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Geochronology of the medium to high-grade metamorphic units of the Peloritani Mts., Sicily

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Appendix

Due to an unfortunate error the last column of Table 5 is missing. The correct table is printed below. (see next page)

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Table 5 Ar–Ar stepwise heating results. All Ar concentrations are given in picolitres per gram (pL/g); errors are 1σ ; Ar* denotes total ^{40}Ar minus atmospheric ^{40}Ar . The integrated values of K (wt%) Ca (wt%) and Cl (ppm) were calculated from the total ^{39}Ar , ^{37}Ar and ^{38}Ar , the production ratios and the irradiation time. Ages are given in Ma

Step	T (°C)	^{40}Ar tot	^{39}Ar	^{38}Ar	^{37}Ar	^{36}Ar	Age $\pm 1\sigma$
Mela Unit							
CRO 1 hbl (33.9 mg); J=2.842* 10 ⁻³ ; Ar*=3,090; K=2.1‰; Ca=7.6‰; Cl=108 ppm							
1	717	248.10 ± 0.04	0.537 ± 0.007	0.888 ± 0.005	5.22 ± 0.07	0.532 ± 0.006	715.8 ± 14.0
2	923	123.99 ± 0.02	1.311 ± 0.005	1.593 ± 0.011	21.32 ± 0.10	0.092 ± 0.005	352.6 ± 4.5
3	981	415.31 ± 0.03	5.121 ± 0.008	1.506 ± 0.007	101.97 ± 0.30	0.138 ± 0.006	351.3 ± 1.4
4	1,011	1,011.00 ± 0.11	13.343 ± 0.012	2.266 ± 0.007	268.35 ± 0.72	0.165 ± 0.006	347.1 ± 0.5
5	1,041	559.96 ± 0.04	8.127 ± 0.010	0.728 ± 0.007	158.99 ± 0.48	0.099 ± 0.004	317.4 ± 0.5
6	1,065	99.50 ± 0.04	1.216 ± 0.005	0.284 ± 0.006	24.03 ± 0.13	0.046 ± 0.005	340.6 ± 4.4
7	1,108	180.16 ± 0.04	2.301 ± 0.007	0.479 ± 0.006	47.40 ± 0.19	0.046 ± 0.005	348.7 ± 2.3
8	1,146	85.45 ± 0.04	0.986 ± 0.006	0.248 ± 0.007	20.13 ± 0.14	0.051 ± 0.004	344.4 ± 5.0
9	1,280	482.20 ± 0.06	6.103 ± 0.009	1.393 ± 0.007	121.26 ± 0.36	0.104 ± 0.002	355.0 ± 0.6
10	1,383	227.25 ± 0.04	3.065 ± 0.005	0.556 ± 0.006	53.51 ± 0.17	0.098 ± 0.005	313.6 ± 1.9
CRO 2 bt (2.2 mg); J=2.845* 10 ⁻³ ; Ar*=53,000; K=74.1‰; Ca=0.2‰; Cl=1.474 ppm							
1	539	5,156.30 ± 1.00	89.151 ± 0.095	11.832 ± 0.080	1.11 ± 0.26	5.87 ± 0.11	187.0 ± 1.7
2	631	6,208.60 ± 1.80	119.14 ± 0.12	12.258 ± 0.105	1.01 ± 0.18	2.03 ± 0.12	226.9 ± 1.4
3	710	10,236.40 ± 1.55	206.33 ± 0.21	17.750 ± 0.110	0.86 ± 0.23	0.87 ± 0.11	232.7 ± 0.8
4	760	6,991.70 ± 0.80	141.11 ± 0.14	14.412 ± 0.090	0.87 ± 0.15	0.948 ± 0.080	229.0 ± 0.8
5	832	4,870.25 ± 0.90	97.90 ± 0.13	11.362 ± 0.135	0.00 ± 0.00	0.21 ± 0.11	236.0 ± 1.4
6	875	6,565.15 ± 1.00	132.58 ± 0.18	14.486 ± 0.075	0.37 ± 0.30	0.767 ± 0.060	230.1 ± 0.7
7	917	8,636.35 ± 1.80	174.98 ± 0.19	18.618 ± 0.095	1.40 ± 0.17	1.001 ± 0.055	229.5 ± 0.5
8	956	6,984.45 ± 1.55	138.59 ± 0.16	12.563 ± 0.085	2.14 ± 0.18	1.574 ± 0.090	226.7 ± 0.9
9	1,015	4,012.09 ± 1.25	74.87 ± 0.080	5.428 ± 0.100	0.00 ± 0.00	0.97 ± 0.10	239.0 ± 1.8
10	1,159	2,563.47 ± 1.15	41.71 ± 0.12	3.498 ± 0.085	2.95 ± 0.30	1.811 ± 0.090	233.9 ± 2.9
11	1,396	1,791.60 ± 1.60	18.18 ± 0.10	2.540 ± 0.105	8.04 ± 0.23	3.301 ± 0.095	217.1 ± 7.0
FR 1 hbl (16.5 mg); J=6.600* 10 ⁻³ ; Ar*=4,270 ; K=3.6‰; Ca=7.0‰; Cl=61 ppm							
1	630	157.92 ± 0.02	1.143 ± 0.008	0.370 ± 0.015	1.31 ± 0.21	0.572 ± 0.010	-18.0 ± 32.0
