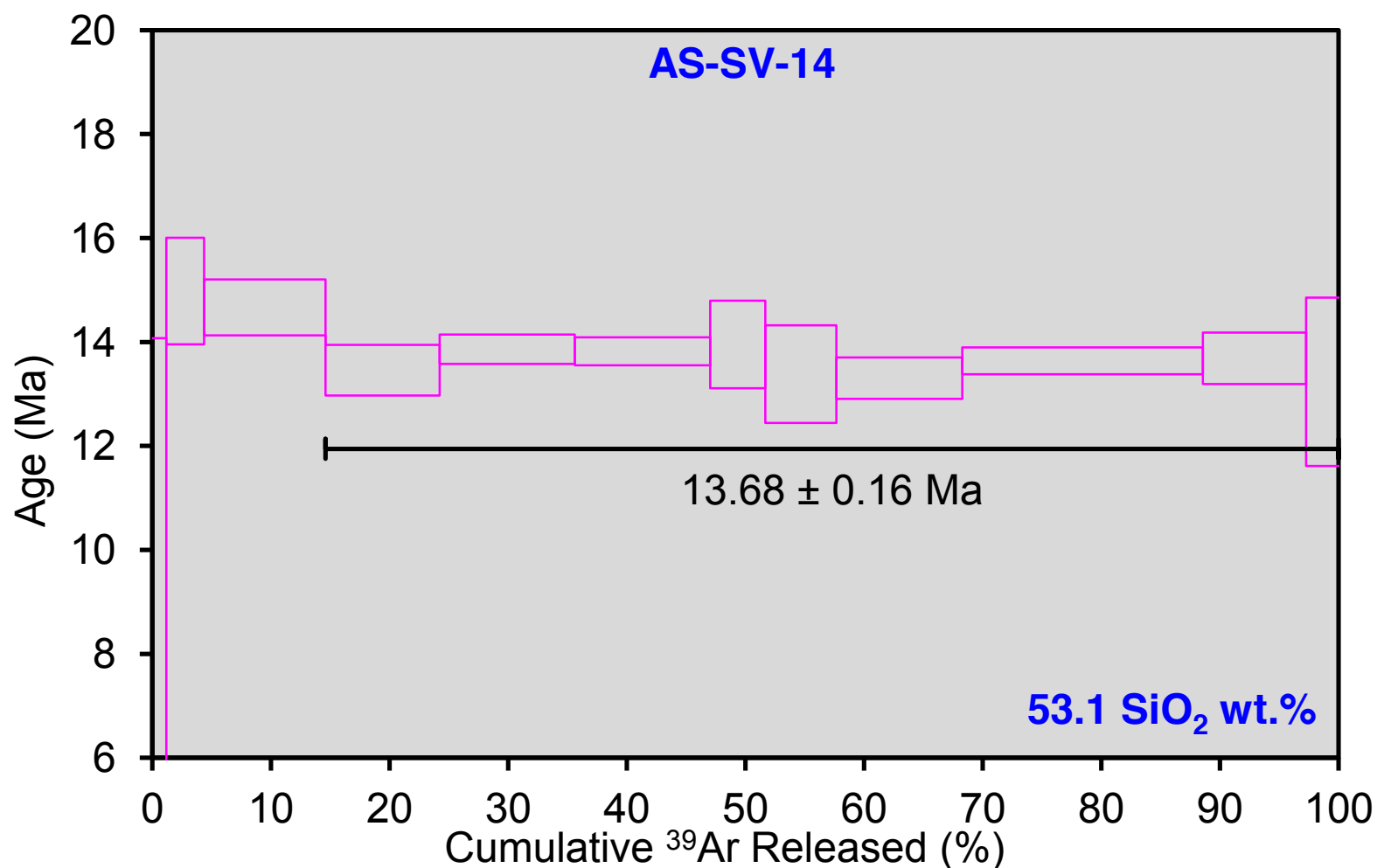


12C2122.AGE >>> AS-SV-14 gm Steiner 2A18-12 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

13.68 ± 0.16

TOTAL FUSION

13.72 ± 0.18

NORMAL ISOCHRON

13.84 ± 0.35

INVERSE ISOCHRON

13.85 ± 0.34

Sample Info

Groundmass

Eastern OR

AS

IRR = OSU2A12

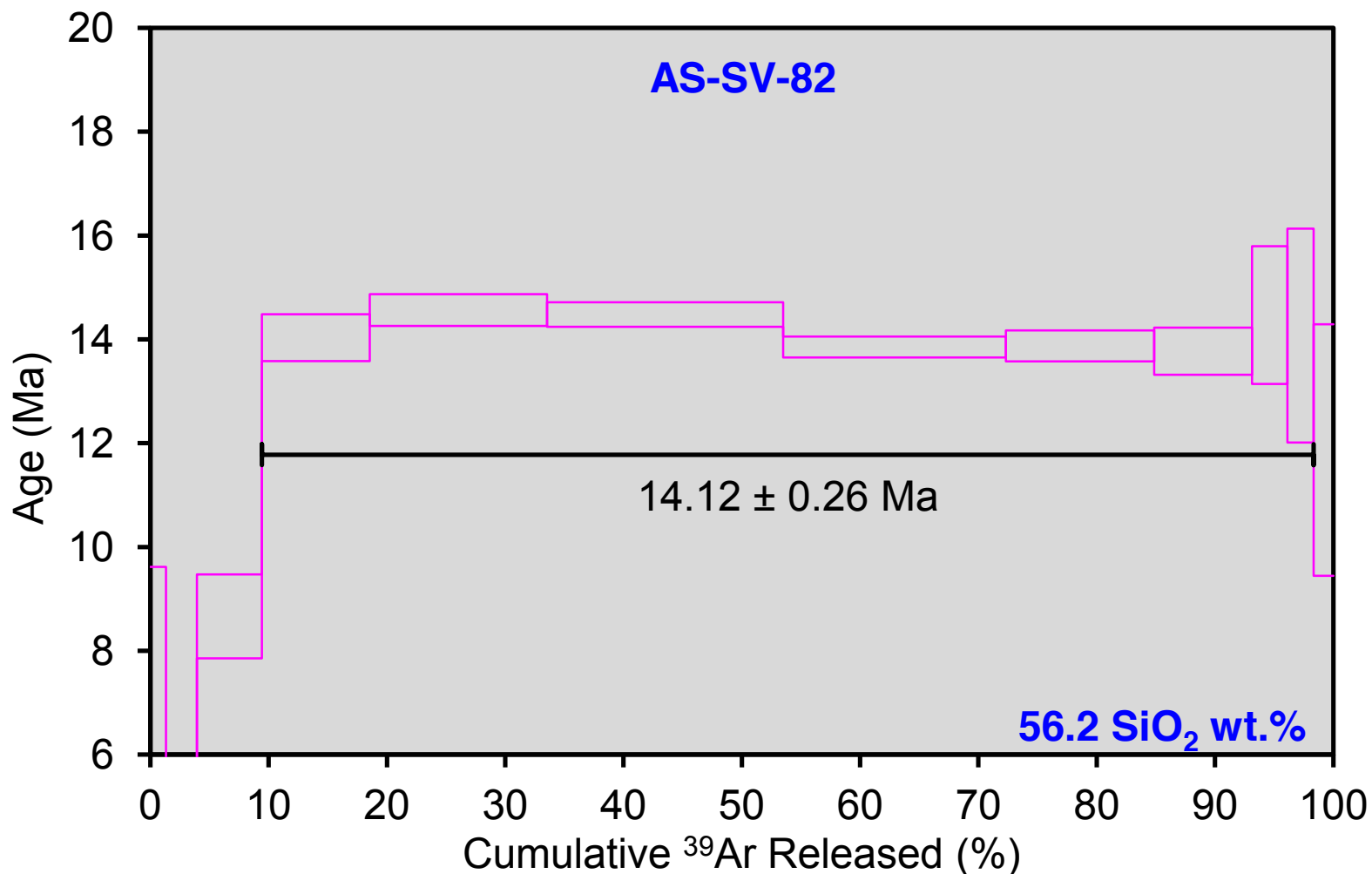
J = $0.0015026 \pm$

0.0000048

Incremental Heating		36Ar(a)	37Ar(ca)	38Ar(cl)	39Ar(k)	40Ar(r)	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
12C2122	400 °C	0.001096	0.003022	0.000029	0.004210	0.014529	9.33 ± 4.74	4.29	1.17	0.599 ± 0.014
12C2123	500 °C	0.001070	0.004053	0.000120	0.011418	0.063354	14.98 ± 1.03	16.69	3.17	1.212 ± 0.022
12C2124	600 °C	0.001291	0.012419	0.000338	0.036863	0.200257	14.67 ± 0.54	34.42	10.25	1.276 ± 0.019
12C2126	675 °C	0.000580	0.014827	0.000284	0.034589	0.172353	13.46 ± 0.48	50.13	9.61	1.003 ± 0.016
12C2127	750 °C	0.000610	0.028017	0.000312	0.041041	0.210663	13.86 ± 0.28	53.89	11.41	0.630 ± 0.009
12C2128	825 °C	0.000794	0.051100	0.000283	0.041056	0.210109	13.82 ± 0.27	47.24	11.41	0.345 ± 0.005
12C2131	900 °C	0.000282	0.031263	0.000103	0.016694	0.086259	13.95 ± 0.84	50.82	4.64	0.230 ± 0.004
12C2132	1000 °C	0.000345	0.056462	0.000169	0.021604	0.107053	13.38 ± 0.94	51.23	6.00	0.165 ± 0.003
12C2133	1100 °C	0.001164	0.122782	0.000354	0.038188	0.188123	13.31 ± 0.40	35.35	10.61	0.134 ± 0.002
12C2135	1200 °C	0.003027	0.260762	0.000776	0.072927	0.368283	13.64 ± 0.26	29.17	20.27	0.120 ± 0.002
12C2136	1300 °C	0.001362	0.124406	0.000322	0.031359	0.158924	13.69 ± 0.50	28.30	8.72	0.108 ± 0.002
12C2137	1400 °C	0.000399	0.046829	0.000104	0.009831	0.048169	13.23 ± 1.62	28.99	2.73	0.090 ± 0.001
Σ		0.012021	0.755942	0.003194	0.359779	1.828076				

Information on Analysis	Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSF	39Ar(k) (% _n)	K/Ca ± 2σ
AS-SV-14 gm Steiner 2A18-12	Weighted Plateau	5.0662 ± 0.0494 ± 0.98%	13.68 ± 0.16	1.04	85.41	0.131 ± 0.054
Groundmass			± 1.16%		9	
Eastern OR			External Error ± 0.27	2.31	Statistical T Ratio	
AS			Analytical Error ± 0.13	1.0200	Error Magnification	
Project = Steiner	Total Fusion Age	5.0811 ± 0.0580 ± 1.14%	13.72 ± 0.18		12	0.205 ± 0.001
Irradiation = OSU2A12			± 1.30%			
J = 0.0015026 ± 0.0000048			External Error ± 0.28			
FCT-3 = 28.030 ± 0.003 Ma			Analytical Error ± 0.16			

12C2139.AGE >>> AS-SV-82 gm Steiner 2A19-12 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU
14.12 ± 0.26
TOTAL FUSION
13.42 ± 0.18
NORMAL ISOCHRON
13.94 ± 0.29
INVERSE ISOCHRON
14.08 ± 0.37

Sample Info

Groundmass
Eastern OR
AS

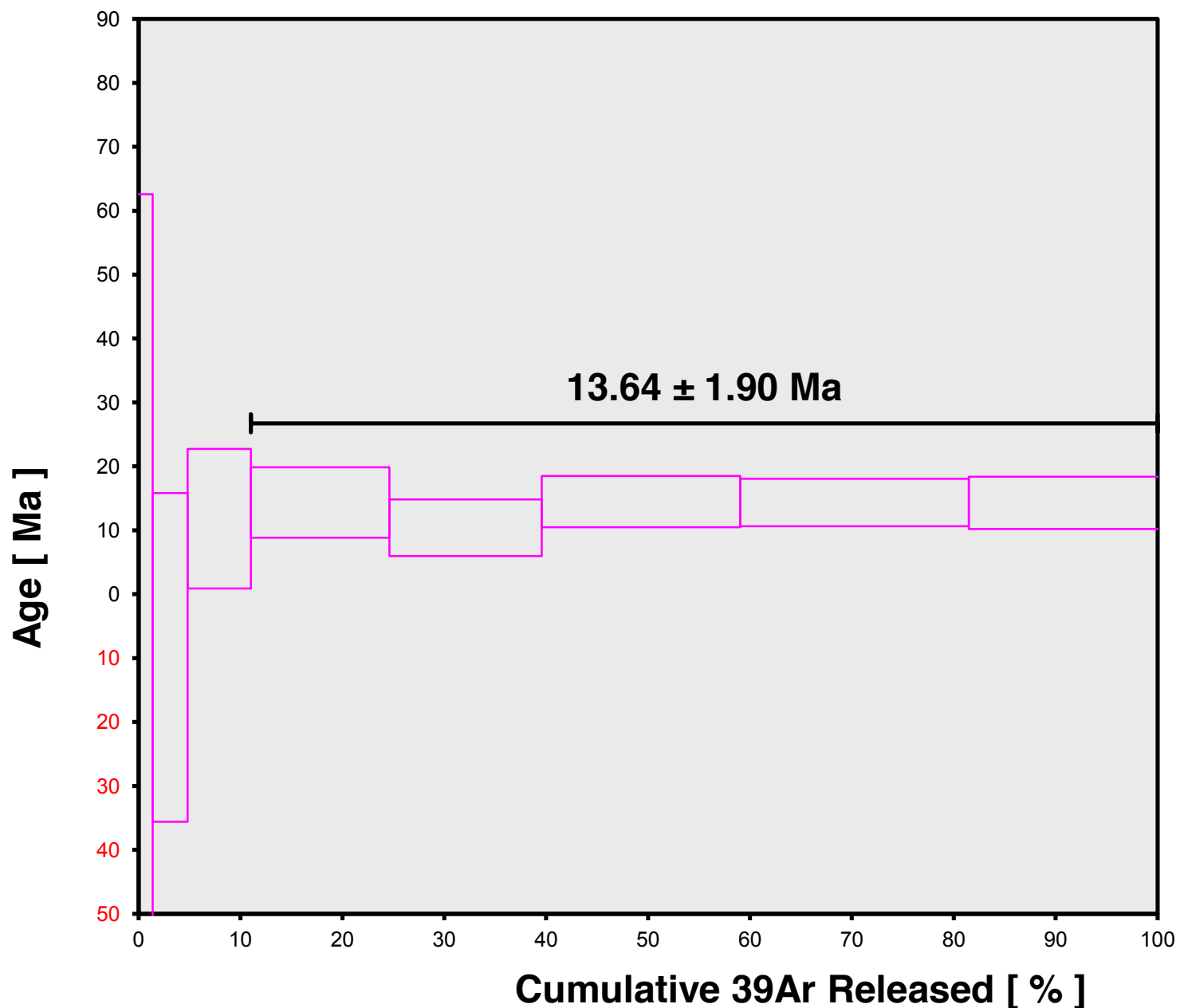
IRR = OSU2A12
J = 0.0014845 ±
0.0000052

Incremental Heating		36Ar(a)	37Ar(ca)	38Ar(cl)	39Ar(k)	40Ar(r)	Age $\pm 2\sigma$ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca $\pm 2\sigma$
12C2139	400 °C	0.000619	0.010626	0.000027	0.004717	0.009380	5.32 \pm 4.30	4.87	1.33	0.191 \pm 0.006
12C2140	500 °C	0.000927	0.010945	0.000050	0.009234	0.012441	3.60 \pm 2.08	4.34	2.61	0.363 \pm 0.008
12C2141	600 °C	0.000748	0.023960	0.000106	0.019473	0.063131	8.66 \pm 0.81	22.21	5.50	0.349 \pm 0.006
12C2143	700 °C	0.000271	0.039850	0.000041	0.032307	0.169949	14.03 \pm 0.45	67.96	9.12	0.349 \pm 0.006
12C2144	775 °C	0.000101	0.059457	0.000014	0.053123	0.290070	14.56 \pm 0.31	90.69	14.99	0.384 \pm 0.006
12C2145	875 °C	0.000052	0.077063	0.000017	0.070638	0.383442	14.48 \pm 0.24	96.11	19.94	0.394 \pm 0.006
12C2147	950 °C	0.000082	0.078139	0.000038	0.066703	0.346292	13.85 \pm 0.20	93.46	18.83	0.367 \pm 0.005
12C2148	1025 °C	0.000047	0.058324	0.000089	0.044440	0.231061	13.87 \pm 0.30	94.26	12.54	0.328 \pm 0.005
12C2149	1100 °C	0.000036	0.050578	0.000110	0.029292	0.151186	13.77 \pm 0.46	93.35	8.27	0.249 \pm 0.004
12C2151	1175 °C	0.000007	0.026521	0.000060	0.010615	0.057567	14.47 \pm 1.33	96.54	3.00	0.172 \pm 0.003
12C2152	1275 °C	0.000017	0.027831	0.000054	0.007878	0.041561	14.07 \pm 2.06	89.34	2.22	0.122 \pm 0.002
12C2153	1400 °C	0.000029	0.021326	0.000060	0.005859	0.026053	11.87 \pm 2.42	74.97	1.65	0.118 \pm 0.002

