

Sotomayor, A., Balbas, A., Konrad, K., Koppers, A.A.P., Konter, J.G., Dorset Wanless, V., Hourigan, T.F., Kelley, C., and Raineault, N., 2023, New insights into the age and origin of two small Cretaceous seamount chains proximal to the Northwestern Hawaiian Ridge: *Geosphere*, v. 19, <https://doi.org/10.1130/GES02580.1>.

SUPPLEMENTAL INFORMATION

NEW INSIGHTS INTO THE AGE AND ORIGINS OF TWO SMALL CRETACEOUS SEAMOUNT CHAINS PROXIMAL TO THE NORTHWESTERN HAWAIIAN RIDGE

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Data Availability - Ocean Exploration Trust Expedition NA101

All data and subsamples are available through national archives and repositories.

Multibeam sonar and metadata: <https://www.rvdata.us/search/cruise/NA101>,

https://www.ngdc.noaa.gov/ships/nautilus/NA101_mb.html.

Geological samples: <https://www.geosamples.org/catalogsearch>

Biological samples: <https://mczbase.mcz.harvard.edu/SpecimenResults.cfm>

Please contact datamanager@oet.org with additional questions or requests

$^{40}\text{Ar}/^{39}\text{Ar}$ Age Determinations

The remainder of this document contains one-page summaries of all the $^{40}\text{Ar}/^{39}\text{Ar}$ incremental heating experiments collected for this study. More detailed excel files for each experiment (e.g. containing blanks and regressions results) please visit Earthref.org.

Table S1: Summary of all $^{40}\text{Ar}/^{39}\text{Ar}$ Age Determination Results

Seamount	Sample	Material	Plateau Age (Ma)	$\pm 2\sigma$ (i)	^{39}Ar	$^{40}\text{Ar}/^{36}\text{Ar}$ intercept	$\pm 2\sigma$	MSWD	P	n	N	Inverse Isochron Age (Ma)	$\pm 2\sigma$ (i)
Naifeh	NA101-023	Plagioclase											
	NA101-024	Groundmass											
	NA101-024												
Seamount 1	NA101-104	Plagioclase											
	NA101-114	Plagioclase											
Seamount 2	NA101-099	Plagioclase											
Seamount 3	NA101-074	Plagioclase	85.63	0.23	44%	290.15	22.68	1.49	9%	17	42	85.7	0.28
	NA101-078	Plagioclase	84.7	0.22	59%	281.87	18.90	1.66	5%	17	42	84.94	0.37
Seamount 4	NA101-068	Groundmass											
	NA101-068												
Seamount 6	NA101-007	Groundmass	87.72	0.20	42%	253.64	61.34	1.2	30%	9	36	87.86	0.29
	NA101-056	Plagioclase											
Seamount 7	NA101-012	Plagioclase											
Seamount 9	NA101-050	Plagioclase											
Seamount 10	NA101-043	Groundmass											

MSWD = Mean Square of the Weighted Deviants. P = Probability of Fit. n=steps used in the plateau calculation. N=total heating steps. i=internal uncertainty. Note that NA101-024 and 068 were analyzed twice with similar results.

Table S2: Geologic Sample Location Metadata for NA101

Seamount	Sample	IGSN	Latitude	Longitude	Depth (mbsl)
Seamount 6	NA101-001	URI0000IU	26.789	-166.924	2065
	NA101-002	URI0000IV	26.79	-166.922	1978
	NA101-003	URI0000IW	26.79	-166.921	1886
	NA101-004	URI0000IX	26.789	-166.918	1809
	NA101-007	URI0000IY	26.789	-166.912	1580
Seamount 7	NA101-008	URI0000IZ	26.786	-167.36	1667
	NA101-010	URI0000J0	26.787	-167.36	1652
	NA101-012	URI0000J1	26.793	-167.363	1555
	NA101-013	URI0000J2	26.796	-167.367	1390
	NA101-014	URI0000J3	26.801	-167.369	1307
	NA101-015	URI0000J4	26.801	-167.369	1289
	NA101-021	URI0000J5	26.801	-167.37	1259
Naifeh	NA101-023	URI0000J6	26.852	-168.066	2201
	NA101-024	URI0000J7	26.853	-168.066	2171
	NA101-026	URI0000J8	26.854	-168.068	2174
	NA101-030	URI0000J9	26.857	-168.075	1990
Seamount 10	NA101-033	URI0000JA	26.977	-168.854	2449
	NA101-035	URI0000JB	26.976	-168.855	2392
	NA101-039	URI0000JC	26.975	-168.857	2330
	NA101-043	URI0000JD	26.972	-168.861	2228
Seamount 9	NA101-044	URI0000JE	27.034	-168.498	2101
	NA101-045	URI0000JF	27.032	-168.496	2000
	NA101-049	URI0000JG	27.029	-168.495	1965
	NA101-050	URI0000JH	27.029	-168.494	1918
Seamount 6	NA101-051	URI0000JI	26.703	-166.987	2275
	NA101-056	URI0000JJ	26.704	-166.987	2233
	NA101-058	URI0000JK	26.708	-166.988	2110
	NA101-063	URI0000JL	26.712	-166.988	1949

Seamount 4	NA101-067	URI0000JN	25.972	-164.745	2351
	NA101-065	URI0000JM	25.972	-164.746	2366
	NA101-068	URI0000JO	25.972	-164.745	2351
	NA101-069	URI0000JP	25.972	-164.744	2356
	NA101-070	URI0000JQ	25.973	-164.741	2371
	NA101-071	URI0000JR	25.973	-164.74	2371
Seamount 3	NA101-073	URI0000JS	25.553	-164.201	2014
	NA101-074	URI0000JT	25.555	-164.202	1990
	NA101-075	URI0000JU	25.555	-164.202	1989
	NA101-078	URI0000JV	25.555	-164.203	1955
	NA101-081	URI0000JW	25.556	-164.205	1925
Seamount 5	NA101-084	URI0000JX	25.727	-165.424	2355
	NA101-087	URI0000JY	25.727	-165.424	2357
	NA101-088	URI0000JZ	25.727	-165.424	2355
Seamount 2	NA101-090	URI0000K0	25.398	-163.916	2477
	NA101-091	URI0000K1	25.398	-163.916	2477
	NA101-093	URI0000K2	25.399	-163.917	2469
	NA101-094	URI0000K3	25.402	-163.924	2399
	NA101-097	URI0000K4	25.403	-163.925	2395
	NA101-099	URI0000K5	25.403	-163.925	2407
	NA101-101	URI0000K6	25.403	-163.925	2407
	NA101-102	URI0000K7	25.403	-163.926	2409
Seamount 1	NA101-104	URI0000KD	25.321	-163.742	2794
	NA101-106	URI0000K8	25.32	-163.741	2796
	NA101-110	URI0000K9	25.32	-163.741	2796
	NA101-112	URI0000KA	25.318	-163.742	2727
	NA101-113	URI0000KB	25.317	-163.742	2696
	NA101-114	URI0000KC	25.317	-163.742	2696

EXP#21G16183 > NA101-104-C-OSU > Plagioclase > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 1
21-OSU-01 (1E35-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-104-C-OSU**
Material = **Plagioclase**
Location = **Seamount 1**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E35-21)**
Position = X: 0 | Y: 0 | Z/H: 37.51453 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.62813 ± 0.01088**
FCT-NM J-value = **0.00161251 ± 0.00000182**
Air Shot 40Ar/36Ar = **303.6340 ± 0.4372**
Air Shot MDF = **0.99581687 ± 0.00043722 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **2.00 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Mini Plateau**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(εC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Two potential plateaus

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%n)	K/Ca ± 2σ
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Age Plateau

Cannot Calculate

Total Fusion Age

26.96029 ± 0.12304
± 0.46%
77.90 ± 0.39
± 0.50%
Full External Error ± 4.03
Analytical Error ± 0.35

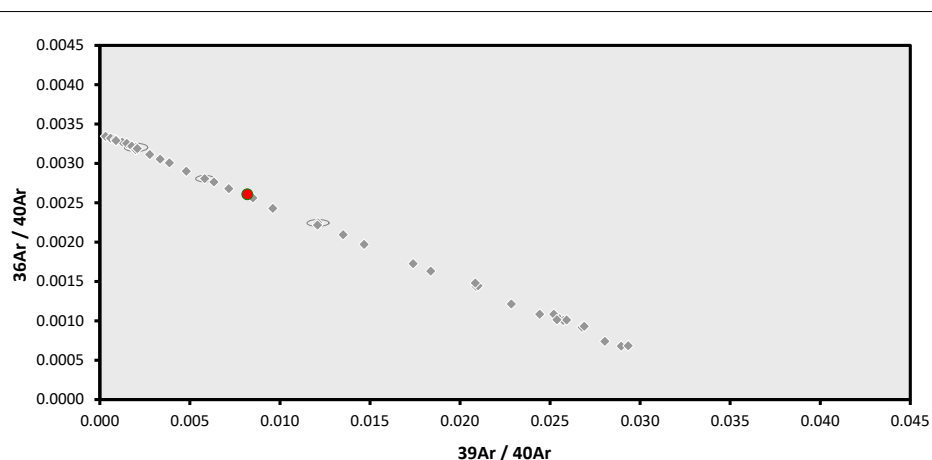
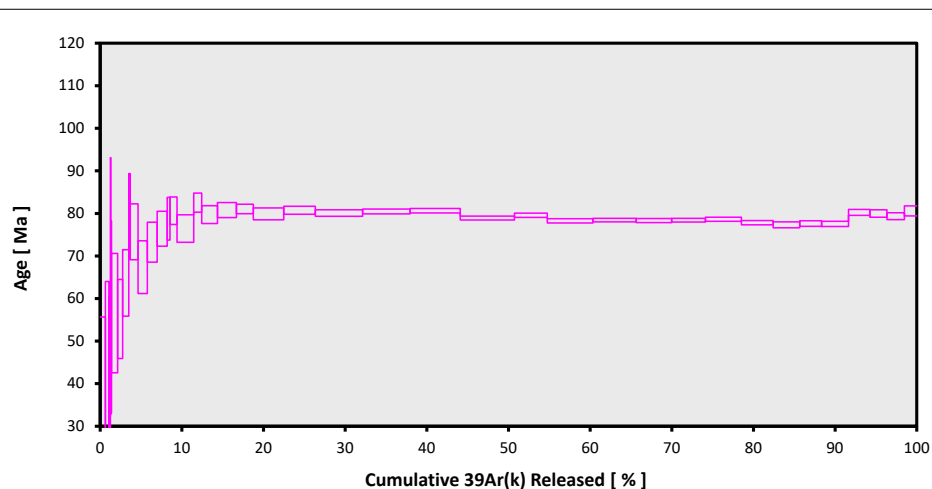
40 0.0131 ± 0.0000