2	750	77.28 ± 0.02	0.486 ± 0.016	0.172 ± 0.013	1.04 ± 0.18	0.256 ± 0.007	78.2 ± 49.0
3	910	269.89 ± 0.04	7.504 ± 0.016	3.265 ± 0.015	3.46 ± 0.30	0.342 ± 0.006	257.8 ± 2.4
4	950	461.21 ± 0.08	14.795 ± 0.022	1.901 ± 0.010	7.78 ± 0.29	0.273 ± 0.011	292.4 ± 2.0
5	980	1380.79 ± 0.13	47.998 ± 0.046	2.520 ± 0.014	22.30 ± 0.24	0.360 ± 0.013	299.6 ± 0.6
6	1,000	490.93 ± 0.05	16.343 ± 0.022	0.822 ± 0.015	7.68 ± 0.30	0.215 ± 0.007	295.7 ± 1.2
7	1,040	195.94 ± 0.05	5.755 ± 0.010	0.577 ± 0.017	5.05 ± 0.20	0.217 ± 0.013	269.6 ± 7.2
8	1,080	335.99 ± 0.05	10.658 ± 0.016	0.875 ± 0.018	6.14 ± 0.29	0.208 ± 0.012	293.6 ± 2.9
9	1,170	1,201.88 ± 0.13	40.268 ± 0.040	2.936 ± 0.013	24.21 ± 0.22	0.362 ± 0.008	308.6 ± 0.5
10	1,380	657.61 ± 0.29	19.496 ± 0.022	1.392 ± 0.020	11.35 ± 0.18	0.474 ± 0.011	301.8 ± 1.5
FR 2 hbl (30.4 mg); J=2.833* 10 ⁻³ ; Ar*=2,870; K=2.1‰; Ca=6.9‰; Cl=32 ppm							
1	701	173.92 ± 0.03	1.000 ± 0.007	0.261 ± 0.003	4.39 ± 0.04	0.336 ± 0.006	348.4 ± 7.2
2	911	110.41 ± 0.03	1.440 ± 0.006	0.155 ± 0.006	19.90 ± 0.10	0.127 ± 0.005	248.4 ± 4.9
3	954	267.33 ± 0.03	3.404 ± 0.007	0.268 ± 0.008	67.92 ± 0.22	0.167 ± 0.004	311.2 ± 1.6
4	973	378.70 ± 0.06	5.347 ± 0.011	0.400 ± 0.005	101.48 ± 0.34	0.045 ± 0.009	329.3 ± 1.1
5	990	317.98 ± 0.03	4.557 ± 0.008	0.294 ± 0.008	81.97 ± 0.25	0.052 ± 0.006	320.4 ± 1.0
6	1,009	100.96 ± 0.04	1.336 ± 0.006	0.103 ± 0.007	23.94 ± 0.12	0.030 ± 0.006	330.9 ± 4.5
7	1,027	63.43 ± 0.04	0.769 ± 0.006	0.097 ± 0.005	14.67 ± 0.12	0.010 ± 0.004	372.8 ± 4.6
8	1,063	174.06 ± 0.06	2.397 ± 0.005	0.174 ± 0.006	43.81 ± 0.14	0.038 ± 0.007	327.2 ± 2.5
9	1,148	640.89 ± 6.58	8.958 ± 0.089	0.651 ± 0.007	156.76 ± 2.26	0.150 ± 0.002	321.0 ± 4.2
10	1,282	729.93 ± 0.07	10.202 ± 0.011	0.743 ± 0.006	178.54 ± 0.50	0.171 ± 0.005	320.8 ± 0.6
11	1,380	219.79 ± 0.08	2.853 ± 0.007	0.198 ± 0.006	48.82 ± 0.18	0.106 ± 0.004	318.4 ± 1.8
FR 3 hbl (12.7 mg); J=6.600* 10 ⁻³ ; Ar*=6,590; K=5.5‰; Ca=7.7‰; Cl=93 ppm							
1	710	1,032.36 ± 0.10	25.183 ± 0.031	3.079 ± 0.013	2.75 ± 1.13	1.715 ± 0.018	233.2 ± 2.2
2	920	621.05 ± 0.06	25.062 ± 0.028	2.226 ± 0.019	9.85 ± 1.06	0.374 ± 0.007	229.1 ± 0.9
3	955	464.27 ± 0.03	16.990 ± 0.026	1.831 ± 0.018	14.02 ± 0.82	0.268 ± 0.007	254.8 ± 1.3
4	990	1,012.51 ± 0.10	33.664 ± 0.034	3.039 ± 0.017	48.60 ± 1.61	0.381 ± 0.009	299.2 ± 0.8
5	1,020	2,719.57 ± 0.22	92.253 ± 0.087	6.261 ± 0.019	184.48 ± 0.92	0.596 ± 0.009	310.1 ± 0.3
6	1,080	487.95 ± 0.06	15.589 ± 0.020	1.195 ± 0.013	41.70 ± 1.40	0.316 ± 0.013	290.0 ± 2.1
7	1,170	1,036.41 ± 0.07	31.556 ± 0.031	3.246 ± 0.016	77.16 ± 1.73	0.530 ± 0.014	315.1 ± 1.2
8	1,380	690.33 ± 0.04	15.260 ± 0.016	1.706 ± 0.016	33.42 ± 0.66	0.854 ± 0.006	322.2 ± 1.2
Aspromonte Unit							
VER 1 ms (3.3 mg); J=2.938* 10 ⁻³ ; Ar*=83,820; K=92.0‰ ; Ca=0.4‰; Cl=81 ppm							
1	607	2,977.42 ± 0.26	43.187 ± 0.091	2.12 ± 0.05	1.11 ± 0.08	2.406 ± 0.04	258.8 ± 1.3
2	716	2,409.81 ± 0.33	52.901 ± 0.088	1.32 ± 0.07	1.69 ± 0.07	1.546 ± 0.07	185.6 ± 1.3
3	741	18,508.73 ± 1.61	293.02 ± 0.27	4.52 ± 0.07	0.77 ± 0.18	1.841 ± 0.05	298.9 ± 0.4

