Thermo Scientific Dionex Corona Veo Charged Aerosol Detector

See clearly

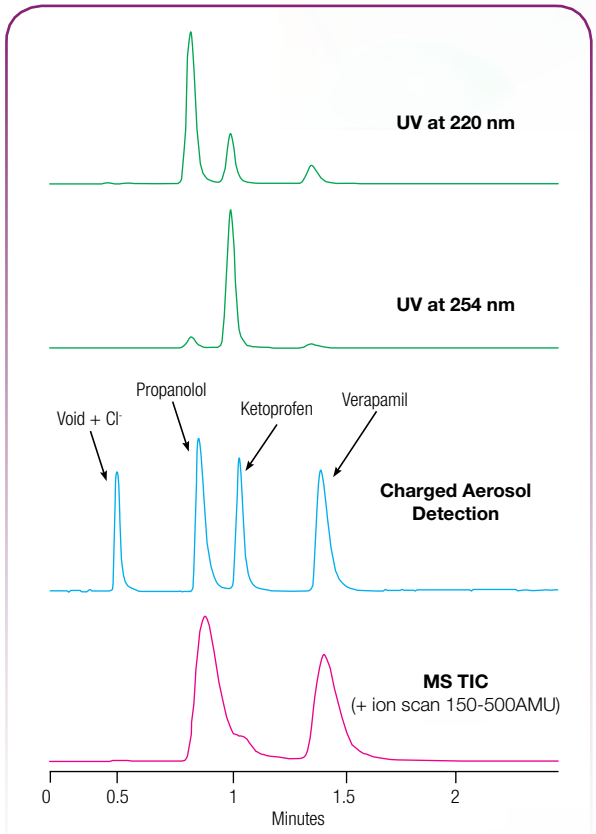
hidden peaks revealed

Thermo SCIENTIFIC

Hidden peaks
revealed

The analyte detection challenge

No single liquid chromatography (LC) detector delivers ideal results. Often, one analyte responds more strongly than another, or may not respond at all. What is most desired is the ability to accurately measure a wide range of analytes with consistent response. Charged aerosol detection (CAD) is a revolutionary technology that will change the way you view every sample. This technique provides consistent analyte response independent of chemical structure and gives greater sensitivity over a wider dynamic range.



Comparison of Charged Aerosol Detection to UV and MS

The area percent response is accurate and consistent across a wide spectrum of molecules from ions to proteins.

With the flexibility and performance for analytical R&D, and the simplicity and reproducibility needed for manufacturing QC/QA, charged aerosol detection can be used for the analysis of pharmaceuticals (large and small molecule), biomolecules, foods and beverages, specialty chemicals, and polymers.

A charged aerosol detector opens new opportunities for discovery and routine analysis – the ideal detector for every lab.

Understanding
charged aerosol detection

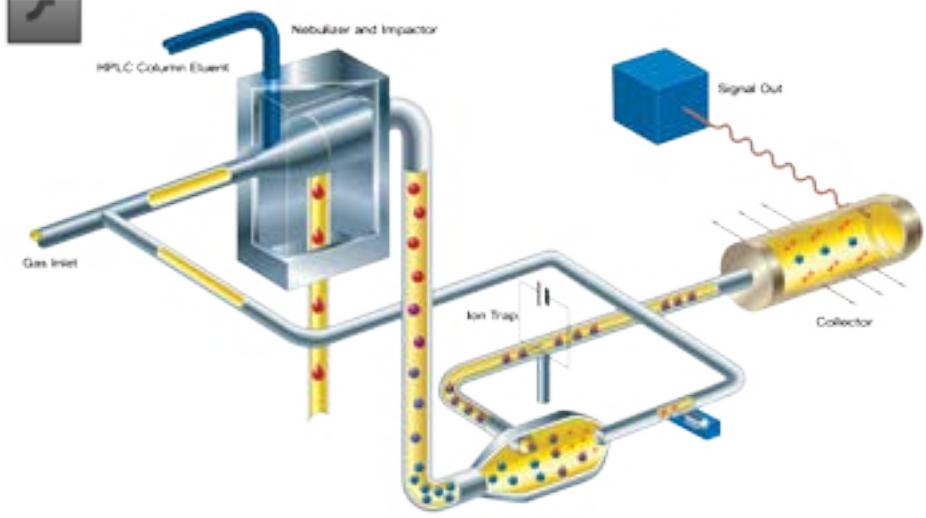
Charged aerosol detection measures signals that are in direct proportion to the amount of analytes present in a sample. These signals are derived from the measurement of an electrical charge originating from ionized nitrogen that is diffusionally transferred to the surface of the analyte particle. This technology quantifies the analyte particles that attract this charge, including those that cannot ionize or do not have chromophores. The result is accurate and consistent response, regardless of analyte structure. With charged aerosol detection, you can measure any nonvolatile and most semivolatile analytes.

