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$^{40}Ar/^{39}Ar$ Data for White Mica, Biotite, and K-Feldspar Samples from Low-Grade Metamorphic Rocks in the Westminster Terrane and Adjacent Rocks, Maryland

By Michael J. Kunk and Ryan McAleer

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Conversion Factors

Inch/Pound to SI

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
foot (ft)	0.3048	meter (m)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:
°F=(1.8×°C)+32
Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:
°C=(°F-32)/1.8

$^{40}Ar/^{39}Ar$ Data for White Mica, Biotite, and K–Feldspar Samples from Low-Grade Metamorphic Rocks in the Westminster Terrane and Adjacent Rocks, Maryland

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Introduction

This report contains reduced $^{40}Ar/^{39}Ar$ data of white mica and K-feldspar mineral separates and matrix of a whole rock phyllite, all from low-grade metamorphic rocks of the Westminster terrane and adjacent strata in central Maryland. This report presents these data in a preliminary form, but in more detail than can be accommodated in todays professional journals. Also included in this report is information on the location of the samples and a brief description of the samples. The data contained herein are not interpreted in a geological context, and care should be taken by readers unfamiliar with argon isotopic data in the use of these results; many of the individual apparent ages are not geologically meaningful. This report is primarily a detailed source document for subsequent publications that will integrate these data into a geological context.

Sample Locations

All the samples in this report were collected in the Westminster terrane or adjacent terranes in central Maryland. Table 1 lists the location of all the samples. The table includes the sample number, the material dated, the latitude and longitude of the sample site, the U.S. Geological Survey (USGS) 7.5-minute quadrangle in which the sample is located on, and the name of the rock unit from which the sample was collected. In general, the samples are listed from north to south.

Table 1. Material dated, location of sample, and formation.

Field no.	Material	Latitude	Longitude	7.5 minute quadrangle	Formation
K01–6–14E	White mica	39.0933	77.3278	Seneca Md.	Mather Gorge Formation
K01–6–14F	White mica	39.0942	77.3314	Seneca Md.	Mather Gorge Formation
K01–6–14H	White mica	39.0819	77.2700	Seneca Md.	Mather Gorge Formation
K01–6–14H1	White mica	39.0819	77.2700	Seneca Md.	Mather Gorge Formation
K01–6–14G	K-feldspar	39.0625	77.3942	Seneca Md.	Mather Gorge Formation
K03–7–14E	White mica	39.4517	76.9558	Finkstown Md.	Prettyboy Schist
K01–6–14I	White mica	39.7278	77.3153	Germantown Md.	Marburg Schist
K03–7–14F	White mica	39.4865	76.9840	Finksburg Md.	Marburg Schist
K03–7–14G	White mica	39.4878	77.0231	Winfield Md.	Marburg Schist
K03–7–14K	White mica	39.4771	77.1910	Libertytown Md.	Sams Creek Formation
K03–7–14I	White mica	39.4456	77.1280	Libertytown Md.	Marburg Schist
K04–7–14M	White mica	39.4145	77.3036	Walkersville Md.	Sams Creek Formation
K01–6–14C	White mica	39.3014	77.4172	Buckeystown Md.	Loudoun Formation
K07–11–8E1	Biotite	39.3015	77.3820	Buckeystown Md.	Urbana Formation
K01–6–14D	Phyllitic matrix	39.2933	77.4053	Buckeystown Md.	Urbana Formation
K07–11–08B	White mica	39.3142	77.4107	Buckeystown Md.	Frederick Formation
K01–6–14B	K-feldspar	39.3003	77.4225	Buckeystown Md.	Frederick Formation
K01–6–14B	K-feldspar	39.3003	77.4225	Buckeystown Md.	Frederick Formation
K07–11–8A	White mica	39.2658	77.4438	Buckeystown Md.	Araby Formation
K03–7–14B	White mica	39.6394	77.4011	Catoctin Furnace Md.	Tomstown Dolomite
K03–7–14A	White mica	39.6451	77.4172	Catoctin Furnace Md.	Harpers Formation
K03–7–14C	White mica	39.6333	77.4480	Catoctin Furnace Md.	Loudoun Formation
K01–6–14J	White mica	39.3131	77.5150	Point of Rocks Md.-Va.	Tomstown Dolomite

Methods

Sample Preparation

All of the samples were crushed, ground, and sized using 250-, 180-, and 150-microgram (µm) sieves. Mineral separates were produced using magnetic separation, heavy liquid separation, paper shaking, and hand picking to a purity greater than 99 percent for white mica and K-spar. The samples were washed in acetone, alcohol, and deionized water (threefold) in a Branson B–220 ultrasonic cleaner to remove dust and then re-sieved by hand using a 100 µm sieve.

The samples were irradiated in three separate packages (KD 24, KD 32, and KD 37). Approximately 1 milligram (mg) of muscovite and K-feldspar and 50 mg of whole rock phyllite were packaged in copper capsules and sealed under vacuum in fused silica tubes. The samples were then irradiated in the central thimble facility at the Training Reactor Isotopes General Atomics (TRIGA) reactor (GSTR) at the USGS in Denver, Colo. The monitor mineral used in all packages was MMhb-1 with an age of 519.4 ± 2.5 Ma (Alexander and others, 1978; and Dalrymple and others, 1981, p. 10). The type of container, and the geometry of samples and standards are similar to those described by Snee and others (1988).

Sample Analysis

The whole rock phyllite sample was analyzed at the U.S. Geological Survey in Denver on a VG Isotopes, Ltd. model 1200B mass spectrometer fitted with an electron multiplier using the $^{40}Ar/^{39}Ar$ step heating method of dating. Heating for 10 minutes per step followed a schedule of 5 steps. The sample was heated in a small-volume, molybdenum-lined, low-blank tantalum resistance furnace similar to that described by Staudacher and others (1978). Temperature was monitored by a W_5Re-$W_{26}Re$ thermocouple and controlled by a proportional, programmable controller. The furnace and the rear manifold were pumped between steps with a turbo molecular pump. Two isolated ion pumps evacuated the front manifold and the mass spectrometer flight-tube between each incremental step. Prior to analysis in the mass spectrometer, the gas was purified in the rear manifold by a SAES ST707 Zr-V-Fe getter operated at room temperature and a hot Re filament. A cold finger in the rear manifold, immersed in liquid N_2, was used to freeze out H_20. Gas was equilibrated with the front manifold, then isolated and cleaned in the front manifold with a SAES ST101 Al-Zr getter operated at 400°C and a Ti getter operated at 350°C.

An activated charcoal finger submerged in a thermally equilibrated mixture of dry ice and acetone in the front manifold was used to remove gasses with a molecular weight greater than 60 or 80 (primarily other noble gasses) prior to the expansion of the Ar dominated gas into the mass spectrometer. The gas was further purified in the mass spectrometer by a second SAES ST101 active gas getter operated at room temperature. Its successful operation could be monitored by the drop in counts of mass 44 (dominated by CO2) after the first gas analysis cycle. Ar isotopes with masses 40 through 36 and CO_2 (mass 44) were analyzed as a function of time in five analytical cycles. ^{40}Ar, ^{39}Ar, ^{38}Ar, and ^{37}Ar peaks and their baselines were measured for five 1.28 second integrations in each of the five cycles. ^{36}Ar and its baselines were measured for twenty 1.28 second integrations each of the five cycles. After the analysis the mass spectrometer was evacuated with an isolated ion pump. All phases of the sample heating, cleanup, equilibration, and analysis were performed under computer control.

All white mica and K-feldspar samples were analyzed at the USGS in Denver in a MAP 216 mass spectrometer fitted with an electron multiplier using the $^{40}Ar/^{39}Ar$ step heating method of dating. Heating for 10 minutes per step followed a schedule of 11 to 20 steps. The heating schedules were designed such that the percentage of ^{39}Ar released per step was limited to less than 20 percent of the total released for most samples. The samples were heated in the same manner and in the same type of furnace as was described above. The furnace and the rear manifold and front manifold were pumped between steps with a turbo molecular pump. An isolated ion pump was used to pump the mass spectrometer. Prior to mass spectrometer analysis the gas was purified in the manifold by two SAES ST101 Al-Zr getters, one operated at room temperature and the other at 400°C, and a hot Re filament. The Ar rich gas was further purified by a third SAES ST101 getter operated at room temperature in the flight tube of the mass spectrometer. Ar isotopes with masses 40 through 36 were analyzed as a function of time in six analytical cycles. Baselines were measured for ^{39}Ar and ^{36}Ar. The ^{36}Ar baselines were subtracted from the ^{40}Ar, ^{38}Ar, ^{37}Ar, and ^{36}Ar peaks. The ^{39}Ar baseline was subtracted from the ^{39}Ar peak to reduce the influence of the tail of the ^{40}Ar peak. All phases of the sample heating, cleanup, equilibration, and analysis were performed under computer control.

Isotopic Data Reduction

All the isotopic data produced on the VG 1200B were reduced using an updated version of the computer program ArAr* (Haugerud and Kunk, 1988). Isotopic data from the MAP 216 was reduced using the computer program Mass Spec (Deino, 2001). We used the decay constants recommended by Steiger and Jäger (1977). The isotopic measurements made in the five- or six-cycle analysis had

baseline values subtracted and then were regressed, to time zero, using standard linear regression techniques. These regressed peak values and associated analytical uncertainties were used in data reduction. For the VG 1200b and the MAP 216, full system blanks were measured prior to the suite of analyses made on each sample and then subtracted from the analytical results. Error estimates of the blanks were quadratically combined with the analytical errors and propagated through the error equations.

Corrections for interfering reactor-produced Ar isotopes from Ca, K, and Cl in the sample were made using the production ratios given in Dalrymple and others (1981, p. 19) and Roddick (1983, p. 891). Errors in calculated ages or ratios include: measurement uncertainty in the analysis, decay factor uncertainties, uncertainties in measured atmospheric $^{40}Ar/^{36}Ar$ ratios, the irradiation parameter J, the production ratios of the various reactor induced Ar producing reactions, the initial $^{38}Ar/^{36}Ar$ ratio, and the age of the monitor mineral (Haugerud and Kunk, 1988).

The data and charts in table 2 include the identification of individual step ages, plateau ages, and total gas ages. Total gas ages represent the age calculated from the addition of all the measured Ar peaks for all steps in a single sample. The total gas ages are roughly equivalent to conventional K/Ar ages. No analytical precision is calculated for total gas ages. Plateau ages were determined using the definition of Fleck, and others (1977, p. 19) as modified by Haugerud and Kunk (1988, p. 4). Only plateau ages include the error in the irradiation parameter J.

Results

$^{40}Ar/^{39}Ar$ Data

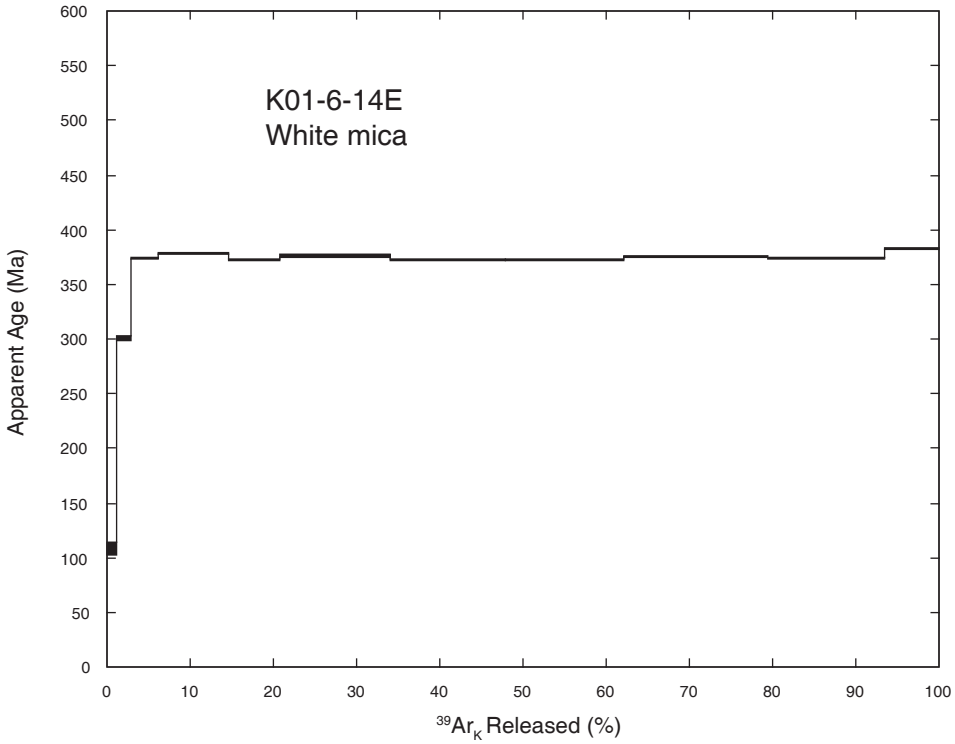
The $^{40}Ar/^{39}Ar$ geochronologic results presented in this report include tabular data (table 2), and graphical representation of the age spectra data on facing pages. Each sample starts with a line that gives the sample number, the sample weight in grams, the material analyzed, the packet and package number from the irradiation, and the J-value used, with its analytical uncertainty. The table includes a letter designation for the individual argon analysis, the temperature of the step, the percentage of K-derived ^{39}ArK for each step, the radiogenic yield (percentage of 40Ar that is derived from the decay of K), moles of ^{39}ArK , a corrected $^{40}Ar/^{39}ArK$ ratio from which the age can be directly calculated, calculated apparent K/Ca, and K/C ratios for each step (or asterisk if the measured ^{38}Ar or ^{37}Ar signal measured was less than the detection limit of the mass spectrometer), a calculated age for the step in millions of years, and an estimate of the precision of each age at the 1-sigma level. The sample precision includes estimates of the errors that are unique to a single sample and can be used only for comparisons with other steps of the same sample. This error estimate does not include the error in “J”. The second to last line in the age spectra data sets represents the total gas results for the sample. No analytical error is calculated for the age in this line because the age spectra are frequently disturbed and the error that could be calculated here would be geologically meaningless. The final line in the age spectrum data sets indicates if there was a plateau age. If the sample has an age plateau, the percentage of ^{39}Ar on the plateau, the steps on the plateau, and the plateau age and its precision are reported. Plateau ages include the error in the irradiation parameter J.

