



Lachat Replacement: Advancements over Traditional FIAs 2/25/2025



FIAlab Instruments, Inc.



HELLO!



Presented by: Scott Schroeder (NA Sales Director)

Find me @ scott@flowinjection.com in Hartford, WI

**HQ-Seattle, WA / Offices in Dallas, TX/Toronto,
Canada/Sydney Australia**



SPRING

Some would say
Spring symbolizes renewal, growth,
and hope, representing
a time for new beginnings



Nowadays, water pollution has become a global issue affecting most countries in the world. Water quality should be monitored to alert authorities on water pollution, so that action can be taken **quickly**.

Accurate Nutrient Management: Soil testing helps identify nutrient deficiencies and excesses, allowing farmers to apply fertilizers more **efficiently**



Content



01 Flow Injection-Market Choice

02 Hardware Advancements

03 Chemistry Advancements

04 Software Advancements

05

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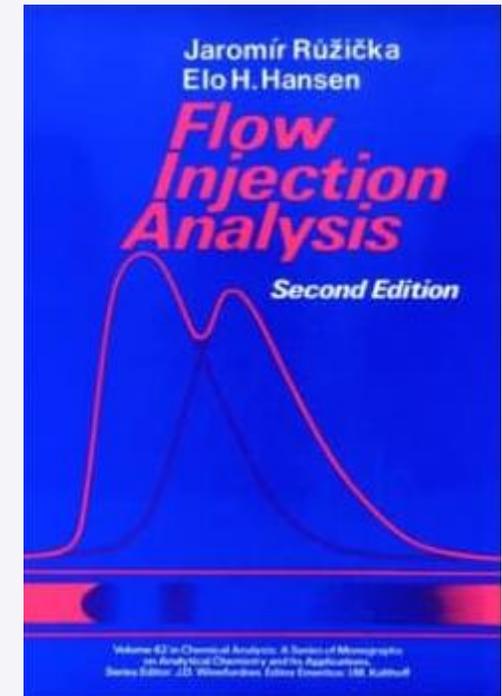


Flow Injection

Why did the market choose Flow Injection vs. SFA or Discrete

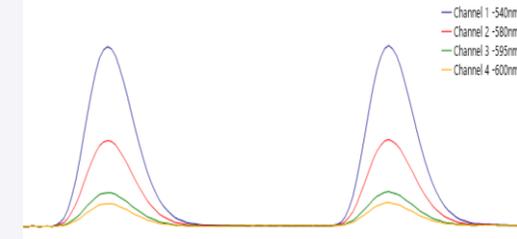
WE LOVE FLOW INJECTION

FIALab Instruments has the strongest roots in flow injection out there. **The inventor of these techniques (Jarda Ruzicka) founded FIALab in 1987.** For over 30 years now, we have remained on the cutting-edge of these techniques and have significantly improved these technologies. The latest technological breakthrough Sequential Injection was also founded by FIALab.



WHY DID FIA BECOME MARKET LEADER

- Speed
 - Whole Calibrations ~5 min from start **PEAK IN LESS THAN 60 SECONDS**
- Carryover
 - **complete** return to baseline between injections
- Use of plastic (Teflon) capillary tubing
 - Actually, much more inert than glass and cost is significantly reduced to change or replace tubing vs. glass
- Wider Dynamic Ranges
 - Less Reruns/dilutions needed (Compared to SFA/Discrete)
- Lowest Cost of Operation-Highest Cost is **OPERATOR TIME**



WHY DID FIA BECOME MARKET LEADER

- Troubleshooting
 - Know what you did wrong can be corrected quickly
- Does it all
 - Low Level of Detection
 - Various Matrices
 - Amperometric detection (CN), Direct Voltage (Fluoride for example)
- Simultaneous Determinations
 - This was a downfall of discrete (sequential) productivity (Ammonia/NO_x), (OP/NO₂)
- Gas Diffusion
 - Ammonia inline Distillation via GD
- Sample Prep automation (Inline TN/TP/CN/Phenol/MBAS)





1



Flow Injection

Hardware Advancements

FIA-FLEX vs. FIA-1000

FIAlyzer-FLEX



Suggested Platform for Labs Who Need:

- Easy Switchover Between Chemistries
- Integrated Low-noise Detector
- In-line Method Compatibility
- Small Batches of Multiple Chemistries

FIAlyzer-1000



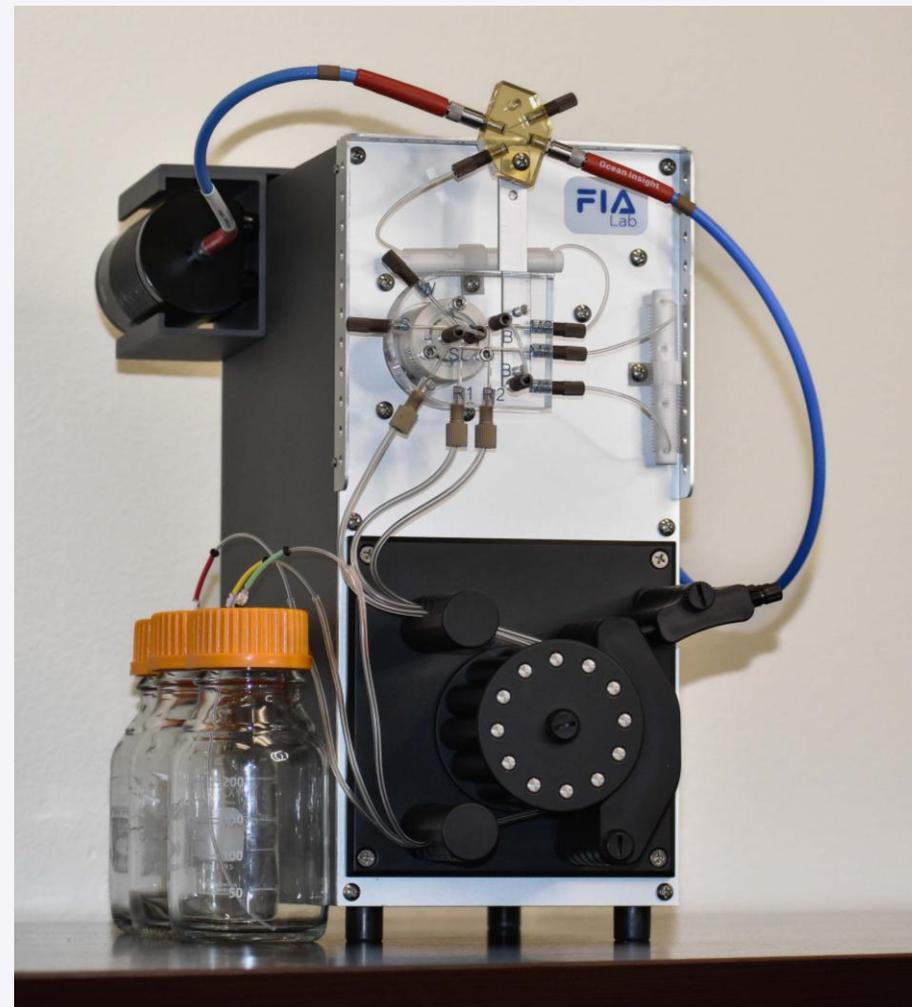
Suggested Platform for Labs Who Need:

- Dedicated Workstations
- High Throughput
- 100% Visible Manifold
- Greater Compatibility with Multiple Detection Types



HARDWARE ADVANCEMENTS

- Size-Bench Space Critical
- Backup for Lab (redundancy)
- Full Array Spectrometer
- Pump Control (FIA)
- Lower cost of operation over Lachat
- No O-Rings
- Improved Cadmium Column
- Metal not plastic
- Flexibility



UNIQUE FLEXIBILITY WITH LITTLE ADDED COST

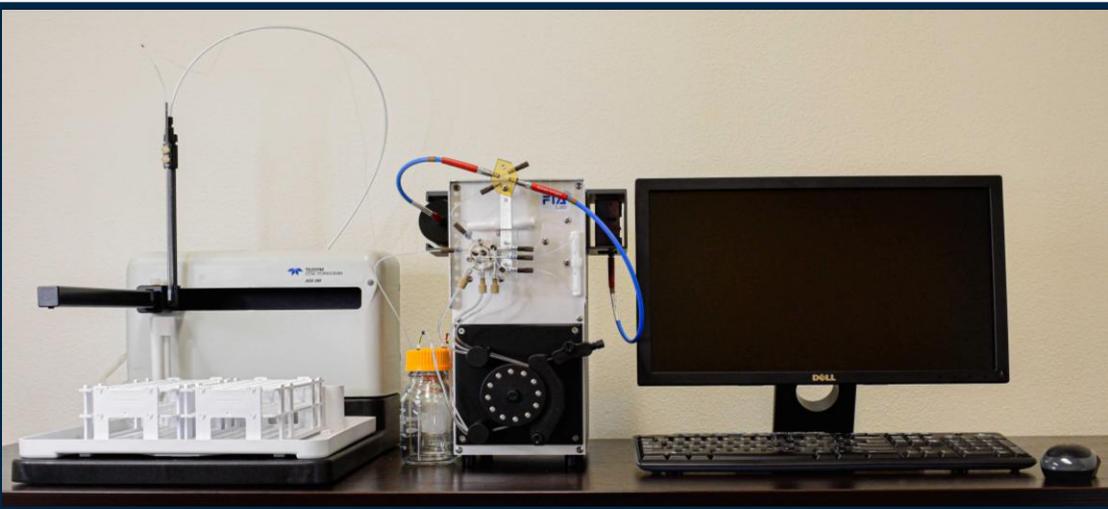
- FLEXIBILITY
 - Add Autosampler and Software license
- TWO WORKSTATIONS



**No other FIA does
configure this way**



MULTICHANNEL FLOW INJECTION SETUP



EXTREMELY SMALL SIZE
60 cm x 25 cm x 50 cm
(actual space 10 cm)



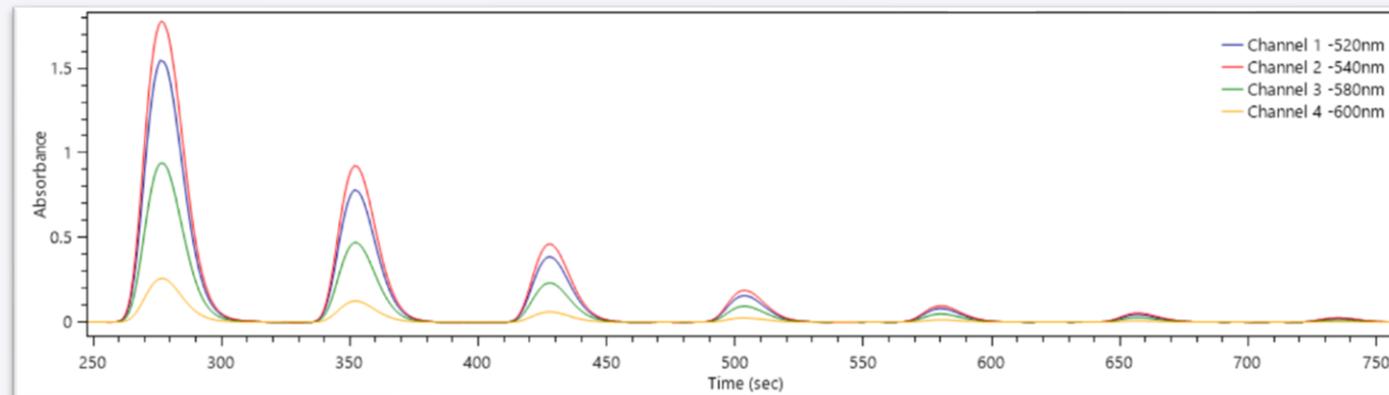
2-channel setup, Nitrate+Nitrite and Ammonia

