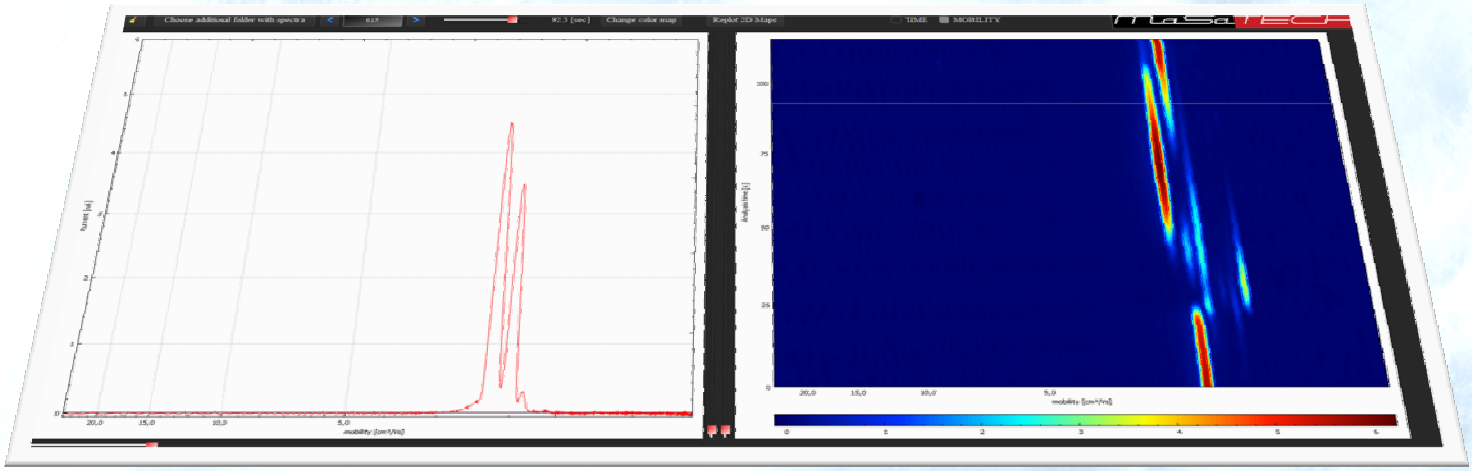
OPTIC-AIMS
for detection or screening analytes



OPTIC with Advanced Ion Mobility Spectrometry

What is the OPTIC-AIMS System?

The OPTIC-AIMS system is an analyzer which consists out of 2 elements.
The first element is the OPTIC inlet, which is the most versatile inlet system, mainly used with gas chromatography.
Which can perform many different type of sample introductions. For example: Hot and Cold injections, Split and Splitless, Desorption and Pyrolysis, Small and Large Volume.
The second element is the AIMS. The AIMS stands for Advanced Ion Mobility Spectrometer. This is the most advanced and sensitive Ion Mobility detector there is.
The detector can measure down to PPT levels.

Advantages

High Sensitivity
When speaking about High Sensitivity, it is dependent on the compound measured, Like for Ochratoxin A, this is 0.003 ng and for pentane 150 ppb

Real time response
When the analyte is passed into the IMS, it takes microseconds before it's measured. The measured signal is seen on the PC in real time

High Resolving power
The resolving power is 90 FWHM, which makes it an instrument with the highest resolution in the field.

Non-radioactive plasma ionization source
The common problem of the adaptation of the IMS systems in the field was in the past that they have a radioactive source for the ionization. This possess problems for the disposal and servicing of these units. With the introduction of the corona discharge ionization principle, this argument can stay in the past.

Simple Calibration
Through the software, we can easily make a calibration curve and we can use when we want to do quantitative analyses.

Atmospheric pressure
One of the great things about an Ion mobility spectrometer is, it can work on atmospheric pressure, no need for a vacuum pump. But it can be used, to get even more sensitivity.