The figure associated with each age spectrum data set is a graph that plots cumulative percent ^{39}ArK of the individual heating steps against apparent age in millions of years. Errors in age are graphically displayed at the 2-sigma level of confidence.

For additional information on the sample data sets see Haugerud and Kunk (1988) and Deino (2001).

Table 2. $^{40}Ar/^{39}Ar$ analytical data.
[Ma, million years; wt., weight in grams; %, percent]

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K01-6-14E White mica #122KD32; J = 0.012329 ± 0.5%, wt.= 0.0021 g								
650	1.2	20.7	2.52E-16	5.016	11.26	8	108.2	2.6
750	1.7	86.3	3.37E-16	14.694	17.02	47	300.4	1.0
850	3.2	98.0	6.52E-16	18.675	46.13	503	373.8	0.6
950	8.5	99.5	1.73E-15	18.893	98.91	1563	377.8	0.5
1,000	6.1	99.7	1.24E-15	18.606	118.91	1786	372.6	0.5
1,050	13.2	99.5	2.66E-15	18.793	83.89	1639	376.0	0.4
1,100	13.9	99.6	2.82E-15	18.615	120.92	1471	372.7	0.4
1,150	14.1	99.7	2.86E-15	18.602	123.46	1563	372.5	0.4
1,200	17.4	99.7	3.52E-15	18.758	117.65	1515	375.3	0.4
1,300	14.1	99.8	2.85E-15	18.672	39.86	1408	373.8	0.4
1,450	6.5	98.4	1.31E-15	19.164	1.54	1149	382.6	0.5
Total gas	100.0	98.3	2.02E-14	18.500	89.13	1438	370.6	
No plateau								
K01-6-14F White mica #124KD32; J = 0.012339 ± 0.5%, wt.= 0.0020 g								
550	1.3	21.2	2.53E-16	5.518	27.15	22	118.8	2.6
650	1.3	90.0	2.48E-16	12.453	49.78	44	257.9	0.8
750	3.0	98.7	5.83E-16	16.190	74.18	538	328.6	0.6
850	8.0	99.4	1.54E-15	18.034	142.65	1163	362.5	0.5
950	18.3	99.9	3.54E-15	18.127	325.73	1667	364.2	0.4
1,000	13.0	100.0	2.52E-15	18.082	304.88	1515	363.3	0.4
1,050	13.1	99.9	2.54E-15	18.050	308.64	1961	362.8	0.4
1,100	10.7	99.9	2.07E-15	18.128	243.90	1351	364.2	0.4
1,150	8.1	99.8	1.57E-15	18.111	191.94	1538	363.9	0.4
1,200	8.0	100.0	1.55E-15	18.224	216.45	1639	365.9	0.4
1,300	11.5	99.7	2.21E-15	18.290	235.29	1429	367.1	0.4
1,450	3.6	99.9	7.01E-16	18.577	153.85	1563	372.3	0.5
Total gas	100.0	97.5	1.93E-14	17.314	203.06	1302	359.1	
No plateau								


K01-6-14E
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

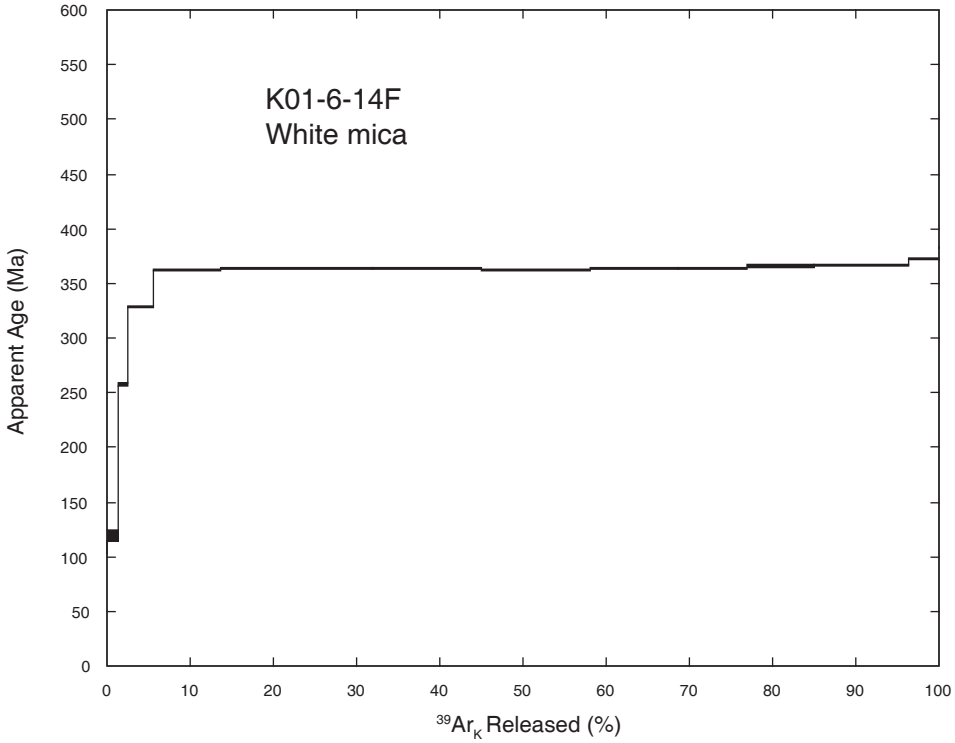
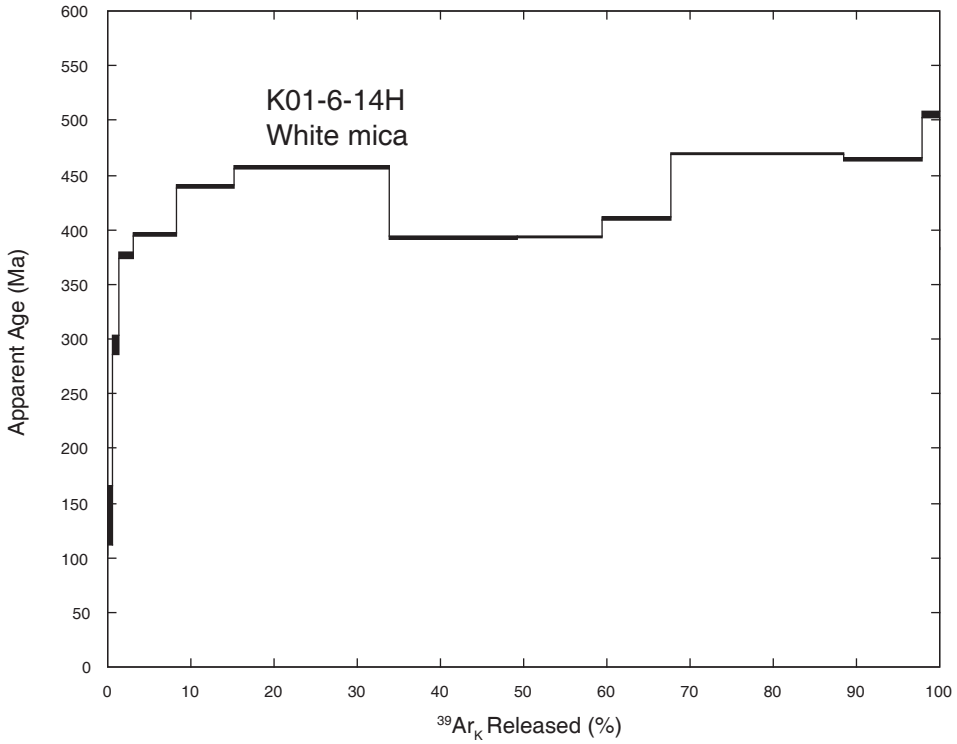

K01-6-14F
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K01-6-14H White mica #127KD32; J = 0.012349 ± 0.5%, wt.= 0.00291 g								
650	0.6	6.6	2.33E-16	6.432	3.60	3	137.9	13.7
750	0.7	49.9	2.96E-16	14.339	2.56	19	294.1	4.3
850	1.9	92.1	7.59E-16	18.754	1.78	273	375.8	1.5
950	5.2	98.1	2.14E-15	19.790	31.87	769	394.4	0.7
1,000	6.9	99.0	2.83E-15	22.344	46.45	893	439.6	0.8
1,050	18.6	99.6	7.65E-15	23.344	39.79	1176	457.0	0.6
1,100	15.3	99.6	6.3E-15	19.645	24.17	1299	391.8	0.6
1,150	10.2	99.6	4.18E-15	19.717	13.76	1205	393.1	0.6
1,200	8.4	99.5	3.43E-15	20.618	23.06	1351	409.2	0.7
1,300	20.7	98.9	8.51E-15	24.050	19.43	1053	469.2	0.6
1,450	9.4	99.2	3.85E-15	23.719	9.54	1205	463.5	0.7
1,650	2.1	94.5	8.82E-16	26.133	12.89	1176	504.6	1.5
Total gas	100.0	98.1	4.11E-14	21.913	24.56	1117	432.2	
No plateau								
K01-6-14H1 White mica #129KD32; J = 0.012357 ± 0.5%, wt.= 0.0021 g								
550	0.6	4.9	1.05E-16	2.261	9.90	17	49.7	6.0
650	1.5	33.9	2.86E-16	5.868	27.91	10	126.3	1.9
750	2.1	91.4	3.91E-16	16.732	37.11	88	339.1	1.0
850	4.9	98.9	9.09E-16	18.915	89.29	971	378.9	0.6
950	13.8	99.8	2.59E-15	18.724	213.22	1667	375.5	0.4
1,000	14.2	99.9	2.65E-15	18.372	215.52	1786	369.1	0.4
1,050	18.7	99.7	3.49E-15	18.065	185.87	1887	363.5	0.4
1,100	21.0	99.7	3.93E-15	17.969	144.30	1786	361.8	0.4
1,150	12.8	99.6	2.39E-15	17.976	141.04	1639	361.9	0.4
1,200	6.1	99.3	1.15E-15	17.981	108.23	1429	362.0	0.5
1,300	4.5	98.5	8.35E-16	18.070	70.92	1064	363.6	0.6
Total gas	100.0	98.1	1.87E-14	17.935	158.57	1606	360.5	
No plateau								


