SUPPLEMENTARY MATERIAL

Figure DR1

Photomicrographs of samples A) 02ASR52c and B) ASR0213, field of view is 2mm. Amphibole separates for 02ASR52c were preferentially from the finer grained mylonitic amphiboles as labeled on the right side of Figure 2A.

Figure DR2

Amphibole classification diagram for samples 02ASR52c (squares) and ASR0213 (circles). Open symbols display amphibole compositions from the entire thin section. Retrograde regions plot with Al(IV) < 1.1. Grey filled symbols display amphibole compositions of mineral separates analyzed for argon geochronology. Both samples overlap compositionally with one another and mineral separates were from the high temperature amphiboles associated with the mylonitic fabric in each sample. To select matrix amphiboles, whole grains were picked from the crushed separates of proper grain size.

Back-scattered electron images of 02ASR52c and ASR0213 from which analyses were taken. Consistent grey tone qualitatively shows homogeneity of the amphiboles, with retrogressed regions along fractures appearing slightly darker. Porphyroclastic Hbl (Hblp) and hornblende related to the mylonitic foliation (Hblm) are labeled.

Figure DR3

Inverse isochron plots for samples 02ASR52c and ASR0213

Table DR1

$^{40}Ar/^{39}Ar$ data tables for samples 02ASR52c and ASR0213.

Table DR2

Representative electron microprobe weight percent oxide values for mineral phases used in average PT calculations

Author: Sean R. Mulcahy
Figure DR1
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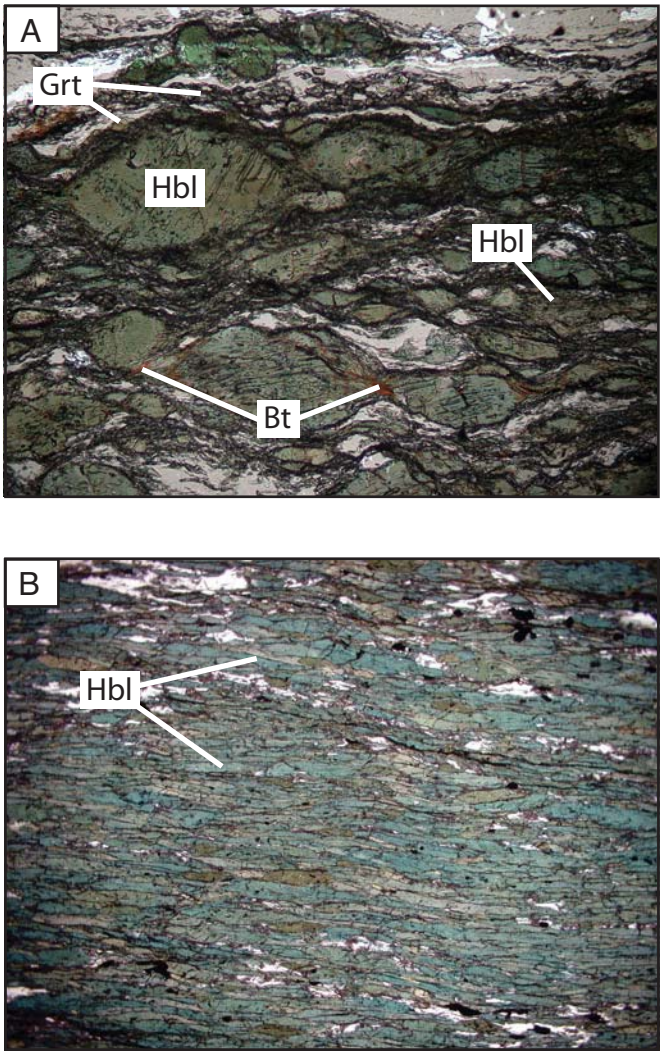

