

Solar Wind Nitrogen in Genesis AuOS Collectors

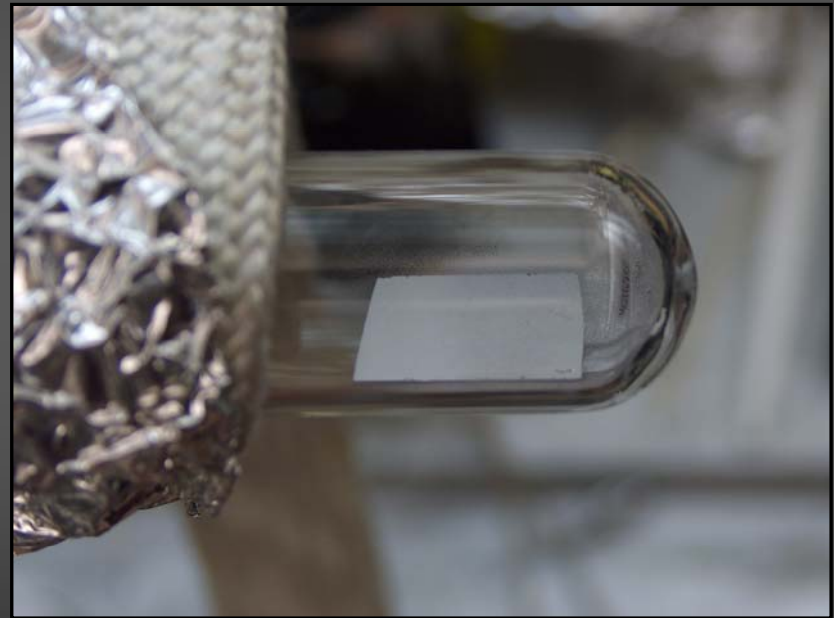
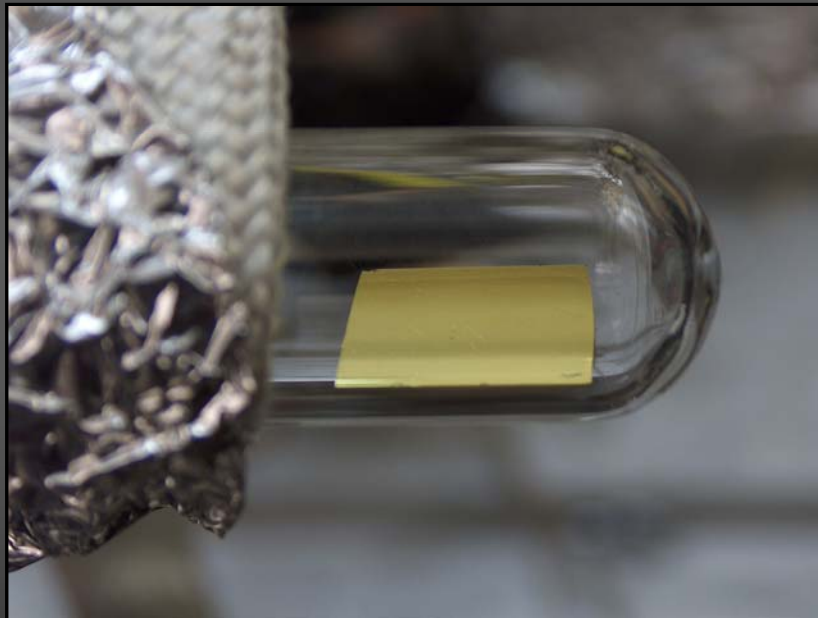
University of Minnesota

