

# ION MOBILITY SPECTROMETER



**Alternative to HPLC & GC**

*Ideal for Chemical Analysis & Research*

*High Resolution & Compact IMS-300 Series*



## **Advantages**

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

**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 specially in detection of explosives, drugs and chemicals in all environments.

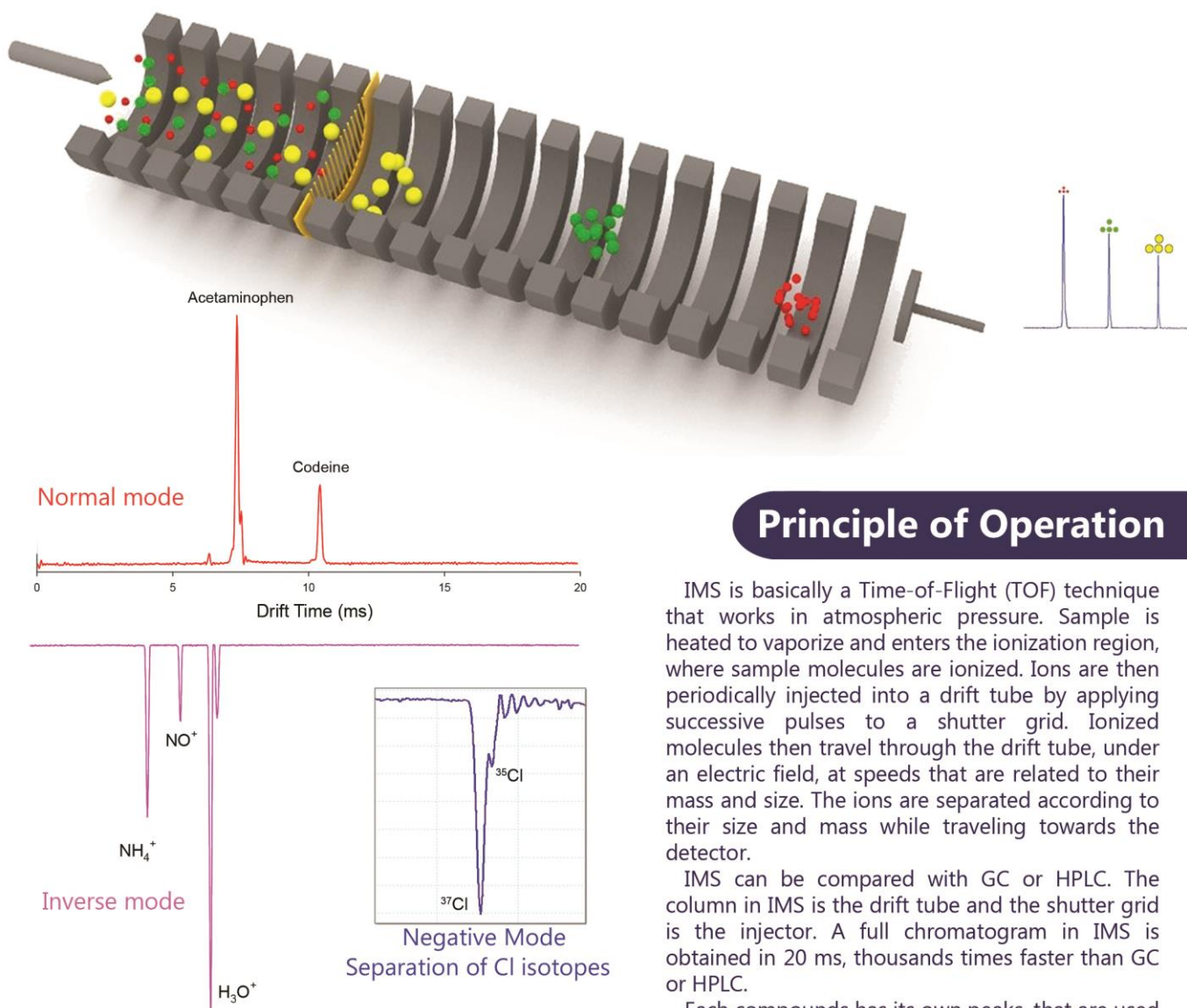
The IMS-300 instrument is an innovative and advanced achievement in linear ion mobility spectrometry. It offers reproducibility, robustness, easy and quick sampling, and exceptional ease of operation for quantitative and qualitative analyses with high selectivity.

The IMS-300 is the world'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 200 °C which helps in better separation and removing memory effect.

- Touch screen control panel
- Novel Corona Discharge ion source
- High resolution; separation of isomers even  $^{35}\text{Cl}$  and  $^{37}\text{Cl}$
- 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 8 spectra per second
- Cell temperature up to 200°C
- New Interference free Corona discharge in  $\text{N}_2$



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

## Principle of Operation

IMS is basically a Time-of-Flight (TOF) technique that works in atmospheric pressure. Sample is heated to vaporize and enters the ionization region, where sample molecules are ionized. Ions are then periodically injected into a drift tube by applying successive pulses to a shutter grid. Ionized molecules then travel through the drift tube, under an electric field, at speeds that are related to their mass and size. The ions are separated according to their size and mass while traveling towards the detector.

IMS can be compared with GC or HPLC. The column in IMS is the drift tube and the shutter grid is the injector. A full chromatogram in IMS is obtained in 20 ms, thousands times faster than GC or HPLC.