Normal

Isochron

Inverse Isochron

Cannot Calculate



EXP#21G09014 > NA101-114-C-OSU > Plagioclase > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 1
21-OSU-01 (1E36-21) > Incremental Heating > Andrea Balbas

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-114-C-OSU**
Material = **Plagioclase**
Location = **Seamount 1**
Region = **NW Hawaiian Ridge**
Analyst = **Andrea Balbas**
Irradiation = **21-OSU-01 (1E36-21)**
Position = X: 0 | Y: 0 | Z/H: 38.89428 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.64905 ± 0.01090**
FCT-NM J-value = **0.00160902 ± 0.00000182**
Air Shot 40Ar/36Ar = **304.3900 ± 0.4231**
Air Shot MDF = **0.99520555 ± 0.00042624 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **3.12 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **No Age**
Age Classification = **Undefined**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(EC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%n)	K/Ca ± 2σ
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Age Plateau

Cannot Calculate

Total Fusion Age

22.58578 ± 0.03861
± 0.17%
65.34 ± 0.18 ± 0.28%
Full External Error ± 3.37
Analytical Error ± 0.11

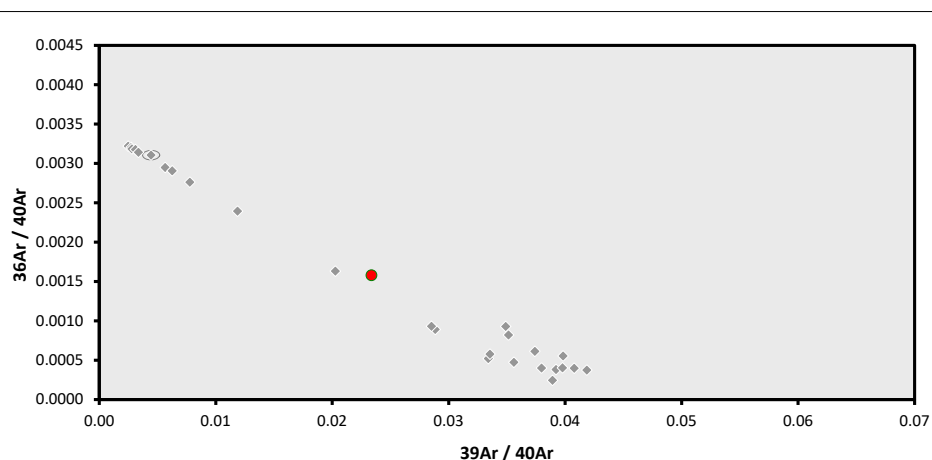
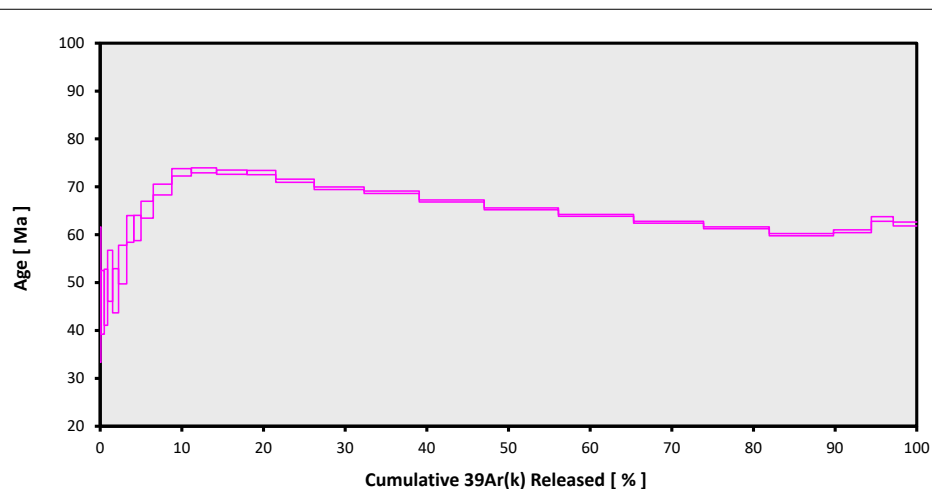
26 0.0142 ± 0.0000

Normal

Isochron

Inverse Isochron

Cannot Calculate



EXP#21G16544 > NA101-099-C-OSU > Plagioclase > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 2
21-OSU-01 (1E34-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-099-C-OSU**
Material = **Plagioclase**
Location = **Seamount 2**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E34-21)**
Position = X: 0 | Y: 0 | Z/H: 36.31319 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.61059 ± 0.01096**
FCT-NM J-value = **0.00161546 ± 0.00000184**
Air Shot 40Ar/36Ar = **303.4320 ± 0.4339**
Air Shot MDF = **0.99598073 ± 0.00043551 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **2.00 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Inverse Isochron**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(εC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.0000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results

40(a)/36(a) ± 2σ

40(r)/39(k) ± 2σ

Age ± 2σ
(Ma)

MSWD

39Ar(k)
(%,n)

K/Ca ± 2σ

Age Plateau

Cannot Calculate

Total Fusion Age

21.30211 ± 0.01827
± 0.09%

61.93 ± 0.15
± 0.24%
Full External Error ± 3.20
Analytical Error ± 0.05

41

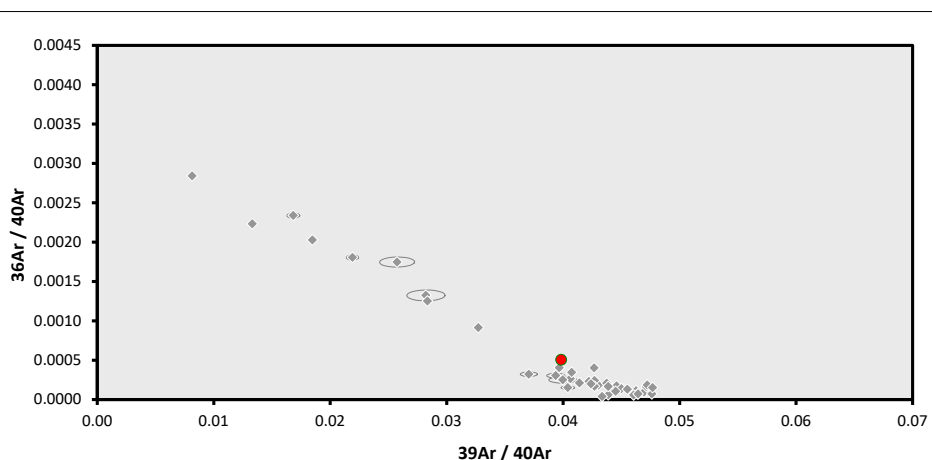
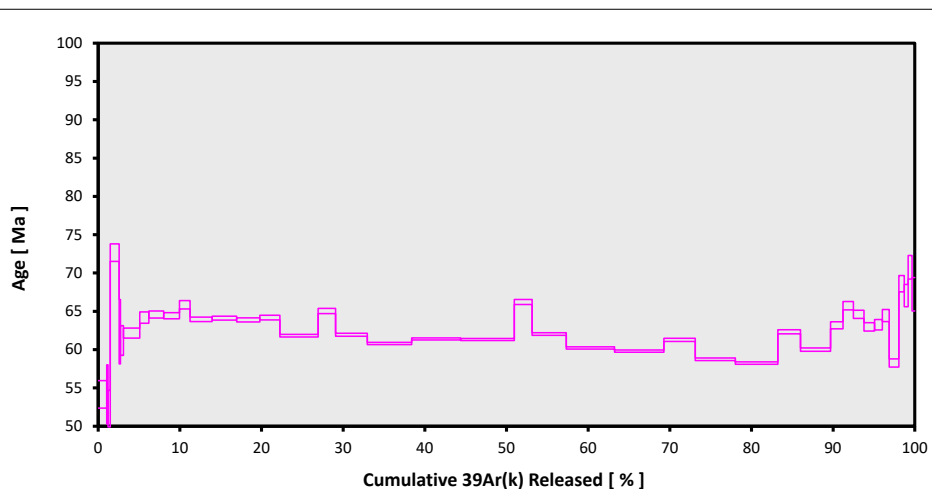
0.0397 ± 0.0001