Bob Pepin, Richard Becker, Dennis Schlutter

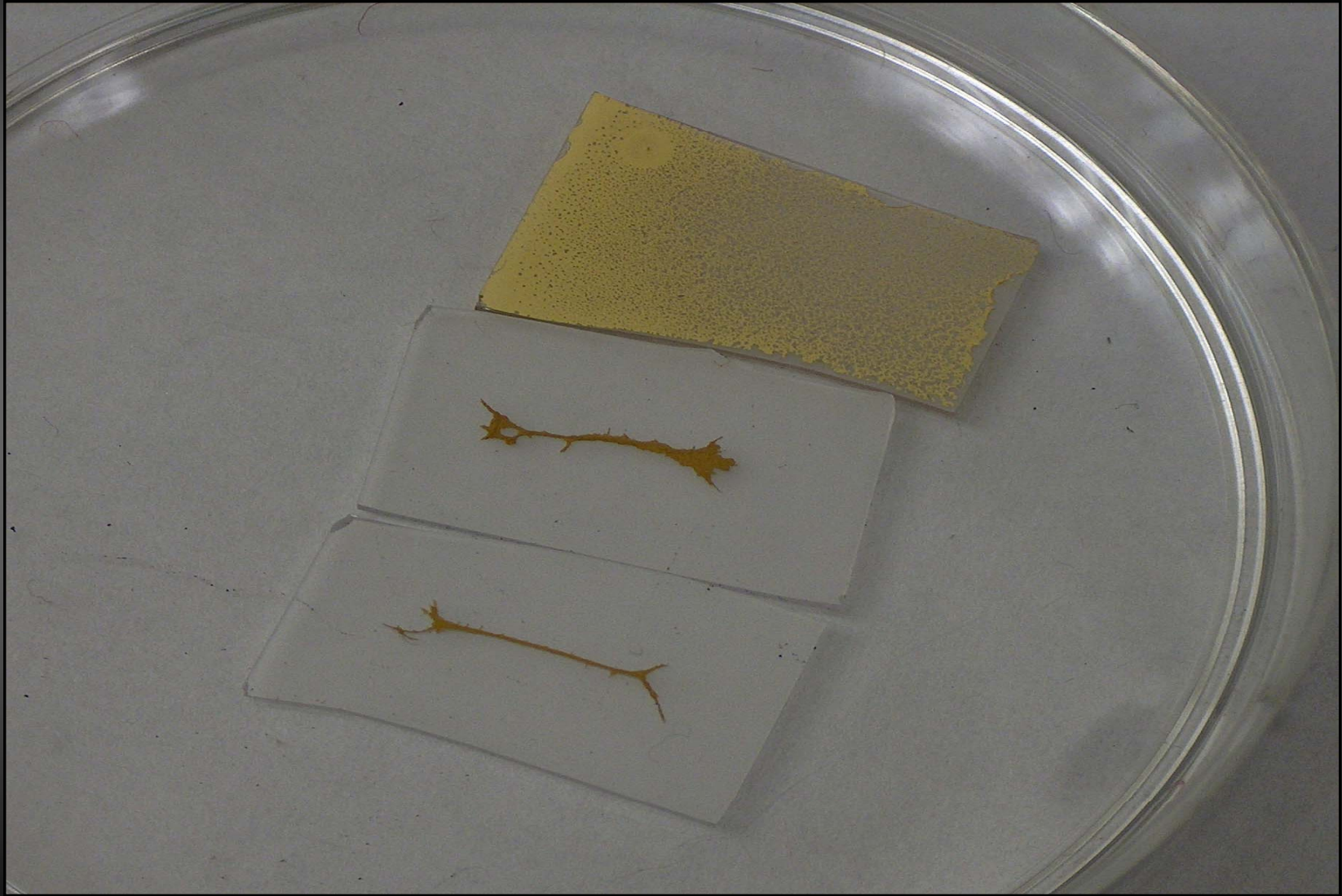
Genesis Team Meeting

March 2009

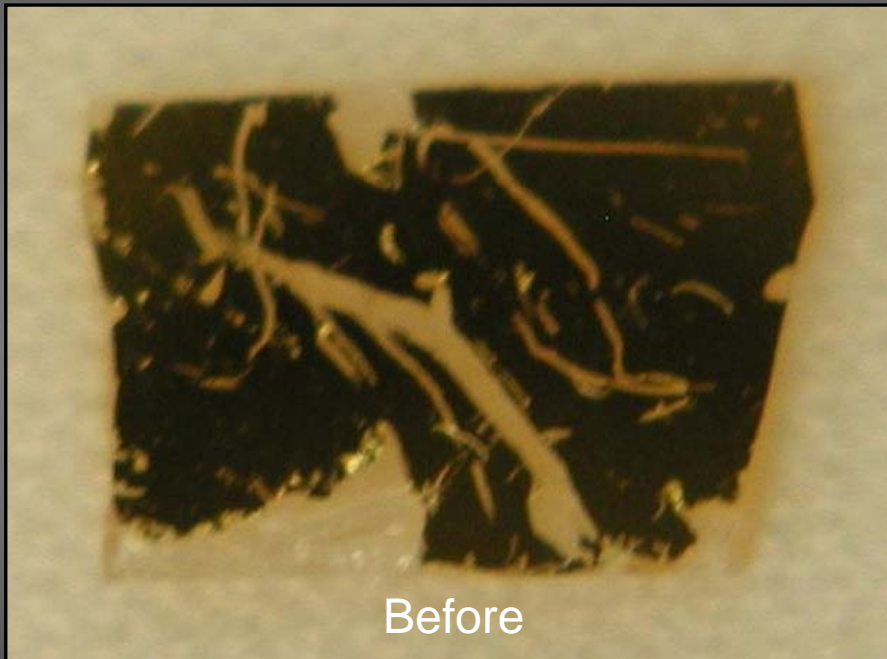
Amalgamation of AuOS Reference Sample



