

Research Grade ION MOBILITY SPECTROMETER (IMS-500)

multi-ion source



Alternative to HPLC & GC

Ideal for most Chemical Analysis & Research

High Resolution & Compact IMS-500 Series



Advantages

- Fast Analysis; within few seconds
- Highly Sensitive: Detects nano-gram or ppb levels
- Versatile: Responds to various organic compounds
- Simplicity: No columns or vacuum pumps needed
- Selective to most compounds of interest
- Cost-effective & Low Maintenance
- Easy Sampling & minimal preparation

Ion Mobility Spectrometry (IMS) is an emerging technique in chemical analysis. Due to its exceptional sensitivity (in the ppb range) and rapid analysis (a few seconds), IMS gained wide acceptance in detecting explosives, drugs, and toxic chemicals in various environments. Our state-of-the-art Research Grade Ion Mobility Spectrometer is tailored for analytical chemistry. It excels in separation science, offers high reproducibility and robustness, simplifies preparation and sampling, and ensures easy operation for quantitative and qualitative analyses with exceptional selectivity.

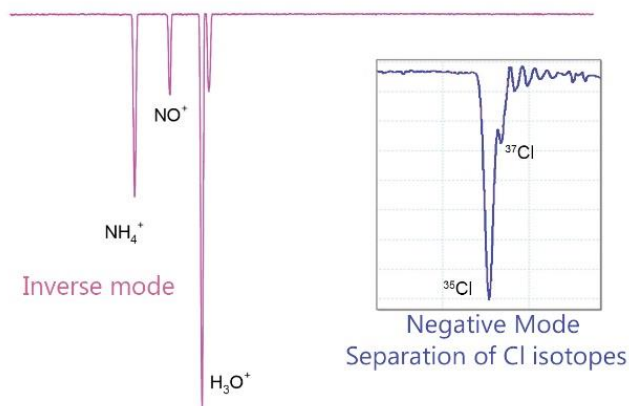
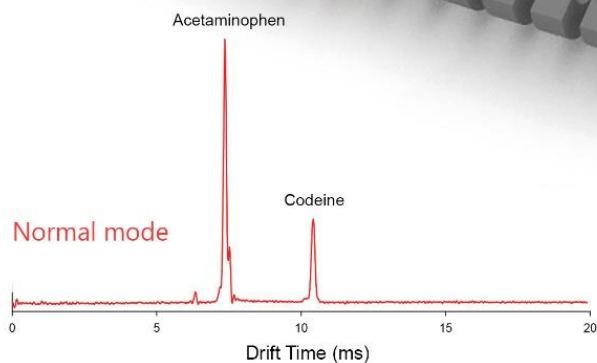
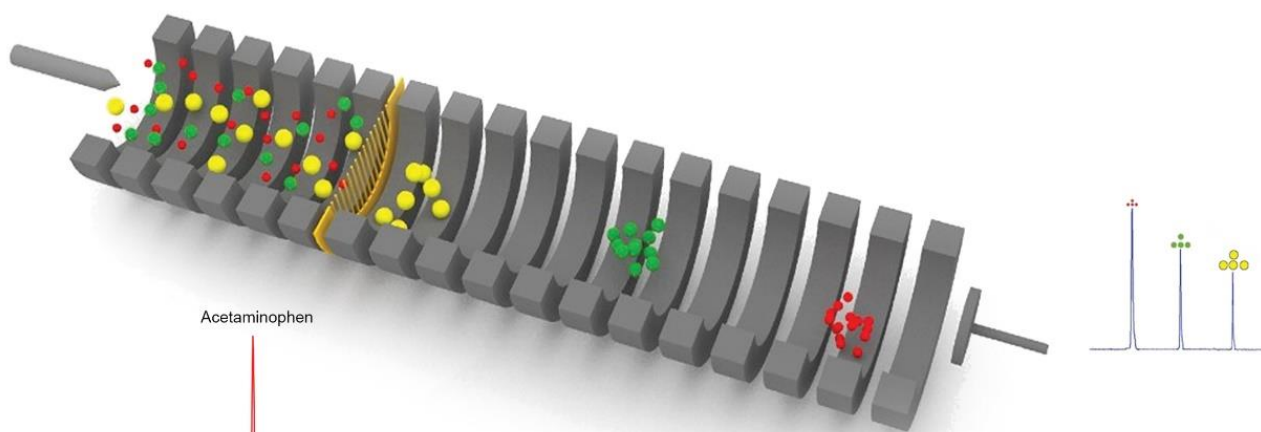
The research-grade IMS-500 builds upon the world's first commercial instrument using a non-radioactive corona discharge ionization source. Thanks to innovative techniques, it can fully resolve overlapping peaks of morphine.