Uses only conditioned Air or Nitrogen
In most detection methods when sensitivity is needed, you need a gas or liquid which doesn't interact with the ionization of the sample, but with Ion Mobility spectrometry the requirement for inert gas is not there, because Air and Nitrogen play a part in the ionization principle.

Only Electricity needed to run the system (No Helium or other rare inert gasses are required)
Because of the Ionization principle, you only need conditioned air. We have a solution which consist out of a zero air generator and a drying product which condition the air in such a way, it can be used for analytical analysis.

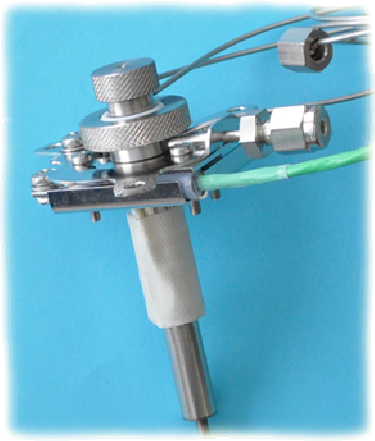
Low solvent amount required (Where you need liters for running an HPLC, with hazardous solvents)
When using the Ion Mobility spectrometer with an OPTIC, the need for large amounts of solvents is not there. You need the solvents to do the clean-up of your sample and the cleaned up sample is also introduced with this solvent into the OPTC-AIMS. This is about 10 µl (up to 50 µl)per injected sample.
A high performance liquid chromatography instrument needs a liquid flow of 1 µl/minute, this will give a year total of 525 Liters of solvent per year, which needs to be cleaned or wasted.

Green Technology
The system only needs electricity, which can be generated in a green manner (wind, solar, etc)

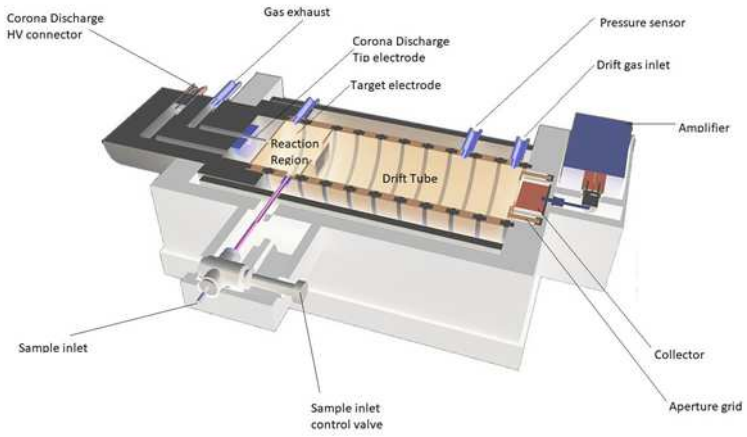
Upscaling to have a higher sensitivity is really easy
For upscaling, you only need to inject more sample into the analyzer with minimum optimalisation

Analysis in seconds rather than minutes (average HPLC run takes 30 minutes, OPTIC-AIMS 60 – 120 seconds)
Yes, seconds or a couple of minutes. Only this brings very high sample throughput

