

Flow Solution[®] IV⁺

Automated Ion Analyzer

Advanced Continuous Flow Analysis



FIA – Flow Injection Analysis

SFA – Segmented Flow Analysis

iSFA – Injection Segmented Flow Analysis

In-line Sample Preparation

Expanding the Possibilities



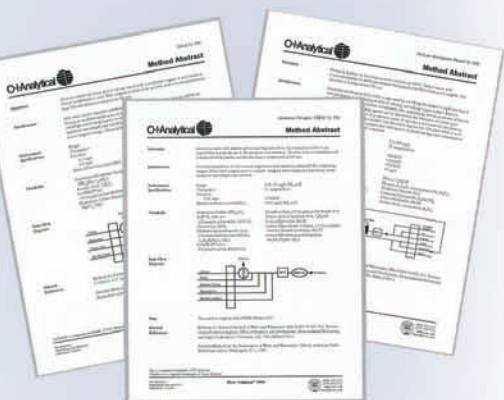
SFA FIA
iSFA
In-line Sample
Preparation

Efficient laboratory workflow and productivity can be hindered when ion analysis tests require manual sample preparation procedures and/or complex, multi-step chemistries. Samples involving such tests often become a bottleneck in laboratory operations.

Manual sample preparation procedures such as distillations and digestions, conducting multiple wet chemistry steps, preparation of calibration standards, dilution of samples, and re-running samples are time-consuming and can negatively impact data quality.

The Flow Solution® IV[®] is an advanced continuous flow analysis system that automates both simple and complex, multi-step ion analysis procedures requiring in-line sample preparation. The FS IV[®] helps laboratories address challenging ion analysis problems and alleviate their testing bottleneck.

The Flow Solution® IV[®] expands the possibilities of ion analysis by combining the performance capabilities of segmented flow analysis (SFA), flow injection analysis (FIA), and injection segmented flow analysis (iSFA) techniques with in-line sample preparation on a single platform. This powerful combination of capabilities enables analysis of many sample types for a diversity of analytes, at concentrations ranging from ppb to percent levels.



CaCO₃
PO₄ Cr(VI)
NO₂ Mg TDN
TKP SO₄ Cl TKN
NO₃ NH₃ Br
TPP CN
N Ca F
SO₃

of Ion Analysis

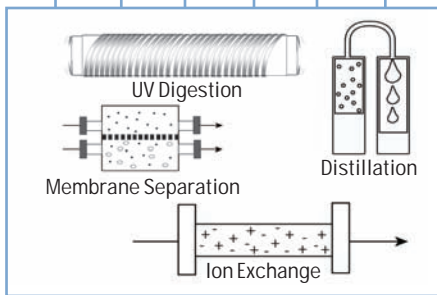


Automated Ion Analysis of Diverse Sample Matrices

- Agriculture Run-off Water
- Boiler Water
- Drinking Water
- Ground Water
- Seawater
- Surface Water
- Ultrapure Water
- Wastewater
- Soil Extracts
- Plant Extracts
- Food & Beverages
- Wine
- Tobacco
- Detergents
- Feed & Fertilizers
- Mining Process & Waste Streams

Seawater
Wastewater
Wine
Soil-Extracts
Plant-Extracts
Wastewater

In-line Sample Preparation



In-line Distillation

Eliminates manual distillation step for total recoverable phenolics and total cyanide analysis

In-line UV Digestion & Heating

Eliminates manual digestion step for total dissolved nitrogen and phosphorus and total cyanide

In-line Gas Diffusion Membrane Separation

Facilitates analyte separation for ammonia, total Kjeldahl nitrogen, available and total cyanide analysis

In-line Dialysis Separation

Facilitates clean-up of samples with turbidity and particulates

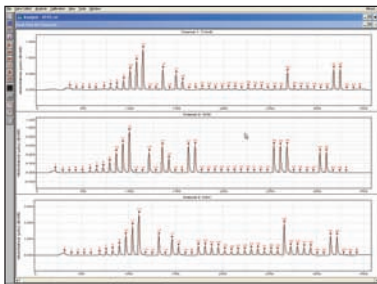
In-line Ion Exchange

Removes selected ions for interference-free analyses

Ammonia
Phenol
Sulfites
Nitrate
Nicotine
Surfactants

Simultaneous Multi-Channel Analysis

- Configurable for simultaneous operation of up to 6 channels
- WinFlow™ operating software runs and displays up to 6 analytical channels simultaneously
- VersaChem Multi-Test Manifold™ supports all typical environmental chemistries and allows simple and rapid tubing changeover for different analyses



