244902 | -4 | 1 | 337 ± 1 |
| 219 | 0,014778053 | 14 | 0,000224077 | 2 | 1,466716224 |  | 15 | 0,28246122 | 19 | 0,282459805 | -4 | 1 | 337 ± 1 |
| 6 | 0,011270372 | 9 | 0,000170793 | 1 | 1,466158649 |  | 16 | 0,282460681 | 24 | 0,282459603 | -4 | 1 | 337 ± 1 |

A picture containing screenshot, text, diagram

Description automatically generated

**Figure 1:** Cathodoluminescence images of dated zircons (SOA-01).

**Table 2: U-Pb analytical data of the monzonite (SOA-02A). The (\*) indicates spots used in the Concordia.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | **Isotopic ratios** | | | | | | | **Ages (Ma)** | | | | | | |
| **Spot** | **ƒ 206** | **Pb** | **Th** | **U** |  | **207Pb/** | **1 s** | **206Pb/** | **1 s** |  | **207Pb/** | **1 s** | **206Pb/** | **1 s** | **207Pb/** | **1 s** | **207Pb/** | **1 s** | **%** |
| **ppm** | **ppm** | **ppm** | **Th/U** | **235U** | **[%]** | **238U** | **[%]** | **Rho** | **206Pb** | **[%]** | **238U** | **abs** | **235U** | **abs** | **206Pb** | **abs** | **Disc.** |
| 1A | 0,0047 | 3 | 212 | 225 | 0,94 | 0,063664 | 5,74 | 0,009629 | 5,33 | 0,93 | 0,047952 | 2,12 | 62 | 3 | 63 | 4 | 97 | 2 | 36 |
| 2A | 0,0039 | 9 | 741 | 780 | 0,95 | 0,062581 | 5,60 | 0,009566 | 5,35 | 0,95 | 0,047449 | 1,66 | 61 | 3 | 62 | 3 | 72 | 1 | 15 |
| 3A\* | 0,0040 | 9 | 853 | 838 | 1,02 | 0,061699 | 5,65 | 0,009473 | 5,43 | 0,96 | 0,047236 | 1,59 | 61 | 3 | 61 | 3 | 61 | 1 | 1 |
| 4A\* | 0,0032 | 13 | 1375 | 1129 | 1,22 | 0,061559 | 5,60 | 0,009453 | 5,42 | 0,97 | 0,047233 | 1,43 | 61 | 3 | 61 | 3 | 61 | 1 | 1 |
| 5A\* | 0,0033 | 11 | 1026 | 905 | 1,13 | 0,061698 | 5,58 | 0,009464 | 5,42 | 0,97 | 0,047282 | 1,32 | 61 | 3 | 61 | 3 | 63 | 1 | 4 |
| 6A\* | 0,0040 | 9 | 841 | 815 | 1,03 | 0,061057 | 5,77 | 0,009381 | 5,57 | 0,97 | 0,047205 | 1,50 | 60 | 3 | 60 | 3 | 60 | 1 | -1 |
| 7A | 0,0242 | 5 | 504 | 378 | 1,33 | 0,093353 | 7,84 | 0,009726 | 5,35 | 0,68 | 0,069614 | 5,73 | 62 | 3 | 91 | 7 | 917 | 53 | 93 |
| 8A\* | 0,0030 | 3 | 231 | 247 | 0,94 | 0,062902 | 5,97 | 0,009652 | 5,32 | 0,89 | 0,047268 | 2,70 | 62 | 3 | 62 | 4 | 63 | 2 | 1 |
| 9A\* | 0,0044 | 7 | 860 | 529 | 1,62 | 0,061189 | 5,71 | 0,009402 | 5,46 | 0,96 | 0,047203 | 1,67 | 60 | 3 | 60 | 3 | 60 | 1 | -1 |
| 1B\* | 0,0040 | 5 | 594 | 452 | 1,31 | 0,060534 | 5,97 | 0,009301 | 5,81 | 0,97 | 0,047203 | 1,37 | 60 | 3 | 60 | 4 | 60 | 1 | 0 |
| 2B | 0,1921 | 6 | 269 | 325 | 0,83 | 0,312798 | 13,93 | 0,007597 | 7,77 | 0,56 | 0,298620 | 11,56 | 49 | 4 | 276 | 39 | 3463 | 400 | 99 |
| 3B | 0,1015 | 10 | 580 | 595 | 0,98 | 0,101529 | 25,29 | 0,009483 | 5,81 | 0,23 | 0,077651 | 24,62 | 61 | 4 | 98 | 25 | 1138 | 280 | 95 |
| 4B\* | 0,0035 | 4 | 363 | 311 | 1,17 | 0,059692 | 6,27 | 0,009181 | 5,91 | 0,94 | 0,047154 | 2,11 | 59 | 3 | 59 | 4 | 57 | 1 | -3 |
| 5B\* | 0,0022 | 18 | 1763 | 1583 | 1,11 | 0,060030 | 6,01 | 0,009227 | 5,83 | 0,97 | 0,047183 | 1,43 | 59 | 3 | 59 | 4 | 59 | 1 | -1 |
| 6B\* | 0,0049 | 7 | 653 | 628 | 1,04 | 0,059149 | 6,23 | 0,009097 | 5,92 | 0,95 | 0,047155 | 1,92 | 58 | 3 | 58 | 4 | 57 | 1 | -2 |
| 7B | 0,0053 | 5 | 565 | 487 | 1,16 | 0,067829 | 5,89 | 0,010277 | 5,30 | 0,90 | 0,047870 | 2,57 | 66 | 3 | 67 | 4 | 93 | 2 | 29 |
| 8B\* | 0,0043 | 7 | 885 | 553 | 1,60 | 0,060358 | 6,22 | 0,009264 | 5,82 | 0,94 | 0,047256 | 2,20 | 59 | 3 | 60 | 4 | 62 | 1 | 4 |
| 9B\* | 0,0049 | 6 | 363 | 600 | 0,61 | 0,061350 | 6,01 | 0,009424 | 5,75 | 0,96 | 0,047217 | 1,75 | 60 | 3 | 60 | 4 | 60 | 1 | 0 |

