Discover the UltiMate 3000 RSLCnano System

The UltiMate 3000 RSLCnano system is the next generation HPLC system for nano, capillary, and micro flow applications. Combining direct continuous flow delivery, an impressive flow pressure footprint with maximum ease-of-use will give you unprecedented application flexibility

UltiMate 3000 RSLCnano system - A new dimension in nano LC.

For more information or to place an order, call (800) 346-6390 within the U.S., or contact the Dionex Regional Office nearest you. Outside of the U.S., order through your local Dionex office or distributor.

Enjoy Industry-Leading Support

Dionex Customer Support Centers are located in the United States, Europe, and Asia. These state-of-the-art laboratories are equipped with the full line of Dionex LC instrumentation and software capabilities. Support Centers provide accessible locations for advanced training and enhanced application development capabilities. Users can attend these laboratories to learn new skills in addressing challenging applications, receive training and support, and discover new, innovative HPLC and IC solutions.

ISO 9001 REGISTERED

Dionex products are designed, developed, and manufactured under an ISO 9001 Quality System.

Passion. Power. Productivity.

DIONEX

UltiMate 3000 RSLCnano System

Intelligent LC Solutions

UltiMate 3000

40.0

214

R-A8 | 10.00

DIONEX

Passion. Power. Productivity.

The UltiMate 3000 RSLCnano System—a New Dimension in Nano LC

The UltiMate® 3000 RSLCnano system was developed with throughput in mind. The robust, continuous direct flow delivery is designed for interruption-free analysis. The wide flow-pressure footprint enables the application of UHPLC to the nano scale, allowing you to tune for the highest resolution or the fastest analysis time. The dual gradient availability and operation at nano, capillary, and micro flow rates provide the largest application flexibility. Configurable for speed, separation power, or sensitivity, the UltiMate 3000 RSLCnano is the only system to deliver all.

Application Range for the UltiMate 3000 RSLCnano System			
	Nano	**Cap**	**Micro**
Flow	20-1000 nL/min	1-10 µL/min	10-50 µL/min
Max Pressure	800 bar	800 bar	800 bar
Column i.d.	25-150 µm	150-500 µm	500-1000 µm
Relative Gain in Sensitivity*	4000	250	30
Benefits	Sensitivity	Loadability	Speed
Typical Application Area	Discovery proteomics	Validation proteomics, bioanalysis	Metabolomics and biopharmaceutical analysis

Relative sensitivity gain for average column i.d. compared to conventional LC, 4.6 mm i.d. column.

Pump Power to Drive Any Separation

- Column pressure up to 800 bar
- Continuous direct flow delivery
- Widest nano/cap/micro flow rate from 20 nL/min up to 50 µL/min
- Loading pump provides flows from 10 µL/min to 2.5 mL/min

Optimized Fluidics

- Proprietary nanoViper fingertight fittings
- Reliable and robust zero-dead-volume connections
- Gradient delay volume of only 25 nL
- Integrated low-dead-volume switching valves
- Column heating up to 80 °C
- Snap in valves

Flexible and Reliable Sample Handling

- Automated sample fractionation and reinjection
- Zero-sample-loss injections
- Sample derivatization
- Extensive wash routines to minimize carryover

Plus Sensitivity of Nano LC

RSLCnano System Benefits

- Up to 3 times faster than conventional nano systems

- Up to twice the resolution of traditional nano systems

- Extensive flow-pressure footprint for maximum application flexibility

- Fingertight nanoViper™ fittings for easy, zero-dead-volume connections

- Continuous direct flow delivery for excellent ease-of-use

- Complete MS integration with DCMS^{Link}™

- Full range of consumables for all application areas

High Performance Columns

- High resolution peptide mapping
- Monoliths for protein separations
- Wide range of sizes and chemistries
  - Reversed Phase (RP)
  - Ion Exchange (IEX)
  - Mixed Mode (RP , IEX, HILIC)

Intelligent Software

- DCMS^{Link} for single point LC-MS control
- eWorkflows for simplified operation
- Chromeleon® software panels for intuitive instrument control
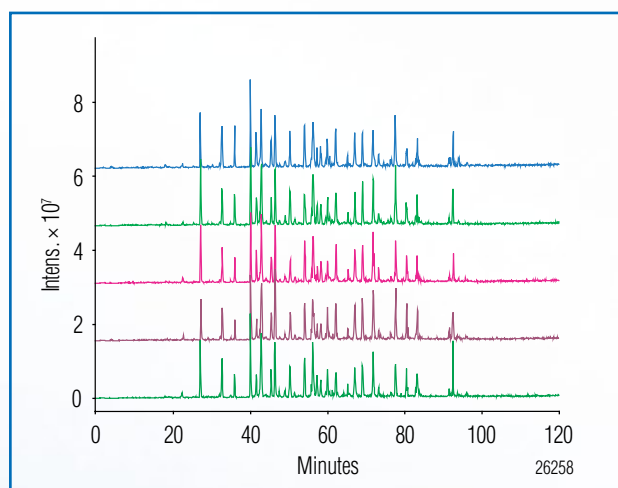- System diagnostics for wellness monitoring and improved uptime