K01-6-14H
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

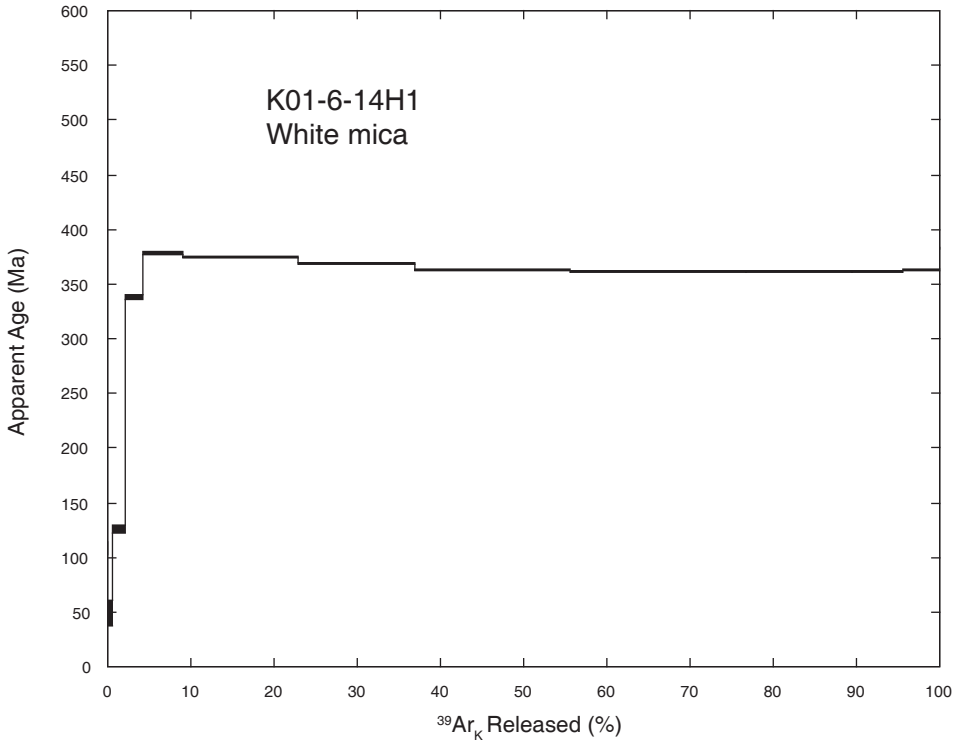
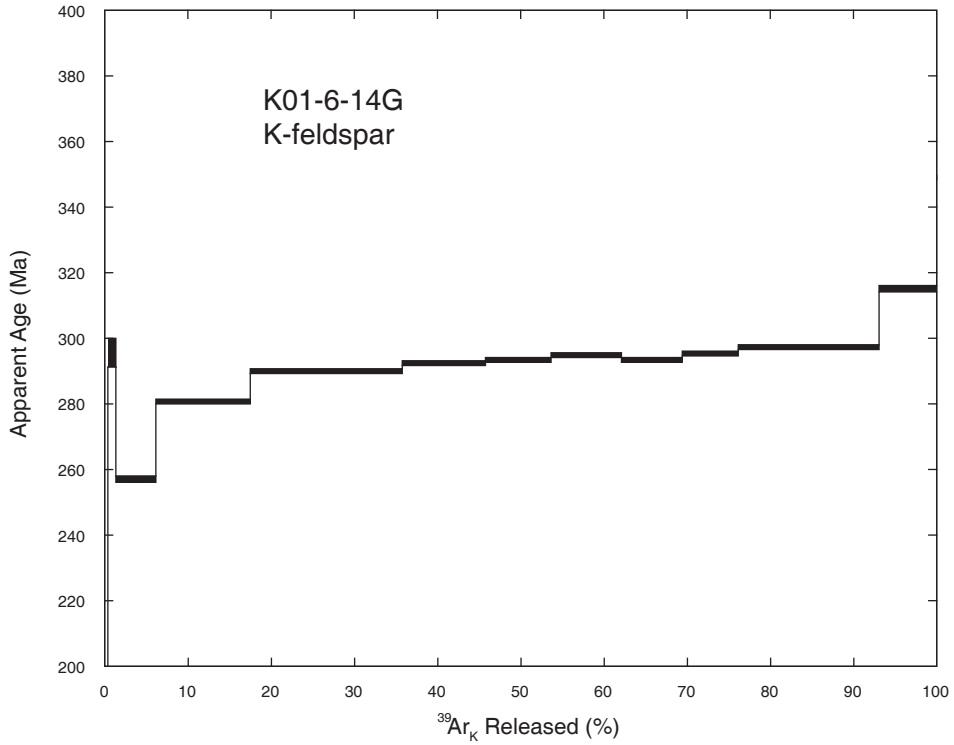

K01-6-14H1
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K01-6-14G K-feldspar #126KD32; J = 0.012346 ± 0.5%, wt.= 0.0021 g								
550	0.4	9.2	5.86E-17	5.549	6.27	15	119.5	8.4
650	1.0	57.3	1.5E-16	14.415	15.01	11	295.5	2.2
750	4.9	97.1	7.66E-16	12.414	48.47	463	257.3	0.5
850	11.3	99.6	1.76E-15	13.630	87.03	1754	280.6	0.4
950	18.3	99.8	2.86E-15	14.120	139.86	1852	289.9	0.3
1,000	9.9	100.0	1.55E-15	14.263	189.04	1786	292.6	0.4
1,050	7.9	99.8	1.23E-15	14.300	116.96	2128	293.3	0.4
1,100	8.4	97.5	1.31E-15	14.379	34.72	1613	294.8	0.4
1,150	7.3	99.7	1.14E-15	14.304	12.57	1493	293.4	0.4
1,200	6.7	99.6	1.05E-15	14.414	20.53	1818	295.5	0.4
1,300	17.1	99.3	2.66E-15	14.518	52.47	1299	297.4	0.4
1,450	6.9	99.0	1.07E-15	15.462	***	935	315.2	0.4
Total gas	100.0	98.6	1.56E-14	14.208	80.11	1558	291.3	
No plateau								
K03-7-14E White mica #131KD37; J = 0.011974 ± 0.5%, wt.= 0.0010 g								
750	0.2	17.7	2.78E-16	6.258	3.54	20	130.4	4.1
800	0.2	36.7	2.86E-16	8.043	5.88	17	165.9	2.8
850	0.3	59.6	3.85E-16	12.274	5.26	25	247.4	2.2
900	0.5	77.8	6.14E-16	15.866	7.25	46	313.8	1.3
950	1.0	88.8	1.19E-15	18.022	10.16	57	352.5	0.9
1,000	1.9	94.9	2.18E-15	18.459	17.58	68	360.3	0.5
1,050	3.3	96.4	3.84E-15	18.703	68.87	114	364.6	0.4
1,100	5.8	94.4	6.65E-15	18.897	72.46	235	368.0	0.3
1,150	17.4	96.0	1.99E-14	19.864	92.76	457	384.9	0.4
1,175	10.5	96.5	1.21E-14	19.422	79.62	442	377.2	0.3
1,200	9.6	95.3	1.11E-14	19.084	69.88	377	371.3	0.3
1,225	8.1	94.9	9.28E-15	19.138	59.74	327	372.2	0.3
1,250	7.4	95.0	8.44E-15	19.398	100.60	322	376.8	0.2
1,275	9.4	94.6	1.08E-14	19.667	82.71	314	381.5	0.3
1,300	9.5	90.9	1.08E-14	19.516	62.66	260	378.9	0.3
1,325	5.6	59.3	6.45E-15	19.443	36.36	95	377.6	0.7
1,350	2.2	34.1	2.57E-15	20.166	24.73	2	390.2	1.7
1,400	1.8	71.0	2.06E-15	20.198	31.78	23	390.8	0.9
1,450	1.2	54.1	1.39E-15	20.217	46.04	29	391.1	1.2
1,550	3.8	67.9	4.34E-15	20.403	80.65	133	394.3	0.6
Total gas	100.0	88.8	1.15E-13	19.319	70.97	297	376.2	
No plateau								


K01-6-14G
K-feldspar
Apparent Age (Ma)
400
380
360
340
320
300
280
260
240
220
200
0
10
20
30
40
50
60
70
80
90
100
$^{39}Ar_K$ Released (%)

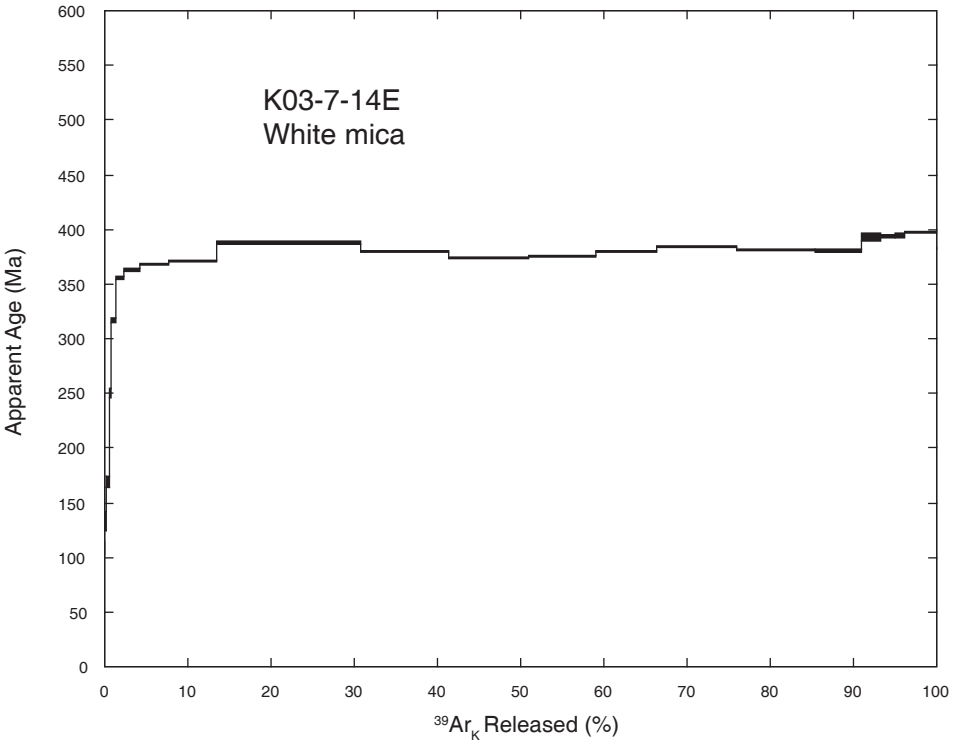
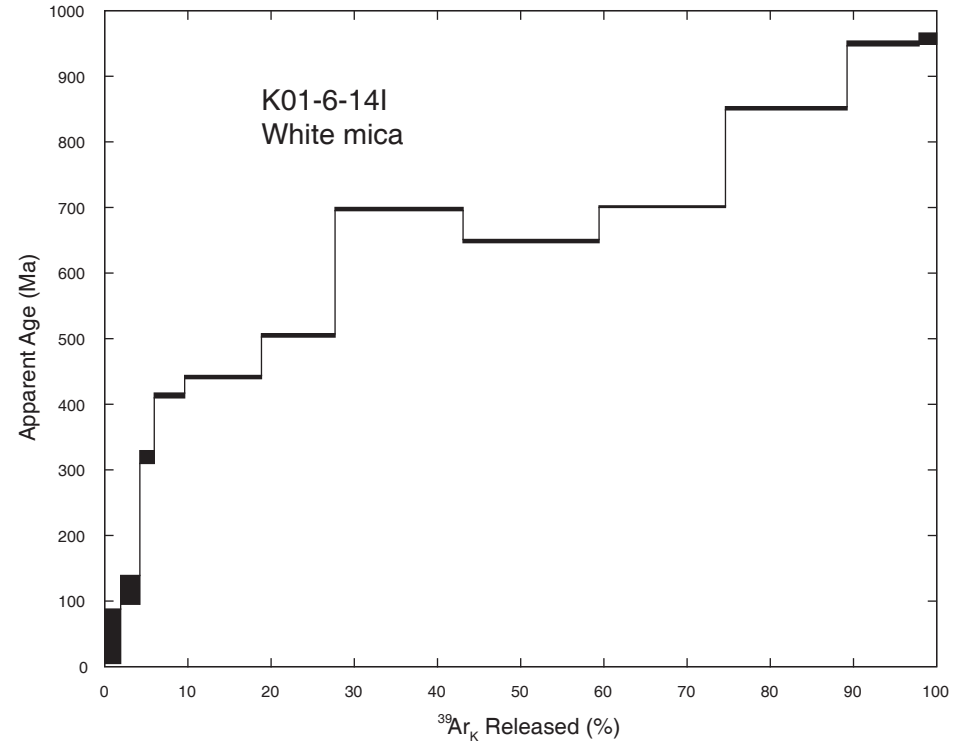

K03-7-14E
White mica
Apparent Age (Ma)
600
550
500
450
400
350
300
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
100
$^{39}Ar_K$ Released (%)

