

FIAlab Instruments Inc.

FIAlab®

Fluidics Intelligently Automated

HELLO!

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WE LOVE FLOW INJECTION

FIALab Instruments is based in Seattle, WA with manufacturing, technical support and service at its Lake Union headquarters. FIALab has perhaps the strongest roots in flow injection out there. The inventor of these FIA techniques (J. Ruzicka) founded FIALab in 1987. For over 30 years, we have remained on the cutting-edge of these techniques and have significantly improved these technologies in soil, water and wastewater chemistry methods. flowinjection.com

HOW DID FIA BECOME MARKET LEADER

- ▶ Speed: up to 430 samples / h X 8 means 3440 per hour. Typical 120 to 200/hour
- ▶ Speed: calibration done in ~5 min from start /Phosphorus peak in **8 SECONDS** now that is Real time analysis
- ▶ Carryover: complete return to baseline b/w injections
- ▶ Use of plastic (Teflon) capillary tubing
- ▶ Wider Dynamic Ranges –Less Reruns/dilutions needed (Compared to Discrete/SFA)
- ▶ Simultaneous Determinations instead of sequential (versus Discrete)
- ▶ Lowest Cost of Operation per sample of \$1 or less



FOCUS POINTS

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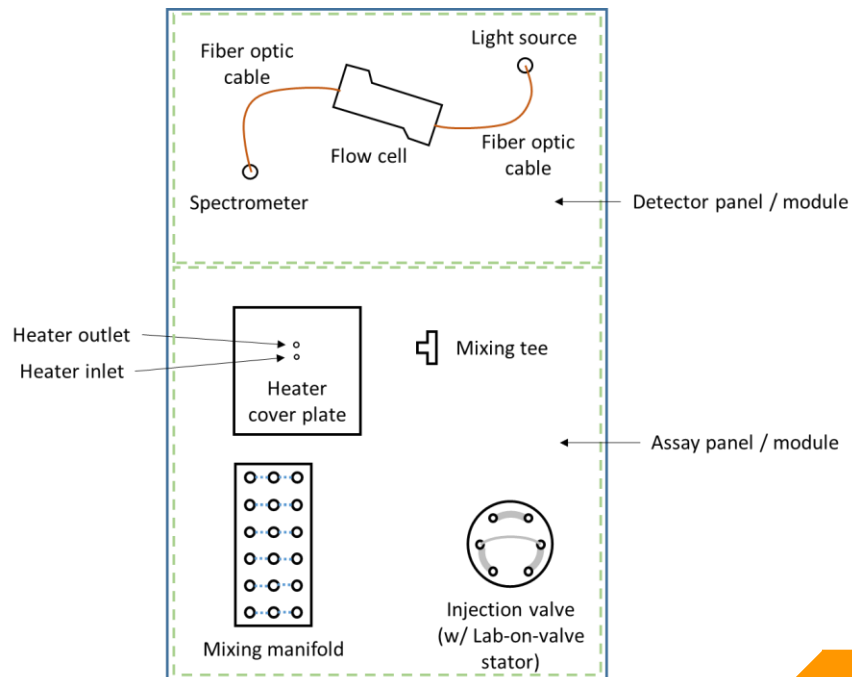
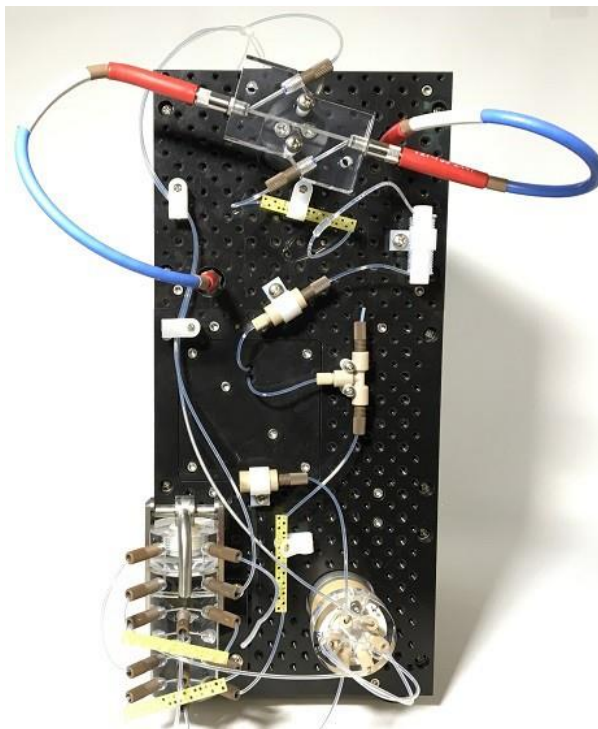
- Easy transition from QC8500 to FLEX or FIA1000
- Similar Hardware (Sampler/Pump/FLEX)
- **Benefits of FIALAB**
 - A. Full Array Spectrometer-Multiple Wavelengths
 - B. Cutting Edge Software-Easy to use
 - C. Lab On Valve Design
 - D. No O-rings
 - E. Small Footprint
 - F. Full Redundancy- **3X BACKUP**



