

SEADM

MOBILITY FRONT END

A Differential Mobility Analyzer Plug-In for
Mass Spectrometers



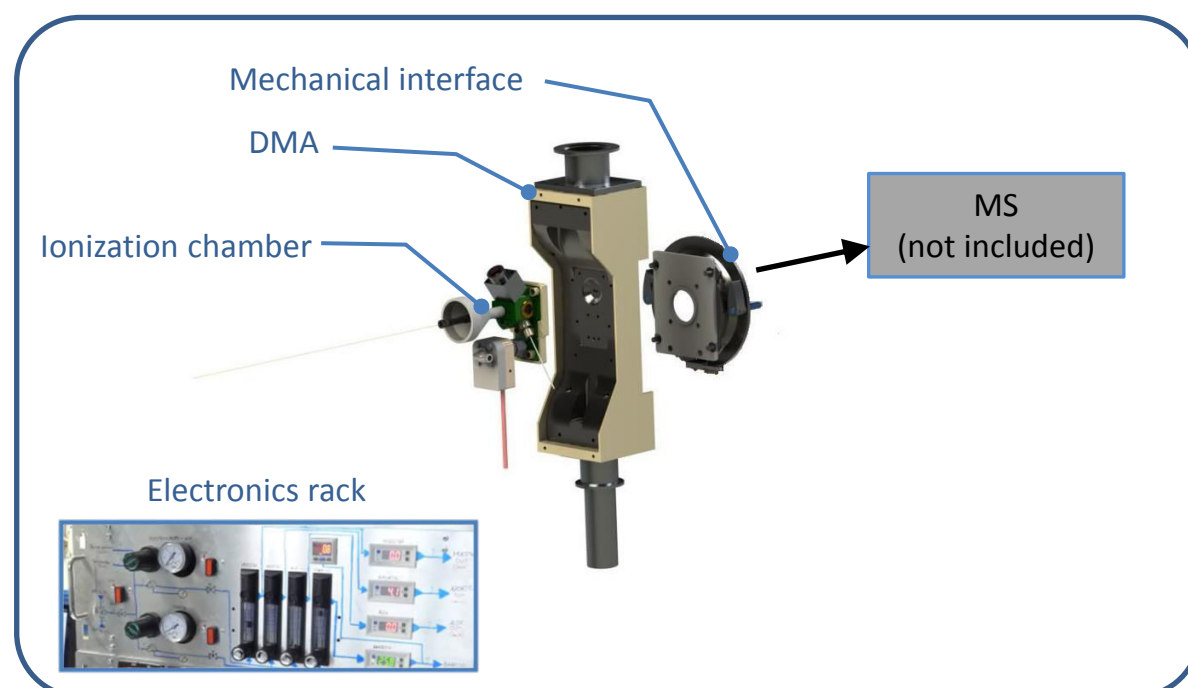
**Superior Sensitivity and Selectivity
for Real-Time Mass Spectrometry
at Affordable Costs**

Mobility Front End

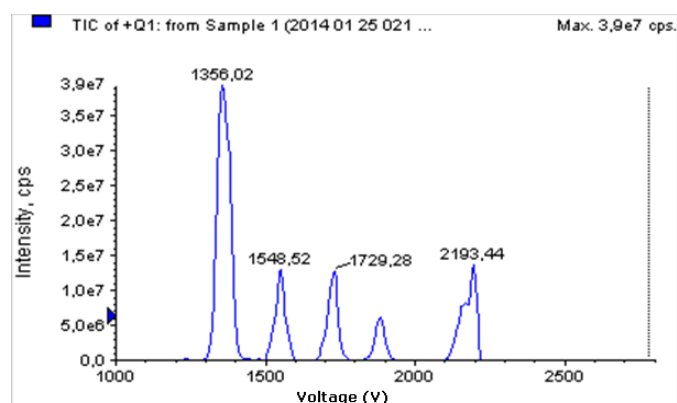
A mobility plug-in for mass spectrometers which enables a high speed, pre-filtration stage for liquid and gas samples.

