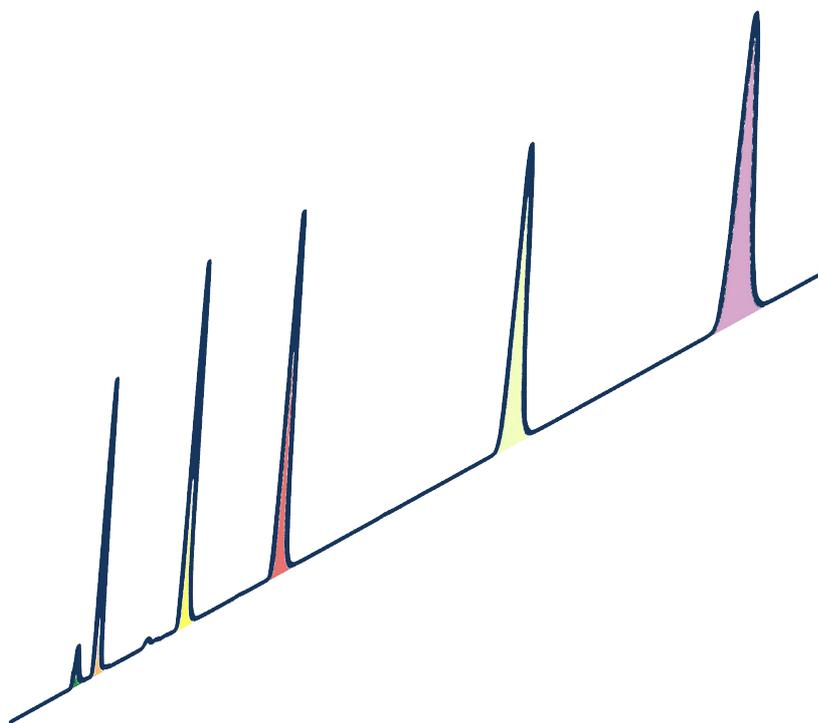
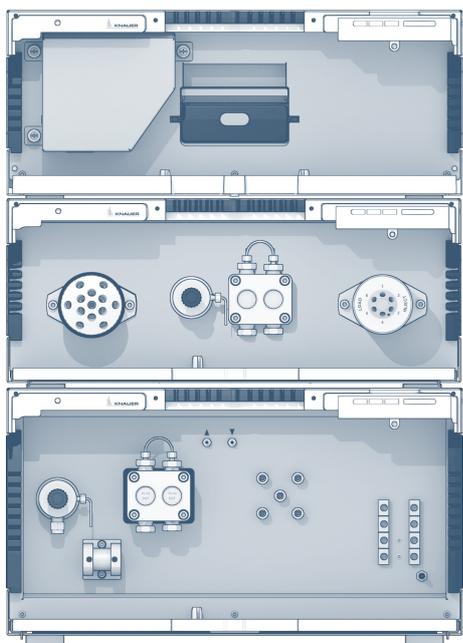


# Observ-Online HPLC

Versatile instruments and solutions



# Observ-Online



**Highly customizable HPLC  
Hardware platform**



**A new Online-HPLC with extended system pressure and flexibility,  
designed for both research and routine purposes**

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## Expert level for every task

The Observ-Online HPLC Analyzer is designed for reliability, accuracy and low maintenance. Its IC and HPLC capabilities allow the determination of species that are not possible with other process analytical techniques. Multicomponent characterization of a sample can be performed in a single analysis and multiple samples can be scheduled for automatic analysis.

## Extensive possibilities

With a wide array of detectors, auxiliary pumps and valves, the system can be tailor-made upon your needs. Our knowledge and experience is at your service to help you find the right configuration to solve your problem.

## Up and Running from Day 1

We implement your method during installation and training. In this way you can start analysing from the first day. The intuitive Clarity™ software helps in faster development of new methods.

## Service and support from the experts

A team of experts is available to help you out whenever problems might occur. We will never leave you in the dark and will support you throughout the whole life cycle of your instrument.

Solvent delivery modules (choose 1)

Isocratic:

- 400 bar (0 – 10ml/min)
- 700 bar (0 – 10ml/min)

Gradient:

- 400 bar HPG (0 – 10ml/min)
- 700 bar LPG (0 – 10ml/min)
- 700 bar HPG (0 – 10ml/min)

Auxiliary pump modules (choose up to 4)

Isocratic:

- 400 bar (0 – 10ml/min)
- 700 bar (0 – 10ml/min)

Gradient:

- 700 bar LPG (0 – 10ml/min)
- 700 bar HPG (0 – 10ml/min)
- 400 bar HPG (0 – 10ml/min)

Column oven (choose 1)

- Amb. +5°C – 100°C
- Amb. -15°C – 100°C

Software + extensions

Clarity CDS

- SST
- GPC
- PDA
- MS

Design your system

Selector Valves (choose up to 4)

- 1pos. – 4port
- 1pos. – 6port
- 1pos. – 8port
- 1pos. – 10port
- 1pos. – 12port

switching Valves

- 2pos. – 6port
- 2pos. – 8port
- 2pos. – 10port

Injector

2-pos/6-port valve and multi-position valve in autosampler configuration

Detector modules (choose up to 4)