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K01-6-14I White mica #130KD32; J = 0.012360 ± 0.5%, wt.= 0.000147 g								
550	1.9	1.2	3.34E-16	2.066	3.77	9	45.5	20.6
650	2.4	5.6	4.11E-16	5.420	5.22	3	117.0	11.4
750	1.7	48.9	3.02E-16	15.685	5.48	27	319.7	5.4
850	3.6	90.0	6.35E-16	20.815	13.53	372	413.0	2.0
950	9.3	97.9	1.61E-15	22.441	42.37	725	441.7	1.1
1,000	8.8	99.0	1.54E-15	26.081	104.60	781	504.1	1.2
1,050	15.3	99.3	2.67E-15	38.191	104.06	763	697.6	1.2
1,100	16.4	99.5	2.86E-15	35.039	83.54	763	649.1	1.0
1,150	15.1	99.5	2.63E-15	38.419	71.94	862	701.0	1.0
1,200	14.6	99.5	2.54E-15	48.823	42.35	746	851.8	1.4
1,450	8.7	98.8	1.52E-15	56.029	1.31	392	949.3	2.1
1,650	2.1	92.9	3.6E-16	56.654	7.89	248	957.6	4.0
Total gas	100.0	93.7	1.74E-14	36.151	60.87	671	667.0	
No plateau								
K03-7-14F White mica #133KD37; J = 0.011987 ± 0.5%, wt.= 0.0015 g								
900	2.2	86.7	1.08E-15	15.573	16.66	61	308.8	0.9
950	5.8	94.7	2.82E-15	15.272	21.36	141	303.3	0.4
1,000	11.8	97.6	5.8E-15	16.738	28.42	177	329.9	0.3
1,050	15.8	97.9	7.73E-15	19.080	36.72	219	371.6	0.2
1,100	14.7	95.7	7.21E-15	19.774	41.67	269	383.8	0.3
1,150	15.0	90.8	7.36E-15	20.200	50.20	262	391.2	0.3
1,175	7.7	88.9	3.79E-15	20.451	53.42	189	395.5	0.5
1,200	6.3	88.6	3.1E-15	20.609	74.85	136	398.3	0.5
1,225	5.8	88.5	2.86E-15	20.542	40.47	101	397.1	0.5
1,250	5.1	87.7	2.52E-15	20.469	29.03	78	395.9	0.6
1,275	4.9	85.7	2.39E-15	20.305	24.54	65	393.0	0.6
1,300	4.8	77.3	2.35E-15	20.413	18.01	64	394.9	0.7
Total gas	100.0	92.0	4.9E-14	19.238	39.14	183	374.7	
No plateau								


K01-6-14I
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
100
200
300
400
500
600
700
800
900
1000
0
10
20
30
40
50
60
70
80
90
100

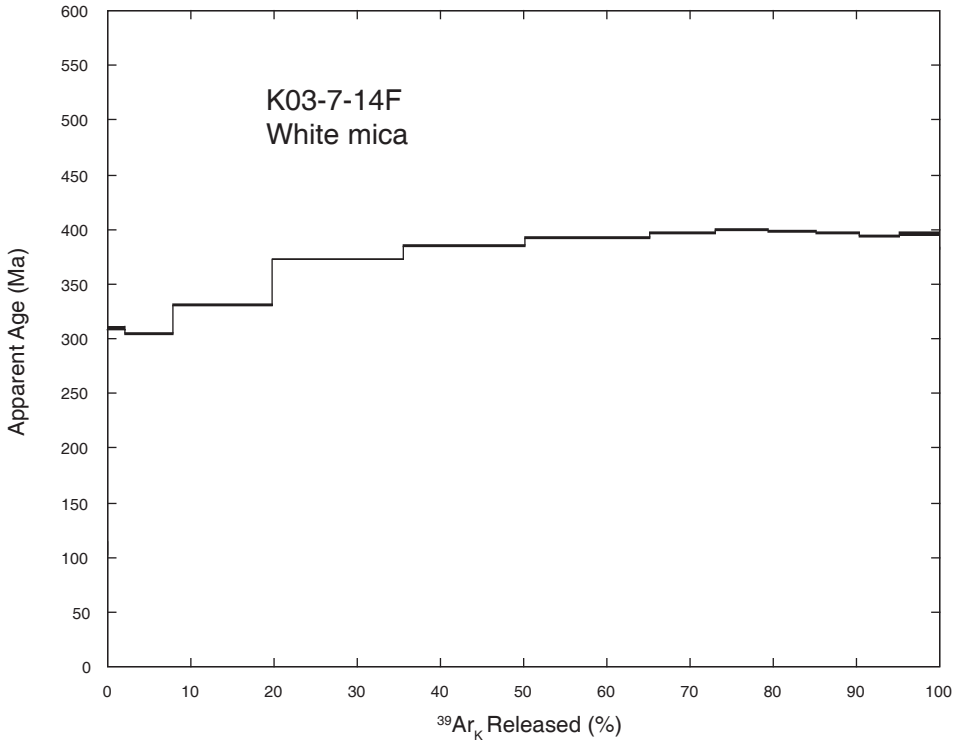
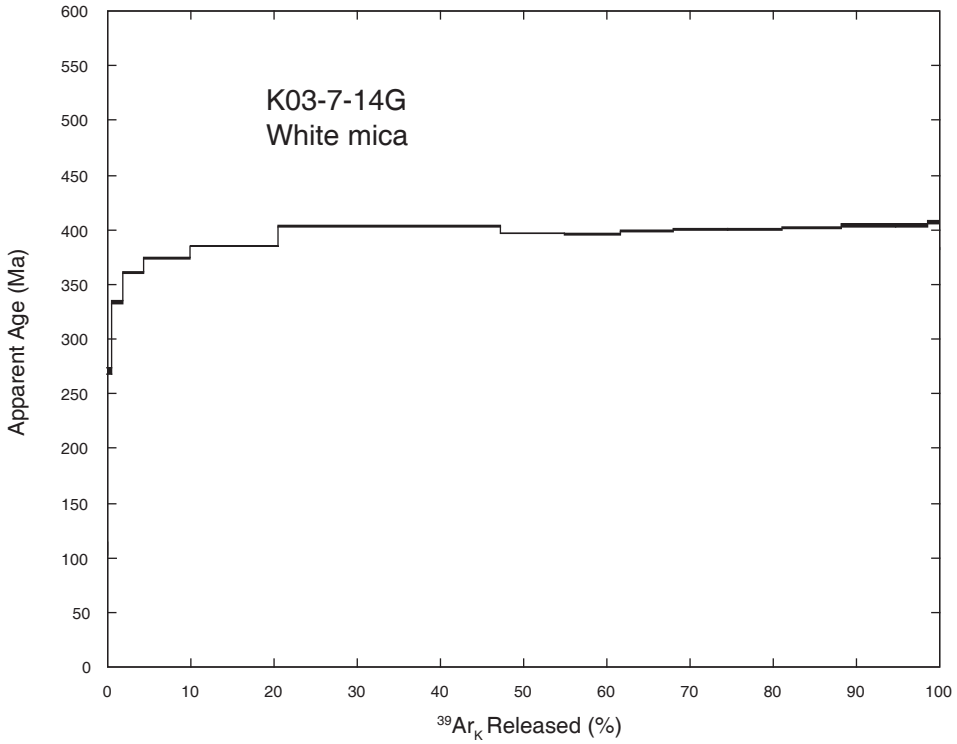

K03-7-14F
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K03-7-14G White mica #134KD37; J = 0.011993 ± 0.5%, wt.= 0.0005 g								
900	0.6	80.3	6E-16	13.581	6.99	19	272.2	1.3
950	1.3	91.9	1.26E-15	17.005	13.52	60	334.8	0.8
1,000	2.5	97.2	2.33E-15	18.554	42.09	71	362.5	0.5
1,050	5.6	97.9	5.33E-15	19.294	44.17	117	375.5	0.3
1,100	10.6	97.7	9.97E-15	19.920	61.65	287	386.5	0.3
1,150	26.6	97.1	2.49E-14	21.005	61.61	524	405.3	0.3
1,175	7.7	95.7	7.3E-15	20.580	77.28	306	398.0	0.3
1,200	6.8	94.0	6.39E-15	20.527	49.16	201	397.1	0.3
1,225	6.4	95.3	6E-15	20.742	38.39	176	400.8	0.3
1,250	6.4	95.9	6.04E-15	20.835	34.64	170	402.4	0.4
1,275	6.6	96.2	6.27E-15	20.800	26.06	157	401.8	0.4
1,300	7.0	96.2	6.69E-15	20.894	29.52	161	403.4	0.3
1,325	6.7	85.7	6.33E-15	21.005	24.28	108	405.3	0.4
1,350	3.8	73.7	3.6E-15	21.040	19.17	2	405.9	0.7
1,400	1.3	85.2	1.27E-15	21.201	9.61	9	408.7	0.8
Total gas	100.0	94.5	9.43E-14	20.505	46.90	267	397.0	
No plateau								
K03-7-14K White mica #139KD37; J = 0.012014 ± 0.5%, wt.= 0.0040 g								
850	3.7	90.0	4.91E-15	9.610	22.62	66	197.1	0.3
900	5.3	96.3	7.1E-15	16.138	25.83	205	319.7	0.3
950	8.5	97.9	1.13E-14	19.781	18.72	395	384.7	0.3
1,000	12.2	98.5	1.62E-14	22.724	23.12	382	435.5	0.4
1,050	11.8	98.8	1.57E-14	24.415	32.48	467	464.0	0.4
1,100	17.9	98.9	2.35E-14	24.374	43.08	625	463.3	0.4
1,150	16.2	97.9	2.14E-14	23.537	33.06	694	449.3	0.4
1,175	8.6	94.3	1.13E-14	23.082	34.97	488	441.6	0.3
1,200	6.5	91.0	8.62E-15	23.109	32.71	322	442.0	0.3
1,225	4.3	91.4	5.69E-15	23.164	24.28	203	442.9	0.4
1,250	3.0	91.5	4E-15	23.226	19.47	131	444.0	0.4
1,275	1.8	88.0	2.38E-15	23.229	9.99	72	444.1	0.6
Total gas	100.0	96.3	1.32E-13	22.320	30.46	450	429.3	
No plateau								


K03-7-14G
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
600
550
500
450
400
350
300
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
100