Operating at temperatures of up to 200°C enhances separation and eliminates memory effects. The multi-ion source option allows quick and easy ionization scheme changes, enabling selective ionization for specific applications.

Features

- Touch screen control panel
- Novel Corona Discharge ion source
- High resolution; separation of isomers even ^{35}Cl and ^{37}Cl
- Enhanced resolving power using novel inverse technique
- Sensitivity enhanced with novel injection method
- Easy sampling for solid, gas, liquid
- Compatible with SPME and TLC
- Dopant included for negative and positive mode
- Automated Positive/Negative polarity switching
- Comprehensive 2D and 3D data processing software
- High signal to noise ratio
- Up to 10 spectra per second
- Cell temperature up to 200°C
- Ionization Source of Choice
- Background free Corona discharge in N_2

Easily couples with your GC



Highest ever separation for commercial IMS instruments, thanks to the novel innovative Inverse Technique.

Principle of Operation

IMS operates on the Time-of-Flight (TOF) principle at atmospheric pressure. It begins by vaporizing the sample, which then enters the ionization region, where molecules become ionized. These ions are periodically injected into a drift tube through successive pulses on a shutter grid. Within the drift tube, under an electric field, ionized molecules travel at speeds related to their size. As they journey toward the detector, ions are separated based on their size.

Comparatively, IMS is similar to chromatography. In IMS, the drift tube serves as the column, and the shutter grid acts as the injector. A full ion-chromatogram in IMS is generated in just 20 milliseconds, which is thousands of times faster than GC or HPLC.

Applications

Specifications

Measuring Principle	Ion Mobility
Ionization source	Corona Discharge
Ion polarity	Positive/Negative
Detection	Electrical current (nA)
Drift field range	60-500 V/cm
Sampling	Solid, Liquid, Gas, TLC, SPME
The amount of sample	Nano gram or μL
Sensitivity	ppb
Dynamic range	ppb-ppm
Analysis time	5 Sec
Resolving power (t/w)	Up to 90
Separation for $\text{NH}_4^+/\text{H}_3\text{O}^+$ ($\Delta t/w$)	Up to 20
S/N for single spectrum	> 100
Drift temperature range	25-200 °C
Injection Port Temperature	25-300 °C
Work temperature range	0-50 °C
Humidity working range	0-50%
Gas Supply	Zero Air
Gas Flow	1000 mL/min
Communication	USB port
Software online	Pico scope (windows)
Software offline	For data analysis
Powering	220-250 V, 2 A



• Environment

- Detection of VOC's in air
- Air pollutants (NO_x , SO_x , Hg)
- Water quality (Pesticides, MTBE, THM)
- Toxic Industrial Chemicals (TICs)



• Analytical Chemistry

Trace analysis of chemicals in different matrices such as: Blood plasma, Urine, Saliva, Breath, Chewing gum, Meat, Tablets, Syrups and Biological Environments.

• Pharmacy

- Drug Detection and Analysis
- Quality Control
- Cleaning Validation

• Security

- Explosive
- Narcotics
- Toxic Chemicals



• Breath Analysis

- Ketones, HCN, NO , Cl

• Food Chemistry

- Residual Pesticides and Insecticides
- Detection and determination of additives
- Determination of Antibiotics in meat
- Aflatoxin and Ochratoxin



• Academic & Fundamental Research

- Kinetics and Thermodynamics of Ion-Molecule Reactions
- Transport properties
- Mobility and diffusion coefficient
- Proton affinity and Electron affinity
- Gas phase Ion Chemistry
- Validation of Quantum Calculations



• Gas & Petrochemicals

- Ammonia in Ethylene
- Hydrogen Sulfide in Gas
- Mercaptans and other Sulfur Compounds
- Total Sulfur
- Mercury in Natural Gas



• Forensic

- Lithium Poisoning
- Cyanide Poisoning
- Suicidal drug overdose
- Operation room



Research Grade ION MOBILITY SPECTROMETER (IMS-500)

