



ARI Gas Chromatograph

A field-deployable modular GC for time-of flight mass spectrometry (ToF-MS)

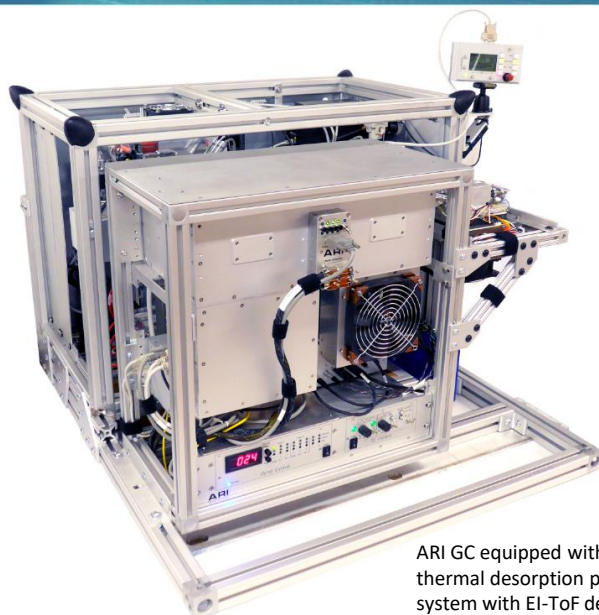
Features:

Flexibility – up to three GC columns depending on application, pre-concentration methods (e.g. thermal desorption vs cryo-mechanical), detector type(s)

Field deployable – ruggedized GC with small, light-weight, footprint for automated operation

Detector compatibility – true plug-and-play operation with all ARI ToF-MS systems (hardware and software, including Tofwerk Acquility)

Dual detectors – designed to operate automatically with two detectors for a more complete data set



ARI GC equipped with ARI two-stage thermal desorption preconcentration system with EI-ToF detection

Turn-Key – ready-to-run on delivery due to pre-installed analytical column(s) with custom pre-loaded method(s)

Speed – flow path allows user to perform multiple GC operations at once; the benefit of this parallel operation is a faster GC cycle (10 – 30 min) without loss of performance

GC Technology

Aerodyne Research, Inc. (ARI) offers a modular gas chromatograph (GC) that combines recent innovations in fast GC separation with highly selective and sensitive detection in a field-deployable package for the measurement of VOCs and OVOCs.

Aerodyne works with our customers to provide a GC system with a **custom separation method** appropriate for their analytical needs. The instrument delivers with the required capillary column installed and analytical methods pre-loaded into the Windows-based control software, for a true **turn-key** operation.

Data Analysis Software

Wavemetrics Igor Pro analysis software (TERN) allows for retention time correction, automated baseline and peak fitting. TERN provides de-convoluted peak fitting for overlapping chromatographic peaks. Compatible for analysis of both high resolution (HR) and unit mass resolution (UMR) data.

Compatible Accessories

Sample Preconcentrators

- ARI Thermal Desorption (TDPC)
- ARI Cryomechanical (CMPC)
- Other commercial preconcentration systems

Direct Injection Methods

- Passivated sample loop (0.005 – 1 mL)
- Split/Splitless Injection Port
- Commercial autosamplers

Detectors

- Vocus PTR-ToF-MS
- EI-ToF-MS
- CIMS-ToF-MS
- Other commercial detectors (q-MS, FID, ECD, etc.)

Performance Specifications:

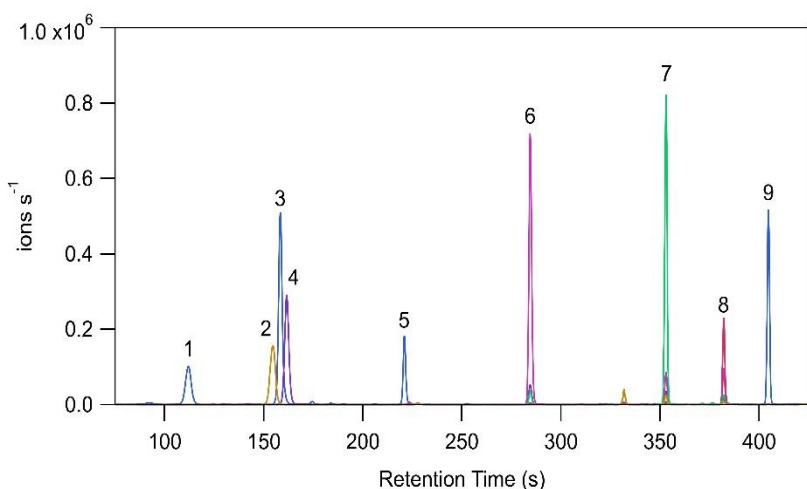
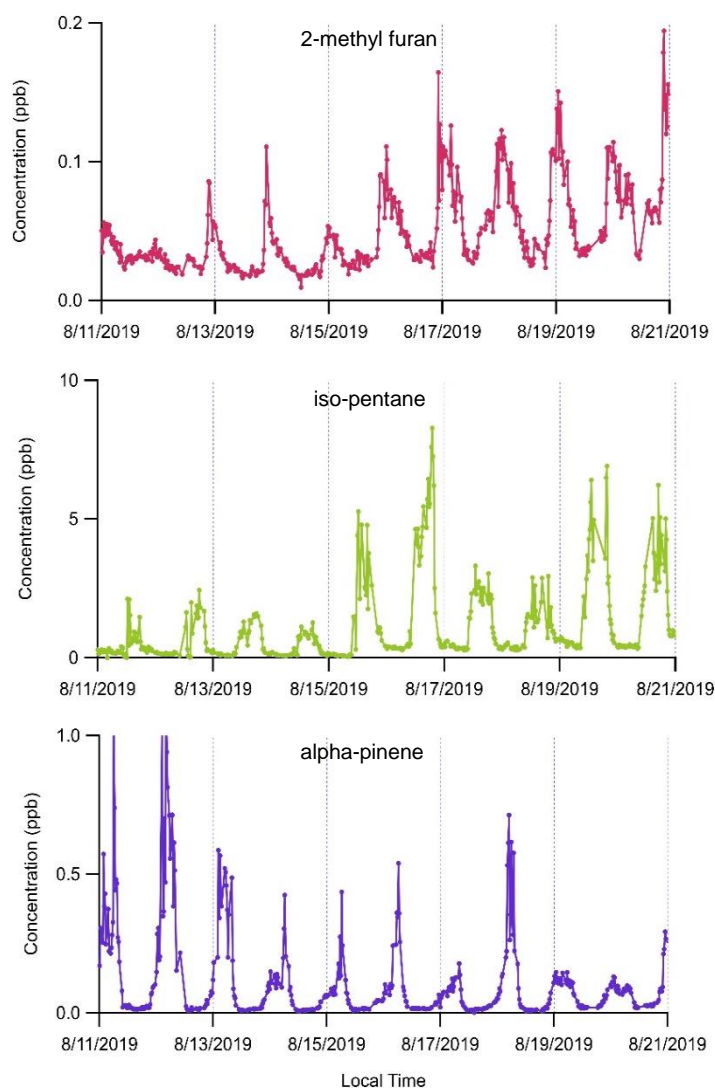


Figure 1. ARI GC equipped with ARI two-stage thermal desorption preconcentration system with EI-ToF detection (TD-GC-EI-ToF). Analysis of multi-component calibration mixture in nitrogen. 1000 mL sample of 0.75 ppb each (1) n-hexane, (2) carbon tetrachloride, (3) 2,2,4-trimethylpentane, (4) benzene, (5) n-octane, (6) ethyl benzene, (7) 1,3,5-trimethylbenzene, (8) limonene, (9) n-undecane.

Figure 2. Ambient data acquired with ARI GC equipped with ARI two-stage thermal desorption preconcentration system with EI-ToF detection (TD-GC-EI-ToF)



Column Oven Specifications

Max heating rate: 120 °C/min

Max cooling rate: 250 °C/min

Max temperature: 260 °C

Temperature accuracy: ± 0.5 °C (ramped);
± 0.25 °C (isothermal)

Column compatibility: all fused silica and metal columns
(60m @ ≤0.32mm ID, 30m @ ≥0.53mm ID)

Capillary columns are swappable without venting detector

Sampling / Reagent Gas Specifications

3-inlet system for analysis of sample (ambient), zero, and calibration gases

Sample gas: -40 to 50 °C; 0-90% RH; 50-125 kPa

Carrier gas compatibility: helium, nitrogen, hydrogen

Sample flow rate: up to 200 sccm, ± 1% accuracy

Carrier gas flow rate: up to 10 sccm

Complete inert/passivated sample flow path

(DuPont PFA, SilcoTek Siltek/Sulfinert passivated stainless steel)

Data Outputs

USB

Weight, Size, Power

Weight: 24 kg

Dimensions: 55 cm x 55 cm x 30 cm

Max power: 600 W, 120/240 V, 50/60 Hz (start-up)

300 W (typical operation)

Aerodyne specializes in collaboration and custom design. Please contact us if you would like to discuss additional measurement options and applications.

REFERENCES:

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