The Flow Solution[®] IV⁺ – Advanced Ion Analysis

The FS IV⁺ has the advanced automation capabilities laboratories need to increase productivity. In-line sample preparation and simultaneous multi-channel operation provide high sample throughput and precise ion analysis results. All FS IV⁺ modules are optimized to perform specific functions and for efficient integration with other system modules.

Analytical methods supplied with the FS IV⁺ are an important component of the total solution provided by OI Analytical. Each method contains all information necessary to perform continuous flow analysis for a specific ion and sample matrix in the required concentration range.



Expanded Range[™] Detector

The Expanded Range[™] (ER) photometric detector plays an especially important role in automating ion analysis methods by virtually eliminating off-scale samples. When analyte concentrations are unexpectedly high the ER detector and auto-scaling software automatically adjust to keep analyte peaks on scale. Using the ER detector a single calibration curve can range from low ppb to high ppm concentrations (3 to 4 orders of magnitude).

Plug-in Detector Modules

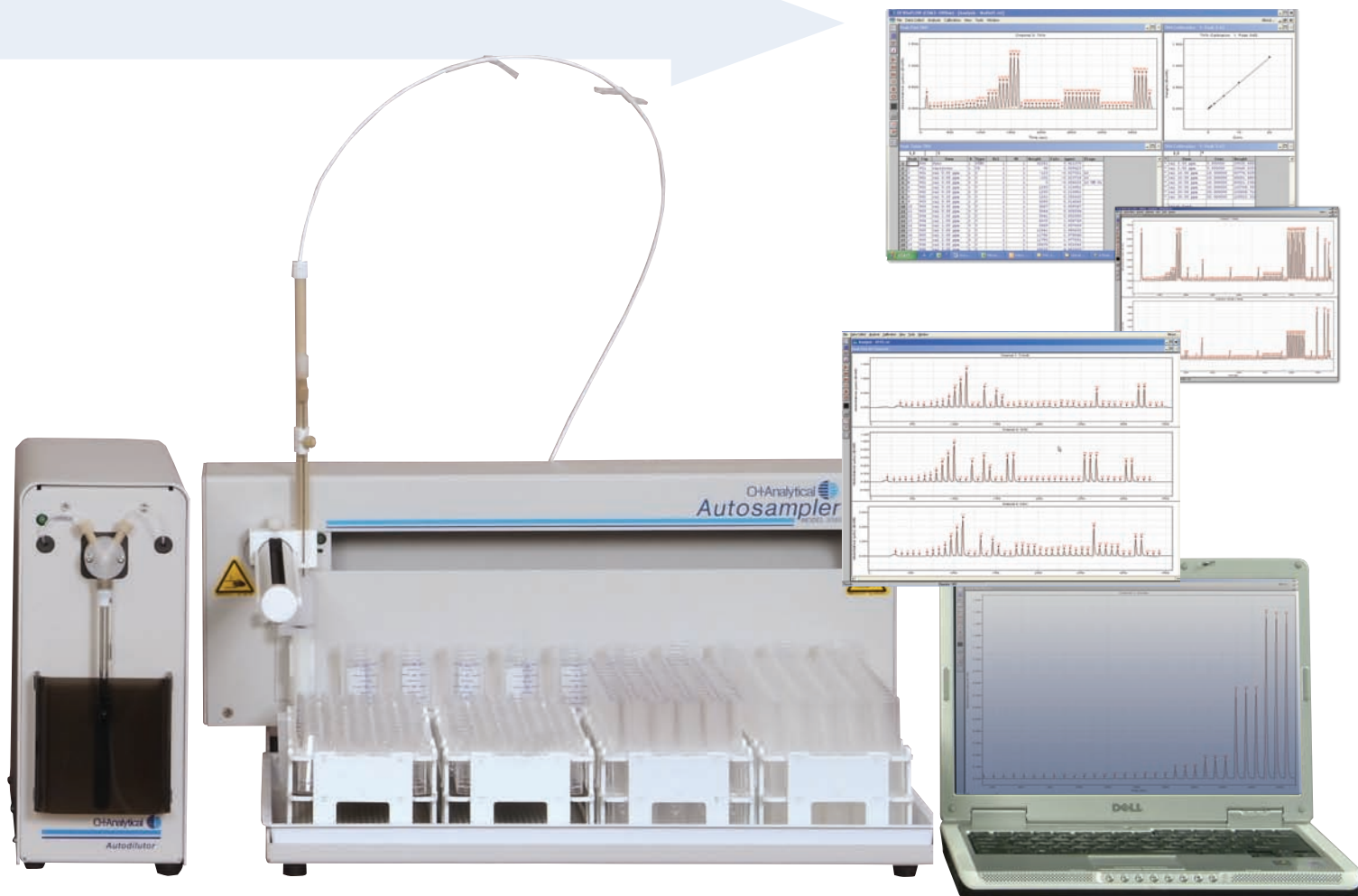
While most FS IV⁺ ion analysis methods involve colorimetric chemistries and photometric detection, tests for some analytes require alternative chemistries and detection technologies. The FS IV⁺ supports these analyses with a selection of plug-in detector modules. Amperometric, Ion Selective Electrode, and Flame Photometric detectors are available along with A/D modules to convert analog detector output to a digital signal.