Σ	0.002938	0.484620	0.000665	0.354278	1.782133
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Information on Analysis	Results	40(r)/39(k) $\pm 2\sigma$	Age $\pm 2\sigma$ (Ma)	MSV	39Ar(k) (% ,n)	K/Ca $\pm 2\sigma$
AS-SV-82 gm Steiner 2A19-12 Groundmass Eastern OR AS	Error Plateau	5.2914 \pm 0.0905 \pm 1.71%	14.12 \pm 0.26 \pm 1.84% External Error \pm 0.34 Analytical Error \pm 0.24	4.34 2.36 2.0827	88.91 8 Statistical T Ratio Error Magnification	0.203 \pm 0.075
Project = Steiner Irradiation = OSU2A12 J = 0.0014845 \pm 0.0000052 FCT-3 = 28.030 \pm 0.003 Ma	Total Fusion Age	5.0303 \pm 0.0580 \pm 1.15%	13.42 \pm 0.18 \pm 1.34% External Error \pm 0.28 Analytical Error \pm 0.15		12	0.314 \pm 0.002

13C3292.AGE >>> AS-SV-109 PLAG 5B8-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

13.64 ± 1.90

TOTAL FUSION

12.56 ± 2.21

NORMAL ISOCHRON

14.50 ± 1.69

INVERSE ISOCHRON

14.36 ± 1.60

MSWD

(PROBABILITY)

0.66 (62%)

Sample Info

plag

Eastern OR

Arron Steiner

IRR = OSU5B13

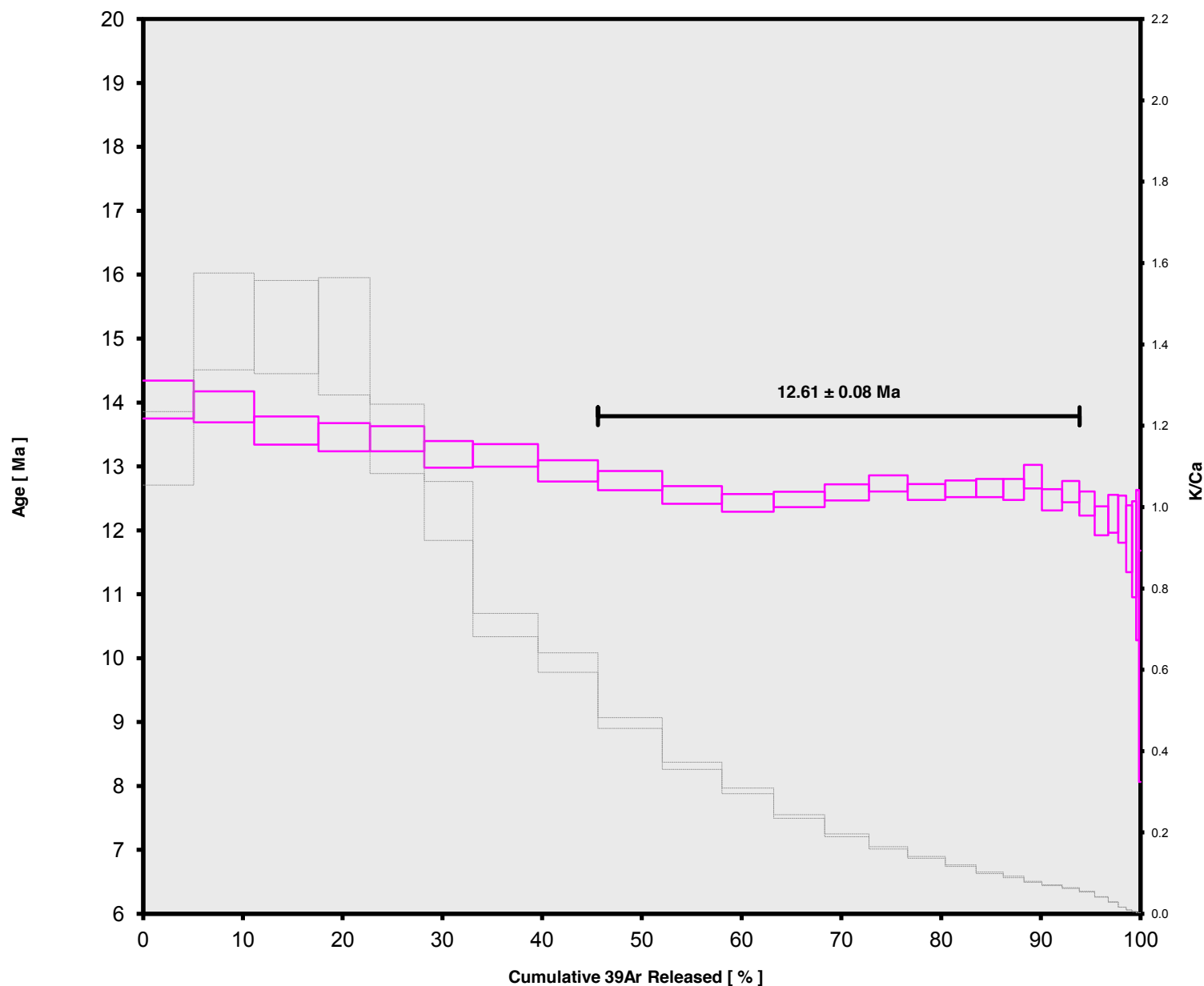
$J = 0.00170987 \pm$

0.00000674

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
13C3292	500 °C	0.0000393	0.0024482	0.0000073	0.0004043	0.0002347	1.79 ± 64.39	2.06	1.38	0.0710 ± 0.0122
13C3294	600 °C	0.0000525	0.0130248	0.0000076	0.0010039	0.0032081	9.89 ± 25.72	26.04	3.44	0.0331 ± 0.0023
13C3295	700 °C	0.0000232	0.0286656	0.0000000	0.0018104	0.0069590	11.82 ± 10.92	50.29	6.20	0.0272 ± 0.0015
13C3297	800 °C	0.0000187	0.0685358	0.0000000	0.0039713	0.0185377	14.34 ± 5.52	76.93	13.60	0.0249 ± 0.0013
13C3298	900 °C	0.0000316	0.0873896	0.0000000	0.0043603	0.0147348	10.39 ± 4.44	61.09	14.94	0.0215 ± 0.0011
13C3300	1050 °C	0.0000038	0.1134584	0.0000000	0.0056856	0.0268030	14.48 ± 4.00	95.76	19.48	0.0215 ± 0.0011
13C3301	1250 °C	0.0000026	0.1345295	0.0000000	0.0065513	0.0305765	14.34 ± 3.72	97.30	22.44	0.0209 ± 0.0011
13C3303	1400 °C	0.0000046	0.1164677	0.0000000	0.0054062	0.0251391	14.29 ± 4.08	94.68	18.52	0.0200 ± 0.0010
Σ		0.0001764	0.5645196	0.0000149	0.0291933	0.1193073				

Information on Analysis	Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Sample = AS-SV-109 PLAG 5B8-13 Material = plag Location = Eastern OR Analyst = Arron Steiner Project = STEINER Mass Discrimination Law = LIN Irradiation = OSU5B13 J = 0.00170987 ± 0.00000674 FCT-3 = 28.030 ± 0.003 Ma	Age Plateau	4.43876 ± 0.61889 ± 13.94%	13.64 ± 1.90 ± 13.91%	0.66 62%	88.98 5	0.0215 ± 0.0015
		Minimal External Error ± 1.91 Analytical Error ± 1.89		2.41 1.0000	2σ Confidence Limit Error Magnification	
	Total Fusion Age	4.08680 ± 0.72141 ± 17.65%	12.56 ± 2.21 ± 17.61%		8	0.0222 ± 0.0005
		Minimal External Error ± 2.22 Analytical Error ± 2.21				

14D34914.AGE >>> AS-SV-109 >>> OREGON I STRECK (13-06C) PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

12.61 ± 0.08

TOTAL FUSION

12.97 ± 0.06

NORMAL ISOCHRON

12.65 ± 0.24

INVERSE ISOCHRON

12.66 ± 0.24

MSWD

(PROBABILITY)

2.56 (0%)

Sample Info

Groundmass

Oregon

Dan Miggins

IRR = 14-OSU-04

J = $0.00157387 \pm$

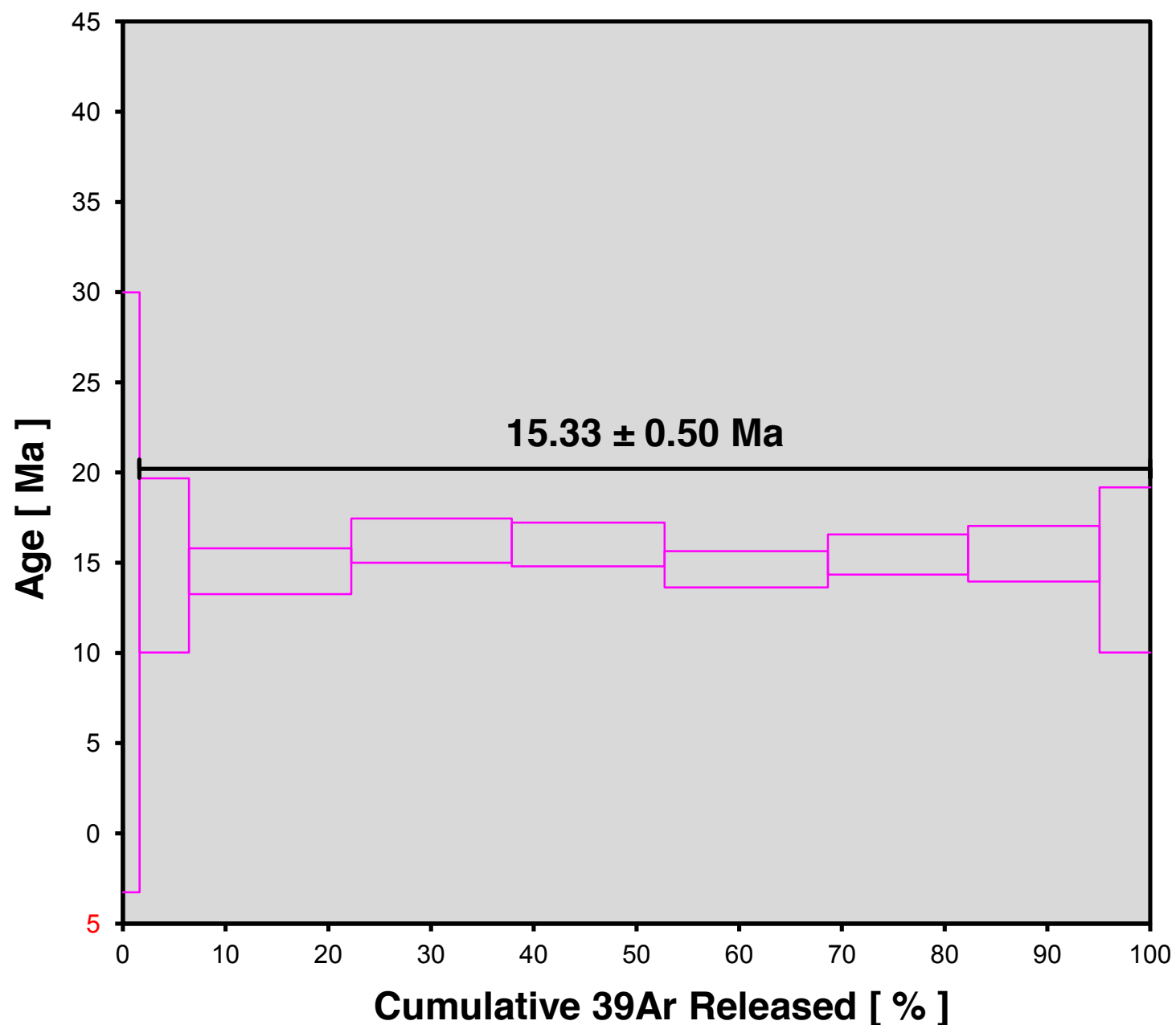
0.00000302

OSU Argon Geochronology Lab
CEOAS Oregon State University, Corvallis, USA

Incremental Heating		36Ar(a) [fA]	37Ar(ca) [fA]	38Ar(cl) [fA]	39Ar(k) [fA]	40Ar(r) [fA]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
14D34915	1.8 %	1.930320	13.8947	0.4046480	36.97292	183.1924	14.05 ± 0.30	24.31	5.08	1.144 ± 0.090
14D34917	2.0 %	1.804120	13.0012	0.3986278	44.04568	216.4638	13.93 ± 0.24	28.88	6.05	1.457 ± 0.119
14D34918	2.2 %	1.763936	13.9990	0.4298092	46.96874	224.6518	13.56 ± 0.22	30.12	6.45	1.443 ± 0.115
14D34919	2.4 %	1.334267	11.3987	0.3584320	37.63743	178.6370	13.46 ± 0.22	31.18	5.17	1.420 ± 0.144
14D34921	2.6 %	1.317864	14.5594	0.3534660	39.53466	187.2836	13.43 ± 0.20	32.47	5.43	1.168 ± 0.085
14D34922	2.8 %	1.131198	15.4479	0.3057825	35.58450	165.5046	13.19 ± 0.21	33.11	4.89	0.991 ± 0.073
14D34923	3.2 %	1.353991	28.8412	0.3741974	47.60827	221.1559	13.17 ± 0.17	35.60	6.54	0.710 ± 0.029
14D34925	3.6 %	1.152742	30.3721	0.2737448	43.61716	198.8602	12.93 ± 0.17	36.86	5.99	0.618 ± 0.024
14D34926	4.1 %	1.102791	43.1318	0.2742833	47.06559	212.0618	12.78 ± 0.15	39.42	6.46	0.469 ± 0.013
14D34927	4.6 %	0.915916	51.3893	0.2883617	43.49660	192.5280	12.55 ± 0.14	41.56	5.97	0.364 ± 0.009
14D34928	5.0 %	0.714696	53.8231	0.2293231	37.82000	165.7317	12.43 ± 0.14	43.97	5.19	0.302 ± 0.007
14D34930	5.5 %	0.599178	66.7906	0.2069037	37.13548	163.4289	12.48 ± 0.12	47.99	5.10	0.239 ± 0.004
14D34931	6.0 %	0.470071	71.9812	0.1903165	32.34190	143.6160	12.59 ± 0.13	50.83	4.44	0.193 ± 0.003
14D34932	6.5 %	0.373667	75.3428	0.1882172	28.36339	127.3462	12.73 ± 0.13	53.55	3.90	0.162 ± 0.003
14D34933	7.0 %	0.326402	84.5586	0.1749556	27.31118	121.3401	12.60 ± 0.12	55.71	3.75	0.139 ± 0.002
14D34934	7.5 %	0.259329	82.0239	0.1540912	22.54740	100.5592	12.65 ± 0.13	56.74	3.10	0.118 ± 0.002
14D34936	8.0 %	0.218416	84.1609	0.1219337	19.72768	88.0735	12.66 ± 0.14	57.70	2.71	0.101 ± 0.002
14D34937	8.5 %	0.167749	71.7938	0.0587748	15.13337	67.4411	12.64 ± 0.16	57.63	2.08	0.091 ± 0.002
14D34938	9.1 %	0.140698	72.2165	0.0679169	13.22271	59.8682	12.84 ± 0.18	59.01	1.82	0.079 ± 0.001
14D34940	10.1 %	0.148938	89.6464	0.1557331	14.66784	64.5232	12.48 ± 0.17	59.44	2.01	0.070 ± 0.001
14D34941	11.2 %	0.126920	86.0990	0.1195100	12.63557	56.1553	12.60 ± 0.17	59.95	1.74	0.063 ± 0.001
14D34942	12.3 %	0.119104	89.0927	0.0808416	11.24535	49.2457	12.42 ± 0.19	58.31	1.54	0.054 ± 0.001
14D34944	13.5 %	0.109691	101.5918	0.0510748	9.83854	42.1398	12.15 ± 0.23	56.52	1.35	0.042 ± 0.001
14D34945	14.8 %	0.093277	108.1107	0.0232756	7.24980	31.3331	12.26 ± 0.30	53.19	1.00	0.029 ± 0.000
14D34946	16.2 %	0.091620	152.1798	0.0158277	5.79944	24.8930	12.18 ± 0.37	47.90	0.80	0.016 ± 0.000
14D34948	17.7 %	0.090904	197.2487	0.0044885	4.32990	18.1152	11.87 ± 0.52	40.27	0.59	0.009 ± 0.000
14D34949	19.8 %	0.097487	238.6013	0.0254687	3.07025	12.6670	11.70 ± 0.75	30.54	0.42	0.006 ± 0.000
14D34950	22.1 %	0.096640	266.6317	0.0141882	2.06274	8.3298	11.46 ± 1.18	22.58	0.28	0.003 ± 0.000
14D34952	24.5 %	0.066050	159.5724	0.0046730	1.09389	3.8053	9.87 ± 1.81	16.32	0.15	0.003 ± 0.000
Σ		18.117981	2387.5012	5.3488667	728.12795	3328.9514				