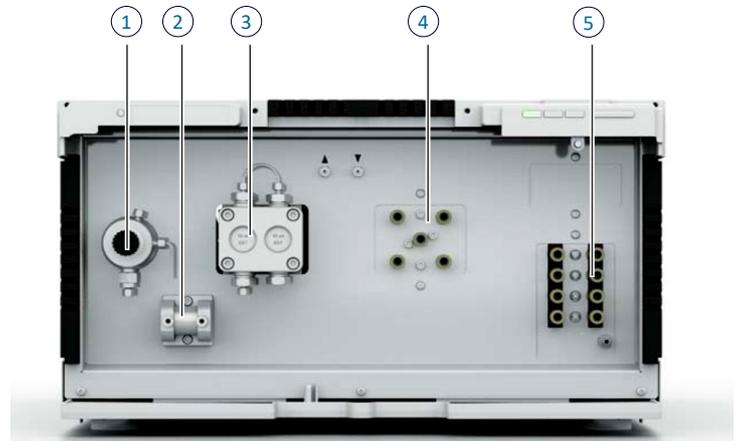
- UV/VIS
- DAD
- RI
- FLD
- ELSD
- mSQD

# Solvent Delivery

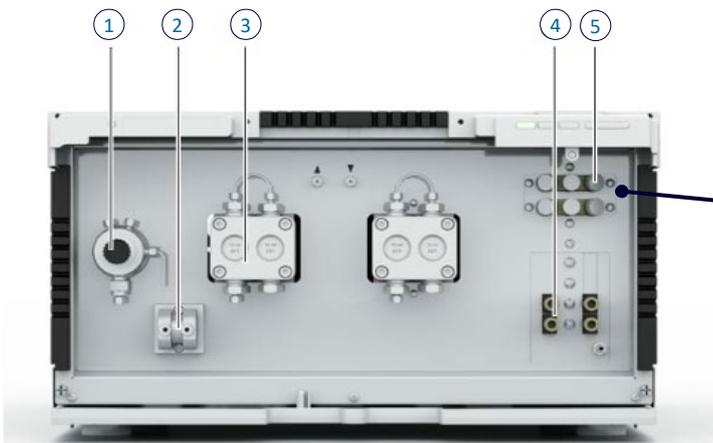
## EXP – P172 & P174

The analytical pump combines all essential components of a first class HPLC pumping system. Threedifferent configurations are available: A 2 x 2 binary high pressure gradient (P102) for high accuracy blending of up to two eluents from two selectable solvents each; a low pressure gradient (P174) for reliable blending of up to four eluents and a very cost-effective isocratic version for easy analyses.

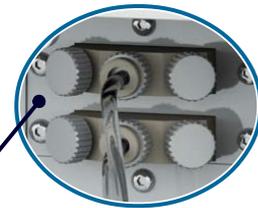
Excellent separations with small particle size columns can be achieved with the high-performance pump heads featuring an extended back pressure. Special pump heads for Normal Phase applications will help to deliver robustly even demanding eluents like heptane or hexane.



1. Pressure sensor 2. Mixer 3. Pump head 4. gradient valve 5. Degasser

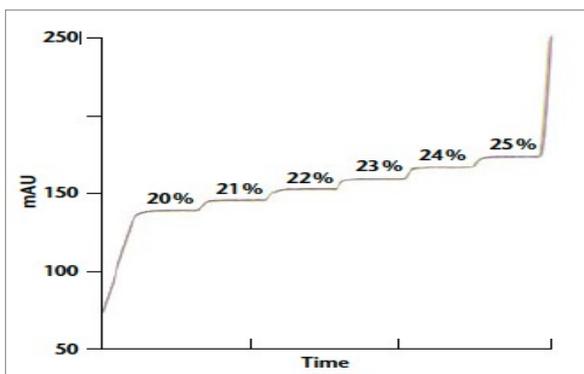


1. Pressure sensor 2. Mixer 3. Pump head 4. degasser 5. Solvent selection



### Solvent Selection Valve

Integrated in every binary HPG pump, each channel can be used with two different solvents



Excellent gradient reproducibility of 0.3 % RSD.  
Overlay of 6 repetitions at 1 ml/min run with pump P17x low pressure gradient version

## High or low pressure gradient?

The choice of gradient formation technology is essential for a HPLC/UHPLC system. HPLC-EXP systems can be equipped with either a high or a low pressure gradient pump. Both techniques have advantages and disadvantages.

A low pressure gradient (LPG) module dynamically composes the eluent on the inlet-side or low pressure side of the pump head, by quickly switching between the different solvent channels.

The P17x pump technology adapts to the mixer volume and changes the valve switching cycle time accordingly.

The eluent in a binary high pressure gradient (HPG) system is composed by combining the solvent flows of two pump heads.

# Sample injection

The Automated Sampling Module (ASM) is equipped with the pump(s), stream selector valve and injection valve. Up to 16 different streams can be selected for one system. Calibration standards are defined as 'a stream' which makes it possible to automate calibration with multiple calibration standards.

