

# Vocus CI-TOF Measurement System

Real-time chemical analysis of trace gases, aerosols, or atmospheric ions.

## Interchangeable Reactors and Sampling Inlets

The Vocus CI-TOF is used with multiple inlets and reactors, which can be easily interchanged by the user.



*Vocus*  
CI-TOF  
Scout Pictured

Inlets			Reactors	Vocus CI-TOF	
Particle Phase	Gas Phase		Associated Ion Reagents PRESSURE	Mass Spectrometer Models	
		PAM	+	<b>EESI</b> $\text{Na}^+$ ATM PRESSURE	<b>Scout S &amp; 2R</b> These models work with all reactors
VIA		PAM	+	<b>NO<sub>3</sub></b> $\text{NO}_3^-$ ATM PRESSURE	
VIA		GC PAM	+	<b>PTR</b> $\text{H}_3\text{O}^+, \text{NH}_4^+, \text{NO}^+, \text{O}_2^+$ LOW PRESSURE	
FIGAERO		GC PAM	+	<b>AIM</b> $\text{I}^-, \text{Br}^-, \text{NH}_4^+, \text{C}_2\text{H}_3\text{O}^+$ MEDIUM PRESSURE	
					<b>B2 / B4</b> Works with <b>AIM</b> <i>(Fast Polarity Switching)</i>

## Applications

- Online identification and quantification of trace gas- or particle-phase compounds
- Laboratory, field, or mobile platform based experiments
- Air quality and climate change research

## Advantages

- Interchangeable ionization sources for selective detection of different chemical classes
- Quantitative response with broad dynamic range
- Sub pptv gas-phase limits of detection
- Molecular identification and elemental speciation
- High-speed data acquisition
- Low power, field portable assembly

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## Inlets

### Aerodyne Gas Chromatograph

Our Fast Compact GC system can be attached to the front of the Vocus for thermal desorption preconcentration for in-situ analysis of VOCs and OVOCs.

### Potential Aerosol Mass Oxidation Flow Reactor

The PAM-OFR provides a highly oxidizing environment that simulates oxidation processes on the timescales of day in the atmosphere in minutes in real time.

### VIA (Vaporization Inlet for Aerosols)

The Vocus Inlet for Aerosols (VIA) is used for thermal desorption of organic aerosols for on-line analysis by the Vocus.

### FIGAERO (Filter Inlet for Gas & Aerosols)

The FIGAERO is an aerosol sampling inlet/interface for analysis of organic aerosol chemical composition and volatility.

## CI-TOF Reactors

### EESI (Extractive Electrospray Ionization Reactor)

- a powerful real-time (seconds) system for aerosol chemical composition measurements.

**NO3 Reactor** - a wall-less flow reactor for the measurement of low-volatility and highly oxidized gases.

**AIM Reactor** - provides fast and sensitive detection of trace oxidized organic and inorganic compounds spanning the entire volatility range.

**PTR Reactor (Proton Transfer Reaction)** - a powerful system for the analysis of a broad range of volatile organic compounds (VOCs).

## Specifications

CI-TOF Models	Scout	S	2R	B2	B4
Sensitivity cps/ppb	4,000	30k	30k	10k	10k
Resolving Power Th/Th M/ΔM	3,500	5,000	10,000	5,000	10,000
LOD (pptv, 1 minute)	<10	<1	<1	< 1	< 1
Bipolar Analyzer Switch	10 min	10 min	10 min	50 ms	50 ms
Ion Mobility Spectrometry			Yes		
Mass - lbs   kg	265   120	265   120	353   160	375   170	408   185
Volume (m3)	.35	.35	.45	.40	.41
Dimensions Inches [mm]	18.90 x 24.21 x 44.49 [480 x 615 x 1130]	18.90 x 24.21 x 44.49 [480 x 615 x 1130]	18.90 x 24.21 x 58.27 [480 x 615 x 1480]	18.90 x 24.21 x 52.56 [480 x 615 x 1335]	18.90 x 25 x 52.56 [480 x 635 x 1335]
Power	< 1100 W (600 W typical)   100 - 240 VAC, 50/60 Hz, single phase				



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