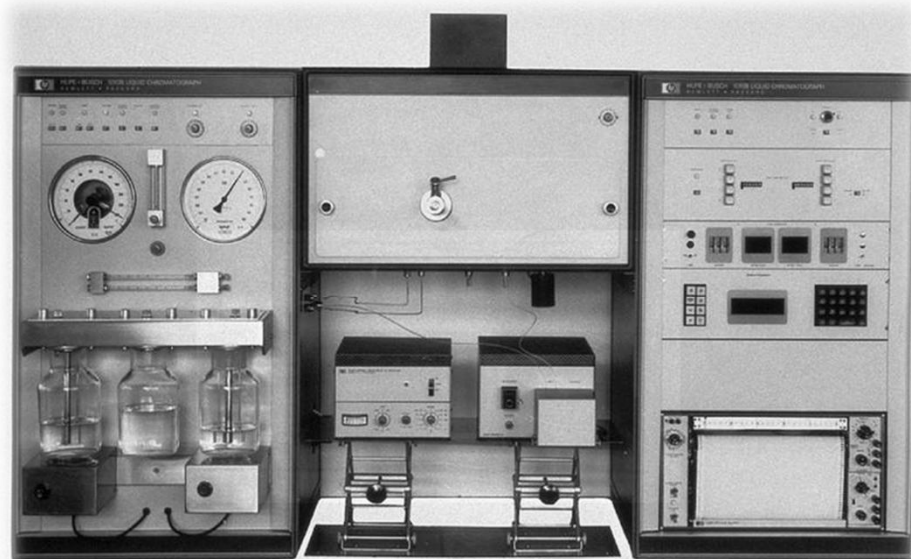


More than 40 Years in
Liquid Chromatography
@ HP/Agilent

1973

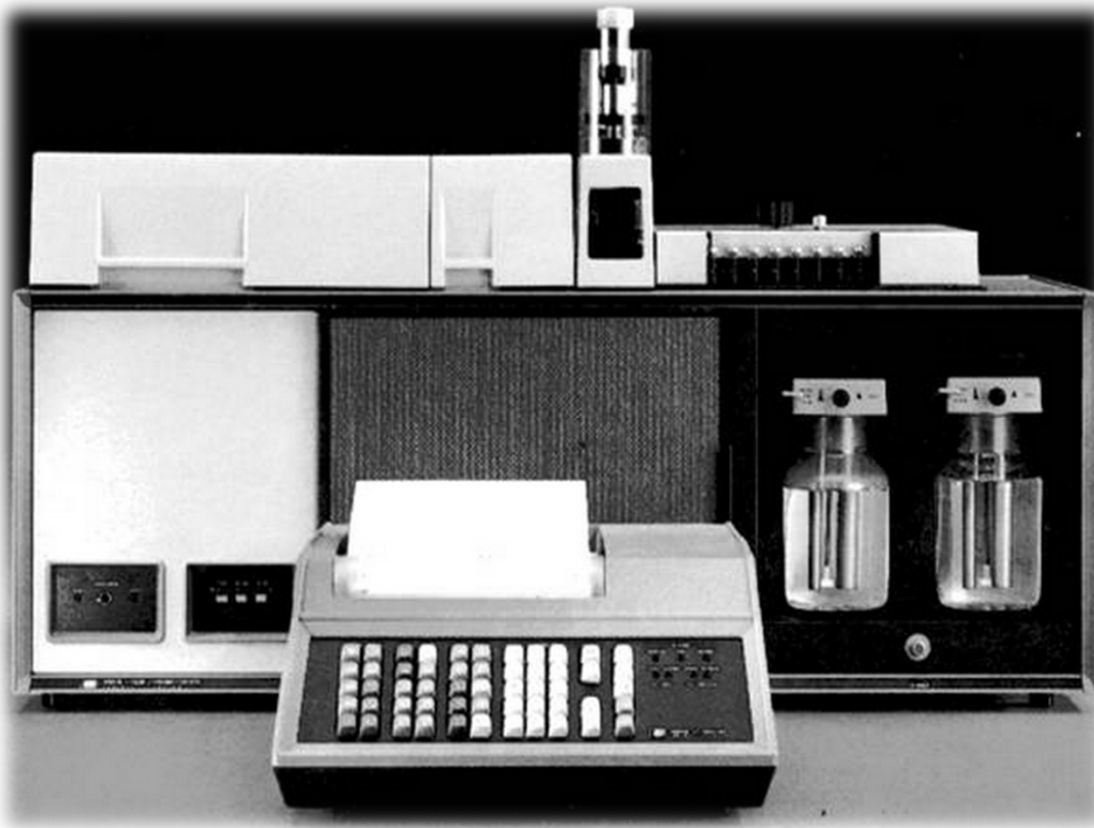
Hewlett Packard acquires the assets of Hupe & Busch/Germany.
The HP1010 is the first ever HPLC Instrument available with the Hewlett Packard label.



- The HP1010 Liquid Chromatograph weighs more than half a ton.
- The columns are packed with the latest 57 μm packing material.

1976

Hewlett Packard moves from Karlsruhe to the Waldbronn site.
The HP1084 is introduced – smaller and less bench space.



Agilent LC – “Made in Germany”

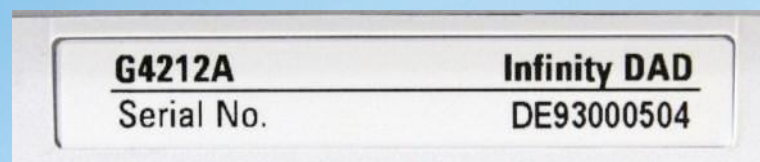


The complete responsibility for all LC products is located in Waldbronn in Germany.

Complete responsibility means:

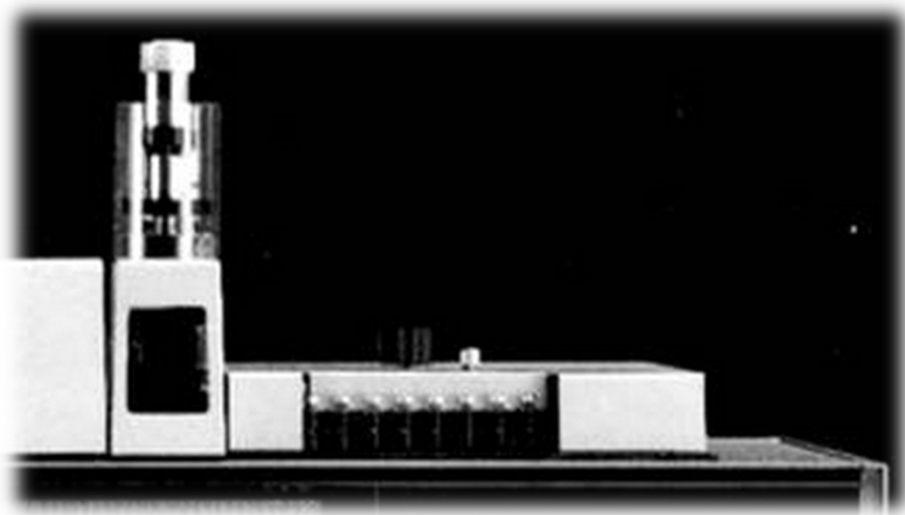
- Product design
- Research & Development
- Production

The serial number of all LC modules (except the degasser) start with „DE“ for Germany!

