



**Agilent 1260 Infinity
Bio-inert Quaternary
LC System**

Infinitely better for bio-molecule analysis



**BIO
inert**



Agilent Technologies

INFINITELY BETTER FOR BIO-MOLECULE ANALYSIS

The Agilent 1260 Infinity Bio-inert Quaternary LC sets new standards in performance, reliability and robustness for analysis of bio-molecules. Based on the proven technology of the 1200 Infinity Series liquid chromatography platform, the 1260 Infinity Bio-inert LC handles with ease the challenging solvent conditions commonly used for analysis of proteins and bio-therapeutics as well as minimizing problems associated with these molecules' non-specific tendencies to bind to surfaces.

100 percent bio-inert

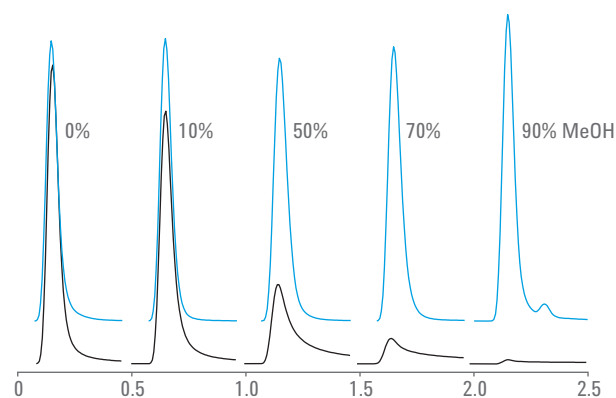
Secondary interactions of proteins and peptides with metallic surfaces can cause peak tailing, low recovery and decrease column lifetime. To minimize these effects the entire flow path of the 1260 Infinity Bio-inert LC is biologically inert. All capillaries and fittings throughout the autosampler, column compartment and detectors are completely metal-free so that the bio-molecules in your sample come in contact only with ceramics or PEEK.

True UHPLC performance

Shorter analysis times and better resolution can be achieved by deploying columns with smaller particles. The 1260 Infinity Bio-inert LC handles with ease the resulting higher pressures up to 600 bar, making this system a perfect match for all of your current SEC and IEX columns with particle sizes down to 1.7 μm . The 1260 Infinity Bio-inert LC is the only truly bio-inert LC with UHPLC capability.

Standard LC (stainless steel)

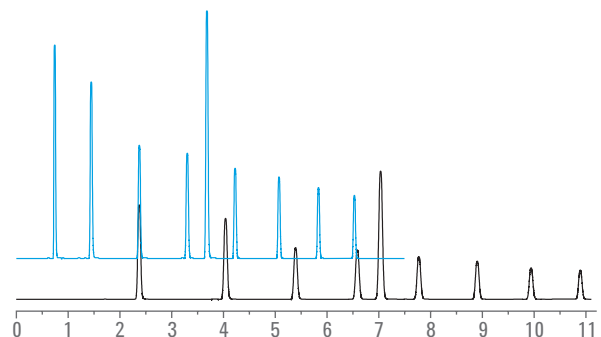
Agilent 1260 Infinity Bio-inert LC



The Agilent 1260 Infinity Bio-inert LC prevents retention of ATP samples, resulting in excellent peak shapes without substantial tailing or area reduction.

Conventional HPLC (4.6 x 150 mm, 5 μm) Resolution peak 5: **4.20** Run time: **11 min**

Bio-inert UHPLC (3.0 x 100 mm, 1.8 μm) Resolution peak 5: **7.16** Run time: **7 min**



The Agilent 1260 Infinity Bio-inert LC gives you true UHPLC performance, increasing chromatographic resolution and sample throughput.



**BIO
inert**

Agilent 1260 Infinity
Bio-inert LC Solution

Robust – even under harshest conditions

Buffers with high salt concentrations such as 2 M NaCl or 8 M urea and extreme pH values of 1-13 are commonly used in the analysis of bio-molecules, posing a significant challenge for LC equipment. The dedicated design of the 1260 Infinity Bio-inert LC handles these harsh solvent conditions with ease. Corrosion-resistant titanium in the solvent delivery system and metal-free materials in the sample flow path create an extremely robust instrument – protecting not only your samples but also your investment.