Normal

Isochron

Inverse Isochron

Cannot Calculate

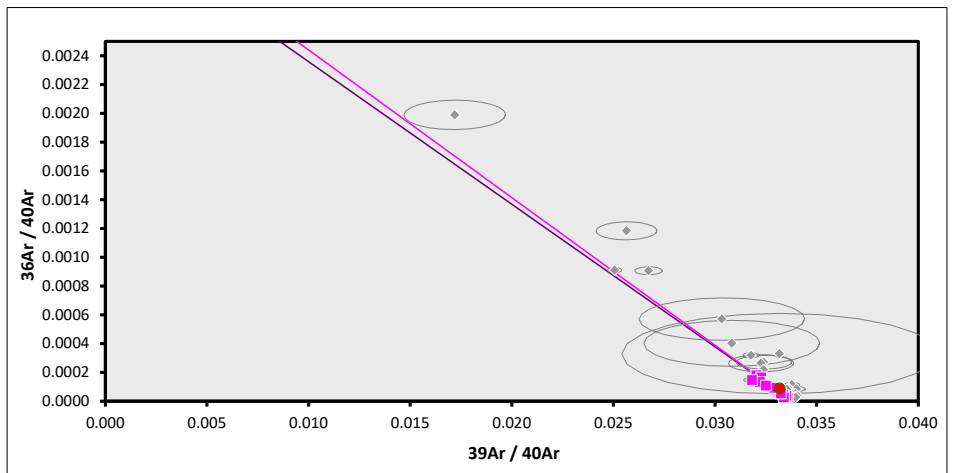
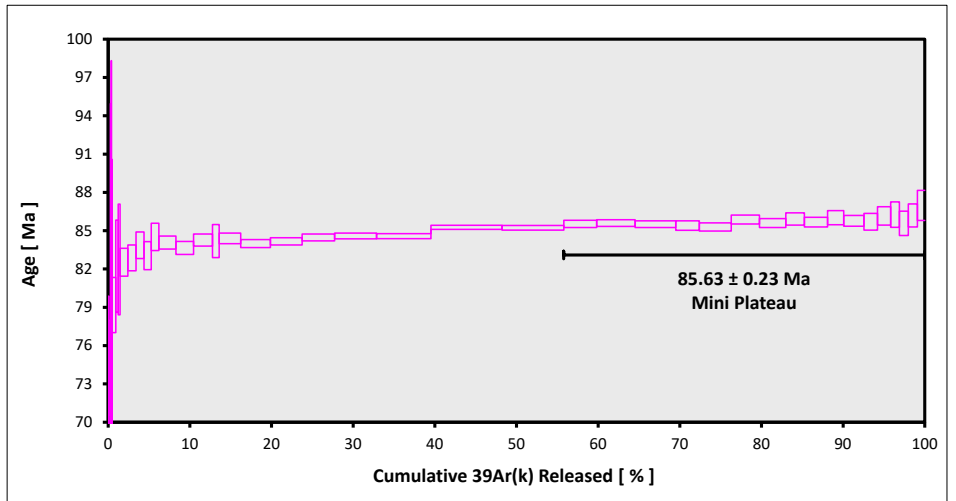


EXP#21G16262 > NA101-074-C-OSU > Plagioclase > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 3
21-OSU-01 (1E33-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-074-C-OSU**
Material = **Plagioclase**
Location = **Seamount 3**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E33-21)**
Position = X: 0 | Y: 0 | Z/H: 34.60027 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.58663 ± 0.01093**
FCT-NM J-value = **0.00161949 ± 0.00000185**
Air Shot 40Ar/36Ar = **303.6260 ± 0.4372**
Air Shot MDF = **0.99582336 ± 0.00043723 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **2.00 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Mini Plateau**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(EC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.0000059**
Production 38/39(k) = **0.012077 ± 0.0000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%n)	K/Ca ± 2σ
Age Plateau		29.57334 ± 0.04227 ± 0.14%	85.63 ± 0.23 ± 0.26%	1.49 9%	44.21 17	0.0250 ± 0.0004
		Full External Error ± 4.41		1.71	2σ Confidence Limit	
		Analytical Error ± 0.12		1.2217	Error Magnification	
Total Fusion Age		29.33474 ± 0.02529 ± 0.09%	84.96 ± 0.20 ± 0.24%		42	0.0259 ± 0.0001
		Full External Error ± 4.37				
		Analytical Error ± 0.07				
Normal Isochron	290.15 ± 22.68 ± 7.82%	29.58732 ± 0.06846 ± 0.23%	85.67 ± 0.27 ± 0.32%	1.46 11%	44.21 17	
		Full External Error ± 4.41		1.73	2σ Confidence Limit	
		Analytical Error ± 0.19		1.2085	Error Magnification	
Inverse Isochron	288.50 ± 23.04 ± 7.99%	29.59791 ± 0.07006 ± 0.24%	85.70 ± 0.28 ± 0.32%	1.53 8%	44.21 17	
		Full External Error ± 4.41		1.73	2σ Confidence Limit	
		Analytical Error ± 0.20		1.2373	Error Magnification	
				5%	Spreading Factor	

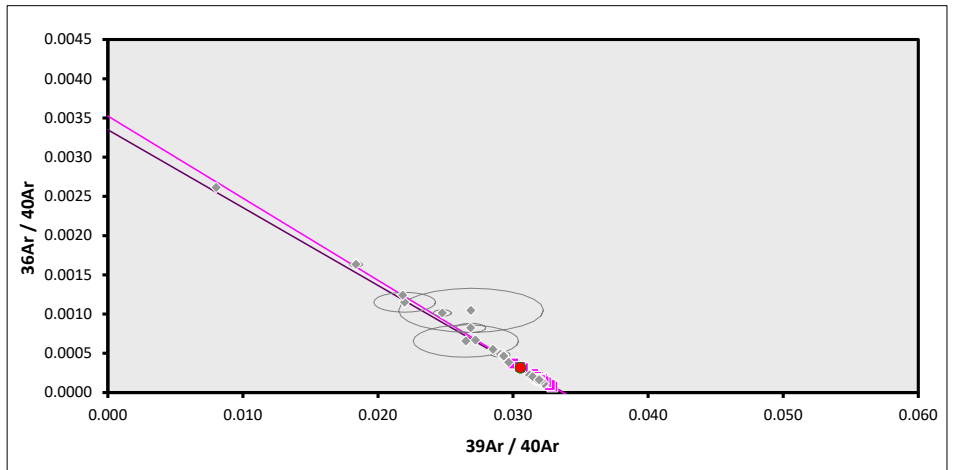
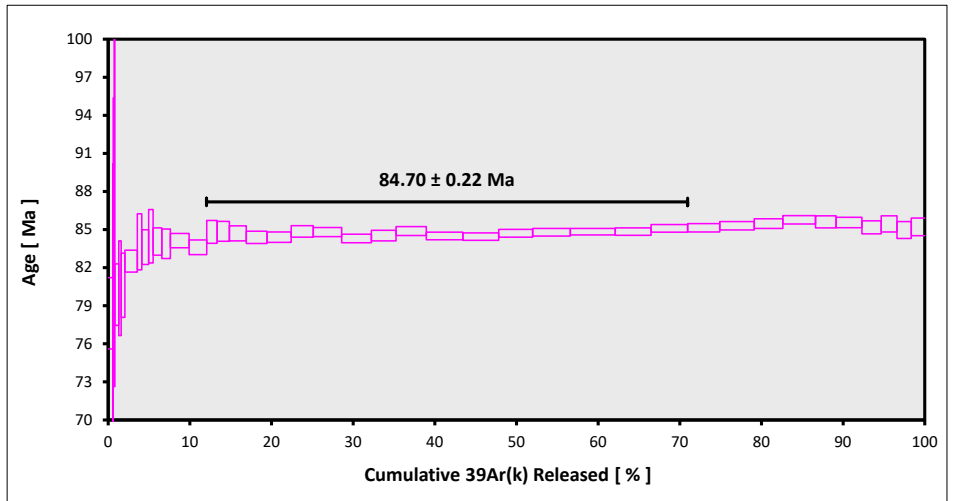


EXP#21G16122 > NA101-078-C-OSU > Plagioclase > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 3
21-OSU-01 (1E38-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-078-C-OSU**
Material = **Plagioclase**
Location = **Seamount 3**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E38-21)**
Position = X: 0 | Y: 0 | Z/H: 42.57659 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.70887 ± 0.01087**
FCT-NM J-value = **0.00159910 ± 0.00000179**
Air Shot 40Ar/36Ar = **303.6150 ± 0.4372**
Air Shot MDF = **0.99583228 ± 0.00043724 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **2.00 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Plateau Age**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(εC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%n)	K/Ca ± 2σ
Age Plateau		29.61523 ± 0.03971 ± 0.13%	84.70 ± 0.22 ± 0.26%	1.66 5%	58.91 17	0.0294 ± 0.0004
			Full External Error ± 4.36 Analytical Error ± 0.11	1.71 1.2888	2σ Confidence Limit Error Magnification	
Total Fusion Age		29.61788 ± 0.02899 ± 0.10%	84.71 ± 0.20 ± 0.24%		42	0.0303 ± 0.0001
			Full External Error ± 4.36 Analytical Error ± 0.08			
Normal Isochron	281.87 ± 18.90 ± 6.71%	29.71080 ± 0.11581 ± 0.39%	84.97 ± 0.37 ± 0.44%	1.54 8%	58.91 17	
			Full External Error ± 4.38 Analytical Error ± 0.32	1.73 1.2408	2σ Confidence Limit Error Magnification	
Inverse Isochron	283.71 ± 18.72 ± 6.60%	29.70155 ± 0.11520 ± 0.39%	84.94 ± 0.37 ± 0.44%	1.53 9%	58.91 17	
			Full External Error ± 4.38 Analytical Error ± 0.32	1.73 1.2351	2σ Confidence Limit Error Magnification Spreading Factor	



EXP#21G08651 > NA101-068-C-OSU > Groundmass > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 4
21-OSU-01 (1E31-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-068-C-OSU**
Material = **Groundmass**
Location = **Seamount 4**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E31-21)**
Position = X: 0 | Y: 0 | Z/H: 30.84637 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.53833 ± 0.01087**
FCT-NM J-value = **0.00162770 ± 0.00000186**
Air Shot 40Ar/36Ar = **304.0600 ± 0.4530**
Air Shot MDF = **0.99547202 ± 0.0004662 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **3.12 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Plateau Age**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(EC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.0000059**
Production 38/37(ca) = **0.0001800 ± 0.0000173**
Production 36/37(ca) = **0.0002703 ± 0.0000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%n)	K/Ca ± 2σ
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Age Plateau