HIGH END FULL ARRAY SPECTROMETER

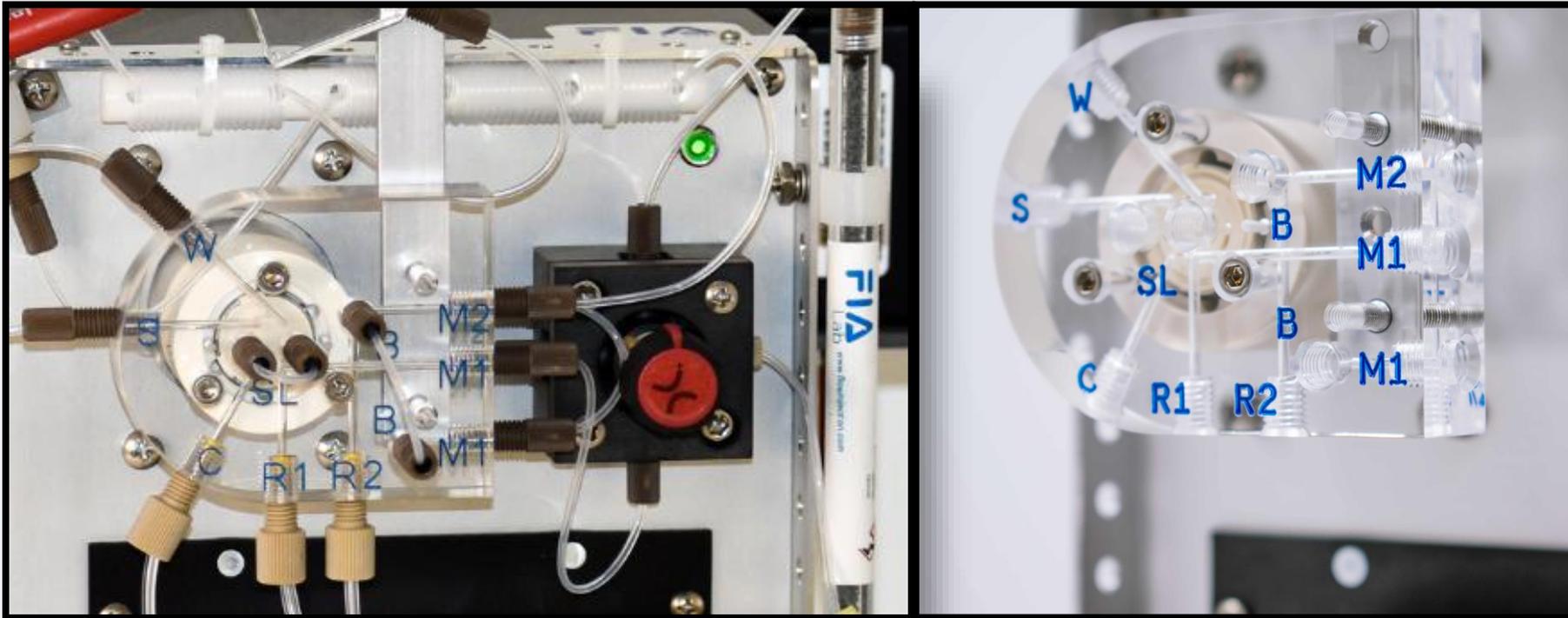
- All Wavelengths Simultaneously
 - Linear Range Extension
 - Colorimetric interference identification



No More FILTERS!



LAB-ON-VALVE (LOV) DESIGN



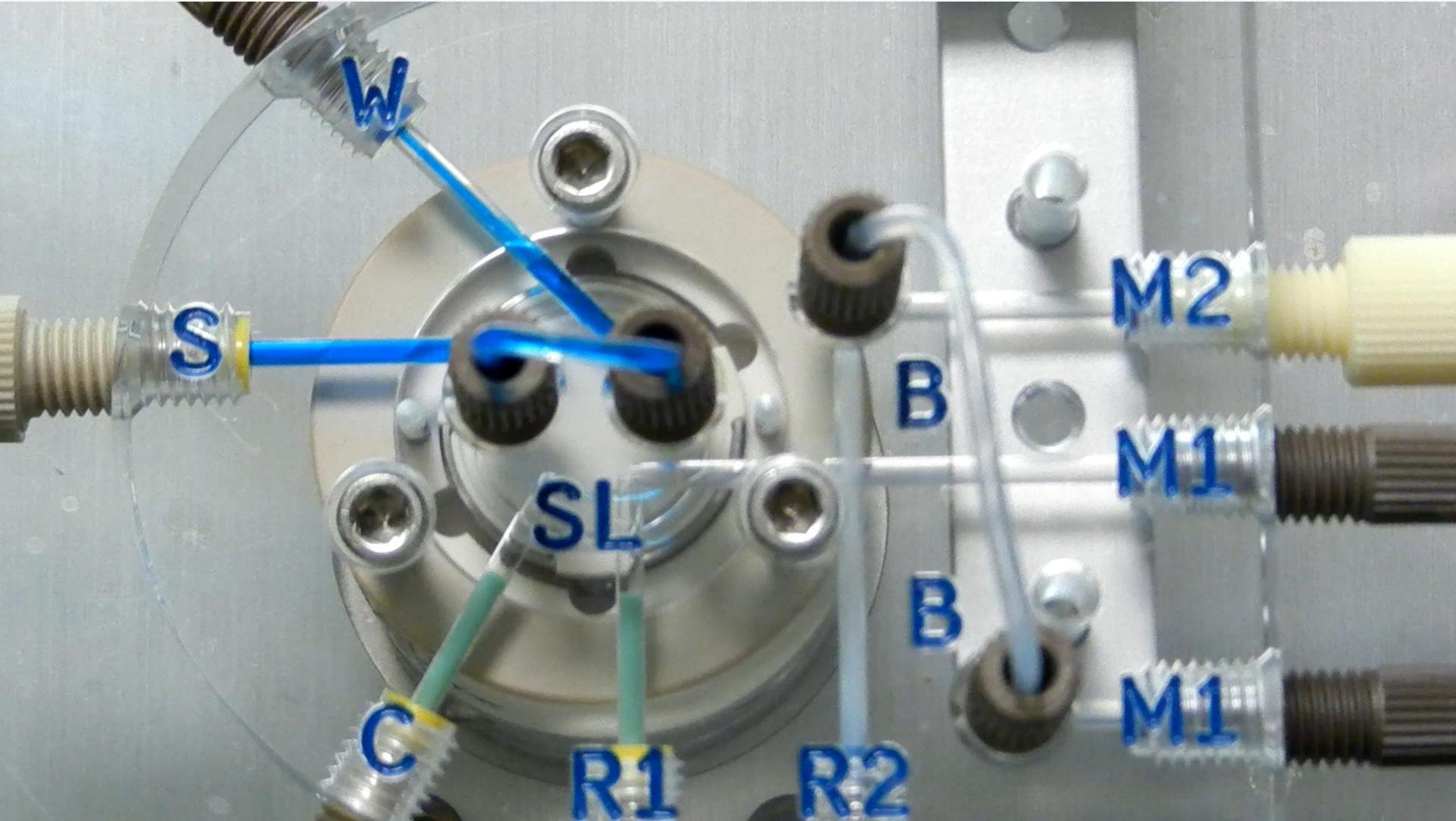
FIA-1000 LOV

- FIAlab Design – wide channels to prevent clogs
- Transparency of valve operation
 - Valve no longer a black box for customer
 - Easy Troubleshooting
- Fluidic organization (labeled ports)
- Easy Maintenance



LAB-ON-VALVE (LOV) DESIGN

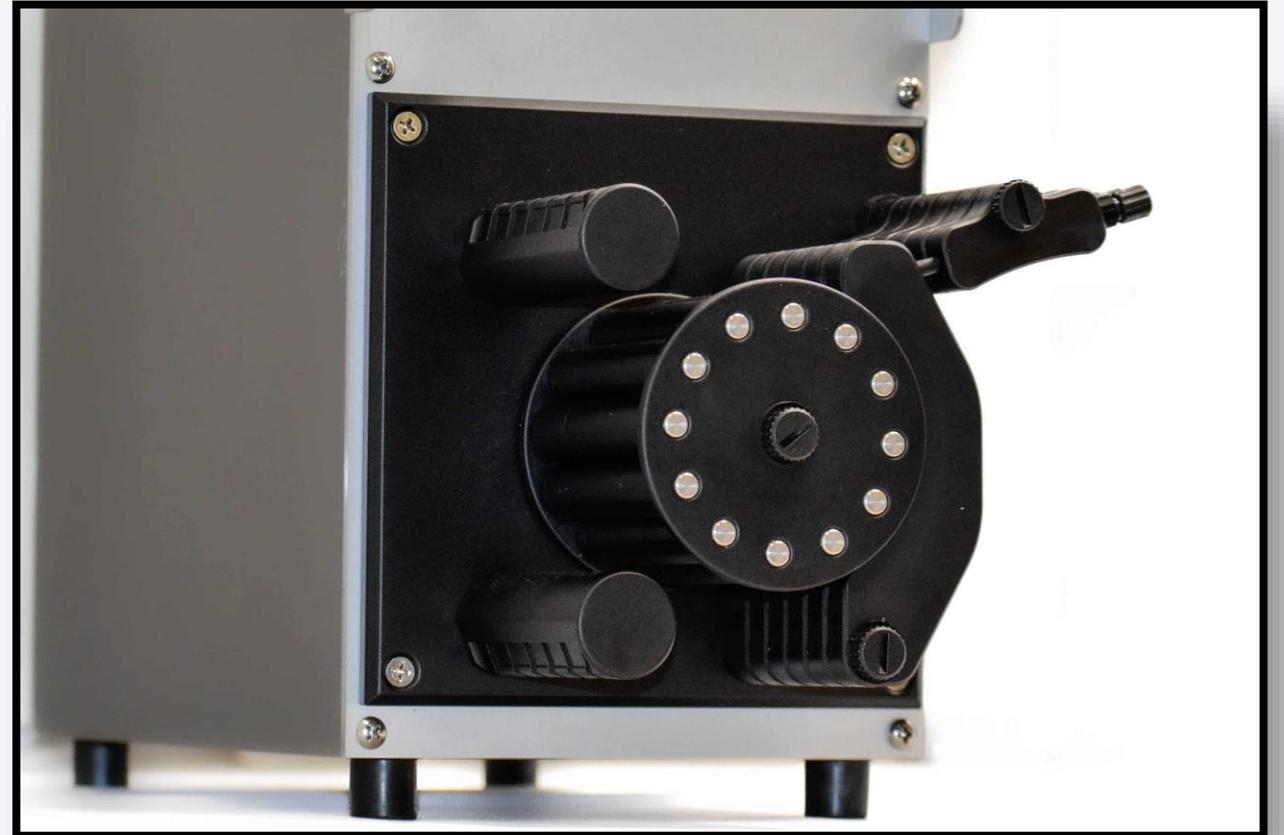
Blue-dye injection on LOV



SOFTWARE CONTROLLED PUMP

Peristaltic Pump

- Smooth rotations and precise liquid flow
- Software control for ease of use, overnight run capability with 'slowdown' mode
- 6-channel capability on each channel
- Built in for FIA-1000, External for FIA-FLEX