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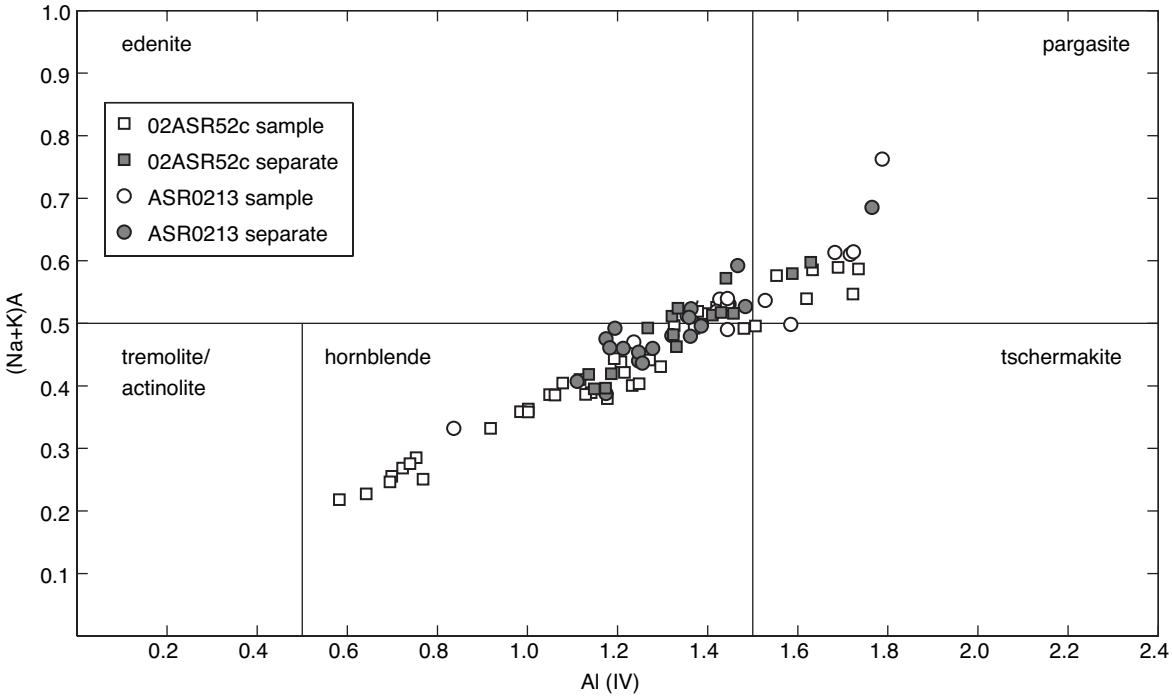
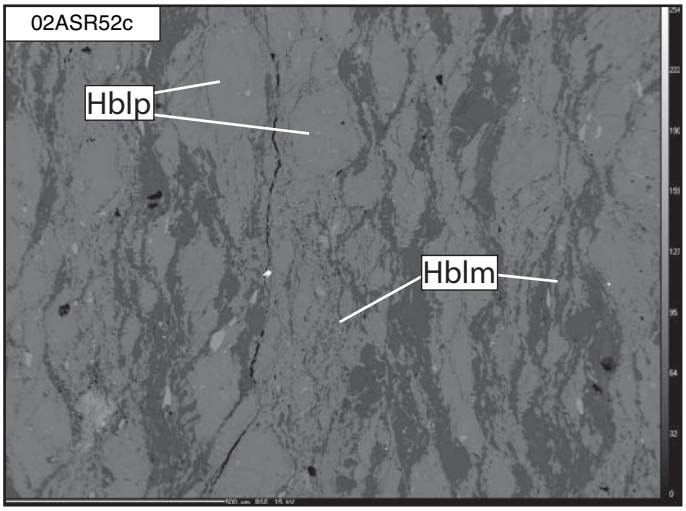
Figure DR2
Mulcahy_FigureDR2.pdf





