

FIRST ANALYSIS OF ALL XENON ISOTOPES IN GENESIS SOLAR WIND AloS COLLECTOR. A. Meshik¹, O. Pravdivtseva¹, C. M. Hohenberg¹, J. H. Allton², and D. S. Burnett³. ¹Washington University, Physics CB1105, Saint Louis, MO 63130, am@physics.wustl.edu, ²NASA, Johnson Space Center, Houston, ³Geology 100-23, CalTech, Pasadena

Introduction: Recently we made successful measurements of all solar wind (SW) krypton isotopes in Genesis Al-collectors [1]. Here we report results of 20 independent analysis of Xe extracted from Aluminum on Sapphire (AloS) under four different experimental conditions.

Experimental: Separation of the solar wind heavy noble gases, captured in Genesis collectors, from surface and possible interface contaminations is not trivial. One way of dealing with these contaminations is depth profiling. But due to low SW-Xe abundance it requires an extremely sensitive mass spectrometer, such as RELAX [2]. In this work we developed a different approach, extracting total Xe and Kr and making a blank correction on the basis of measured Kr/Xe ratios which are different in the SW and the blank. The later turned out to be not atmospheric and was determined by minimizing the spread of calculated SW-Xe fluencies between different extracted areas.

Results: SW fluence and preliminary isotopic composition of Xe extracted from AloS at four different conditions are shown in the table below, where α – angle between incident laser beam and the plane normal to the surface of Al-film; n – number of independent laser extractions.

	$\alpha = \pi/8$ n = 4	$\alpha = \pi/4$ n = 6	$\alpha = \pi/2$ n = 6	$\alpha = \pi/4$ n = 4	71501 lunar soil [3,4]
¹³² Xe _{sw} , 10 ⁶ at/cm ²	1.23	1.01	1.16	1.18	
¹³⁶ Xe/ ¹³² Xe	.2966 ±.0028	.2987 ±.0025	.3002 ±.0015	.3013 ±.0007	.2985 ±.0009
¹³⁴ Xe/ ¹³² Xe	.3713 ±.0029	.3699 ±.0028	.3749 ±.0018	.3724 ±.0008	.3666 ±.0015
¹³¹ Xe/ ¹³² Xe	.8135 ±.0083	.8297 ±.0047	.8190 ±.0026	.8302 ±.0016	.8272 ±.0028
¹³⁰ Xe/ ¹³² Xe	.1613 ±.0020	.1641 ±.0017	.1614 ±.0010	.1612 ±.0005	.1661 ±.0009
¹²⁹ Xe/ ¹³² Xe	1.0413 ±.0051	1.0473 ±.0025	1.0408 ±.0014	1.0358 ±.0015	1.0420 ±.0070
¹²⁸ Xe/ ¹³² Xe	.0829 ±.0014	.0833 ±.0012	.0818 ±.0007	.0846 ±.0003	.0848 ±.0009
¹²⁶ Xe/ ¹³² Xe	.00405 ±.00029	.00389 ±.00027	.00371 ±.00017	.00438 ±.00013	.00423 ±.00014
¹²⁴ Xe/ ¹³² Xe	.00520 ±.00036	.00510 ±.00030	.00460 ±.00018	.00484 ±.00009	.00488 ±.00012

Conclusion: Our preliminary Genesis Xe results are generally agree with SW-Xe obtained from the lunar soil [3,4]. Some subtle differences need to be further investigated. We plan to verify our data treatment and possibly develop some rejection criteria since in several cases the data scatter exceed statistically expected deviations.

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References: [1] Meshik A. P. et al. 2011. Abstract #2703. 42nd Lunar and Planetary Science Conference. [2] Crowther S.A., & Gilmour J. D. 2011. Abstract #1969. 42nd Lunar and Planetary Science Conference. [3] Wieler R. & Baur H. 1994. *Meteoritics* 29:570–580. [4] Pepin R. O. et al. 1995. *Geochimica & Cosmochimica Acta* 59:4997–5022.