DA 3500 Discrete Analyzer

Automated Chemistry and Ion Analysis

Making Wet Chemistry and Analysis Efficient

O·I·Analytical

A World of Solutions

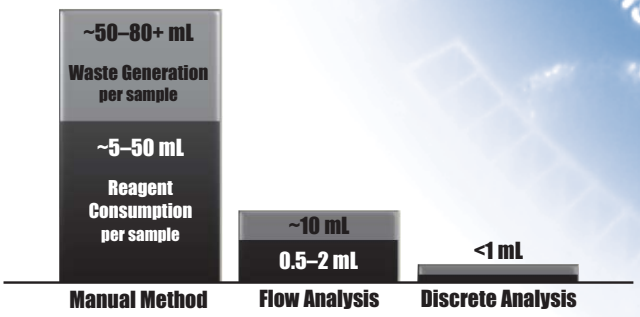
Discrete Analysis – Efficient Microscale Chemistry

Increasingly laboratories are being challenged to operate in a more efficient, environmentally friendly manner. One technique that can help laboratories achieve this goal is discrete analysis.

OI Analytical's DA 3500 Discrete Analyzer is a versatile automated chemistry analyzer for measuring ions in aqueous samples. Using only microliter amounts of sample and reagent, the DA 3500 efficiently performs the same colorimetric reaction chemistries and methods as manual or SFA/FIA techniques for regulatory compliance.

Performing reaction chemistry and analysis in a cuvette at microliter volumes has several advantages. Rapid analysis times are achieved and sample throughput increased. A significant reduction in reagent consumption and chemical waste generated lowers the cost per analysis and overall laboratory operating cost.

Efficiency is defined as producing the desired result, with a minimum of effort, expense, or waste. The DA 3500 Discrete Analyzer meets all these criteria for unsurpassed efficiency in ion analysis.



Reagent Consumption and Waste Generation of Different Ion Analysis Methods

Superior Technology for Discrete Analysis

The DA 3500 contains key technologies for microscale chemistry and analysis that exceed the performance and capabilities of other discrete analysis systems.

Advanced Fluidic System

Accurate volumetric delivery of samples and reagents over a wide range of reaction mixture volumes is a key factor affecting the sensitivity of a discrete analyzer. For this reason, the DA 3500 contains an advanced fluidic system with a dual displacement range pump capable of preparing larger reaction mixtures, with higher sample to reagent ratios than any other discrete analyzer.

Optical Cuvette

The DA 3500 employs a disposable cuvette for reaction chemistry and analysis. This approach eliminates cross-contamination and measurement problems associated with repeated washing and re-use of cuvettes, or flushing the fluid path of a flowcell.

High Performance Diode Array Spectrophotometer

The DA 3500 has a built-in high performance diode array spectrophotometer capable of simultaneously measuring 27 wavelengths from 420–880 nm. This detector supports a wider range of colorimetric analysis and provides greater analytical versatility than other analyzers employing filter wheels with only 8 to 10 fixed wavelengths.

The DA 3500 Discrete Analyzer:

Fluidic System

The fluid delivery system in the DA 3500 delivers samples and reagents with volumetric accuracy over the entire range of reaction mixture volumes to support high sensitivity ion analysis. A proprietary dual displacement range pump aspirates sample and reagent volumes from 2 to 900 µL and dispenses volumes as low as 0.1 µL.

Automatic dilution of off-scale samples, improved reliability, and extended operating life versus syringe-based systems are further advantages of this pump technology.

The instrument's swivel arm mechanism contains precision components for liquid level sensing, aspirating, and preheating samples to reaction temperatures, and mixing reactants within the cuvette. Inert conditions for ion analysis are maintained by the Teflon®-coated probe and Teflon tubing. Liquid level sensing minimizes immersion of the probe and a high efficiency wash station cleans the probe between liquid transfer steps.

Organized Design for Coherent Sample Management

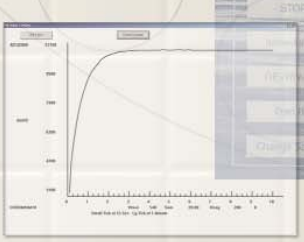
Performing ion analysis by manual or flow methods requires analysts to set up separate batches of samples and test one environmental parameter at a time. The DA 3500 provides a more coherent approach to sample management. Samples are grouped based on holding times and preservatives, and analyzed for multiple parameters to maximize sample throughput and minimize direct labor.

Samples, reagents, standards, and reaction cuvettes are efficiently organized in a compact turntable with numbered positions to simplify setup and operation. A portable sample tray that fits onto the turntable is provided to conveniently handle samples away from the instrument and arrange them into batches for multiparameter analysis.

Flexible Software – Standard M

For rapid integration of the DA 3500 into productive laboratory operation, the Windows®-based software contains preprogrammed methods that automate ion analysis using chemistries and detection technology defined in USEPA approved methods. A streamlined approach to setting up and running methods reduces user inputs to sample identification and run sequence.