The **Mobility Front End** has been designed for users of MS in the search of greatest levels of selectivity*, especially in applications where a measure of the analyte diameter is required.

The equipment is built from (i) an ionization chamber; (ii) the SEADM's Differential Mobility Analyzer, DMA, which enables the separation of components in complex samples through electrical mobility; (iii) the DMA-MS interface, which enables Front-End mounting and dismounting without losing vacuum and (iv) an electronics rack devoted to voltage, temperature and flow control. The sole interfaces required are nitrogen and power supplies.



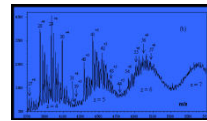
Main elements of the Mobility Front End



Spectra of various tetra-alkyl-ammonium positive ions clearly separated by mobility.

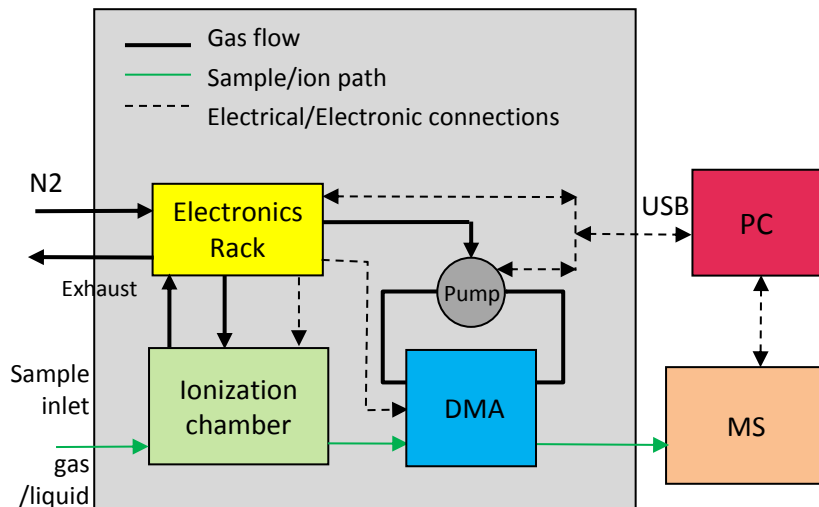
The **DMA Front End** is easy to operate. No specific chemical preparation of samples is required. Besides, the **Front End** can be easily assembled and disassembled (plug in/out) from your mass spectrometer in only 5 minutes (the MS can be reused at any time as an stand-alone device). Once plugged-in, it operates in a fully-integrated approach through easy-to-use software. (For ABSciex MS, operation will proceed through the software already built-in in your MS)

*Currently, interfaces –including hardware and software- are available for Bruker Impact HD, Shimadzu LCMS 2010, and many of ABSciex range mass spectrometers (please see specifications). If your favorite MS is not in this list, we will carry out the integration study for you.



Architecture

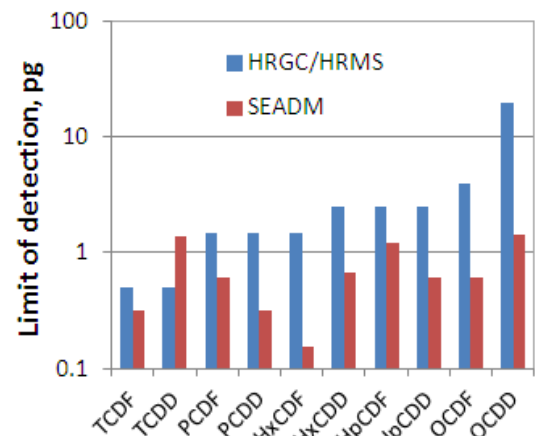
The Front End has been developed as a compact unit and equipped with the latest proprietary ionization and mobility technologies