FIALYZER-FLEX – LAYOUT

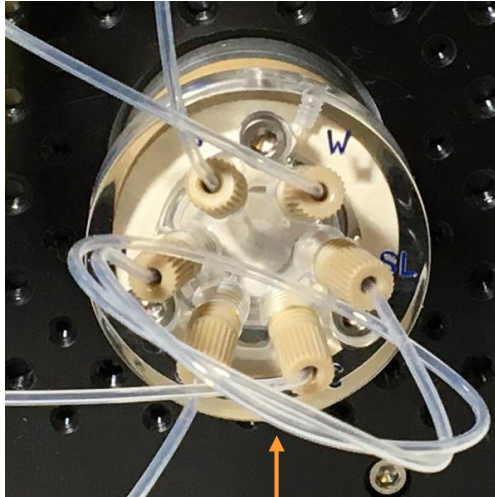
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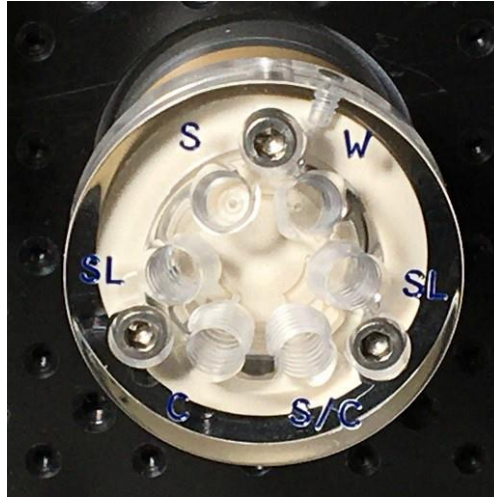