Table 5 (continued)

Step	T (°C)	⁴⁰ Ar tot	³⁹ Ar	³⁸ Ar	³⁷ Ar	³⁶ Ar	Age±1σ
4	765	15,125.30 ± 2.27	241.52 ± 0.24	3.57 ± 0.06	0.40 ± 0.21	0.545 ± 0.04	301.8 ± 0.3
5	791	6,112.88 ± 0.85	96.95 ± 0.12	1.55 ± 0.05	0.00 ± 0.00	0.317 ± 0.03	302.4 ± 0.5
6	858	8,337.15 ± 1.58	132.92 ± 0.14	2.32 ± 0.09	1.12 ± 0.16	0.647 ± 0.08	298.8 ± 0.8
7	945	13,229.15 ± 0.67	211.25 ± 0.20	3.18 ± 0.07	1.76 ± 0.30	0.864 ± 0.04	299.4 ± 0.4
8	1,022	11,399.88 ± 0.76	180.87 ± 0.19	2.80 ± 0.06	2.18 ± 0.12	0.979 ± 0.05	299.4 ± 0.4
9	1,159	6,747.39 ± 0.76	104.07 ± 0.11	1.63 ± 0.07	3.80 ± 0.19	1.073 ± 0.07	301.0 ± 0.9
10	1,344	2,490.80 ± 0.67	33.047 ± 0.097	0.89 ± 0.05	23.73 ± 0.17	1.707 ± 0.04	293.9 ± 1.9
CUM 1 hbl (26.8 mg); J=2.877* 10 ⁻³ ; Ar*=6,370; K=1.4‰; Ca=6.4%; Cl=206 ppm							
1	713	2,425.22 ± 0.82	1.670 ± 0.011	2.203 ± 0.010	15.15 ± 0.11	5.401 ± 0.020	1609.2 ± 10.0
2	921	2,216.89 ± 0.20	6.930 ± 0.013	7.978 ± 0.016	182.20 ± 0.58	1.077 ± 0.011	1068.8 ± 2.0
3	960	712.22 ± 0.06	4.062 ± 0.009	1.837 ± 0.009	101.64 ± 0.34	0.453 ± 0.007	635.5 ± 2.2
4	982	298.14 ± 0.07	1.363 ± 0.008	0.711 ± 0.010	36.99 ± 0.24	0.315 ± 0.006	666.4 ± 6.0
5	1,000	154.23 ± 0.06	0.596 ± 0.006	0.336 ± 0.003	17.36 ± 0.19	0.202 ± 0.006	697.9 ± 12.0
6	1,035	205.48 ± 0.07	0.798 ± 0.007	0.485 ± 0.007	21.33 ± 0.21	0.315 ± 0.006	630.8 ± 9.4
7	1,089	337.99 ± 0.09	1.618 ± 0.005	0.867 ± 0.005	41.82 ± 0.17	0.294 ± 0.007	682.7 ± 4.6
8	1,154	768.10 ± 0.14	3.177 ± 0.009	1.666 ± 0.010	85.33 ± 0.33	0.437 ± 0.005	842.7 ± 2.3
9	1,287	914.01 ± 0.10	3.417 ± 0.009	1.860 ± 0.013	91.58 ± 0.35	0.522 ± 0.007	911.4 ± 2.7
10	1,388	1,158.20 ± 0.49	4.387 ± 0.007	2.181 ± 0.011	108.91 ± 0.35	0.715 ± 0.007	889.2 ± 1.9
CUM 3 hbl (31.3 mg); J=2.885* 10 ⁻³ ; Ar*=14,110; K=4.0‰; Ca=6.9%; Cl=181 ppm							
1	650	804.49 ± 0.02	0.795 ± 0.009	0.460 ± 0.007	3.86 ± 0.04	0.624 ± 0.005	2130.3 ± 14.0
2	713	11,656.90 ± 0.58	2.268 ± 0.011	7.611 ± 0.021	5.48 ± 0.04	37.688 ± 0.131	917.6 ± 54.0
3	924	10,831.76 ± 0.99	11.033 ± 0.013	8.927 ± 0.018	93.79 ± 0.27	30.899 ± 0.109	669.4 ± 11.0
4	940	6,082.24 ± 0.54	14.942 ± 0.016	5.473 ± 0.013	142.38 ± 0.41	12.356 ± 0.045	700.6 ± 3.2
5	962	2,153.98 ± 0.14	7.651 ± 0.008	1.982 ± 0.010	74.29 ± 0.21	3.580 ± 0.013	630.3 ± 2.0
6	1,000	2,475.47 ± 0.38	10.124 ± 0.013	2.276 ± 0.008	96.16 ± 0.29	4.437 ± 0.017	522.6 ± 2.0
7	1,037	1,499.52 ± 0.16	2.404 ± 0.009	1.151 ± 0.007	23.85 ± 0.11	4.019 ± 0.015	579.7 ± 7.4
8	1,087	1,962.54 ± 0.20	4.494 ± 0.009	1.642 ± 0.006	48.52 ± 0.17	4.354 ± 0.017	657.1 ± 4.2
9	1,152	1,812.44 ± 0.28	5.092 ± 0.010	1.549 ± 0.007	53.14 ± 0.17	2.377 ± 0.012	887.6 ± 2.5
10	1,286	4,408.34 ± 0.42	17.519 ± 0.019	4.030 ± 0.009	178.14 ± 0.51	2.655 ± 0.011	851.4 ± 1.0
11	1,388	1,082.09 ± 0.38	4.264 ± 0.010	0.987 ± 0.006	43.79 ± 0.15	0.967 ± 0.008	784.5 ± 2.3
CUM3 bt (1.7 mg); J=2.894* 10 ⁻³ ; Ar*=31,440; K=65.0‰; Ca=0.8%; Cl=180 ppm							
1	541	2,919.97 ± 0.88	49.38 ± 0.11	3.16 ± 0.11	3.51 ± 0.42	5.63 ± 0.11	128.1 ± 3.1
2	632	3,710.54 ± 1.24	86.00 ± 0.12	4.11 ± 0.14	1.63 ± 0.21	3.70 ± 0.12	152.3 ± 2.0