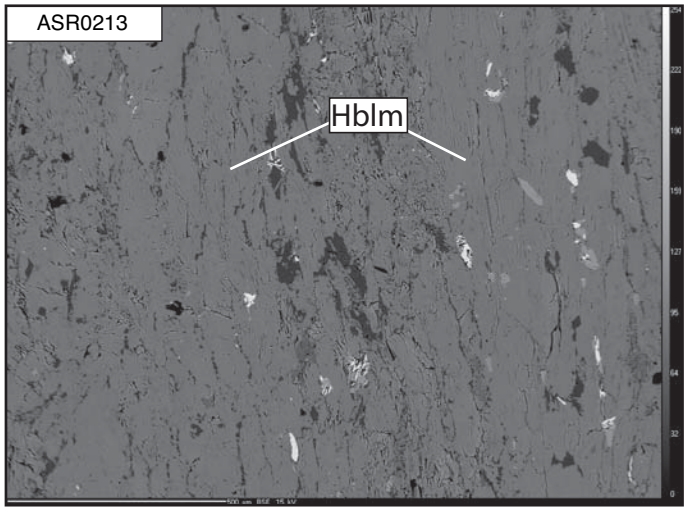


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Figure DR3
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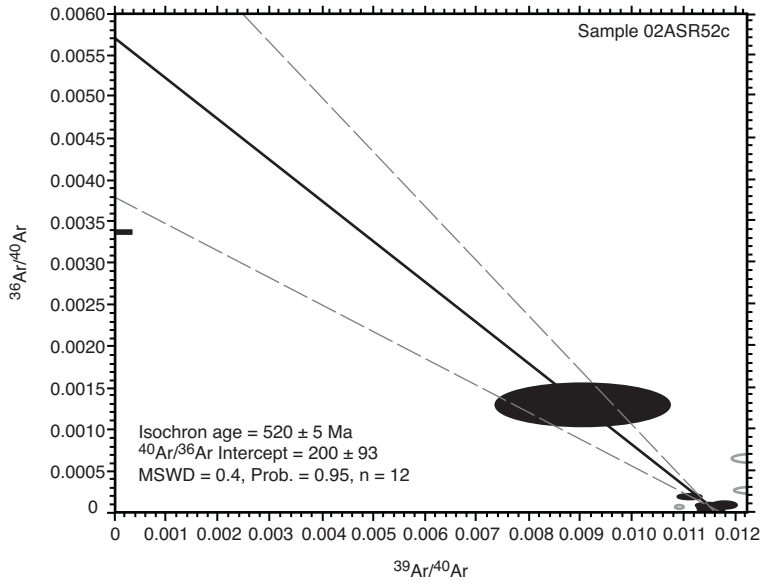