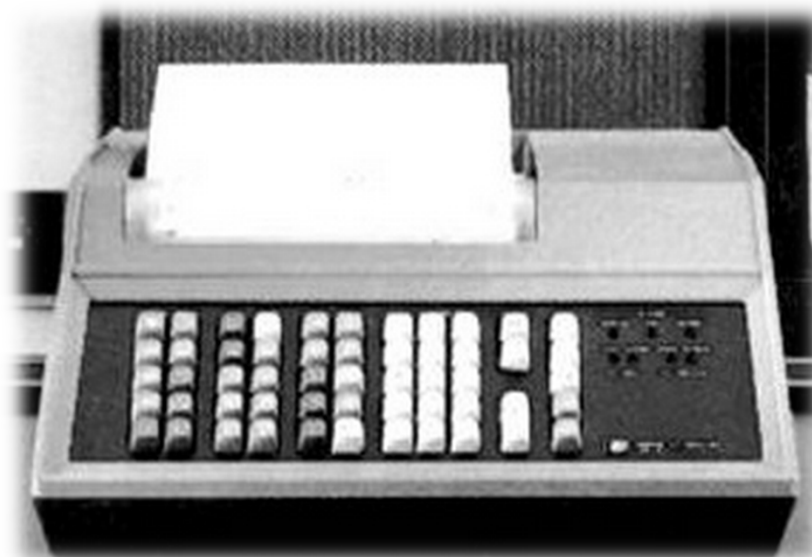


1976

The HP1084 was the first HPLC instrument with Autosampler!



Strip recorder - cutting paper and weighing was yesterday:
The HP1084 is available with an integrator!



1982

The HP1040 is introduced:
The first HPLC instrument with
integrated Diode Array Detector.

211 Photo diodes are contained
on the array.



1982

The HP1040 is the first computer-controlled liquid chromatograph.

Specifications:

- 3 MHz micro processor
- 32 KB RAM
- 500 KB hard disk



1983

Ahead of its time: The HP1090 Liquid Chromatograph for low dispersion narrow bore column technology!



No problem with flow rates as low as 0.2 mL/min.

After 25 years some early 1090 are still in operation...

	HP 1090 Liquid Chromatograph/Data Integrator Ort: Kanada	 Sofort Kaufen	EUR 589,24 Keine Angabe	1T 7Std 26Min
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Spare parts get rare ...and traded high at E-bay!

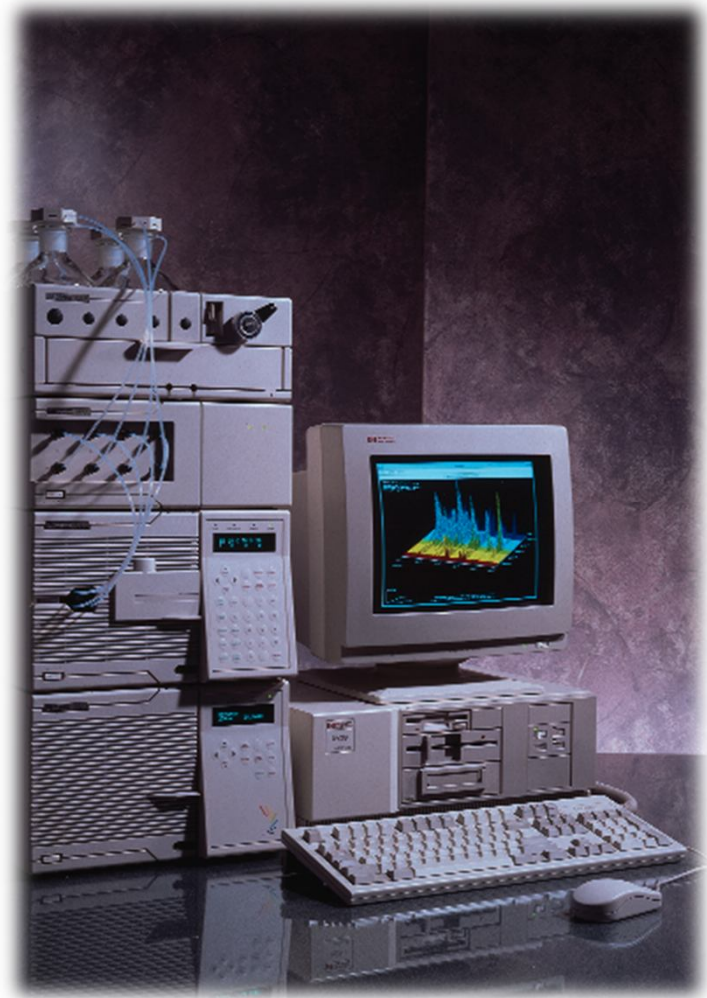
1988

The HP1050 Liquid Chromatograph is the first completely modular HPLC System on the market.

There is choice of UV-detectors:
VWD, MWD und DAD.

Data are stored first time on floppy discs:

3½" or 5¼" size!



1995

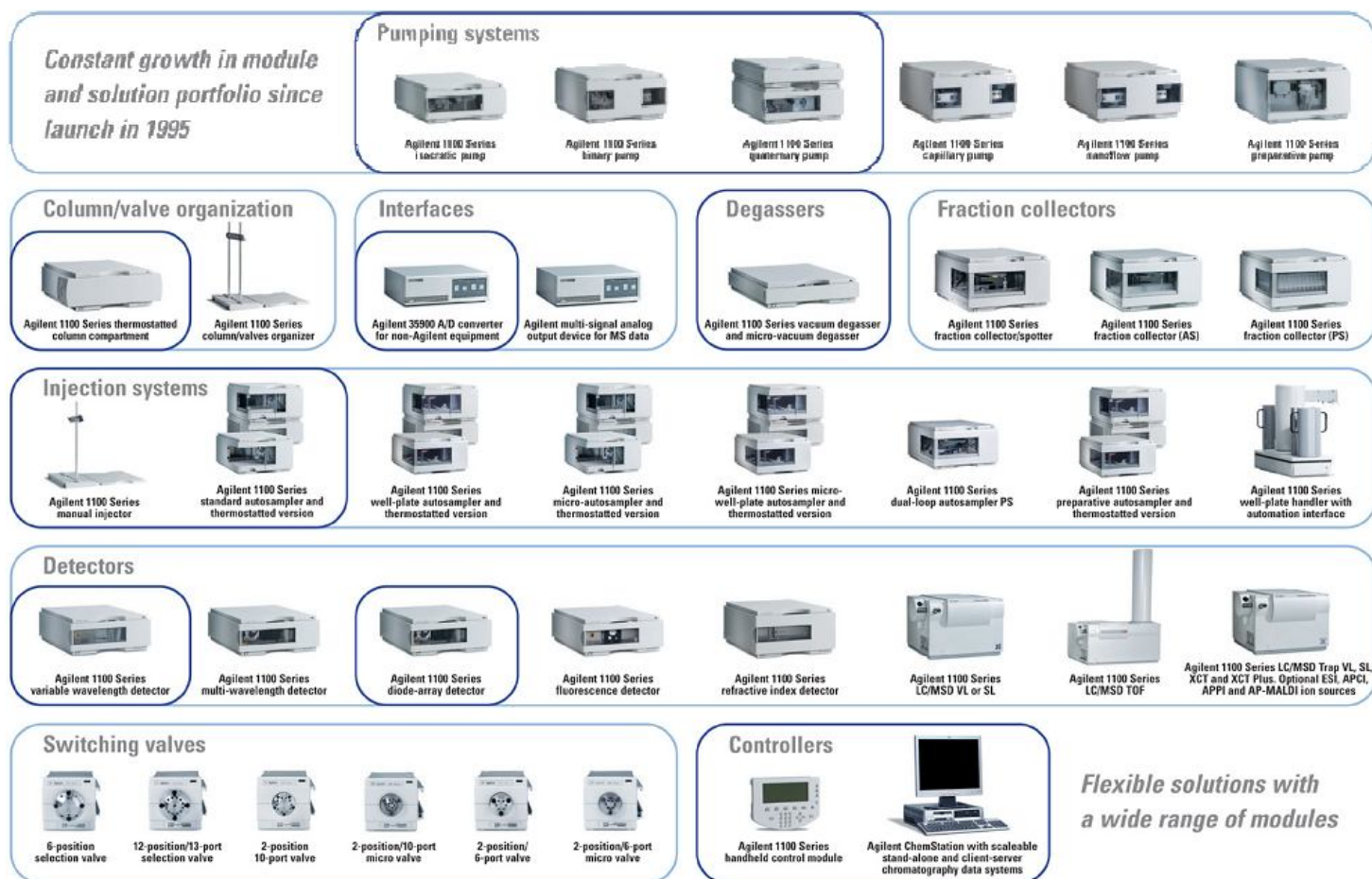
The HP1100 Series Liquid Chromatograph was introduced.