3	711	7,037.18 ± 1.24	203.24 ± 0.21	6.71 ± 0.16	1.73 ± 0.22	2.33 ± 0.11	156.1 ± 0.8
4	787	7,799.00 ± 0.88	222.25 ± 0.25	7.01 ± 0.10	8.30 ± 0.28	2.65 ± 0.12	157.7 ± 0.8
5	858	3,600.74 ± 1.00	95.23 ± 0.18	2.94 ± 0.14	6.01 ± 0.34	2.24 ± 0.14	154.4 ± 2.0
6	926	3,974.79 ± 0.94	96.85 ± 0.12	3.40 ± 0.21	8.20 ± 0.44	2.60 ± 0.11	165.1 ± 1.5
7	1,002	5,348.01 ± 1.65	135.28 ± 0.17	3.98 ± 0.10	20.62 ± 0.16	2.589 ± 0.065	168.8 ± 0.7
8	1,160	3,310.75 ± 0.71	73.31 ± 0.19	2.13 ± 0.11	9.27 ± 0.36	1.94 ± 0.12	185.2 ± 2.4
9	1,397	1,945.19 ± 0.94	17.27 ± 0.14	0.51 ± 0.08	7.81 ± 0.37	4.082 ± 0.094	210.8 ± 7.4
MAL 1 hbl (29.4 mg); J=2.852* 10 ⁻³ ; Ar*=2,700; K=2.0‰; Ca=7.3%; Cl=118 ppm							
1	714	416.54 ± 0.04	1.634 ± 0.006	0.910 ± 0.006	28.76 ± 0.14	1.192 ± 0.007	199.9 ± 5.8
2	922	377.02 ± 0.04	4.937 ± 0.007	2.256 ± 0.006	102.14 ± 0.32	0.282 ± 0.005	293.3 ± 1.3
3	962	295.40 ± 0.03	3.822 ± 0.008	1.019 ± 0.004	76.44 ± 0.26	0.173 ± 0.005	312.4 ± 1.6
4	981	156.53 ± 0.04	2.032 ± 0.009	0.370 ± 0.005	37.98 ± 0.19	0.037 ± 0.006	345.5 ± 3.1
5	999	73.69 ± 0.01	0.999 ± 0.009	0.202 ± 0.004	18.98 ± 0.17	0.086 ± 0.005	242.1 ± 6.4
6	1,036	116.89 ± 0.02	1.562 ± 0.007	0.362 ± 0.007	31.01 ± 0.17	0.056 ± 0.007	313.9 ± 5.3
7	1,069	203.50 ± 0.03	2.816 ± 0.008	0.636 ± 0.006	55.46 ± 0.21	0.082 ± 0.008	311.3 ± 3.0
8	1,108	321.51 ± 0.05	4.292 ± 0.008	0.976 ± 0.004	85.40 ± 0.28	0.117 ± 0.004	325.3 ± 1.2
9	1,149	346.03 ± 0.06	4.492 ± 0.009	1.091 ± 0.010	89.71 ± 0.29	0.111 ± 0.009	337.7 ± 2.1
10	1,287	498.20 ± 0.05	6.387 ± 0.011	1.541 ± 0.009	128.03 ± 0.41	0.211 ± 0.005	331.4 ± 1.0
11	1,388	612.87 ± 0.09	7.889 ± 0.011	1.725 ± 0.011	146.85 ± 0.43	0.278 ± 0.005	326.3 ± 0.8
FLO 5 hbl (33.9 mg); J=2.825* 10 ⁻³ ; Ar*=2,190; K=1.3‰; Ca=6.8%; Cl=60 ppm							
1	710	506.39 ± 0.04	1.983 ± 0.005	0.816 ± 0.005	12.92 ± 0.05	1.222 ± 0.007	342.7 ± 4.7
2	919	459.16 ± 0.06	3.841 ± 0.007	1.338 ± 0.006	85.18 ± 0.28	0.328 ± 0.007	438.7 ± 2.3
3	979	650.95 ± 0.06	6.635 ± 0.009	1.324 ± 0.009	216.14 ± 0.65	0.341 ± 0.007	397.7 ± 1.2
4	1,015	343.10 ± 0.04	3.612 ± 0.011	0.552 ± 0.009	133.17 ± 0.55	0.172 ± 0.006	391.6 ± 2.0
5	1,042	145.52 ± 0.04	1.546 ± 0.009	0.263 ± 0.007	49.11 ± 0.30	0.111 ± 0.005	355.1 ± 4.0
6	1,063	118.65 ± 0.05	1.161 ± 0.011	0.225 ± 0.008	37.03 ± 0.37	0.061 ± 0.005	413.6 ± 5.4
7	1,107	136.20 ± 0.07	1.240 ± 0.010	0.227 ± 0.007	41.20 ± 0.34	0.090 ± 0.006	420.5 ± 6.3
8	1,146	128.27 ± 0.08	1.129 ± 0.005	0.267 ± 0.009	37.01 ± 0.20	0.093 ± 0.008	424.0 ± 7.9
9	1,281	283.20 ± 0.07	2.614 ± 0.008	0.517 ± 0.008	79.33 ± 0.33	0.192 ± 0.005	411.8 ± 2.2
10	1,385	180.03 ± 0.07	1.617 ± 0.009	0.304 ± 0.004	42.85 ± 0.26	0.162 ± 0.004	389.6 ± 3.3

Table 5 (continued)

Step	T (°C)	⁴⁰ Ar tot	³⁹ Ar	³⁸ Ar	³⁷ Ar	³⁶ Ar	Age±1σ
BAD 1 bt (3.5 mg); J =2.905* 10 ⁻³ ; Ar*=11,640; K=65.6‰; Ca=0.1%; Cl=2,350 ppm							
1	546	2,364.93 ± 0.66	91.548 ± 0.097	17.652 ± 0.066	0.85 ±	0.09 5.114 ± 0.057	48.2 ± 0.9
2	630	2,272.83 ± 0.91	147.37 ± 0.17	25.141 ± 0.086	0.87 ±	0.11 1.984 ± 0.057	59.0 ± 0.6