FLOW CELLS

Flow cells for in-line absorbance measurements

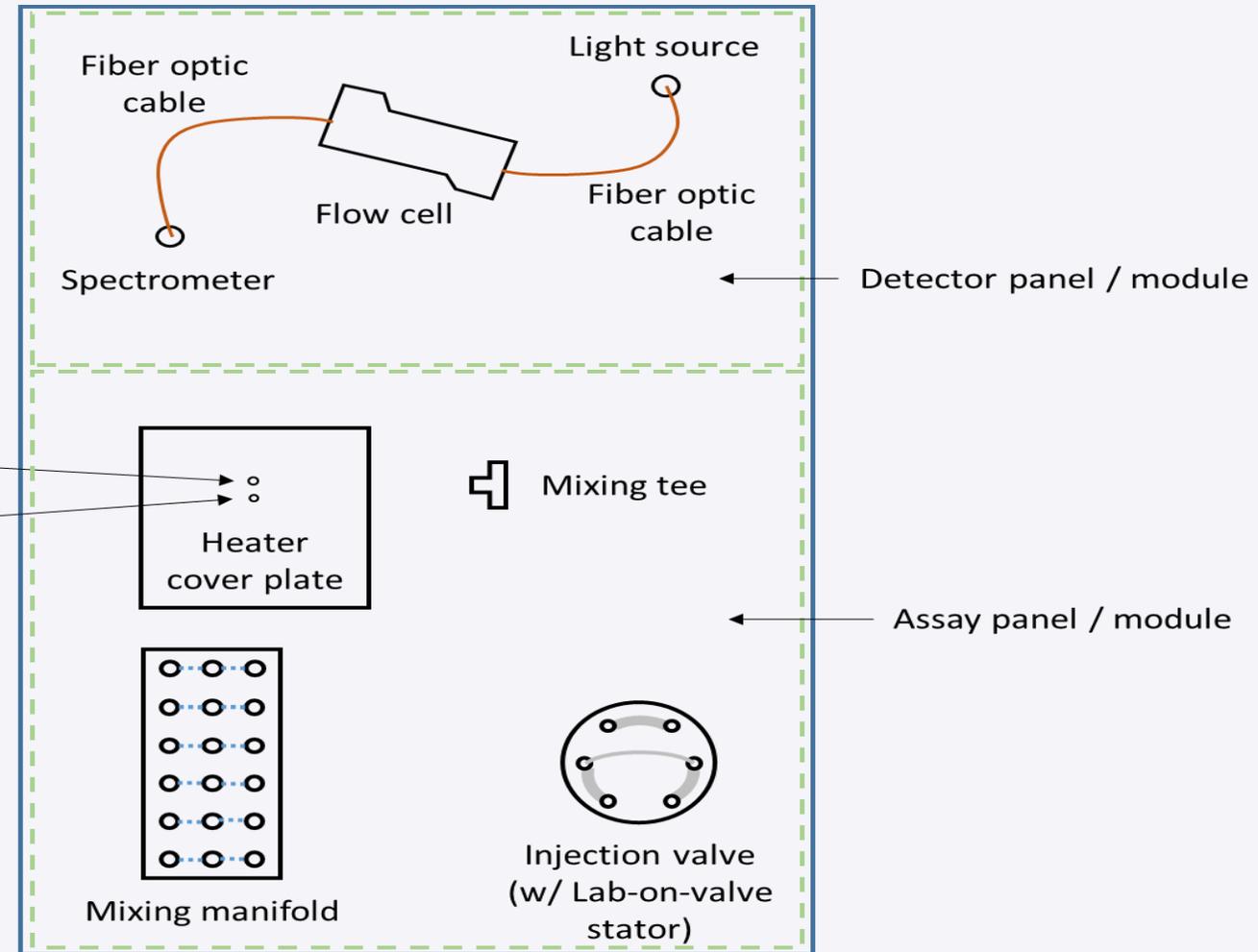
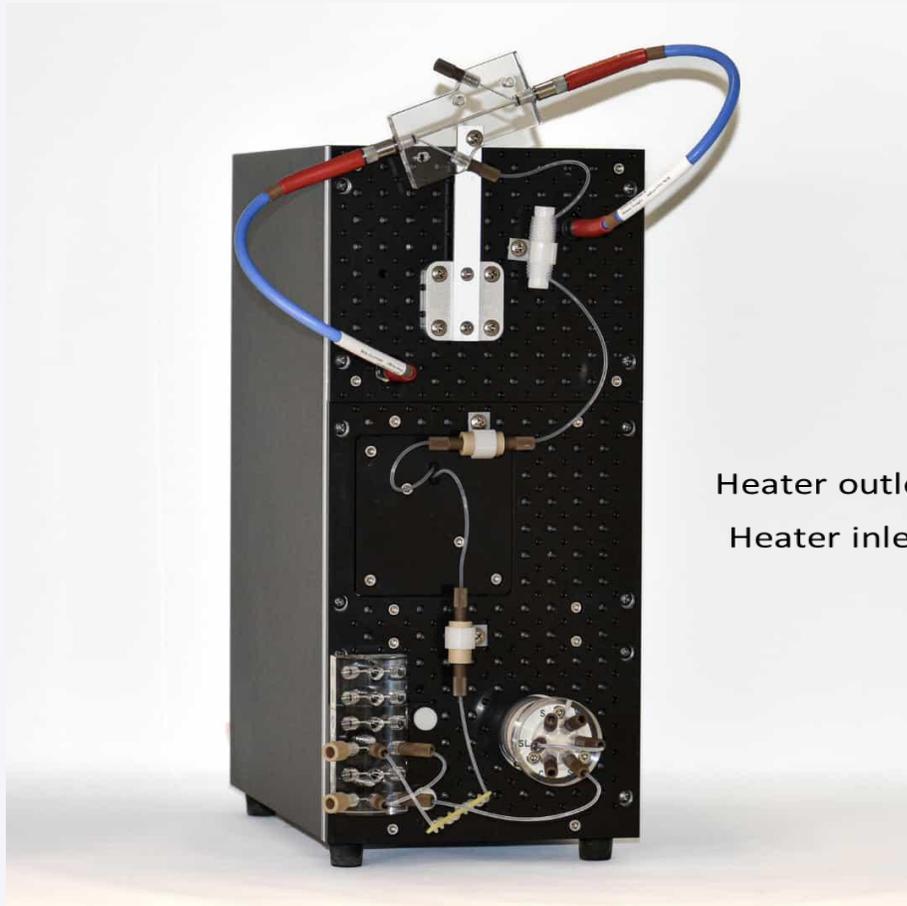
- 2.5 – 100 mm path lengths
- Variety of materials for different method applications



FIALYZER-FLEX SERIES

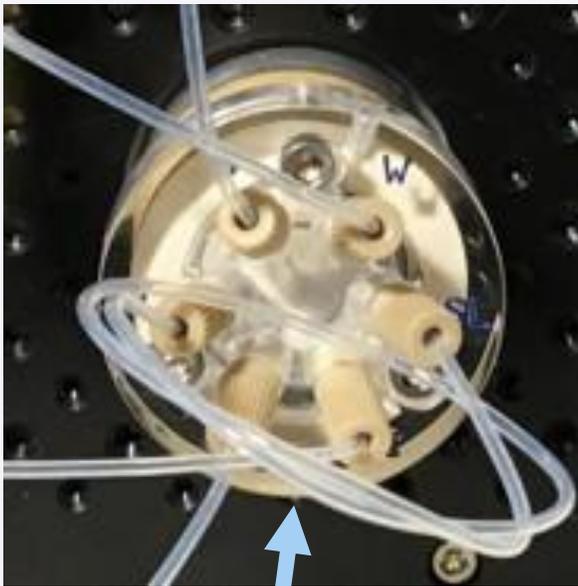


FLOW INJECTION ANALYZER

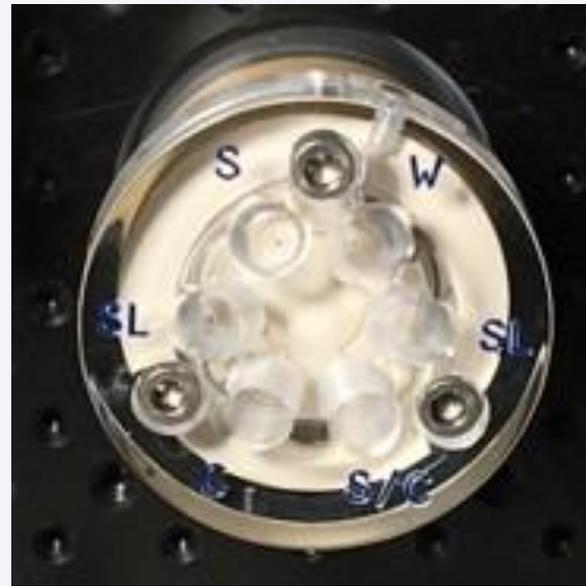


FLOW INJECTION ORGANIZATION

- Lab-on-Valve (LOV) manifold
 - Replaces traditional injection valve stator
 - Transparency of valve operation
 - Valve no longer a black box for customer
 - Tremendous help in troubleshooting
 - Fluidic organization (labeled ports)