Information on Analysis	Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Sample = AS-SV-109	Age Plateau	4.44611 ± 0.02211	12.61 ± 0.08	2.56	48.27	0.093 ± 0.026
Material = Groundmass	Error Mean	± 0.50%	± 0.63%	0%	13	
Location = Oregon			Full External Error ± 0.29	1.82	2σ Confidence Limit	
Analyst = Dan Miggins			Analytical Error ± 0.06	1.6013	Error Magnification	
Project = OREGON STRECK (13-06C)						
Mass Discrimination Law = LIN	Total Fusion Age	4.57193 ± 0.01460	12.97 ± 0.06		29	0.131 ± 0.000
Irradiation = 14-OSU-04		± 0.32%	± 0.50%			
J = 0.00157387 ± 0.00000302			Full External Error ± 0.30			
FCT-NM (R98) (4E36-14) = 28.201 ± 0.0			Analytical Error ± 0.04			

13C3424.AGE >>> AS-SV-144 PLAG 5B4-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

15.33 ± 0.50

TOTAL FUSION

15.28 ± 0.62

NORMAL ISOCHRON

16.09 ± 0.31

INVERSE ISOCHRON

15.57 ± 0.54

MSWD

(PROBABILITY)

1.02 (41%)

Sample Info

Plagioclase

Eastern OR

Arron Steiner

IRR = OSU5B13

$J = 0.00176150 \pm$

0.00000599

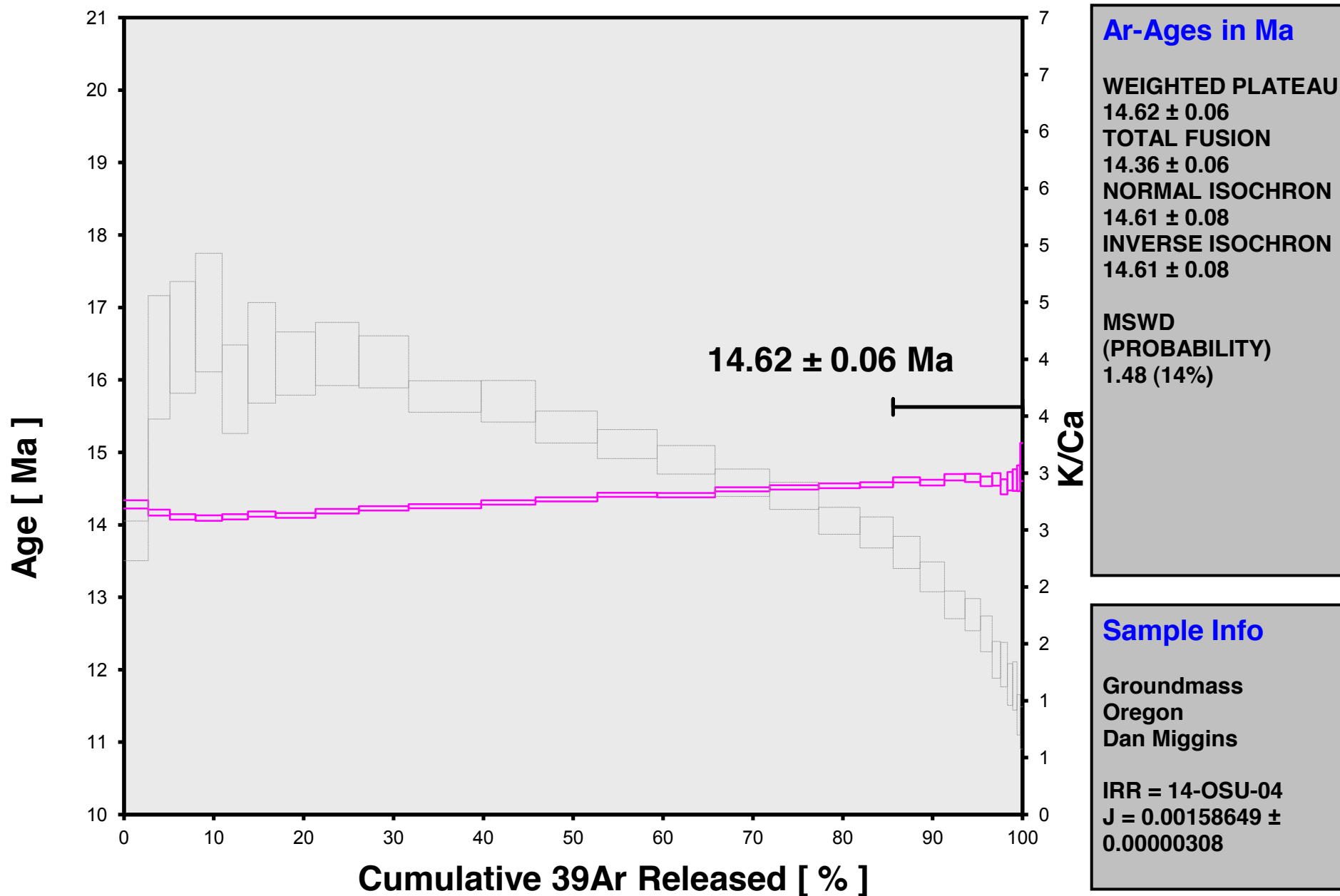
OSU Argon Geochronology Lab
CEOAS Oregon State University, Corvallis, USA

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
13C3424	500 °C	0.0000436	0.0074619	0.0000000	0.0017492	0.0073806	13.36 ± 16.63	36.41	1.62	0.1008 ± 0.0087
13C3426	600 °C	0.0000339	0.0421995	0.0000000	0.0052029	0.0244095	14.85 ± 4.82	70.77	4.82	0.0530 ± 0.0027
13C3427	750 °C	0.0000515	0.1693043	0.0000000	0.0170271	0.0781494	14.53 ± 1.27	83.55	15.79	0.0432 ± 0.0022
13C3429	850 °C	0.0000042	0.1765258	0.0000091	0.0168438	0.0863875	16.23 ± 1.23	98.39	15.62	0.0410 ± 0.0021
13C3430	950 °C	0.0000013	0.1783284	0.0000110	0.0160479	0.0812536	16.02 ± 1.21	99.32	14.88	0.0387 ± 0.0020
13C3432	1050 °C	0.0000267	0.2001241	0.0000000	0.0171645	0.0793925	14.64 ± 1.00	90.78	15.92	0.0369 ± 0.0019
13C3433	1150 °C	0.0000067	0.1700402	0.0000000	0.0147051	0.0718217	15.45 ± 1.12	97.14	13.64	0.0372 ± 0.0019
13C3435	1300 °C	0.0000096	0.1643924	0.0000106	0.0138076	0.0676229	15.50 ± 1.54	95.80	12.80	0.0361 ± 0.0018
13C3436	1400 °C	0.0000106	0.0636667	0.0000000	0.0052971	0.0244332	14.60 ± 4.58	88.47	4.91	0.0358 ± 0.0018
Σ		0.0001880	1.1720433	0.0000306	0.1078451	0.5208509				

Information on Analysis
Sample = AS-SV-144 PLAG 5B4-13
Material = Plagioclase
Location = Eastern OR
Analyst = Arron Steiner
Project = STEINER
Mass Discrimination Law = LIN
Irradiation = OSU5B13
J = 0.00176150 ± 0.00000599
FCT-3 = 28.030 ± 0.003 Ma

Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Age Plateau	4.84360 ± 0.15521 ± 3.20%	15.33 ± 0.50 ± 3.26%	1.02 41%	98.38 8	0.0391 ± 0.0033
	Minimal External Error ± 0.56		2.07	2σ Confidence Limit	
	Analytical Error ± 0.49		1.0101	Error Magnification	
Total Fusion Age	4.82962 ± 0.19426 ± 4.02%	15.28 ± 0.62 ± 4.06%		9	0.0396 ± 0.0008
	Minimal External Error ± 0.67				
	Analytical Error ± 0.61				

14D34953.AGE >>> AS-SV-144 >>> OREGON I STRECK (13-06C) PROJECT

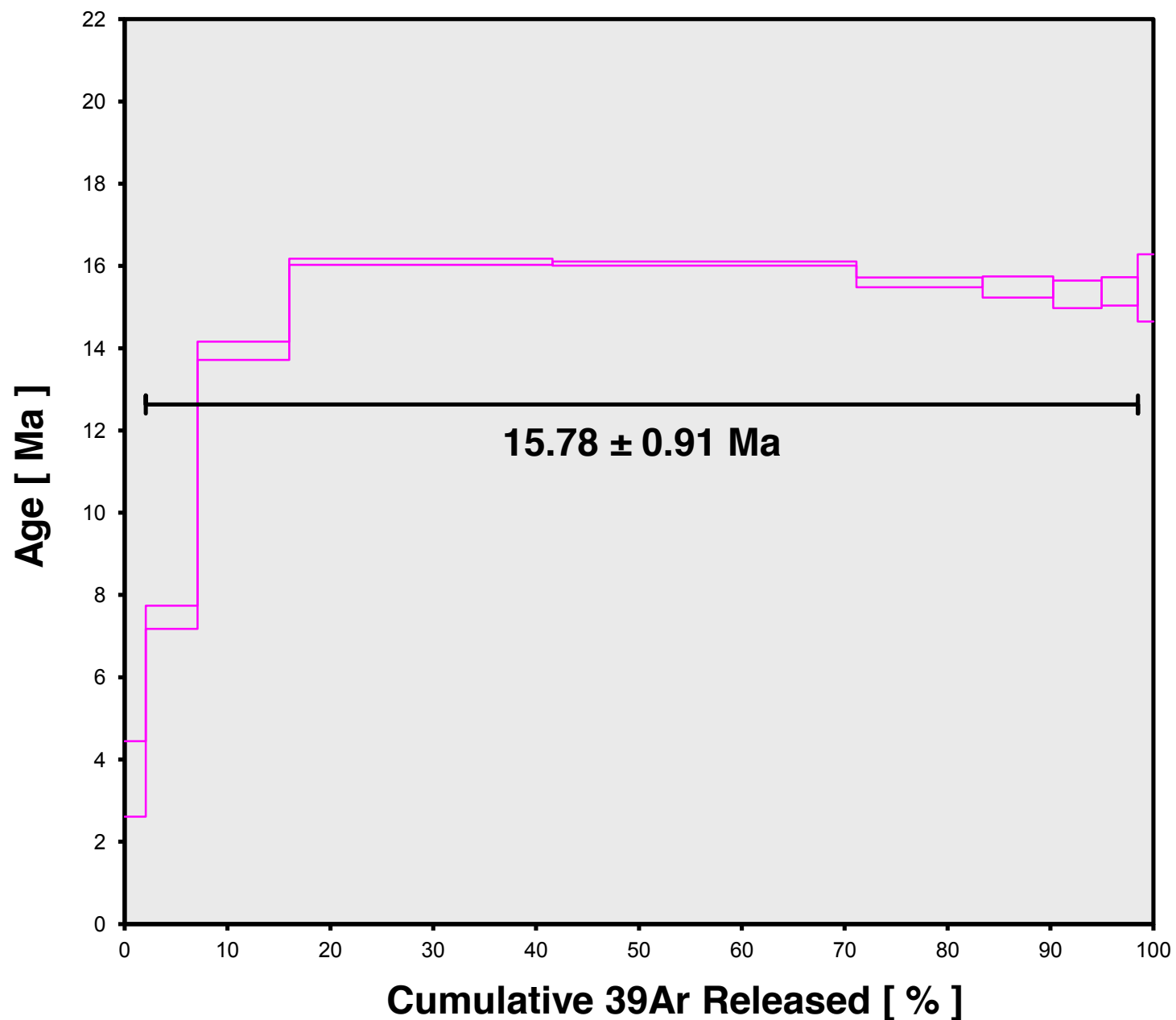


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CEOAS Oregon State University, Corvallis, USA

Incremental Heating		36Ar(a) [fA]	37Ar(ca) [fA]	38Ar(cl) [fA]	39Ar(k) [fA]	40Ar(r) [fA]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
14D34954	1.8 %	0.911601	21.27666	0.454994	118.9430	594.478	14.28 ± 0.06	68.81	2.70	2.40 ± 0.17
14D34956	2.0 %	0.419389	11.33082	0.434536	105.8382	524.781	14.17 ± 0.04	80.88	2.41	4.02 ± 0.54
14D34957	2.2 %	0.444012	12.85683	0.525441	125.3219	618.752	14.11 ± 0.04	82.49	2.85	4.19 ± 0.49
14D34958	2.4 %	0.441142	12.76988	0.582274	130.9558	645.818	14.09 ± 0.04	83.19	2.98	4.41 ± 0.52
14D34960	2.6 %	0.417412	14.57961	0.513448	126.7080	625.665	14.11 ± 0.04	83.52	2.88	3.74 ± 0.39
14D34961	2.8 %	0.422519	14.24662	0.543766	134.3873	665.371	14.15 ± 0.04	84.19	3.05	4.06 ± 0.44
14D34962	3.2 %	0.600268	21.26582	0.835443	195.9784	968.972	14.13 ± 0.03	84.51	4.45	3.96 ± 0.28
14D34964	3.6 %	0.631459	22.54395	0.919287	212.1390	1053.287	14.19 ± 0.03	84.94	4.82	4.05 ± 0.28
14D34965	4.1 %	0.705027	26.40225	1.069024	244.1953	1215.874	14.23 ± 0.03	85.36	5.55	3.98 ± 0.23
14D34966	4.6 %	1.026471	41.56541	1.472768	354.9617	1770.818	14.26 ± 0.03	85.36	8.07	3.67 ± 0.14
14D34967	5.0 %	0.759716	31.52596	1.098659	266.2188	1333.042	14.31 ± 0.03	85.57	6.05	3.63 ± 0.18
14D34969	5.5 %	0.840396	38.18728	1.293329	302.3382	1518.394	14.35 ± 0.03	85.93	6.87	3.40 ± 0.14
14D34970	6.0 %	0.810451	38.81449	1.215904	293.7938	1481.901	14.41 ± 0.03	86.07	6.68	3.25 ± 0.13
14D34971	6.5 %	0.797764	39.10012	1.226165	283.3810	1428.987	14.41 ± 0.03	85.82	6.44	3.12 ± 0.13
14D34972	7.0 %	0.748777	39.45634	1.114755	267.4842	1356.489	14.49 ± 0.03	85.96	6.08	2.92 ± 0.12
14D34973	7.5 %	0.691150	36.82406	0.981601	239.7368	1217.964	14.52 ± 0.03	85.62	5.45	2.80 ± 0.12
14D34975	8.0 %	0.629652	33.70001	0.826088	202.2628	1029.148	14.54 ± 0.03	84.67	4.60	2.58 ± 0.12
14D34976	8.5 %	0.512767	28.08655	0.723049	161.8983	824.513	14.55 ± 0.03	84.46	3.68	2.48 ± 0.14
14D34977	9.1 %	0.443279	24.73566	0.566572	132.5402	678.183	14.62 ± 0.04	83.80	3.01	2.30 ± 0.14
14D34979	10.1 %	0.446912	24.57145	0.519286	119.3781	609.267	14.58 ± 0.04	82.17	2.71	2.09 ± 0.13
14D34980	11.2 %	0.426206	23.35098	0.430307	100.0500	513.249	14.66 ± 0.04	80.28	2.27	1.84 ± 0.12
14D34981	12.3 %	0.392764	18.77110	0.259825	76.6629	392.999	14.65 ± 0.06	77.19	1.74	1.76 ± 0.14
14D34983	13.5 %	0.359153	15.49364	0.223131	57.2050	292.277	14.60 ± 0.07	73.35	1.30	1.59 ± 0.16
14D34984	14.8 %	0.315698	13.09503	0.206269	41.3947	211.909	14.63 ± 0.09	69.42	0.94	1.36 ± 0.16
14D34985	16.2 %	0.290190	10.66819	0.130126	32.7004	166.225	14.52 ± 0.10	65.96	0.74	1.32 ± 0.20
14D34987	17.7 %	0.255760	9.66417	0.093156	25.6927	131.293	14.60 ± 0.13	63.46	0.58	1.14 ± 0.18
14D34988	19.8 %	0.241199	8.10867	0.067199	21.3053	108.994	14.62 ± 0.15	60.45	0.48	1.13 ± 0.21
14D34989	22.1 %	0.207964	7.78776	0.028354	15.8793	81.378	14.64 ± 0.18	56.97	0.36	0.88 ± 0.18
14D34991	24.5 %	0.200793	6.36279	0.055922	11.2460	58.514	14.87 ± 0.26	49.65	0.26	0.76 ± 0.19
Σ		15.389892	647.14212	18.410677	4400.5970	22118.539				