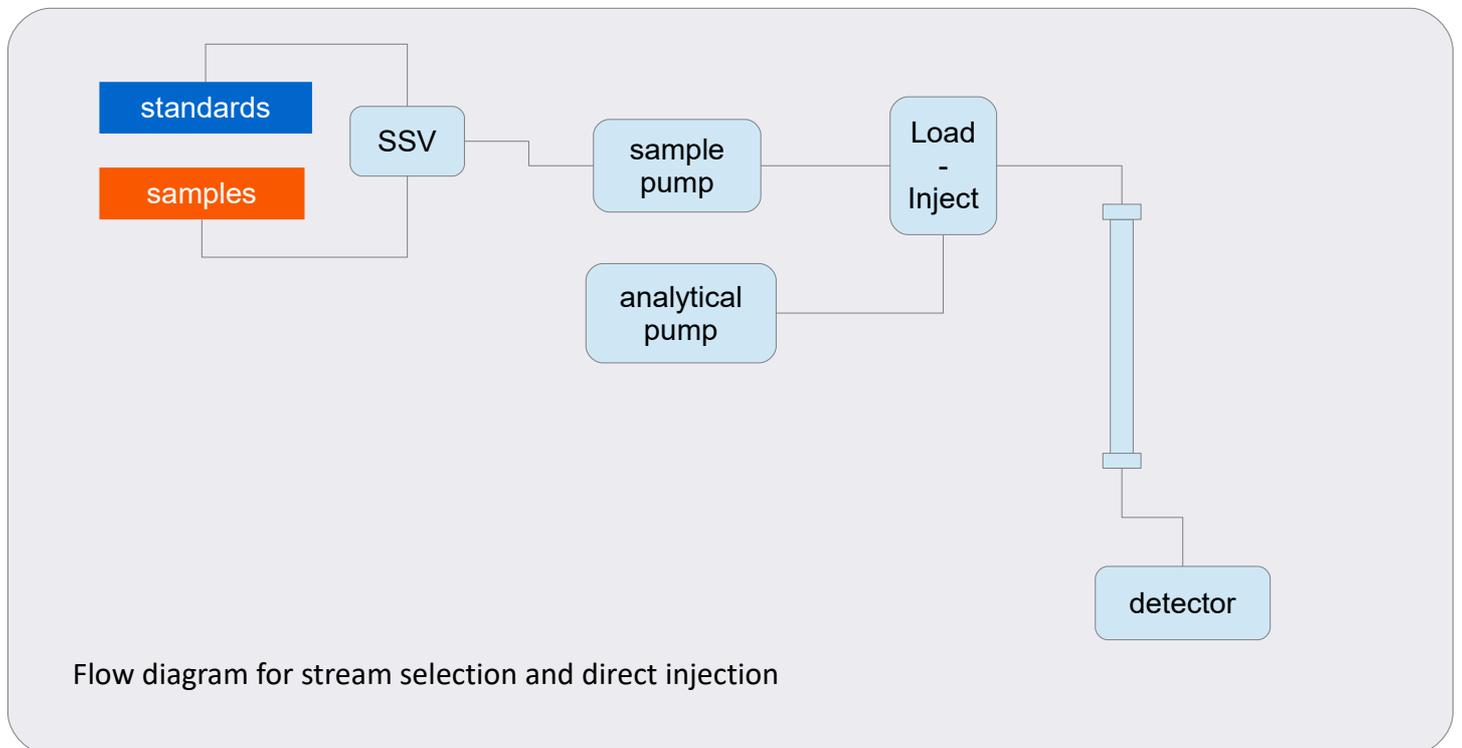
Additionally extra pumps, valves, dilution vessels and concentration columns can easily be implemented for a real tailored solution.

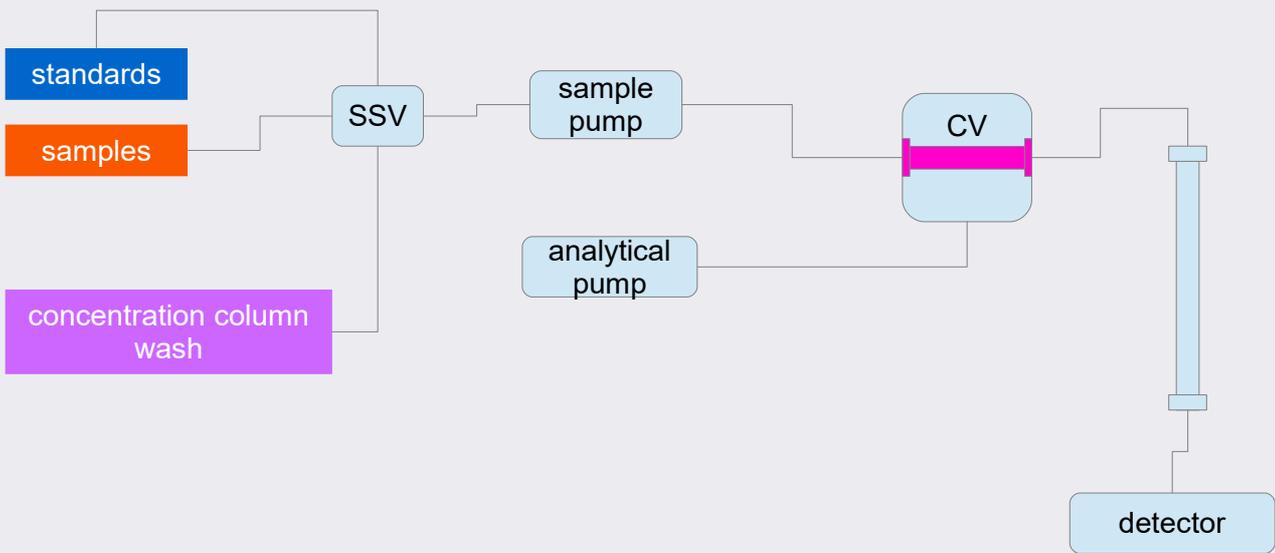
3 possible standard configurations:

- direct injection
- concentration and injection
- dilution and injection

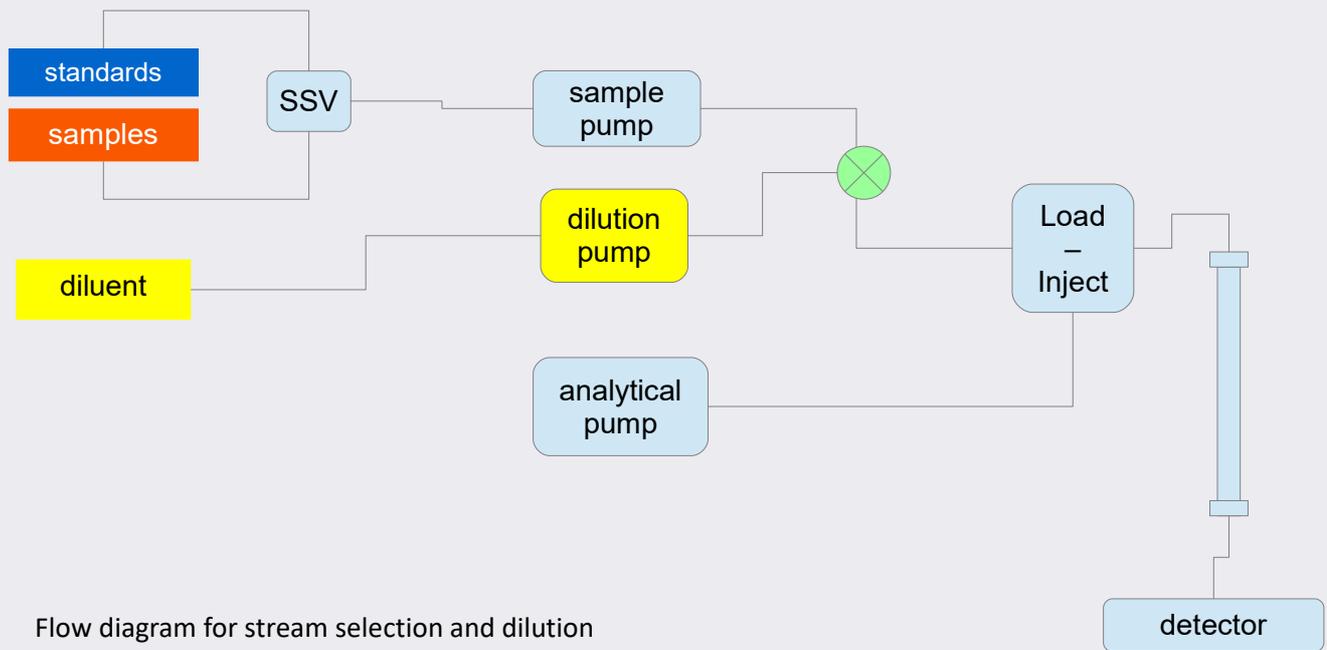
More possibilities:

- Post-column reaction
- heart-cutting LC
- multidimensional LC
- ...





Flow diagram for stream selection and concentration



Flow diagram for stream selection and dilution

# Column thermostating

## CT 2.1

Almost every parameter defining a chromatographic separation is temperature dependent. Suffice to say that temperature control provides an indispensable tool to optimize your online-HPLC analysis. As you will easily recognize, retention times will be more constant with constant temperature, but varying the temperature can also be a great help to tune selectivity, improve peak shape and reduce analysis time. Plus, high temperatures reduce column back pressure significantly, allowing higher solvent flow rates, narrower columns or smaller particles. Clearly, such benefits will only come true if the temperature itself is stable and precise, and without temperature gradients in the oven or the column. And this is exactly what we had in mind when we designed the CT 2.1 with its forced air oven, excellent temperature control and integrated solvent pre-heater.



### Easy fit

Extensive remote control I/O, including PC control, makes integration into your HPLC or UHPLC system an easy job. The large column area will accommodate almost any column size and the small footprint will hardly increase the bench space required by the system.

### Automated column selection

Select up to 6 different columns via the keyboard or the PC! This feature comes as an option and will be a great help if you want to run multiple assays on a single system.

- 5 – 90°C
- Vapour sensor
- Temperature gradient programming
- Integrated solvent pre-heater
- Excellent temperature stability
- Automated column selection

## EXP-CO372

CO372 Column Oven is an ideal tool to grant stable separation temperature even if laboratory temperature fluctuates during the day. Thanks to the wide temperature range improve the separation condition at saccharides analysis and many applications requiring high temperature. Thermostat for temperature control of chromatographic columns in ranging from 10 °C above the laboratory to 100 °C. Column compartment is easily accessible - after the lid is opened. Column compartment length is enough to place the column including pre-column up to a total length of 450 mm. The tempering block can be added for temperature equilibration of the inflowing fluid. Column compartment lid is designed to allow lead the capillary in any place. Column oven only works with a secure supply voltage, integrated processor provides for the management of heating and measurement. Oven is protected by an independent thermal fuse against overheating. The basic configuration (no controller connected) is intended for the thermostat temperature setting from the computer (Clarity data system). Status attainment and heating temperatures are indicated by two LEDs on the thermostat housing.