Sample Prep Modules

In-line sample preparation modules and the chemistry cartridges for specific methods integrate directly into the FS IV⁺. These pre-engineered modules allow automation of complex multi-step ion analysis methods requiring heated reactions, distillation, UV digestion, and sample cleanup by dialysis or ion exchange.

Modular design allows simple addition of new sample preparation steps and easy re-configuration for different chemistries.

ysis Capability



Autodilutor

The Autodilutor module eliminates possible sources of analytical error by automating the preparation of working standards, dilution of samples prior to a run, and post-run dilution of off-scale samples.

The high resolution stepper motor enables users to program dilution ratios from 1:2 to 1:1,000 using WinFlow™ software.

Autosampler

In order to meet different laboratory workload requirements, two X-Y-Z autosamplers are available for the FS IV®. The Model 3090 has positions for 90 samples and 9 bulk standards, while the Model 3360 has positions for 360 samples and 10 bulk standards. Both autosamplers have a wash station and dedicated peristaltic pump to rinse the sampling probe and prevent cross-contamination.

WinFlow™ Software

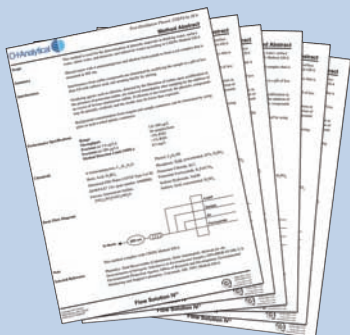
WinFlow™ is a Windows®-based software for programming and operating the FS IV®, data acquisition, report generation, and interfacing to a LIMS system for data exporting and worklist importing. Up to six separate analytical channels can be run and displayed simultaneously. Auto-scaling of peaks allows analyte concentrations varying over 3 to 4 orders of magnitude measured by the ER detector to be displayed on-scale and in real-time.

OI Analytical's Unique Consultative Solutions Approach

OI Analytical's Automated Chemistry Analyzer Group has expertise in all automated chemistry techniques including flow injection, segmented flow, injection segmented flow, and discrete analysis. Through consultation, OI Analytical assesses clients' requirements and provides an unbiased recommendation on the best instrumentation solution to meet their needs.



Analytical methods supplied with the FS IV[®] contain all information necessary to perform continuous flow analysis for a specific ion and sample matrix in the required concentration range.



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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Global Solutions for Automated Ion Analysis



FS3100 Automated Ion Analyzer

The efficient solution for automated ion analysis.



DA 3500 Discrete Analyzer

Improving productivity with concurrent chemistries.



CNSolution™ Cyanide Analyzer

Automated cyanide analysis without distillation makes data available in minutes, not hours.



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