3	712	1,371.69 ± 0.54	88.93 ± 0.10	14.675 ± 0.054	0.36 ±	0.11 1.111 ± 0.060	60.5 ± 1.0
4	763	687.77 ± 0.40	41.004 ± 0.086	6.689 ± 0.043	0.29 ±	0.15 0.931 ± 0.054	52.0 ± 2.0
5	834	951.21 ± 0.31	61.407 ± 0.071	10.171 ± 0.071	0.07 ±	0.10 0.828 ± 0.051	59.3 ± 1.3
6	900	1,585.47 ± 0.54	117.22 ± 0.13	20.540 ± 0.077	1.21 ±	0.13 1.115 ± 0.063	55.3 ± 0.8
7	970	3,988.86 ± 0.46	322.40 ± 0.29	54.68 ± 0.13	1.35 ±	0.15 1.672 ± 0.069	55.9 ± 0.3
8	1,023	2,050.77 ± 0.66	156.52 ± 0.16	25.537 ± 0.091	0.95 ±	0.16 0.967 ± 0.040	58.2 ± 0.4
9	1,094	580.93 ± 0.49	22.162 ± 0.054	3.601 ± 0.040	0.64 ±	0.18 1.072 ± 0.057	61.4 ± 3.8
10	1,232	541.21 ± 0.37	3.915 ± 0.049	0.881 ± 0.051	1.90 ±	0.13 1.382 ± 0.049	169.7 ± 17.0
11	1,395	918.59 ± 0.83	1.127 ± 0.051	0.587 ± 0.049	3.51 ±	0.20 3.036 ± 0.046	98.2 ± 60.0
BAD 1 ms; (3.0 mg); J=2.909* 10 ⁻³ ; Ar*=11,300; K=75.6‰; Ca=2.0%; Cl=298 ppm							
1	597	2,334.35 ± 0.11	32.171 ± 0.053	3.800 ± 0.060	2.86 ±	0.18 7.293 ± 0.053	29.1 ± 2.6
2	707	1,334.47 ± 0.23	176.54 ± 0.20	5.617 ± 0.087	1.81 ±	0.15 6.678 ± 0.047	52.8 ± 0.4
3	760	5,731.17 ± 0.47	524.64 ± 0.47	9.618 ± 0.057	1.53 ±	0.17 2.796 ± 0.031	48.4 ± 0.1
4	807	2,349.82 ± 0.37	185.20 ± 0.18	3.334 ± 0.060	1.76 ±	0.14 1.885 ± 0.077	50.1 ± 0.6
5	841	1,192.13 ± 0.33	65.62 ± 0.11	1.411 ± 0.073	1.14 ±	0.22 1.739 ± 0.067	53.5 ± 1.6
6	875	997.65 ± 0.57	35.167 ± 0.087	1.303 ± 0.087	3.21 ±	0.08 2.110 ± 0.053	55.0 ± 2.2
7	937	916.81 ± 0.50	37.808 ± 0.047	1.004 ± 0.073	4.19 ±	0.15 2.312 ± 0.053	32.2 ± 2.1
8	1,016	1,010.57 ± 0.47	51.63 ± 0.12	2.048 ± 0.073	9.49 ±	0.18 1.950 ± 0.047	43.7 ± 1.4
9	1,153	1,286.87 ± 0.63	53.301 ± 0.087	5.429 ± 0.050	64.21 ±	0.22 2.395 ± 0.043	56.6 ± 1.3
10	1,344	2,011.51 ± 1.13	33.758 ± 0.087	7.505 ± 0.053	81.45 ±	0.32 5.776 ± 0.067	47.8 ± 2.9
BAD 2 bt (2.6 mg); J=2.901* 10 ⁻³ ; Ar*=10,290; K=60.4‰; Ca=0.9%; Cl=114 ppm							
1	551	2,873.63 ± 0.27	112.82 ± 0.13	4.395 ± 0.088	3.22 ±	0.16 6.173 ± 0.050	48.1 ± 0.7
2	630	1,334.37 ± 0.77	94.69 ± 0.10	2.403 ± 0.100	2.19 ±	0.22 1.459 ± 0.062	49.2 ± 1.0
3	711	1,751.10 ± 0.77	138.15 ± 0.14	2.228 ± 0.073	1.16 ±	0.15 0.920 ± 0.065	55.2 ± 0.7
4	764	1,278.99 ± 0.46	92.73 ± 0.13	1.874 ± 0.096	0.85 ±	0.21 1.021 ± 0.054	54.3 ± 0.9
5	830	1,643.13 ± 1.19	117.79 ± 0.17	2.253 ± 0.077	3.93 ±	0.14 1.137 ± 0.073	57.2 ± 0.9
6	875	1,180.64 ± 0.46	66.840 ± 0.085	1.873 ± 0.062	3.73 ±	0.16 1.292 ± 0.054	61.5 ± 1.2
7	917	1,334.63 ± 0.34	84.77 ± 0.11	1.891 ± 0.081	5.12 ±	0.17 1.199 ± 0.054	59.5 ± 1.0
8	954	1,365.42 ± 0.54	81.34 ± 0.10	1.850 ± 0.104	11.35 ±	0.11 1.705 ± 0.065	54.7 ± 1.2
9	1,010	1,411.89 ± 0.69	88.05 ± 0.12	1.779 ± 0.085	29.49 ±	0.19 1.281 ± 0.065	60.5 ± 1.1
10	1,148	1,211.93 ± 0.65	61.427 ± 0.092	1.525 ± 0.085	14.90 ±	0.19 1.292 ± 0.069	69.5 ± 1.7
11	1,283	656.82 ± 0.50	6.961 ± 0.077	0.211 ± 0.096	3.41 ±	0.12 2.024 ± 0.065	43.7 ± 14.0
PER 2 hbl (27.3 mg); J=2.865* 10 ⁻³ ; Ar*=4,310; K=2.9‰; Ca=6.7%; Cl=133 ppm							
1	715	429.26 ± 0.07	1.757 ± 0.011	0.69 ± 0.01	9.37 ±	0.07 0.933 ± 0.006	406.5 ± 4.9
2	924	435.89 ± 0.10	5.087 ± 0.008	1.66 ± 0.01	50.52 ±	0.16 0.355 ± 0.005	313.5 ± 1.3