- Heating up to 100°C
- Excellent temperature stability
- economical solution

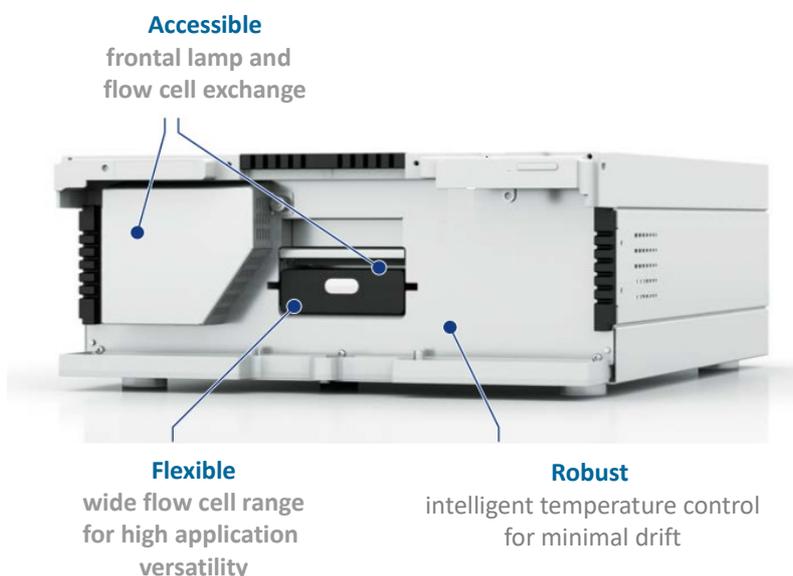
# UV-Detectors

## DAD471

The EXP- DAD471 is a high-end diode array detector (DAD) which combines outstanding performance with easy handling.



A wide range of easily exchangeable flow cells make this device the right choice for fast, standard analytical, semi-preparative and preparative separations with bio-compatible or stainless steel wetted parts. State-of-the-art total reflection flow cells (LightGuide technology) are available for this detector providing maximum light throughput (due to total internal reflection) with minimal peak dispersion (due to small cell volume) to guarantee an optimized signal to noise (S/N) ratio.



## Which flow cell suits your application best?



PressureProof Flow cell

10mm path

10µl volume

20ml/min flow rate

Standard HPLC

> 3µm particles



Lightguide flow cell

10mm path

2µl volume

5ml/min flow rate

Fast HPLC

< 2µm particles and core-shell technology



High-Sensitive Lightguide flow cell

50mm path

10µl volume

5ml/min flow rate

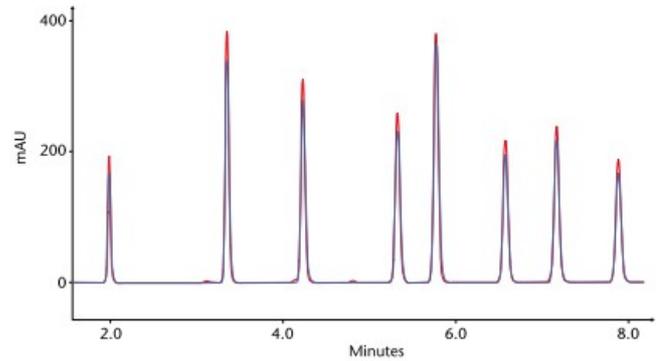
High sensitivity fast HPLC

< 2µm particles and core-shell technology

## Guidance in correct flow cell selection

### Standard HPLC

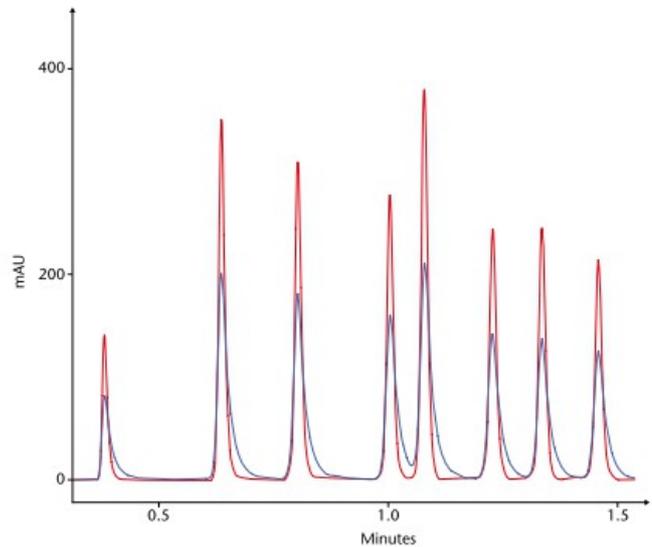
Choose the PressureProof flow cell if you are using particles  $> 3\mu\text{m}$ . The difference in peak shape and sensitivity is comparable between both type of flow cells.



HPLC separation performed with an analytical PressureProof flow cell (blue) vs. a Standard LightGuide flow cell (red)

### Fast HPLC

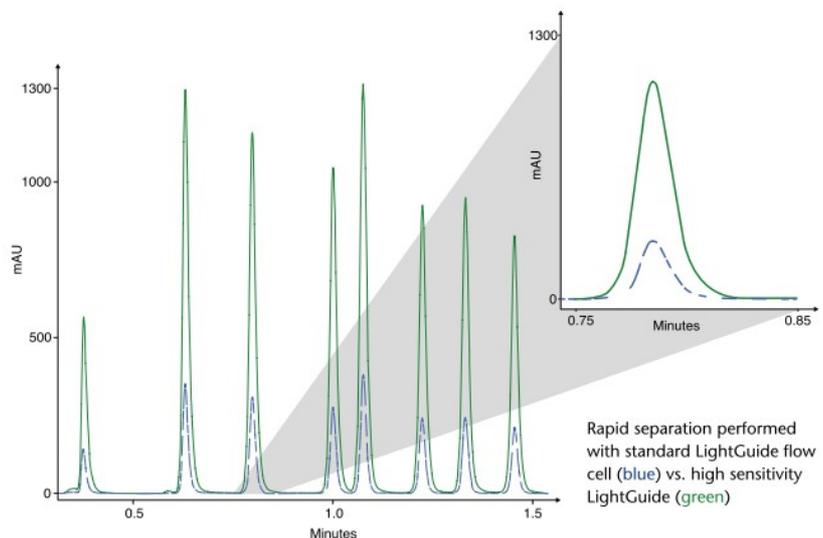
Choose the standard LightGuide flow cell if you are using particles  $< 2\mu\text{m}$  or core-shell particles.