Sample Loop



MULTICHANNEL FLOW INJECTION





2

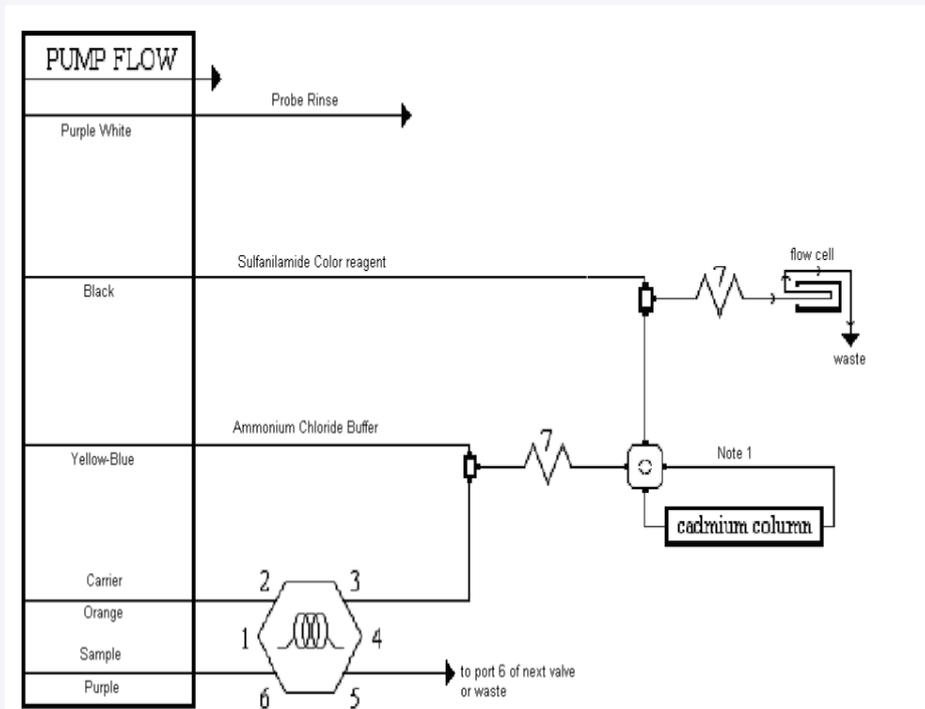


Chemistry Advancements

Comparison to some Lachat Methods

CHEMISTRY FLOW DIAGRAM

Example Method: Colorimetric Nitrate+Nitrite



Lachat Method Diagram

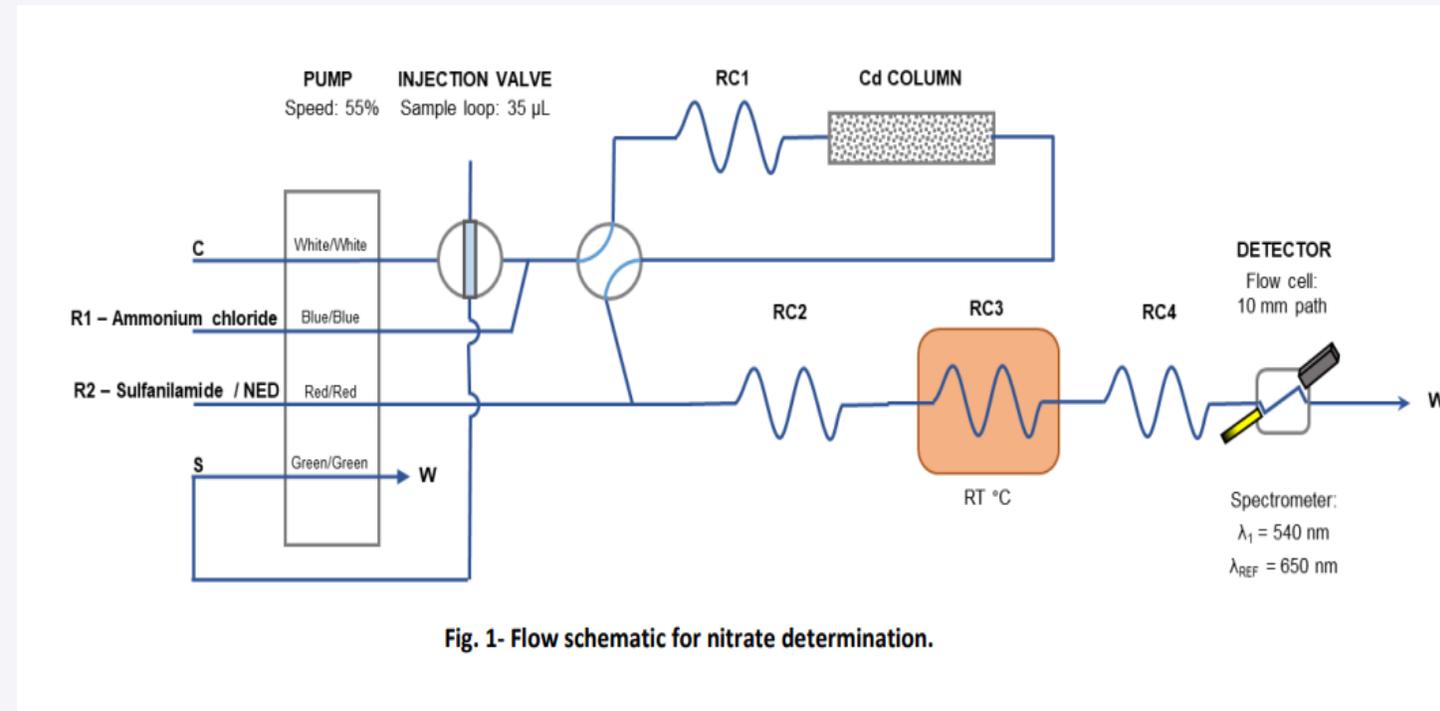


Fig. 1- Flow schematic for nitrate determination.

New FIA Method Diagram



Flow Rates New FIA VS Lachat

Pump Tubing Type, Internal Diameter and Flow Rate Table

Pump Tube Type	Internal Diameter (inches)	Flow at 40% (ml/min)
Orange/Blue	0.010	0.03
Orange/Green	0.015	0.10
Orange/Yellow	0.020	0.18
Orange/White	0.025	0.25
Black/Black	0.030	0.32
Orange/Orange	0.035	0.41
White/White	0.040	0.56
Red/Red	0.045	0.71
Gray/Gray	0.051	0.84
Yellow/Yellow	0.056	1.01
Yellow/Blue	0.060	1.12
Blue/Blue	0.065	1.35
Green/Green	0.073	1.57

Flow rates applicable to Cole Parmer Ismatec pumps only.

Part Number (Tygon)	Part Number (Duraprene)	Color	Inner Diameter (mm)	Measured Flow Rate* (mL/min.)
53403	54403	Orange-Blue	0.254	0.16
53404	54404	Orange-Green	0.381	0.23
53405	54405	Orange-Yellow	0.508	0.49
53406	54406	Orange-White	0.635	0.76
53407	54407	Black-Black	0.762	0.94
53408	54408	Orange-Orange	0.889	1.28
53409	54409	White-White	1.016	1.45
53410	54410	Red-Red	1.143	1.75
53411	54411	Gray-Gray	1.295	2.47
53412	54412	Yellow-Yellow	1.422	2.95
53419	54419	Yellow-Blue	1.524	3.07
53413	54413	Blue-Blue	1.651	3.44
53414	54414	Green-Green	1.854	4.23



LESS REAGENT CONSUMPTION & WASTE GENERATION

Chemistry	Lachat Method	Standard Method	FIALab Method	Low	High	Units
Nitrate/Nitrite	10-107-04-1-C	4500-NO3-I	NO3-W-20-2	0.2	2.0	mg/L

Reagent Name	Stability	Lachat	FIALab
1.6M Ammonium Chloride Buffer (1L)	3 months	3.07 mL	1.925 mL
Sulfanilamide Solution (1L)	Monthly	0.94 mL	0.94 mL
Carrier (i.e. D.I. Water)		1.28 mL	0.77 mL
Total (mL) / minute		5.29 mL	3.635 mL

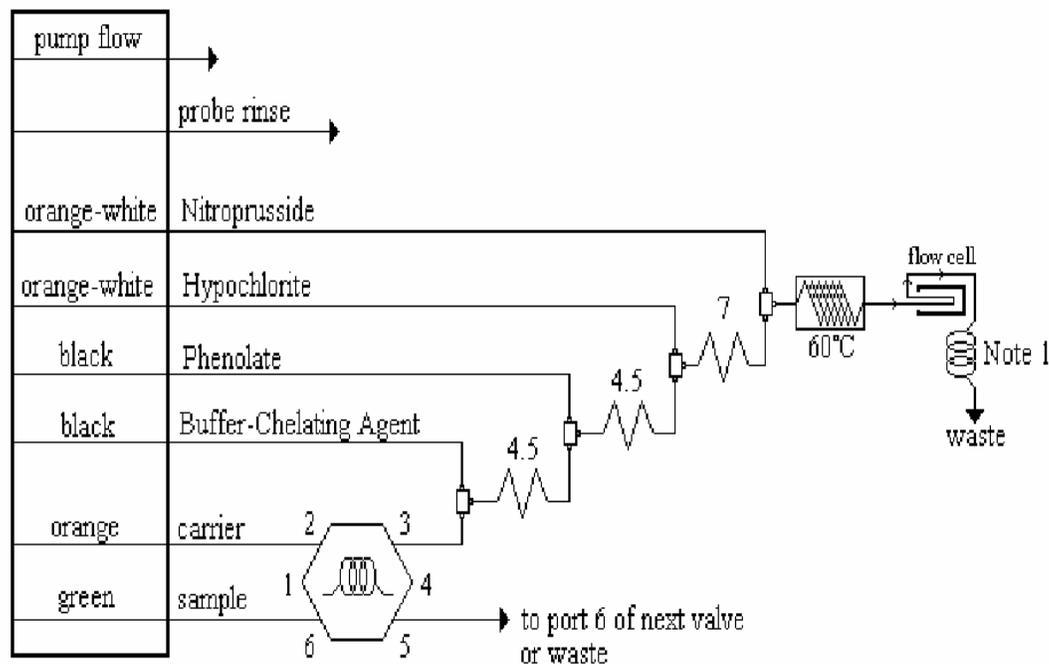
Reduction of waste approximately 30%

$$f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos \frac{n\pi x}{L} + b_n \sin \frac{n\pi x}{L} \right)$$

0.04 cents/sample X # of samples (30,000/year)
\$360 reduction in Reagent Cost



AMMONIA LACHAT VS New FIA



Carrier: DI water or Reagent 7 (preserved samples)

Manifold Tubing: 0.5 mm (0.022 in) i.d. This is 2.5 μ L/cm.

AE Sample Loop: 125 cm x 0.022 in. i.d.

QC8000 Sample Loop: LR = 125 cm x 0.022 in. i.d.

HR = 13 cm x 0.022 in. i.d.