multi-ion source

Pharmaceutical Analysis

Food Safety

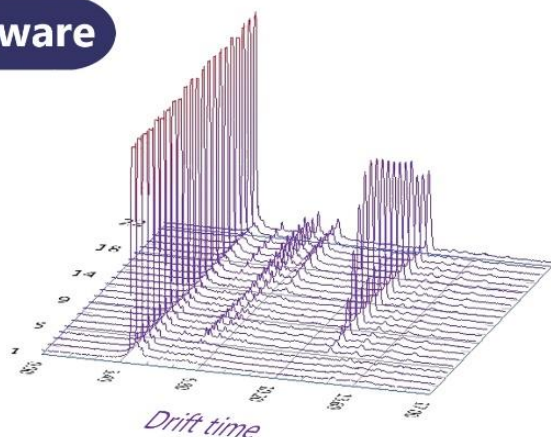
Water Quality

Research & Education

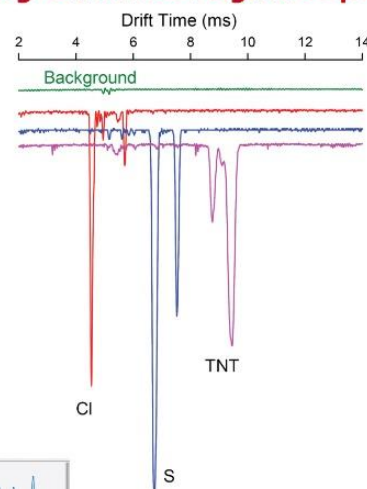
Chemical Industry



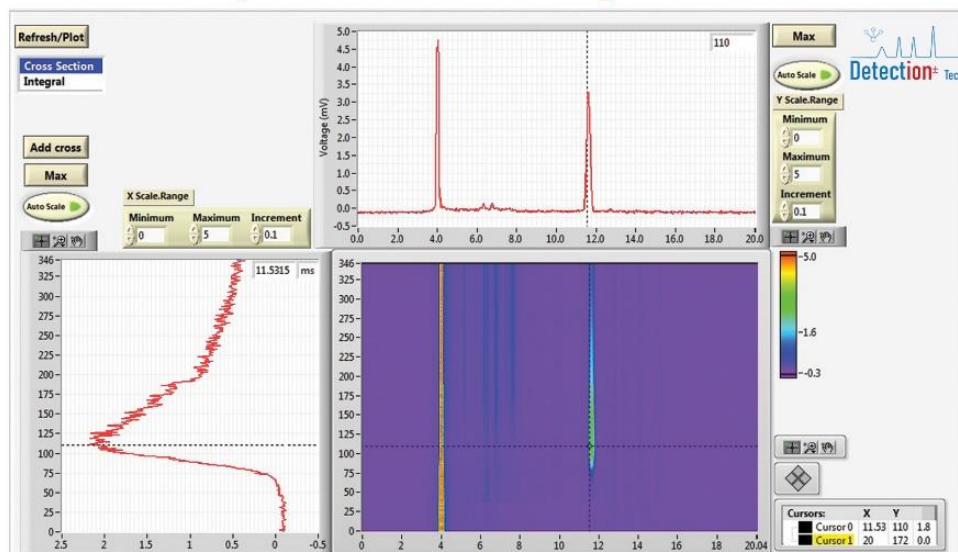
Software



Background Free Negative Spectra



Comprehensive Data Processing Software



- GC IMS
- Averaging
- 2 & 3D plots
- Peak Analysis
- Overlay Spectra
- Mass Calculation
- Mobility Calculation
- Pick Height and Area
- Background Correction
- Integral, Derivative, etc.
- Automatic Calibration Curve

Contact

DETECT ION TECH INC.

Front St W, Suite # 300 TBDC, Toronto, Ontario, Canada M5V 2Y1 3Z5

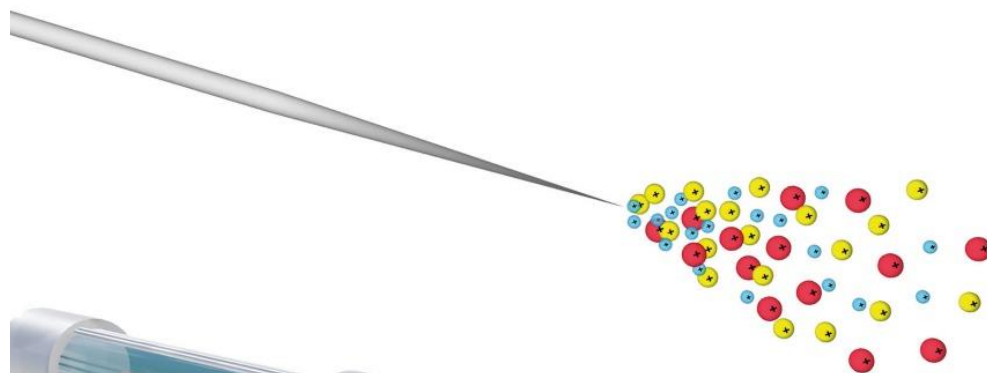
www.detectiontech.ca

Email info@detectiontech.ca Tel: +1 416 834 3447



Research Grade ION MOBILITY SPECTROMETER (IMS-500)