Cannot Calculate

Total Fusion Age

27.69222 ± 0.00838
± 0.03%
80.70 ± 0.18
± 0.23%
Full External Error ± 4.15
Analytical Error ± 0.02

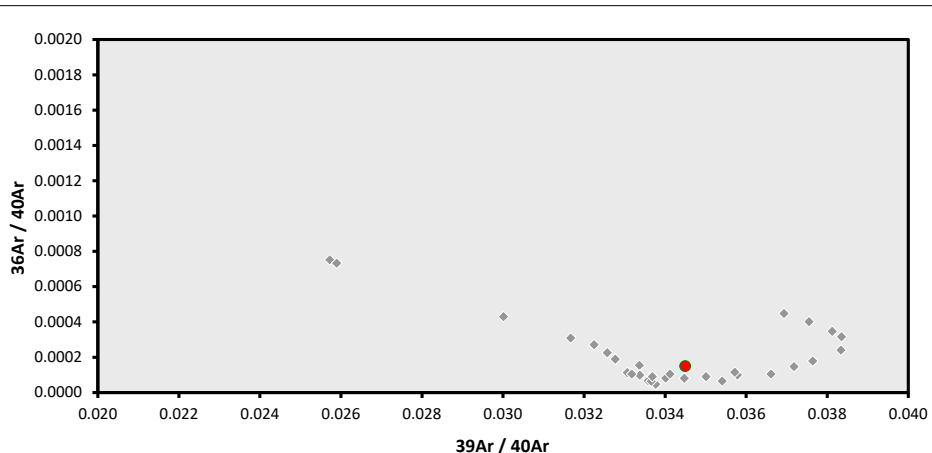
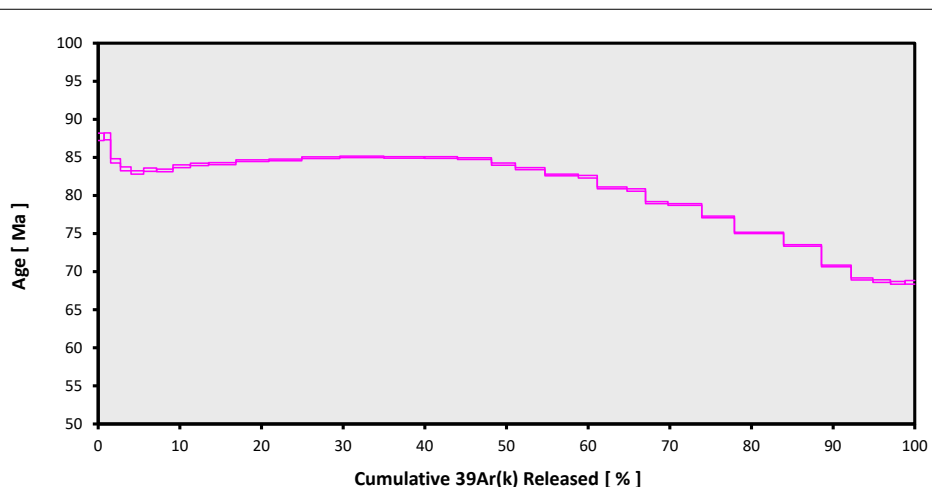
33 0.312 ± 0.000

Normal

Isochron

Inverse Isochron

Cannot Calculate



EXP#21G17699 > NA101-068-C-OSU > Groundmass > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 4
21-OSU-01 (1E31-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-068-C-OSU**
Material = **Groundmass**
Location = **Seamount 4**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E31-21)**
Position = X: 0 | Y: 0 | Z/H: 30.84637 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.53833 ± 0.01087**
FCT-NM J-value = **0.00162770 ± 0.00000186**
Air Shot 40Ar/36Ar = **303.2630 ± 0.5277**
Air Shot MDF = **0.99611799 ± 0.00049956 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **2.00 min**
Instrument = **ARGUS-VI-g**
Preferred Age = **Plateau Age**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(εC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 14.93**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results

40(a)/36(a) ± 2σ

40(r)/39(k) ± 2σ

Age ± 2σ
(Ma)

MSWD

39Ar(k)
(%,n)

K/Ca ± 2σ

Age Plateau

Cannot Calculate

Total Fusion Age

27.97215 ± 0.04271
± 0.15%

81.50 ± 0.22
± 0.27%

60

0.341 ± 0.002

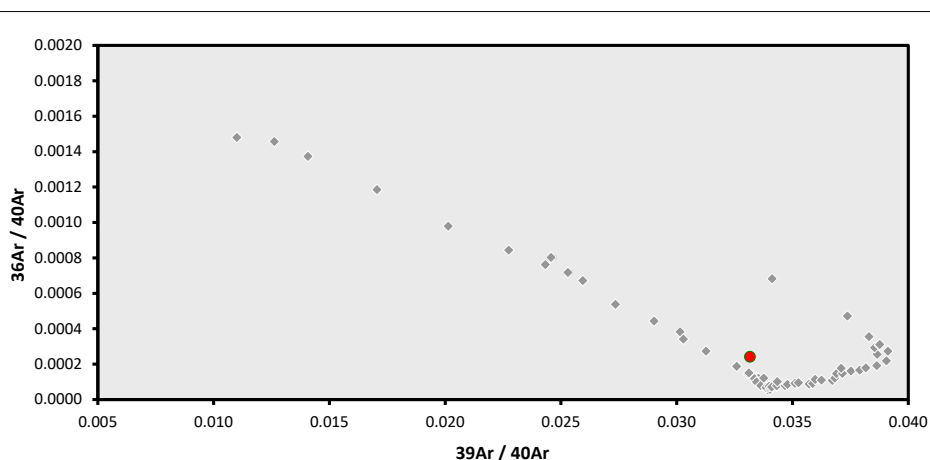
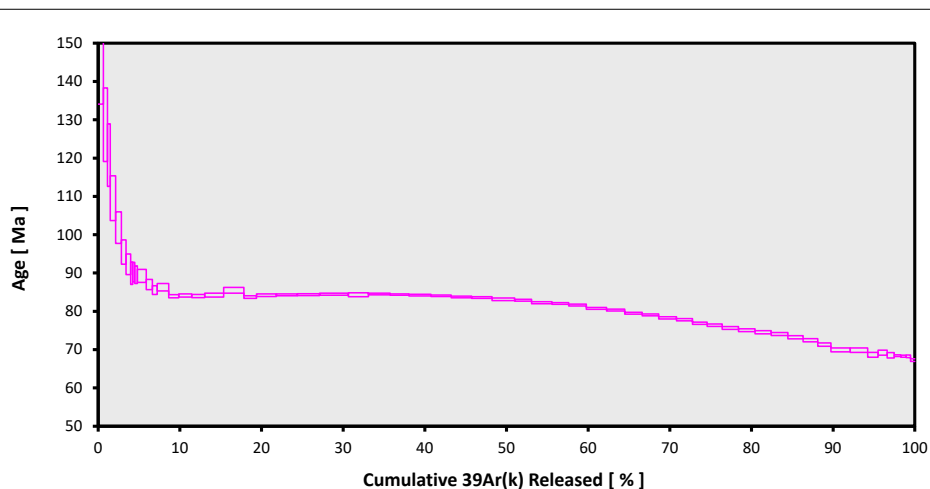
Full External Error ± 4.20
Analytical Error ± 0.12