Interference Filter: 630 nm

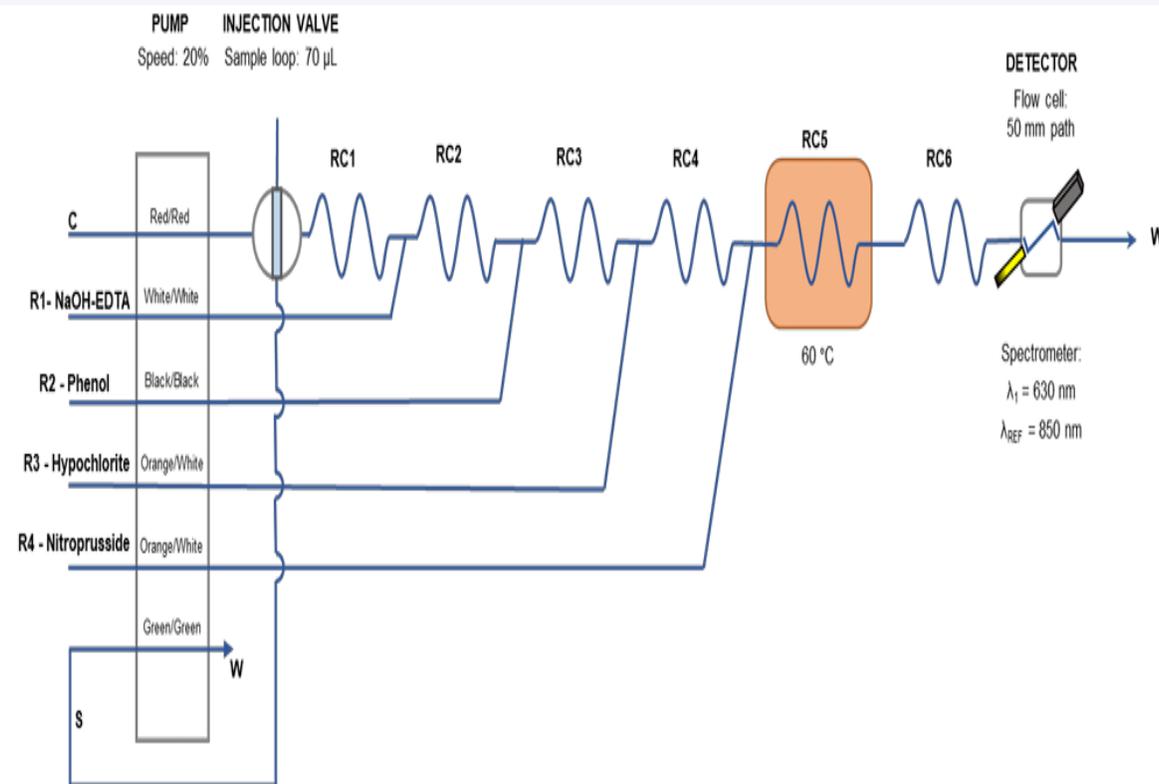


Fig. 1- Flow schematic for ammonia determination.

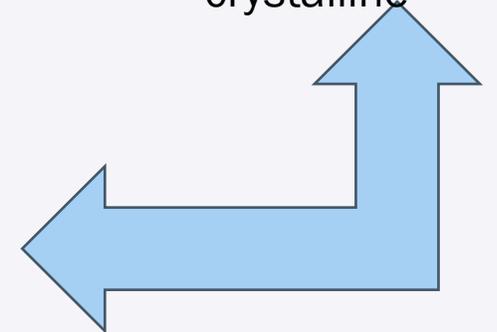


Ammonia New FIA VS LACHAT

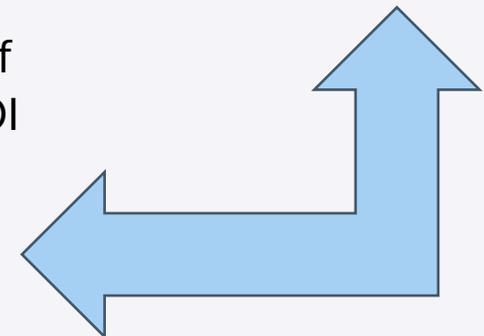
- Reagent 2: Phenol solution (200 mL) □ Add 35 mL of 8.6% NaOH stock solution to 157 mL deionized water. □ Add 8.2 mL of 90% phenol (or 7.9 g solid phenol). □ Stir to mix. □ Store in a brown glass bottle.

Reagent 1. Sodium Phenolate -By Volume: In a 1 L volumetric flask, dissolve 88 mL of 88% liquefied phenol or 83 g crystalline phenol (C_6H_5OH) is approximately 600 mL DI water. While stirring, slowly add 32 g sodium hydroxide (NaOH). Cool, dilute to the mark, and invert to mix. Do not degas

41ml of liquefied phenol or 39.5 g crystalline



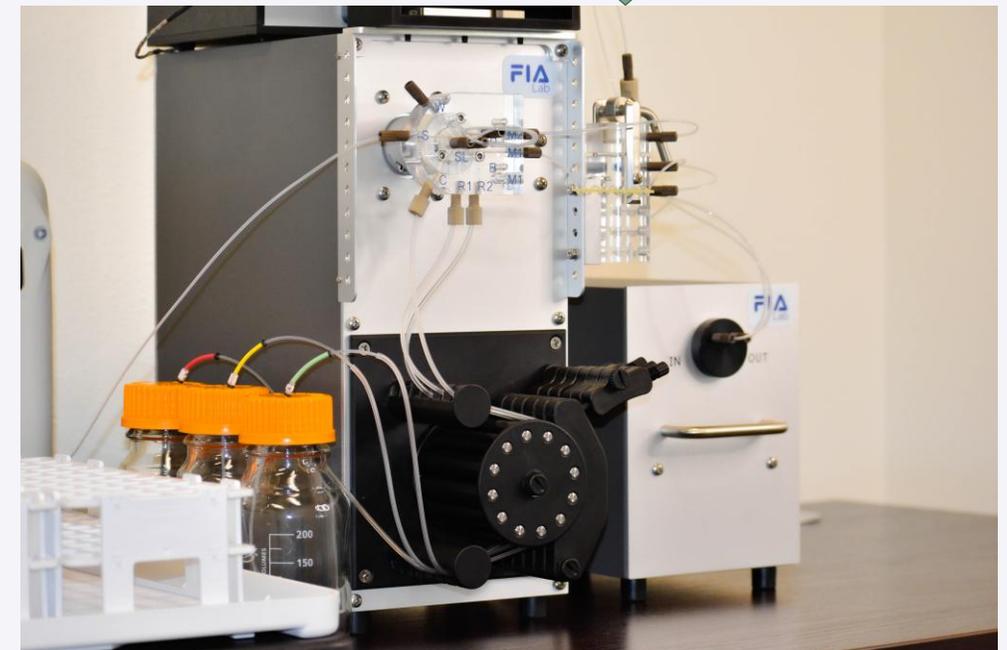
88ml of liquefied phenol or 83g crystalline



BEST AMMONIA/TKN METHOD

Ammonia								
Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
NH3-S-1-1	0.02 0.075	0.5 50	0.006 0.025	mg N / L as NH3	120	Soil extracts	N/A	Salicylate method for soil extracts.
NH3-W-1-2	0.5	20	0.1	mg N / L as NH3	60	Waters	EPA 350.1	Salicylate method with gas diffusion, can also be used for TKN analysis.
NH3-W-1-4	0.5	20	0.1	mg N / L as NH3	60	Waters	SM 4500-NH3 H.	Salicylate or phenate method with gas diffusion.
NH3-W-2-1	0.01	0.5	0.003	mg N / L as NH3	60	Waters	EPA 350.1	Salicylate or phenate method with gas diffusion, utilizing low-noise detector, can also be used for TKN analysis.
NH3-W-2-3	0.01	0.5	0.003	mg N / L as NH3	60	Waters	SM 4500-NH3 H.	Salicylate or phenate method with gas diffusion, utilizing low-noise detector, can also be used for TKN analysis.
NH3-W-2-5	0.003	1	0.001	mg N / L as NH3	60	Waters	SM 4500-NH3 H.	Salicylate or phenate method, utilizing low-noise detector.
NH3-W-2-6	0.003	1	0.001	mg N / L as NH3	60	Waters	EPA 350.1	Phenate method, no gas diffusion.
NH3-W-3-2	0.015	10	0.005	mg N / L as NH3	60	Waters	EPA FIALab 100	OPA method with gas diffusion, utilizing fluorometric detector, can also be used for TKN analysis.
NH3-W-3-3	0.015	5	0.005	μmol NH3 / L	60	Waters	N/A	OPA method, utilizing fluorometric detector, no gas diffusion, for seawater matrices.

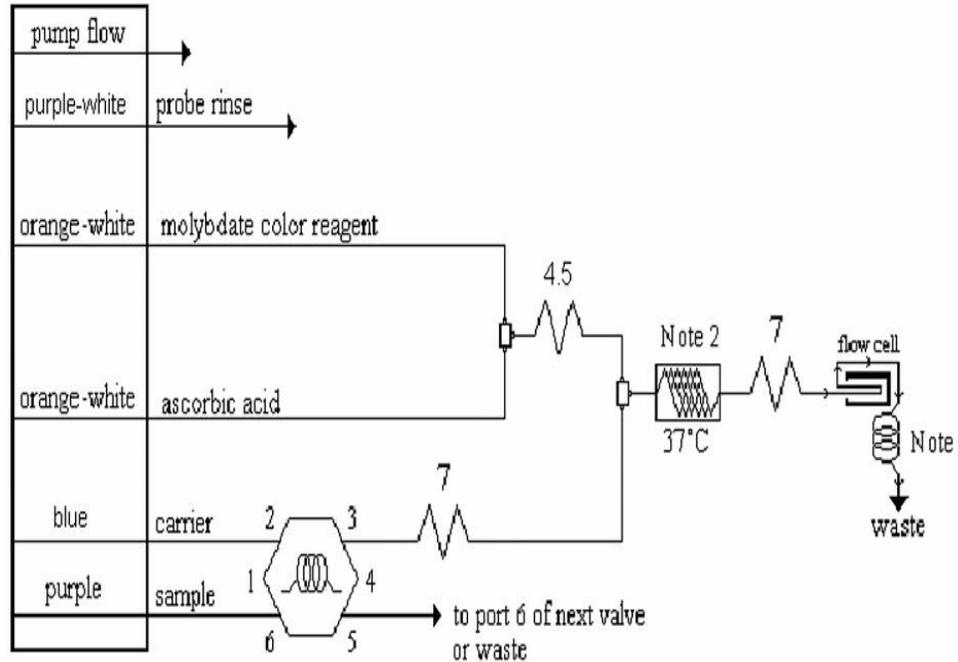
•APPROVED
JULY 19th 2021



SOIL OP LACHAT VS New FIA

12-115-01-1-N ULTRA HIGH THROUGH Bray or Mehlich

Fast-Phosphate Determination – P04-S-1-2



Carrier: DI Water*

Manifold Tubing: 0.8 mm (0.032 in) i.d. This is 5.2 $\mu\text{L}/\text{cm}$.