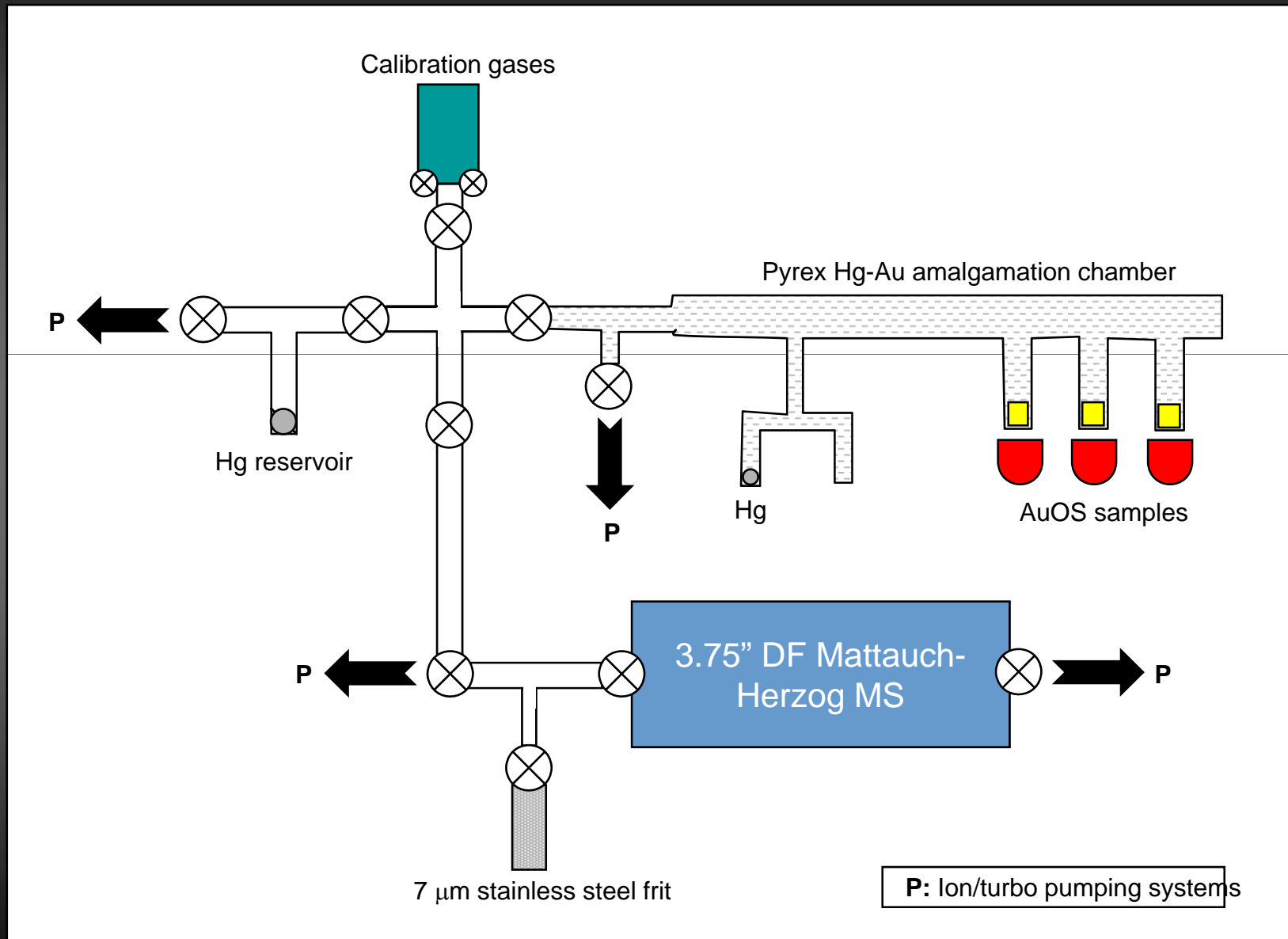
Amalgamated AuOS Reference Samples



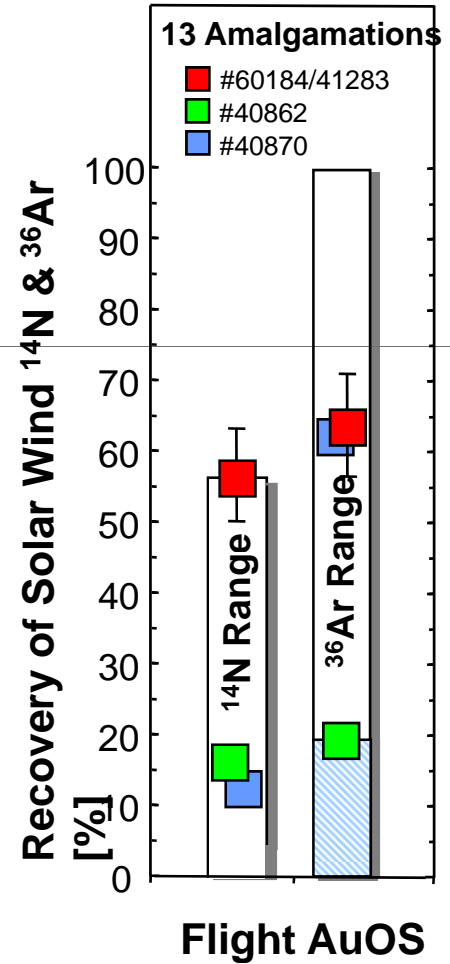
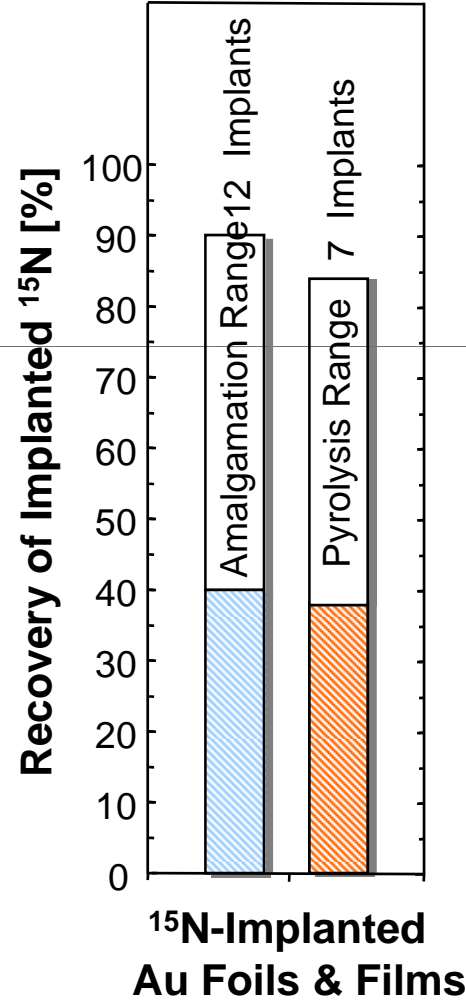
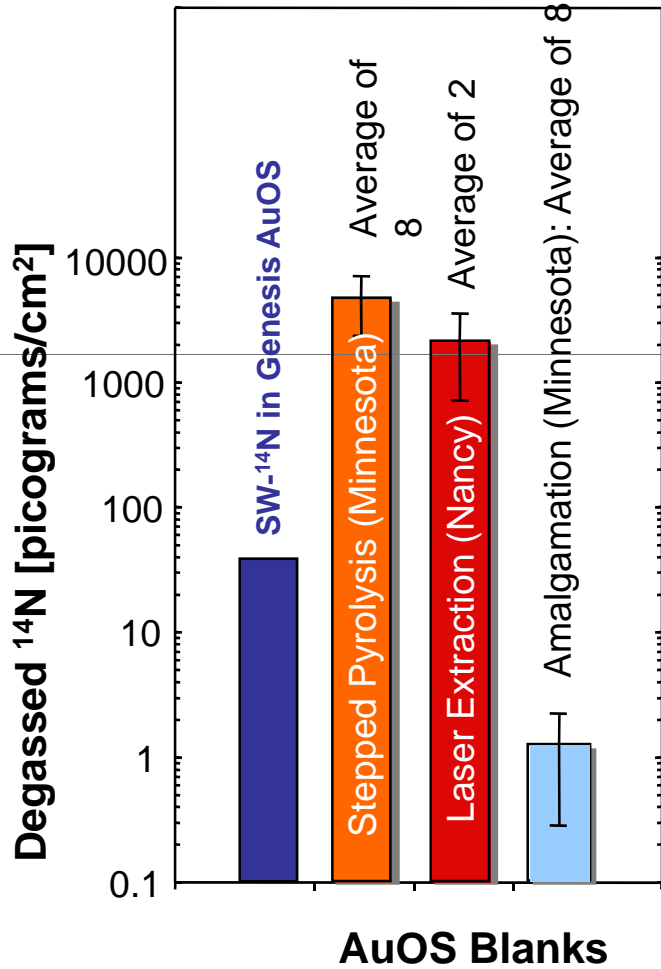
Amalgamated AuOS Flight Sample