multi-ion source



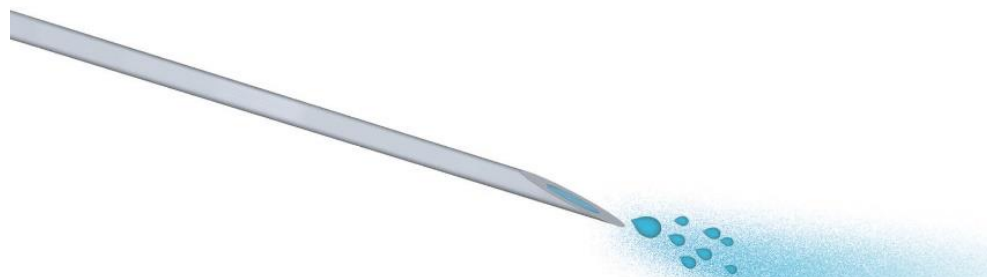
Corona Discharge

Toxins
Drugs
Organics
Alkaloids
Explosive,...



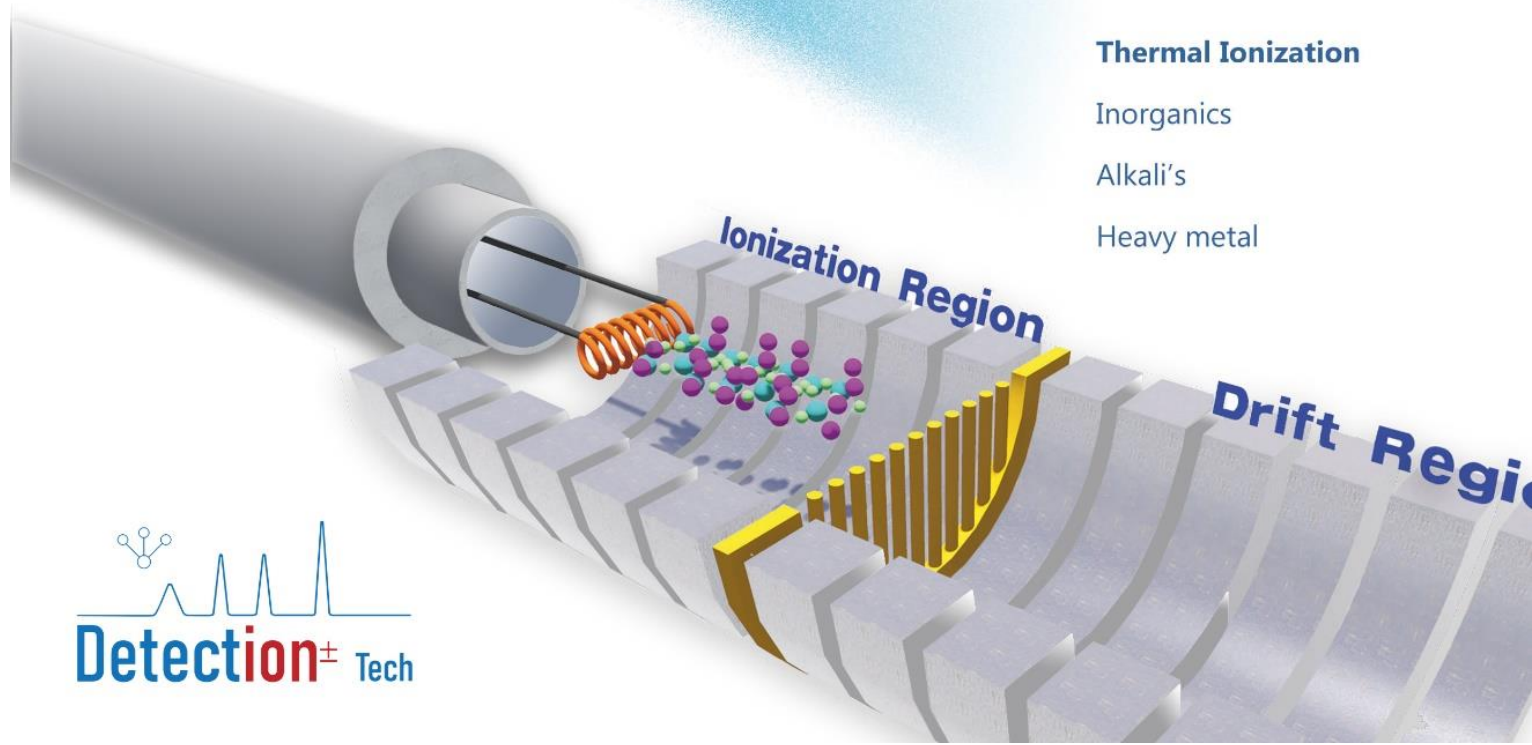
UV Photoionization

VOC
Aromatics
BTX



Electrospray

Liquid Samples
Biomolecules



Thermal Ionization

Inorganics
Alkali's
Heavy metal