Enabling Solutions

- LC-ESI-MS
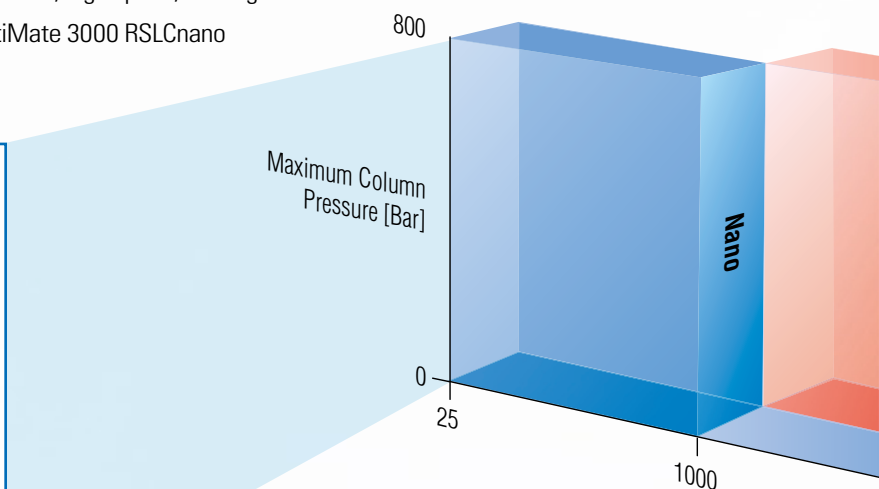- MALDI spotting
- Phosphopeptides
- 2D-LC

Pump Power to Drive Any

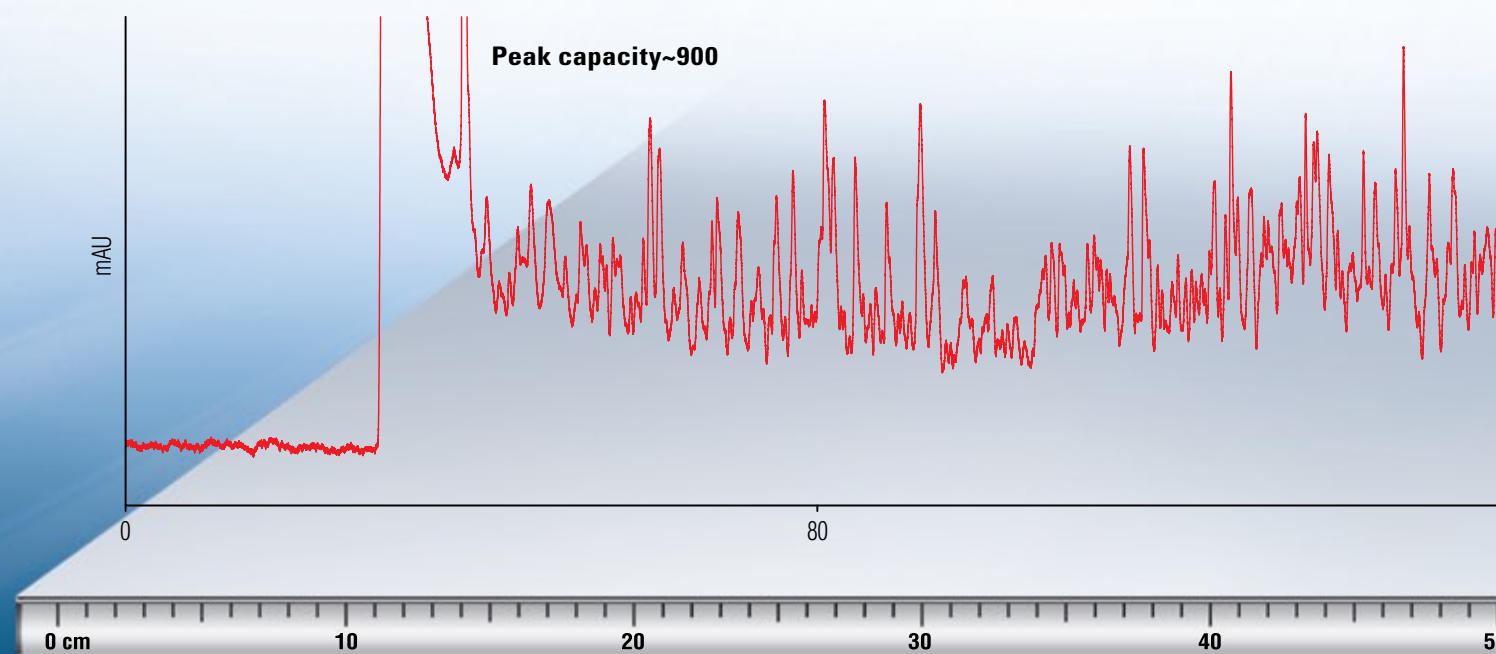## Taking Advantage of the Flow-Pressure Footprint

