



# FIA Products

Sold, Serviced and Supported in Australia and New Zealand by



Flow Injection Analysis Systems and Software

***FIAlab<sup>®</sup>***

Leaders in Flow Injection Technology

# What is FIA?

Flow injection analysis (FIA) is an automated method of chemical analysis in which a sample is injected into flowing carrier and reagent solutions. Samples and reagents mix in-line before reaching a detector. This sort of automation revolutionizes the way we can perform colorimetric assays. It increases throughput, simplifies the analytical process, and provides reliable, robust analysis.

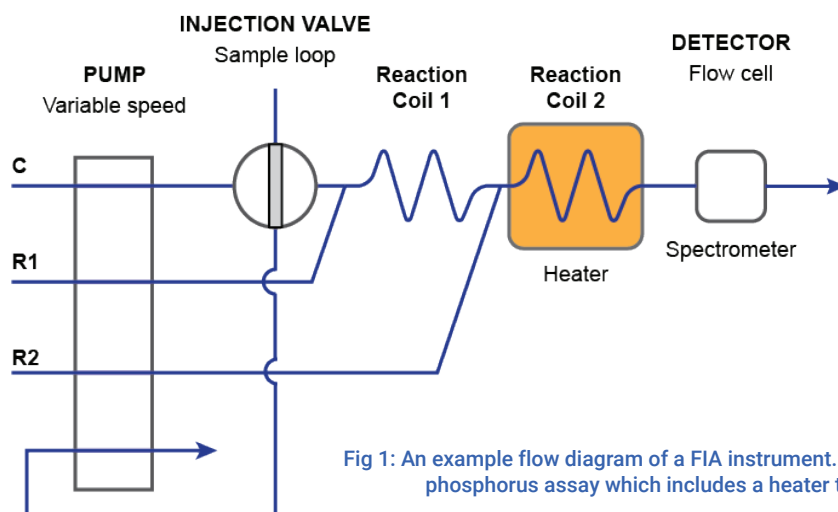
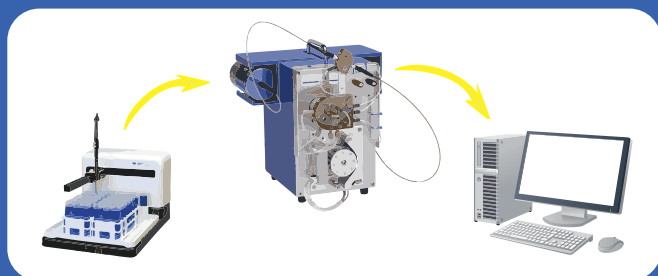


Fig 1: An example flow diagram of a FIA instrument. This diagram was made for our phosphorus assay which includes a heater to increase throughput.

## Where is it used?



The standard instrument setup includes three parts: an autosampler, an analyzer, and a computer. These components are typically provided together as a unit.

However you can use your own autosampler and computer if you wish. Upon instrument purchase, our technicians will install and configure all of these components for you on-site and provide introductory training in order to get you started right away...



Our instruments are utilized in agricultural labs, environmental labs, research facilities and industrial production lines.

### Applications include:

Agriculture, environment, research, biotechnology, pharmaceuticals, commercial production, food & drink.

FIALab has even had an analyzer on every continent!

# Why FIA over other methods?

**FIALab**

Leaders in Flow Injection Technology

## FIA vs Manual

- + Takes less lab tech time
- + Lesser consumable cost
- + More repeatable results

## FIA vs IC

- + 20-30 times faster
- + Ability to analyze high ionic strength matrices
- + Can tolerate particulate matter

## FIA vs SFA

- + Higher throughput
- + No troublesome bubbles required
- + No peak timing to worry about
- + Short startup and shutdown times