The 1100 Series family starts with 8 modules.



2004

The 1100 Series had been expanded to 50 modules!



2006

In 2006 more than 50000 HP/Agilent 1100 Series HPLC Instruments had been installed with our customers.

The 1100 LC is the most common LC instrument ever.

Contract Services in ADME-Tox Research

Ensuring Success by Delivering Quality

Quality.

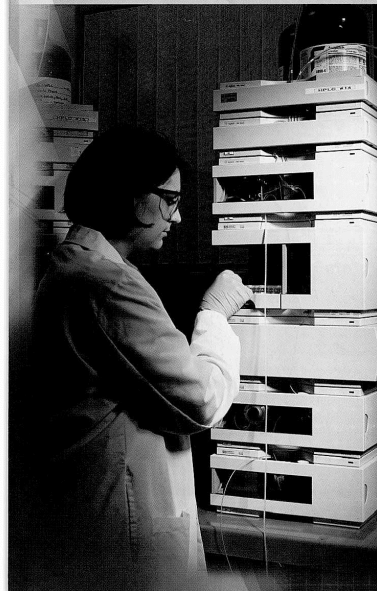
It's what separates an extraordinary CRO from an ordinary one.

With In Vitro Technologies, you can rely on quality in the experimental results and the customer service we deliver. We provide you:

- ◆ **Accuracy.** Studies done correctly, with close attention to the details.
- ◆ **Consultation.** Experienced study directors who work with you to design your protocol.
- ◆ **Responsiveness.** Prompt, continuous support from our customer service associates.

Contact us for more information about our contract research services.
Toll-free: 888-488-3232
E-mail: info@invitrotech.com
Web: www.invitrotech.com

Going Lean...In Vitro Technologies continually strives to improve our products and services, and is a member of the Maryland World Class Manufacturing Consortium.



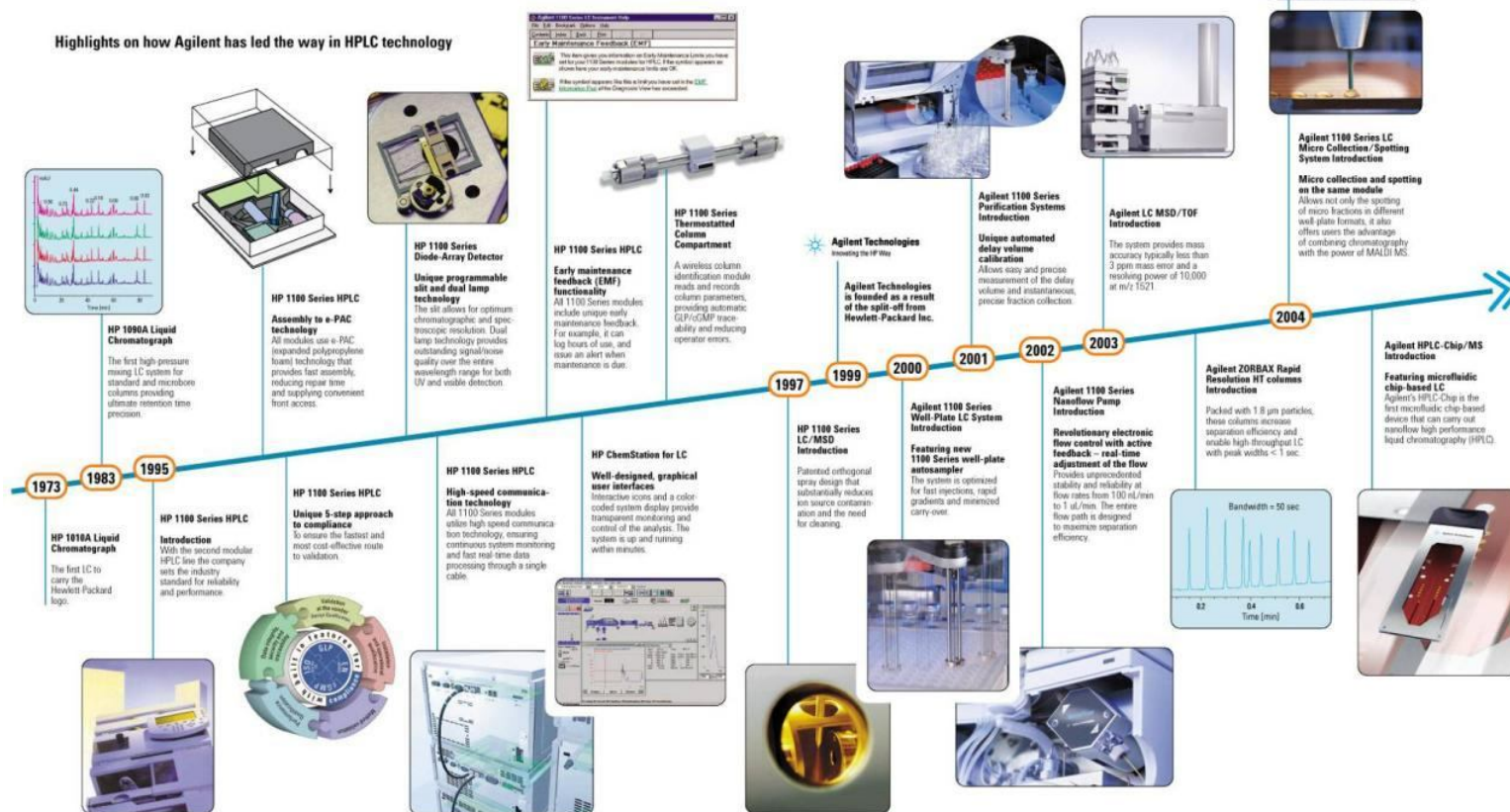
Liquid Phase Analysis

A Tradition of Innovation

Setting the pace in HPLC technology for over 30 years

With 50,000 systems installed worldwide, it's no wonder Agilent 1100 Series LC and LC/MS systems are considered such workhorses. The open architecture gives seamless integration and unprecedented scalability to more than 50 modules. What's more, the 1100 Series LC systems are the ultimate racehorses. State-of-the-art instrumentation has been combined with the latest ZORBAX® column technology to give optimum speed, resolution and sensitivity. You will double your efficiency and save up to 95 percent in analysis time.