Specifications



OPTIC Inlet



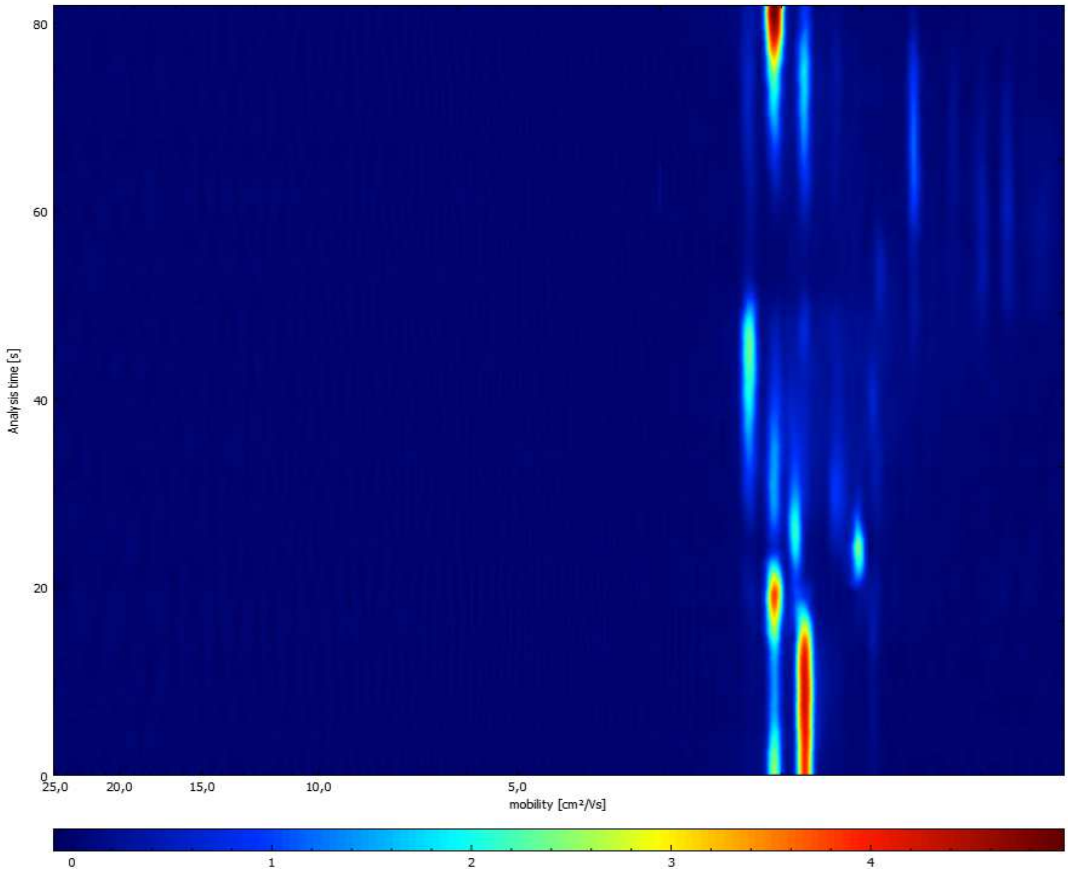
AIMS

Model	OPTIC-AIMS
OPTIC	
Temperature Range	0-700 ℃ (0.1 ℃ step size)
Temperature Ramp Rate	0.1 to 60.0 ℃/sec (0.1 ℃/sec step size)
Flow Range	0.1 to 500.0 ml/min (0.1 ml/min step size)
Pressure Range	7 to 700 kPa (1 kPa step size)
IAMS	
Resolving power	90 FWHM
Sensitivity	ppt-ppb
Drift tube Temperature	20 to 200℃ (0.1 ℃ step size)
Drift tube gas flow	500 – 1300 ml/min (0.1 ml/min step size)
Ionization source	Corona Discharge
Drift field intensity	200-560 V/cm
Response time	<1 sec
Carrier gas and Drift gas type	Conditioned Air or Nitrogen
Supplied pressure range	0.1 ～ 0.6 MPa
Size	Controller: 600 (W) X 300 (D) X 250 (H) mm (excluding protrusions)
Weight	Approx. 10 Kg
Temp./Humidity Range	5 ～ 35 ℃ / 10 ～ 85 %, no condensing water
Power	200 to 240V AC, 50/60 Hz/ Max.750VA

Example Applications

Cleaning validation for production of medication (several applications will follow)

OPTIC-AIMS for fast detection of Ochratoxin A in fresh Paprika
Analysing cleanup Paprika matrix with spiked Ochratoxin A (Ochratoxin went through cleanup)



10 µl injection with 2 µg/kg Ochratoxin A, cleanup with InertSEP-SAX. (5010-61644, GL Sciences)

Fast Quantification of Whisky lactone in Oak wood by AIMS.