FIALYZER-FLEX – ORGANIZATION



Sample loop



■ Lab-on-valve (LOV) manifold

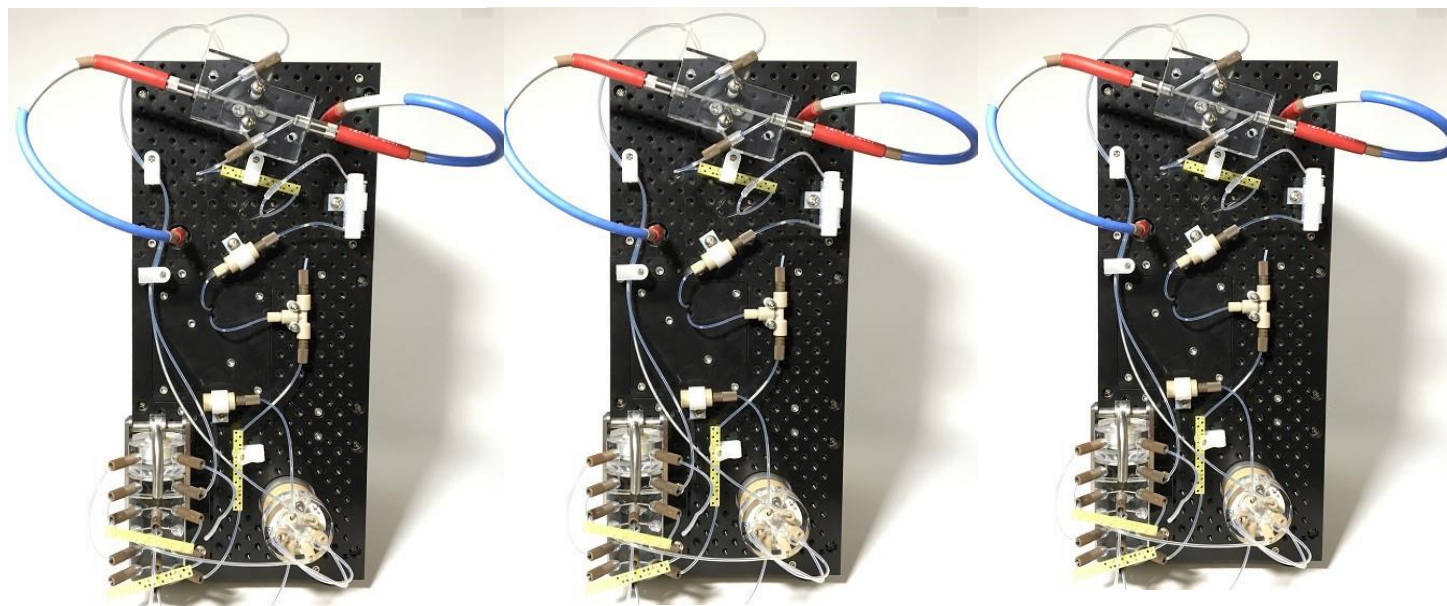
- ▷ FIAlab design
- ▷ Replaces traditional injection valve stator
- ▷ Transparency of valve operation
 - valve no longer a black box for customer
 - tremendous help in troubleshooting
- ▷ Fluidic organization (labeled ports)



Three Channels

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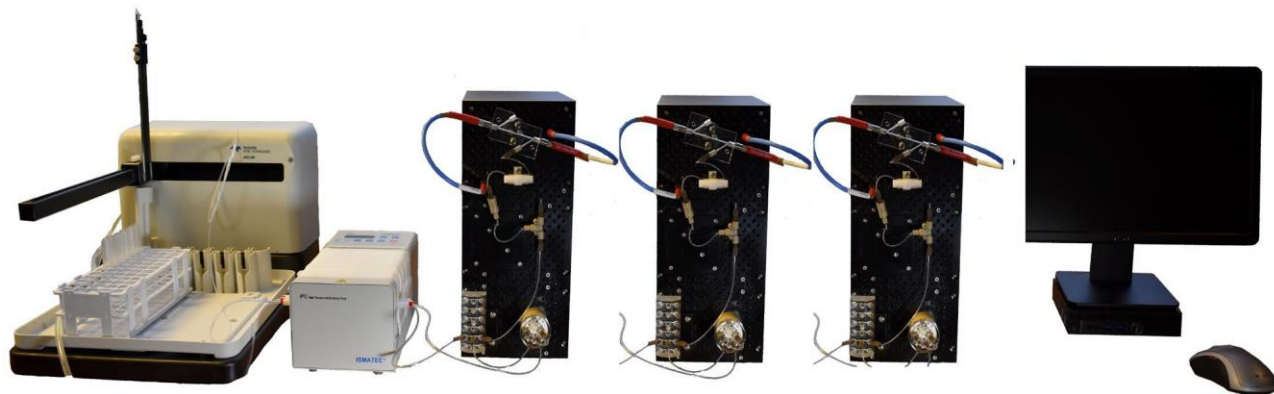
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FLEX INLINE-STACK FOR SIMULTANEOUS