Highlights on how Agilent has led the way in HPLC technology



2006

The Agilent 1200 Series Systems and Modules enable again a wider range of separation capabilities.



Sub-2-Micron Column Technology introduced by Agilent in 2003 lays the foundation for the 1200 Series Rapid Resolution System. Some call it UHPLC – Ultra High Performance Liquid Chromatography

2009

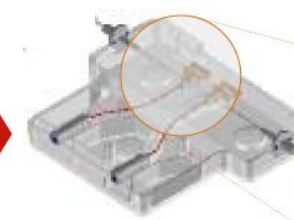
Agilent Technologies 1290 Infinity LC - Infinitely Better



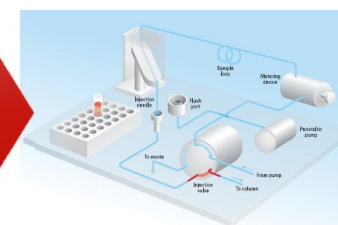
**More
Powerful**



**More
Sensitive**



**More
Flexible**



The Agilent 1200 Infinity Series

Raising the Standard in HPLC – UHPLC for EVERY Lab



1220
Infinity LC

Integrated
600 bar
80 Hz

Most affordable
HPLC and UHPLC
1260/1290 Technology



1260
Infinity LC

Modular
600 bar
80 Hz

2x or 10x UV Sensitivity
100% HPLC Compatible
HPLC Price – UHPLC Capability



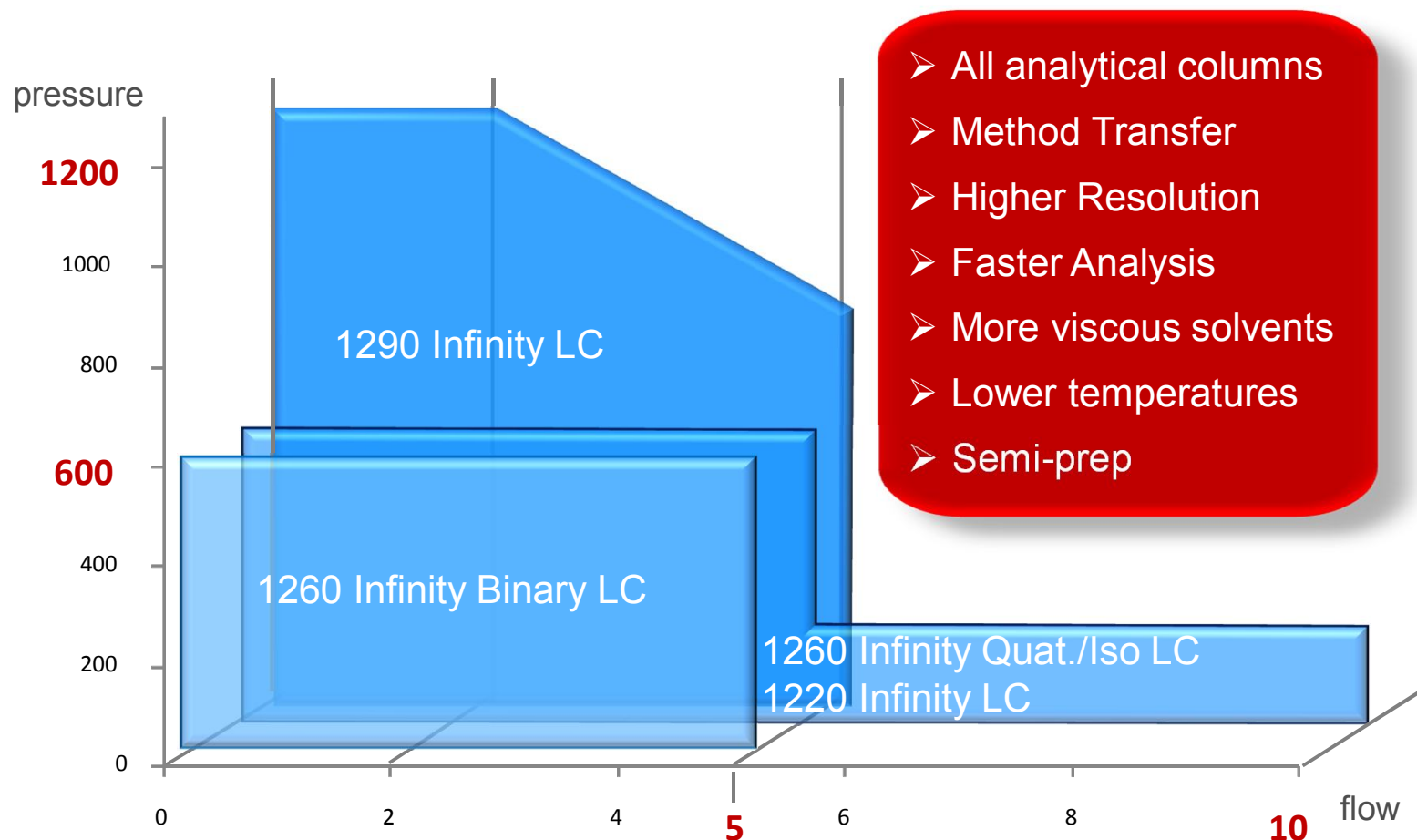
1290
Infinity LC

Modular
1200 bar
160 Hz

1st Universal LC by ISET
Highest Performance
HPLC Service Costs

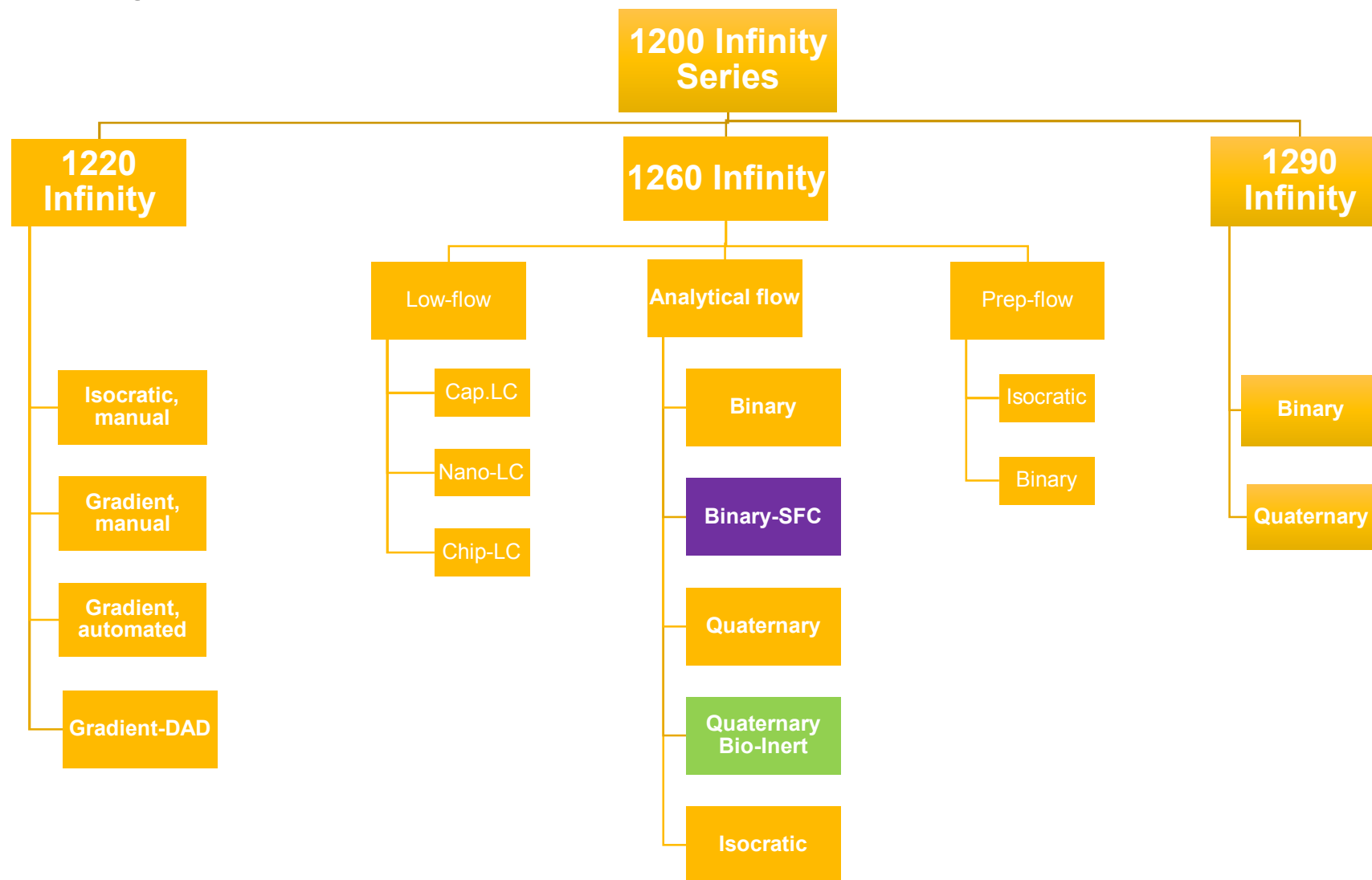
The Agilent 1200 Infinity Series

- *Power range*



The Agilent 1200 Infinity Series

Raising the Standard in HPLC – UHPLC for EVERY Lab



The Agilent 1200 Infinity Series

Raising the Standard in HPLC – UHPLC for EVERY Lab



1220
Infinity LC

Integrated
600 bar
80 Hz

Most affordable
HPLC and UHPLC
1260/1290 Technology

1220 Infinity LC at a Glance



Isocratic or Gradient Pump (2-Channel):

- flow range: **0.2 - 10 mL/min**
- low pressure mixing
- integrated degasser
- flow precision 0.07 % RSD

Manual Injector or Autosampler:

- **600 bar**
- injection range: 0.1-100 µL