Normal

Isochron

Inverse Isochron

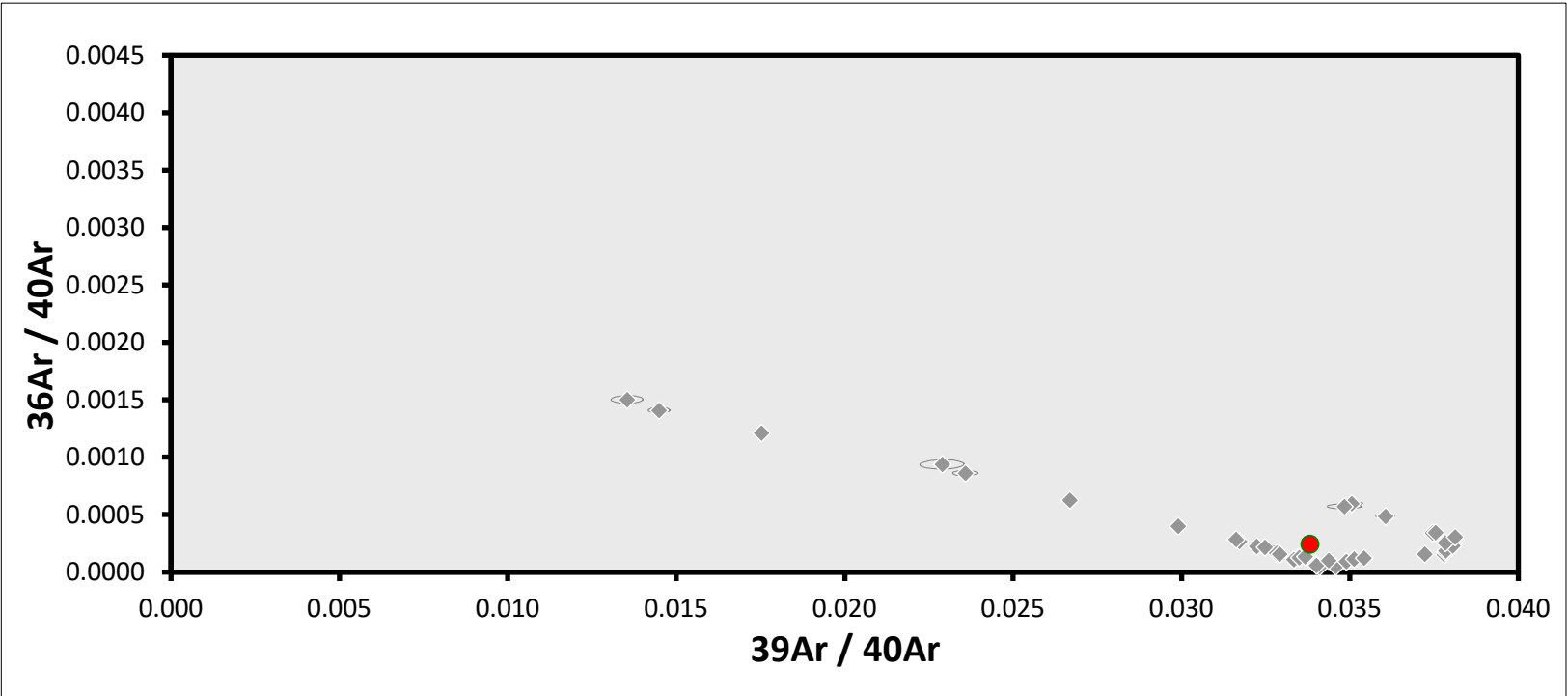
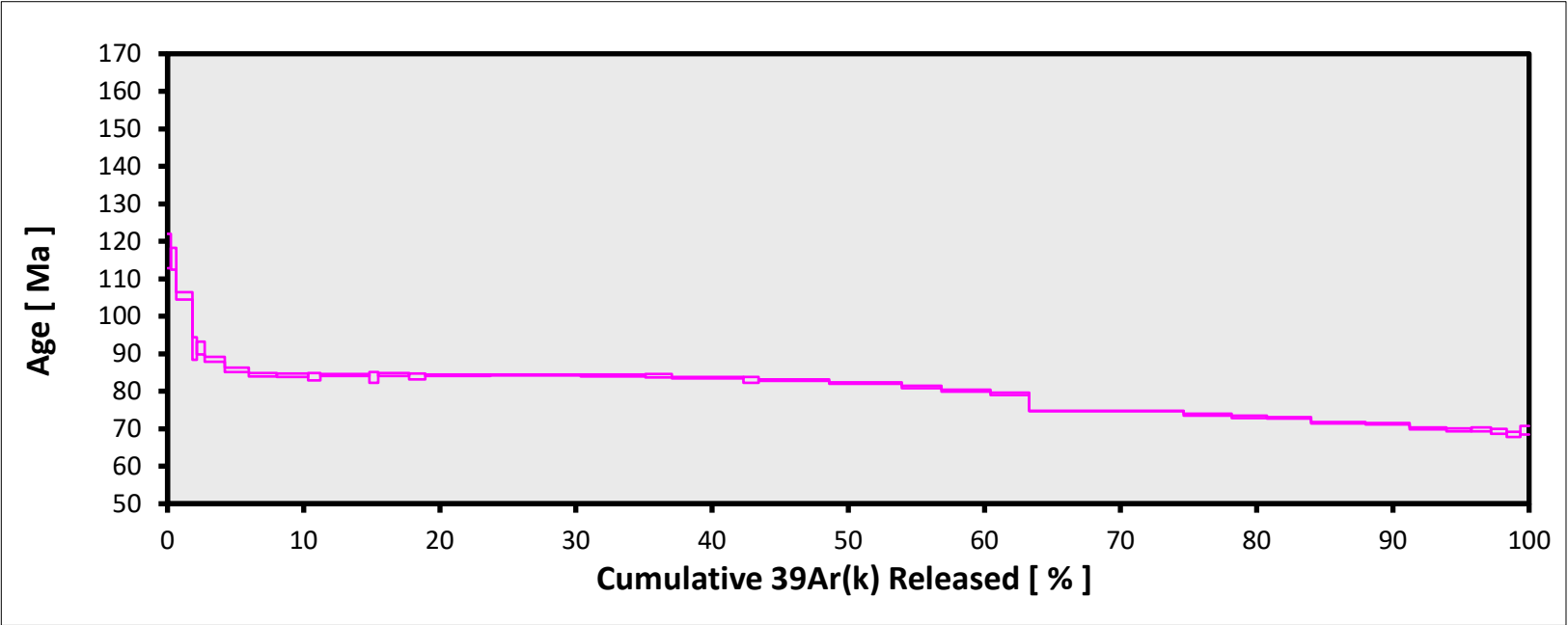
Cannot Calculate



EXP#21G21538 > NA101-068-C-OSU > Groundmass > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 4
21-OSU-01 (1E31-21) > Incremental Heating > Daniel Heaton

Information on Analysis and Constants Used in Calculations
Project = BALBAS (20-28) Sample = NA101-068-C-OSU Material = Groundmass Location = Seamount 4 Region = NW Hawaiian Ridge Analyst = Daniel Heaton Irradiation = 21-OSU-01 (1E31-21) Position = X: 0 Y: 0 Z/H: 30.84637 mm FCT-NM Age = 28.201 ± 0.023 Ma FCT-NM Reference = Kuiper et al (2008) FCT-NM 40Ar/39Ar Ratio = 9.53833 ± 0.01087 FCT-NM J-value = 0.00162770 ± 0.00000186 Air Shot 40Ar/36Ar = 304.0930 ± 0.4166 Air Shot MDF = 0.99544535 ± 0.00042273 (LIN) Experiment Type = Incremental Heating Extraction Method = Bulk Laser Heating Heating = 52 sec Isolation = 3.00 min Instrument = ARGUS-VI-G Preferred Age = Plateau Age Age Classification = Unknown IGSN = Undefined Rock Class = Undefined Lithology = Undefined Lat-Lon = Undefined - Undefined Age Equations = Min et al. (2000) Negative Intensities = Allowed Collector Calibrations = 36Ar Decay 40K = 5.463 ± 0.107 E-10 1/a Decay 39Ar = 2.940 ± 0.016 E-07 1/h Decay 37Ar = 8.230 ± 0.012 E-04 1/h Decay 36Cl = 2.257 ± 0.015 E-06 1/a Decay 40K(EC,β ⁺) = 0.580 ± 0.014 E-10 1/a Decay 40K(β ⁻) = 4.884 ± 0.099 E-10 1/a Atmospheric 40/36(a) = 298.56 ± 0.31 Atmospheric 38/36(a) = 0.1885 ± 0.0003 Production 39/37(ca) = 0.0006425 ± 0.0000059 Production 38/37(ca) = 0.0001800 ± 0.0000173 Production 36/37(ca) = 0.0002703 ± 0.0000005 Production 40/39(k) = 0.000607 ± 0.000059 Production 38/39(k) = 0.012077 ± 0.000011 Production 36/38(cl) = 262.80 ± 1.71 Scaling Ratio K/Ca = 0.430 Abundance Ratio 40K/K = 1.1700 ± 0.0100 E-04 Atomic Weight K = 39.0983 ± 0.0001 g

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (% ,n)	K/Ca ± 2σ
Age Plateau						
Cannot Calculate						
Total Fusion Age		27.43118 ± 0.01967 ± 0.07%	79.96 ± 0.19 ± 0.23%		37	0.251 ± 0.006
			Full External Error ± 4.12 Analytical Error ± 0.06			
Normal Isochron						
Inverse Isochron						
Cannot Calculate						

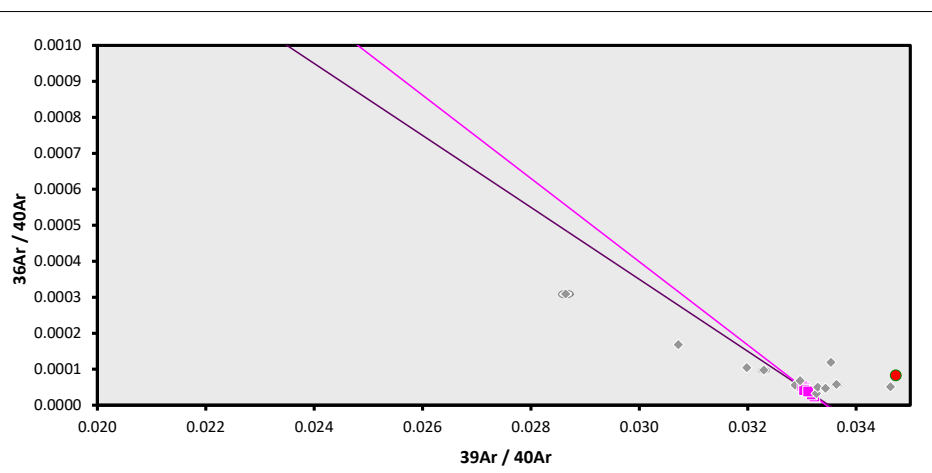
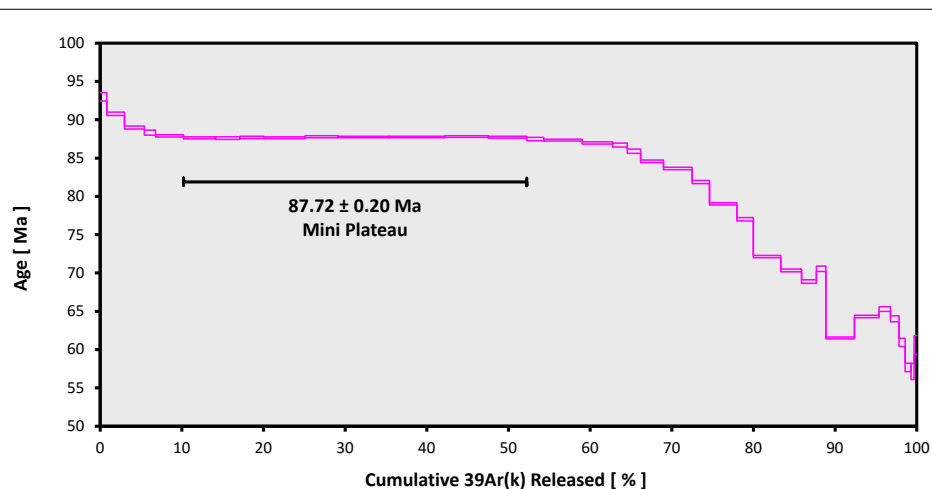