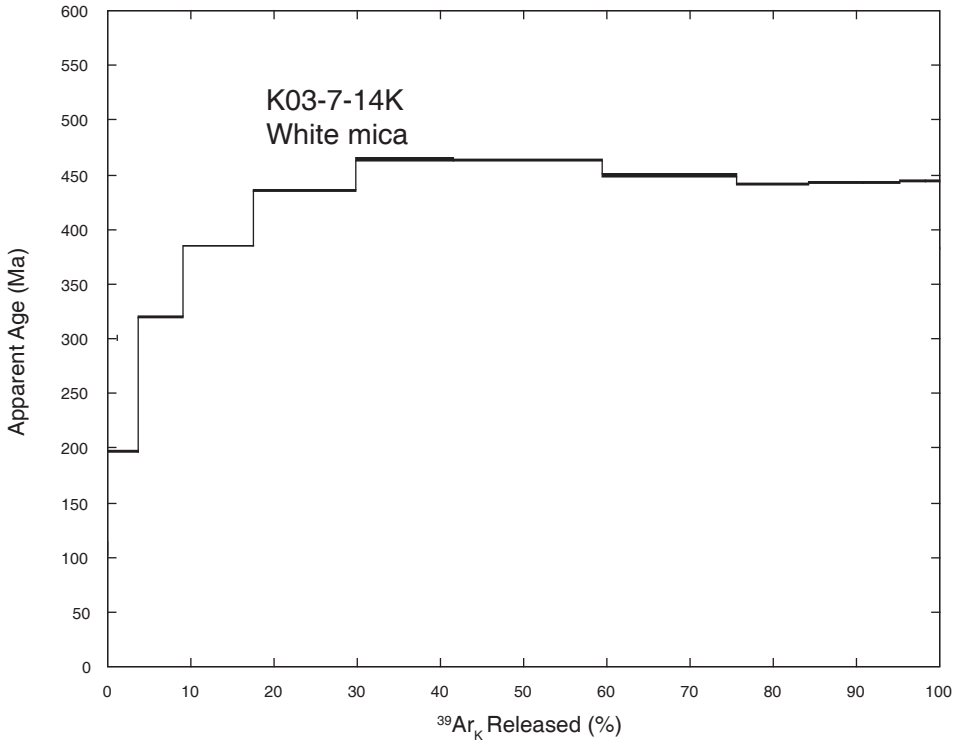
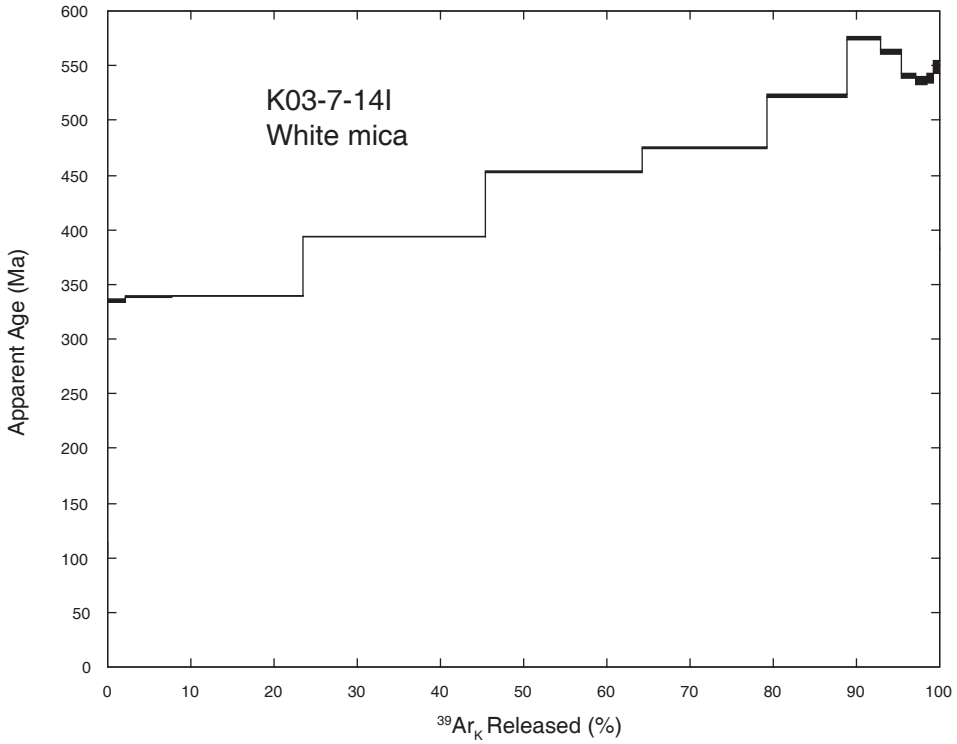

K03-7-14K
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
600
550
500
450
400
350
300
250
200
150
100
50
0
0
10
20
30
40
50
60
70
80
90
100

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K03-7-14I White mica #138KD37; J = 0.012010 ± 0.5%, wt.=0.0015 g								
850	2.2	86.4	1.2E-15	16.982	20.47	21	334.9	0.8
900	5.6	95.5	3.06E-15	17.197	22.64	99	338.7	0.4
950	15.7	98.4	8.59E-15	17.224	30.05	282	339.2	0.2
1,000	21.9	99.0	1.2E-14	20.308	42.61	294	393.7	0.2
1,050	18.8	98.7	1.03E-14	23.728	45.29	299	452.3	0.3
1,100	15.1	97.4	8.21E-15	25.109	50.43	314	475.5	0.3
1,150	9.6	90.7	5.19E-15	27.978	31.45	192	522.6	0.5
1,175	4.0	87.7	2.19E-15	31.271	35.79	99	575.3	0.8
1,200	2.6	86.4	1.4E-15	30.448	334.45	50	562.3	1.0
1,225	1.6	82.5	8.87E-16	29.107	134.59	31	540.8	1.1
1,250	1.3	72.9	7.03E-16	28.840	***	18	536.6	1.6
1,275	0.9	62.9	5.04E-16	29.005	***	12	539.2	2.2
1,300	0.7	53.3	3.77E-16	29.617	103.52	13	549.0	2.9
Total gas	100.0	95.3	5.46E-14	22.778	47.92	243	436.3	
No plateau								
K03-7-14M White mica #141KD37; J = 0.012019 ± 0.5%, wt.= 0.0016 g								
700	0.1	30.7	5.91E-17	2.309	3.11	5	49.4	9.0
750	0.9	44.3	9.07E-16	2.328	8.63	5	49.8	0.8
800	1.5	75.0	1.5E-15	4.293	12.94	5	90.8	0.5
850	2.0	92.8	2.02E-15	10.739	15.12	14	219.0	0.4
900	2.5	97.1	2.55E-15	17.831	12.81	90	350.3	0.4
950	5.3	97.5	5.43E-15	19.755	14.32	224	384.4	0.3
1,000	10.9	99.1	1.13E-14	21.853	23.27	263	420.7	0.3
1,050	17.6	99.1	1.82E-14	22.544	22.44	376	432.6	0.3
1,100	18.7	98.9	1.93E-14	22.583	29.73	535	433.2	0.4
1,150	22.0	98.4	2.27E-14	22.422	34.16	529	430.5	0.4
1,175	12.3	98.8	1.27E-14	22.414	39.94	448	430.3	0.3
1,200	4.9	98.0	5.06E-15	22.378	25.44	188	429.7	0.4
1,225	1.0	93.1	1.05E-15	21.874	8.13	43	421.1	0.8
1,250	0.3	72.5	3.22E-16	19.809	2.98	11	385.3	2.1
1,275	0.1	44.7	1.28E-16	17.583	0.98	4	345.9	5.1
Total gas	100.0	97.5	1.03E-13	21.450	27.47	391	413.9	
No plateau								


K03-7-14I
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

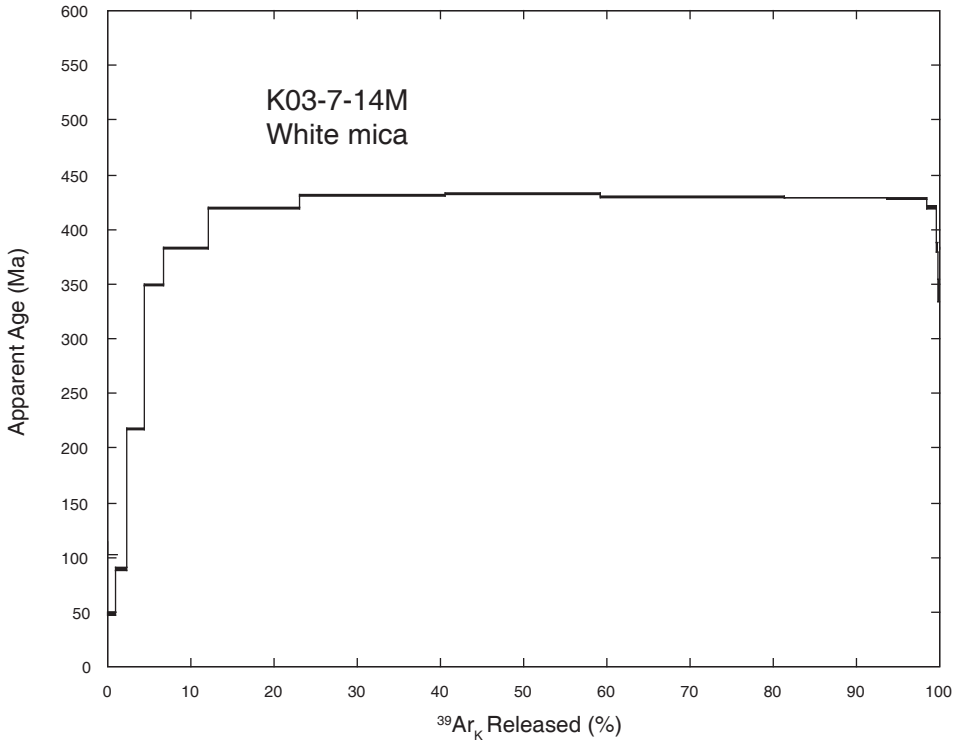
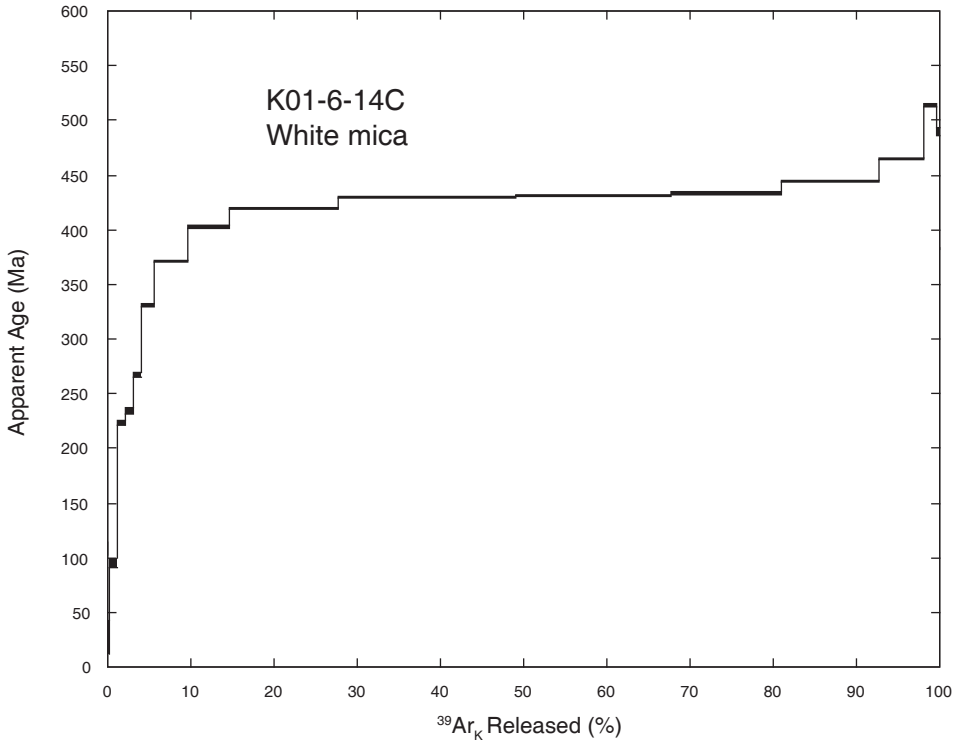

K03-7-14M
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K01-6-14C White mica #119KD32; J = 0.012355 ± 0.5%, wt.= 0.0021 g								
550	0.2	3.2	3.34E-17	1.250	15.06	13	27.7	7.7
600	1.1	23.0	2.22E-16	4.356	26.54	43	94.6	2.2
650	1.0	73.6	2.09E-16	10.666	69.88	28	223.3	1.2
700	0.9	86.7	2E-16	11.215	67.43	27	234.1	1.4
750	1.0	93.4	2.07E-16	12.928	68.49	72	267.3	1.1
800	1.5	98.6	3.22E-16	16.264	120.77	289	330.3	0.7
850	3.9	99.2	8.21E-16	18.461	80.45	787	370.7	0.5
900	5.1	99.8	1.08E-15	20.227	126.90	1124	402.4	0.5
950	13.0	99.7	2.76E-15	21.170	201.21	1351	419.2	0.5
1,000	21.4	99.8	4.53E-15	21.733	245.70	1613	429.1	0.4
1,050	18.7	99.8	3.95E-15	21.854	232.56	1613	431.2	0.4
1,100	13.1	99.9	2.78E-15	21.959	230.41	1351	433.1	0.5
1,150	11.8	99.8	2.49E-15	22.612	195.69	1282	444.5	0.5
1,200	5.4	99.6	1.15E-15	23.768	119.33	1190	464.5	0.6
1,250	1.4	99.1	3.01E-16	26.662	7.39	725	513.7	0.9
1,300	0.5	98.3	9.98E-17	25.228	4.15	476	489.5	1.9
Total gas	100.0	98.2	2.12E-14	21.200	195.80	1322	420.0	
No plateau								
K07-11-8E1 Biotite #195KD49; J = 0.009296 ± 0.5%, wt.= 0.0001 g								
1,450	100.0	42.6	9.09E-15	28.730	0.66	5	427.0	2.8
K01-6-14D Groundmass #120KD32; J = 0.012298 ± 0.5%, wt.= 0.0543 g								
550	1.1	67.9	1.54E-13	4.711	204.40	141	101.6	0.2
650	3.7	97.7	5.4E-13	15.078	496.95	755	306.9	0.2
750	14.4	99.7	2.11E-12	20.393	1,025.02	***	403.7	0.1
850	31.6	99.8	4.63E-12	21.743	876.91	***	427.5	0.2
950	44.7	99.8	6.55E-12	22.431	542.35	***	439.5	0.1
1,000	1.7	99.6	2.55E-13	21.666	93.58	39751	426.1	0.2
1,050	0.7	99.7	9.59E-14	21.106	59.47	5641	416.3	0.5
1,150	0.6	99.6	8.96E-14	21.805	82.95	8027	428.6	0.3
1,250	1.0	99.5	1.51E-13	22.282	58.68	12957	436.9	0.3
1,450	0.5	98.7	7.2E-14	22.443	26.72	1612	439.7	0.3
Total gas	100.0	99.3	1.46E-11	21.436	691.06	949	422.1	
No plateau								