The wide flow-pressure footprint of the UltiMate 3000 RSLCnano system supports nano, capillary, and micro applications with pump power up to 800 bar. The built in micro pump can deliver ternary gradients at mico and analytical flow rates for preconcentration or 2D applications. This unique combination allows for high resolution, high speed, and high sensitivity in many different application areas, making the UltiMate 3000 RSLCnano system the most flexible system available.

Pump at 300 nL/min with exceptional gradient reproducibility.
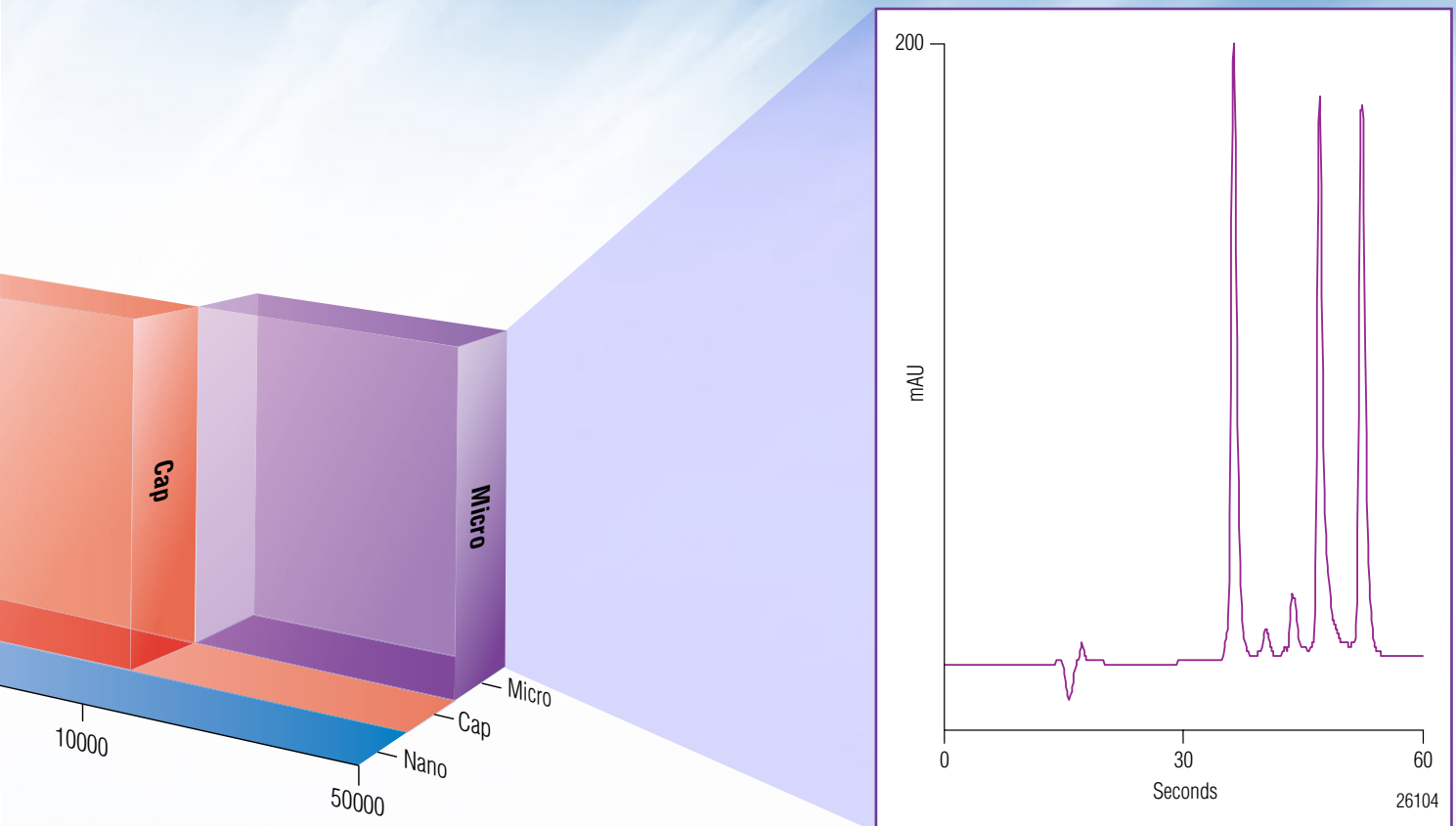