EXP#21G08721 > NA101-007-C-OSU > Groundmass > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 6
21-OSU-01 (1E18-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-007-C-OSU**
Material = **Groundmass**
Location = **Seamount 6**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E18-21)**
Position = X: 0 | Y: 0 | Z/H: 21.19798 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.44096 ± 0.01095**
FCT-NM J-value = **0.00164448 ± 0.00000191**
Air Shot 40Ar/36Ar = **304.2140 ± 0.4259**
Air Shot MDF = **0.99534759 ± 0.00042845 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **3.12 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Plateau Age**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(EC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.0000059**
Production 38/39(k) = **0.012077 ± 0.0000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%n)	K/Ca ± 2σ
Age Plateau		29.85186 ± 0.01584 ± 0.05%	87.72 ± 0.20 ± 0.23%	1.20 30%	42.04 9	0.481 ± 0.109
			Full External Error ± 4.51 Analytical Error ± 0.05	2.00 1.0942	2σ Confidence Limit Error Magnification	
Total Fusion Age		28.07697 ± 0.01025 ± 0.04%	82.62 ± 0.19 ± 0.23%		36	0.469 ± 0.001
			Full External Error ± 4.25 Analytical Error ± 0.03			
Normal Isochron	253.64 ± 61.34 ± 24.18%	29.90475 ± 0.07442 ± 0.25%	87.88 ± 0.29 ± 0.33%	1.12 35%	42.04 9	
			Full External Error ± 4.52 Analytical Error ± 0.21	2.07 1.0587	2σ Confidence Limit Error Magnification	
Inverse Isochron	258.36 ± 59.41 ± 23.00%	29.89956 ± 0.07446 ± 0.25%	87.86 ± 0.29 ± 0.33%	1.11 35%	42.04 9	
Clustered Points			Full External Error ± 4.52 Analytical Error ± 0.21	2.07 1.0552 1%	2σ Confidence Limit Error Magnification Spreading Factor	



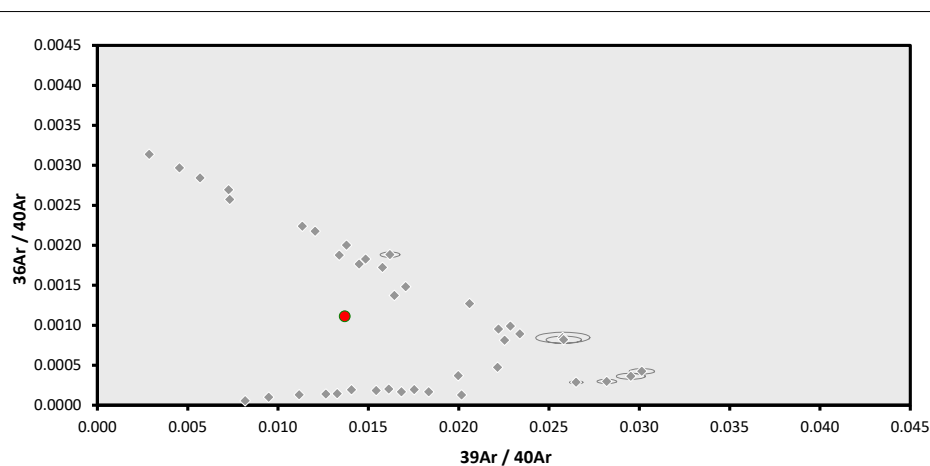
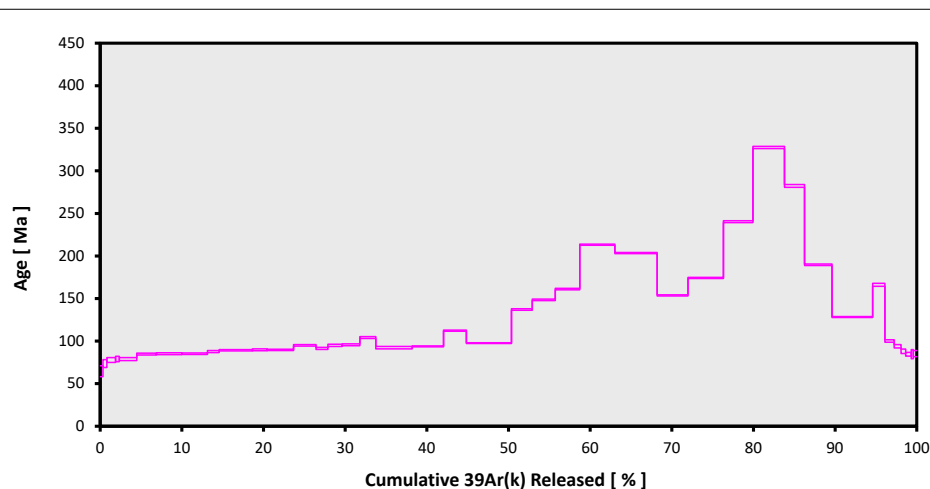
EXP#21G16323 > NA101-056-C-OSU > Plagioclase > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 6
21-OSU-01 (1E30-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-056-C-OSU**
Material = **Plagioclase**
Location = **Seamount 6**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E30-21)**
Position = X: 0 | Y: 0 | Z/H: 29.42163 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.52146 ± 0.01095**
FCT-NM J-value = **0.00163058 ± 0.00000188**
Air Shot 40Ar/36Ar = **303.8860 ± 0.4133**
Air Shot MDF = **0.99561276 ± 0.00042106 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **2.00 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **No Age**
Age Classification = **Undefined**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(εC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results

	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Age Plateau						
Cannot Calculate						
Total Fusion Age		48.74690 ± 0.06400 ± 0.13%	140.00 ± 0.36 ± 0.25%		40	0.0115 ± 0.0000
			Full External Error ± 7.15 Analytical Error ± 0.18			
Normal Isochron						
Inverse Isochron						
Cannot Calculate						



EXP#21G08974 > NA101-012-C-OSU > Plagioclase > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 7
21-OSU-01 (1E39-21) > Incremental Heating > Andrea Balbas

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-012-C-OSU**
Material = **Plagioclase**
Location = **Seamount 7**
Region = **NW Hawaiian Ridge**
Analyst = **Andrea Balbas**
Irradiation = **21-OSU-01 (1E39-21)**
Position = X: 0 | Y: 0 | Z/H: 44.18147 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.73657 ± 0.01090**
FCT-NM J-value = **0.00159455 ± 0.00000179**
Air Shot 40Ar/36Ar = **304.0470 ± 0.4439**
Air Shot MDF = **0.99548253 ± 0.00044062 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **3.12 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Inverse Isochron**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(εC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.0000059**
Production 38/39(k) = **0.012077 ± 0.0000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%n)	K/Ca ± 2σ
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Age Plateau

Cannot Calculate

Total Fusion Age

23.09502 ± 0.06707
± 0.29%
66.20 ± 0.24
± 0.36%
Full External Error ± 3.42
Analytical Error ± 0.19

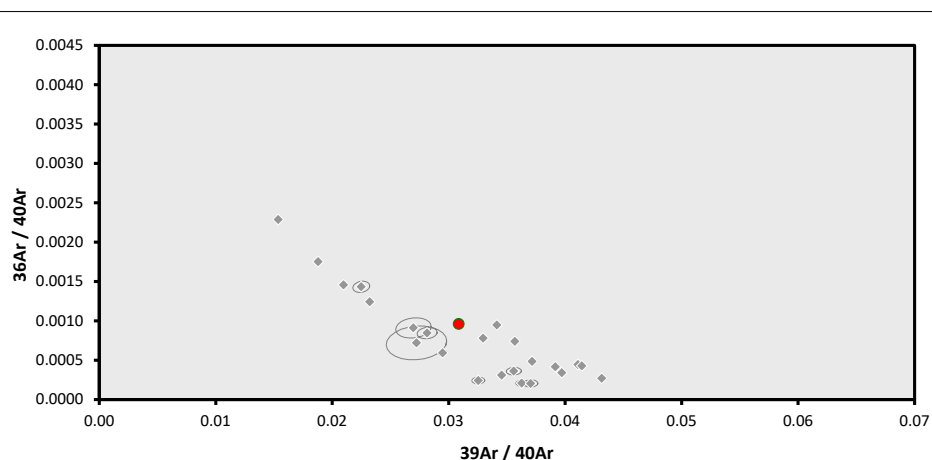
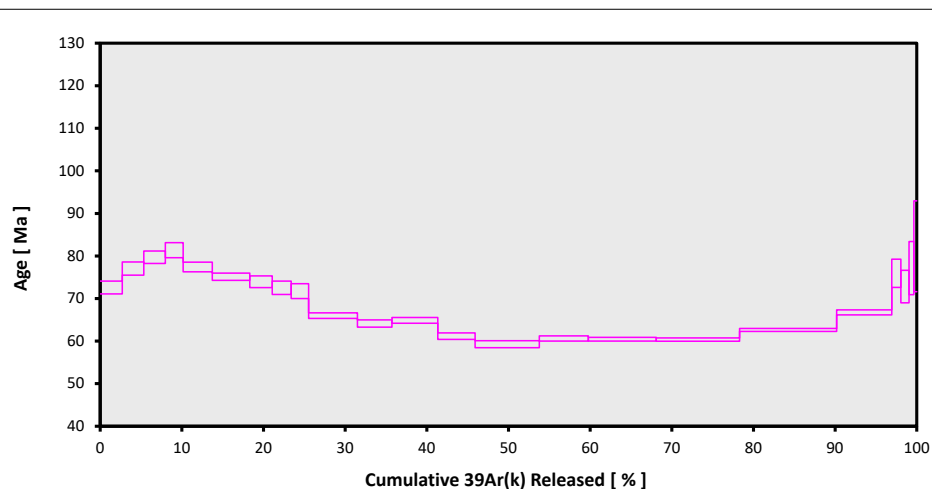
23 0.0175 ± 0.0000