Each compounds has its own peaks, that are used for qualitative analysis. The peak intensities are used for quantitative determinations.



## 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 $\mu\text{L}$
Sensitivity	ppb
Dynamic range	ppb-ppm
Analysis time	5 Sec
Resolving power ( $t/w$ )	Up to 90
Resolution 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	25-260 °C
Work temperature range	0-50 °C
Humidity working range	0-50%
Gas Supply	Zero Air, $\text{N}_2$ , He, Ar
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
- Water quality (such as THM)



### •Analytical Chemistry

- Determination of trace amounts 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

### •Security

- Explosive
- Narcotics
- Chemicals

### •Breath Analysis

### •Food Chemistry

- Detection of agricultural pesticides and insecticides
- Detection and determination of additives
- Determination of Antibiotics in meat
- Aflatoxin and Ochratoxin



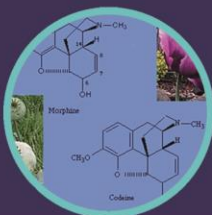
### •Academic & Fundamental Research

- 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



### •Instrumentation

- Characterization of different atmospheric pressure ionization sources

# ION MOBILITY SPECTROMETER

Pharmaceutical Analysis

Food Safety

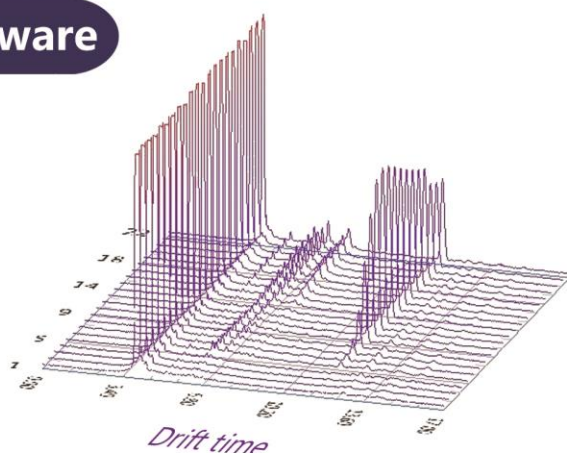
Water Quality

Research & Education

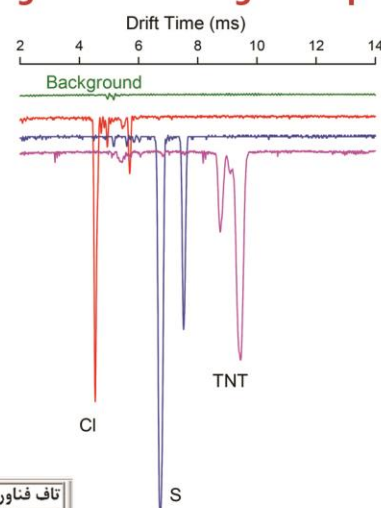
Chemical Industry



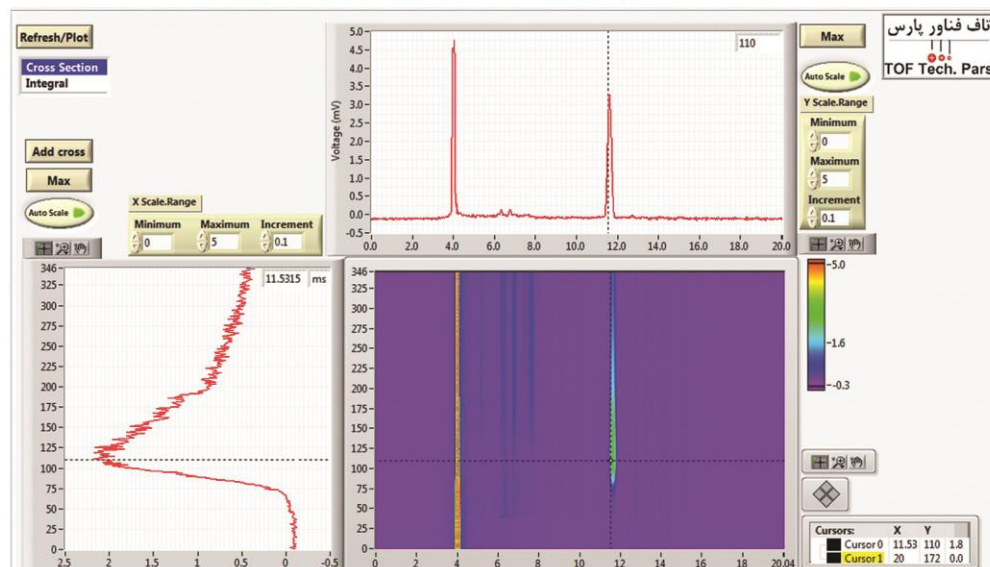
## Software



## 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.

## Contact

TOF Tech. Pars Co.

No. 119, Fanafarini 2, Isfahan Science & Technology Town,  
Isfahan University of Technology Blvd, Isfahan, IRAN  
Tel: +98 31 33932250 & +98 913 0969147 Fax: +98 31 33932249  
Post code: 84156-83155  
tofttech.ir@gmail.com, [www.tofttech.ir](http://www.tofttech.ir)



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تاف فناور پارس  
TOF Tech. Pars