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WE AUTOMATE SOIL & WATER ANALYSIS (EPA APPROVED)

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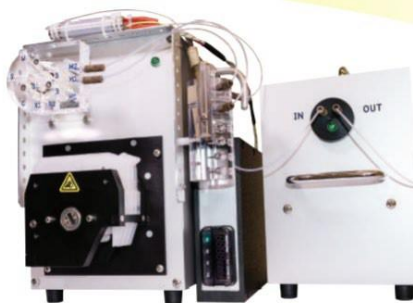
•APPROVED
JULY 19th 2021

Alkalinity

Method number	Lower	Upper	MDL	Units	Sample / Hour	Matrix	Compliant With	Notes
ALK-W-1-1	1 10	50 500	0.3 3	g CaCO ₃ / L	50	Waters	EPA 310.2	Methyl Orange 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 NH ₃	120	Soil extracts	N/A	Salicylate method for soil extracts.
NH3-W-1-2	0.5	20	0.1	mg N / L as NH ₃	60	Waters	EPA 350.1	Salicylate method with gas diffusion.
NH3-W-1-4	0.5	20	0.1	mg N / L as NH ₃	60	Waters	SM 4500-NH ₃ H.	Salicylate or phenate method with gas diffusion.
NH3-W-2-1	0.05	0.5	0.02	mg N / L as NH ₃	60	Waters	EPA 350.1	Salicylate or phenate method with gas diffusion, utilizing low-noise detector.
NH3-W-2-3	0.05	0.5	0.02	mg N / L as NH ₃	60	Waters	SM 4500-NH ₃ H.	Salicylate or phenate method with gas diffusion, utilizing low-noise detector.
NH3-W-2-5	0.006	1	0.002	mg N / L as NH ₃	60	Waters	SM 4500-NH ₃ H.	Salicylate or phenate method, utilizing low-noise detector.
NH3-W-3-2	0.05	10	0.012	mg N / L as NH ₃	60	Waters	EPA Rec.	OPA method with gas diffusion, utilizing fluorometric detector.



FIA1000 EXTREMELY SMALL SIZE 25 cm X 15.2 cm

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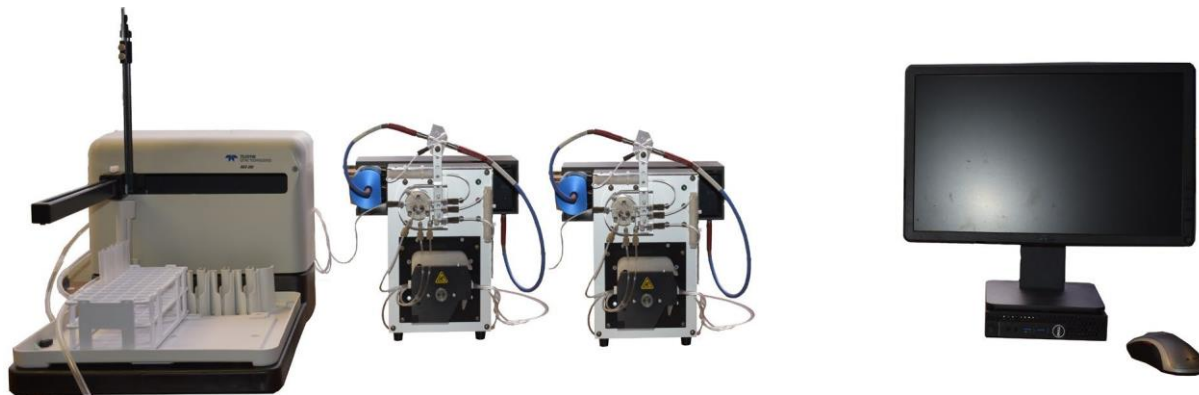