QC8000/8500 Sample Loop: Microloop

Interference Filter: 880 nm

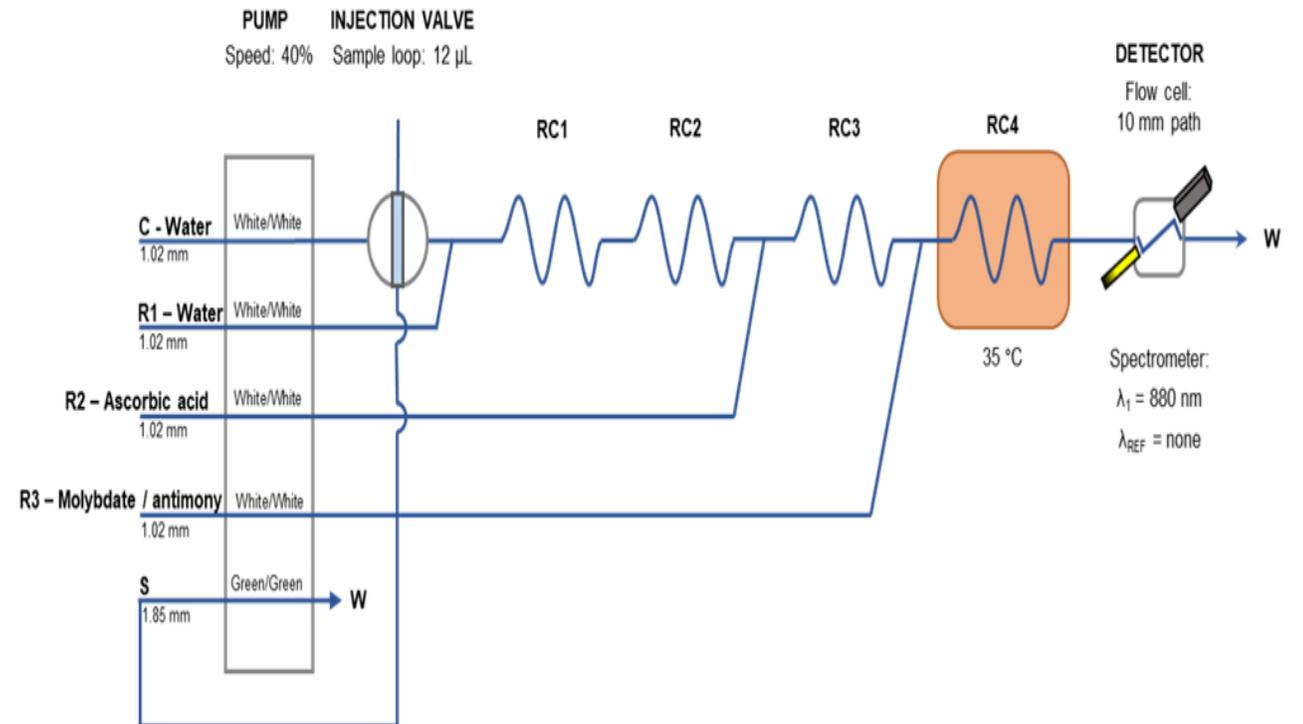


Fig. 3- Flow schematic – high range



Flow Injection Soil Advancement

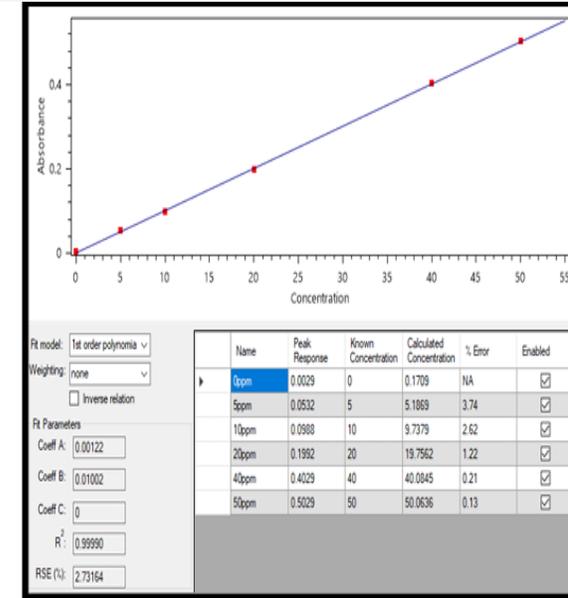
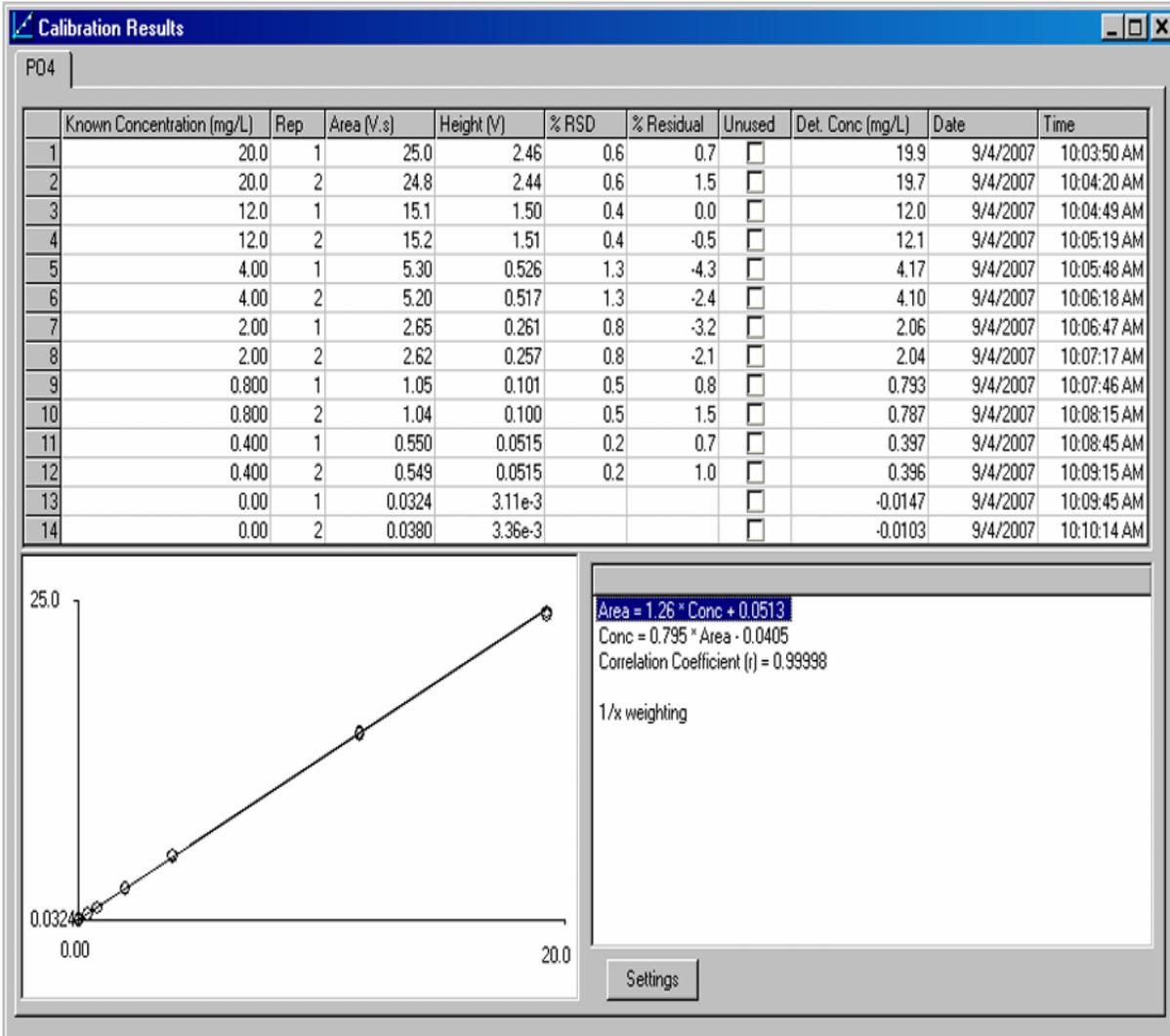


Fig. 4 – Example calibration data – high range

- Lower limit of detection: 0.3 mg P/L – $9.7 \cdot 10^{-6}$ mol/L
- Lower limit of quantification: 1.0 mg P/L – $3.2 \cdot 10^{-5}$ mol/L
- Upper limit of detection: 50 mg P/L – $1.3 \cdot 10^{-3}$ mol/L
- Sample throughput: 135 samples / hour
- Startup + Calibration: 10 minutes
- Shutdown: 5 minutes

3



Software Advancements

Lachat Omnion 4.0 Direct Comparison

OMNION 4.0 VS FIASOFT

Sample No.	Cup No.	Sample ID	Sample Type	Reps	ADF	Trigger OFF	MDF	Weight	Units	Status	Injection No	Sample Name	Rack Position	Sample Type	Level	MDF	ADF	Weight	Comment	Autodilute?	Remove
1	S1	CalStd A	Calibration Standard	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			Done	1	Std 300	RS1	Standard	01	1	1	1		<input type="checkbox"/>	Remove
2	S2	CalStd B	Calibration Standard	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			Done	2	Std 200	RS2	Standard	02	1	1	1		<input type="checkbox"/>	Remove
3	S3	CalStd C	Calibration Standard	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			Processing	3	Std 100	RS3	Standard	03	1	1	1		<input type="checkbox"/>	Remove
4	S4	CalStd D	Calibration Standard	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			Pending	4	BLK	RS8	Standard	04	1	1	1		<input type="checkbox"/>	Remove
5	1	Sample1	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	5	Unkown	RA1	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
6	2	Sample2	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	6	Unkown	RA2	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
7	3	Sample3	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	7	75	RA3	QC	00	1	1	1		<input type="checkbox"/>	Remove
8	1	Sample8	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	8		RA4	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
9	1	Sample9	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	9		RA5	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
10	1	Sample10	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	10		RA6	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
11	1	Sample11	Check Standard	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			Pending	11		RA7	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
12	1	Sample12	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	12		RA8	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
13	1	Sample13	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	13		RA9	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
14	1	Sample14	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	14		RA10	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
15	1	Sample15	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending	15		RA11	Unknown	00	1	1	1		<input type="checkbox"/>	Remove
16	1	Sample16	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending										<input type="checkbox"/>	Remove
17	1	Sample17	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending										<input type="checkbox"/>	Remove
18	1	Sample18	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending										<input type="checkbox"/>	Remove
19	1	Sample19	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending										<input type="checkbox"/>	Remove
20	1	Sample20	Unknown	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			Pending										<input type="checkbox"/>	Remove



Flow Injection Software

Sample Table	Level	Assay	Concentration	Low Limit	High Limit	Eval Type	Spike Comp	Fail Action	Type
Standard Table	90	Assay1	75	90	110	Recovery (%)	N/A	Continue	CCV
QC Table								Continue	
Stock Standard Table								Stop	
Dataset Notes								Recalibrate and repeat	
								Recalibrate and continue	
								User decides	
								Rerun this sample	

DQM Actions :	+ %RD
Pass Message	
Fail Message	
Pass Action	
Fail Action	
	Stop Run
	User Decides
	Run Recalibration Set and Repeat
	Run Recalibration Set and Continue
	Continue

PROPERTIES : Check Standard	
PROPERTIES	VALUES
Known Concentration (mg/L)	100
DQM Tests :	
<input type="checkbox"/> > +conc limit	0.00
<input type="checkbox"/> < -conc limit	0.00
<input checked="" type="checkbox"/> + %RD	10.0
<input checked="" type="checkbox"/> - %RD	10.0



HARDWARE CONTROL

FIAsoft Configuration Status Reporting Help

All Devices
Detectors
Spectrometer1
FIAlab Analyzers
FIAlab1
Autosampler
Autodilutor
Misc Accessories

Devices
Sample Table
Method Operation

Selected Device

Configure Device

Select Port: Auto Type: FIAnalyzer 1000 Accessories

Heaters: 0
SPump: No

Connect
Disconnect

Current Status
Unknown

User Notes:
SCOTTS DEMO

Control Device

Quick Commands

Pump
 Off
 On
100 Speed (%)
Counter-clockwise Clockwise

Full Commands

Injection Valve Sample Load
Injection Valve Sample Inject
Injection Valve Learn Positions
Peristaltic Pump 1 On
Peristaltic Pump 1 Off
Peristaltic Pump 1 Speed(%)
Peristaltic Pump 2 On
Peristaltic Pump 2 Off
Peristaltic Pump 2 Speed(%)
Relay On
Relay Off

Value



Modern Software

Run Configuration Tools Window Help

New Open Save Start Preview Stop Run1 Run2 Run3 Run4

Racks Sample Timing Analytes Run Report Run

Sample Timing

RUN Channel 1 Dye

Timing Properties

PROPERTIES	VALUES
Expected Inject to Peak Start (Seconds)	18.0
Expected Peak Base Width (Seconds)	50.0

Timing

Method Cycle Period: 40.0

Autosampler Timing: 25.0 (Sample Period) + 15.0 (Min. Probe in Wash Period)

Valve Timing: 1

0 10.0 20.0 30.0 40.0 50.0 60.0

Minutes Seconds

Full 5X

Method Cycle Period (Cyan), Sample Period (Green), Min. Probe in Wash Period (Red), Time to Valve (Yellow), Load Period (Pink), Inject Period (Orange)

Accept Cancel Close

Graphical

FIAsoft Configuration Method Options Status Reporting Help

-- Method Operation

* Nitrite Method Script.