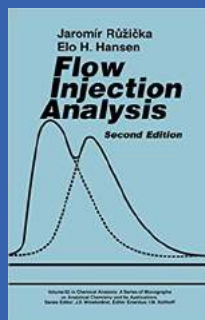
## FIA vs Discrete Analysis

- + Less complicated mechanics

Can perform dialysis and gas diffusion to exclude matrix interference

Superior precision and accuracy for multi-reagent assays

# Why FIALab Instruments?



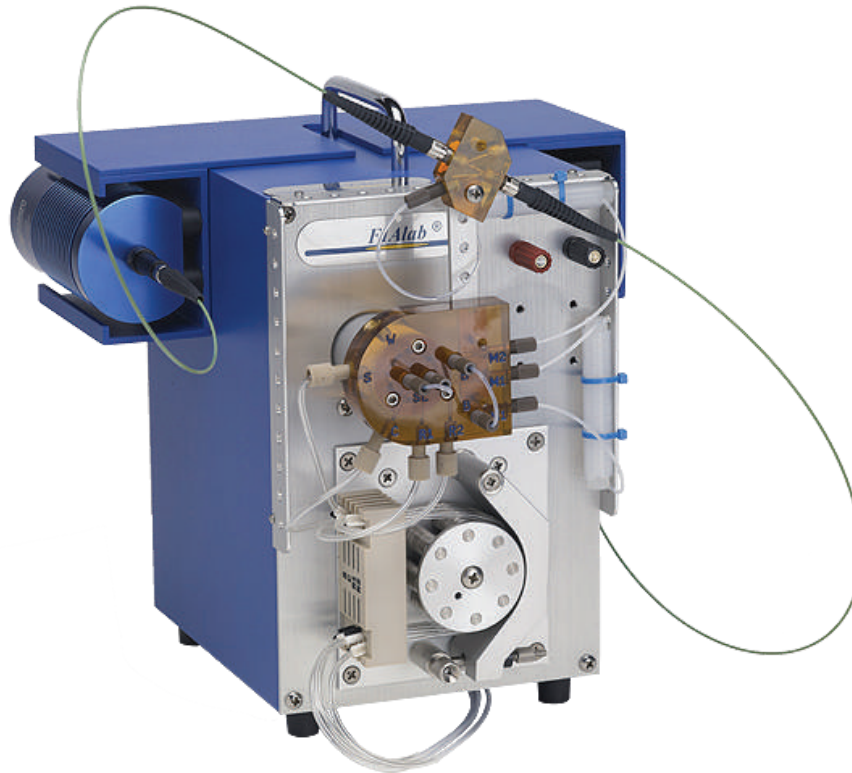
## Experience

Dr. Jaromir Ruzicka, the inventor of FIA, started FIALab Instruments over 30 years ago. Since then, FIALab has remained the leader in flow injection technology. We continue to push the limits of the methodology, apply it across many industries, and streamline it for the everyday user.

## Technical Service and Support

Together, FIALab and SDR Scientific are committed to providing complete solutions for your modern analytical needs. This has led to the development of user-friendly instrumentation, intuitive software and unsurpassed service and support. The services we offer include installation and introductory training, phone, email, and remote desktop support, annual preventative maintenance, and on-site service.





## FIAlyzer 1000

The FIAlyzer-1000 is a single-channel analyzer that offers full automation of flow injection analysis. The complete system includes the pump, valve, light source, spectrometer, and other components needed for measuring liquid samples by flow injection analysis. The system is controlled by FIASoft, our state-of-the-art software, which is also compatible with most peripheral devices, like autosamplers. This instrument's robust design, low cost, and flexibility make it the best choice for agricultural and environmental laboratories performing routine assays.

### Typical Setup

1. Analyzer
2. Autosampler
3. Computer

### Highlights

- 1. Throughput**  
FIA was built for speed. Our systems can handle up to 240 samples per hour without sacrificing reproducibility or reliability.
- 2. Reliability**  
The FIAlyzer-1000 can run thousands of samples a day without an issue. It does so without sacrificing accuracy or reproducibility. Oftentimes our instruments operate for 10+ years before showing any wear.
- 3. Ease of Care**  
Exposed tubing and flow paths make it easy to change consumable parts and maintain your instrument. Preventative Maintenance (PM) Plans are also available for every instrument.
- 4. Spectrometer Capabilities**  
With a spectrometer, absorption readings can be taken at multiple wavelengths. This allows for broader range of sample concentrations, wavelength selection, and reference scans for noise reduction.