60 cm X 25 cm X 50 cm
Reagents 5 cm (actual space 10cm)

SIMULTANEOUSLY RUN MULTIPLE ANALYTES

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SOFTWARE CONTROLLED ISMATEC PUMP

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FL-1000 Pump

The FL-1000 pump features a planetary drive for less pulsation and longer tubing life. The eight SS rotors provides smooth rotation and accurate liquid flow. This pump requires fewer tubing changes and can handle flow rates of 0.002 to 44 mL/min per channel. Flow rates depend on drive rpm and tubing size. See page XX for a complete list of FIAlab's pump tubing. The FL-1000 pump is simple to use and includes automatic occlusion cartridges, which provide reproducible results.

Pump Extensions

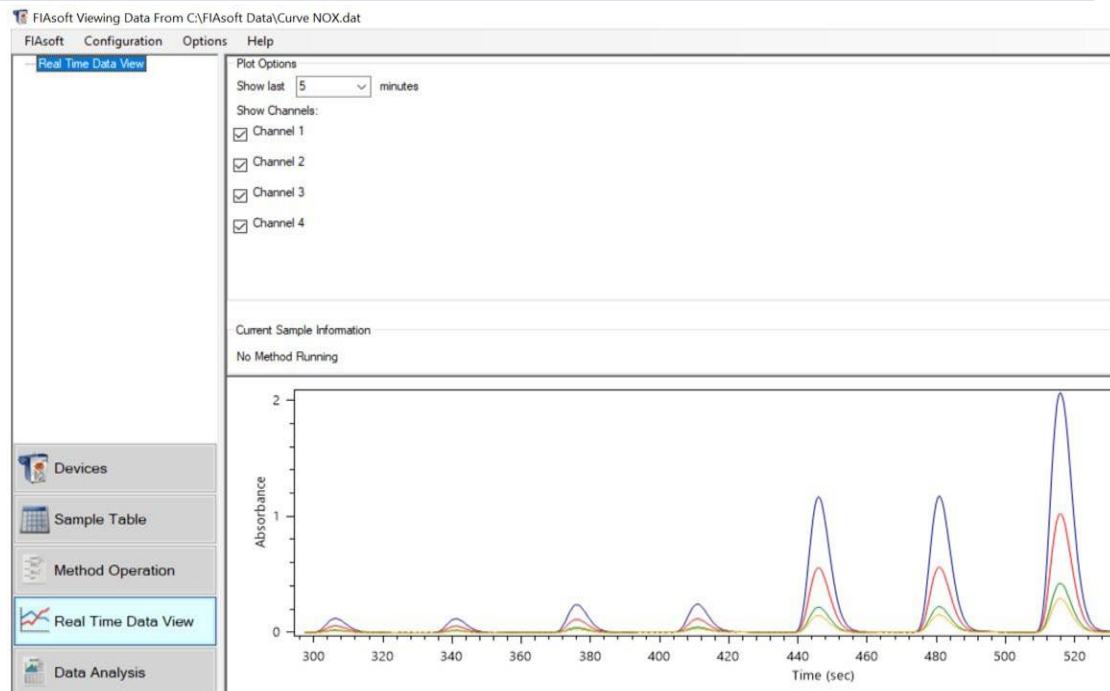
The FL-1000 pump can be extended up to 8 channels to accommodate multiple chemistries.



FULL ARRAY SPECTROMETER-NO ONE ELSE !