UHPLC separation performed with an analytical PressureProof flow cell (blue) vs. standard LightGuide flow cell (red)

### High Sensitivity Fast HPLC

Choose the High Sensitivity LightGuide when using particles  $< 2\mu\text{m}$  or core-shell particles and sensitivity is key.



Rapid separation performed with standard LightGuide flow cell (blue) vs. high sensitivity LightGuide (green)

## UVD472-L

The UV472 UV/VIS Detector is a competitively priced HPLC spectrophotometer for routine HPLC applications including fast LC methods. Besides offering excellent technical specifications, this robust detector features a highly flexible and compact design.

Due to a smart design the flow cell is easily accessible and can be changed very quickly. You can choose between a wide range of flow cells for analytical or preparative LC applications with flow rates from 10  $\mu\text{l}/\text{min}$  up to 10 l/min.



## UVD472-S

This small detector is a highly competitive single variable wavelength UV detector for HPLC. It offers excellent technical specifications for routine laboratory work. With its small footprint, it is one of the smallest detectors for HPLC on the market. The installed deuterium lamp covers a wavelength range from 190 to 500 nm.

Due to a smart design the flow cell is easily accessible and can be changed very quickly.

## RID 2.1L

The RID 2.1L refractive index detector is a competitively priced differential refractometer suitable for detecting compounds with little or no UV activity such as alcohols, sugars, lipids or polymers. This instrument is designed for use in analytical HPLC (high performance liquid chromatography) as well as for GPC (gel permeation chromatography) applications.

The intelligently designed optical unit with advanced temperature control ensures high sensitivity, fast baseline stabilization, and excellent reproducibility. Furthermore, the long-life LED, highly pressure resistant flow cell, improved safety features and enhanced diagnostics functions guarantee easy handling and minimal maintenance.

Optional touch display (stand-alone operation), and analog input/output; allows it to be integrated into almost any LC system.



## ELSD474

The Evaporative Lightscattering Detector ELSD474 is a universal detector for HPLC. It is used to analyze components which do not have UV absorption, cannot be separated with an isocratic solvent and must use a gradient elution, which cannot be used with a refractive index detector. Only mobile phases with volatile buffers should be used.

In contrast to other evaporative light scattering detectors all parts of the the ELSD474 detectors which come in contact with the sample are made of PTFE or glass. By this these parts are inert to common solvents and easy to clean. One more advantage of glass parts is the fact that contamination can be located easily. The nebulization takes place in the glass nebulization chamber. From here the aerosol is guided into the evaporation chamber which is made of glass, too. The solvent evaporated and only small sample particles reach the detection chamber. Here this particles pass a beam of bright light. By this the light is scattered in all directions. The scattered light is detected by a photomultiplier in an angel of 120°.

# Observ-Online: online-filter units

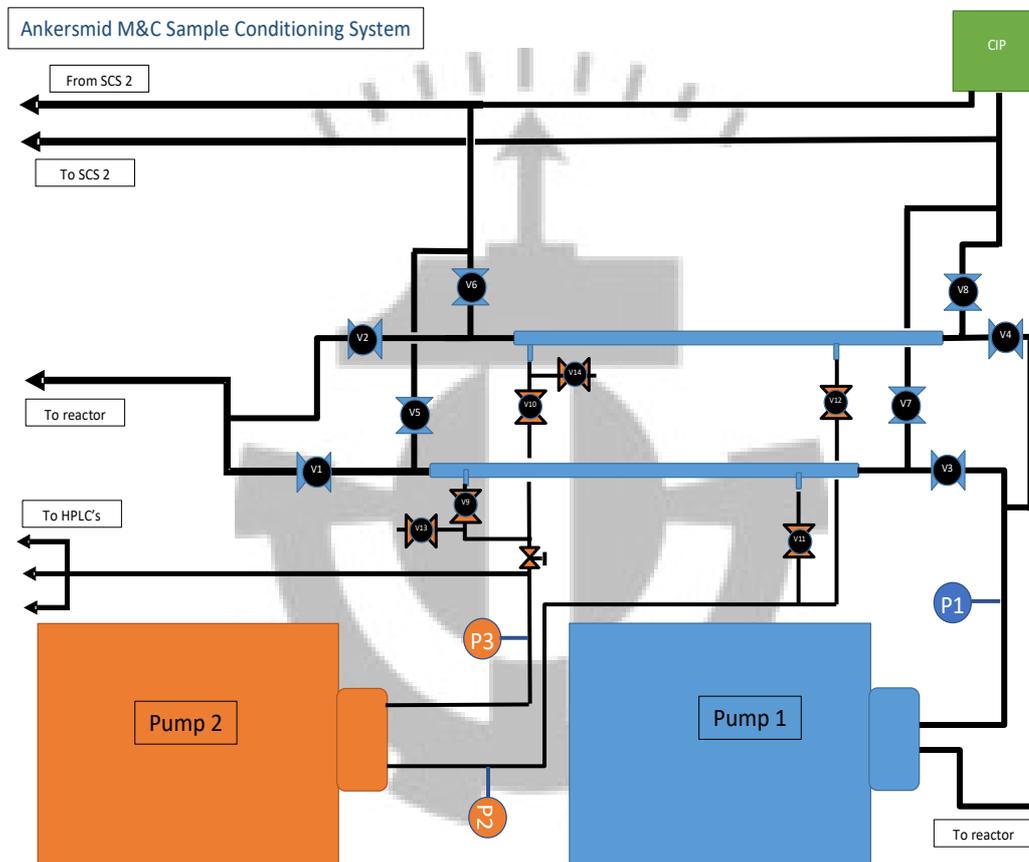
Injecting sample from online streams require the sample to be cleared from particles bigger than  $0,2\mu\text{m}$  to prevent blockage of the column and damage on the sampling pump.

