



Contamination Knowledge Report: Part 2. GCMS

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Summary

- Pyrolysis GCMS was performed on Witness foils that were taken out at different times from a curation cabinet were received at NASA GSFC.
- Pyrolysis GCMS was also performed on Aluminum foils in the AAL (unbaked Aluminum foil, 2 week old Aluminum foil, and freshly baked Aluminum foil)

Pyrolysis GC-MS Analysis

Aluminum foil pieces (5 to 10 mg) were cut out and analyzed via pyrolysis GC-MS. The results gave a good baseline results for hexane, acetone, acetaldehyde, isopropanol, ethanol, benzaldehyde, and acetonitrile.

Table I: Base peak areas for each analyte studied using pyrolysis GCMS

| | Al foil mass (mg) | 5.716 | 9.472 | 8.018 | 8.55 | 6.054 |
|--------------|-------------------------|---------------------|--------------------------|-----------------|-----------|------------|
| Analyte | Retention Time (min) | Newly Baked Foil | 2 Week old baked foil | unbaked foil | JSC Day 1 | JSC day 28 |
| Acetaldehyde | 9.96 | 1869663 | 2872537 | 1514308 | 1219074 | 2082775 |
| Ethanol | 12.73 | 46656 | 34821 | 45165 | 39209 | 40636 |
| Acetonitrile | 12.93 | 653307 | 1850103 | 938763 | 301030 | 964133 |
| Acetone | 14.18 | 2360292 | 3040291 | 1574860 | 1728832 | 3012345 |
| Isopropanol | 14.92 | 1163305 | 406668 | 137259 | 160501 | 624126 |
| Hexene | 15.26 | 199090 | 564639 | 282843 | 76337 | 379870 |
| Benzaldehyde | 28.53 | 174885 | 319750 | 232005 | 163229 | 145877 |

Figure 1. Peak areas for each analyte studied using pyrolysis GCMS