### Applications



Soil Analysis  
Water Analysis  
Plant Tissue  
Nitrate  
Phosphate  
Ammonia  
TKN  
Chloride  
Sulfate  
Iron  
Silica

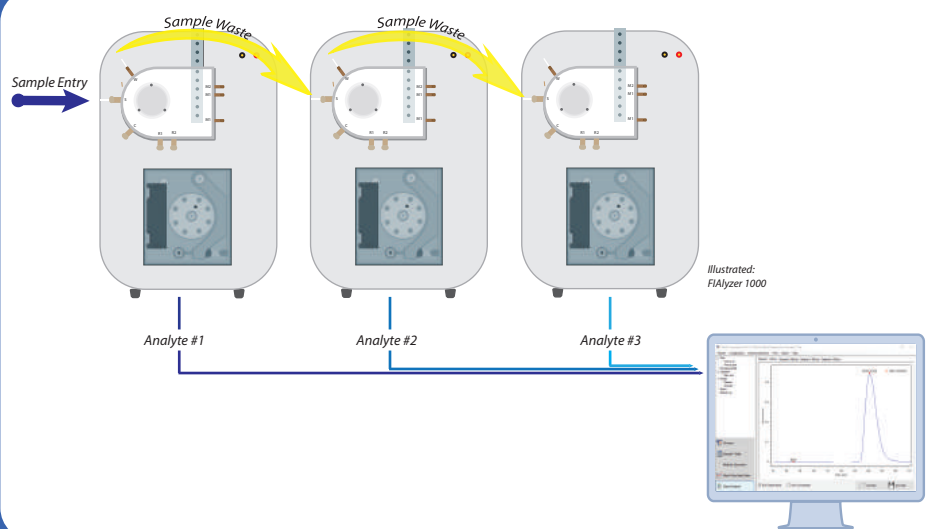
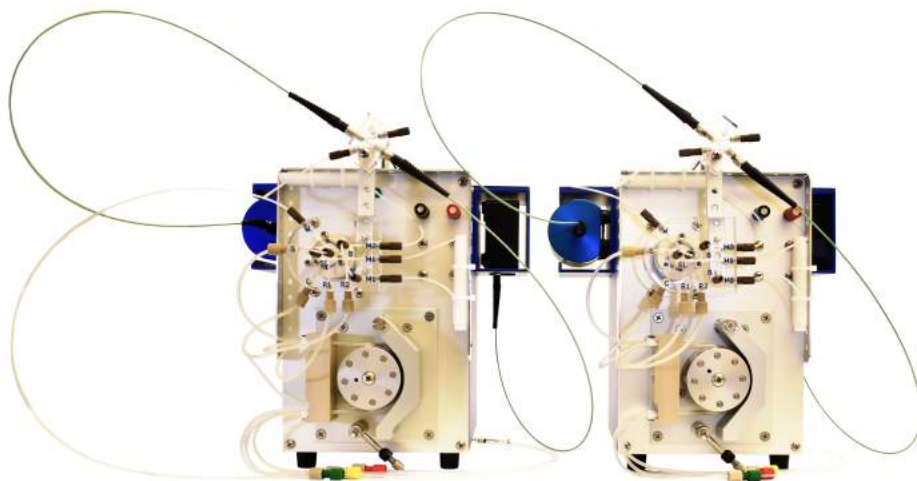
# Multi-Channel

Multi-Channel Analysis combines multiple assays into an efficient, in-line configuration.

Such a setup allows you to test multiple analytes on one sample simultaneously.

This saves bench space, instrument cost, and time. By running multiple methods at once and by preparing only one set of samples for all your methods you multiply your efficiency.

If you need to analyze multiple parameters for a single sample, why not save time and do them all at once?



## Applications



Any combination of analytes with the same extracting solution.

**i.e.**

- Nitrate, Ammonia
- Nitrate, Phosphate
- Nitrate, Ammonia, Nitrite, Phosphate, Chloride, Sulfate

A multi-channel configuration is constructed by daisy-chaining single-channel units, like the FIALyzer 1000. In a flow injection system, sample is continually pumped through an instrument. It is only injected for analysis in short, specified intervals while the rest of the sample matrix flows to waste. In a multi-channel configuration, this sample waste is utilized for further analysis in another instrument where a different parameter is measured. This stepwise pattern can accommodate up to eight channels.



# FIAsoft

We believe that an instrument can only be fully utilized when quality hardware meets polished computer control. Our instruments operate on the newest, most intuitive flow injection software ever. This modern software, FIAsoft, streamlines assays and reduces workload significantly.