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**Figure 2:** Cathodoluminescence images of dated zircons (SOA-02A).

**Table 3: U-Pb analytical data of the alkali feldspar syenite (SOA-05). The (\*) indicates spots used in the Concordia.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | **Isotopic ratios** | | | | | | | **Ages (Ma)** | | | | | | |
| **Spot** | **ƒ 206** | **Pb ppm** | **Th ppm** | **U ppm** | **Th/U** | **207Pb/** | **1 s** | **206Pb/** | **1 s** |  | **207Pb/** | **1 s** | **206Pb/** | **1 s** | **207Pb/** | **1 s** | **207Pb/** | **1 s** | **%** |
| **235U** | **[%]** | **238U** | **[%]** | **Rho** | **206Pb** | **[%]** | **238U** | **abs** | **235U** | **abs** | **206Pb** | **abs** | **Disc.** |
| 1A\* | 0,0020 | 12 | 746 | 1150 | 0,65 | 0,056980 | 8,12 | 0,008761 | 7,98 | 0,98 | 0,047172 | 1,47 | 56 | 4 | 56 | 5 | 58 | 1 | 0 |
| 2A\* | 0,0044 | 8 | 591 | 760 | 0,78 | 0,058718 | 7,91 | 0,009027 | 7,75 | 0,98 | 0,047175 | 1,57 | 58 | 4 | 58 | 5 | 58 | 1 | 0 |
| 3A | 0,0030 | 24 | 3096 | 1929 | 1,60 | 0,058334 | 7,91 | 0,008920 | 7,84 | 0,99 | 0,047433 | 1,05 | 57 | 4 | 58 | 5 | 71 | 1 | 1 |
| A4\* | 0,0046 | 5 | 404 | 399 | 1,01 | 0,059060 | 8,09 | 0,009069 | 7,73 | 0,96 | 0,047231 | 2,37 | 58 | 5 | 58 | 5 | 61 | 1 | 0 |
| 5A | 0,0028 | 13 | 1104 | 1141 | 0,97 | 0,057447 | 8,09 | 0,008750 | 8,00 | 0,99 | 0,047617 | 1,17 | 56 | 4 | 57 | 5 | 80 | 1 | 1 |
| 6A\* | 0,0046 | 7 | 503 | 648 | 0,78 | 0,059381 | 7,81 | 0,009126 | 7,68 | 0,98 | 0,047194 | 1,40 | 59 | 4 | 59 | 5 | 59 | 1 | 0 |
| 7A\* | 0,0048 | 4 | 241 | 384 | 0,63 | 0,058930 | 8,00 | 0,009056 | 7,72 | 0,97 | 0,047194 | 2,09 | 58 | 4 | 58 | 5 | 59 | 1 | 0 |
| 8A\* | 0,0046 | 5 | 401 | 405 | 0,99 | 0,058449 | 8,10 | 0,008980 | 7,82 | 0,97 | 0,047206 | 2,09 | 58 | 5 | 58 | 5 | 60 | 1 | 0 |
| 9A\* | 0,0028 | 9 | 953 | 733 | 1,30 | 0,058209 | 8,02 | 0,008951 | 7,85 | 0,98 | 0,047164 | 1,67 | 57 | 5 | 57 | 5 | 58 | 1 | 0 |
| 1B\* | 0,0051 | 5 | 341 | 445 | 0,77 | 0,058638 | 6,07 | 0,009012 | 5,79 | 0,96 | 0,047190 | 1,80 | 58 | 3 | 58 | 4 | 59 | 1 | 0 |
| 2B\* | 0,0042 | 6 | 375 | 537 | 0,70 | 0,059791 | 5,98 | 0,009186 | 5,66 | 0,95 | 0,047207 | 1,93 | 59 | 3 | 59 | 4 | 60 | 1 | 0 |
| 3B | 0,0058 | 6 | 413 | 567 | 0,73 | 0,064126 | 6,07 | 0,009146 | 5,70 | 0,94 | 0,050854 | 2,08 | 59 | 3 | 63 | 4 | 234 | 5 | 7 |
| 4B\* | 0,0034 | 6 | 399 | 557 | 0,72 | 0,059189 | 5,98 | 0,009090 | 5,72 | 0,96 | 0,047223 | 1,75 | 58 | 3 | 58 | 3 | 61 | 1 | 0 |
| 5B\* | 0,0036 | 8 | 806 | 620 | 1,30 | 0,061121 | 5,79 | 0,009385 | 5,56 | 0,96 | 0,047234 | 1,63 | 60 | 3 | 60 | 3 | 61 | 1 | 0 |
| 6B\* | 0,0028 | 9 | 504 | 828 | 0,61 | 0,059734 | 5,90 | 0,009179 | 5,67 | 0,96 | 0,047199 | 1,63 | 59 | 3 | 59 | 3 | 59 | 1 | 0 |
| 7B\* | 0,0017 | 10 | 937 | 907 | 1,03 | 0,058621 | 5,96 | 0,009007 | 5,76 | 0,97 | 0,047203 | 1,50 | 58 | 3 | 58 | 3 | 60 | 1 | 0 |
| 8B\* | 0,0052 | 5 | 348 | 417 | 0,84 | 0,059519 | 5,95 | 0,009146 | 5,70 | 0,96 | 0,047199 | 1,73 | 59 | 3 | 59 | 3 | 59 | 1 | 0 |
| 9B | 0,0030 | 9 | 666 | 875 | 0,76 | 0,060200 | 5,76 | 0,009214 | 5,65 | 0,98 | 0,047385 | 1,11 | 59 | 3 | 59 | 3 | 69 | 1 | 0 |