- 100 x 2 mL vials or 30 x 6 mL vials
- injection cycle time 50 s
- carryover: < 0.05%

Column Oven:

- up to **80°C**
- one column, max. 250 mm

VWD or DAD:

- **80 Hz data rate**
- wavelength range: 190 - 600 nm (VWD)
up to 950 nm (DAD)
- 2.5 µAU (7µAU for DAD) noise at 230 nm

600 bar for UHPLC Capabilities

1220 Infinity LC Mobile Solution is...

...the 1220 Infinity LC in combination with a Mobile Upgrade Kit for shock & vibration resistance

It can be placed in a van for on-site LC analysis.



1220 Infinity Mobile LC Dimensions Accessories

PN	Description	
5043-0225	Safety Cap I with 1 shutoff-valve (GL45). Comes with one venting valve (5043-0232)	
5043-0232	Venting valve with 1um PTFE membrane	
5043-0243	10 Liter PEHD waste can. Comes with a S60 safety caps (5043-0227) including 4 ports + 1 leak port. The charcoal filter must be ordered separately (5043-0230).	
5043-0828	Conductive safety funnel PEHD with cover for S60 can.	
5043-0230	Charcoal filter (48g)	

The Agilent 1200 Infinity Series

Raising the Standard in HPLC – UHPLC for EVERY Lab



1260 Infinity LC

**Modular
600 bar
80 Hz**

2x or 10x UV Sensitivity
100% HPLC Compatible
HPLC Price – UHPLC Capability

1290 Infinity Pumps



1290 Infinity Quaternary Pump

*More Information
Click here*



1290 Infinity Binary Pump

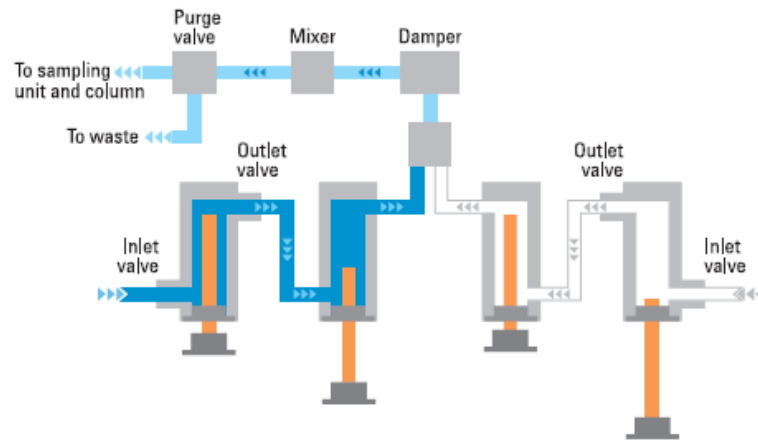
*More Information
Click here*



High Pressure vs. Low Pressure Mixing Principle

Binary pump

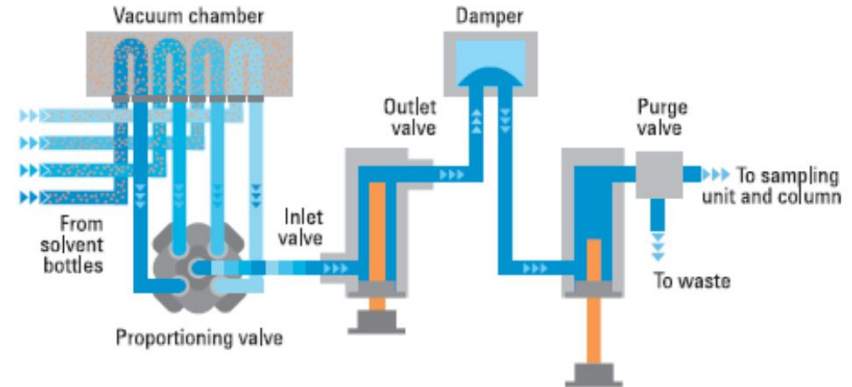
→ High Pressure Mixing



- Combination and mixing of mobile phases **after** the pump head
- Possible influence of excess volume on gradient (→ flow accuracy!)