FIAlab Injection Valve Sample Load
FIAlab1 Peristaltic Pump CounterClockwise(%) 60

Delay (sec) 10
Next Sample
Delay (sec) 45

Loop Start

Autosampler Wash
Analyte New Sample
Next Sample
FIAlab Injection Valve Sample Inject
Delay (sec) 3

Spectrometer Reference Scan
Spectrometer Absorbance Scanning

Delay (sec) 5

FIAlab Injection Valve Sample Load

Delay (sec) 35
Spectrometer Stop Scanning

Loop End

Autosave Data C:\Users\FIAlab\Desktop\FIAlab User Files\DateTime
FIAlab Peristaltic Pump Off

Devices

Sample Table

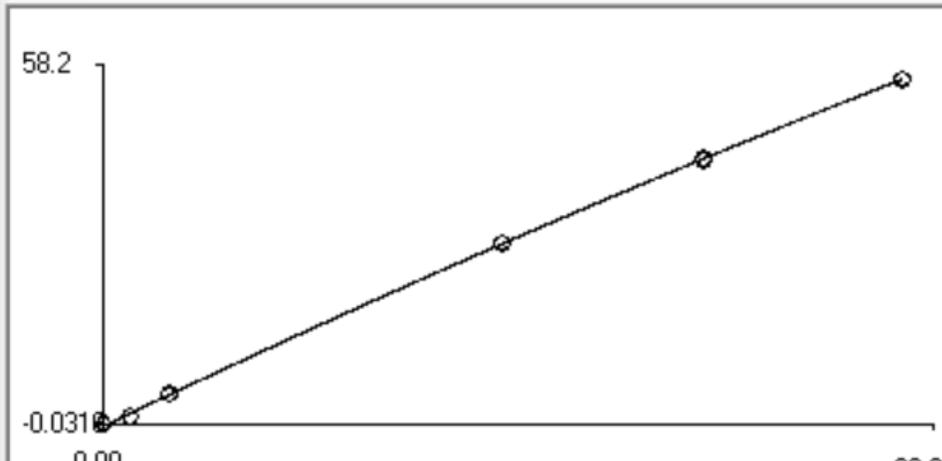
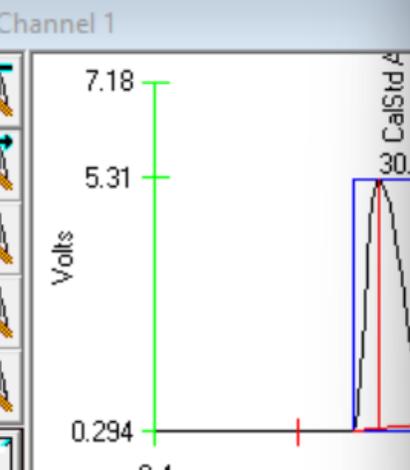
Method Operation



First Delete Standard in curve

S1	CalStd A
S2	CalStd B
S3	CalStd C
S5	Sample1
S6	Sample2
S7	Sample3

	Known Conc. (mg/L)	Rep.	Peak Area (V.s)	Peak Height (V)	% RSD	% Resid.	Unused	Det. Conc (mg/L)	Date	Time
1	30.0	1	58.0	4.91	0.2	0.1	<input type="checkbox"/>	29.9	9/17/2001	3:33:19 F
2	30.0	2	58.2	4.94	0.2	-0.2	<input type="checkbox"/>	30.0	9/17/2001	3:33:19 F
3	22.5	1	44.5	3.78	0.3	0.3	<input type="checkbox"/>	22.5	9/17/2001	3:33:19 F
4	22.5	2	44.7	3.79	0.3	-0.1	<input type="checkbox"/>	22.5	9/17/2001	3:33:19 F
5	15.0	1	30.5	2.58	0.3	0.0	<input type="checkbox"/>	15.0	9/17/2001	3:33:19 F
6	15.0	2	30.6	2.59	0.3	-0.4	<input type="checkbox"/>	15.1	9/17/2001	3:33:19 F
7	7.50	1	30.6	2.59			<input checked="" type="checkbox"/>		9/17/2001	3:33:19 F
8	7.50	2	30.7	2.60			<input checked="" type="checkbox"/>		9/17/2001	3:33:19 F
9	2.50	1	5.03	0.412	1.0	0.0	<input type="checkbox"/>	2.49	9/17/2001	3:33:19 F
10	2.50	2	5.10	0.416	1.0	-1.4	<input type="checkbox"/>	2.52	9/17/2001	3:33:19 F
11	1.00	1	1.44	0.113	4.3	21.5	<input type="checkbox"/>	0.821	9/17/2001	3:33:19 F
12	1.00	2	1.35	0.105	4.3	26.1	<input type="checkbox"/>	0.782	9/17/2001	3:33:19 F



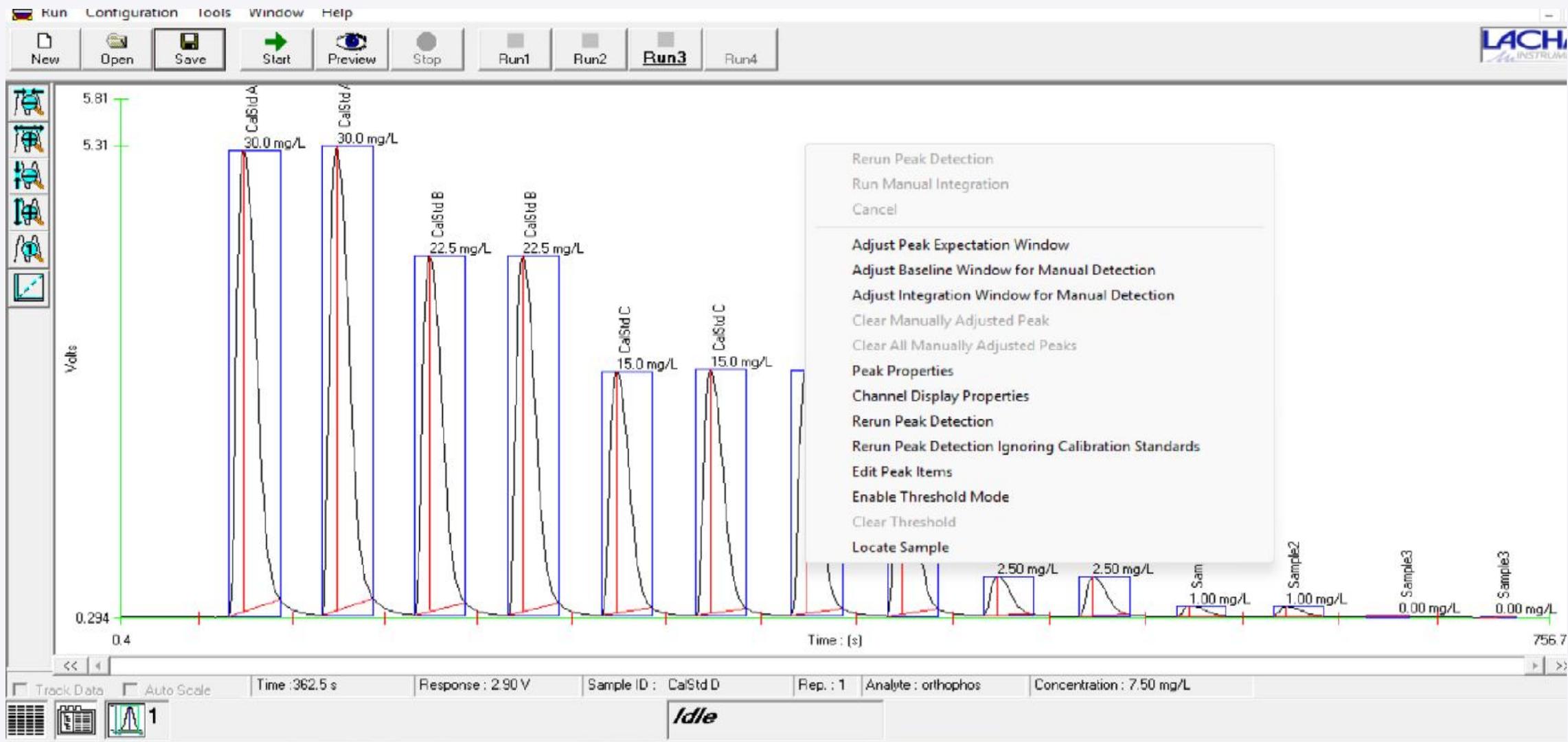
$Area = -6.84e-3 * Conc^2 + 2.15 * Conc - 0.313$
 $Conc = 9.55e-4 * Area^2 + 0.458 * Area + 0.160$
 Correlation Coefficient (r) = 0.99994

 Weighting : None

Sample3
0.00



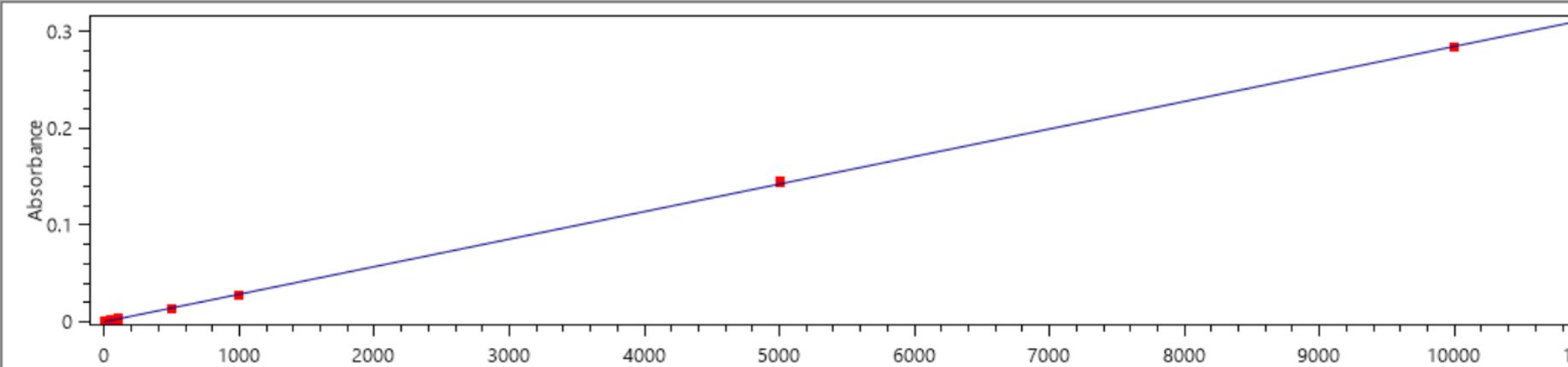
Rerun Peak Detection



Click – While running

FIAsoft Configuration External Calibration Background Correction Print Report Status Reporting Help