The software automatically performs calculations using measurements of different parameters within a sample to output values for regulatory or process monitoring reports.



r: Versatility and Productivity in Ion Analysis

Disposable Cuvette

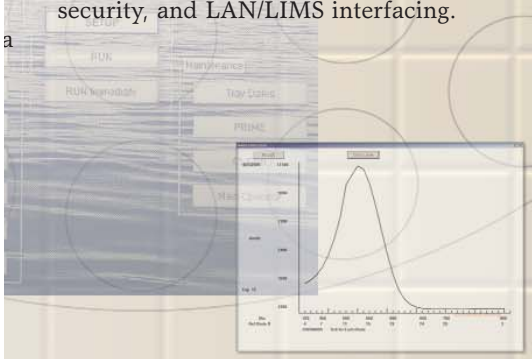
The DA 3500 employs disposable, segmented cuvettes for reaction chemistry and analysis. Each segment contains 14 separate measurement cuvettes. The instrument turntable holds ten segments for a capacity of 140 cuvettes. Programmable heating of the cuvettes in the turntable allows reactions to be conducted at ambient temperature, 37 °C, or 50 °C to reduce analysis times and increase sample throughput.

Using disposable cuvettes eliminates cross-contamination and detection problems associated with repeated washing and reuse of cuvettes, or cleaning the liquid path inside a flowcell. DA 3500 run times are also shorter than other discrete analyzers because no productive analysis time is lost while the instrument washes and tests cuvettes for residual contamination.

d Methods and More

Values such as total organic nitrogen (TKN – NH_3) and Nitrate ((NO_3 + NO_2) – NO_3) can be automatically calculated, without the need to export data into separate spreadsheet programs or perform manual calculations.

Advanced features are also accessible in the software for method development and optimization, operation with 21 CFR 11 compliant data handling and security, and LAN/LIMS interfacing.



Diode Array Spectrophotometer

The DA 3500 was designed with a built-in diode array spectrophotometer to perform all current ion analysis methods and support an expanded range of new methods in the future without instrument limitations.

The diode array detector simultaneously measures 27 wavelengths from 420–880 nm for instantaneous data acquisition. Other discrete analyzers measure fewer wavelengths (8 to 10) and collect multiwavelength data by sequentially advancing a mechanical filter wheel.

Diode array technology is superior for rapid wavelength scanning used for optimization of measurement wavelengths, eliminating analytical interferences in sample matrices, and background correction.

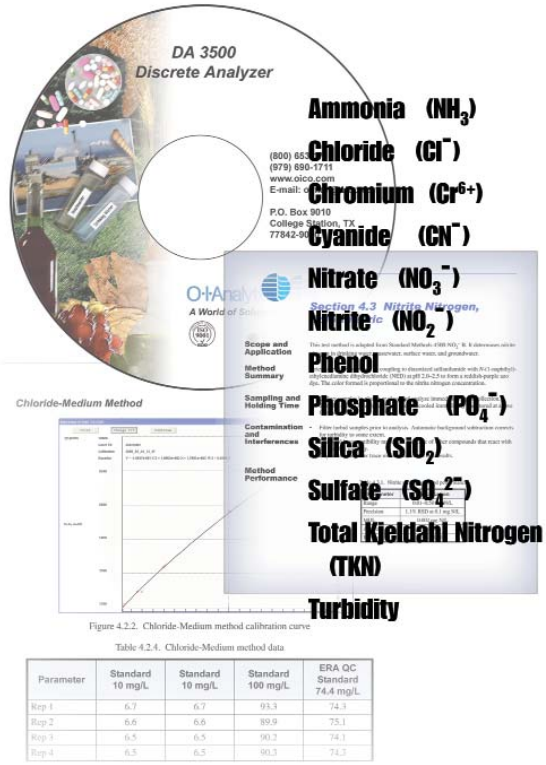
The Source for Ion Analysis Solutions

OI Analytical instruments are performing automated ion analysis procedures in hundreds of laboratories around the world. Since the introduction of our first instruments in 1984, we have expanded the range of solutions offered for ion analysis to include segmented flow (SFA), flow injection (FIA), and discrete analysis techniques. This comprehensive line of instrumentation enables us to apply the most appropriate technique to our clients' ion analysis applications. Others must often suggest less effective, compromised approaches due to their limited instrument capabilities and options.

An extensive range of methods for environmental, industrial, food and beverage, oceanographic, and agricultural samples makes OI Analytical the source for ion analysis solutions.

DA 3500 Discrete Analyzer Ion Analysis Methods

A set of preprogrammed methods is provided with the DA 3500 analyzer. These methods employ the same chemistries and detection technology defined in USEPA approved methods and ASTM, AOAC, DIN, and ISO methods.



OI Analytical is committed to developing new ion analysis methods for our clients' applications. A comprehensive listing of methods and applications is available on our website at www.oico.com. Abstracts of these methods can be downloaded.

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