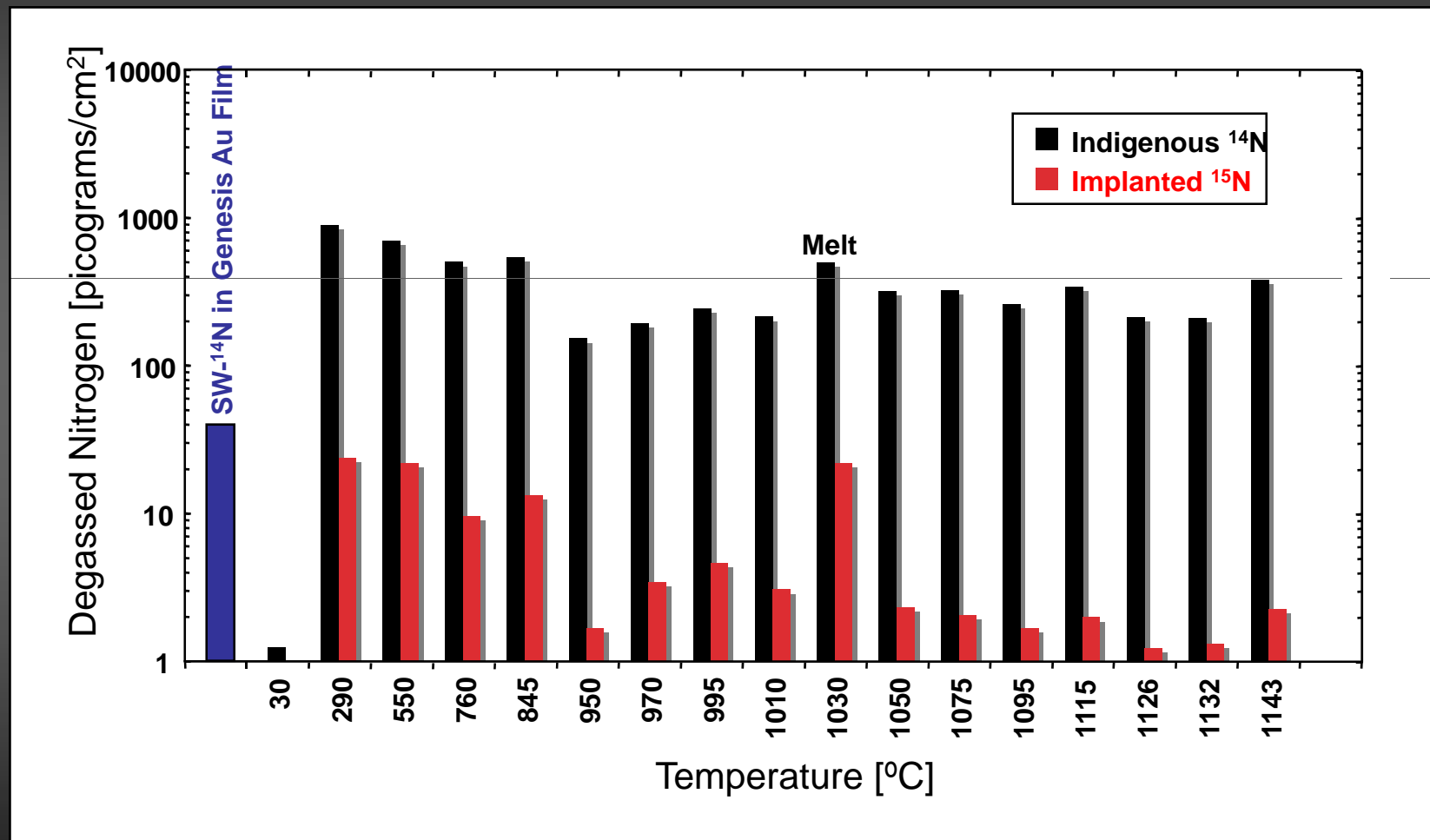
Analytic System Schematic



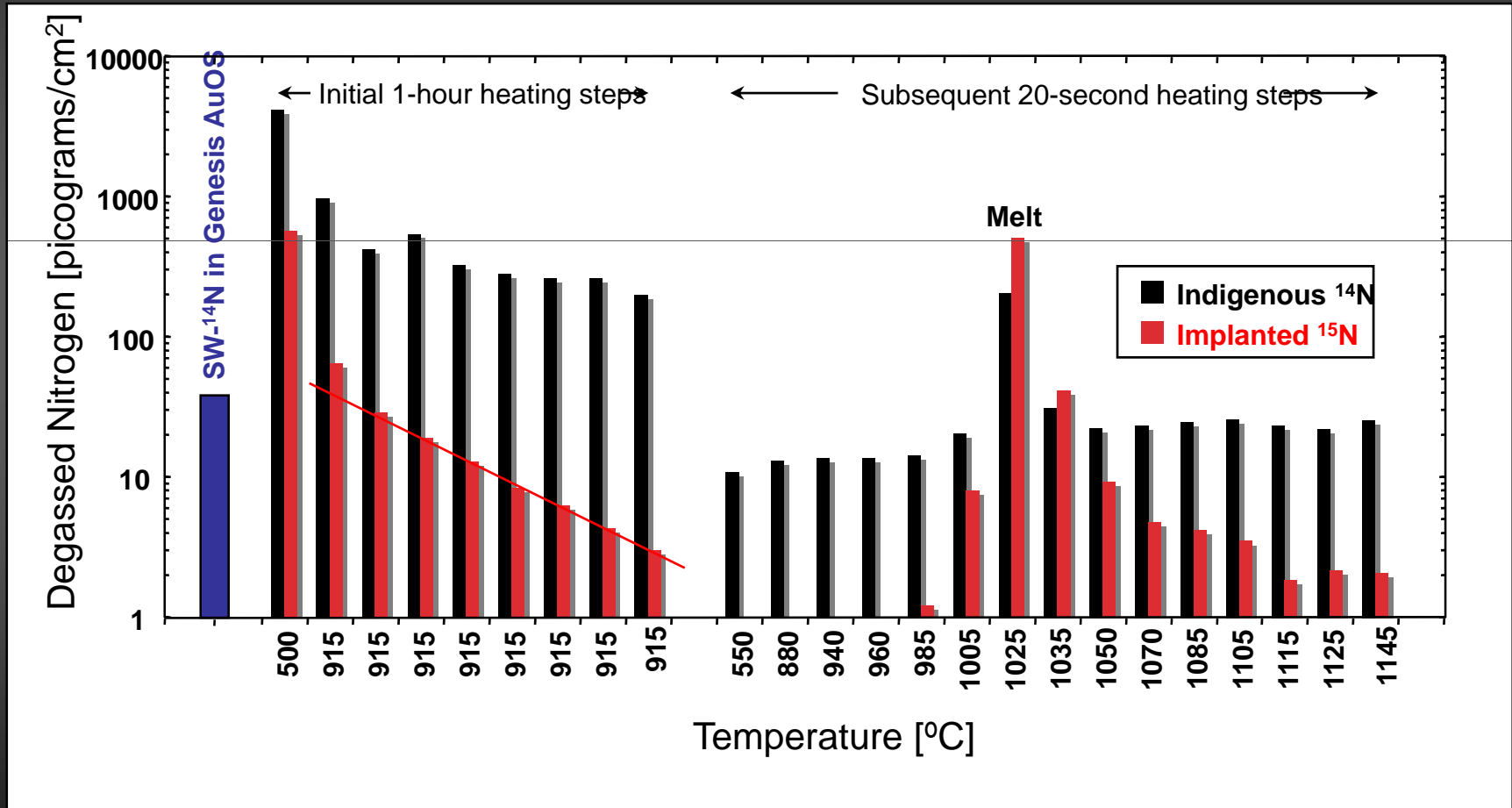
AuOS Analytic Data



Stepwise Pyrolysis of 5 cm² of ¹⁵N-Implanted AuOAI at 20 seconds/step

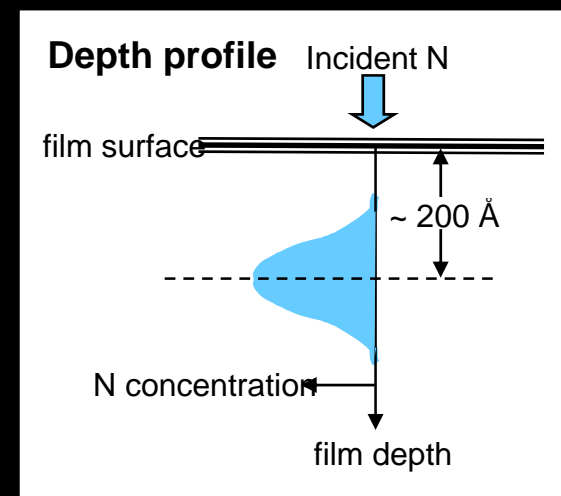
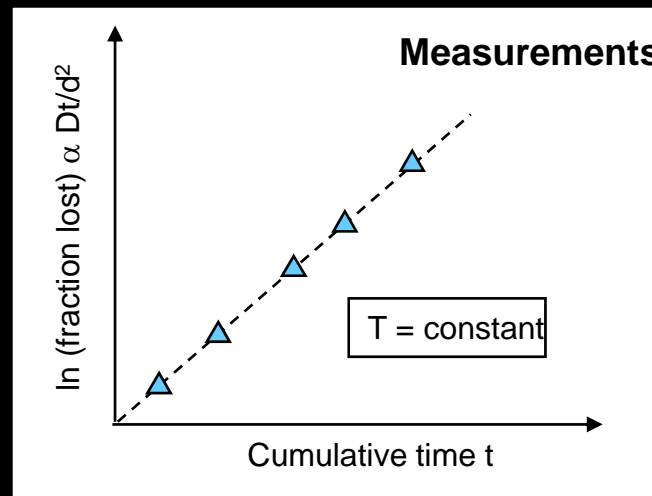
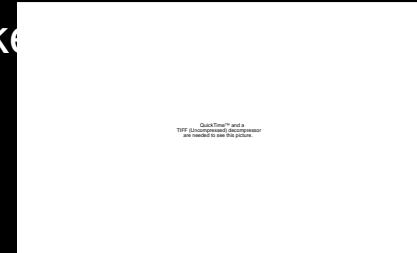