Channel 1 -540nm Channel 2 -580nm Channel 3 -595nm Channel 4 -600nm



Lock view

Fit model: 1st order polynomia
Weighting: none
 Inverse relation

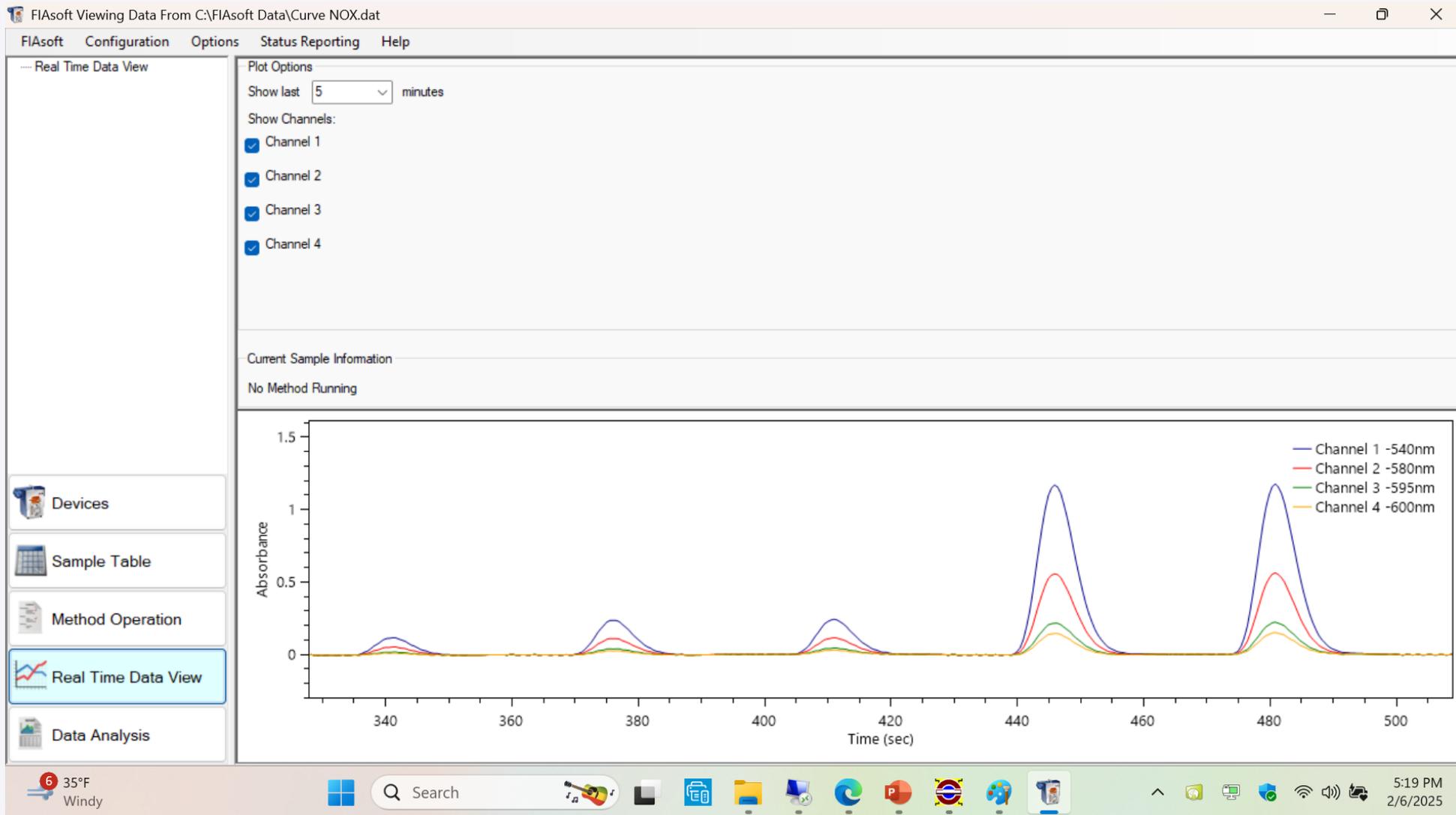
Fit Parameters
Coeff A: 0.00032
Coeff B: 0.00003
Coeff C: 0
Coeff D: 0
R²: 0.99986
RSE (%): 11.43502

	Name	Peak Response	Known Concentration	Calculated Concentration	% Error	Peak Time	Enabled
▶	0 ppb	0.0011	0	27.0646	NA	2018-04-17 10:1...	<input checked="" type="checkbox"/>
	0 ppb	0.0000	0	-9.6698	NA	2018-04-17 10:1...	<input checked="" type="checkbox"/>
	50 ppb	0.0019	50	55.2076	10.42	2018-04-17 10:1...	<input checked="" type="checkbox"/>
	50 ppb	0.0018	50	50.7465	1.49	2018-04-17 10:1...	<input type="checkbox"/>
	100 ppb	0.0040	100	128.6199	28.62	2018-04-17 10:1...	<input checked="" type="checkbox"/>
	100 ppb	0.0028	100	88.1418	11.86	2018-04-17 10:1...	<input checked="" type="checkbox"/>
	500 ppb	0.0137	500	468.667	6.27	2018-04-17 10:1...	<input checked="" type="checkbox"/>
	500 ppb	0.0138	500	472.2047	5.56	2018-04-17 10:1...	<input checked="" type="checkbox"/>
	1 ppm	0.0273	1000	947.1245	5.29	2018-04-17 10:1...	<input checked="" type="checkbox"/>
	1 ppm	0.0282	1000	978.9417	2.11	2018-04-17 10:1...	<input checked="" type="checkbox"/>

Devices
Sample Table
Method Operation
Real Time Data View



Wavelength Change



Wavelength Change-While running

FIAsoft Configuration Status Reporting Help

All Devices
- Detectors
 - Spectrometer1
- FIAlab Analyzers
 - FIAlab1
 - Autosampler
 - Autodilutor
 - Misc Accessories

Devices
Sample Table

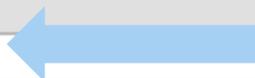
Configure Detectors

Name	Type	Assay	Continuous
Spectrometer1	Spectrometer	NO3	<input type="checkbox"/>

Add Detector Remove Detector

Configure Channels

Name	Assay	Wavelength	Units
Channel 1 -540nm	NO3	540	
Channel 2 -580nm	NO3	580	
Channel 3 -595nm	NO3	595	
Channel 4 -600nm	NO3	600	



SOFTWARE

FIAsoft

- In house managed software by PhD chemists
- Easy load-in software configurations for chemistry switchovers
 - On-the-fly Analysis
 - Intuitive Quality Control
 - Full Spectrum Range
 - Compatible Data Management and Integration
 - Multilingual feature

FIAsat

- Free status webpage to link your run to a web browser
 - See runtime, if calibration/QC are passing
 - **Not available from any other competitor!**



The screenshot shows a web browser window with the address bar displaying "fiastat.com". The page has a navigation bar with "Settings", "Status", and "Log Out" buttons. Below the navigation bar, it shows "User: Lab Tech1" and "FIAnalyzers: 2". A table displays the status of two analyzers:

FIAnalyzer:	NH3	NOx
Connection:	connected	connected
Status:	running	running
Est. Time Remaining:	0d 0h 37m 23s	0d 1h 42m 46s
Current Sample:	1 of 60	15 of 150
Calibration:	OK	Passed
QC:	OK	Passed
Since Last Update	0d 0h 0m 23s	0d 0h 3m 46s
Serial #:	10000	19999

At the bottom of the page, there are buttons for "Privacy Policy", "FIA", and "Terms of Use".



FIASAT-Real Time Monitoring

Settings

Status

Log Out

User: Demo

FIAnalyzers: 6

FIAnalyzer:	Demo	SCOTTS DEMO		Bens Demo		
Connection:	connected	connected		not connected		
Status:	idle	running		not connected		
Est. Time Remaining:				not connected		
Current Sample:	0 of 480	2 of 7	of	0 of 63	of	of
Calibration:	OK	OK		not connected		
QC:	OK	OK		not connected		
Since Last Update	0d 0h 0m 13s	11d 6h 35m 41s	11d 6h 27m 42s	0d 0h 0m 7s	346d 14h 52m 2s	346d 14h 51m 52s
Serial #:	29012	31563	31541	31609	30817	31022



FIASTAT-Real Time Monitoring

The screenshot displays the FIASoft software interface. The 'Status Reporting' menu is open, showing 'Send' and 'Options' options. A blue arrow points to the 'Send' option. The main window shows a table with the following data:

Device Name	Device Status
Autosampler	Disconnected
Spectrometer1	Disconnected
FIAlab1	Disconnected

Below the table, there is a large greyed-out area. The left sidebar contains a tree view of devices and a 'Devices' button. The bottom of the interface has several tabs: 'Sample Table', 'Method Operation', 'Real Time Data View', and 'Data Analysis'.



4



WHY CONTINUE WITH FLOW INJECTION?

Flow Injection Upgrade Path



SAVE from Loss of Investment

- Trade in on whole unit
- Autosamplers (AIM or CETAC)
- Cadmium Columns cross-compatible with QuikChem series
 - Add-on Lachat Adaption kit
 - Improved lead time and lower cost & longer shelf life
- Similar SOPs
 - NOx has almost identical reagents as QC 8500 methods



Flow Injection Advancements

1. Footprint
2. Spectrometer
3. Remote Troubleshooting-Online Applications
4. No O-rings
5. Software on current platform (C#)
6. Lab On Valve Design
7. Can buy and replace the rotor and align with software (LEAST MOVING PARTS AND LOWEST COST TO MAINTAIN)
8. Fastest up to 211 samples/Hour on our Fast Soil Phosphorus method in real time 1 channel



Flow Injection Advancement

1. Better Modular Design-KISS (keep it smart & simple) Less Failure & Less Clogs
2. Built High-Quality materials (not plastic QC8500 like the days of the QC8000)
3. Every Channel is a unique instrument which means redundancy 3X in a 3 channel (less down time to customer)
4. Flow Cells customize 1-10 cm (Lachat only had 1 & 2 cm)
5. LESS CLOGS! And easier to see if they happen in valve and fix
6. Selling Solutions - Service & Support Essential





THANK YOU