Quaternary pump

→ Low Pressure Mixing

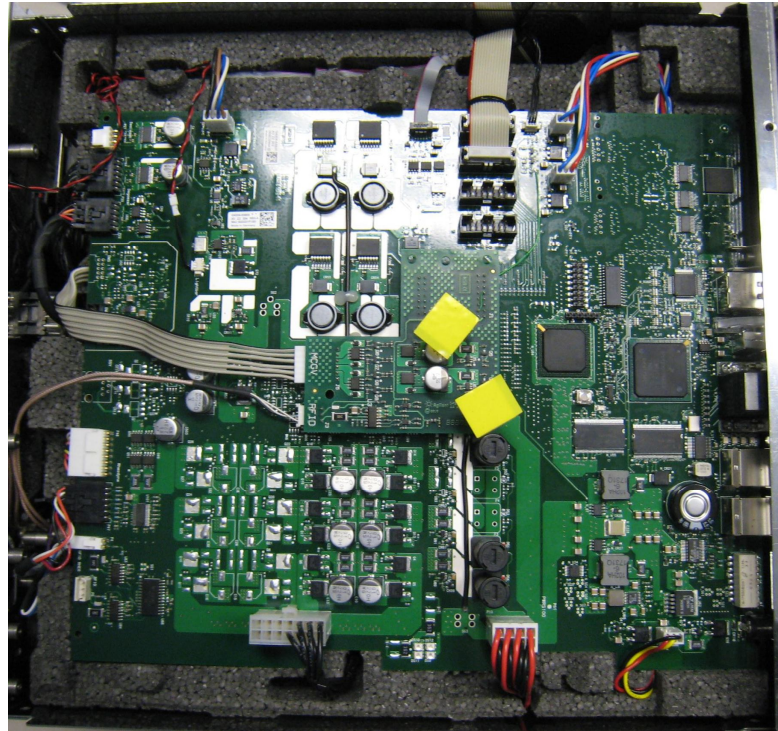


- Combination and mixing by low-pressure proportioning valve **before** the pump head
- No influence of excess volume on gradient, but on composition accuracy!

There is almost a complete PC inside the pump!

Computing power required for ...

- solvent behavior
- active damping
- pump resolution
- Multi-Purpose-Valve
- clustering with Autosampler
- clustering with valves



Product-Overview – features/options

1260 / 1290 Infinity Sampler



→ **G1329B 1260 Standard Autosampler** —
#020 extended inj. Volume (900 ul syringe)
#021 multi draw kit (up to 500 or 1500ul)



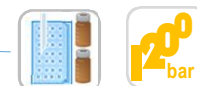
→ **G1367E 1260 High Performance Autosampler** —
#021 multi draw kit (up to 500 or 1500ul)
#040 40 µL Injection Kit for fastest analysis



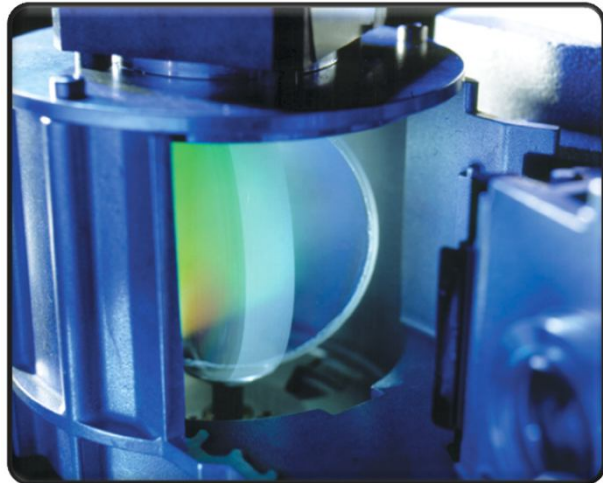
→ **G4226A 1290 Infinity Autosampler** —
5067-4703 40 ul Flex Loop Kit
G4216A 100 ul large volume kit (multi-draw)



→ **G4277/8A 1290 Infinity LC Injector HTS/C** —

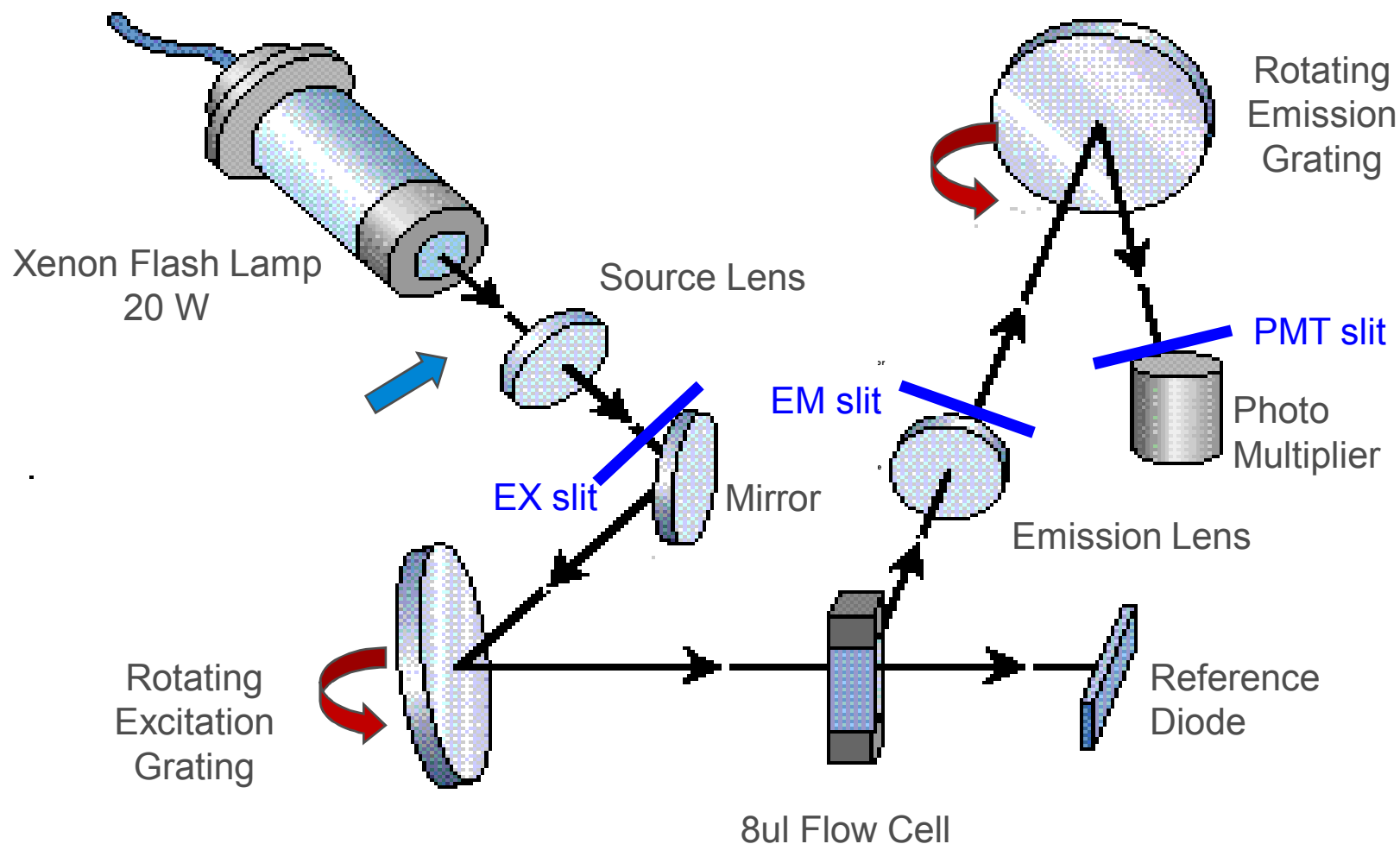


1200 Infinity Series Fluorescence Detector Portfolio



1260 Infinity Fluorescence Detector

- *Technical principle*



New 1200 Infinity Series FLD portfolio

- June 2013



G1321B

1260 Infinity FLD Spectra

What is it?

