ARGON AND NEON IN GENESIS ALUMINUM-COATED SAPPHIRE COLLECTORS FROM REGIME ARRAYS.

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Introduction: Here we report Ar results from the Aluminum on Sapphire (AloS) bulk regime samples, from which Ne results were obtained [1]. Ar measurements from other regimes are in progress.

Regime	^{20}Ne fluence, 10^{12} /cm^2	^{20}Ne/^{22}Ne	^{21}Ne/^{22}Ne
Bulk	1.23 ± .11	13.96 ± .03	.0346± .003
IS	.352 ± .032	13.98 ± .04	.0340± .004
CME	.271 ± .024	13.93 ± .04	.0336± .004
C-H	.362 ± .032	13.94 ± .04	.0345± .004

Method: Since elemental and isotopic abundances of light noble gases in solar wind differ substantially from terrestrial air (usually used for calibration), we used specially tailored calibration procedures. For Ar, we lowered the ion source emission to 50 μA, from our typical 150 μA. Using this procedure, mass discrimination was small and reproducible at less than 0.3 %/amu.

The AloS samples were loaded into an extraction cell specially designed to minimize Al sputtering effects which can contribute significantly to the blank and block the view-port. We rastered areas of 4, 10, 15, and 20 mm^2 for Ar and 1-2 mm^2 for Ne, using a Q-switched infrared laser, slightly defocused to optimize the surface energy density and the time needed to complete the raster. The corrections for $^1H^{35}Cl^+$ and $^1H^{37}Cl^+$ interferences at A = 36 and 38 were negligible, as was the ^{40}Ar blank (< 5 × 10^{-10} ccSTP) with observed ^{40}Ar/^{36}Ar ratios between 3 and 10.

Ar fluences were calibrated using both an air standard and (mg size) Springwater olivine grains, with known amounts of spallogenic ^{36}Ar, ^{38}Ar, ^{21}Ne and ^{22}Ne [2]. These two calibrations differed by about 8%, which should improve by ongoing inter-lab calibrations.

Results: The Ar data from all four rastered areas formed a nearly perfect straight line when the ratios of ^{36}Ar/^{40}Ar versus ^{38}Ar/^{40}Ar were plotted, indicating a mixing of only two distinct components: solar wind and terrestrial atmosphere, no SEP or HCl effects. We calculated fluences (not corrected for backscatter) of (2.4 ± 0.2) × 10^{10} ^{36}Ar /cm^{-2} and (4.5 ± 0.4) × 10^9 ^{38}Ar/cm^{-2}. All four of our ^{36}Ar/^{38}Ar ratios agree to within 5 permil.

^{36}Ar/^{38}Ar ratios (from [3] and this work).	
Terrestrial Air	5.32
Apollo foils	5.3 ± 0.3
Lunar regolith (Zürich)	5.48 ± 0.05
Lunar regolith (Minnesota)	5.80 ± 0.06
SOHO/MTOF	5.5 ± 0.6
Regime bulk (this work, weighted average)	5.467 ± 0.010

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References:

[1] Hohenberg C. M. et al. 2006 *LPSC XXXVII* Abstract #2439. [2] Megrue G. H. 1968 *J. Geophys. Res.* 73 pp. 2027-2033. [3] Weins R. C. et al. 2004 *EPSL* 222 pp. 697-712.