Three Simple Steps

1. Charged aerosol detection begins by nebulizing the eluent into droplets, which are subsequently dried into particles. The particle size increases with the amount of analyte.

2. A stream of charged gas collides with the analyte particles. The charge is then transferred to the particles – the larger the particles, the greater the charge.

3. The particles are transferred to a collector where the charge is measured by a highly sensitive electrometer. This generates a signal in direct proportion to the quantity of analyte present.



Video

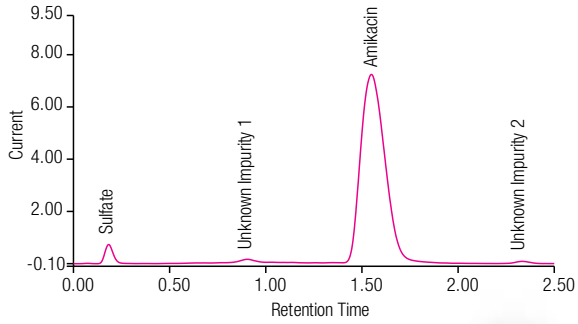
An evolution for
charged aerosol detection

The Thermo Scientific™ Dionex™ Corona™ Veo™ detector improves the capabilities and extends the advantages of charged aerosol detection. The Corona Veo detector combines all the benefits of CAD for the high speed and increased resolution of UHPLC, along with improved low flow performance for micro LC. This detector widens the envelope of LC conditions for mobile phase composition to take advantage of ever advancing column technologies.

- Simple, intuitive operation
- Enhanced linear dynamic range
- Sub-nanogram sensitivity
- Expanded flow rate range optimized from 0.01 to 2.0 mL/min

The Corona Veo detector incorporates an advanced concentric nebulizer design that facilitates the use of an expanded range of flows and eluents:

- Easy-to-access design for maximized uptime
- Micro LC flow optimized
- Designed for simple capillary connections



The UHPLC analysis of amikacin impurities using micro LC flow rate of 50uL/min

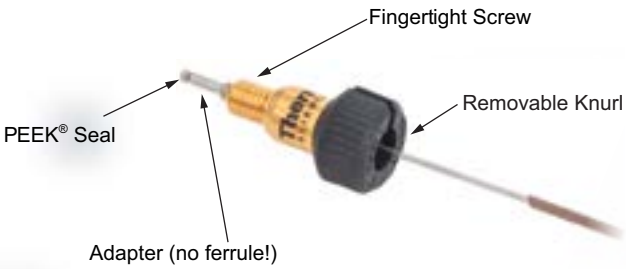
The FocusJet™ nebulizer

Easy integration
with any LC System

The Corona Veo detector is designed to integrate into any liquid chromatographic system, HPLC or UHPLC, from any manufacturer. The stackable design and rugged construction allow positioning anywhere within a system. Software drivers are available for the Thermo Scientific™ Dionex™ Chromeleon™ Chromatography Data System (CDS), as well as ChemStation®, EZChrom®, OpenLab®, and Empower® 2 and 3 software.

The UltiMate Solution

Combine the Corona Veo detector with the Thermo Scientific™ Dionex™ UltiMate™ 3000 LC system to provide an ideal solution for approximation of relative analyte concentrations, even when standards are not available. Widen the scope of your detection possibilities using orthogonal and complementary solutions by pairing with UV or mass spectrometry (MS). This approach maximizes the amount of compound data obtained from a single analytical run.



New bioinert 1/32" capillary Thermo Scientific™ Dionex™ Viper™ Fingertight Fitting System provides virtually zero-dead-volume connections for any column, at any flow rate up to 1250 bar. The Viper design ensures easy connections of all fluidics for any LC system connected to the Corona Veo charged aerosol detector.