At Ankersmid M&C we have developed an easy to implement tangential flow filtration (TFF) unit that can be put in front of the HPLC system. (Depending on the concentration of larger particles a pre-filtration step might be necessary).

The online-filter unit exists in a single and double TFF (parallel) version. All valves and meters can be automated if desired.

Filter cartridges can be chosen in the micro-filtration and ultra-filtration range.

Clean-in-place (CIP) or backwash is available as an option.



# Observ-Online: Auxiliary devices

## Valves: Unlimited possibilities

By adding valves to your system configuration, you can virtually design your system to your needs. 2D-LC, online-SPE, column selection, stream selection, two parallel detectors, alternating column regeneration,...



Ask us for more info, possibilities or custom made solutions that can address your application problem.

## Auxiliary pumps

Small multi-purpose pumps with or without pressure sensor with a pressure limit of 400bar.

- versatile due to wide flow rate range (0.001-10 ml/min)
- powerful and precise drive, with low pulsation
- compact dimensions
- flexible control via Ethernet, RS-232, analog signals and software



Ideal for post-column addition or dosing pump,...

## Post-column reactors

Compact reactor oven up to 135°C with reaction loop suitable for post-column derivatization.

Reaction coil may be replaced after removing the front panel. We offer the range of reaction coils as accessory for this oven

### Features

- Temperature range up to 135°C
- Space saving design
- Microprocessor based controller for settings and temperature monitoring
- Powered by 19V DC
- Tempered space dimensions 70x70x25 mm



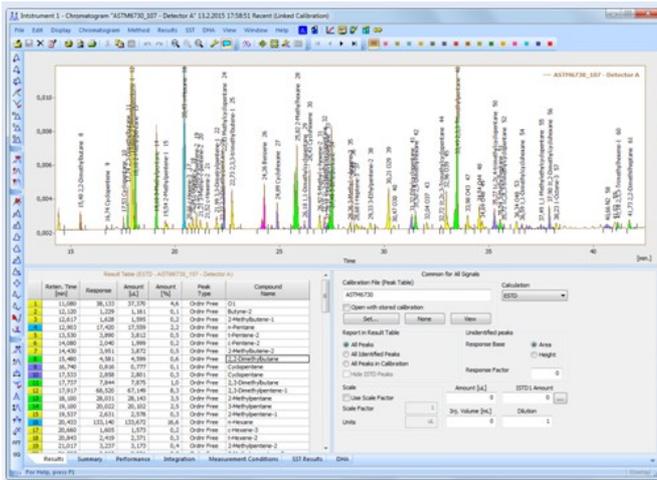
## Safety caps

Close your HPLC system from outside influences and avoid contamination and pollution of the environment. No more harmful vapors in the lab, no eluent contamination easy bottle changes. Different thread sizes for your available containers.

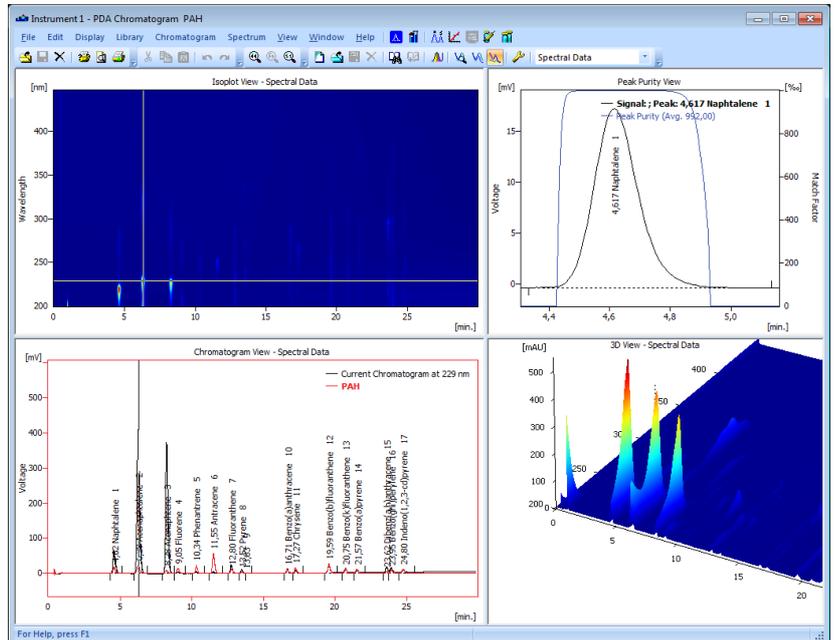


# Observ-Online: Software solutions

- ✓ Compatible with any chromatograph
- ✓ Extremely reliable and easy to use
- ✓ Versatile and scalable solutions
- ✓ Regular free of charge updates
- ✓ Extended user support