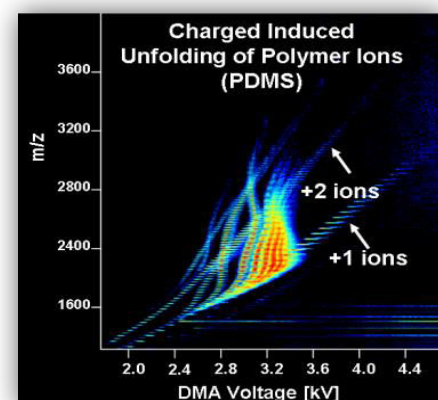
Ionization chamber	Low Flow SESI (LFSESI), which can be used as a vapor charger for gas samples, or operated as a nano-ESI for liquid samples
Differential mobility analyzer (DMA)	Planar, supercritical type.
Mass spectrometer	A range of SoTA equipments are available (see specification sheet for details).
Electronics and controls	The electronics rack is controlled by the operator's software. It fixes the HVDC references for the DMA and the ionization chamber. It accurately controls the temperature of the key elements (DMA recirculation circuit, ionization chamber), and provides the necessary flows at a controlled pressure for stable operation.

Advantages

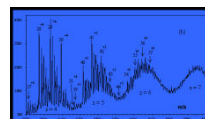
- **High resolution** (up to 50)
- Lowest limits of detection available (1ppq for TNT)
- Compelling advantages for the analysis of **polymers** (specially at moderate and high molecular masses) and **bio-molecules** (true linear mobility delivered).
- Reduced sampling time due to higher sensitivity.
- Accomplishment of measurements in real time (seconds to minutes depending on the application).
- Complex samples can be thoroughly analyzed (including discovery mode) through a **2D mass-mobility** analysis.
- **High versatility:** the Front End **can be disassembled at any time** and leave the MS as a stand alone.
- **Plug in/out to/from** your MS in 5 minutes.
- Robust, **highly engineered construction**, featuring mirror polishing, micro-slots and full thermal control for the maximum standard of reliability.
- Full **support and maintenance** from SEADM.
- And still at a **fraction of the cost** of commercial IMS-MS systems!!



Detection limit in pg for selected dioxins and furans obtained with SEADM's equipment (using APPI ionization method and a AB Sciex 3200 QTrap MS) compared with the High resolution gas chromatography / High resolution mass spectrometry (HRGC/HRMS) method applied by The National Dioxin Air Monitoring Network (NDAMN, U.S.A.) in accordance to EPA Method 1613.



Example of mobility-mass 2D analysis in a polymer application



Upgrade your MS to tackle more and more challenging applications!

INDUSTRY



- Polymer analysis
- Food security and quality
- Bio-based industries

MEDICINE AND BIOLOGY



- Metabolomics
- Bio-molecules analysis
- Serious illnesses diagnosis
- Pharmacokinetics

ENVIRONMENT



- Air/soil pollution
- Geological studies

SECURITY



- Drugs / explosives detection
- Person identification (border checks)
- Industrial security (gas leakages)

Developed in collaboration with
Juan Fernandez de la Mora at Yale University

Specifications

Ionization probability	Up to 1%
DMA	Resolution: 50 (Peak Voltage/FWHM) Transmission: 50% Dynamic range: 20,000
MS interfaces available	Brucker Impact HD, ABSciex Qtrap 3200, 4500 & 5500, ABSciex Triple Quad 5000 & 5500, ABSciex TOF Qstar, Shimadzu LCMS 2010. If your favourite MS is not on the list we will carry out the integration study for you.
Power	3-phase, 16 A (per line)
Dimensions (mm)	1400 x 800 x 1050
Weight (Kg)	150 Kg

SEADM, your strategic partner

We are prepared to actively cooperate with you in your research. Just contact us at:

SEADM, Sociedad Europea de Analisis Diferencial de Movilidad
Parque Tecnológico de Boecillo. Parcela 205. 47151 Valladolid, Spain.
M. +34 687 503 052 / T. +34 983 130 400 / info@seadm.com / www.seadm.com