Stepwise Pyrolysis of 3 cm² of ¹⁵N-Implanted AuOS



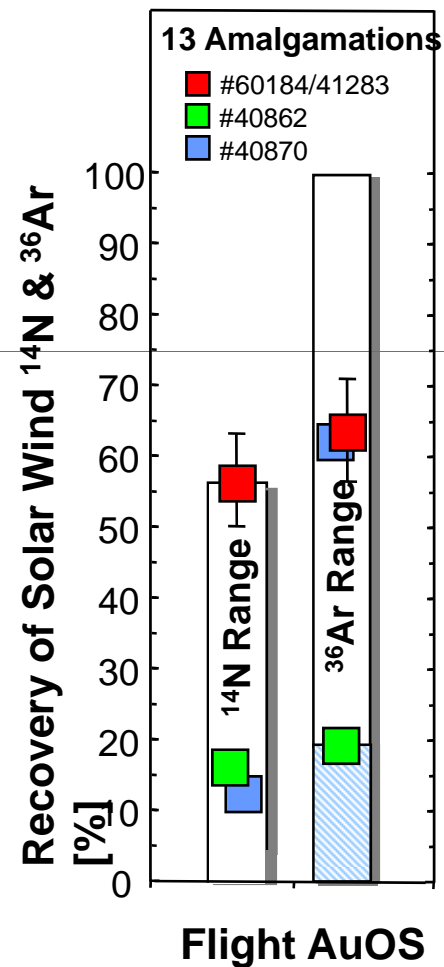
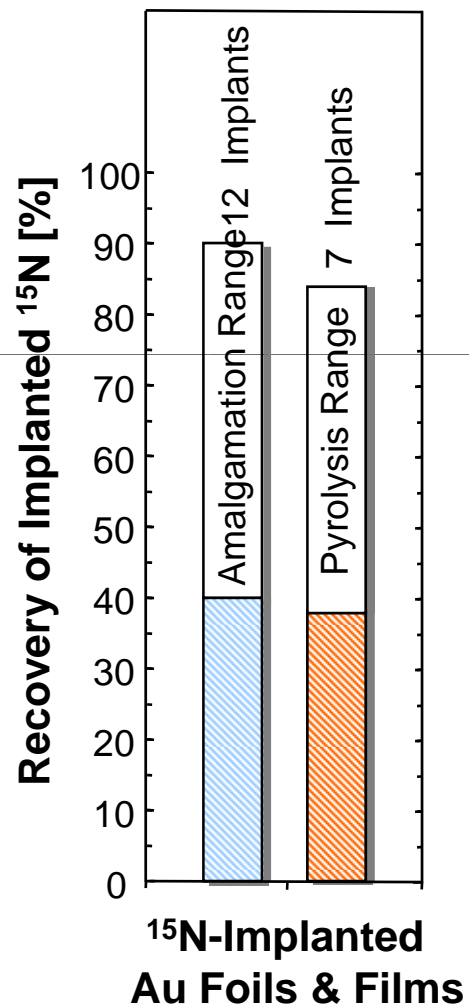
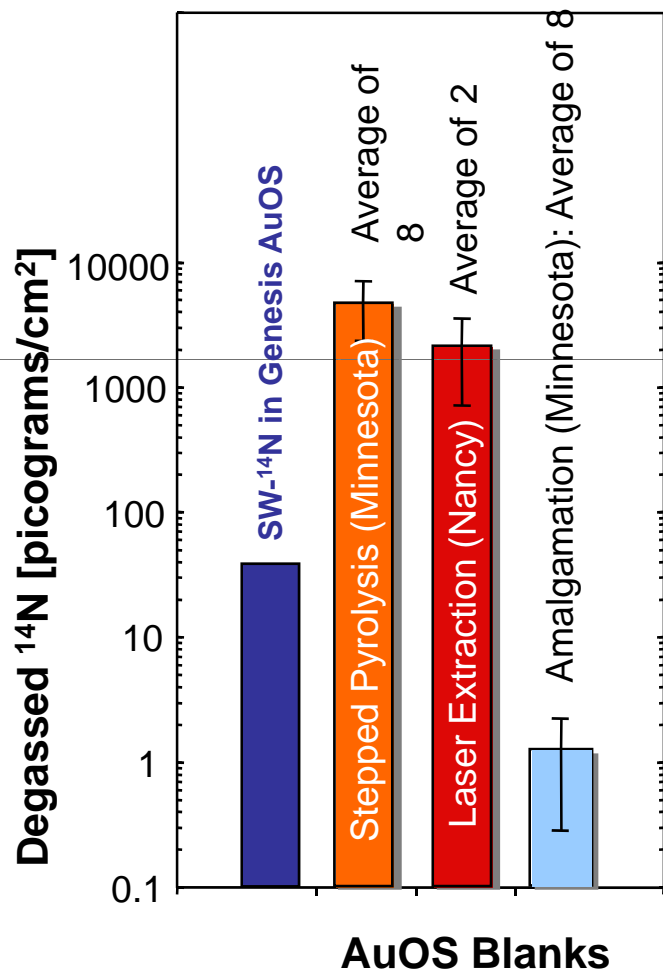
Planned Measurement of N & Ar Diffusion Coefficients

- Implant several samples of AuOS reference material with ^{15}N and ^{36}Ar
- Load in multi-sample pyrolysis furnace/no bake
- Pyrolyze at temperature T in a sequence of equal time steps t
- Measure evolved ^{15}N and ^{36}Ar in each step



- Fick's Law + assumed depth profile + measured data $\rightarrow D(T)/d^2$
- Repeats on new samples at higher $T \rightarrow D/d^2$ as a function of T