UHPLC+ focused

Flexibility
for many analytes

Flexibility for many analytes

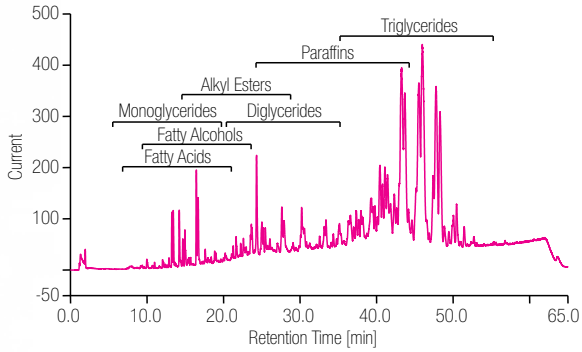
Charged aerosol detection is an ideal primary LC detection technology that delivers predictable results without intricate optimization. There are a minimum of parameters to optimize enabling you to quickly begin generating data. This detector can be used in a range of applications from basic research to quality control.

Lipids

Lipids, including fats and oils, contain molecules with a wide variety of structural properties and are found throughout many products and industries. These are traditionally difficult to characterize with conventional detection technologies. Charged aerosol detection is a powerful tool for lipid analysis due to its structure-independent response.

Pharmaceutical Product Characterization

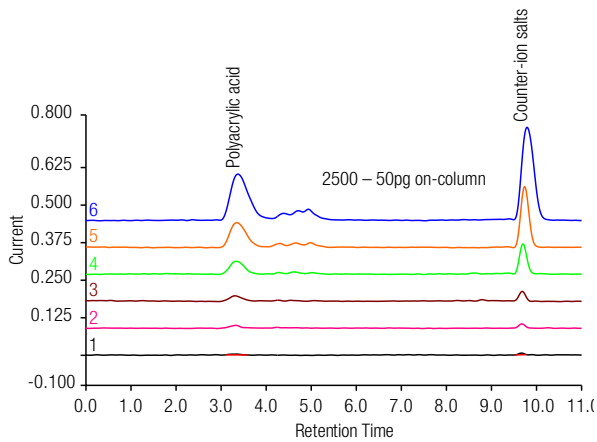
Using HPLC-HILIC methodologies, counterions along with their parent compound can be analyzed simultaneously with the Corona Veo detector. This approach helps speed selection of final product formulations.



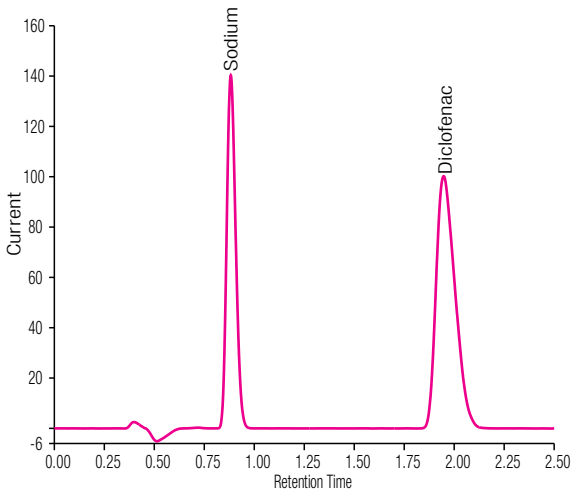
Universal lipids analysis of algal oils

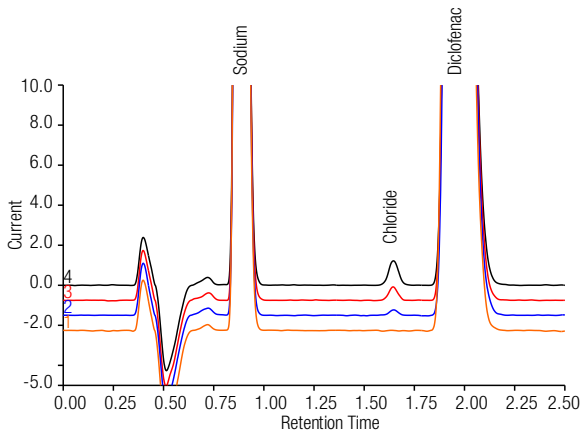
Industrial Water Treatment

Polyacrylic acid, a biodegradable water soluble polymer and environmentally toxic agent, is used as an anti-scaling inhibitor in circulating water systems. The low levels present are difficult to characterize using standard methods. This example shows detection by CAD at low ppb levels.