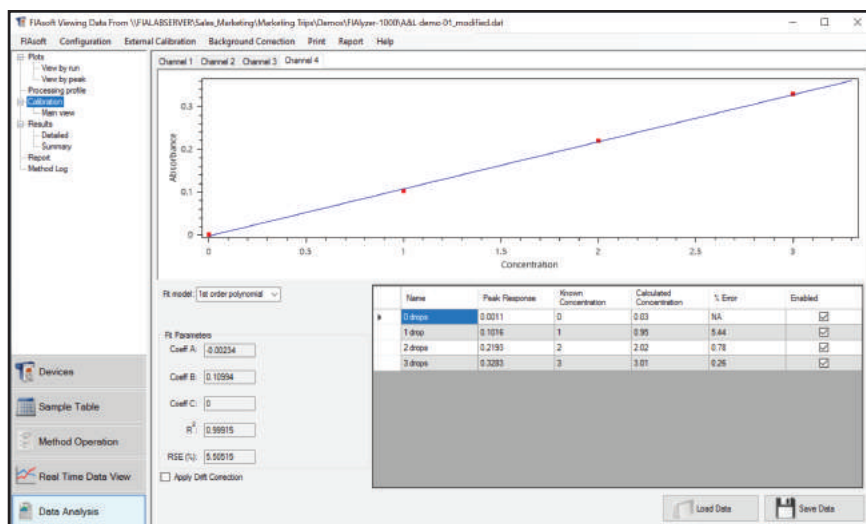
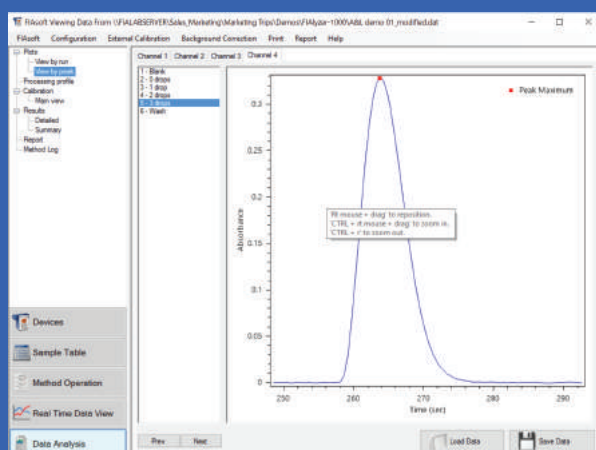


Fig 1: Calibration curve after method completion

## Features



### Real Time Data Analysis

Observe the method as it runs. This tool makes it easy to view trends and check your samples as the system operates.



### Easy Sample Entry

Edit sample tables in your choice of program. Enter samples directly in the software manually, with a barcode scanner, or from a csv document.

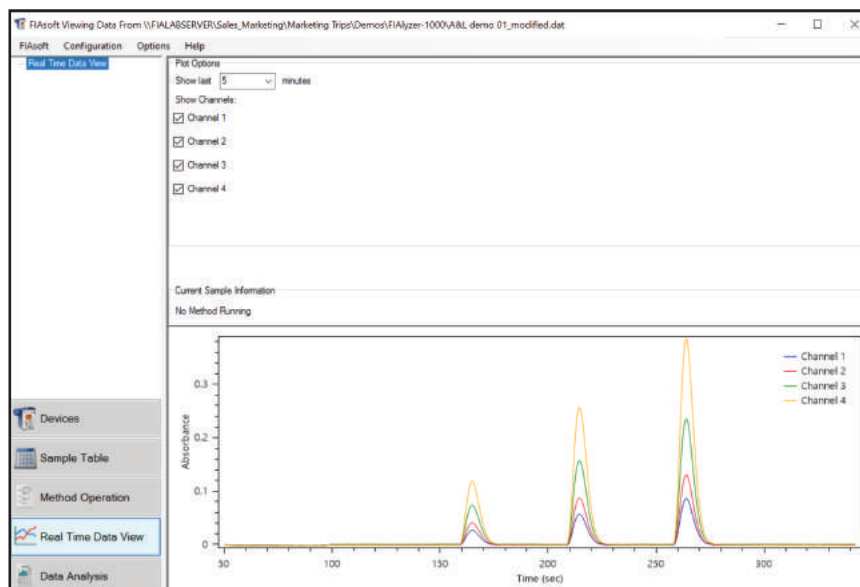
Status	Injection No	Sample Name	Peak Position	Sample Type	Level	Dilution Factor	Comment	Remove
Pending	1	Blank	1031	Unknown	00	1		Remove
Pending	2	5000 Group	1031	Standard	01	1		Remove
Pending	3	5000 Group	1032	Standard	02	1		Remove
Pending	4	4500 Group	1033	Standard	03	1		Remove
Pending	5	1000 Group	1034	Standard	04	1		Remove
Pending	6	Blank	1035	Unknown	00	1		Remove



