

ION MOBILITY SPECTROMETER

Ion Mobility Spectrometry (IMS) is a new developing technique in the field of chemical analysis. Due to its excellent sensitivity (ppb rang) and high speed analysis (few sec). IMS has achieved extensive acceptance in many fields especially in detection of explosives, drugs and chemicals in all environments.

The IMS-300 instrument is an innovative and advanced achievement in linear ion mobility spectrometry. It offers reproducibility, robustness, easy and quick sampling, and exceptional ease of operation for quantitative and qualitative analyses with high selectivity.

The IMS-300 is the word's most sensitive commercial IMS instruments that works based on corona discharge ionization source.

Thanks to the innovative inverse technique, It is the only IMS instrument that can separate different forms of protonated compounds with the highest resolution.

It can operate up to 220 oC which helps in better separation and removing memory effect.



Applications

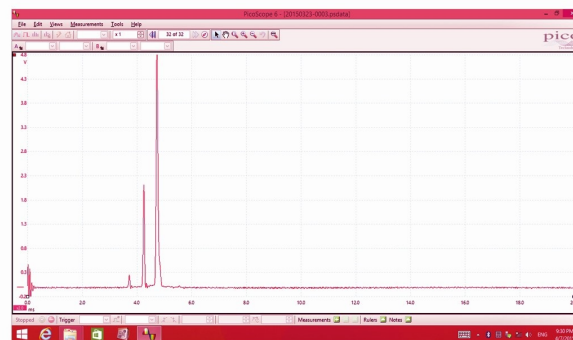
- Security
Detection of explosive and narcotics and chemicals
- Environment
Detection of VOC's in air
Water quality (such as THM)
- Breath Analysis
- Food chemistry
Detection of agricultural pesticides
Detection and Determination of additives
Determination of antibiotics in meat
Aflatoxin and Ochratoxin
- Pharmacy
Drug Detection and Analysis
- Analytical chemistry
Determination of trace amounts of chemicals in different matrices such as: Blood plasma, Salvia, Breath, Chewing gum, Chicken meat, Tablets, Syrups and biological environments.
- Gas & petrochemicals
Ammonia in Ethylene
Hydrogen Sulfide in Gas
- 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
- Instrumentation:
Charactraization of different atemospheric pressure ionization source

Specifications

Measuring Principle	Ion Mobility
Ion polarity	Positive/Negative
Ionization source	Corona Discharge
Resolving power	Up to 90
Sampling	Solid. Liquid, Gas
Sensitivity	ppb
Detection	electrical current
Dynamic range	ppb-ppm
The amount of sample	nanogram or Microlitr
Injection Port Temperature	25-260 °C
Gas Supply	Zero Air, N ₂ , He, Ar
Gas Flow	0 – 1000 mL/min
Communication	USB port
Powering	220-250 V, 2 A
Work temp. range	0-50 °C
Humidity working range	0-50%
Software online	Pico scope (windows)
Software offline	For data analysis
Drift field range	0-450 V/cm
Drift temp range	25-200 °C
Analysis time	≤ 5 Se

” Advantages

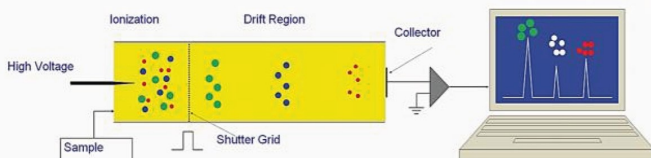
Fast analysis; within few seconds
Sensitive; detection in nano-gram scale
Response to most organic compounds
Simplicity; no need for vacuum pump
Selective to most compounds of interests
Easy sampling
Economic and maintenance free



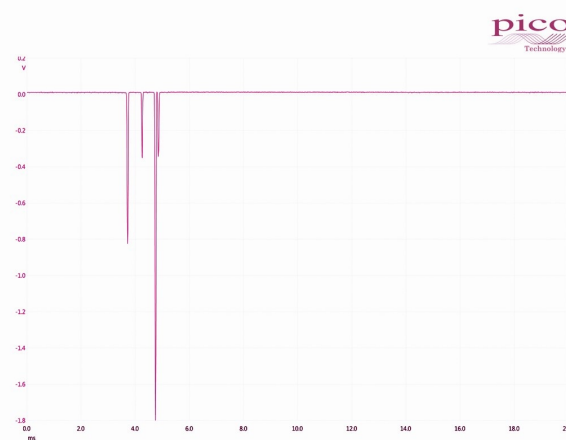
Reactant Ions in Normal mode (Positive)

Principle of Operation

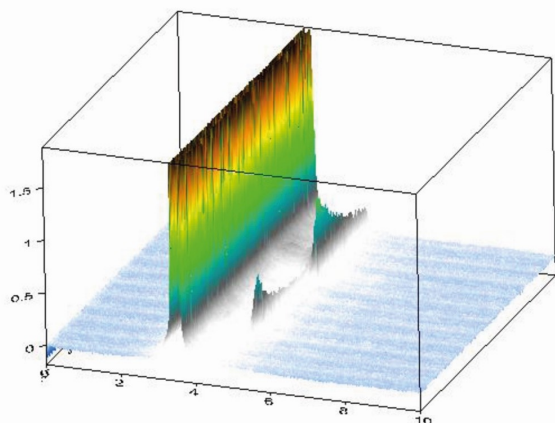
Ion Mobility Spectrometry, is an instrumental analytical method that is similar to Time-of-Flight MS except that it works at atmospheric pressure. Sample is heated to vaporize and enters the ionization region. Ions are then periodically pushed to a drift tube by applying successive pulses to the shutter grid. Ionized molecules then travel through the drift tube at speeds that are related to their mass and size. The ions are separated according to their size, mass and geometry while traveling towards the detector. IMS can also be compared with GC or HPLC. The column in IMS is the drift tube and the shutter grid is the injector. Ions are injected into the drift tube where they are separated as they move. Unlike, GC or HPLC, a chromatogram is obtained in 25 ms, i.e. thousands times faster.



Principle operation of an ion mobility spectrometer



Highest Ever Resolution for commercial IMS instruments, thanks to the novel innovative Inverse Technique.



” Features

Touch screen control panel for pulse generator High voltage, Temperature, Gases
Highest resolution (Separation of isomers and even ^{35}Cl and ^{37}Cl) and isomers
Modified injection port for easy sampling
Dopant included for negative and positive mode
Automated polarity switching
Novel negative ion source in air
Data processing Software
High signal to noise ratio
Easy sampling