3	962	737.97 ± 0.23	9.845 ± 0.011	1.98 ± 0.01	124.30 ±	0.36 0.181 ± 0.005	334.4 ± 0.7
4	1,003	409.86 ± 0.04	5.584 ± 0.007	0.97 ± 0.01	68.72 ±	0.20 0.103 ± 0.011	327.3 ± 2.1
5	1,028	126.35 ± 0.04	1.611 ± 0.005	0.33 ± 0.01	20.86 ±	0.09 0.049 ± 0.004	334.1 ± 2.9
6	1,072	274.83 ± 0.10	3.309 ± 0.007	0.72 ± 0.01	46.39 ±	0.16 0.115 ± 0.005	349.3 ± 1.9
7	1,113	463.28 ± 0.04	5.405 ± 0.010	1.16 ± 0.01	71.03 ±	0.22 0.121 ± 0.005	375.7 ± 1.1
8	1,150	280.59 ± 0.07	3.366 ± 0.009	0.65 ± 0.01	44.19 ±	0.17 0.096 ± 0.004	357.8 ± 1.6
9	1,280	1,520.88 ± 0.12	19.335 ± 0.021	3.73 ± 0.01	251.05 ±	0.72 0.304 ± 0.007	353.9 ± 0.5
10	1,384	290.79 ± 0.05	3.579 ± 0.007	0.71 ± 0.01	44.43 ±	0.14 0.148 ± 0.005	332.2 ± 1.9
PER 2 bt (1.8 mg); J=2.858* 10 ⁻³ ; Ar*=36,260; K=70.9‰; Ca=0.4%; Cl=236 ppm							
1	544	1,603.07 ± 0.89	30.031 ± 0.100	2.45 ± 0.09	0.53 ±	0.26 2.818 ± 0.078	127.7 ± 3.7
2	637	2,928.10 ± 1.00	63.318 ± 0.128	2.89 ± 0.11	3.01 ±	0.32 2.553 ± 0.094	168.9 ± 2.1
3	715	5,464.27 ± 1.39	149.942 ± 0.178	4.46 ± 0.10	0.40 ±	0.37 1.276 ± 0.078	167.0 ± 0.8
4	791	6,419.56 ± 0.89	176.694 ± 0.189	3.59 ± 0.16	1.24 ±	0.23 0.755 ± 0.089	172.4 ± 0.7
5	862	4,655.42 ± 1.06	118.469 ± 0.178	3.31 ± 0.13	0.72 ±	0.33 1.610 ± 0.106	173.4 ± 1.2
6	920	6,229.28 ± 1.39	167.837 ± 0.172	5.31 ± 0.13	4.93 ±	0.34 2.145 ± 0.144	164.3 ± 1.2
7	1,003	7,588.00 ± 1.11	206.997 ± 0.239	4.60 ± 0.08	11.62 ±	0.35 1.425 ± 0.083	170.3 ± 0.6
8	1,161	5,238.32 ± 0.78	128.876 ± 0.144	3.39 ± 0.13	6.52 ±	0.41 2.091 ± 0.067	176.1 ± 0.7
9	1,394	1,703.62 ± 1.28	11.467 ± 0.100	1.15 ± 0.08	6.21 ±	0.38 4.156 ± 0.078	202.4 ± 9.2
PER 3 hbl (33.1 mg); J=2.872* 10 ⁻³ ; Ar*=2,880; K=1.7‰; Ca=7.7%; Cl=33 ppm							
1	707	434.79 ± 0.022	1.843 ± 0.006	0.402 ± 0.003	3.35 ±	0.02 0.722 ± 0.004	536.1 ± 3.0
2	918	565.00 ± 0.045	4.824 ± 0.006	0.493 ± 0.005	59.51 ±	0.18 0.448 ± 0.006	420.3 ± 1.6
3	957	418.89 ± 0.033	3.940 ± 0.005	0.389 ± 0.008	95.08 ±	0.29 0.168 ± 0.005	443.9 ± 1.5
4	997	704.76 ± 0.069	8.709 ± 0.009	0.785 ± 0.010	260.09 ±	0.73 0.204 ± 0.005	363.9 ± 0.6
5	1,022	277.89 ± 0.036	3.701 ± 0.007	0.305 ± 0.006	95.17 ±	0.31 0.096 ± 0.005	332.9 ± 1.3
6	1,064	100.25 ± 0.019	1.109 ± 0.006	0.089 ± 0.007	28.26 ±	0.18 0.097 ± 0.004	320.5 ± 4.8
7	1,106	135.57 ± 0.021	1.366 ± 0.010	0.133 ± 0.007	40.28 ±	0.31 0.101 ± 0.006	378.5 ± 5.6

Table 5 (continued)

Step	T (°C)	⁴⁰ Ar tot	³⁹ Ar	³⁸ Ar	³⁷ Ar	³⁶ Ar	Age±1σ
8	1,145	130.26 ± 0.039	1.310 ± 0.004	0.150 ± 0.008	39.00 ± 0.16	0.073 ± 0.005	402.0 ± 4.1
9	1,220	178.76 ± 0.030	1.669 ± 0.007	0.180 ± 0.005	51.61 ± 0.25	0.110 ± 0.005	422.0 ± 3.3
10	1,279	222.77 ± 0.042	2.192 ± 0.007	0.250 ± 0.007	66.59 ± 0.27	0.112 ± 0.006	417.6 ± 3.0
11	1,384	329.51 ± 0.057	3.306 ± 0.007	0.382 ± 0.005	98.41 ± 0.32	0.180 ± 0.006	404.8 ± 2.0
PER 3 bt (2.5 mg); J=2.868* 10 ⁻³ ; Ar*= 30,140; K=58.7‰; Ca=1.4%; Cl=92 ppm							
1	548	1,854.57 ± 0.96	35.153 ± 0.092	2.29 ± 0.12	2.08 ± 0.15	3.879 ± 0.060	101.4 ± 2.5
2	635	2,097.95 ± 1.04	48.049 ± 0.108	1.51 ± 0.09	0.32 ± 0.16	1.670 ± 0.060	165.0 ± 1.8