Normal

Isochron

Inverse Isochron

Cannot Calculate



EXP#21G21437 > NA101-024-C-OSU > Groundmass > BALBAS (20-28)
NW HAWAIIAN RIDGE > NAIFEH
21-OSU-01 (1E20-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-024-C-OSU**
Material = **Groundmass**
Location = **Naifeh**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E20-21)**
Position = X: 0 | Y: 0 | Z/H: 23.69179 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.46238 ± 0.01088**
FCT-NM J-value = **0.00164076 ± 0.00000189**
Air Shot 40Ar/36Ar = **303.8890 ± 0.4254**
Air Shot MDF = **0.99561033 ± 0.00042891 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **3.00 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Mini Plateau**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(εC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%n)	K/Ca ± 2σ
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Age Plateau

Cannot Calculate

Total Fusion Age

28.94009 ± 0.00855
± 0.03%
84.92 ± 0.19
± 0.23%
Full External Error ± 4.37
Analytical Error ± 0.02

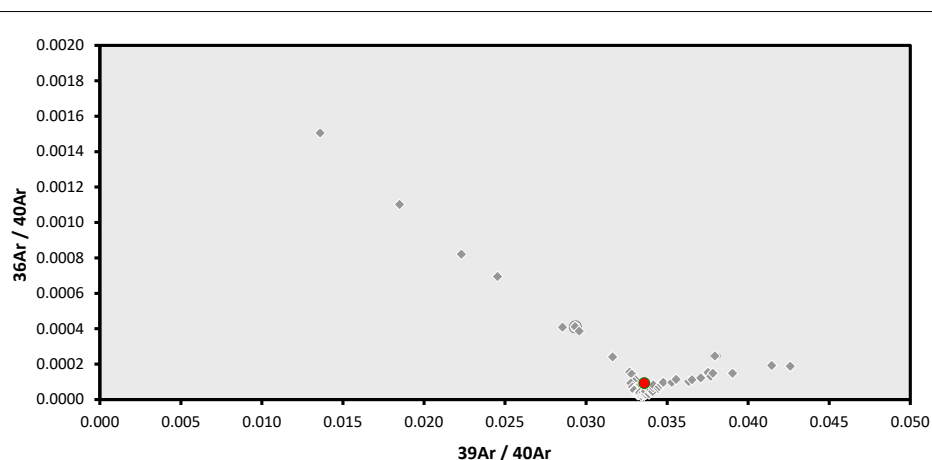
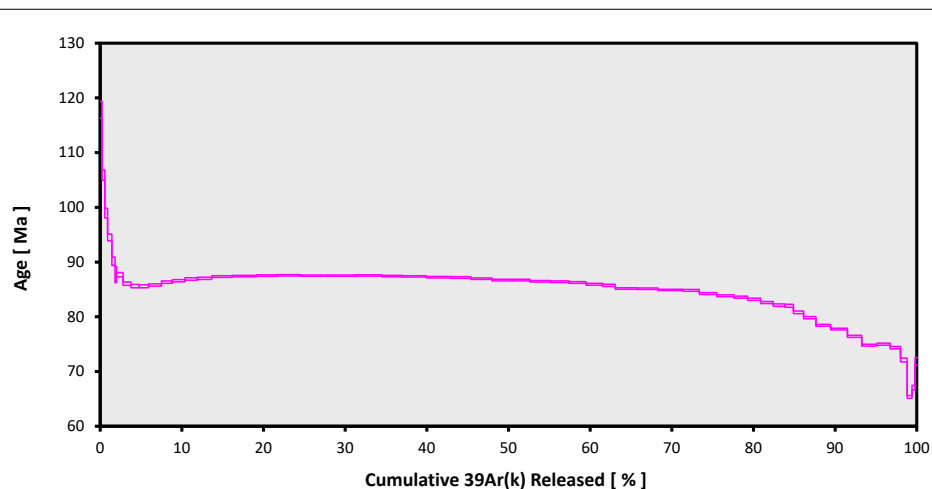
57 0.88 ± 0.02

Normal

Isochron

Inverse Isochron

Cannot Calculate



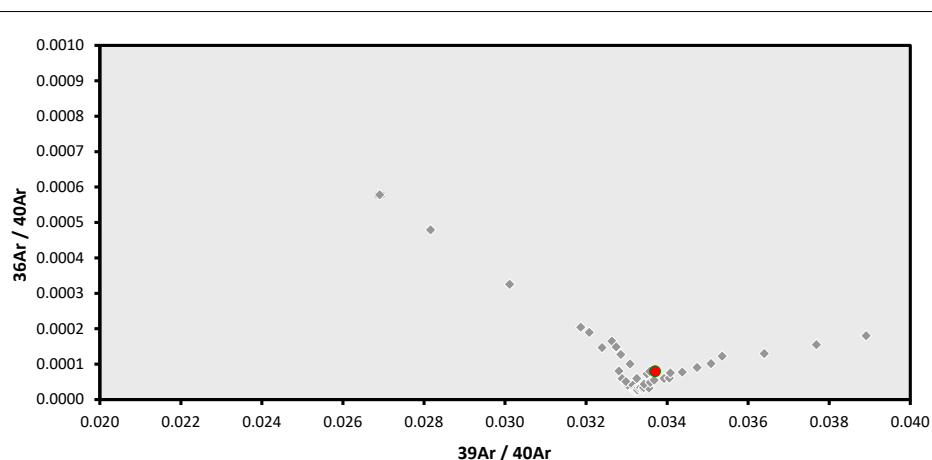
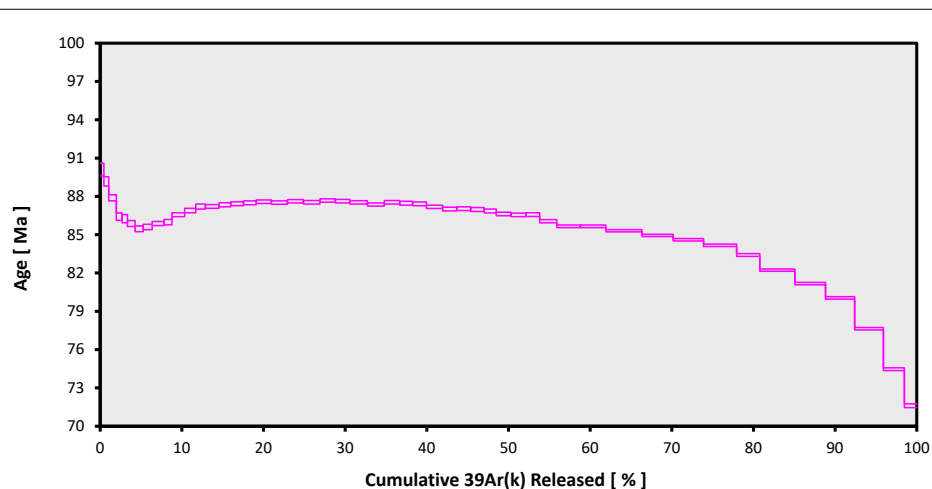
EXP#21G08775 > NA101-024-C-OSU > Groundmass > BALBAS (20-28)
NW HAWAIIAN RIDGE > NAIFEH
21-OSU-01 (1E20-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-024-C-OSU**
Material = **Groundmass**
Location = **Naifeh**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E20-21)**
Position = X: 0 | Y: 0 | Z/H: 23.69179 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.46405 ± 0.01126**
FCT-NM J-value = **0.00164047 ± 0.00000195**
Air Shot 40Ar/36Ar = **304.2650 ± 0.4412**
Air Shot MDF = **0.99530642 ± 0.00043830 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **3.12 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Mini Plateau**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(EC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results

	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Age Plateau						
Cannot Calculate						
Total Fusion Age		28.95808 ± 0.00668 ± 0.02%	84.95 ± 0.20 ± 0.23%		50	0.94 ± 0.00
			Full External Error ± 4.37 Analytical Error ± 0.02			
Normal Isochron						
Inverse Isochron						
Cannot Calculate						



EXP#21G16402 > NA101-023-C-OSU > Plagioclase > BALBAS (20-28)
NW HAWAIIAN RIDGE > NAIFEH
21-OSU-01 (1E19-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-023-C-OSU**
Material = **Plagioclase**
Location = **Naifeh**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E19-21)**
Position = X: 0 | Y: 0 | Z/H: 22.52991 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.45208 ± 0.01087**
FCT-NM J-value = **0.00164255 ± 0.00000189**
Air Shot 40Ar/36Ar = **303.6430 ± 0.4342**
Air Shot MDF = **0.99580958 ± 0.00043521 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **2.00 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **Inverse Isochron**
Age Classification = **Unknown**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(EC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results

40(a)/36(a) ± 2σ

40(r)/39(k) ± 2σ

Age ± 2σ
(Ma)

MSWD

39Ar(k)
(%,n)