K01-6-14C
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

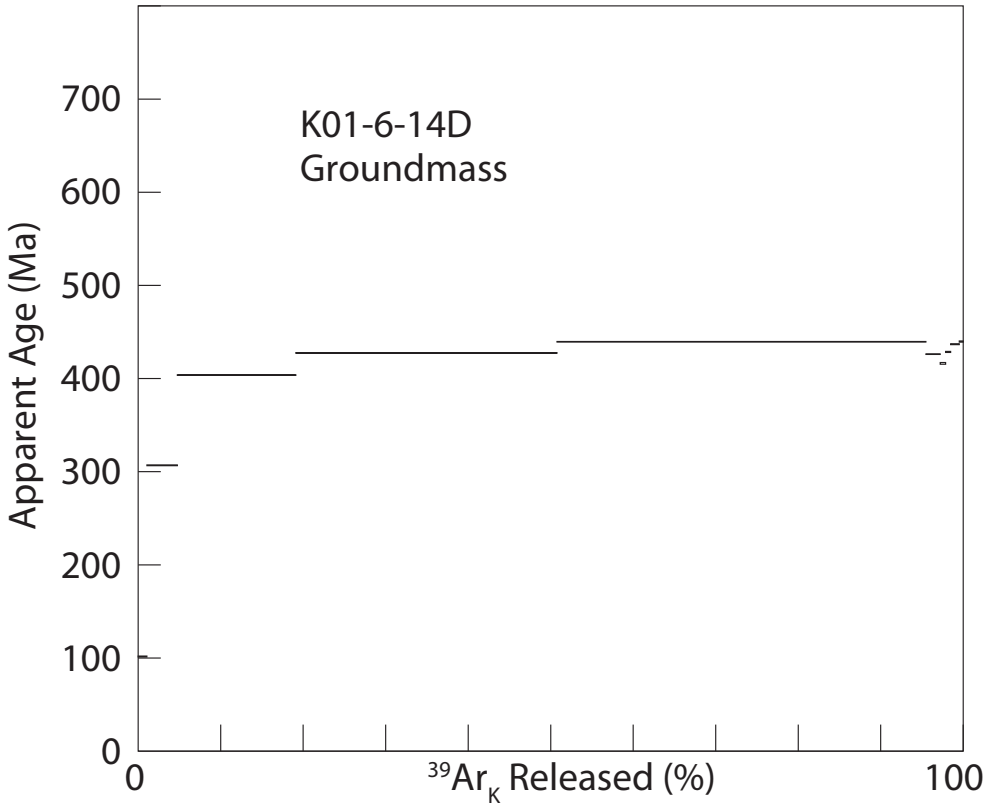
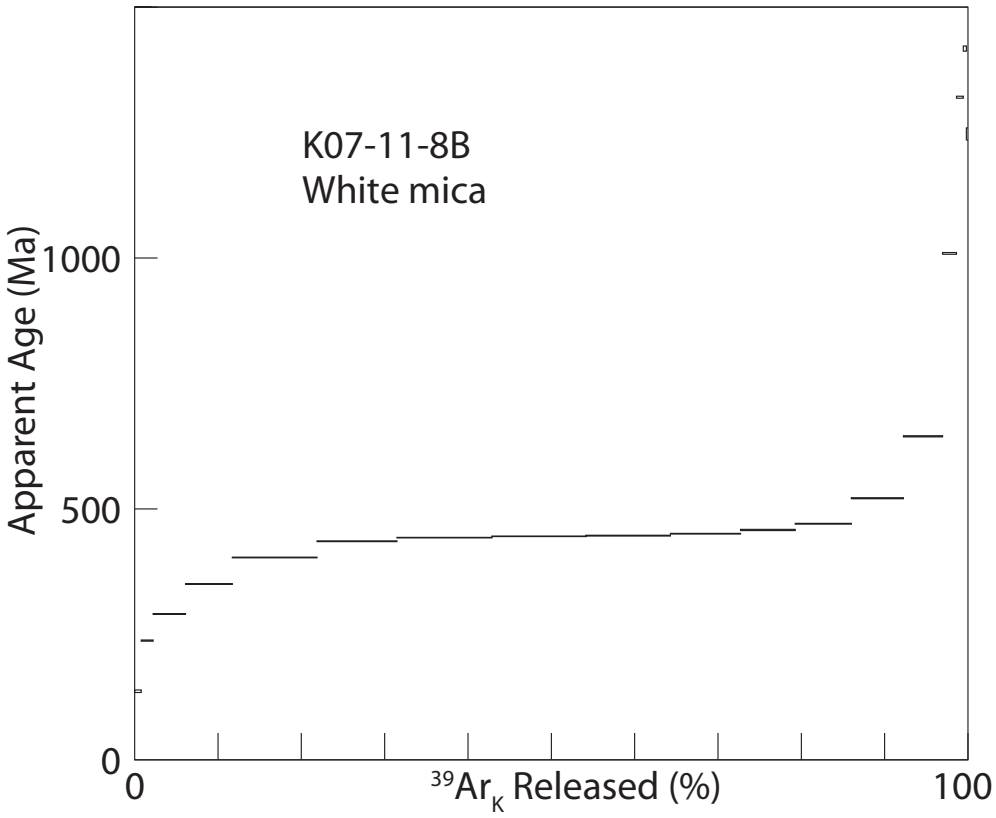

K01-6-14D
Groundmass
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
100
200
300
400
500
600
700
0
100

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K07-11-8B White mica #193KD49; J = 0.009329 ± 0.5%, wt.= 0.0102g								
500	0.8	65.7	1.09E-14	8.442	30.23	78	136.8	1.3
600	1.4	91.3	1.98E-14	15.096	42.48	146	237.7	0.6
700	3.9	97.9	5.41E-14	18.742	75.84	361	290.7	0.3
750	5.6	99.2	7.76E-14	22.981	120.81	776	350.4	0.4
800	10.2	99.6	1.41E-13	26.845	178.55	1378	403.2	0.3
825	9.6	99.6	1.33E-13	29.274	255.68	2767	435.6	0.4
850	11.4	99.7	1.58E-13	29.821	317.91	5446	442.8	0.3
875	11.3	99.7	1.56E-13	30.023	335.83	6424	445.5	0.3
900	10.1	99.7	1.41E-13	30.122	325.67	8369	446.8	0.4
925	8.4	99.6	1.17E-13	30.418	327.33	10112	450.7	0.4
950	6.6	99.4	9.09E-14	30.995	257.66	3371	458.2	0.6
1,000	6.7	99.3	9.34E-14	31.930	321.00	2246	470.4	0.4
1,050	6.3	99.3	8.67E-14	35.919	319.89	2274	521.4	0.5
1,100	4.7	99.4	6.52E-14	46.052	227.66	1501	644.8	0.6
1,150	1.7	99.0	2.31E-14	80.364	49.14	447	1009.3	0.8
1,200	0.8	98.5	1.14E-14	115.699	23.79	167	1320.6	1.0
1,250	0.4	95.0	5.07E-15	127.989	12.52	61	1417.5	2.6
1,450	0.2	41.4	2.67E-15	106.798	4.72	3	1247.1	6.2
Total gas	100.0	99.0	1.39E-12	31.865	258.35	4104	468.6	
No plateau								
K01-6-14B K-feldspar #116KD32; J = 0.012345 ± 0.5%, wt.= 0.00327 g								
800	0.3	62.7	1.42E-16	95.231	***	2	1402.3	5.4
900	1.1	79.5	4.75E-16	41.565	***	13	747.2	1.8
950	2.1	93.4	8.85E-16	15.707	***	202	319.7	0.8
1,000	3.1	97.9	1.32E-15	12.693	***	552	262.6	0.5
1,050	4.0	98.7	1.73E-15	12.725	***	699	263.2	0.4
1,100	4.7	98.9	2.02E-15	12.949	***	833	267.5	0.4
1,150	4.9	97.8	2.09E-15	13.298	***	877	274.2	0.4
1,200	4.5	99.2	1.93E-15	13.078	***	1190	270.0	0.4
1,225	3.1	99.1	1.32E-15	12.960	***	1282	267.7	0.6
1,250	2.9	99.4	1.22E-15	13.307	***	980	274.4	0.5
1,275	3.2	99.4	1.35E-15	13.766	***	781	283.2	0.5
1,300	3.1	98.7	1.31E-15	14.212	***	667	291.6	0.6
1,400	20.2	99.0	8.59E-15	16.102	***	535	327.1	0.2
1,650	42.9	98.9	1.83E-14	17.102	***	448	345.6	0.3
Total gas	100.0	98.5	4.26E-14	16.082		599	327.0	
No plateau								


K07-11-8B
White mica
Apparent Age (Ma)
1000
500
0
0
$^{39}Ar_K$ Released (%)
100

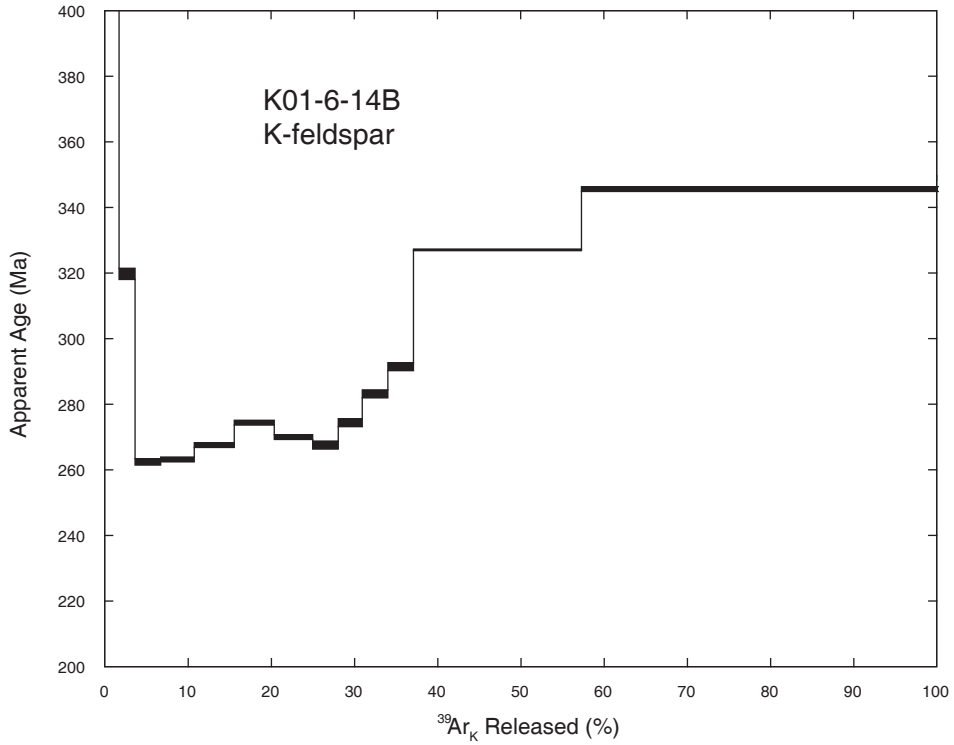
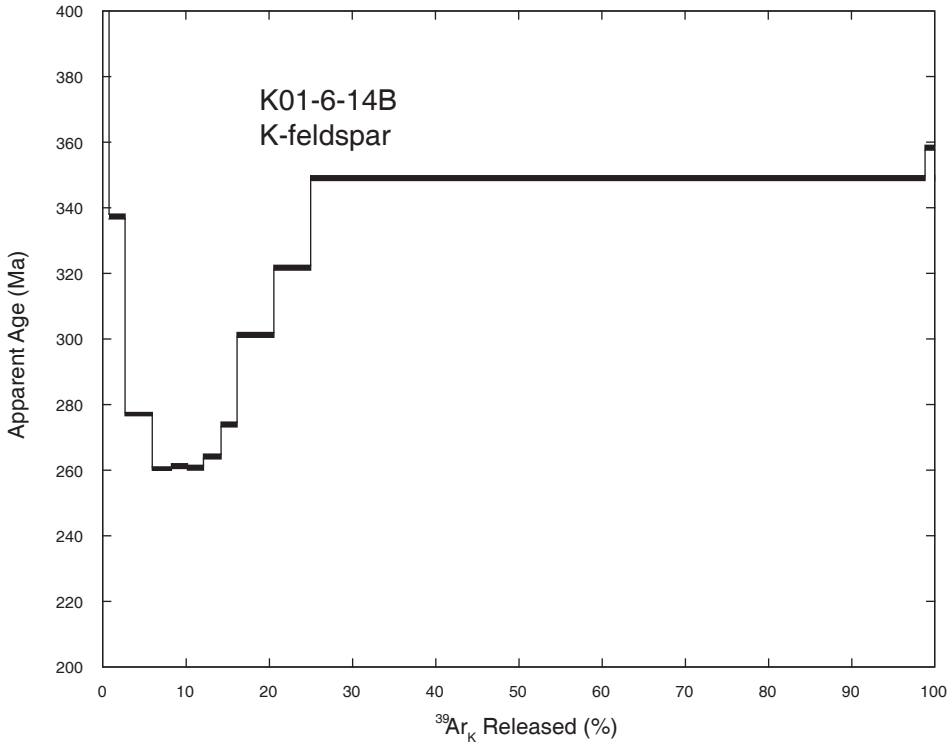