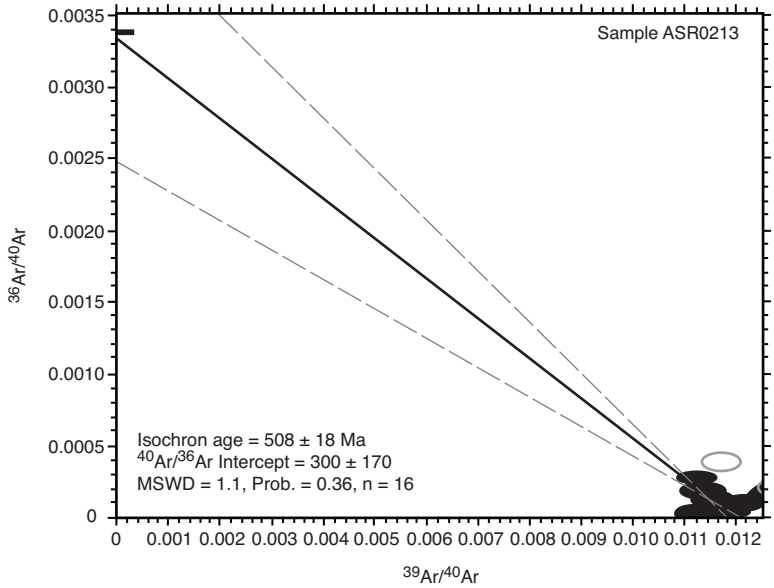

Table DR1: 40Ar/39 Ar data tables for samples presented in text

Run ID	D= 0.9971 ± 0.0013 %40*	Age	J=0.003889 ± 0.000012 ±	40 Ar (moles)	327NV 40Ar	± 40Ar	standard : FCS at 28.02Ma 39Ar	± 39Ar	38Ar	± 38Ar	37Ar	Nexus ± 37Ar	36Ar	± 36Ar
02ASR52c														
56760-01A	61.7	425.0	83.0	9.77E-16	0.0264	0.0003	0.0002	0.000043	0.000004	0.000008	0.0000	0.0001	0.000034	0.000007
56760-01B	81.1	411.0	13.3	5.19E-15	0.1402	0.0004	0.0017	0.000053	0.000040	0.000008	0.0003	0.0001	0.000090	0.000007
56760-01C	92.3	463.6	9.1	8.82E-15	0.2381	0.0006	0.0029	0.000058	0.000051	0.000008	0.0008	0.0001	0.000063	0.000007
56760-01D	94.3	515.9	8.1	1.37E-14	0.3691	0.0006	0.0041	0.000067	0.000053	0.000010	0.0016	0.0001	0.000071	0.000007
56760-01E	96.4	443.5	5.8	1.66E-14	0.4495	0.0009	0.0061	0.000081	0.000090	0.000010	0.0040	0.0003	0.000056	0.000007
56760-01F	96.8	480.8	5.5	2.01E-14	0.5435	0.0018	0.0067	0.000076	0.000098	0.000010	0.0054	0.0002	0.000060	0.000007
56760-01G	98.5	521.7	6.4	1.83E-14	0.4935	0.0007	0.0056	0.000073	0.000084	0.000009	0.0069	0.0003	0.000027	0.000007
56760-01H	97.7	517.3	6.2	1.78E-14	0.4798	0.0006	0.0055	0.000069	0.000093	0.000010	0.0069	0.0002	0.000039	0.000007
56760-01I	97.2	511.7	3.5	2.64E-14	0.7145	0.0007	0.0082	0.000053	0.000135	0.000010	0.0111	0.0003	0.000072	0.000007
56760-01J	97.4	513.1	4.2	3.41E-14	0.9221	0.0014	0.0106	0.000089	0.000158	0.000011	0.0138	0.0003	0.000085	0.000007
56760-01K	99.0	519.7	6.3	1.75E-14	0.4734	0.0009	0.0055	0.000069	0.000091	0.000009	0.0079	0.0002	0.000018	0.000007
56760-01L	98.1	516.0	4.5	3.31E-14	0.8927	0.0011	0.0103	0.000094	0.000185	0.000012	0.0107	0.0005	0.000061	0.000007
56760-01M	98.6	517.8	5.9	1.80E-14	0.4850	0.0007	0.0056	0.000067	0.000099	0.000008	0.0112	0.0003	0.000025	0.000007
56760-01O	98.6	517.3	5.6	1.59E-14	0.4289	0.0006	0.0050	0.000055	0.000074	0.000010	0.0056	0.0002	0.000023	0.000007
56760-01P	98.1	539.4	3.3	4.05E-14	1.0927	0.0014	0.0120	0.000070	0.000161	0.000011	0.0167	0.0004	0.000075	0.000007
56760-01Q	99.7	522.8	9.2	1.41E-14	0.3796	0.0009	0.0044	0.000084	0.000074	0.000008	0.0053	0.0002	0.000005	0.000007
56760-01R	97.6	505.0	10.4	8.57E-15	0.2315	0.0005	0.0027	0.000058	0.000041	0.000008	0.0049	0.0002	0.000020	0.000007
ASR0213														
56756-01A	1000.0	100.0	1740.8	5.96E-19	0.0000	0.0002	0.0000	0.000044	-0.000012	0.000007	-0.0001	0.0001	0.000000	0.000007
56756-01B	9.0	-50.0	587.7	8.18E-17	0.0022	0.0002	0.0000	0.000043	-0.000006	0.000008	0.0001	0.0001	0.000007	0.000007
56756-01C	22.0	140.0	174.7	2.93E-16	0.0078	0.0003	0.0001	0.000044	0.000013	0.000008	0.0001	0.0001	0.000021	0.000007
56756-01D	72.4	344.0	23.1	2.36E-15	0.0632	0.0003	0.0008	0.000050	0.000020	0.000008	0.0010	0.0001	0.000059	0.000007
56756-01E	88.2	464.0	15.7	4.25E-15	0.1136	0.0005	0.0013	0.000043	0.000014	0.000008	0.0044	0.0002	0.000046	0.000007
56756-01F	91.6	497.0	15.7	7.23E-15	0.1930	0.0004	0.0022	0.000074	0.000023	0.000008	0.0066	0.0003	0.000057	0.000007
56756-01G	95.5	460.0	20.4	2.84E-15	0.0759	0.0002	0.0010	0.000041	0.000001	0.000007	0.0024	0.0002	0.000012	0.000007
56756-01H	93.7	449.0	17.7	3.18E-15	0.0848	0.0002	0.0011	0.000040	0.000016	0.000008	0.0031	0.0002	0.000019	0.000007
56756-01I	96.7	485.0	13.1	5.86E-15	0.1566	0.0003	0.0019	0.000053	0.000014	0.000008	0.0059	0.0002	0.000019	0.000007
56756-01J	99.2	530.0	21.0	4.10E-15	0.1095	0.0005	0.0012	0.000052	0.000000	0.000008	0.0041	0.0002	0.000004	0.000007
56756-01K	94.3	505.0	16.7	7.89E-15	0.2106	0.0009	0.0024	0.000084	0.000038	0.000009	0.0062	0.0002	0.000042	0.000009
56756-01L	96.8	509.0	12.7	1.15E-14	0.3060	0.0007	0.0035	0.000098	0.000057	0.000009	0.0089	0.0002	0.000036	0.000007
56756-01M	96.5	515.7	6.9	1.70E-14	0.4543	0.0010	0.0052	0.000073	0.000081	0.000008	0.0161	0.0003	0.000058	0.000007
56756-01N	98.0	518.0	10.6	9.72E-15	0.2594	0.0004	0.0030	0.000066	0.000033	0.000009	0.0085	0.0002	0.000020	0.000007
56756-01O	97.1	513.0	10.1	1.08E-14	0.2885	0.0005	0.0033	0.000071	0.000053	0.000008	0.0109	0.0003	0.000031	0.000007
56756-01P	96.9	512.4	5.0	2.35E-14	0.6264	0.0006	0.0072	0.000073	0.000083	0.000009	0.0291	0.0006	0.000074	0.000007
56756-01Q	97.3	513.0	12.4	7.70E-15	0.2057	0.0005	0.0024	0.000061	0.000032	0.000009	0.0078	0.0003	0.000021	0.000007
56756-01R	96.2	505.1	7.8	1.57E-14	0.4198	0.0013	0.0049	0.000081	0.000083	0.000009	0.0133	0.0004	0.000057	0.000007
56756-01S	97.1	503.1	4.9	1.74E-14	0.4644	0.0007	0.0055	0.000052	0.000084	0.000009	0.0172	0.0004	0.000050	0.000007
56756-01T	98.8	503.0	12.4	5.62E-15	0.1499	0.0013	0.0018	0.000042	0.000012	0.000008	0.0057	0.0002	0.000007	0.000007
56756-01U	95.8	502.0	13.1	6.31E-15	0.1684	0.0004	0.0020	0.000053	0.000025	0.000009	0.0078	0.0003	0.000026	0.000007
56756-01V	97.2	516.0	10.5	8.39E-15	0.2240	0.0006	0.0026	0.000055	0.000027	0.000008	0.0067	0.0003	0.000023	0.000007