## Spectrometer Capabilities

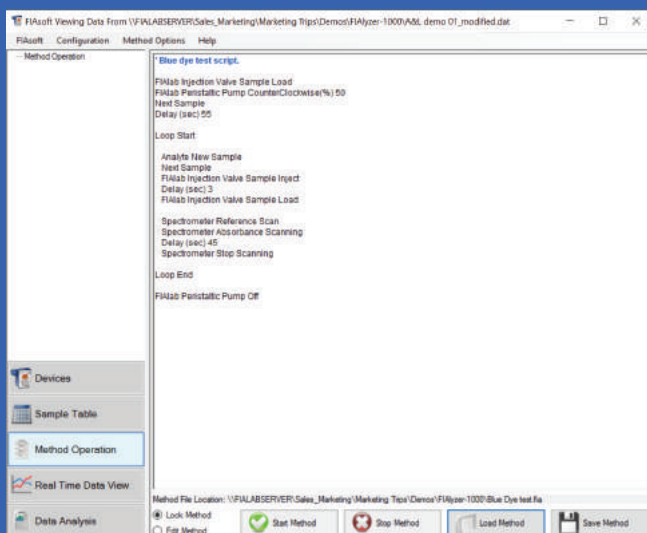
Utilizing a spectrometer allows for absorption to be read at multiple wavelengths at once. This broadens the concentration range you can measure in a single run and eliminates the need to change wavelength filters on your light source.

This also allows for the use of reference wavelengths to reduce noise and increase accuracy. The different wavelengths are represented by different colored peaks on the graph here.



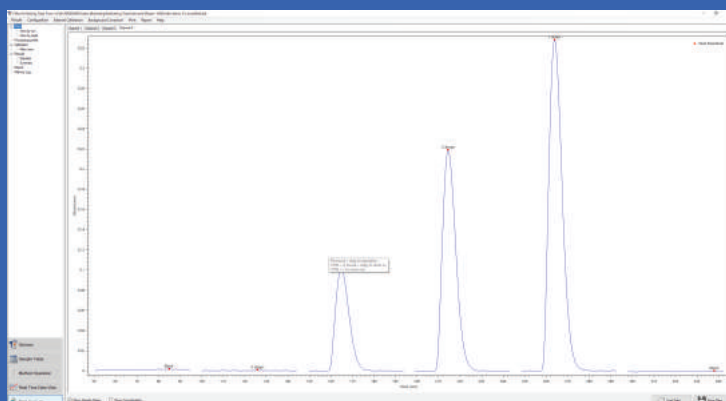
## Palpable Method Operation

Visualize, test, and start your method in a single click. These methods come fully written from FIALab and require no coding knowledge to operate. However, they can be changed by a customer to suit their needs.



## Streamlined Data Export

Data is processed and automatically uploaded to your choice of information management system. Reports can be generated in csv or printable formats and can be customized to fit your needs.



## Detectors

FIAlab provides a wide variety of absorbance and fluorescence detectors for balancing economy and detection limits. FIAsoft is compatible with a plethora of detectors. This allows different detectors to be smoothly integrated into any instrument setup.



Flame Spectrometer  
Ocean Optics



STS Series Spectrometers  
Ocean Optics



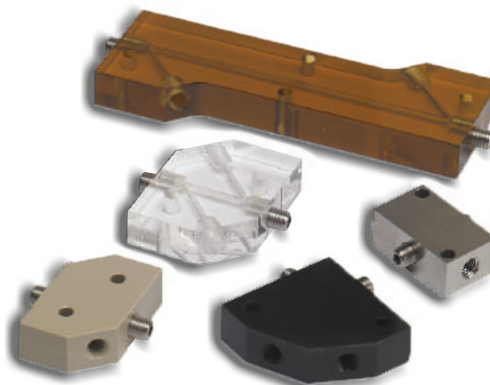
PMT  
Photo-Multiplier Tube

## Flow Cells

Professionally machined. Carefully measured. Proudly made in the USA. These flow cells come in a wide range of materials and lengths to satisfy your detection limits and withstand your reagents. Normal and micro-volumes are available.