Information on Analysis	Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Sample = AS-SV-144	Age Plateau	5.11611 ± 0.00808	14.62 ± 0.06	1.48	14.41	1.60 ± 0.30
Material = Groundmass		± 0.16%	± 0.42%	14%	11	
Location = Oregon			Full External Error ± 0.33	1.89	2σ Confidence Limit	
Analyst = Dan Miggins			Analytical Error ± 0.02	1.2181	Error Magnification	
Project = OREGON STRECK (13-06C)	Total Fusion Age	5.02626 ± 0.00255	14.36 ± 0.06		29	2.92 ± 0.04
Mass Discrimination Law = LIN		± 0.05%	± 0.39%			
Irradiation = 14-OSU-04			Full External Error ± 0.33			
J = 0.00158649 ± 0.00000308			Analytical Error ± 0.01			
FCT-NM (R98) (4E34-14) = 28.201 ± 0.0						

13C3396.AGE >>> AS-SV-151 GM 5B7-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

15.78 ± 0.91

TOTAL FUSION

15.03 ± 0.12

NORMAL ISOCHRON

16.31 ± 0.22

INVERSE ISOCHRON

16.26 ± 0.26

MSWD

(PROBABILITY)

570.65 (0%)

Sample Info

gm

Eastern OR

Trevor Smith

IRR = OSU5B13

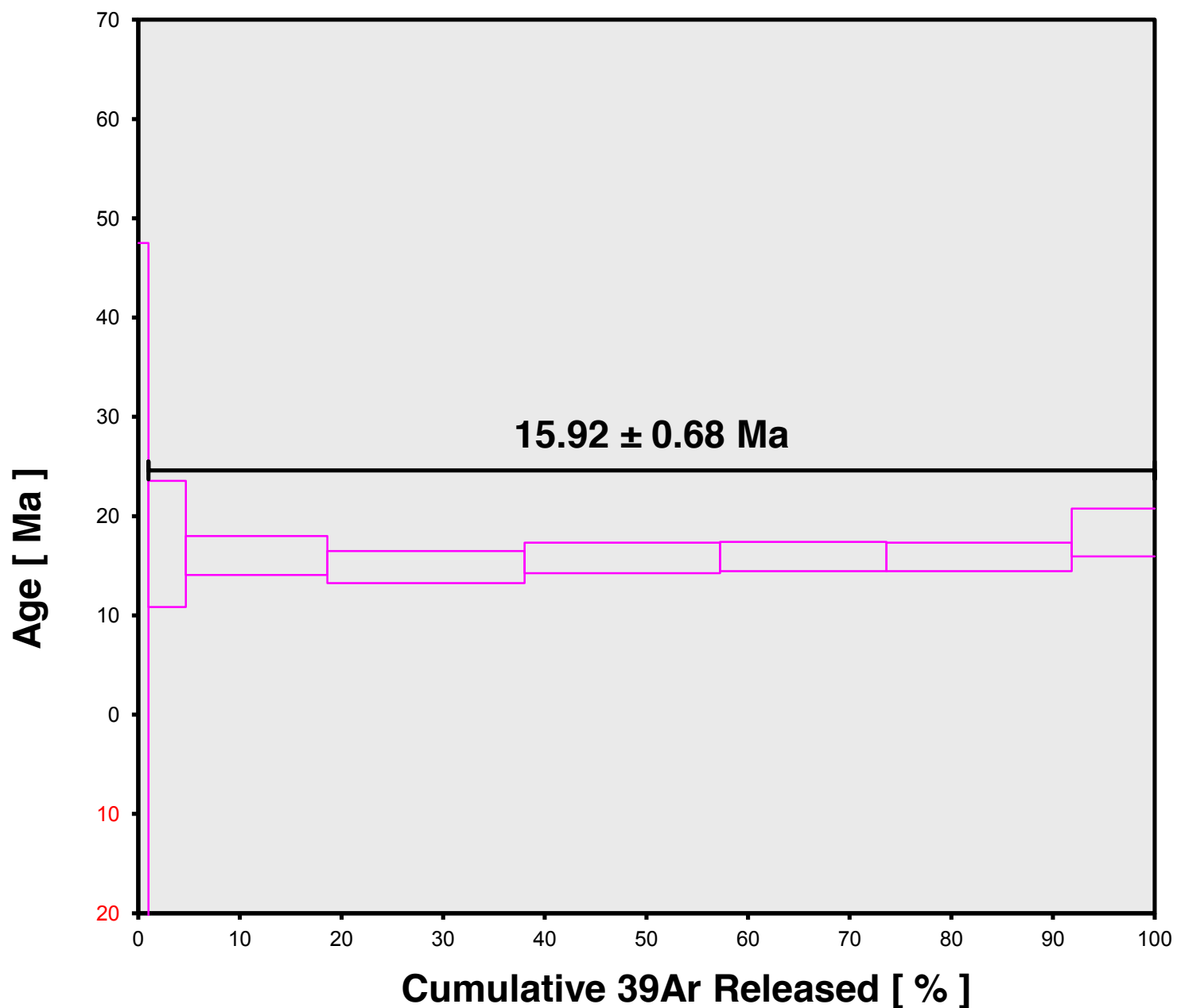
$J = 0.00172464 \pm$

0.00000655

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
13C3396	500 °C	0.0022576	0.0083042	0.0001912	0.0322184	0.0365720	3.53 ± 0.92	5.19	2.05	1.67 ± 0.13
13C3397	600 °C	0.0009857	0.0192902	0.0003998	0.0791051	0.1900421	7.46 ± 0.28	39.42	5.04	1.76 ± 0.09
13C3399	700 °C	0.0003287	0.0270096	0.0003115	0.1398881	0.6291251	13.94 ± 0.22	86.46	8.91	2.23 ± 0.12
13C3400	800 °C	0.0002091	0.0567029	0.0003155	0.4017808	2.0885216	16.10 ± 0.08	96.94	25.60	3.05 ± 0.15
13C3402	900 °C	0.0001793	0.0561106	0.0003786	0.4639083	2.4050594	16.06 ± 0.05	97.66	29.55	3.56 ± 0.18
13C3403	950 °C	0.0001126	0.0240562	0.0002603	0.1925727	0.9697500	15.60 ± 0.12	96.50	12.27	3.44 ± 0.18
13C3405	1000 °C	0.0001051	0.0145261	0.0002428	0.1073930	0.5368010	15.49 ± 0.26	94.35	6.84	3.18 ± 0.19
13C3406	1075 °C	0.0001130	0.0112458	0.0002455	0.0739888	0.3656281	15.31 ± 0.33	91.46	4.71	2.83 ± 0.18
13C3408	1200 °C	0.0001322	0.0097006	0.0002780	0.0552749	0.2744142	15.38 ± 0.35	87.38	3.52	2.45 ± 0.16
13C3409	1350 °C	0.0001003	0.0051744	0.0001028	0.0236104	0.1178596	15.47 ± 0.82	79.78	1.50	1.96 ± 0.18
Σ		0.0045236	0.2321205	0.0027261	1.5697406	7.6137731				

Information on Analysis	Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Sample = AS-SV-151 GM 5B7-13 Material = gm Location = Eastern OR Analyst = Trevor Smith Project = STEINER Mass Discrimination Law = LIN Irradiation = OSU5B13 J = 0.00172464 ± 0.00000655 FCT-3 = 28.030 ± 0.003 Ma	Age Plateau Error Mean	5.09245 ± 0.29351 ± 5.76%	15.78 ± 0.91 ± 5.79%	570.65 0%	96.44 8	2.53 ± 0.48
		Minimal External Error ± 0.95		2.07	2σ Confidence Limit	
		Analytical Error ± 0.91		#####	Error Magnification	
	Total Fusion Age	4.85034 ± 0.01660 ± 0.34%	15.03 ± 0.12 ± 0.83%		10	2.91 ± 0.06
		Minimal External Error ± 0.27				
		Analytical Error ± 0.05				

13C3411.AGE >>> AS-SV-151 PLAG 5B5-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

15.92 ± 0.68

TOTAL FUSION

15.90 ± 0.79

NORMAL ISOCHRON

15.94 ± 0.34

INVERSE ISOCHRON

15.75 ± 1.11

MSWD

(PROBABILITY)

1.00 (42%)

Sample Info

gm

Eastern OR

Arron Steiner

IRR = OSU5B13

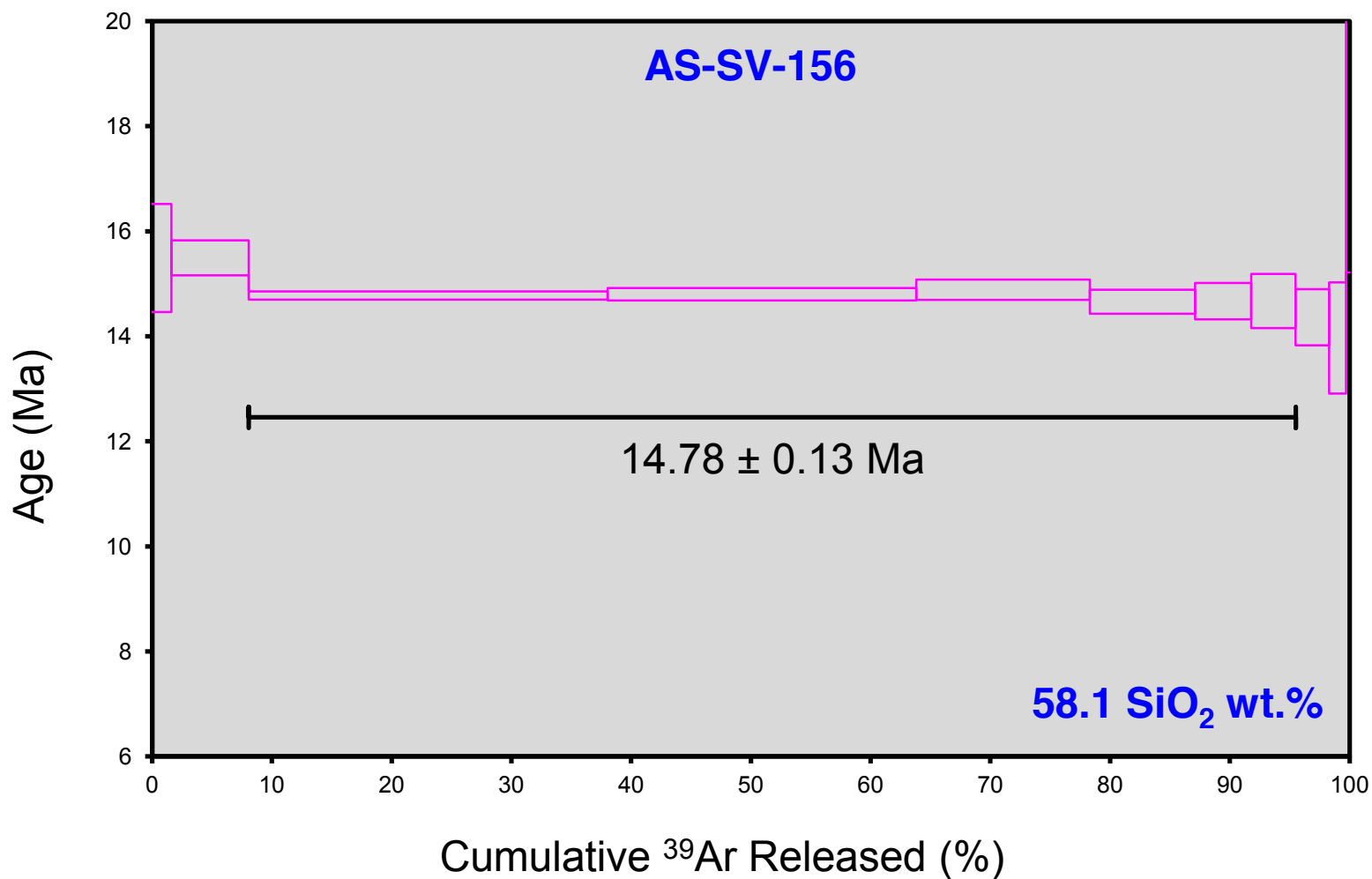
J = 0.00175058 ±

0.00000613

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
13C3411	500 °C	0.0000358	0.0051073	0.0000000	0.0007634	0.0028500	11.75 ± 35.76	21.21	1.01	0.0643 ± 0.0058
13C3413	600 °C	0.0000029	0.0251290	0.0000000	0.0027897	0.0152560	17.19 ± 6.35	94.59	3.68	0.0477 ± 0.0027
13C3414	750 °C	0.0000014	0.0979856	0.0000000	0.0105778	0.0539337	16.03 ± 1.95	100.55	13.94	0.0464 ± 0.0024
13C3416	850 °C	0.0000305	0.1418015	0.0000210	0.0147157	0.0695083	14.86 ± 1.61	88.35	19.39	0.0446 ± 0.0022
13C3417	950 °C	0.0000087	0.1465492	0.0000211	0.0146007	0.0733267	15.79 ± 1.54	96.41	19.24	0.0428 ± 0.0021
13C3419	1050 °C	0.0000004	0.1244332	0.0000000	0.0124333	0.0629617	15.92 ± 1.48	99.62	16.38	0.0430 ± 0.0022
13C3420	1200 °C	0.0000086	0.1499152	0.0000121	0.0138319	0.0699069	15.89 ± 1.43	96.29	18.22	0.0397 ± 0.0020
13C3422	1400 °C	0.0000097	0.0691231	0.0000000	0.0061884	0.0361289	18.34 ± 2.40	108.43	8.15	0.0385 ± 0.0020
Σ		0.0000758	0.7600441	0.0000541	0.0759009	0.3838721				

Information on Analysis	Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Sample = AS-SV-151 PLAG 5B5-13 Material = gm Location = Eastern OR Analyst = Arron Steiner Project = STEINER Mass Discrimination Law = LIN Irradiation = OSU5B13 J = 0.00175058 ± 0.00000613 FCT-3 = 28.030 ± 0.003 Ma	Age Plateau	5.06366 ± 0.21475 ± 4.24%	15.92 ± 0.68 ± 4.28%	1.00 42%	98.99 7	0.0427 ± 0.0025
		Minimal External Error ± 0.73		2.15	2σ Confidence Limit	
		Analytical Error ± 0.67		1.0008	Error Magnification	
	Total Fusion Age	5.05755 ± 0.24894 ± 4.92%	15.90 ± 0.79 ± 4.95%		8	0.0429 ± 0.0009
		Minimal External Error ± 0.83				
		Analytical Error ± 0.78				

12C2091.AGE >>> AS-SV-156 gm Steiner 2A20-12 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU
14.78 \pm 0.13
TOTAL FUSION
14.83 \pm 0.13
NORMAL ISOCHRON
14.74 \pm 0.25
INVERSE ISOCHRON
14.74 \pm 0.25