3	714	2,726.44 ± 0.92	71.905 ± 0.100	1.41 ± 0.09	2.13 ± 0.09	1.350 ± 0.052	160.2 ± 1.0
4	765	2,723.12 ± 0.88	69.561 ± 0.104	1.48 ± 0.09	1.34 ± 0.16	1.319 ± 0.076	165.7 ± 1.5
5	837	3,450.99 ± 0.80	93.792 ± 0.108	2.29 ± 0.07	2.86 ± 0.18	0.855 ± 0.076	168.4 ± 1.2
6	883	4,240.80 ± 1.08	116.038 ± 0.148	1.50 ± 0.08	6.98 ± 0.13	0.740 ± 0.048	171.0 ± 0.6
7	923	6,765.80 ± 0.76	185.450 ± 0.192	2.93 ± 0.06	9.79 ± 0.18	0.870 ± 0.056	173.1 ± 0.5
8	964	6,200.32 ± 1.48	168.190 ± 0.180	3.26 ± 0.10	21.88 ± 0.29	1.150 ± 0.048	171.9 ± 0.5
9	1,018	2,247.90 ± 1.04	56.148 ± 0.124	1.08 ± 0.12	34.54 ± 0.26	0.918 ± 0.092	173.8 ± 2.3
10	1,159	1,408.95 ± 0.80	28.703 ± 0.108	1.06 ± 0.08	12.49 ± 0.32	1.212 ± 0.044	180.3 ± 2.2
11	1,399	1,119.66 ± 1.08	12.761 ± 0.064	0.57 ± 0.08	21.98 ± 0.25	1.950 ± 0.072	208.7 ± 7.9
PETR 1 bt (3.6 mg); J=2.929* 10 ⁻³ ; Ar*=30,540; K=73.6‰; Ca=0.2%; Cl=275 ppm							
1	539	3,340.00 ± 0.23	104.615 ± 0.100	5.23 ± 0.05	1.29 ± 0.27	4.255 ± 0.050	102.3 ± 0.7
2	600	2,316.65 ± 1.06	64.342 ± 0.086	2.50 ± 0.10	0.41 ± 0.21	2.055 ± 0.039	135.2 ± 0.9
3	658	3,282.06 ± 1.44	100.249 ± 0.125	3.11 ± 0.04	0.91 ± 0.13	1.627 ± 0.039	142.0 ± 0.6
4	709	3,470.78 ± 1.17	113.108 ± 0.122	3.38 ± 0.04	0.76 ± 0.18	0.728 ± 0.061	146.1 ± 0.8
5	760	2,385.87 ± 0.81	75.813 ± 0.083	2.29 ± 0.05	1.02 ± 0.14	0.856 ± 0.053	142.9 ± 1.0
6	833	3,763.58 ± 0.75	121.229 ± 0.139	3.26 ± 0.08	1.12 ± 0.14	1.315 ± 0.044	141.5 ± 0.6
7	903	4,294.06 ± 1.17	144.433 ± 0.158	4.26 ± 0.07	1.36 ± 0.10	1.295 ± 0.044	137.7 ± 0.5
8	960	4,600.03 ± 0.36	155.716 ± 0.158	4.18 ± 0.06	1.15 ± 0.14	1.134 ± 0.072	139.2 ± 0.7
9	1,017	4,060.86 ± 0.53	131.767 ± 0.131	3.22 ± 0.05	1.62 ± 0.14	0.867 ± 0.039	146.5 ± 0.4
10	1,157	3,074.00 ± 0.58	88.827 ± 0.097	2.25 ± 0.05	2.96 ± 0.17	1.424 ± 0.050	151.4 ± 0.8
11	1,399	1,056.63 ± 0.83	16.450 ± 0.053	0.80 ± 0.04	0.39 ± 0.18	1.711 ± 0.028	168.9 ± 2.5
PETR 1 ms (2.4 mg); J=2.934* 10 ⁻³ ; Ar*=51,050; K=82.7‰; Ca=0.1%; Cl=61 ppm							
1	604	2,715.34 ± 0.63	48.916 ± 0.121	2.99 ± 0.07	1.81 ± 0.29	3.751 ± 0.075	166.0 ± 2.2
2	716	3,313.49 ± 0.46	72.739 ± 0.088	1.82 ± 0.10	2.32 ± 0.18	2.125 ± 0.104	185.6 ± 2.0
3	745	8,350.79 ± 0.79	192.752 ± 0.188	3.64 ± 0.11	1.23 ± 0.22	2.084 ± 0.092	200.8 ± 0.7
4	766	10,896.13 ± 0.75	247.834 ± 0.246	3.88 ± 0.09	1.38 ± 0.17	2.081 ± 0.092	207.2 ± 0.6
5	791	6,454.21 ± 1.38	145.747 ± 0.167	1.71 ± 0.14	0.00 ± 0.00	0.936 ± 0.058	211.5 ± 0.6
6	822	3,693.95 ± 0.83	78.686 ± 0.142	1.51 ± 0.09	0.60 ± 0.24	1.196 ± 0.071	211.8 ± 1.3
7	856	2,458.65 ± 0.58	52.676 ± 0.079	0.82 ± 0.06	0.00 ± 0.00	0.966 ± 0.079	206.2 ± 2.2
8	940	4,175.00 ± 0.39	94.251 ± 0.129	1.81 ± 0.07	0.91 ± 0.29	1.663 ± 0.054	195.9 ± 0.8
9	1,020	6,035.17 ± 1.13	133.941 ± 0.154	2.15 ± 0.09	1.39 ± 0.23	1.523 ± 0.088	208.2 ± 1.0
10	1,159	7,732.17 ± 1.33	170.577 ± 0.163	3.25 ± 0.09	2.24 ± 0.26	2.113 ± 0.050	208.1 ± 0.4
11	1,347	1,539.15 ± 0.75	16.500 ± 0.054	0.67 ± 0.05	0.10 ± 0.26	2.928 ± 0.071	204.2 ± 5.9
STR3 hbl (28.4 mg); J=2.914* 10 ⁻³ ; Ar*=5,320; K=3.9‰; Ca=6.9%; Cl=107 ppm							
1	716	764.49 ± 0.13	7.996 ± 0.012	1.045 ± 0.006	14.80 ± 0.05	1.055 ± 0.007	276.4 ± 1.2