Polyacrylic Acid in cooling water





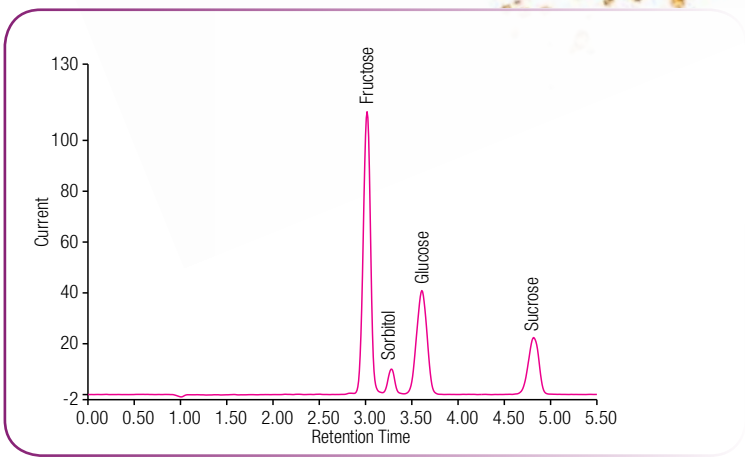
Fast analysis of diclofenac, its counterions, and impurities

Carbohydrates

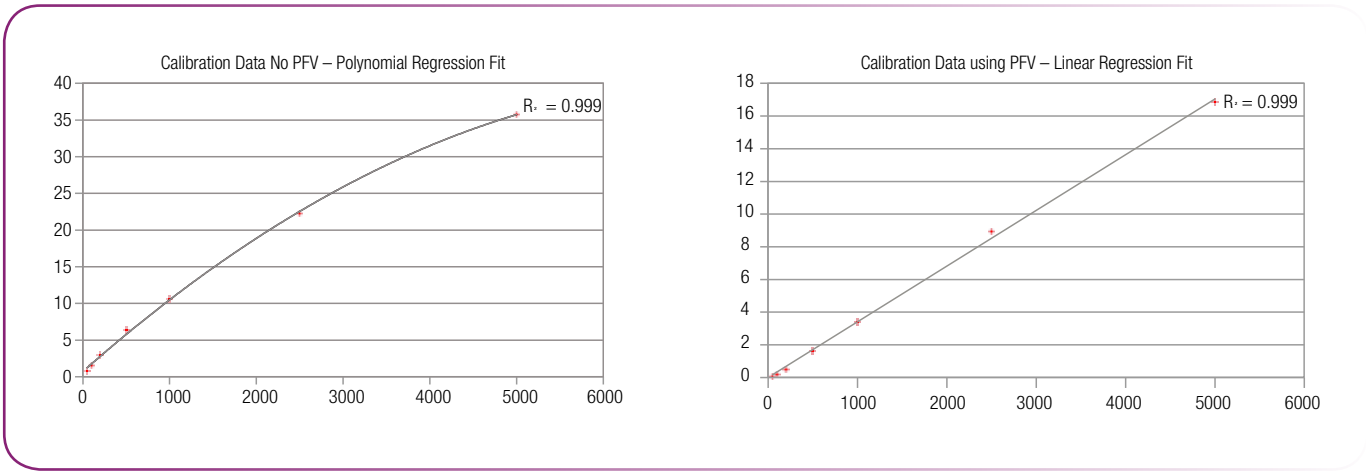
Sugar analysis using HPLC-RI or HPAE-PAD is limited to isocratic methods or requires complicated methodologies using dedicated instrumentation. The Corona Veo detector offers the flexibility to use reversed-phase gradients and HILIC modes of separation on any LC system with dilute-and-shoot simplicity.

Power Function - Enhanced Linearization

The Power Function provides several benefits when using charged aerosol detection. The use of this built-in feature can provide quantitative results from unresolved peaks in a chromatographic analysis, and simplify calibration curves for improved mass balance determinations.



UHPLC characterization of sugars in apple juice



Extended linear dynamic range using the Power Function Value (PFV)

Chromeleon 7.2 CDS

simply intelligent

The Chromeleon Chromatography Data System delivers rich, intelligent functionality with Operational Simplicity™.

- Reduced training effort for your lab staff-one single software package instead of several
- Comprehensive suite of Chromeleon CDS productivity tools from dynamic data linking, instant processing, to SmartPeaks™ detection
- One set of methods, one set of reports, and one central location for your chromatographic data
- Seamless integration and access to the online applications and methods library

Chromeleon 7.2 CDS combines separation (LC/IC/GC) and MS in an enterprise (client-server) environment to streamline your chromatography and quantitation workflows in one application. Everything you need is within easy reach to boost your overall lab productivity.

www.thermoscientific.com/Veo

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