K/Ca ± 2σ

Age Plateau

Cannot Calculate

Total Fusion Age

29.47738 ± 0.03902
± 0.13%

86.55 ± 0.22
± 0.26%
Full External Error ± 4.45
Analytical Error ± 0.11

40

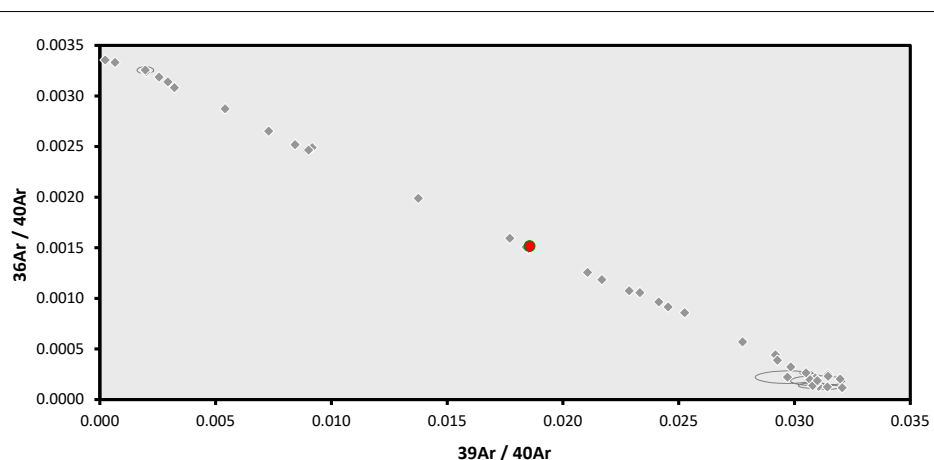
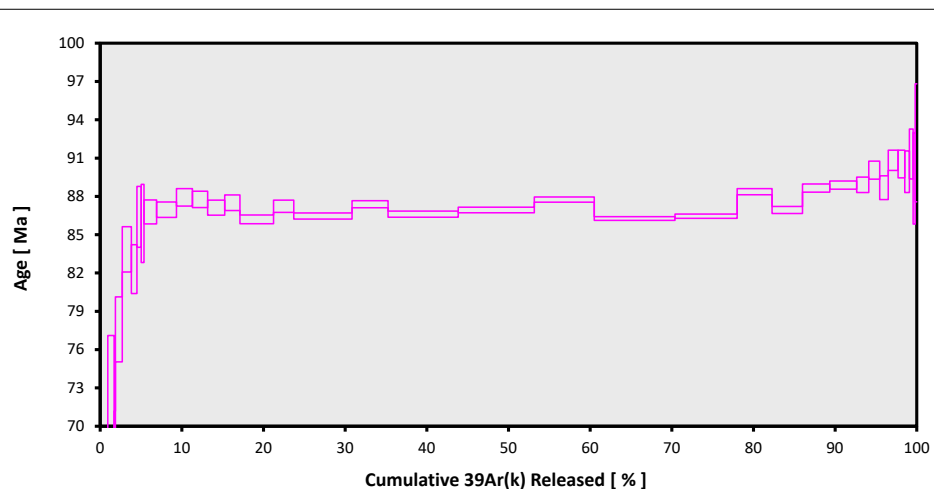
0.0281 ± 0.0001

Normal

Isochron

Inverse Isochron

Cannot Calculate



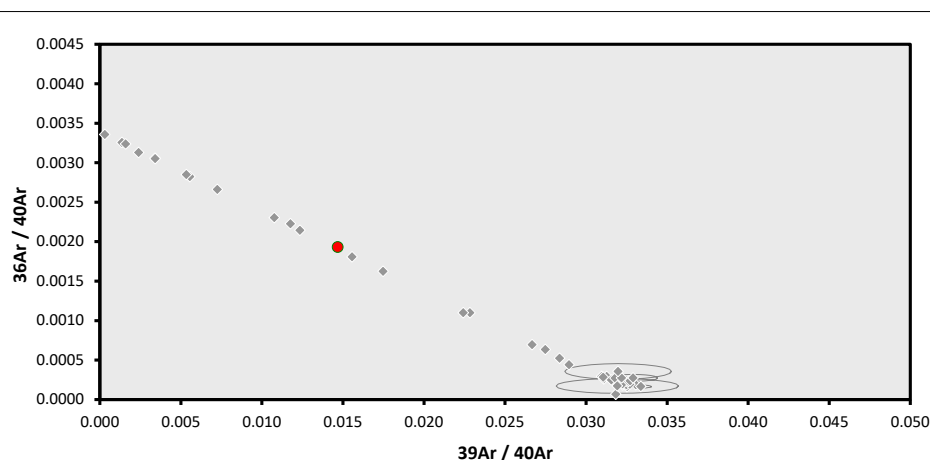
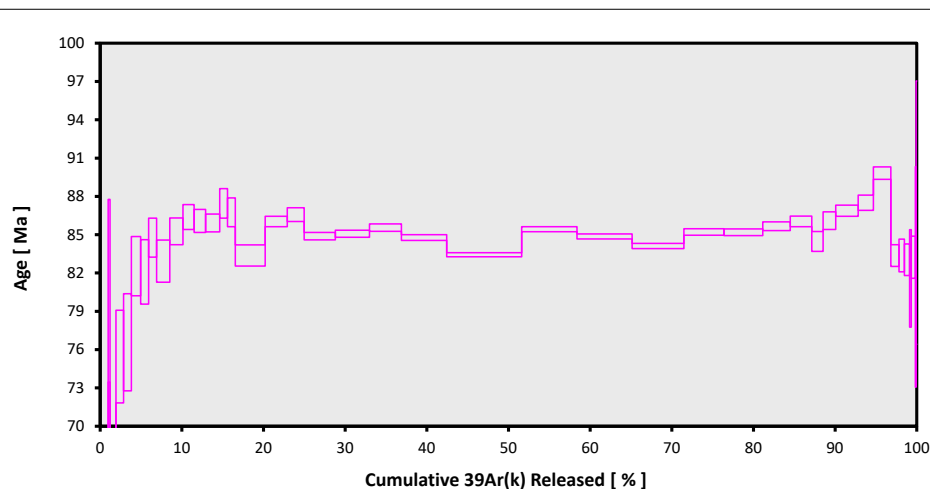
EXP#21G16461 > NA101-050-C-OSU > Plagioclase > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 9
21-OSU-01 (1E29-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-050-C-OSU**
Material = **Plagioclase**
Location = **Seamount 9**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E29-21)**
Position = X: 0 | Y: 0 | Z/H: 28.16908 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.50740 ± 0.01093**
FCT-NM J-value = **0.00163299 ± 0.00000188**
Air Shot 40Ar/36Ar = **304.0060 ± 0.4195**
Air Shot MDF = **0.99551568 ± 0.00042481 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **2.00 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **No Age**
Age Classification = **Undefined**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(εC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.000059**
Production 38/39(k) = **0.012077 ± 0.000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results

	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Age Plateau						
Cannot Calculate						
Total Fusion Age		28.81031 ± 0.07034 ± 0.24%	84.15 ± 0.28 ± 0.33%		43	0.0260 ± 0.0001
			Full External Error ± 4.33 Analytical Error ± 0.20			
Normal Isochron						
Inverse Isochron						
Cannot Calculate						



EXP#21G08868 > NA101-043-C-OSU > Groundmass > BALBAS (20-28)
NW HAWAIIAN RIDGE > SEAMOUNT 10
21-OSU-01 (1E28-21) > Incremental Heating > Daniel Heaton

**Information on Analysis
and Constants Used in Calculations**

Project = **BALBAS (20-28)**
Sample = **NA101-043-C-OSU**
Material = **Groundmass**
Location = **Seamount 10**
Region = **NW Hawaiian Ridge**
Analyst = **Daniel Heaton**
Irradiation = **21-OSU-01 (1E28-21)**
Position = X: 0 | Y: 0 | Z/H: 26.63022 mm
FCT-NM Age = **28.201 ± 0.023 Ma**
FCT-NM Reference = **Kuiper et al (2008)**
FCT-NM 40Ar/39Ar Ratio = **9.49098 ± 0.01091**
FCT-NM J-value = **0.00163582 ± 0.00000188**
Air Shot 40Ar/36Ar = **304.4580 ± 0.4384**
Air Shot MDF = **0.99515071 ± 0.00043603 (LIN)**
Experiment Type = **Incremental Heating**
Extraction Method = **Bulk Laser Heating**
Heating = **52 sec**
Isolation = **3.12 min**
Instrument = **ARGUS-VI-G**
Preferred Age = **No Age**
Age Classification = **Undefined**
IGSN = **Undefined**
Rock Class = **Undefined**
Lithology = **Undefined**
Lat-Lon = **Undefined - Undefined**
Age Equations = **Min et al. (2000)**
Negative Intensities = **Allowed**
Collector Calibrations = **36Ar**
Decay 40K = **5.463 ± 0.107 E-10 1/a**
Decay 39Ar = **2.940 ± 0.016 E-07 1/h**
Decay 37Ar = **8.230 ± 0.012 E-04 1/h**
Decay 36Cl = **2.257 ± 0.015 E-06 1/a**
Decay 40K(EC,β⁺) = **0.580 ± 0.014 E-10 1/a**
Decay 40K(β⁻) = **4.884 ± 0.099 E-10 1/a**
Atmospheric 40/36(a) = **298.56 ± 0.31**
Atmospheric 38/36(a) = **0.1885 ± 0.0003**
Production 39/37(ca) = **0.0006425 ± 0.00000059**
Production 38/37(ca) = **0.0001800 ± 0.00000173**
Production 36/37(ca) = **0.0002703 ± 0.00000005**
Production 40/39(k) = **0.000607 ± 0.0000059**
Production 38/39(k) = **0.012077 ± 0.0000011**
Production 36/38(cl) = **262.80 ± 1.71**
Scaling Ratio K/Ca = **0.430**
Abundance Ratio 40K/K = **1.1700 ± 0.0100 E-04**
Atomic Weight K = **39.0983 ± 0.0001 g**

Results	40(a)/36(a) ± 2σ	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%n)	K/Ca ± 2σ
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Age Plateau

Cannot Calculate

Total Fusion Age

29.47625 ± 0.01366
± 0.05%
86.20 ± 0.20
± 0.23%
Full External Error ± 4.43
Analytical Error ± 0.04

60 0.210 ± 0.000

Normal

Isochron

Inverse Isochron

Cannot Calculate