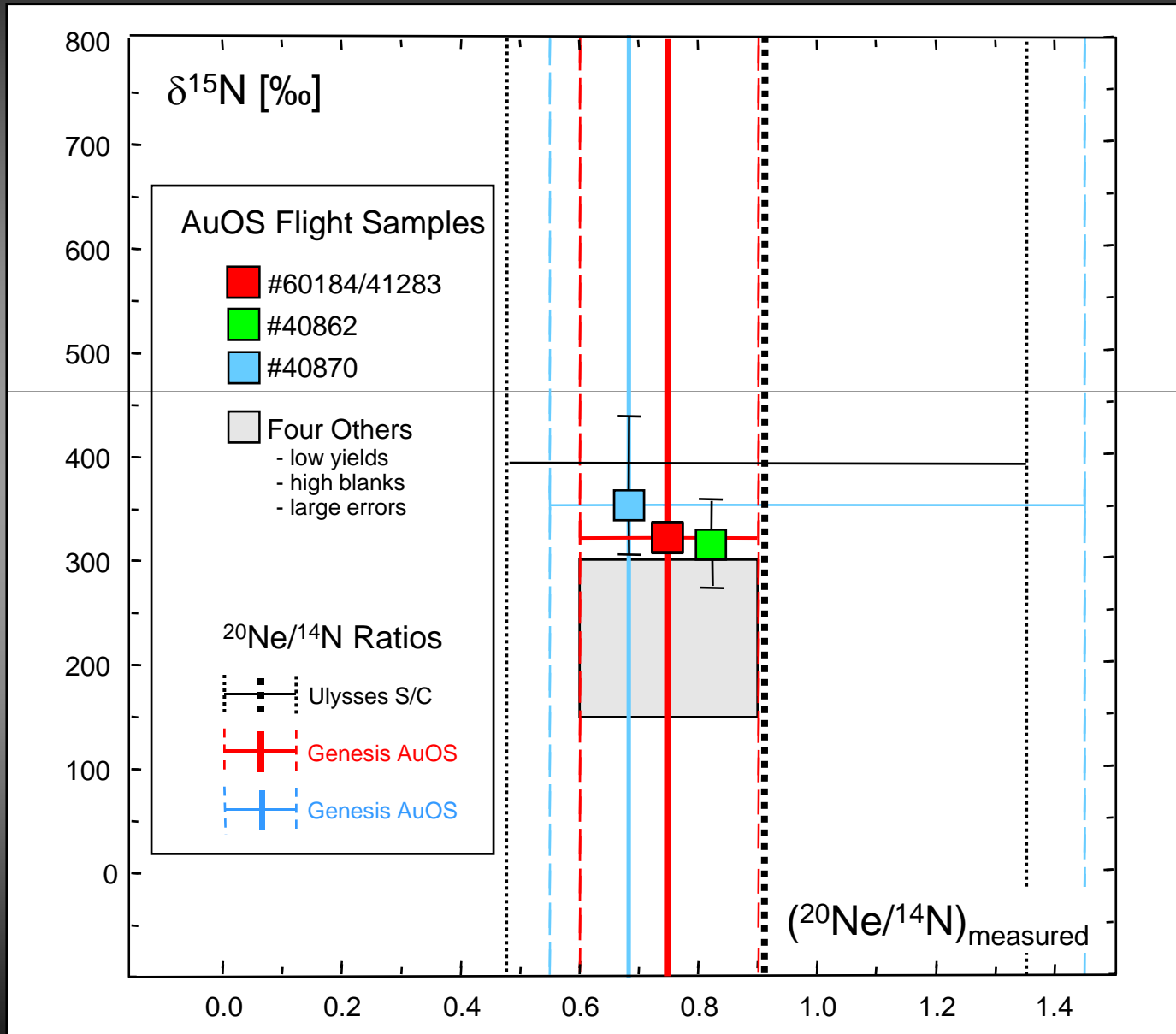
AuOS Analytic Data

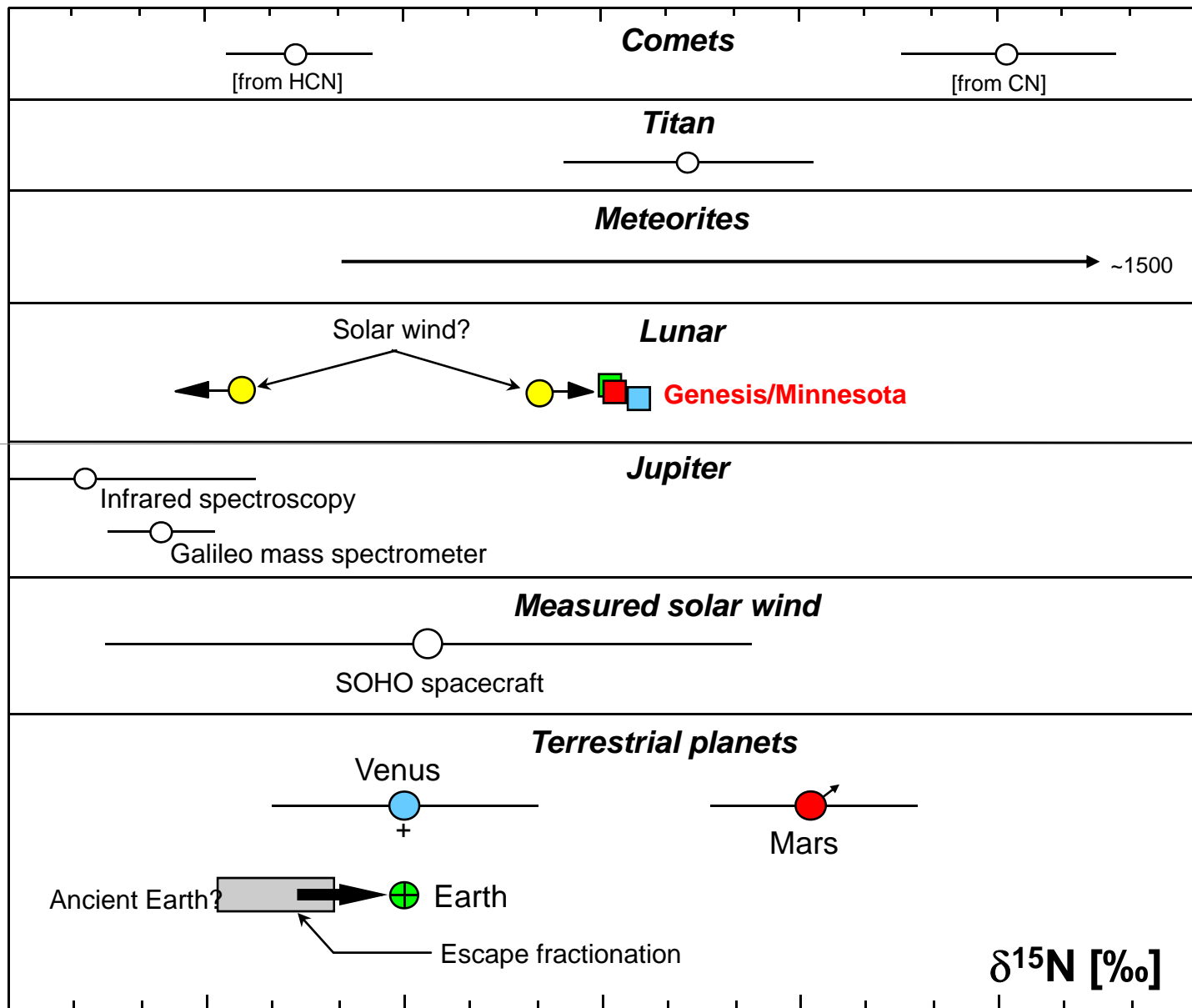


AuOS Sample Data Summary

Sample	AuOS area [cm ²]	¹⁴ N ₂ [pg/cm ²]	¹⁴ N yield [%]	N Blank [%]	δ ¹⁵ N [‰]	²⁰ Ne/ ¹⁴ N [atom/atom]
#40862	1.54	4. 8	12	44	315 ± 43	[≥ 3.2]
#40870	1.21	6.3	16	85	354 ⁺⁸⁵ ₋₄₈	0.68 ^{+0.77} _{-0.14}
#60184/41283	1.18	21.7	56	21	322 ± 17	0.75 ± 0.15
Genesis Expected	—	39	100	—	—	—
Ulysses S/C	—	—	—	—	—	0.92 ± 0.44