A picture containing screenshot, text, diagram

Description automatically generated

**Figure 3:** Cathodoluminescence images of dated zircons (SOA-05).

**Table 4: U-Pb analytical data of the nepheline syenite. The (\*) indicate spots used in the Concordia.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **Isotopic ratios** | | | | | | | **Ages (Ma)** | | | | | |  |
| **Spot** | **f206** | **U** | **Th/U** | **207Pb/206Pb** | **2s (%)** | **207Pb/235U** | **2s (%)** | **206Pb/238U** | **2s (%)** | **Rho** | **207Pb/206Pb** | **2s** | **206Pb/238U** | **2s** | **207Pb/235U** | **2s** | **% Disc.** |
| 7\* | 0,0000 | 557 | 1,98 | 0,047340 | 1,61 | 0,067038 | 2,24 | 0,010270 | 1,56 | 0,70 | 66 | 38 | 66 | 1 | 66 | 1 | 0 |
| 8 | 0,9813 | 473 | 2,40 | 0,046935 | 4,62 | 0,068213 | 19,28 | 0,010541 | 18,72 | 0,97 | 46 | 110 | 68 | 13 | 67 | 13 | -1 |
| 9 | 0,6045 | 867 | 2,15 | 0,047074 | 2,99 | 0,067375 | 12,13 | 0,010381 | 11,76 | 0,97 | 53 | 71 | 67 | 8 | 66 | 8 | -1 |
| 10 | 0,0000 | 303 | 1,50 | 0,058260 | 1,32 | 0,081456 | 2,06 | 0,010140 | 1,58 | 0,77 | 540 | 29 | 65 | 1 | 80 | 2 | 18 |
| 11\* | 0,0000 | 1731 | 3,96 | 0,047400 | 1,12 | 0,069347 | 1,88 | 0,010611 | 1,51 | 0,80 | 69 | 27 | 68 | 1 | 68 | 1 | 0 |
| 12 | 0,6210 | 1272 | 3,05 | 0,047086 | 2,95 | 0,067393 | 12,43 | 0,010381 | 12,08 | 0,97 | 54 | 70 | 67 | 8 | 66 | 8 | -1 |
| 13 | 0,5739 | 393 | 1,70 | 0,047068 | 2,82 | 0,066653 | 11,64 | 0,010270 | 11,30 | 0,97 | 53 | 67 | 66 | 7 | 66 | 7 | -1 |
| 14\* | 0,0000 | 90 | 1,00 | 0,047350 | 2,98 | 0,066660 | 3,57 | 0,010210 | 1,96 | 0,55 | 67 | 71 | 65 | 1 | 66 | 2 | 0 |
| 15\* | 0,0000 | 402 | 2,02 | 0,047320 | 1,27 | 0,065834 | 2,03 | 0,010090 | 1,59 | 0,78 | 65 | 30 | 65 | 1 | 65 | 1 | 0 |
| 16 | 2,4933 | 318 | 3,46 | 0,046160 | 10,95 | 0,063774 | 51,03 | 0,010020 | 49,84 | 0,98 | 6 | 264 | 64 | 32 | 63 | 32 | -2 |
| 17 | 3,9215 | 232 | 2,49 | 0,045560 | 17,47 | 0,066844 | 75,84 | 0,010641 | 73,80 | 0,97 | -26 | 423 | 68 | 50 | 66 | 49 | -4 |
| 18\* | 0,0000 | 732 | 2,52 | 0,047350 | 1,33 | 0,067248 | 2,05 | 0,010300 | 1,55 | 0,76 | 67 | 32 | 66 | 1 | 66 | 1 | 0 |