Flexible and modular for bio-analysis and bio-purification

The modularity of the 1260 Infinity Bio-inert LC gives you a high degree of flexibility.

- Quaternary solvent capability for online buffer mixing from up to four solvents
- Bio-compatible valves for even more options such as solvent selection or column switching – making method development an easy task
- Bio-inert flow cells for your choice of detector
- Flow rates up to 10 mL/min in gradient operation and bio-inert fraction collection for automated bio-purification and semi-prep work with larger column dimensions
- Mix-and-match compatibility with existing Agilent systems for full flexibility to meet future requirements

MORE CONFIDENCE IN BIO-MOLECULE ANALYSIS

More resolution per time

The 1260 Infinity Bio-inert Quaternary Pump provides true UHPLC performance up to 600 bar, allowing you to run any current bio-molecule application at high or low pressures. All solvent lines are titanium, making them completely corrosion resistant. Quaternary solvent mixing with integrated degassing and seal washing gives you superior functionality, robustness and performance.



1260 Infinity Bio-inert Quaternary Pump.

More confidence in sample handling

The 1260 Infinity Bio-inert Autosampler handles vials and microtiter plates and enables you to inject volumes from 0.1 μ L to 100 μ L – extendable to 1.5 mL. The ceramic needle, PEEK needle seat and wash, and stainless-steel-clad PEEK capillaries ensure highest injection accuracy and precision with minimum carryover. To protect labile compounds from degradation during analysis or storage, the autosampler is cold-room compatible or you can add a cooling module. The 1260 Infinity Bio-inert Manual Injector is available for single injections or larger injection volumes.



1260 Infinity Bio-inert Autosampler.

More flexibility to optimize your chromatography

Proteins are sensitive molecules that require stable temperatures during analysis. Bio-inert heating elements in the 1290 Infinity Thermostatted Column Compartment pre-heat the solvent before it reaches the column. Parallel workflows in bio-chromatography can help increase sample throughput. The column compartment houses either four short columns or two columns up to 30 cm in length. Agilent Quick-Change valves are available for more complex workflows such as column switching, column screening or method development.



1290 Infinity Column Compartment with bio-inert solvent heating elements.

More sensitivity – wider dynamic range

To address the requirements of protein research applications or assays to assess the integrity of bio-therapeutic compounds, Agilent offers a variety of detection options. Bio-inert flow cells are available for our multiple wavelength and diode array UV-absorbance detectors, as well as for our viscometer and special detection techniques such as fluorescence, and static and dynamic light scattering.



1260 Infinity Diode Array Detector with bio-inert flow cell.



**BIO
inert**

1260 Infinity Bio-inert
Multi-detector Suite.

More advanced detection capabilities

The 1260 Infinity Bio-inert Multi-detector Suite offers advanced light scattering detection options, significantly increasing the performance of biomolecule analysis. Using both static and dynamic light scattering, critical information about size variation and molar mass as well as sensitive aggregation detection are provided. This makes this detector an indispensable tool for determination of protein purity and stability.



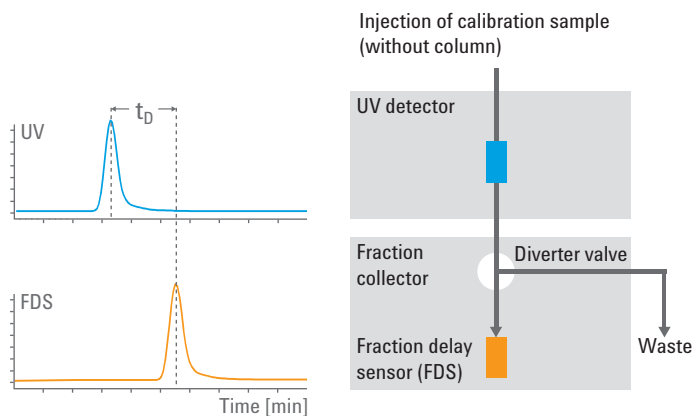
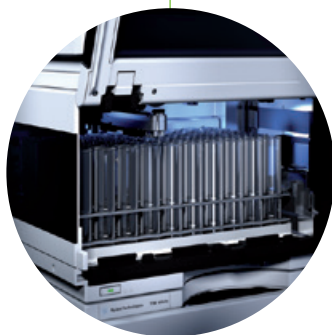
**BIO
inert**