K01-6-14B
K-feldspar
Apparent Age (Ma)
400
380
360
340
320
300
280
260
240
220
200
0
10
20
30
40
50
60
70
80
90
100
$^{39}Ar_K$ Released (%)

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K01-6-14B K-feldspar #117KD32; J= 0.012349 ± 0.5%, wt.= 0.0021 g								
550	0.1	51.5	3.93E-18	166.350	2.97	6	2014.3	8.1
650	0.1	80.8	8.74E-18	169.041	6.56	5	2033.8	3.9
750	0.6	96.5	4.12E-17	39.632	23.11	42	718.7	1.0
850	1.8	98.9	1.25E-16	16.643	22.72	216	337.2	0.4
950	3.4	99.3	2.31E-16	13.446	44.46	518	277.1	0.3
1,000	2.3	99.7	1.58E-16	12.579	43.12	1010	260.5	0.3
1,050	1.9	99.7	1.29E-16	12.619	44.60	1266	261.3	0.3
1,100	2.0	99.7	1.4E-16	12.593	48.01	1316	260.8	0.3
1,150	2.0	99.8	1.37E-16	12.765	50.97	1299	264.1	0.3
1,200	2.1	99.5	1.42E-16	13.270	52.77	1176	273.8	0.3
1,300	4.4	99.4	3.02E-16	14.715	75.41	699	301.2	0.3
1,350	4.5	99.4	3.06E-16	15.802	93.90	602	321.6	0.4
1,450	73.8	99.6	5.05E-15	17.286	173.01	465	349.1	0.4
1,650	1.1	99.4	7.8E-17	17.790	63.17	813	358.3	0.5
Total gas	100.0	99.6	6.85E-15	16.956	142.92	556	342.4	
No plateau								
K07-11-8A White mica #192KD49; J = 0.009308 ± 0.5%, wt.= 0.00116 g								
600	0.1	1.0	2.15E-17	2.471	11.33	9	41.0	46.0
700	0.3	7.5	1.01E-16	6.483	6.65	19	105.7	9.6
750	0.4	30.5	1.26E-16	11.045	4.06	39	176.5	5.1
800	0.4	59.9	1.34E-16	12.521	6.07	55	198.9	6.8
825	0.3	75.7	1.11E-16	15.069	5.27	86	236.8	4.2
850	0.4	80.1	1.26E-16	16.838	7.45	95	262.7	3.6
875	0.5	86.7	1.73E-16	18.617	7.63	85	288.3	2.7
900	0.6	98.0	2.12E-16	21.229	11.18	82	325.3	7.5
925	1.0	95.8	3.65E-16	21.322	11.84	136	326.6	1.7
950	1.5	97.3	5.45E-16	22.068	18.66	177	337.0	1.2
1,000	4.0	98.3	1.44E-15	23.272	44.25	184	353.7	0.6
1,050	8.8	99.0	3.12E-15	24.751	70.67	424	374.0	0.4
1,100	13.4	98.9	4.78E-15	26.222	144.72	641	394.0	0.6
1,125	12.3	98.5	4.37E-15	27.136	194.17	1020	406.3	0.5
1,150	13.1	98.9	4.66E-15	28.043	228.83	1639	418.4	0.4
1,175	15.2	99.1	5.41E-15	28.740	221.73	2000	427.7	0.4
1,190	9.8	99.1	3.5E-15	29.257	392.16	1852	434.5	0.4
1,200	6.1	99.0	2.16E-15	29.843	135.14	990	442.2	0.7
1,215	4.1	98.6	1.46E-15	30.545	555.56	1282	451.4	0.7
1,225	2.4	98.1	8.65E-16	31.600	67.20	813	465.2	1.1
1,240	1.4	97.3	4.91E-16	33.867	49.46	278	494.3	1.4
1,250	0.7	95.0	2.53E-16	35.669	13.77	191	517.2	2.3
1,275	0.5	92.4	1.74E-16	40.018	14.83	72	571.2	3.1
1,300	0.4	88.5	1.41E-16	44.757	3.63	37	628.3	4.0
1,350	0.6	49.4	2.09E-16	49.316	1.33	14	681.5	4.3
1,400	0.5	49.3	1.92E-16	38.694	1.63	2	554.9	4.7
1,450	0.5	45.2	1.64E-16	28.810	3.01	12	428.6	5.0
1,650	0.9	28.7	3.07E-16	30.975	6.95	7	457.0	5.9
Total gas	100.0	96.4	3.56E-14	27.709	187.60	1101	413.5	
No plateau								


K01-6-14B
K-feldspar
Apparent Age (Ma)
400
380
360
340
320
300
280
260
240
220
200
0
10
20
30
40
50
60
70
80
90
100
$^{39}Ar_K$ Released (%)

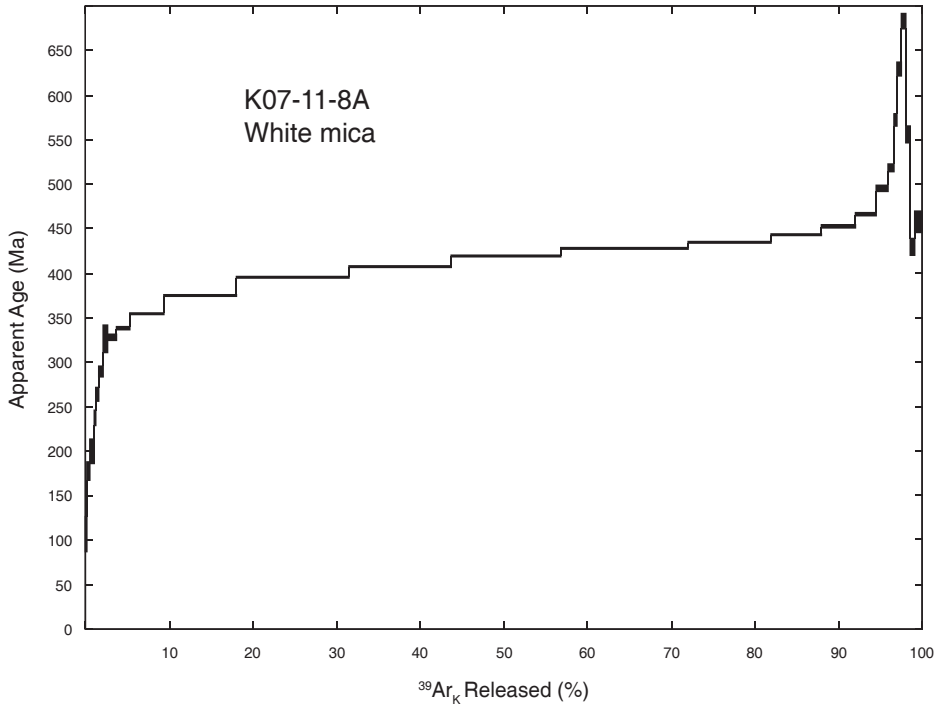
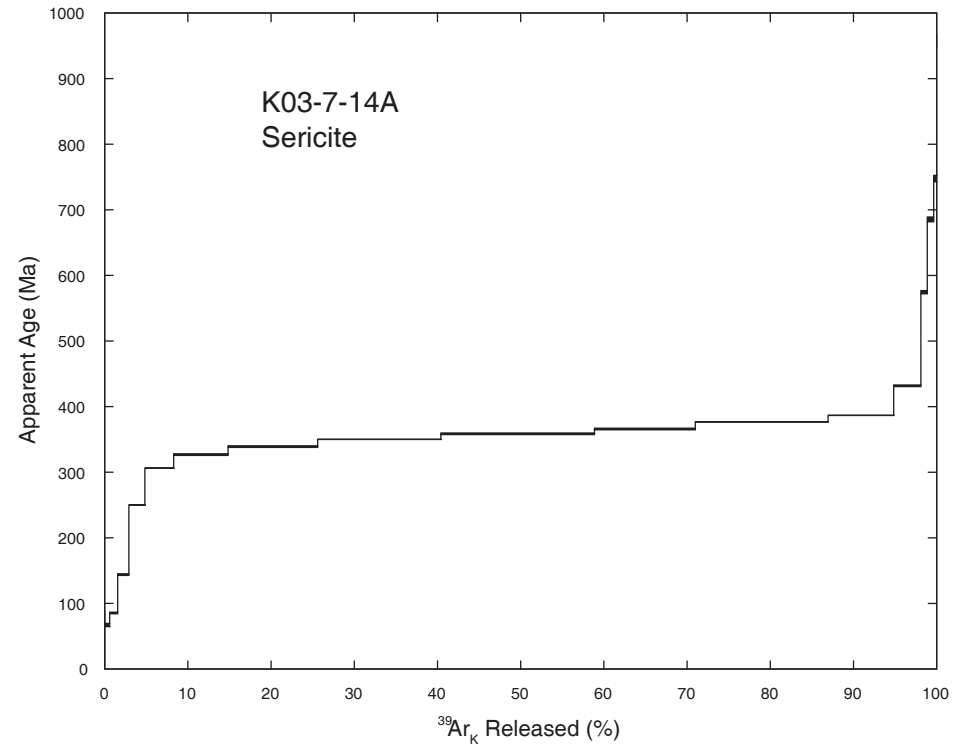

K07-11-8A
White mica
Apparent Age (Ma)
650
600
550
500
450
400
350
300
250
200
150
100
50
0
10
20
30
40
50
60
70
80
90
100
$^{39}Ar_K$ Released (%)

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K03-7-14A Sericite #121KD37; J = 0.011894 ± 0.5 %, wt.= 0.0020 g								
750	0.6	28.6	6.9E-16	3.210	12.20	42	67.6	1.4
800	0.9	49.9	9.79E-16	4.144	14.36	38	86.8	1.0
850	1.3	75.6	1.38E-15	7.004	25.77	48	144.3	0.7
900	2.0	90.3	2.09E-15	12.556	21.85	100	251.1	0.5
950	3.5	96.1	3.7E-15	15.590	25.46	192	306.9	0.3
1,000	6.5	98.5	6.92E-15	16.756	38.34	214	327.9	0.2
1,050	10.8	99.0	1.15E-14	17.441	53.33	272	340.1	0.2
1,100	14.9	98.8	1.58E-14	18.102	57.01	452	351.8	0.3
1,150	18.3	97.5	1.95E-14	18.520	83.26	524	359.2	0.3
1,175	12.2	98.7	1.29E-14	18.993	74.79	649	367.4	0.2
1,200	16.1	98.3	1.71E-14	19.618	149.03	562	378.4	0.4
1,225	7.8	98.6	8.32E-15	20.138	64.56	361	387.4	0.3
1,250	3.2	96.1	3.41E-15	22.831	43.27	109	433.4	0.5
1,275	0.9	90.4	9.54E-16	31.668	17.87	28	576.7	1.2
1,300	0.6	84.6	6.66E-16	38.959	7.73	19	686.9	1.7
1,325	0.4	56.0	4.71E-16	43.201	4.77	10	748.0	2.7
Total gas	100.0	96.6	1.06E-13	18.472	73.61	418	358.5	
No plateau								
K03-7-14B White mica #123KD37; J = 0.011914 ± 0.5%, wt.= 0.0012 g								
850	0.9	68.2	4.82E-16	11.614	0.52	11	233.8	1.7
900	2.0	84.6	1.03E-15	11.839	0.33	59	238.0	0.8
950	6.9	92.9	3.58E-15	10.343	0.15	110	209.6	0.3
1,000	8.2	96.7	4.26E-15	15.811	0.11	113	311.4	0.3
1,050	13.5	97.2	7.05E-15	17.082	0.87	176	334.2	0.2
1,100	15.7	94.4	8.19E-15	17.718	4.27	258	345.5	0.3
1,150	15.1	89.1	7.88E-15	18.699	6.73	240	362.8	0.3
1,175	10.0	91.9	5.18E-15	19.179	8.00	193	371.3	0.4
1,200	8.5	93.2	4.45E-15	19.669	9.40	154	379.8	0.4
1,225	7.7	92.6	4.04E-15	19.986	9.42	110	385.3	0.4
1,250	4.8	88.6	2.53E-15	19.899	6.41	63	383.8	0.6
1,275	3.2	78.6	1.68E-15	19.993	3.91	36	385.4	0.8
1,300	1.4	53.7	7.41E-16	19.916	1.87	22	384.1	1.7
1,325	0.6	9.4	3.2E-16	19.692	0.77	1	380.2	9.0
1,350	0.3	17.7	1.64E-16	17.855	0.84	0	348.0	8.1
1,400	1.2	53.9	6.29E-16	17.716	0.87	6	345.5	1.8
Total gas	100.0	90.6	5.22E-14	17.649	4.64	164	344.5	
No plateau								