| 19 | 4,1214 | 67 | 0,77 | 0,045427 | 18,83 | 0,065332 | 81,35 | 0,010431 | 79,15 | 0,97 | -33 | 457 | 67 | 53 | 64 | 52 | -4 |
| 20 | 0,0000 | 75 | 1,22 | 0,053040 | 2,17 | 0,072694 | 2,83 | 0,009940 | 1,81 | 0,64 | 331 | 49 | 64 | 1 | 71 | 2 | 11 |
| 27\* | 0,0000 | 63 | 0,86 | 0,047330 | 4,20 | 0,064345 | 4,76 | 0,009860 | 2,23 | 0,47 | 66 | 100 | 63 | 1 | 63 | 3 | 0 |
| 28\* | 0,0000 | 244 | 1,18 | 0,047310 | 2,28 | 0,064579 | 3,05 | 0,009900 | 2,02 | 0,66 | 65 | 54 | 64 | 1 | 64 | 2 | 0 |
| 29\* | 0,0000 | 143 | 1,20 | 0,047310 | 2,60 | 0,064253 | 3,30 | 0,009850 | 2,03 | 0,62 | 65 | 62 | 63 | 1 | 63 | 2 | 0 |
| 30 | 0,2665 | 1247 | 3,61 | 0,047214 | 1,81 | 0,069075 | 5,61 | 0,010611 | 5,31 | 0,95 | 60 | 43 | 68 | 4 | 68 | 4 | 0 |
| 32 | 0,5024 | 2238 | 2,55 | 0,047102 | 2,44 | 0,066506 | 10,24 | 0,010240 | 9,95 | 0,97 | 54 | 58 | 66 | 6 | 65 | 6 | 0 |
| 33\* | 0,0000 | 335 | 1,81 | 0,047330 | 1,37 | 0,066958 | 2,08 | 0,010260 | 1,56 | 0,75 | 66 | 33 | 66 | 1 | 66 | 1 | 0 |
| 34\* | 0,0000 | 254 | 1,03 | 0,047320 | 1,78 | 0,066487 | 2,51 | 0,010190 | 1,77 | 0,71 | 65 | 42 | 65 | 1 | 65 | 2 | 0 |
| 35 | 1,0000 | 132 | 1,51 | 0,047414 | 4,90 | 0,066227 | 20,46 | 0,010130 | 19,86 | 0,97 | 70 | 117 | 65 | 13 | 65 | 13 | 0 |
| 36\* | 0,0000 | 168 | 1,63 | 0,047350 | 2,03 | 0,066987 | 2,68 | 0,010260 | 1,76 | 0,65 | 67 | 48 | 66 | 1 | 66 | 2 | 0 |
| 37 | 0,0000 | 113 | 1,09 | 0,050650 | 1,80 | 0,068509 | 2,43 | 0,009810 | 1,63 | 0,67 | 225 | 42 | 63 | 1 | 67 | 2 | 6 |
| 38 | 1,0000 | 164 | 2,44 | 0,047579 | 4,83 | 0,065668 | 20,67 | 0,010010 | 20,10 | 0,97 | 78 | 115 | 64 | 13 | 65 | 13 | 1 |
| 39 | 0,4282 | 577 | 3,09 | 0,047536 | 2,35 | 0,066331 | 8,93 | 0,010120 | 8,62 | 0,96 | 76 | 56 | 65 | 6 | 65 | 6 | 0 |
| 40 | 0,3682 | 295 | 1,50 | 0,047196 | 2,08 | 0,068266 | 7,53 | 0,010491 | 7,23 | 0,96 | 59 | 50 | 67 | 5 | 67 | 5 | 0 |

A picture containing text, screenshot, diagram, design

Description automatically generated

**Figure 4:** Cathodoluminescence images of dated zircons of nefeline syenite.