1260 Infinity Bio-inert
Fraction Collector.

More flexibility in fraction collection

When you need to investigate separated compounds further, the 1260 Infinity Bio-inert Fraction Collector is the ideal extension to your 1260 Infinity Bio-inert LC system and does not require extra bench space. Automated peak-triggered fraction collection facilitates superior recovery and purity. With flow rates up to 10 mL/min possible, you can use columns with larger inside diameters. Like the autosampler, a cooling module is available to prevent degradation of thermally-labile bio-molecules.

Extend your system with the 1260 Infinity Bio-inert Fraction Collector for protein purification or enrichment.



MULTIPLY YOUR CAPABILITIES WITH BIO-INERT VALVES

Sample enrichment

In protein analysis sometimes only small amounts of sample are available. Enrichment of the analyte prior to separation is often required to achieve highest sensitivity. A 2-position/6-port valve can be used to automate sample enrichment. While the matrix is flushed to waste, the analytes are retained and enriched on a precolumn. A second pump then flushes the analytes out of the precolumn and onto the separation column.



2-position/6-port valve

Sample cleanup

Sample cleanup is essential for samples with complex matrices, such as biological fluids, food extracts or wastewater. Before injection into an LC or LC/MS system, the analytes of interest must be separated from the sample matrix. Stripping methods for sample cleanup deal with analytes and matrices in the opposite way to enrichment methods – while the matrix is retained on a precolumn, the analytes are flushed through to the separation column.



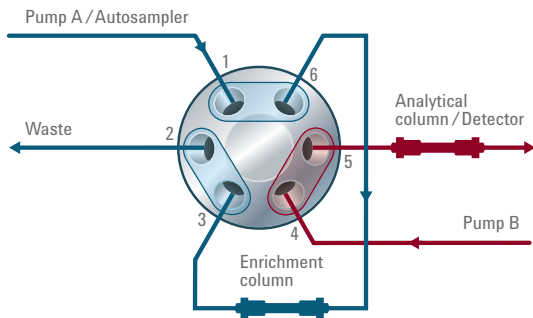
2-position/6-port valve

Automated column regeneration

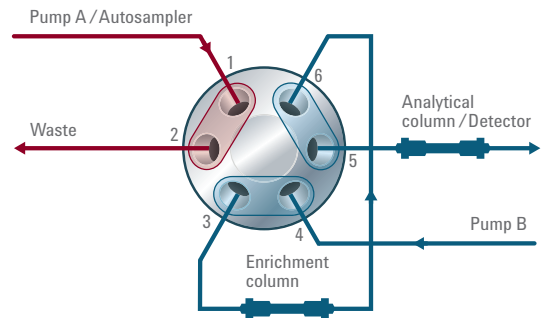
Optimizing analysis times through automated column regeneration can increase sample throughput significantly – up to two-fold! Two identical columns are connected through a 2-position/10-port valve – while an analysis is running on one column, the second column is flushed and equilibrated by an additional regeneration pump.



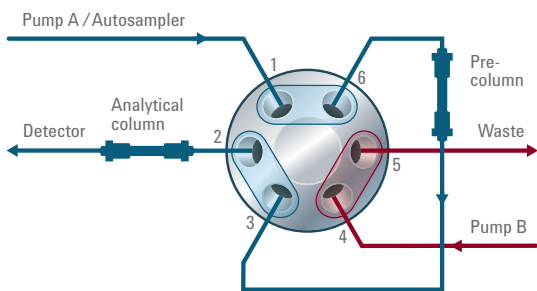
2-position/10-port valve



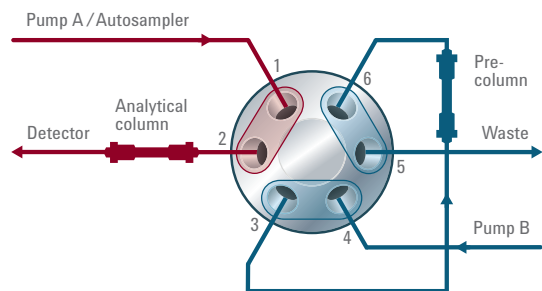
The analyte is retained and concentrated on an enrichment column while the sample matrix flows to waste.