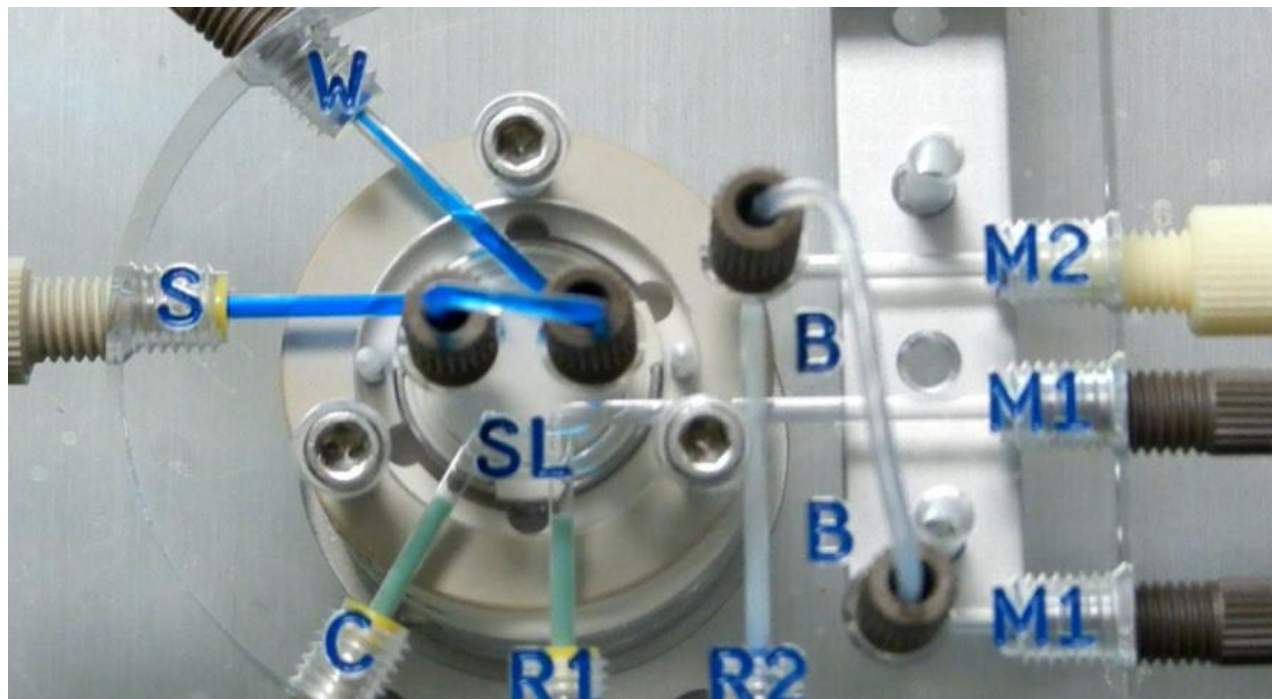
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— Channel 1 -540nm
— Channel 2 -580nm
— Channel 3 -595nm
— Channel 4 -600nm

LAB ON VALVE DESIGN



FLOW CELLS

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STS Series Spectrometers
Ocean Optics