Sample Info

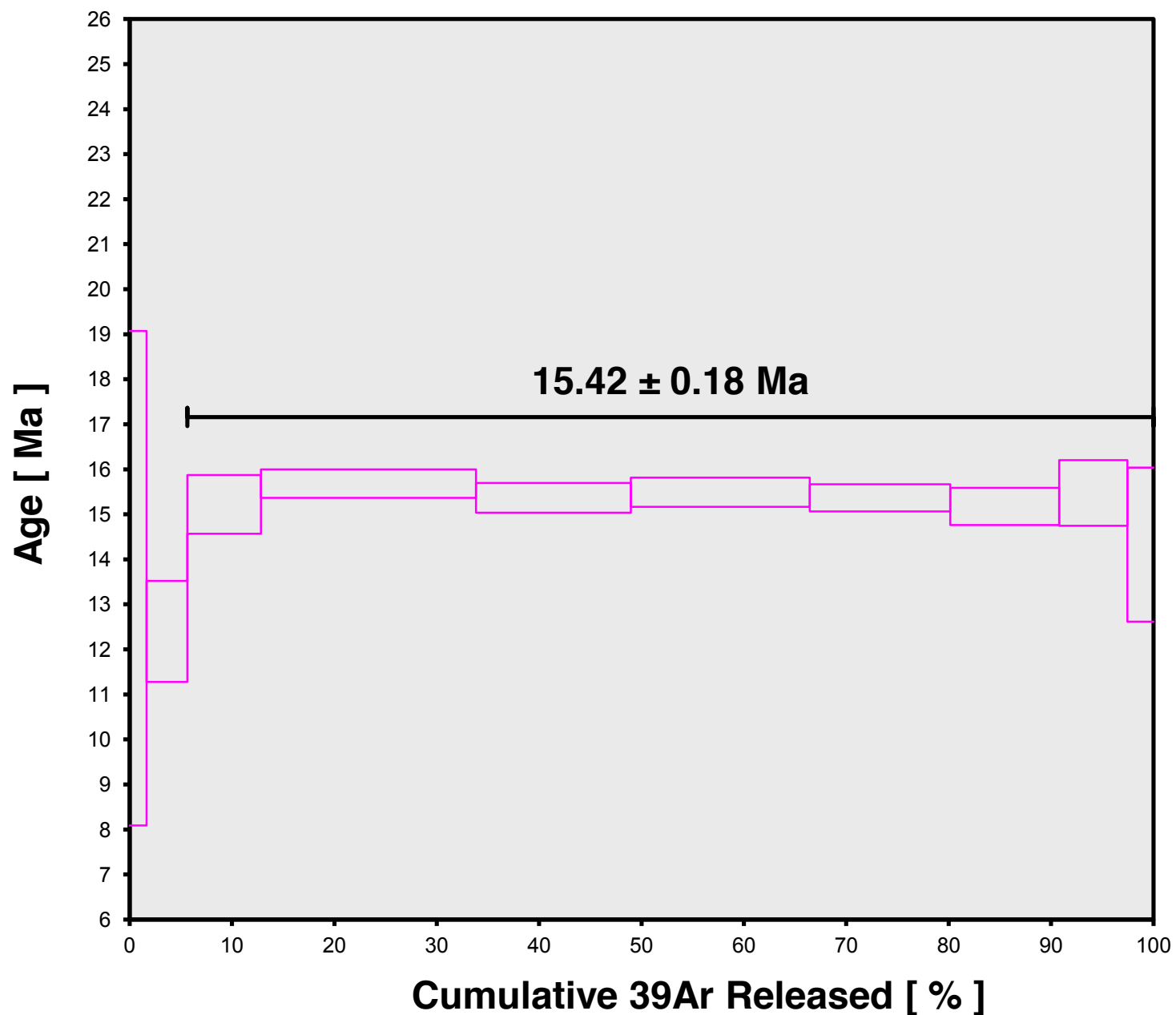
Groundmass
Eastern OR
AS

IRR = OSU2A12
J = 0.0014610 \pm
0.0000056

Incremental Heating			36Ar(a)	37Ar(ca)	38Ar(cl)	39Ar(k)	40Ar(r)	Age $\pm 2\sigma$ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca $\pm 2\sigma$
12C2091	400 °C		0.000734	0.002379	0.000080	0.009480	0.055954	15.49 \pm 1.03	20.50	1.60	1.713 \pm 0.033
12C2092	500 °C		0.001523	0.007446	0.000256	0.038371	0.226494	15.49 \pm 0.33	33.47	6.47	2.216 \pm 0.034
12C2093	600 °C	☞	0.004065	0.043724	0.001169	0.177840	1.001077	14.78 \pm 0.08	45.45	29.98	1.749 \pm 0.024
12C2095	675 °C	☞	0.002484	0.056589	0.000968	0.152907	0.862186	14.80 \pm 0.12	54.01	25.78	1.162 \pm 0.016
12C2096	750 °C	☞	0.001122	0.059923	0.000476	0.085956	0.487538	14.89 \pm 0.19	59.51	14.49	0.617 \pm 0.009
12C2097	825 °C	☞	0.000515	0.076929	0.000247	0.052178	0.291346	14.66 \pm 0.23	65.69	8.80	0.292 \pm 0.004
12C2099	900 °C	☞	0.000213	0.073535	0.000153	0.027701	0.154810	14.67 \pm 0.35	71.12	4.67	0.162 \pm 0.002
12C2100	1000 °C	☞	0.000141	0.084774	0.000102	0.022081	0.123390	14.67 \pm 0.52	74.81	3.72	0.112 \pm 0.002
12C2101	1125 °C		0.000099	0.090056	0.000084	0.016551	0.090550	14.36 \pm 0.54	75.54	2.79	0.079 \pm 0.001
12C2102	1250 °C		0.000064	0.077616	0.000054	0.008474	0.045082	13.97 \pm 1.06	70.28	1.43	0.047 \pm 0.001
12C2104	1400 °C		0.000012	0.022165	0.000024	0.001679	0.013994	21.84 \pm 6.63	80.13	0.28	0.033 \pm 0.001
Σ			0.010972	0.595136	0.003613	0.593217	3.352420				

Information on Analysis	Results	40(r)/39(k) $\pm 2\sigma$	Age $\pm 2\sigma$ (Ma)	MSF	39Ar(k) (%,n)	K/Ca $\pm 2\sigma$
AS-SV-156 gm Steiner 2A20-12 Groundmass Eastern OR AS	Weighted Plateau	5.6306 \pm 0.0218 \pm 0.39%	14.78 \pm 0.13 \pm 0.85% External Error \pm 0.27 Analytical Error \pm 0.06	0.63 2.57 1.0000	87.43 6 Statistical T Ratio Error Magnification	0.161 \pm 0.125
Project = Steiner Irradiation = OSU2A12 J = 0.0014610 \pm 0.0000056 FCT-3 = 28.030 \pm 0.003 Ma	Total Fusion Age	5.6513 \pm 0.0264 \pm 0.47%	14.83 \pm 0.13 \pm 0.89% External Error \pm 0.27 Analytical Error \pm 0.07		11	0.429 \pm 0.002

13C3381.AGE >>> AS-SV-159C GM 5B6-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

15.42 ± 0.18

TOTAL FUSION

15.26 ± 0.21

NORMAL ISOCHRON

15.61 ± 0.31

INVERSE ISOCHRON

15.62 ± 0.31

MSWD

(PROBABILITY)

0.94 (47%)

Sample Info

gm

Eastern OR

Arron Steiner

IRR = OSU5B13

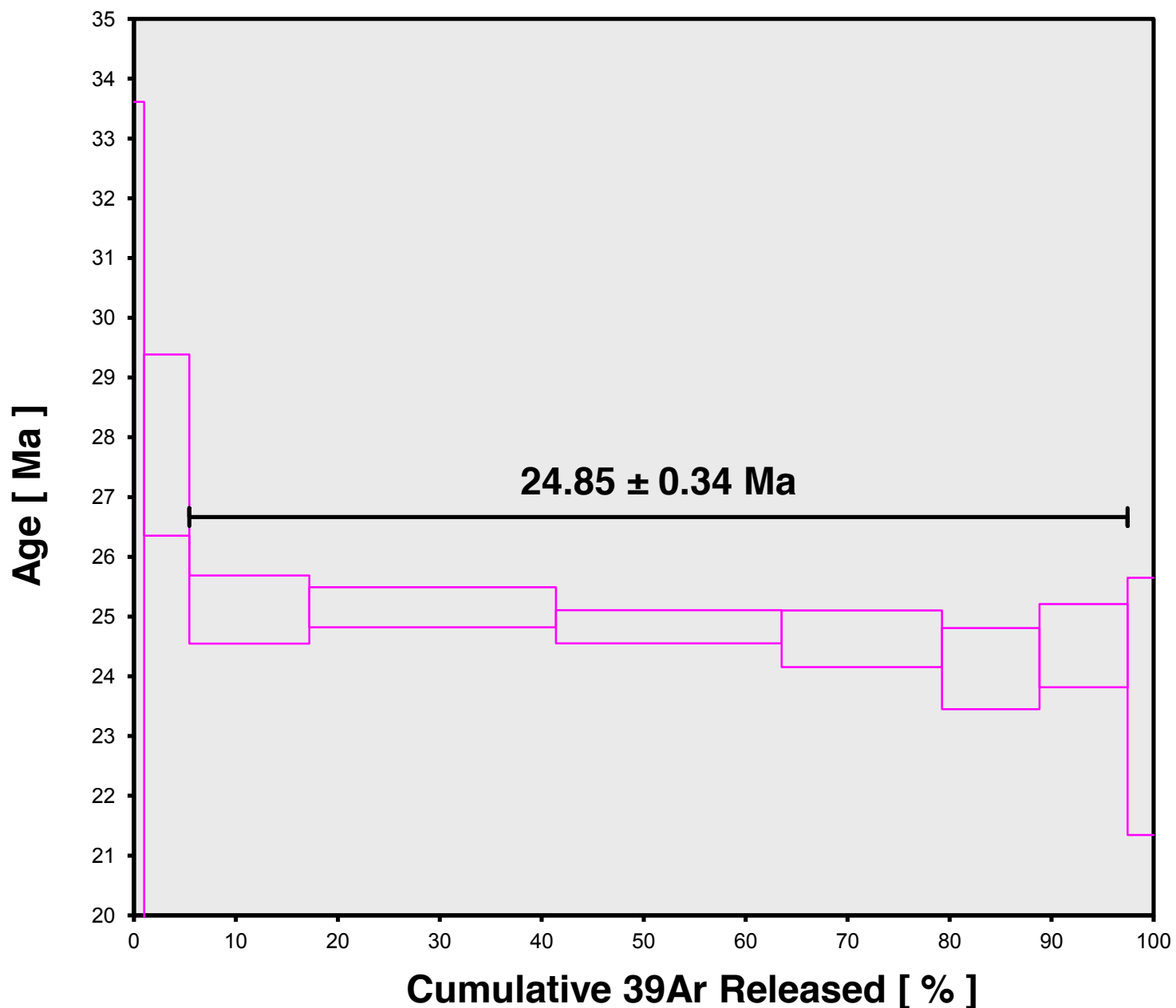
J = 0.00173868 ±

0.00000643

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
13C3381	500 °C	0.0036100	0.0044621	0.0000980	0.0083858	0.0364419	13.58 ± 5.49	3.30	1.67	0.808 ± 0.076
13C3382	600 °C	0.0011314	0.0127414	0.0001349	0.0199177	0.0790051	12.40 ± 1.12	19.10	3.97	0.672 ± 0.043
13C3384	700 °C	0.0003457	0.0287729	0.0001642	0.0361292	0.1760471	15.22 ± 0.65	63.19	7.19	0.540 ± 0.029
13C3385	800 °C	0.0003310	0.1079847	0.0002532	0.1055803	0.5300784	15.68 ± 0.32	84.28	21.02	0.420 ± 0.021
13C3387	875 °C	0.0001932	0.0826928	0.0001874	0.0758540	0.3732121	15.37 ± 0.33	86.58	15.10	0.394 ± 0.020
13C3388	950 °C	0.0003475	0.0947960	0.0003465	0.0878972	0.4359750	15.49 ± 0.32	80.81	17.50	0.399 ± 0.020
13C3390	1050 °C	0.0003867	0.0757959	0.0003442	0.0688222	0.3385257	15.36 ± 0.30	74.65	13.70	0.390 ± 0.020
13C3391	1150 °C	0.0004420	0.0546516	0.0003274	0.0535090	0.2599457	15.17 ± 0.41	66.47	10.65	0.421 ± 0.021
13C3393	1275 °C	0.0004072	0.0397935	0.0002219	0.0334577	0.1657579	15.47 ± 0.73	57.87	6.66	0.362 ± 0.018
13C3394	1400 °C	0.0002286	0.0192602	0.0000685	0.0127718	0.0585585	14.32 ± 1.71	46.39	2.54	0.285 ± 0.016
Σ		0.0074233	0.5209511	0.0021462	0.5023248	2.4535474				

Information on Analysis	Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Sample = AS-SV-159C GM 5B6-13 Material = gm Location = Eastern OR Analyst = Arron Steiner Project = STEINER Mass Discrimination Law = LIN Irradiation = OSU5B13 J = 0.00173868 ± 0.00000643 FCT-3 = 28.030 ± 0.003 Ma	Age Plateau	4.93711 ± 0.04541 ± 0.92%	15.42 ± 0.18 ± 1.18%	0.94 47%	94.37 8	0.382 ± 0.047
		Minimal External Error ± 0.30 Analytical Error ± 0.14		2.07 1.0000	2σ Confidence Limit Error Magnification	
	Total Fusion Age	4.88438 ± 0.05615 ± 1.15%	15.26 ± 0.21 ± 1.36%		10	0.415 ± 0.008
		Minimal External Error ± 0.32 Analytical Error ± 0.17				

13C3351.AGE >>> AS-SV-171 GM 5B11-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

24.85 ± 0.34

TOTAL FUSION

24.94 ± 0.31

NORMAL ISOCHRON

24.38 ± 0.75

INVERSE ISOCHRON

24.42 ± 0.73

MSWD

(PROBABILITY)

2.11 (6%)

Sample Info

gm

Eastern OR

Julia Klath

IRR = OSU5B13

J = 0.00165556 ±

0.00000795

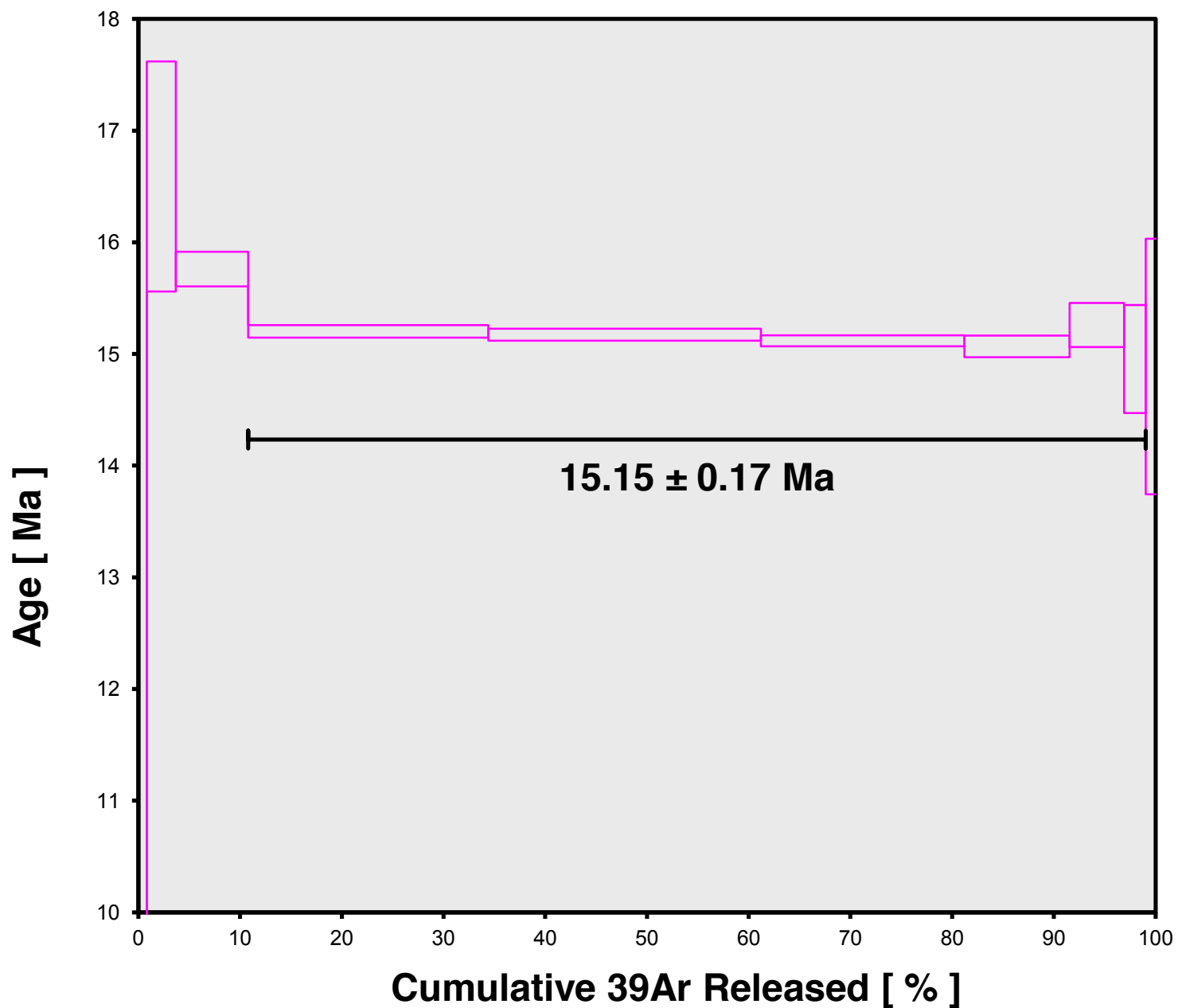
OSU Argon Geochronology Lab
CEOAS Oregon State University, Corvallis, USA

