

High Separation Power Meets Sensitive Detection

Capillary Electrophoresis/ Mass Spectrometry (CE/MS)

Capillary Electrophoresis Mass Spectrometry (CE/MS) combines the high separation power of CE with the sensitive detection and high information content delivered by MS. CE/MS primarily utilizes Electrospray Ionization (ESI), which allows charged or polar compounds separated under low-flow conditions (nL/min)

to be efficiently transferred into the gas phase for MS analysis. CE delivers narrow peaks, necessitating rapid full-spectrum MS scanning. Time-of-flight MS (TOF-MS) is ideal in this application, providing sufficient data points per peak and a full mass range, while quadrupole-TOF (QTOF) offers mass accuracy with

MS/MS capability for structure elucidation. CE/MS and HPLC/MS represent orthogonal and complementary methods; CE separation is based on ion mobility in an electrical field, and is therefore ideal for separating charged compounds that are often difficult to separate by HPLC.

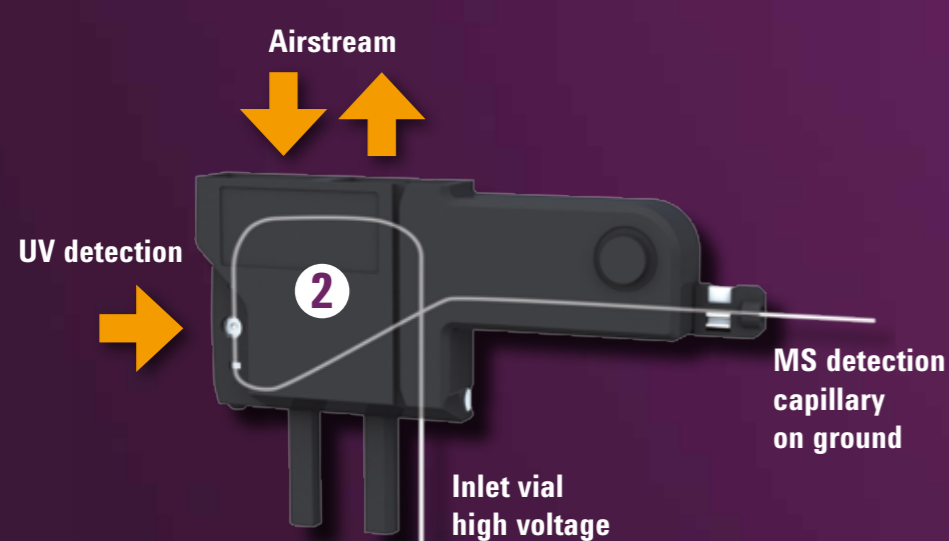
1 Sample

Complex mixtures of charged molecules, ranging from inorganic ions to native proteins. CE offers the smallest injection volumes (nL range) with little sample preparation.



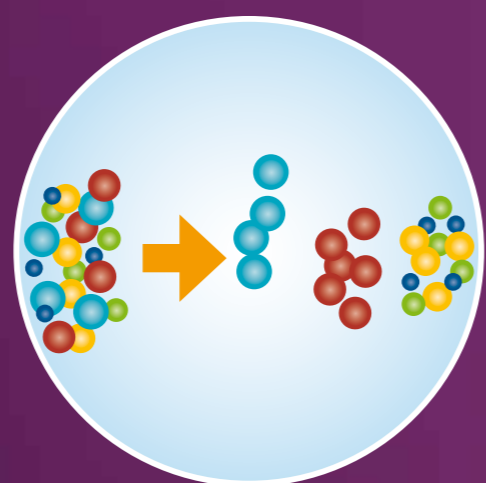
2 CE/MS cassette

First part of the CE-MS interface; houses separation capillary and controls temperature, providing a UV-detection window and an exit to external detectors.



3 CE capillary

Separation based on mobility in an electrical field takes place in 50-100 cm (usually fused silica) capillaries filled with aqueous buffers.



4 CE-ESI/MS-sprayer

Triple-tube interface combines CE capillary with sheath liquid for stable flow rates and electrical contact, and isolate separation chemistry from MS ionization. Nebulization gas facilitates ESI spray.



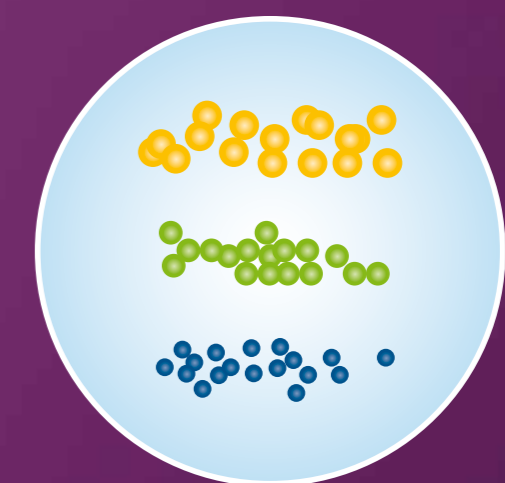
5 Agilent iFunnel MS

Combines Agilent Jet Stream (precision sprayer to desolvate and concentrate ions), hexabore capillary (array of capillaries for sampling more ions) and dual-stage ion funnel (to efficiently remove gas while focusing ions).



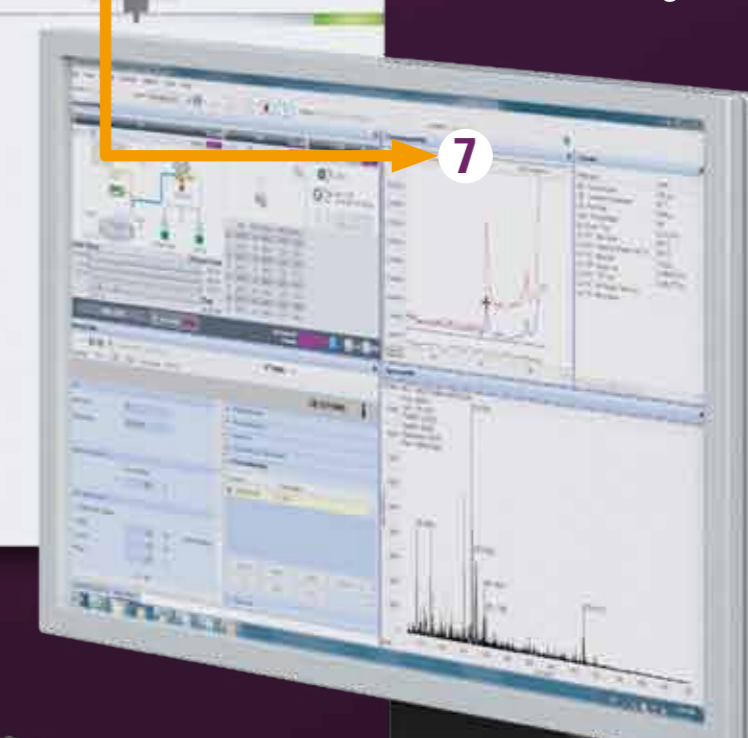
6 TOF-MS analysis

Flight tube with vacuum-insulated shell eliminates thermal mass drift due to temperature changes, for excellent mass accuracy. Reflectron and long flight tube improve mass resolution.



7 Data analysis

Integrated software packages control the CE/MS system and interpret and filter the massive amount of data created during analysis.



Agilent 7100 CE System



Agilent 6540 Accurate-Mass Q-TOF

As the industry leader in CE/MS technology, Agilent is the only vendor providing fully integrated CE/MS solutions. Explore our full line at www.agilent.com/chem/cems.