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

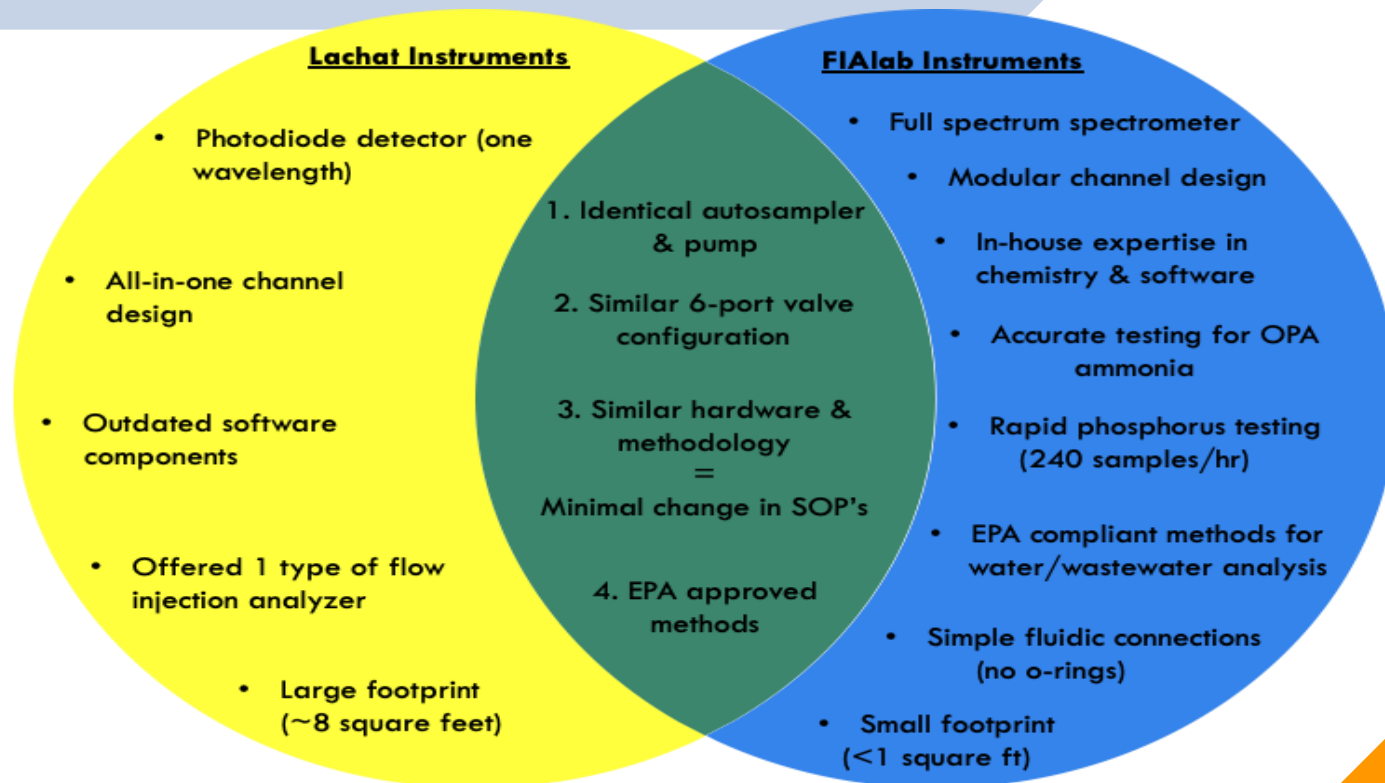


Assorted flow cells

Materials Available:

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

SIMILARITIES FROM LACHAT QC8500 Series I or II/8000



UPGRADE PATH

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■ *SAVE FROM LOSS OF INVESTMENT*

- ▶ Cetac Autosampler(ASX 500 after 2005)
- ▶ Consumables (Cadmium column)-FIALab has improved with their updates to this product
- ▶ SOP's NOx has same reagents as QC8500 Methods



20 Reasons FIAlab is an improvement over Everyone

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1. Footprint
2. Spectrometer
3. MDL's
4. Remote Troubleshooting
5. No O-rings
6. No Pump tube adapters
7. Software on current platform
8. Software able to customize if customer wants
9. Lab On Valve Design
10. Reverse Sample line no need to wait for dead volume -Faster Time to valve

20 Reasons FIALab is an improvement

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1. Can buy and replace rotor and align with software
2. Faster up to 360 samples/Hour on our Fast Phosphorus method-REAL TIME
3. Pump tubes by being 3 tab last twice as long
4. Digitally controlled pump
5. Chemistry sometimes use all same color pump tube
6. Built High Quality materials
7. Every Channel unique instrument which means redundancy 3X in a 3 channel
8. Flow Cells customize 1-100 MM
9. LESS CLOGS! And easier to see if they happen in valve and fix
10. Many More VS. Segmented Flow or Discrete as Lachat was preferred, IE Flow Injection

Let us find your solution!



THANK
YOU!