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
13C3351	500 °C	0.0051689	0.0160372	0.0000405	0.0043032	0.0387093	26.67 ± 6.95	2.47	1.01	0.115 ± 0.006
13C3353	600 °C	0.0016492	0.0347186	0.0000238	0.0189050	0.1777765	27.87 ± 1.52	26.72	4.42	0.234 ± 0.012
13C3354	700 °C	0.0008629	0.0689561	0.0000073	0.0503869	0.4266886	25.12 ± 0.57	62.55	11.78	0.314 ± 0.016
13C3356	800 °C	0.0008843	0.1526297	0.0000051	0.1033861	0.8768397	25.16 ± 0.34	76.97	24.18	0.291 ± 0.014
13C3357	900 °C	0.0006354	0.1491219	0.0000157	0.0946392	0.7921544	24.83 ± 0.28	80.76	22.13	0.273 ± 0.013
13C3359	1000 °C	0.0004130	0.1120922	0.0000470	0.0672876	0.5586677	24.63 ± 0.47	81.99	15.74	0.258 ± 0.013
13C3360	1100 °C	0.0002739	0.0904261	0.0000235	0.0408558	0.3322511	24.13 ± 0.68	80.33	9.56	0.194 ± 0.010
13C3362	1250 °C	0.0002431	0.1851118	0.0000585	0.0369466	0.3052844	24.51 ± 0.70	80.87	8.64	0.086 ± 0.004
13C3363	1400 °C	0.0000901	0.0769547	0.0000153	0.0108482	0.0858987	23.50 ± 2.15	76.25	2.54	0.061 ± 0.003
Σ		0.0102208	0.8860484	0.0002367	0.4275586	3.5942705				

Information on Analysis
Sample = AS-SV-171 GM 5B11-13
Material = gm
Location = Eastern OR
Analyst = Julia Klath
Project = STEINER
Mass Discrimination Law = LIN
Irradiation = OSU5B13
J = 0.00165556 ± 0.00000795
FCT-3 = 28.030 ± 0.003 Ma

Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Age Plateau	8.37742 ± 0.08510 ± 1.02%	24.85 ± 0.34 ± 1.39%	2.11 6%	92.03 6	0.146 ± 0.075
	Minimal External Error ± 0.52		2.26	2σ Confidence Limit	
	Analytical Error ± 0.25		1.4524	Error Magnification	
Total Fusion Age	8.40650 ± 0.06845 ± 0.81%	24.94 ± 0.31 ± 1.25%		9	0.207 ± 0.004
	Minimal External Error ± 0.50				
	Analytical Error ± 0.20				

13C3305.AGE >>> AS-SV-179 GM 5B13-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

15.15 ± 0.17

TOTAL FUSION

15.06 ± 0.18

NORMAL ISOCHRON

15.13 ± 0.23

INVERSE ISOCHRON

15.11 ± 0.23

MSWD

(PROBABILITY)

2.12 (6%)

Sample Info

gm

Eastern OR

Julia Klath

IRR = OSU5B13

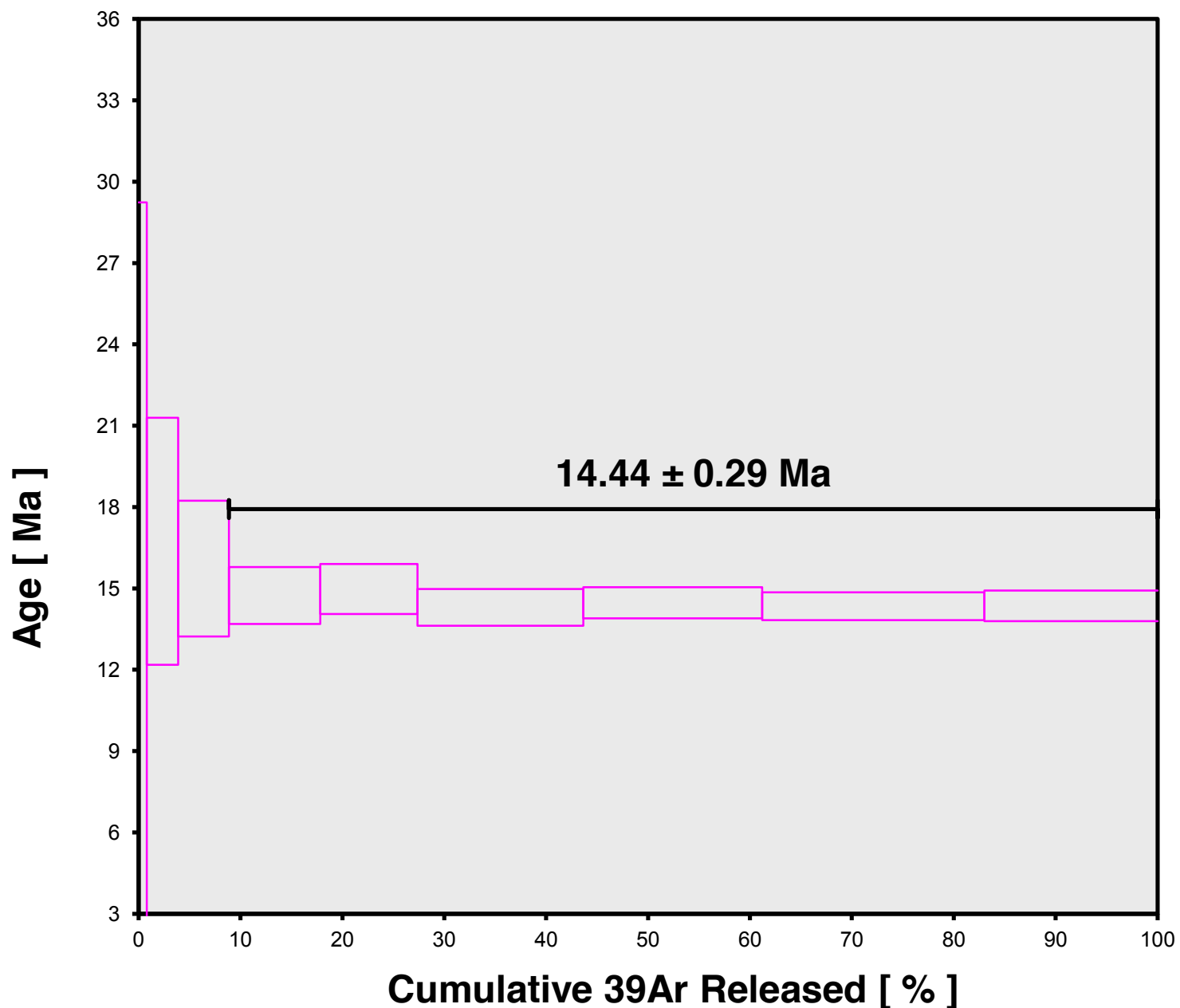
$J = 0.00161386 \pm$

0.00000904

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
13C3305	500 °C	0.0203008	0.0028120	0.0000639	0.0157340	0.0345418	6.40 ± 4.79	0.58	0.83	2.4 ± 0.3
13C3307	600 °C	0.0168384	0.0054073	0.0002399	0.0540657	0.3094731	16.59 ± 1.03	5.85	2.85	4.3 ± 0.3
13C3308	700 °C	0.0027832	0.0078715	0.0001633	0.1348305	0.7330100	15.76 ± 0.16	47.08	7.12	7.4 ± 0.5
13C3310	800 °C	0.0006093	0.0204461	0.0001121	0.4472365	2.3450228	15.20 ± 0.06	92.70	23.61	9.4 ± 0.5
13C3311	900 °C	0.0003842	0.0217785	0.0001309	0.5078373	2.6576540	15.17 ± 0.05	95.73	26.80	10.0 ± 0.5
13C3313	1000 °C	0.0003198	0.0153666	0.0001729	0.3788330	1.9753323	15.12 ± 0.05	95.26	19.99	10.6 ± 0.6
13C3314	1100 °C	0.0002760	0.0073224	0.0001093	0.1959866	1.0184986	15.07 ± 0.10	92.42	10.34	11.5 ± 0.8
13C3316	1200 °C	0.0001861	0.0039471	0.0001123	0.1017778	0.5356891	15.26 ± 0.20	90.53	5.37	11.1 ± 1.2
13C3317	1300 °C	0.0001378	0.0013799	0.0000539	0.0401329	0.2069970	14.95 ± 0.48	83.42	2.12	12.5 ± 3.0
13C3319	1400 °C	0.0000771	0.0004388	0.0000133	0.0182200	0.0935528	14.89 ± 1.14	80.29	0.96	17.9 ± 13.5
Σ		0.0419128	0.0867703	0.0011717	1.8946543	9.8406879				

Information on Analysis	Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Sample = AS-SV-179 GM 5B13-13 Material = gm Location = Eastern OR Analyst = Julia Klath Project = STEINER Mass Discrimination Law = LIN Irradiation = OSU5B13 J = 0.00161386 ± 0.00000904 FCT-3 = 28.030 ± 0.003 Ma	Age Plateau	5.22681 ± 0.01444 ± 0.28%	15.15 ± 0.17 ± 1.15%	2.12 6%	88.24 6	10.2 ± 0.7
		Minimal External Error ± 0.30		2.26	2σ Confidence Limit	
		Analytical Error ± 0.04		1.4547	Error Magnification	
	Total Fusion Age	5.19392 ± 0.02033 ± 0.39%	15.06 ± 0.18 ± 1.18%		10	9.4 ± 0.2
		Minimal External Error ± 0.30				
		Analytical Error ± 0.06				

13C3321.AGE >>> AS-SV-188 GM 5B14-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

14.44 ± 0.29

TOTAL FUSION

14.60 ± 0.35

NORMAL ISOCHRON

14.91 ± 0.49

INVERSE ISOCHRON

14.55 ± 0.43

MSWD

(PROBABILITY)

0.42 (83%)

Sample Info

gm

Eastern OR

Julia Klath

IRR = OSU5B13

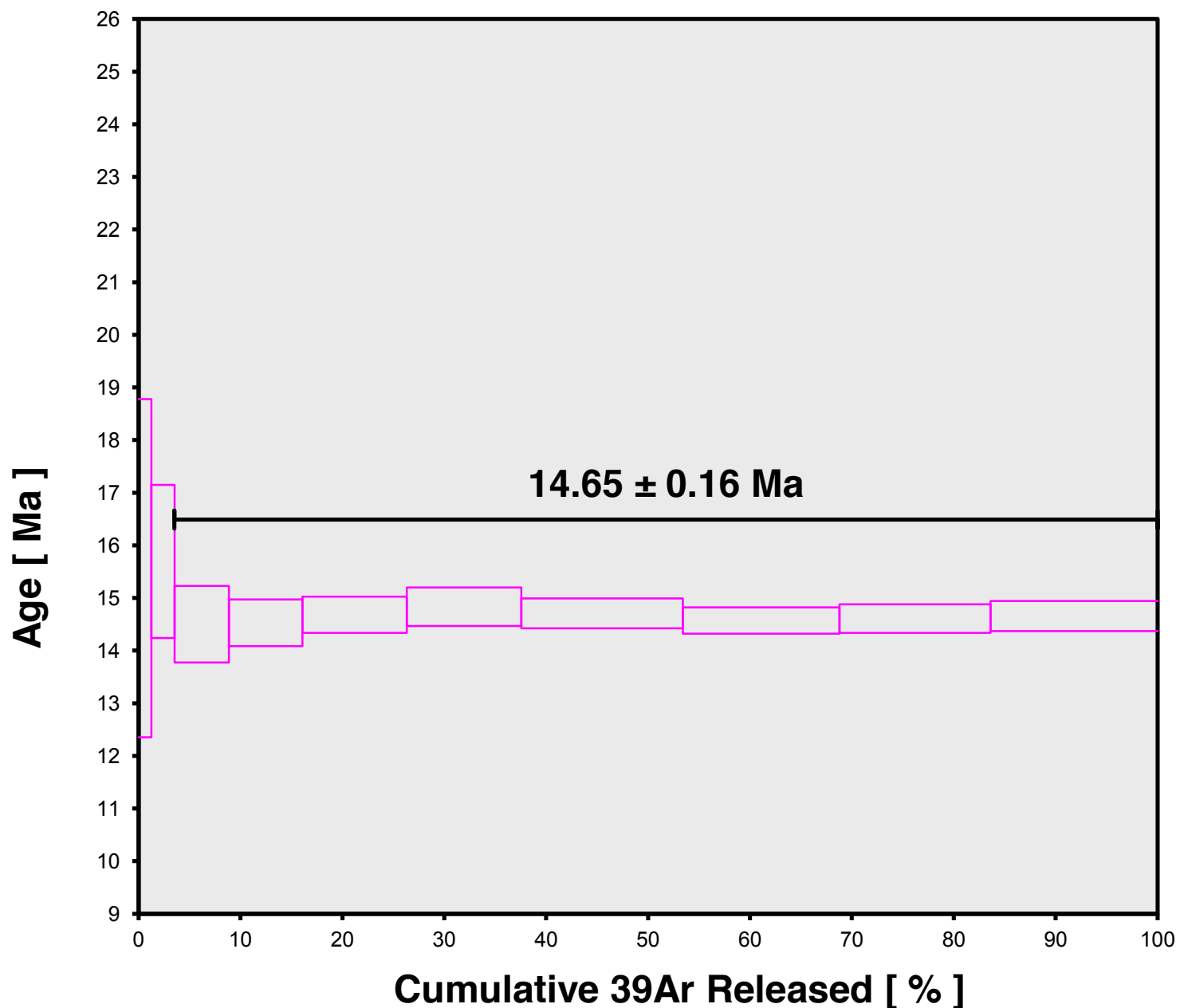
$J = 0.00158671 \pm$

0.00000674

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age $\pm 2\sigma$ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca $\pm 2\sigma$
13C3321	500 °C	0.0000633	0.0002172	0.0000000	0.0016624	0.0085470	14.66 \pm 14.58	31.33	0.80	3.292 \pm 6.519
13C3323	600 °C	0.0000228	0.0025815	0.0000578	0.0064165	0.0376906	16.74 \pm 4.56	84.72	3.08	1.069 \pm 0.139
13C3324	700 °C	0.0000089	0.0055035	0.0000926	0.0104129	0.0574614	15.73 \pm 2.50	95.45	5.00	0.814 \pm 0.086
13C3326	800 °C	0.0000205	0.0150995	0.0001658	0.0186217	0.0962544	14.74 \pm 1.05	93.92	8.94	0.530 \pm 0.031
13C3327	900 °C	0.0000063	0.0193253	0.0001800	0.0198642	0.1043713	14.98 \pm 0.92	98.06	9.54	0.442 \pm 0.025
13C3329	1050 °C	0.0001024	0.0386427	0.0003328	0.0339112	0.1700443	14.30 \pm 0.68	84.74	16.29	0.377 \pm 0.020
13C3330	1150 °C	0.0000236	0.0441034	0.0003496	0.0365314	0.1854035	14.47 \pm 0.57	96.18	17.55	0.356 \pm 0.019
13C3332	1275 °C	0.0001404	0.0644141	0.0004549	0.0453959	0.2283155	14.34 \pm 0.51	84.48	21.80	0.303 \pm 0.016
13C3334	1400 °C	0.0000193	0.0519797	0.0003356	0.0353792	0.1781236	14.35 \pm 0.56	96.71	16.99	0.293 \pm 0.016
Σ		0.0004075	0.2418670	0.0019691	0.2081954	1.0662117				

Information on Analysis	Results	40(r)/39(k) $\pm 2\sigma$	Age $\pm 2\sigma$ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca $\pm 2\sigma$
Sample = AS-SV-188 GM 5B14-13	Age Plateau	5.06553	± 0.09312	0.42	91.12	0.351 \pm 0.060
Material = gm		$\pm 1.84\%$	14.44	83%	6	
Location = Eastern OR			$\pm 2.02\%$	2.26	2 σ Confidence Limit	
Analyst = Julia Klath			Minimal External Error ± 0.37	1.0000	Error Magnification	
Project = STEINER	Total Fusion Age		Analytical Error ± 0.26			0.370 \pm 0.009
Mass Discrimination Law = LIN		5.12121	± 0.11654		9	
Irradiation = OSU5B13		$\pm 2.28\%$	14.60			
J = 0.00158671 \pm 0.00000674			$\pm 2.42\%$			
FACT-3 = 28.030 \pm 0.003 Ma			Minimal External Error ± 0.42			
			Analytical Error ± 0.33			

13C3365.AGE >>> AS-SV-190 GLASS 5B10-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

14.65 ± 0.16

TOTAL FUSION

14.68 ± 0.17

NORMAL ISOCHRON

14.84 ± 0.17

INVERSE ISOCHRON

14.69 ± 0.19

MSWD

(PROBABILITY)

0.31 (95%)

