

Particle Into Liquid Sampler (PILS) For PM1 Chemistry

Georgia Institute of Technology

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Instrument 1:

PILS with Liquid Fraction Collector

Off-line IC analysis of soluble ions

Cations: sodium, ammonium, potassium, magnesium, calcium

Anions: chloride, nitrite, nitrate, sulfate

Suite of C1-C9 organic acids (e.g. acetic, formic, oxalic, glyoxylic, pyruvic, ...)

Instrument 2:

PILS with Total Organic Carbon Analyzer

On-line measurement of WSOC

GOALS:

- Investigate PM1 organic acids; sources/sinks, g/p partitioning, fractions of WSOC.
- Provide PM1 chemical tracers (Na^+ , Ca^{2+} , K^+).
- Provide quantitative aerosol composition data for method comparisons.

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OPERATION CONCERNS/REQUIREMENTS:

- **Sample-air heating in inlet/transmission lines**
 - **loss of PM1 semi-volatiles.**
- **Instruments above freezing at all times.**
- **Lab space during deployment (except Thule).**
- **Foreign National (Thule flights).**