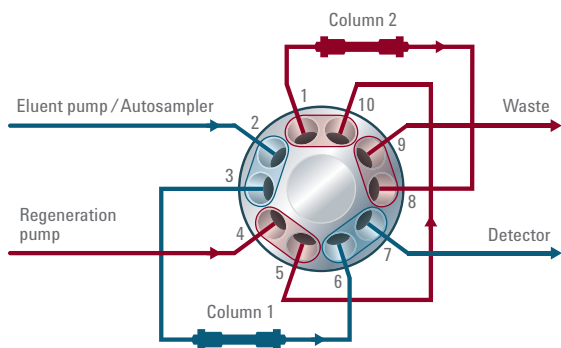
For analysis, the concentrated sample is flushed out of the enrichment column to the analytical column.



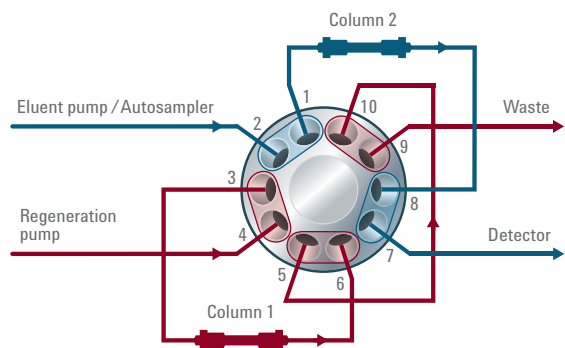
Matrix components are retained on a precolumn while the analytes pass through to the analytical column for separation.



After sample cleanup or matrix stripping, the precolumn is flushed in reversed flow direction by the second pump.



While the analysis is running on column 1, column 2 is regenerated using the flow from a second pump.



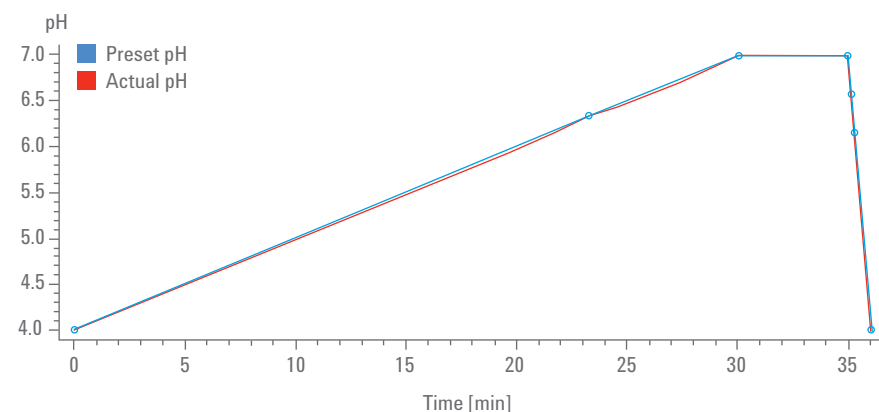
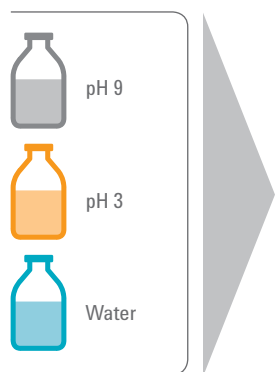
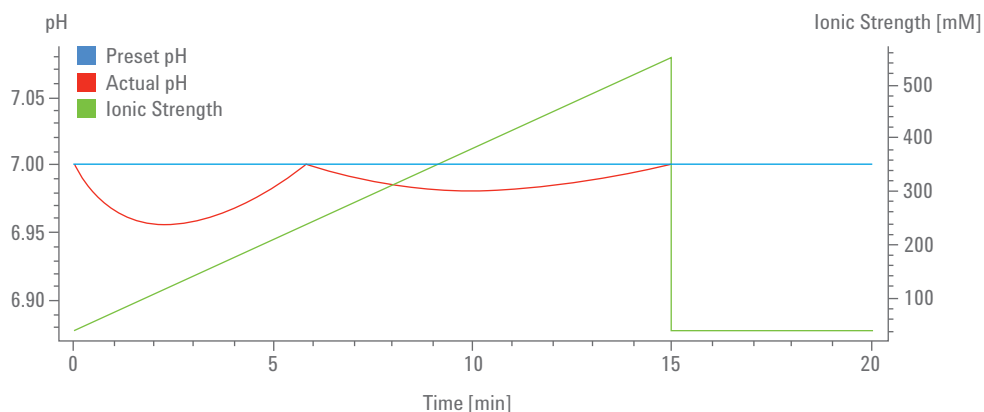
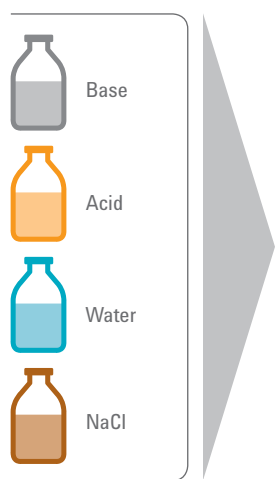
After the analysis on column 1, the flow switches to column 2 for analysis while column 1 is regenerated.