**Products Include:**

- SMA-Z Flow Cells 100um to 100mm optical length
- Long Path 50 cm optical path
- Dialysis and gas diffusion cells



Assorted flow cells

**Materials Available:**

- Plexiglas
- Ultem
- Teflon
- Stainless Steel
- Peek
- COP

## SIA Instruments

FIAlab's sequential injection instruments have proven to be great tools in the fields of research, pharmaceuticals, and industrial processing. We manufacture a wide range of instruments to suit every level of application complexity. Check out our materials dedicated to SIA and our new control software, SIAsoft, on our website!



MicroSIA



OmniSIA

## Process Analysis

The FIAlab Process Analyzer is a highly customized sequential injection analysis (SIA) instrument that provides solutions to many kinds of on-line process monitoring challenges. As a monitoring system, it can report changes in the chemical composition of process fluids. As a process control system, it can adjust the composition of a process within required specifications. Previous applications include batch processing, PAT, on-line analysis, and much more.



Process Analyzer



## COMMON APPLICATIONS



## Agricultural

Soil and fertilizer labs need to process thousands of samples in a single season. That's why flow injection is so popular in this field - no pun intended. With throughputs as high as 15 sec/sample, our analyzers efficiently handle the demand. This speed paired with our robust design makes our analyzers a tried and trusted resource for agricultural analysis.

## Extracting Solutions

- Water
- KCl
- Bicarb (Olsen)
- Acetic Acid
- and more...

## Matrices

- Soil
- Plant Tissue
- Feed
- Fertilizer
- Manure
- Compost
- and more...



## Environmental

The more you know about your environment, the better you can manage it. For this reason, FIALab strives for the lowest detection limits in flow injection. Our limits reach into the parts per billion (see back for details). Having an automated system like FIA also increases the accuracy of your methods. By reducing the chance of human error, you are more likely to attain consistent results while also saving time.

## Matrices

- Drinking Water
- Wastewater
- Runoff
- Lake/River Water
- Seawater
- and more...



## Research and more...

From simple sample dilution to multi-channel, criss-crossing complexity, flow injection has been used in research projects around the globe. Our scientists are happy to consult with you and recommend or construct an instrument for your specific needs.

## Customer Testimonial

*"We have found various FIALab instrument models easy to set-up and use. FIALab is open to feedback from their customers and applies it to better their products. FIALab's prompt customer service is very helpful and minimizes equipment downtime. Their product combined with their software has allowed our lab to increase productivity since they are both user-friendly."*

- Jackie from Brookside Laboratories



## Method Performance

Analyte	Samples/Hour	Typical Ranges	Notes
Ammonia	40 - 150	0.002 to 200 mg (N)/L	Salicylate Method
	45	0.001 to 10 mg (N)/L	OPA Method
Chloride	60 - 120	0.1 to 50 mg (Cl)/L	
Cyanide - Free	50	0.01 – 1 mg (CN)/L	Amperometric
Cyanide - Total	50	0.05 - 1 mg (CN)/L	Batch Distillation
Fluoride	60	1 - 100 mg (F)/L	
Iron	45 - 140	0.0005 to 100 mg (Fe)/L	
Nitrate	45 - 180	0.0004 to 200 mg (N)/L	Cadmium
Nitrite	80 - 220	0.0001 to 100 mg (N)/L	
Nitrogen - Total	30	0.01 to 5 mg (N)/L	In-line UV Digestion
Phosphate	45 - 120	0.002 to 25 mg (P)/L	
Phosphate - Fast	240 - 360	0.1 to 25 mg (P)/L	Fast FIA Manifold
Phosphorus - Total	80	0.01 to 25 mg (P)/L	Batch Digestion
Silica	40 - 60	0.02 to 300 mg (Si)/L	
Sulfate	60 - 120	2 to 500 mg (SO <sub>4</sub> )/L	
TKN	120	1.0 to 300 mg (N)/L	Batch Digestion
	45	0.25 to 50 mg (N)/L	OPA
Urea	40	0.5 – 10 mM	

**Need more information or a free demonstration?**

**Please Contact Your Friendly SDR Scientific Technical Sales and Support Specialist for more information:**

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