Sample Info

gm

Eastern OR

Arron Steiner

IRR = OSU5B13

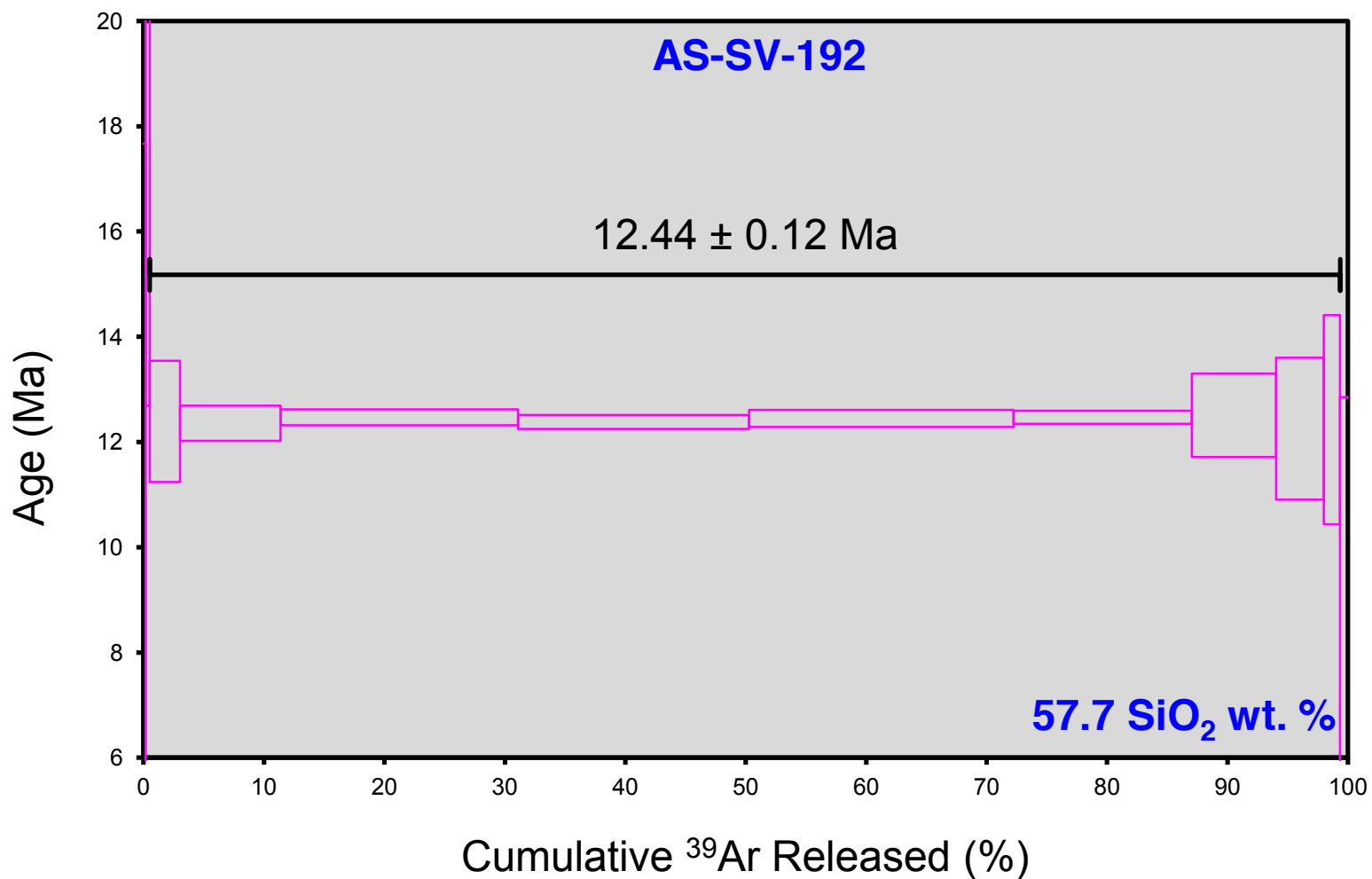
$J = 0.00167605 \pm$

0.00000674

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age $\pm 2\sigma$ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca $\pm 2\sigma$
13C3365	600 °C	0.0001919	0.0014752	0.0000744	0.0082608	0.0427130	15.57 \pm 3.21	42.93	1.26	2.41 \pm 0.57
13C3366	700 °C	0.0000318	0.0015501	0.0000833	0.0147751	0.0770178	15.69 \pm 1.45	88.97	2.26	4.10 \pm 0.85
13C3368	800 °C	0.0000515	0.0036491	0.0002053	0.0349499	0.1682632	14.50 \pm 0.73	91.53	5.35	4.12 \pm 0.48
13C3369	900 °C	0.0000202	0.0046127	0.0002822	0.0469794	0.2266182	14.53 \pm 0.45	97.23	7.19	4.38 \pm 0.41
13C3371	1000 °C	0.0000105	0.0067554	0.0003842	0.0668958	0.3261279	14.68 \pm 0.34	98.85	10.24	4.26 \pm 0.31
13C3372	1100 °C	0.0000007	0.0072309	0.0004444	0.0734521	0.3618211	14.83 \pm 0.37	99.73	11.25	4.37 \pm 0.34
13C3374	1200 °C	0.0000255	0.0102565	0.0006005	0.1034797	0.5053831	14.71 \pm 0.28	98.33	15.84	4.34 \pm 0.29
13C3375	1250 °C	0.0000306	0.0097885	0.0005459	0.1004350	0.4859542	14.57 \pm 0.25	97.97	15.38	4.41 \pm 0.26
13C3377	1325 °C	0.0000203	0.0094422	0.0005046	0.0968519	0.4697226	14.61 \pm 0.27	98.54	14.83	4.41 \pm 0.30
13C3378	1400 °C	0.0000152	0.0104386	0.0005887	0.1070144	0.5208380	14.66 \pm 0.29	98.94	16.39	4.41 \pm 0.27
Σ		0.0003982	0.0651992	0.0037136	0.6530942	3.1844592				

Information on Analysis	Results	40(r)/39(k) $\pm 2\sigma$	Age $\pm 2\sigma$ (Ma)	$\frac{D}{MSWD}$	39Ar(k) (%,n)	K/Ca $\pm 2\sigma$
Sample = AS-SV-190 GLASS 5B10-13 Material = gm Location = Eastern OR Analyst = Arron Steiner Project = STEINER Mass Discrimination Law = LIN Irradiation = OSU5B13 J = 0.00167605 \pm 0.00000674 FCT-3 = 28.030 \pm 0.003 Ma	Age Plateau	4.86322 \pm 0.03805 \pm 0.78%	14.65 \pm 0.16 \pm 1.12%	0.31 95%	96.47 8	4.36 \pm 0.11
		Minimal External Error \pm 0.28 Analytical Error \pm 0.11		2.07 1.0000	2 σ Confidence Limit Error Magnification	
	Total Fusion Age	4.87596 \pm 0.04163 \pm 0.85%	14.68 \pm 0.17 \pm 1.17%		10	4.31 \pm 0.11
		Minimal External Error \pm 0.29 Analytical Error \pm 0.12				

12C2105.AGE >>> AS-SV-192 gm Steiner 2A22-12 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

12.44 ± 0.12

TOTAL FUSION

12.40 ± 0.15

NORMAL ISOCHRON

12.40 ± 0.13

INVERSE ISOCHRON

12.44 ± 0.14

Sample Info

Groundmass

Eastern OR

AS

IRR = OSU2A12

J = 0.0014392 ±

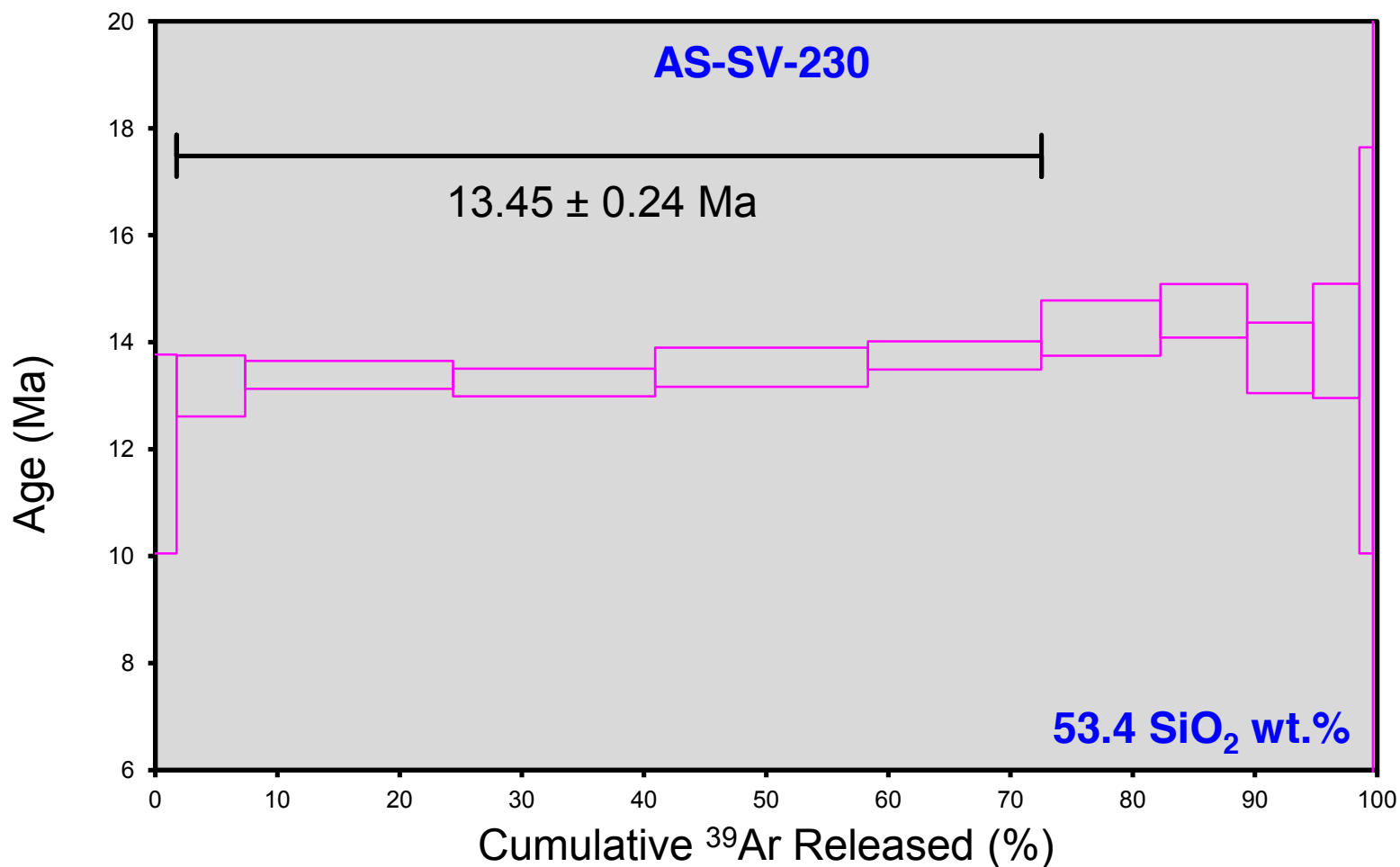
0.0000059

Incremental Heating		36Ar(a)	37Ar(ca)	38Ar(cl)	39Ar(k)	40Ar(r)	Age $\pm 2\sigma$ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca $\pm 2\sigma$
12C2105	400 °C	0.000073	0.000973	0.000004	0.000635	0.000469	1.91 \pm 15.75	2.11	0.17	0.281 \pm 0.012
12C2106	500 °C	0.000052	0.002026	0.000022	0.001233	0.008447	17.70 \pm 5.01	35.40	0.34	0.262 \pm 0.006
12C2108	600 °C	0.000055	0.015853	0.000006	0.009251	0.044301	12.39 \pm 1.15	73.06	2.51	0.251 \pm 0.004
12C2110	700 °C	0.000051	0.052445	0.000000	0.030707	0.146639	12.36 \pm 0.34	90.59	8.35	0.252 \pm 0.004
12C2111	800 °C	0.000039	0.105795	0.000018	0.072625	0.350022	12.47 \pm 0.15	96.78	19.74	0.295 \pm 0.004
12C2113	875 °C	0.000012	0.083383	0.000032	0.070554	0.337599	12.38 \pm 0.13	98.94	19.18	0.364 \pm 0.005
12C2114	950 °C	0.000020	0.085074	0.000026	0.080809	0.388718	12.45 \pm 0.16	98.45	21.96	0.408 \pm 0.006
12C2115	1025 °C	0.000020	0.059261	0.000046	0.054449	0.262388	12.47 \pm 0.13	97.80	14.80	0.395 \pm 0.006
12C2117	1100 °C	0.000025	0.034598	0.000006	0.025687	0.124150	12.51 \pm 0.79	94.45	6.98	0.319 \pm 0.005
12C2118	1175 °C	0.000040	0.031586	0.000012	0.014561	0.068953	12.25 \pm 1.35	85.30	3.96	0.198 \pm 0.003
12C2119	1275 °C	0.000028	0.018767	0.000000	0.005017	0.024092	12.43 \pm 1.99	74.62	1.36	0.115 \pm 0.002
12C2121	1400 °C	0.000036	0.015764	0.000000	0.002404	0.007662	8.26 \pm 4.60	41.74	0.65	0.066 \pm 0.001

Σ 0.000452 0.505524 0.000172 0.367934 1.763441

Information on Analysis	Results	40(r)/39(k) $\pm 2\sigma$	Age $\pm 2\sigma$ (Ma)	MSV	39Ar(k) (%,n)	K/Ca $\pm 2\sigma$
AS-SV-192 gm Steiner 2A22-12	Weighted Plateau	4.8063 \pm 0.0264 \pm 0.55%	12.44 \pm 0.12 \pm 0.98%	0.19	98.84 9	0.219 \pm 0.069
Groundmass			External Error \pm 0.23	2.31	Statistical T Ratio	
Eastern OR			Analytical Error \pm 0.07	1.0000	Error Magnification	
AS						
Project = Steiner	Total Fusion Age	4.7928 \pm 0.0447 \pm 0.93%	12.40 \pm 0.15 \pm 1.24%		12	0.313 \pm 0.002
Irradiation = OSU2A12			External Error \pm 0.25			
J = 0.0014392 \pm 0.0000059			Analytical Error \pm 0.12			
FCT-3 = 28.030 \pm 0.003 Ma						

12C2155.AGE >>> AS-SV-230 gm Steiner 2A23-12 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU
13.45 ± 0.24
TOTAL FUSION
13.63 ± 0.19
NORMAL ISOCHRON
14.01 ± 0.48
INVERSE ISOCHRON
14.01 ± 0.48