- „1260 Infinity FLD Spectra“
- higher data rates 145 Hz



G1321C

1260 Infinity FLD

What is it?

- no spectra, no multi-signal capabilities
- 74 Hz data rates

1260 Infinity FLD Spectra (G1321B)

- *Features & Benefits*

Features:

- Fast rotating monochromators synchronized with the flash lamp allows multi-signal detection for up to 4 signals without significant loss of sensitivity
- and online excitation or emission spectra
- 145 Hz data rate
- Long-life xenon lamp (>4000 hours)
- Front access of flow cell
- Automatic cell recognition
- Agilent Lab Advisor software and Instant Pilot

Benefits:

- For higher sensitivity and selectivity
- Spectral library search for peak confirmation without stop-flow
- Up to 100% resolution gain in ultra fast LC
- For lowest cost of ownership
- For easy and fast exchange of flow cell
- For unambiguous data traceability
minimized risk of false data interpretation
- Extensive diagnostics, error detection, instrument usage tracking and display

1260 Infinity FLD (G1321C)

- *Features & Benefits*

Features:

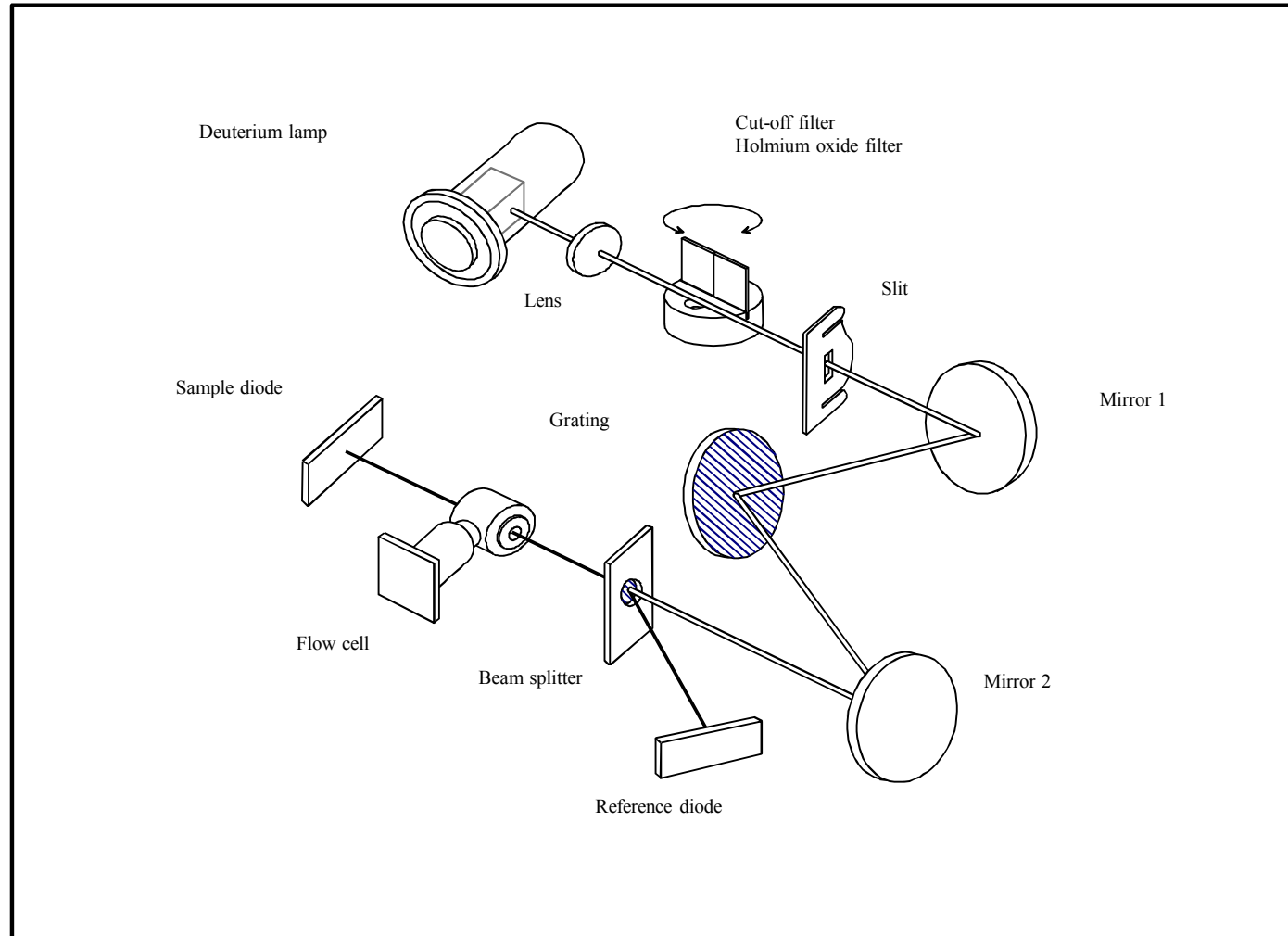
- 74 Hz data rate
- Long-life xenon lamp (>4000 hours)
- Front access of flow cell
- Automatic cell recognition
- Agilent Lab Advisor software and Instant Pilot

Benefits:

- Up to 100% resolution gain in ultra fast LC
- For lowest cost of ownership
- For easy and fast exchange of flow cell
- For unambiguous data traceability
minimized risk of false data interpretation
- Extensive diagnostics, error detection,
instrument usage tracking and display