K03-7-14A
Sericite
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
100
200
300
400
500
600
700
800
900
1000
0
10
20
30
40
50
60
70
80
90
100

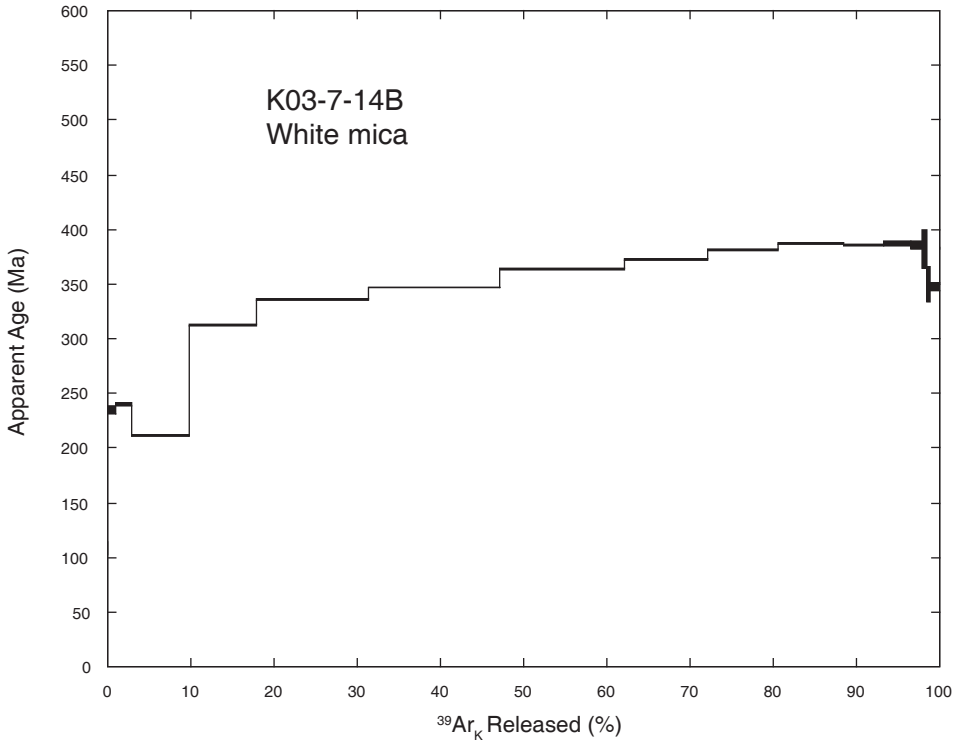
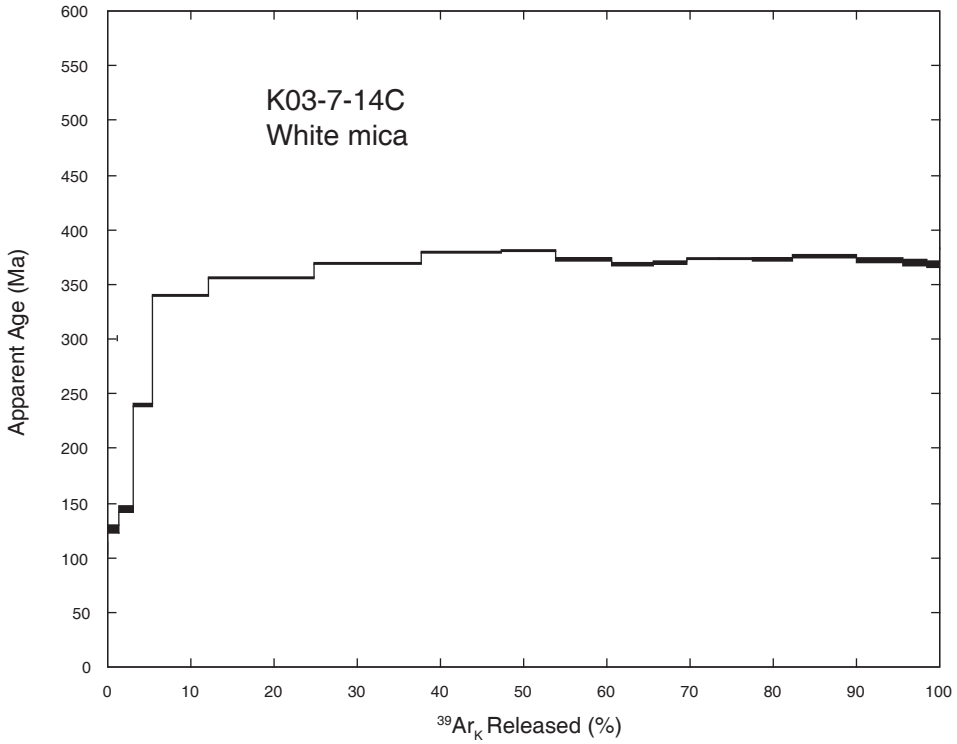
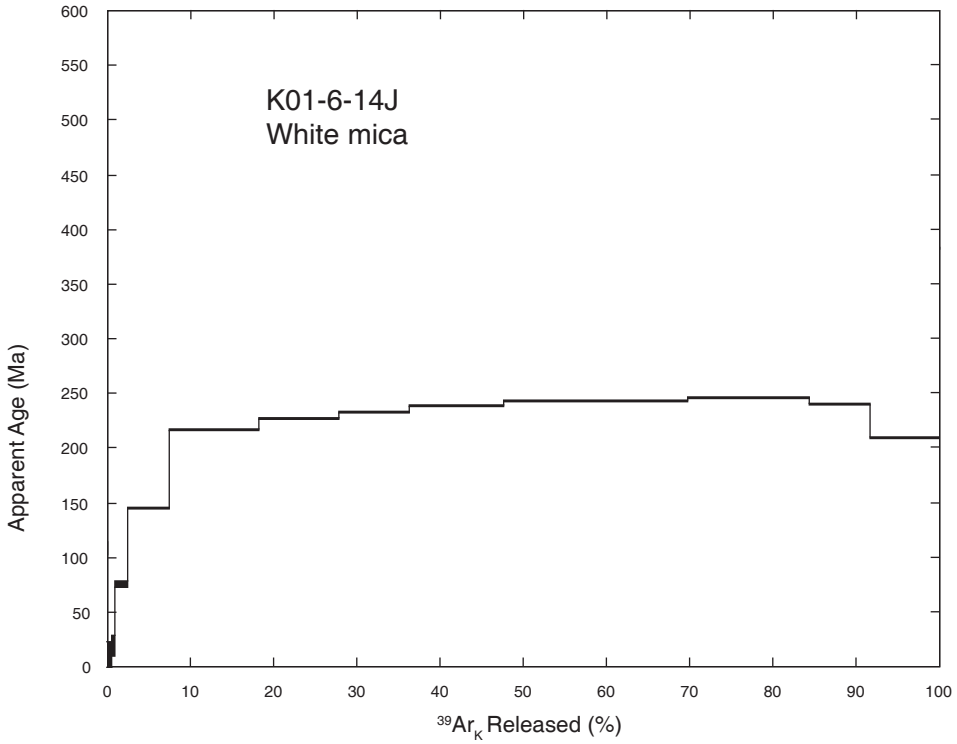

K03-7-14B
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

Table 2. $^{40}Ar/^{39}Ar$ analytical data.—Continued

Temperature (°C)	^{39}Ar (% of total)	Radiogenic yield (%)	$^{39}Ar_k$ (moles)	$^{40}Ar^*/^{39}Ar_k$	Apparent K/Ca	Apparent K/Cl	Apparent age (Ma)	Error (Ma)
K03-7-14C White mica #125KD37; J = 0.011932 ± 0.5%, wt.=0.0025 g								
750	1.4	33.8	6.48E-16	6.067	4.24	41	126.1	1.9
800	1.7	54.8	8.05E-16	7.003	4.90	35	144.8	1.2
850	2.3	82.6	1.07E-15	11.910	5.29	56	239.7	0.8
900	6.7	95.9	3.14E-15	17.372	6.14	177	339.8	0.4
950	12.9	98.1	6.03E-15	18.319	6.72	267	356.6	0.3
1,000	12.7	98.1	5.97E-15	19.042	7.15	174	369.4	0.3
1,050	9.6	96.8	4.51E-15	19.598	8.35	135	379.1	0.3
1,100	6.5	93.0	3.07E-15	19.732	9.52	133	381.4	0.5
1,150	6.7	80.4	3.16E-15	19.267	11.78	142	373.3	0.6
1,175	5.0	80.3	2.35E-15	19.011	12.07	121	368.8	0.7
1,200	4.1	85.2	1.92E-15	19.082	9.69	92	370.1	0.7
1,225	3.9	87.5	1.83E-15	19.287	9.35	73	373.7	0.6
1,250	4.0	87.2	1.87E-15	19.295	9.10	64	373.8	0.6
1,275	4.8	84.1	2.23E-15	19.262	8.49	67	373.2	0.7
1,300	7.7	81.7	3.61E-15	19.440	9.55	105	376.3	0.5
1,325	5.6	53.0	2.62E-15	19.220	8.79	22	372.5	0.9
1,350	2.9	53.5	1.38E-15	19.082	7.71	1	370.1	1.4
1,400	1.5	68.8	7.09E-16	18.981	4.26	8	368.3	1.4
Total gas	100.0	85.9	4.69E-14	18.471	8.31	130	359.4	
No plateau								
K01-6-14J White mica #132KD32; J = 0.012384 ± 0.5%, wt.= 0.0021 g								
550	0.5	11.8	9.06E-17	4.571	4.54	7	99.3	5.8
650	0.4	45.2	6.63E-17	4.945	4.58	10	107.2	5.0
750	1.6	90.4	2.89E-16	7.676	2.65	61	163.8	1.4
850	5.0	96.9	8.67E-16	11.176	0.64	296	233.9	0.5
950	10.8	98.9	1.88E-15	14.900	10.91	952	305.5	0.4
1,000	9.7	99.3	1.7E-15	15.443	88.65	1639	315.7	0.4
1,050	8.4	99.8	1.47E-15	15.733	130.04	1667	321.1	0.4
1,100	11.5	99.5	2.01E-15	16.033	109.41	1449	326.7	0.4
1,150	22.0	99.6	3.85E-15	16.298	165.56	1587	331.7	0.4
1,200	14.6	99.7	2.56E-15	16.450	176.37	1449	334.5	0.4
1,300	7.3	99.0	1.28E-15	16.141	119.47	1124	328.8	0.4
1,450	8.3	99.1	1.45E-15	14.504	138.70	990	298.0	0.4
Total gas	100.0	98.6	1.75E-14	15.366	115.80	1309	313.6	
No plateau								


K03-7-14C
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100


K01-6-14J
White mica
Apparent Age (Ma)
$^{39}Ar_K$ Released (%)
0
50
100
150
200
250
300
350
400
450
500
550
600
0
10
20
30
40
50
60
70
80
90
100

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