

mipTOF

Microwave Induced Plasma Time-of-Flight Mass Spectrometry

*Field Deployable Real-Time Analysis of
Trace Elements and Metals in Air*

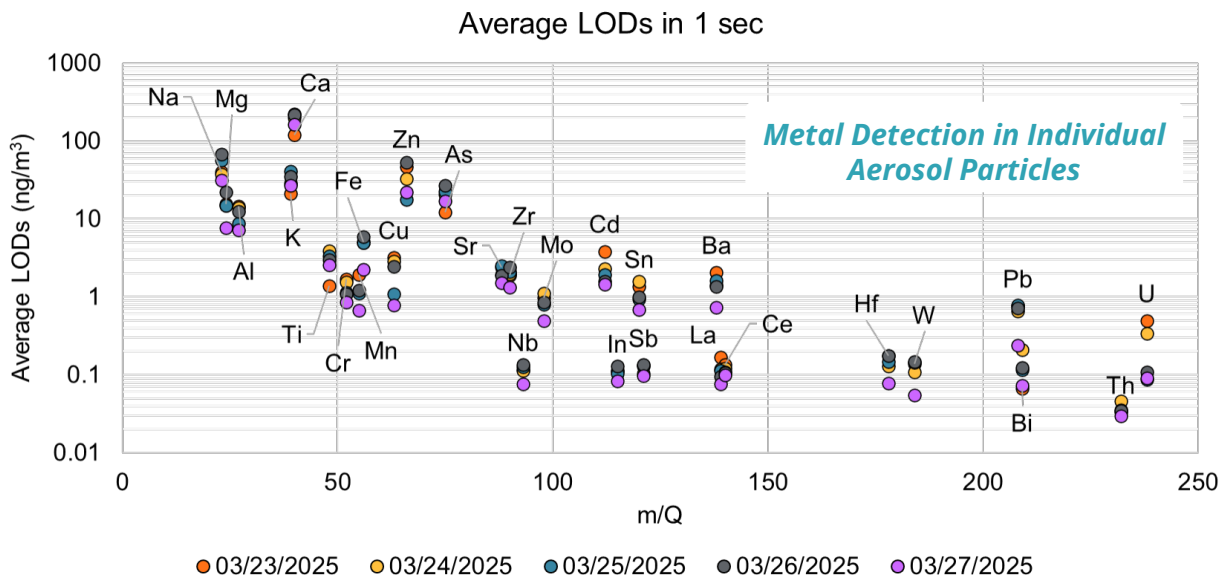


Applications

- Industrial emission plume detection
- Brake and tire wear particle detection
- Weather and climate impact from mineral dust
- Single particle and bulk mass concentrations
- Mobile and stationary air monitoring
- Source apportionment
- Occupational health and safety

Features

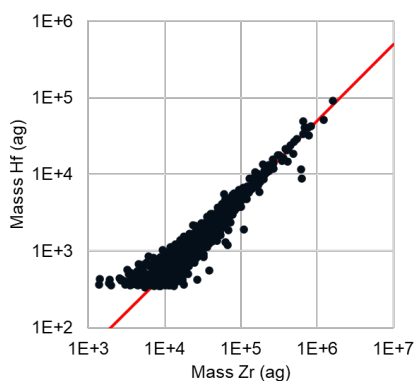
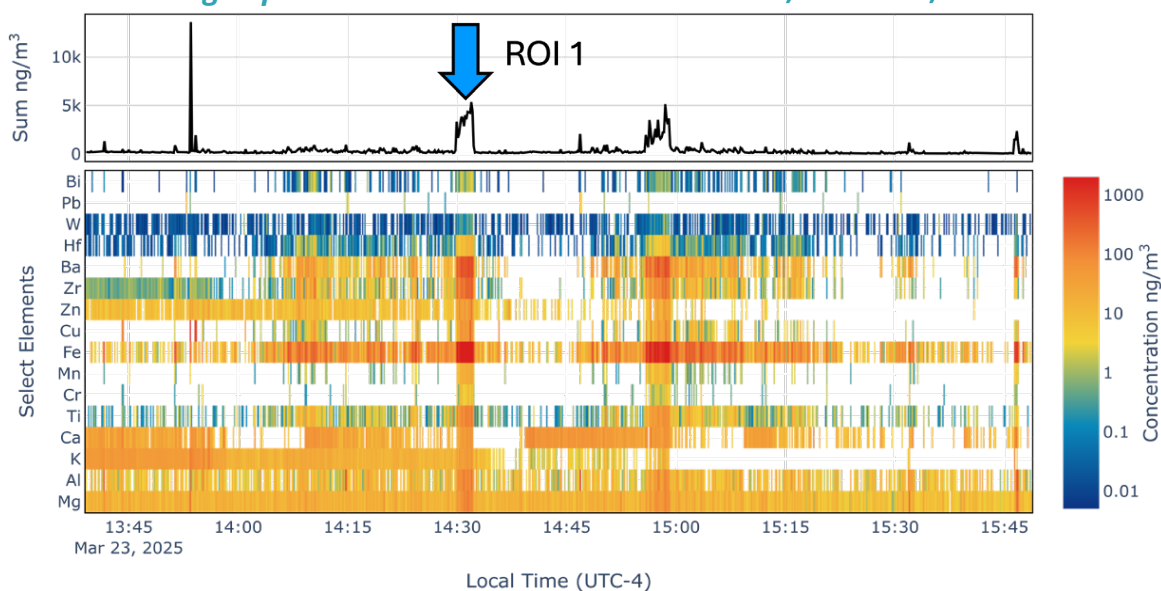
- **High-Power Plasma Source.** Microwave-sustained inductively coupled atmospheric plasma (MICAP, RADOM Instruments), operable with N₂ gas or air
- **Field Deployable.** On-site gas generation eliminates the need for gas cylinders
- **Real-Time Sampling.** Direct, real-time air sampling for continuous particulate analysis of ultra-fine, fine and coarse mode detection
- **Maximum Sensitivity.** Detection of elements in individual particles at atto- to femtogram detection limits



Specifications

Parameter (unit)	Specified Value
Mass Resolving Power, $M/\Delta M$ at FWHM	3,000
Power Requirements (kW)	Active: 5.5, Standby: <0.35
mipTOF Dimensions, L x W x H (cm)	132 x 83 x 115
mipTOF Mass (kg)	195
Supplies Unit Dimensions, L x W x H (cm)	126 x 83 x 101
Supplies Unit Mass (kg)	225

Image plot and time series trace for selected metal atoms observed during mipTOF mobile measurements in Boston, March 23, 2025



Particle-Resolved Analysis:

- ROI 1 is 2.57 min
- 4546 particles measured
- Correlation of Zr vs. Hf, brake wear particles