Sample Info

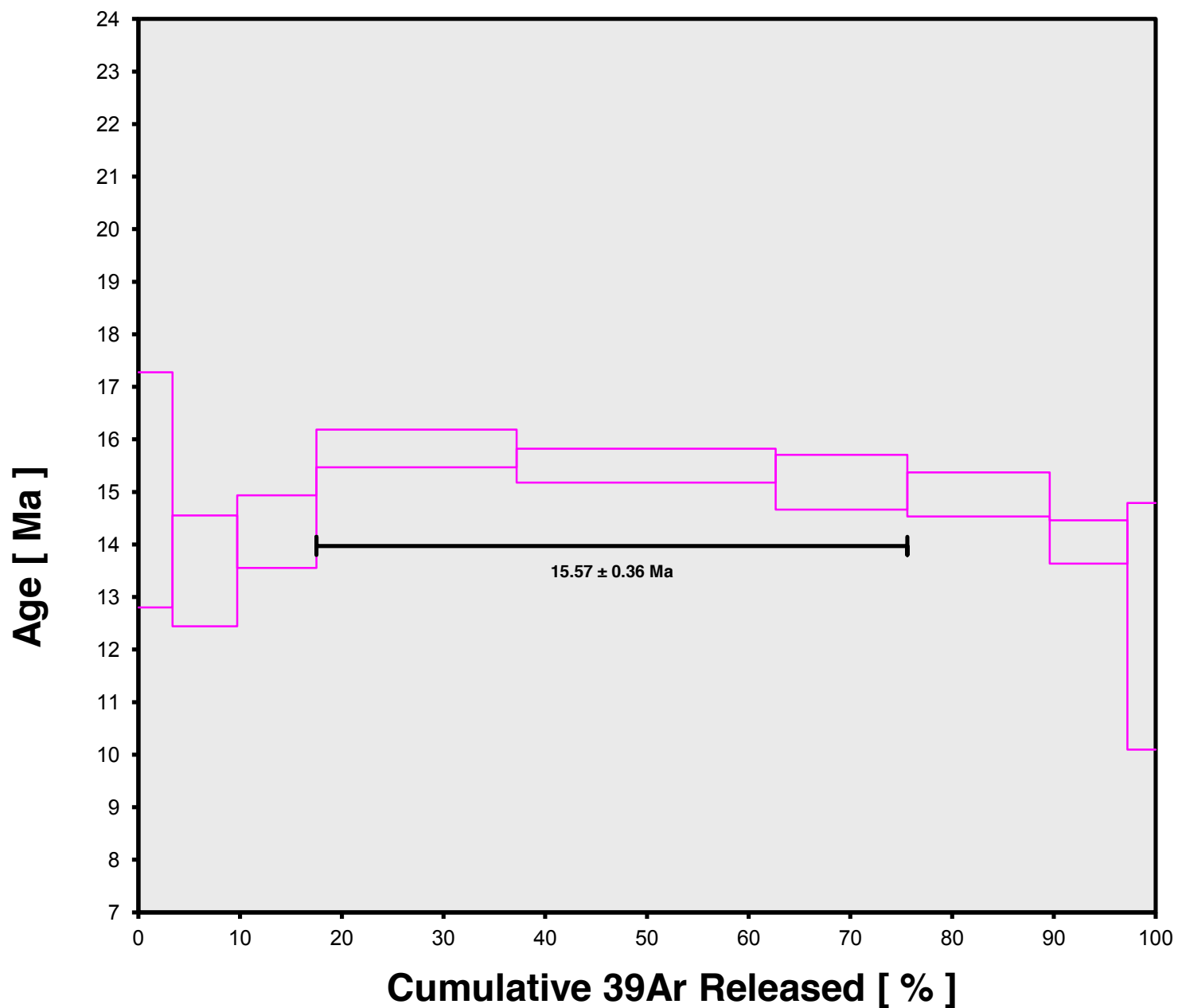
Groundmass
Eastern OR
AS

IRR = OSU2A12
J = 0.0014167 ±
0.0000062

Incremental Heating		36Ar(a)	37Ar(ca)	38Ar(cl)	39Ar(k)	40Ar(r)	Age $\pm 2\sigma$ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca $\pm 2\sigma$
12C2155	400 °C	0.000363	0.004410	0.000039	0.005764	0.026946	11.91 \pm 1.86	20.09	1.74	0.562 \pm 0.010
12C2156	500 °C	0.000968	0.006651	0.000107	0.018584	0.096202	13.18 \pm 0.57	25.17	5.62	1.202 \pm 0.019
12C2157	600 °C	0.002313	0.026701	0.000260	0.056214	0.295559	13.39 \pm 0.26	30.19	17.01	0.905 \pm 0.014
12C2159	675 °C	0.001843	0.041874	0.000230	0.054596	0.284000	13.25 \pm 0.26	34.27	16.52	0.561 \pm 0.009
12C2160	750 °C	0.001539	0.072507	0.000229	0.057542	0.305791	13.53 \pm 0.37	40.20	17.41	0.341 \pm 0.005
12C2161	825 °C	0.000910	0.091145	0.000142	0.046943	0.253574	13.75 \pm 0.27	48.53	14.21	0.221 \pm 0.003
12C2163	900 °C	0.000414	0.083381	0.000071	0.032219	0.180529	14.26 \pm 0.52	59.59	9.75	0.166 \pm 0.003
12C2164	975 °C	0.000134	0.080725	0.000032	0.023399	0.134099	14.59 \pm 0.50	77.16	7.08	0.125 \pm 0.002
12C2165	1075 °C	0.000056	0.076531	0.000011	0.017845	0.096065	13.71 \pm 0.66	85.39	5.40	0.100 \pm 0.002
12C2167	1175 °C	0.000033	0.083402	0.000022	0.012577	0.069286	14.03 \pm 1.07	87.80	3.81	0.065 \pm 0.001
12C2168	1275 °C	0.000026	0.050522	0.000000	0.003617	0.019670	13.85 \pm 3.80	71.96	1.09	0.031 \pm 0.000
12C2169	1400 °C	0.000011	0.024649	0.000000	0.001139	0.006826	15.25 \pm 12.37	68.30	0.34	0.020 \pm 0.001
Σ		0.008609	0.642499	0.001144	0.330437	1.768547				

Information on Analysis	Results	40(r)/39(k) $\pm 2\sigma$	Age $\pm 2\sigma$ (Ma)	MSV	39Ar(k) (%,n)	K/Ca $\pm 2\sigma$
AS-SV-230 gm Steiner 2A23-12 Groundmass Eastern OR AS	Weighted Plateau	5.2827 \pm 0.0802 \pm 1.52%	13.45 \pm 0.24 \pm 1.75% External Error \pm 0.32 Analytical Error \pm 0.20	2.25 2.78 1.5012	70.78 5 Statistical T Ratio Error Magnification	0.324 \pm 0.198
Project = Steiner Irradiation = OSU2A12 J = 0.0014167 \pm 0.0000062 FCT-3 = 28.030 \pm 0.003 Ma	Total Fusion Age	5.3521 \pm 0.0580 \pm 1.08%	13.63 \pm 0.19 \pm 1.39% External Error \pm 0.29 Analytical Error \pm 0.15		12	0.221 \pm 0.001

13C3336.AGE >>> AS-SV-291 GM 5B12-13 >>> STEINER PROJECT



Ar-Ages in Ma

WEIGHTED PLATEAU

15.57 ± 0.36

TOTAL FUSION

15.01 ± 0.25

NORMAL ISOCHRON

15.48 ± 2.94

INVERSE ISOCHRON

15.26 ± 3.07

MSWD

(PROBABILITY)

2.23 (11%)

Sample Info

gm

Eastern OR

Arron Steiner

IRR = OSU5B13

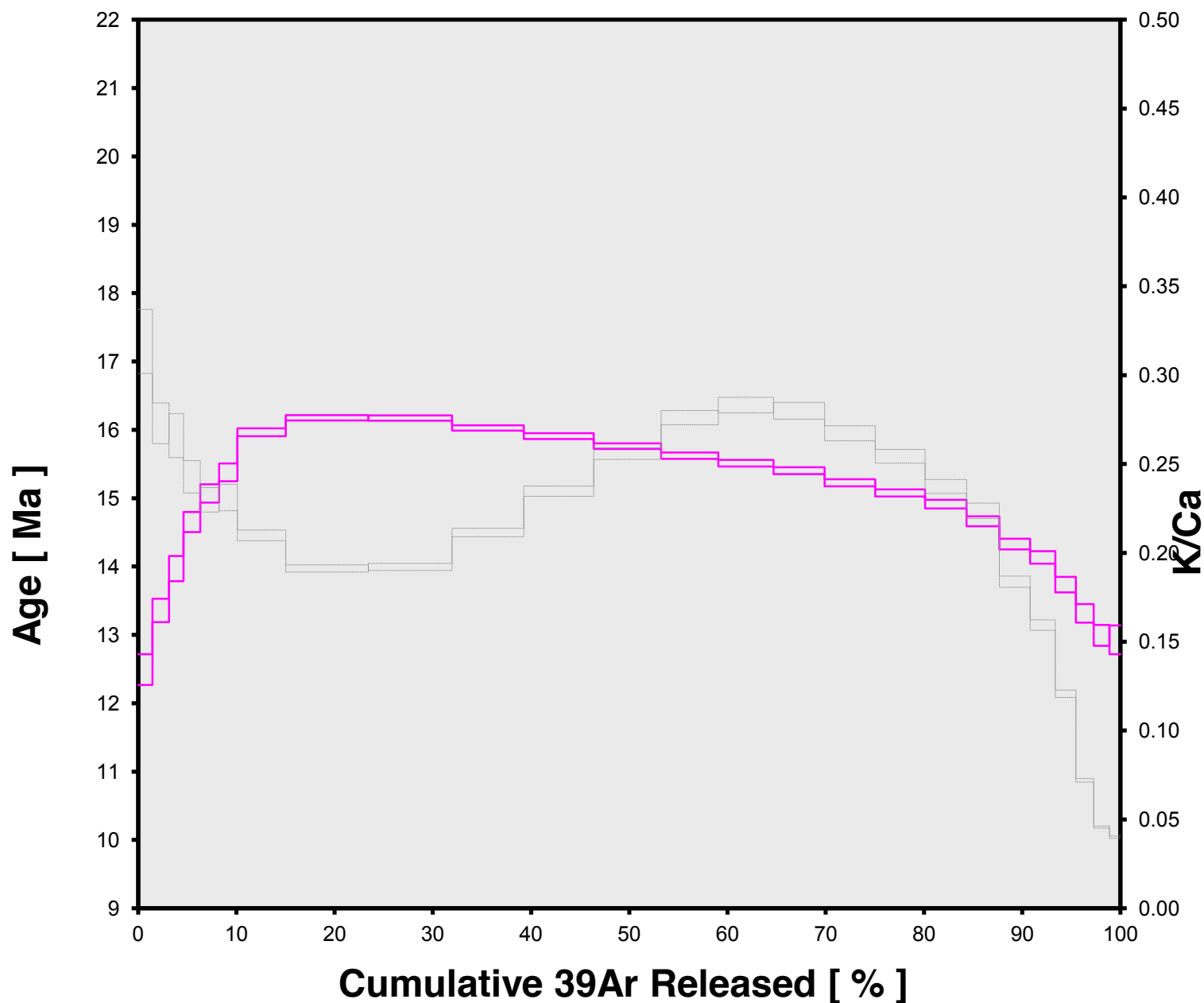
$J = 0.00163522 \pm$

0.00000850

Incremental Heating		36Ar(a) [V]	37Ar(ca) [V]	38Ar(cl) [V]	39Ar(k) [V]	40Ar(r) [V]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
13C3336	500 °C	0.0035403	0.0077820	0.0000357	0.0111787	0.0572223	15.04 ± 2.24	5.19	3.37	0.618 ± 0.039
13C3338	600 °C	0.0019619	0.0207467	0.0000842	0.0210317	0.0965905	13.50 ± 1.05	14.28	6.34	0.436 ± 0.023
13C3339	700 °C	0.0005717	0.0435632	0.0000578	0.0258701	0.1254038	14.24 ± 0.69	42.57	7.80	0.255 ± 0.013
13C3341	800 °C	0.0002751	0.1290750	0.0000238	0.0652478	0.3516252	15.83 ± 0.36	81.10	19.68	0.217 ± 0.011
13C3342	900 °C	0.0002876	0.1590341	0.0000063	0.0844625	0.4456547	15.50 ± 0.32	83.85	25.47	0.228 ± 0.011
13C3344	950 °C	0.0002180	0.0715113	0.0000134	0.0428662	0.2215554	15.18 ± 0.52	77.36	12.93	0.258 ± 0.013
13C3345	1050 °C	0.0003382	0.0814878	0.0000415	0.0464270	0.2362973	14.95 ± 0.42	70.18	14.00	0.245 ± 0.012
13C3347	1200 °C	0.0002963	0.0650042	0.0000313	0.0253112	0.1209962	14.05 ± 0.41	57.95	7.63	0.167 ± 0.008
13C3349	1400 °C	0.0001789	0.0452901	0.0000046	0.0092101	0.0389780	12.44 ± 2.35	42.40	2.78	0.087 ± 0.004
Σ		0.0076680	0.6234944	0.0002985	0.3316053	1.6943234				

Information on Analysis	Results	40(r)/39(k) ± 2σ	Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Sample = AS-SV-291 GM 5B12-13 Material = gm Location = Eastern OR Analyst = Arron Steiner Project = STEINER Mass Discrimination Law = LIN Irradiation = OSU5B13 J = 0.00163522 ± 0.00000850 FCT-3 = 28.030 ± 0.003 Ma	Age Plateau	5.29922 ± 0.11140 ± 2.10%	15.57 ± 0.36 ± 2.34% Minimal External Error ± 0.44 Analytical Error ± 0.33	2.23 11% 3.00 1.4937	58.07 3 2σ Confidence Limit Error Magnification	0.232 ± 0.023
	Total Fusion Age	5.10946 ± 0.06665 ± 1.30%	15.01 ± 0.25 ± 1.66% Minimal External Error ± 0.34 Analytical Error ± 0.19		9	0.229 ± 0.004

14D34877.AGE >>> AS-SV-291 >>> OREGON I STRECK (13-06C) PROJECT



Ar-Ages in Ma

TOTAL FUSION
 15.29 ± 0.06

Sample Info

Groundmass
Oregon
Dan Miggins

IRR = 14-OSU-04
 $J = 0.00156440 \pm$
 0.00000299

OSU Argon Geochronology Lab
CEOAS Oregon State University, Corvallis, USA

Incremental Heating		36Ar(a) [fA]	37Ar(ca) [fA]	38Ar(cl) [fA]	39Ar(k) [fA]	40Ar(r) [fA]	Age ± 2σ (Ma)	40Ar(r) (%)	39Ar(k) (%)	K/Ca ± 2σ
14D34878	1.8 %	0.3059596	20.1682	0.0533106	14.9599	66.2799	12.49 ± 0.23	42.30	1.45	0.319 ± 0.018
14D34880	2.0 %	0.2059748	27.6323	0.0083887	17.5365	83.1159	13.36 ± 0.17	57.72	1.70	0.273 ± 0.011
14D34881	2.2 %	0.1323285	24.3475	0.0000000	15.0594	74.6526	13.97 ± 0.18	65.62	1.46	0.266 ± 0.012
14D34882	2.4 %	0.1108692	31.1653	0.0206205	17.5965	91.5007	14.65 ± 0.15	73.62	1.71	0.243 ± 0.009
14D34884	2.6 %	0.1048586	36.7765	0.0070425	19.6571	105.1474	15.07 ± 0.13	77.23	1.91	0.230 ± 0.007
14D34885	2.8 %	0.0791864	35.8868	0.0000000	19.2891	105.2907	15.38 ± 0.13	81.80	1.87	0.231 ± 0.007
14D34889	4.5 %	0.0583457	103.4077	0.0434809	50.4525	285.9928	15.97 ± 0.06	94.30	4.90	0.210 ± 0.003
14D34890	5.5 %	0.0607620	195.2185	0.0571639	86.7978	498.5436	16.18 ± 0.04	96.51	8.44	0.191 ± 0.002
14D34892	6.0 %	0.0457216	195.8044	0.0437195	87.4382	502.0796	16.17 ± 0.04	97.36	8.50	0.192 ± 0.002
14D34893	6.5 %	0.0337251	152.8714	0.0267996	75.1737	427.7695	16.03 ± 0.04	97.71	7.31	0.211 ± 0.002
14D34894	7.0 %	0.0333686	134.1033	0.0751588	73.2153	413.4900	15.91 ± 0.04	97.65	7.12	0.235 ± 0.003
14D34895	7.5 %	0.0328856	118.7677	0.0836881	70.6747	395.4558	15.76 ± 0.04	97.58	6.87	0.256 ± 0.003
14D34897	8.0 %	0.0308353	93.4287	0.0797273	59.9865	332.6549	15.62 ± 0.05	97.32	5.83	0.276 ± 0.004
14D34898	8.5 %	0.0334745	87.7959	0.0389826	57.8146	318.3552	15.51 ± 0.05	96.97	5.62	0.283 ± 0.004
14D34899	9.1 %	0.0339666	81.9635	0.0714475	53.3650	291.8006	15.40 ± 0.05	96.66	5.19	0.280 ± 0.005
14D34901	10.1 %	0.0415437	85.6137	0.1018841	53.2077	287.5969	15.23 ± 0.05	95.89	5.17	0.267 ± 0.004
14D34902	11.2 %	0.0486247	88.0443	0.0939764	52.0701	278.6380	15.08 ± 0.05	95.08	5.06	0.254 ± 0.004
14D34903	12.3 %	0.0525548	78.7311	0.0827519	43.4474	229.9491	14.91 ± 0.06	93.66	4.22	0.237 ± 0.004
14D34905	13.5 %	0.0529741	66.0859	0.0358691	34.3606	178.8044	14.66 ± 0.07	91.93	3.34	0.224 ± 0.004
14D34906	14.8 %	0.0635703	75.2741	0.0971717	32.1608	163.5415	14.33 ± 0.08	89.68	3.13	0.184 ± 0.003
14D34907	16.2 %	0.0631775	71.1107	0.1379810	26.3488	132.1476	14.13 ± 0.09	87.61	2.56	0.159 ± 0.003
14D34909	17.7 %	0.0633924	77.5911	0.0735474	21.7772	106.1378	13.74 ± 0.11	84.98	2.12	0.121 ± 0.002
14D34910	19.8 %	0.0683853	111.5501	0.1073397	18.6746	88.2131	13.31 ± 0.14	81.35	1.81	0.072 ± 0.001
14D34911	22.1 %	0.0683973	155.4209	0.1167193	16.4843	75.9821	12.99 ± 0.15	78.98	1.60	0.046 ± 0.001
14D34913	24.5 %	0.0559967	122.5201	0.1642606	11.3912	52.2375	12.93 ± 0.21	75.93	1.11	0.040 ± 0.001
Σ		1.8808788	2271.2797	1.6210315	1028.9395	5585.3775				

Information on Analysis

Sample = AS-SV-291
Material = Groundmass
Location = Oregon
Analyst = Dan Miggins
Project = OREGON | STRECK (13-06C)
Mass Discrimination Law = LIN
Irradiation = 14-OSU-04
J = 0.00156440 ± 0.00000299
FCT-NM (R98) (4E37-14) = 28.201 ± 0.0

Results

40(r)/39(k) ± 2σ		Age ± 2σ (Ma)	MSWD	39Ar(k) (%,n)	K/Ca ± 2σ
Age Plateau Cannot Calculate					
Total Fusion Age		5.42829 ± 0.00487 ± 0.09%	15.29 ± 0.06 ± 0.39%	25	0.195 ± 0.001
		Full External Error ± 0.35			
		Analytical Error ± 0.01			