Amalgamation-Extracted Nitrogen and Neon from Genesis AuOS Collectors





-600

-300

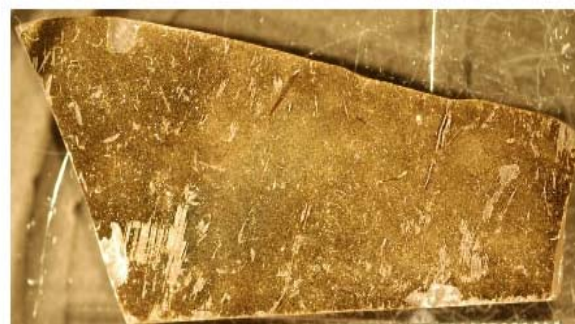
0

300

600

900

1200



5 mm

AuOS #30571

Concentrator Cross (GCA)

Marty for N

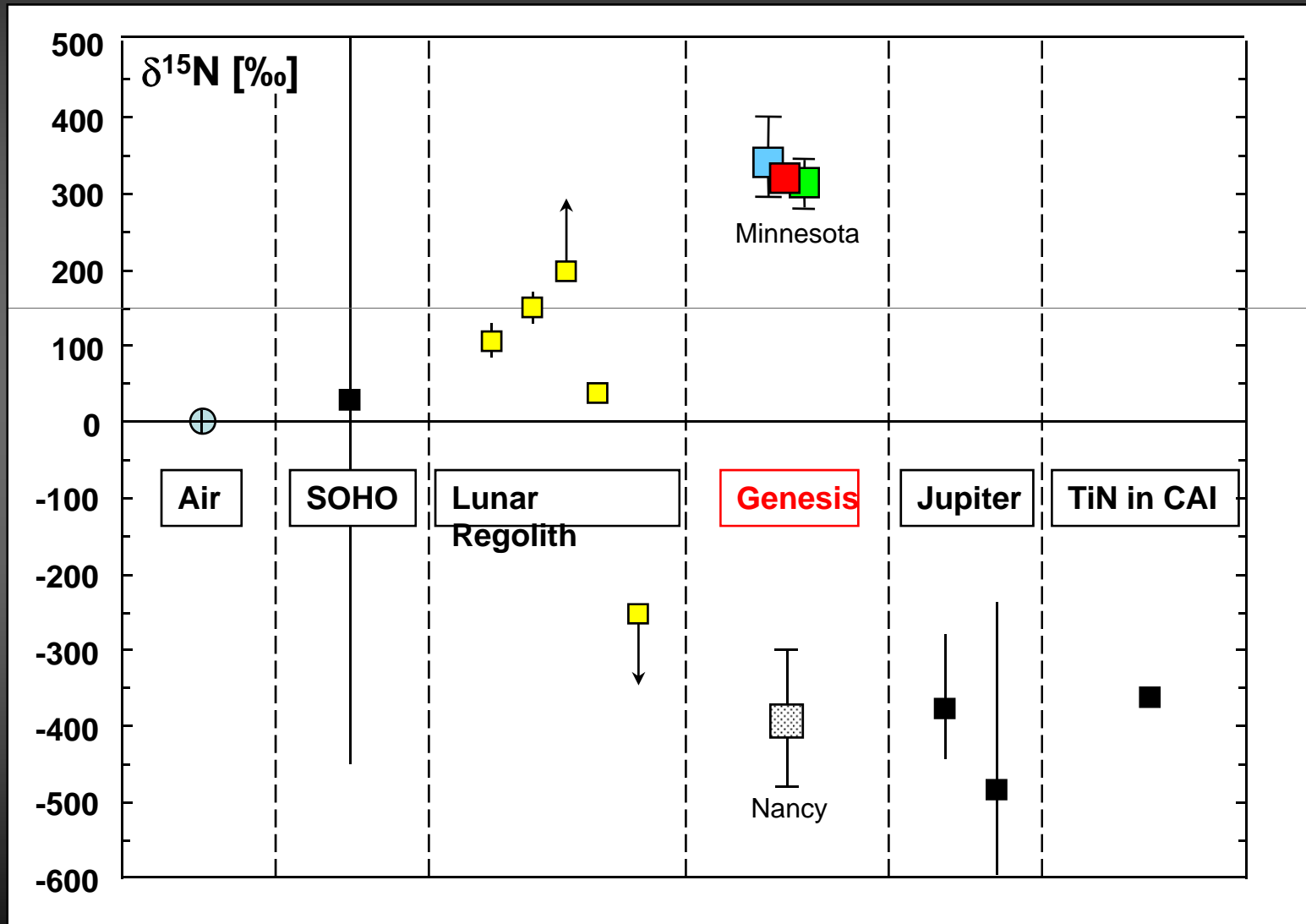
QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

Proposed
samples
for Pepin

Wieler for Ne



Estimates of Solar Wind $\delta^{15}\text{N}$ as of March 2009



Comparison of Minnesota and Nancy Results