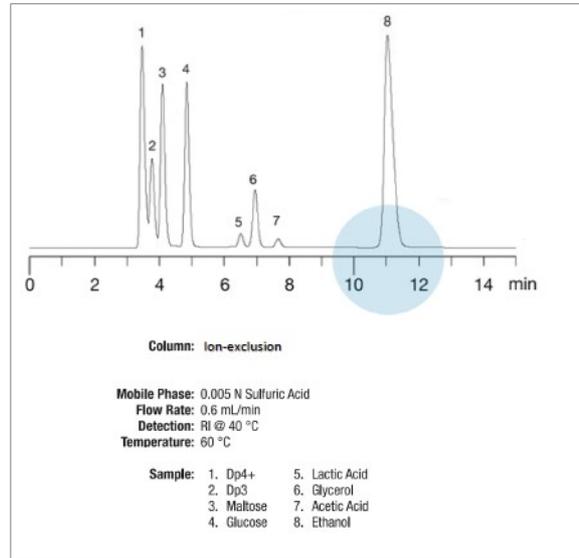
- ✓ Multi-instrument and multi-detector system
- ✓ Up to 4 instruments with up to 32 signals each
- ✓ 21 CFR Part 11 compliance
- ✓ IQ/OQ validation
- ✓ GPC, PDA, NGA, SST, DHA, MS, GcXGC
- ✓ 500+ direct controlled instruments
- ✓ Rich import/export, LIMS connection
- ✓ Transfer of results through OPC or 4-20mA



# Observ-Online: Application examples

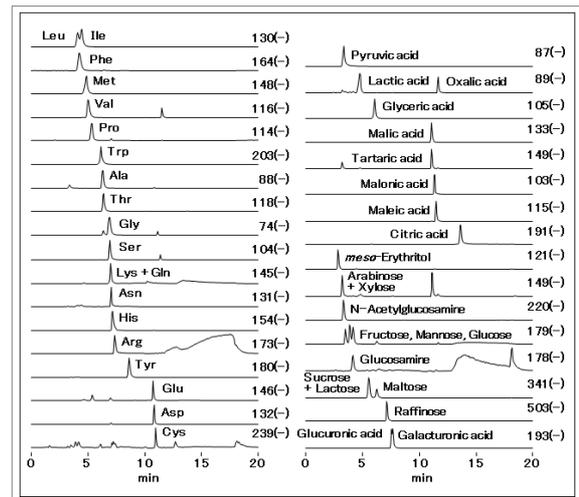
## Bioethanol Fermentation Monitoring

- Easy quantitation of ethanol fermentation broth components
- monitor starches, sugars, organic acids and ethanol in one run
- increase throughput without lab intervention
- measurement interval of 15 minutes for important compounds



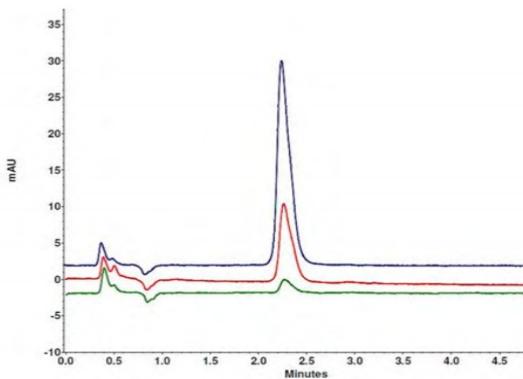
## Bioreactor Monitoring

- simultaneous amino acids, sacharides and organic acids
- 30 min analysis interval for 48 compounds
- unique online-HPLC-MS configuration

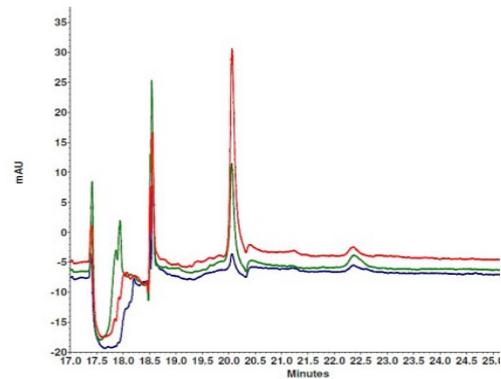


## Online wastewater monitoring

- Bisphenol A monitoring in wastewater
- online pre-concentration and purification
- limit-of-detection down to 70 ppt (!)



3 different standards of BPA in water: 0.07ng/ml; 0.4ng/ml; 1ng/ml



Spiked wastewater with 3 different concentrations and same concentration time (18 min)



# Expert services

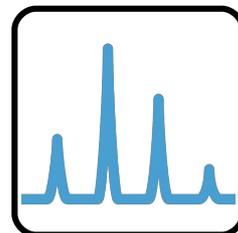


## Preventive maintenance

Make sure that your system stays up and running with our affordable preventive maintenance services

## Method development & optimization

From Proof of Concept Screening to full method development with complete validation and robustness testing



## Academy

HPLC training courses in a variety of topics: beginners course, experienced, method development, troubleshooting.

In our lab or yours.

## Rent an expert

Get help in your lab from an experienced HPLC Lab Technician. Take advantage of the practical help in your lab and adsorb knowledge at the same time.



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