Nucleogenic interferences from K and Ca isotopes are the following (uncertainties given at 2 sigma level): (38Ar/39Ar)K = 0.0122 ± 5.4x10-5, (40Ar/39Ar)K = 0.0007 ± 0.0006 (38Ar/37Ar)Ca = 1.96x10-5 ± 1.63x10-6, (39Ar/37Ar)Ca = 0.00076 ± 0.00017, (36Ar/37Ar)Ca = 0.000264 ± 1.4x10-5. K decay constant of 5.543×10-10 y-1 (Steiger and Jaeger, 1977).

Typical averaged backgrounds in moles for ^{40}Ar, ^{39}Ar, ^{38}Ar, ^{37}Ar, and ^{36}Ar are (1.29 ± 0.68) x 10^{-16}, (1.75 ± 2.29) x 10^{-18}, (5.15 ± 3.09) x 10^{-19}, (4.55 ± 1.64) x 10^{-18}, and (1.57 ± 0.69) x 10-18, respectively

Table DR2: Representative mineral analyses for P-T calculations

	ASR52c				PdP003				PdP004			
	Grt	Pl	Amp	Bt	Grt	Pl	Amp	Bt	Grt	Pl	Amp	Bt
SiO2	35.76	62.50	42.75	37.60	37.45	60.34	42.77	35.36	36.97	60.02	40.94	35.33
TiO2	0.05	0.00	0.31	2.04	0.23	0.00	0.32	1.50	0.18	0.00	0.08	1.82
Al2O3	21.75	23.85	17.42	19.84	21.66	24.25	16.66	19.00	21.15	25.17	18.10	19.09
Cr2O3	0.01	0.00	0.00	0.00	0.04	0.00	0.02	0.00	0.08	0.00	0.04	0.00
Fe2O3	0.00	0.07	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00
FeO	25.50	0.00	17.57	16.94	31.24	0.00	17.05	17.42	29.54	0.19	18.16	19.43
MnO	4.49	0.00	0.34	0.03	1.04	0.00	0.12	0.03	3.18	0.00	0.04	0.05
MgO	1.31	0.00	6.90	9.41	1.76	0.00	8.27	11.72	1.50	0.00	6.61	10.13
CaO	9.56	4.55	10.29	0.03	7.29	5.45	9.57	0.02	7.63	6.33	10.57	0.02
Na2O	0.00	8.92	2.26	0.12	0.00	7.93	2.24	0.28	0.00	8.25	2.11	0.09
K2O	0.00	0.05	0.78	9.29	0.00	0.09	0.37	8.74	0.00	0.06	0.74	9.50
Total	98.43	99.94	98.62	95.30	100.71	98.16	97.39	94.07	100.23	100.02	97.39	95.46