SIMPLIFY YOUR BIO-ANALYSIS WORKFLOW

Straightforward buffer blending and pH scouting

Agilent Buffer Advisor software eliminates the tedious and error-prone method-development steps of buffer preparation, buffer blending and pH scouting by providing a fast and simple way to create salt and pH gradients. Utilizing the mixing principle of the 1260 Infinity Bio-inert Quaternary Pump, the Buffer Advisor software facilitates dynamic mixing of solvents from only four stock solutions, simplifying your bio-analysis workflow and significantly reducing the time required for buffer preparation.

First, theoretical modeling helps you to find the best salt or pH conditions for your protein separation. The optimized gradient conditions are saved in an XML-format file for later import in Agilent OpenLAB CDS. This file sets the solvent blending in the timetable of the 1260 Infinity Bio-inert Quaternary Pump. Four stock solutions are all you need to prepare; acidic buffer, basic buffer, water, salt. To create a salt gradient, an increasing amount of salt solution from channel D is mixed with the acidic and basic buffer components from channels A and B, and with water for dilution from channel C.



Salt or pH gradients are easily created from stock solutions.

Give your bio-analysis workflow a performance boost!

Step 1: Select anion or cation exchange, and the buffer system according to the pKa.

Step 2: Enter desired starting conditions for gradient table.

Step 3: Take recommended concentrations for stock solutions or enter own values.

Step 4: Process data with optimized conditions and review resulting gradient pump time table.

Step 5: Messages give you hints on how to optimize conditions.

Step 6: Save optimized gradient table for later import in bio-inert pump driver software or copy optimized timetable for later use.

New Session 1

Single Buffer (pH / Salt Gradient)

Cation Exchange	pH Range	Buffer Range
<input checked="" type="checkbox"/> Sodium Phosphate (NaH ₂ PO ₄ +Na ₂ HPO ₄)	6.1-7.2	7.5-125
<input type="checkbox"/> Sodium Phosphate (H ₃ PO ₄ +NaOH)	2.6-3.6, 5.9-7.4	10-15
<input type="checkbox"/> Sodium Phosphate (H ₃ PO ₄ +Na ₂ HPO ₄)	2.5-3.4, 5.9-7.1	7.5-125
<input type="checkbox"/> Sodium Phosphate (H ₃ PO ₄ +Na ₃ PO ₄)	2.6-3.6, 6.0-7.4	7.5-125
<input checked="" type="checkbox"/> Sodium Citrate (Citric + Tri-Sodium Citrate)	3.0-5.5, 5.5-6.0	7.5-125
<input type="checkbox"/> Sodium Citrate (Citric + NaOH)	2.9-3.7, 3.7-6.2	7.5-15
<input checked="" type="checkbox"/> Formic/Na (acid + Na salt)	3.2-4.4	7.5-125