2	922	804.67 ± 0.04	12.439 ± 0.012	2.865 ± 0.006	98.39 ± 0.28	0.407 ± 0.009	272.3 ± 1.0
3	962	1,571.93 ± 0.11	21.576 ± 0.020	2.947 ± 0.010	245.88 ± 0.69	0.320 ± 0.006	334.3 ± 0.4
4	982	668.74 ± 0.06	9.965 ± 0.012	0.925 ± 0.010	105.91 ± 0.31	0.136 ± 0.005	310.0 ± 0.6
5	999	288.61 ± 0.03	4.391 ± 0.007	0.395 ± 0.004	43.70 ± 0.14	0.108 ± 0.008	288.9 ± 2.2
6	1,036	238.23 ± 0.05	3.249 ± 0.009	0.333 ± 0.009	35.30 ± 0.14	0.113 ± 0.005	310.0 ± 2.0
7	1,089	300.00 ± 0.04	3.763 ± 0.008	0.443 ± 0.005	43.04 ± 0.15	0.113 ± 0.007	344.8 ± 2.3
8	1,154	359.29 ± 0.06	3.858 ± 0.011	0.473 ± 0.011	44.77 ± 0.17	0.145 ± 0.007	393.0 ± 2.3
9	1,283	468.74 ± 0.04	5.146 ± 0.007	0.604 ± 0.005	57.55 ± 0.17	0.148 ± 0.005	395.3 ± 1.3
10	1,383	607.79 ± 0.05	6.959 ± 0.007	0.725 ± 0.011	74.69 ± 0.21	0.190 ± 0.006	380.7 ± 1.1
STR 3 bt (3.5 mg); J=2.920* 10 ⁻³ ; Ar*=15,770; K=46.0‰; Ca=4.1%; Cl=232 ppm							
1	549	1,415.28 ± 0.54	52.036 ± 0.100	2.23 ± 0.07	16943.1 ± 467.9	2.062 ± 0.051	251.6 ± 5.6
2	635	1,449.15 ± 0.54	62.431 ± 0.077	2.03 ± 0.05	2.79 ± 0.16	1.126 ± 0.071	91.9 ± 0.8
3	714	3,392.83 ± 0.37	165.170 ± 0.160	4.07 ± 0.04	6.29 ± 0.17	0.838 ± 0.063	97.7 ± 0.5
4	764	2,864.71 ± 0.66	132.835 ± 0.177	3.69 ± 0.04	26.68 ± 0.13	0.752 ± 0.063	102.1 ± 0.7
5	834	1,686.70 ± 0.69	70.210 ± 0.097	2.34 ± 0.07	40.59 ± 0.17	0.971 ± 0.040	102.4 ± 0.8
6	883	1,072.04 ± 0.37	36.794 ± 0.063	1.44 ± 0.04	22.87 ± 0.18	1.218 ± 0.049	99.6 ± 2.1
7	925	1,326.40 ± 0.51	45.423 ± 0.083	1.63 ± 0.06	45.13 ± 0.27	0.905 ± 0.054	119.4 ± 2.0
8	963	1,702.49 ± 0.54	53.097 ± 0.080	2.13 ± 0.06	91.52 ± 0.34	0.954 ± 0.037	136.6 ± 2.0
9	1,022	1,302.57 ± 0.54	42.360 ± 0.074	1.36 ± 0.06	35.28 ± 0.23	0.819 ± 0.060	127.8 ± 1.6
10	1,160	1,298.27 ± 0.71	29.439 ± 0.040	1.18 ± 0.07	35.35 ± 0.15	1.640 ± 0.034	140.7 ± 3.9
11	1,396	1,212.35 ± 0.74	10.425 ± 0.043	0.93 ± 0.08	23.63 ± 0.16	3.099 ± 0.049	145.1 ± 4.9

Table 5 (continued)

Step	T (°C)	⁴⁰ Ar tot	³⁹ Ar	³⁸ Ar	³⁷ Ar	³⁶ Ar	Age±1σ
STR 8 bt (3.4 mg); J=2.925* 10-3; Ar*=31,840; K=70.6 %; Ca=0.2%; Cl=75 ppm							
1	550	3,441.97 ± 0.44	103.090 ± 0.115	3.12 ± 0.05	2.37 ± 0.14	2.809 ± 0.056	129.0 ± 0.8
2	636	3,463.47 ± 0.88	104.763 ± 0.100	2.61 ± 0.07	0.72 ± 0.10	1.635 ± 0.044	144.2 ± 0.6
3	720	6,289.44 ± 0.71	204.731 ± 0.185	3.25 ± 0.04	0.57 ± 0.06	0.921 ± 0.065	148.8 ± 0.5
4	768	5,465.29 ± 0.71	173.960 ± 0.168	3.00 ± 0.08	1.16 ± 0.14	0.687 ± 0.041	153.0 ± 0.4
5	835	2,411.90 ± 0.35	75.436 ± 0.088	1.66 ± 0.05	1.16 ± 0.25	0.647 ± 0.065	149.1 ± 1.2
6	880	1,761.61 ± 0.44	54.862 ± 0.076	0.89 ± 0.06	0.93 ± 0.14	0.488 ± 0.065	149.3 ± 1.7
7	920	2,563.29 ± 0.79	77.695 ± 0.088	0.77 ± 0.09	0.17 ± 0.18	0.291 ± 0.062	160.9 ± 1.1
8	961	3,070.68 ± 0.62	91.851 ± 0.097	1.26 ± 0.04	1.64 ± 0.13	0.660 ± 0.056	158.1 ± 0.9
9	1,019	3,467.00 ± 0.32	103.393 ± 0.112	1.32 ± 0.06	0.36 ± 0.16	0.578 ± 0.053	160.9 ± 0.8
10	1,155	2,425.05 ± 0.68	67.411 ± 0.085	0.86 ± 0.05	2.00 ± 0.17	1.154 ± 0.035	156.2 ± 0.8
11	1,292	822.29 ± 0.65	12.077 ± 0.044	0.54 ± 0.07	1.35 ± 0.10	1.440 ± 0.047	165.7 ± 5.5