Variable Wavelength Detectors

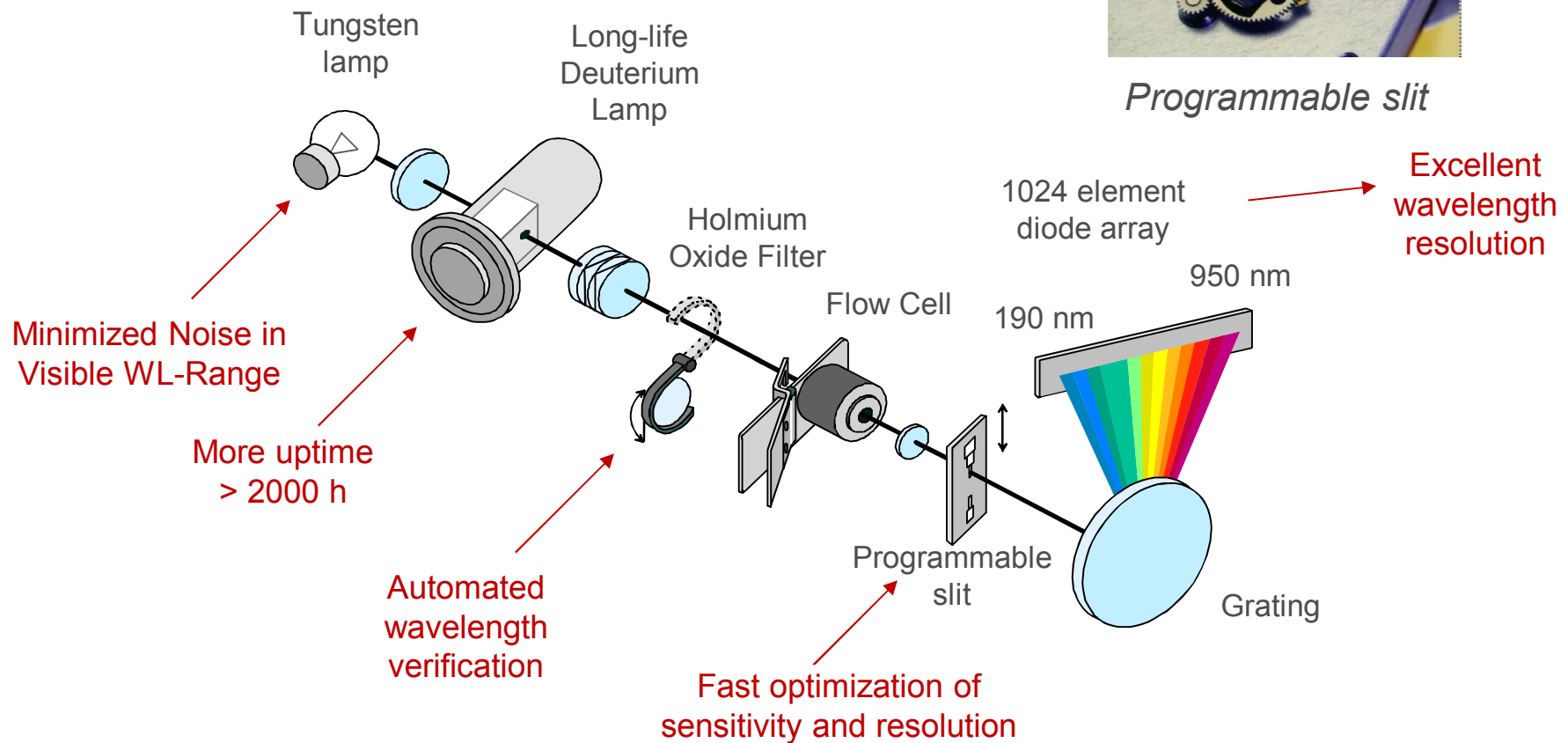
- *Technical principle*



1260 Infinity MWD

- *Technical principle*

DAD design provides highest sensitivity independent of the numbers of signals

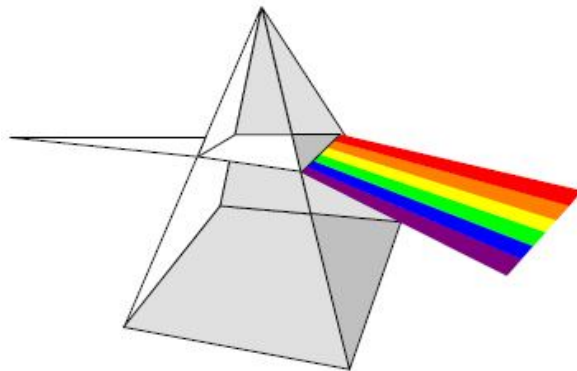


Agilent 1260 Infinity ELSD & 1290 Infinity ELSD

Evaporative Light Scattering
Detection (ELSD)



1260 Infinity Series LC Refractive Index Detector (RID)



1260 LC and MS

- The perfect front end for LC/MS



1. Highest power range for highest separation power per time
 - Speed for higher throughput
 - Resolution for higher data quality (ion suppression)
2. Lowest delay volume* for fastest gradients
(pump delay volume (10 μ l w/o mixer*))
 - a) with Fixed loop (20 μ l*) injection
 - b) with Flow through (80 μ l*) injection
3. More robustness for lowest carry over with 1290 Infinity Autosampler
< 0.002 % Chlorhexidine**

* Delay Volume: 10 % step gradient Definition,

Column Options

– *Rapid Resolution High Throughput (RRHT) Columns*

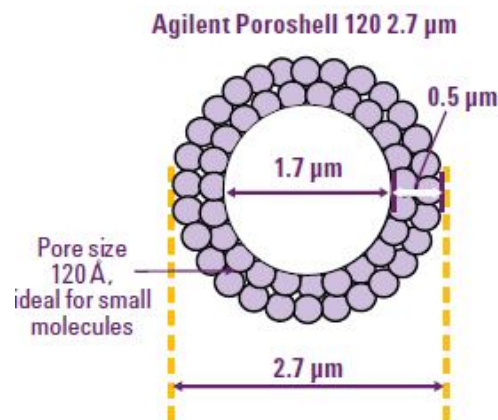
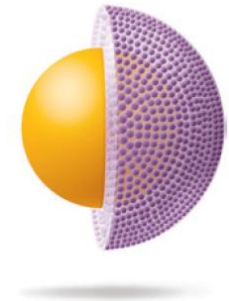
- 1.8 μm for ultrafast analyses **up to 600 bar**
- Ideal w/ 1260/1220 Infinity LC portfolio.
- Dimensions: 4.6, 3.0 and 2.1 mm ID, 20 to 150 mm length
- Selectivities: Many different Zorbax chemistries:
 - Eclipse Plus C18 / C8 / PhenylHexyl
 - Eclipse XDB C18 / C8
 - Extend C18
 - SB-C18
 - SB-C8
 - SB-Phenyl
 - SB-CN
 - SB-Aq
 - Rx-SIL
 - Bonus-RP



Column Options

– *Superficial porous columns: Poroshell 120 for small molecules*

- 2.7 μm **up to 600 bar**
- Ideal for entire Infinity LC portfolio.
- Efficiency sub 2- μm like at low back pressure
- Dimensions: 4.6, 3.0 and 2.1 mm ID, 30 to 150 mm length
- Selectivities: Zorbax Eclipse Plus C18 / C8 and SB C18



*Improved mass mass transfer (C-term of van Deemter)
due to minimized diffusion*

Пряка връзка със сервизните ни специалисти



тел. 0884842680

e-mail: service@team-cag.com



1200 Infinity Series – Agilent Value Promise



Full module compatibility

- Mix 1220, 1260, 1290 Infinity LC with 1100 and 1200 Series – and future systems !

Stepwise upgrade – now and in future:

- Exchange Detector only – for higher sensitivity and detection speed.
- Exchange Pump and Autosampler only – for ultra-high resolution LC on latest 1.8 μm rapid resolution column technology
- Exchange Column Compartment only – to upgrade to a fully automated multi-method or method development solution supporting up to 8 columns and 24 solvents.