Help... OK Cancel

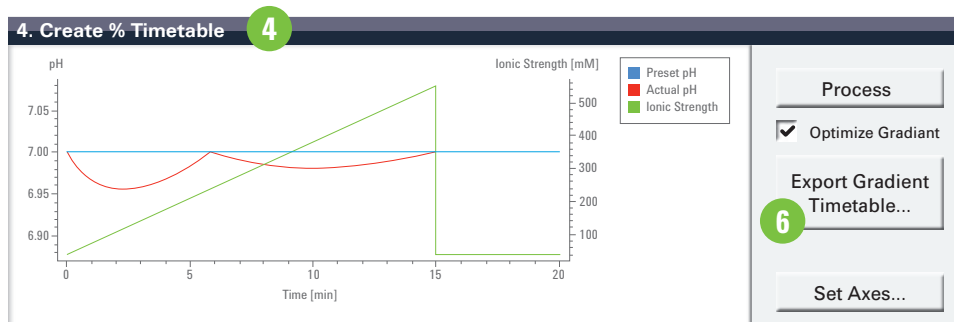
2. Define Gradient Table 2

	Time	Salt	pH	Buffer
	0	0	7	20
	15	500	7	20
	15.01	0	7	20
	20	0	7	20

3. Compose Stock Solutions 3

A: Water		Recommended
B: NaCl	1700	1700 mM
C: NaH ₂ PO ₄	55	23.5 mM
D: Na ₂ HPO ₄	100	38.5 mM

Recipe... Set



5 Messages

Minimum Buffering Capacity (BC) = 7.89 mM



Fast buffer scouting with Agilent Buffer Advisor software

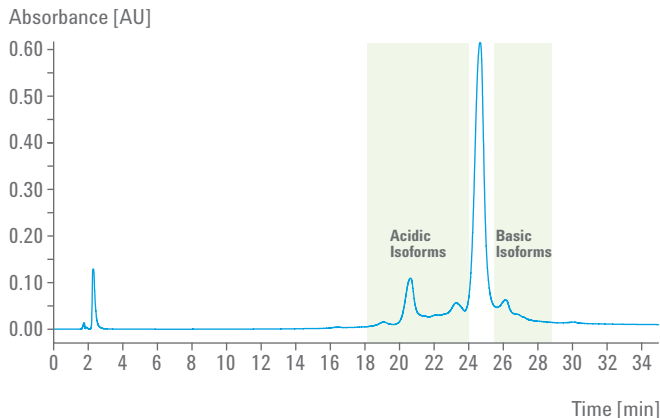
Watch video:
www.agilent.com/chem/bufferadvisor-video

A COMPLETE SOLUTION FOR NBE ANALYSIS

Superior resolution and higher productivity for charge variants and deamidation

An essential part of monoclonal antibody characterization is the identification of acidic and basic isoforms. The unique design of Agilent Bio MAb non-porous PS/DVB particles – with a stable and uniform weak cation exchange layer – provides charged-based separations with increasing efficiency and recovery.

- Agilent Bio MAb HPLC Columns for high-resolution monoclonal antibody charge isoform separations.
- Agilent Bio IEX HPLC Columns for charged-based analytical separations of proteins and peptides – these columns come with strong and weak anion and cation functionalities for analysis of cationic and anionic bio-molecules.

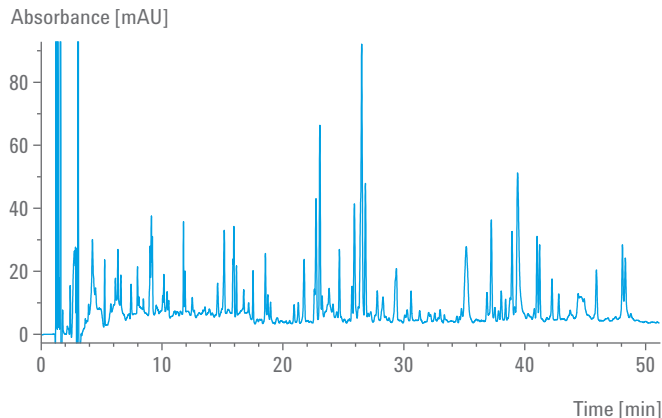


High resolution separation of acidic and basic charge variants using the Agilent Bio Mab NP10 column.

Accelerate your peptide mapping without losing resolution

Conventional peptide mapping with fully porous HPLC columns can take 60 minutes or longer to complete. Agilent AdvanceBio Peptide Mapping columns let you quickly resolve and identify amino acid modifications in primary structure.

These advanced superficially porous columns feature a 120 Å pore size with 2.7 µm particles and are designed to deliver highest resolution and shortest analysis times. Peak capacities of over 300 can be achieved, making these columns ideal for separating large numbers of compounds within short periods of time – without losing resolution.



Chromatogram of an IgG1 digest separation on an Agilent 1260 Infinity Bio-inert LC using an Agilent Poroshell 120 SB-C18 4.6 × 150 mm, 2.7 µm column (p/n 683975-902).



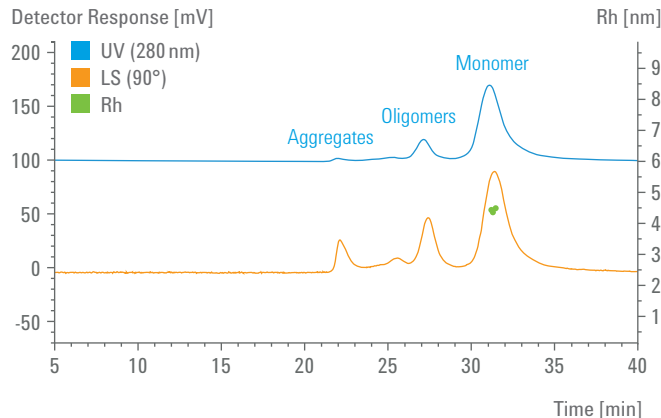
Introduction to ion-exchange chromatography
Watch video:
www.agilent.com/chem/iex-video

Advanced bio-SEC analysis made reproducible

Aggregation and size variation of monomers change the biological activity and efficacy of a drug or cause undesirable side effects. The performance of size-exclusion chromatography (SEC) in the determination of these factors is significantly increased with the addition of advanced light-scattering (LS) detection.

- Static LS determines accurate molar masses, independent of column calibrations and is highly sensitive to aggregation.
- Dynamic LS complements by determining molecular size in solution.

The industry-leading, low dead-volume of the Agilent 1260 Infinity Multi-Detector Bio-SEC Solution attains this advanced information without sacrificing chromatographic performance. Unlocking the potential of light scattering is made easy through this complete, easy-to-use optimized solution.



High performance aggregation analysis of a monoclonal antibody using an Agilent Bio SEC-3 300Å, 7.8 x 300 mm, 3 µm column (p/n 5190-2511). Increased sensitivity of the aggregates was obtained from the 1260 Infinity Bio-inert Multi-Detector Suite with static and dynamic light scattering, and UV detection. These advanced detectors provide accurate molar mass and size determination.



Advance your bio-SEC with the Agilent 1260 Infinity Multi-Detector Bio-SEC Solution

Watch video:
www.agilent.com/chem/bio-sec-video

New capillary and fitting technology for robust and secure operation – day in, day out

With the 1260 Infinity Bio-inert LC, Agilent introduces new capillary and fitting technology that facilitates the unique combination of metal-free bio-inertness and high pressure operation. Three different types of capillaries are deployed:

- Highly corrosion resistant titanium capillaries for the solvent delivery lines
- Metal-clad PEEK capillaries in the autosampler and column compartment
- PEEK capillaries in the low pressure parts of the system downstream of the separation column

The metal-clad PEEK capillaries feature a unique connection system for complete bio-inertness at every connection. The mechanically interlocked PEEK tip is highly resistant to lateral or rotational tension, eliminating torque at the capillary while tightening the fitting.



Learn more

www.agilent.com/chem/1200BioLC

Find an Agilent customer center

www.agilent.com/chem/contactus

USA and Canada

1-800-227-9770

agilent_inquiries@agilent.com

Europe

info_agilent@agilent.com

Asia Pacific

inquiry_lsca@agilent.com

This information is subject to change without notice.

© Agilent Technologies, Inc. 2013-2014

Published in the USA, February 1, 2014

5991-3697EN



Agilent Technologies