The UltiMate 3000 RSLCnano offers the most extensive flow-pressure footprint for nano, capillary, and micro applications. This offers analytical laboratories unprecedented flexibility, all in a single system.
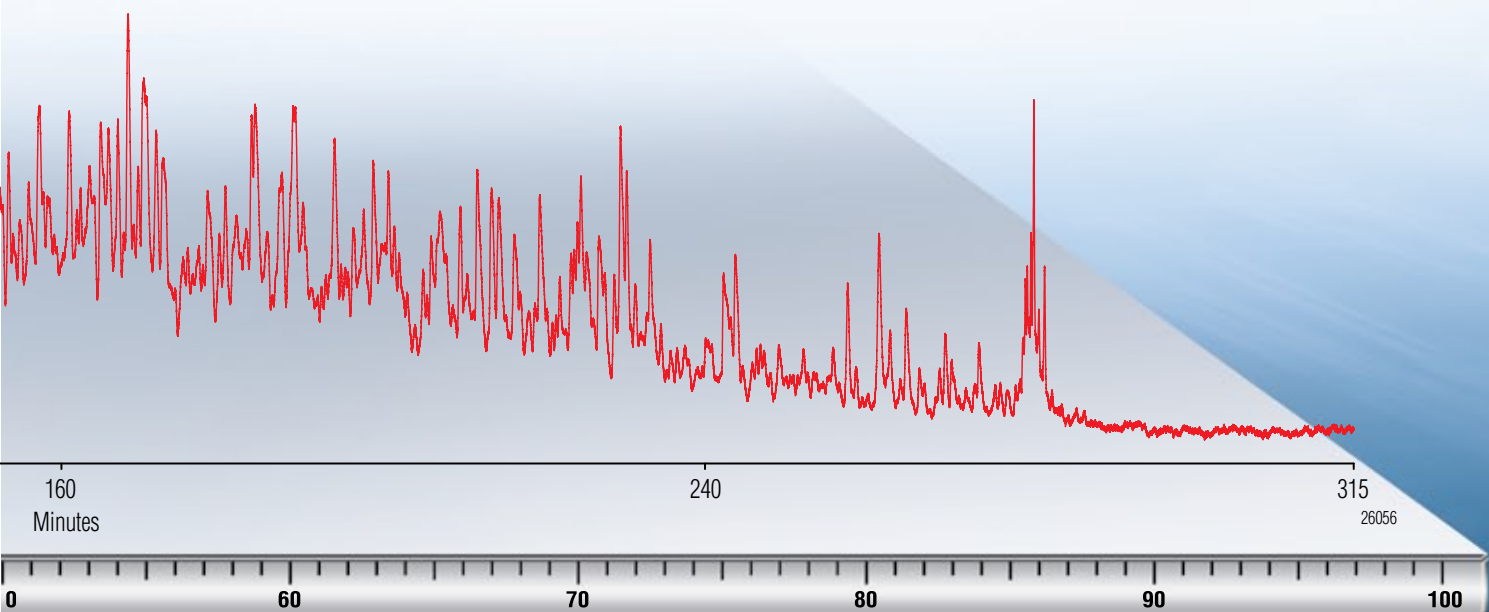
Peak capacity~900

Combine four 25 cm columns for a 1 m long column separation at 800 bar to get the highest possible resolution.

Separation
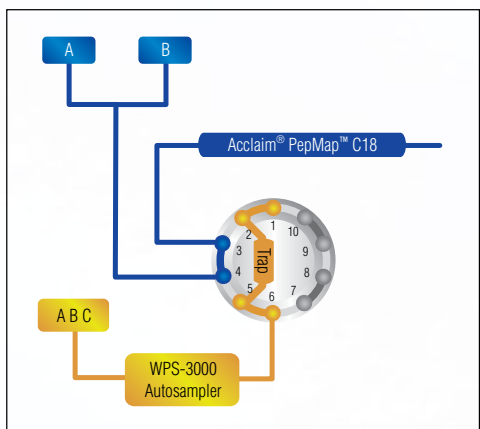

Perform ultrafast microflow separations to separate proteins in less than a minute with peak widths at half height of 1 s.
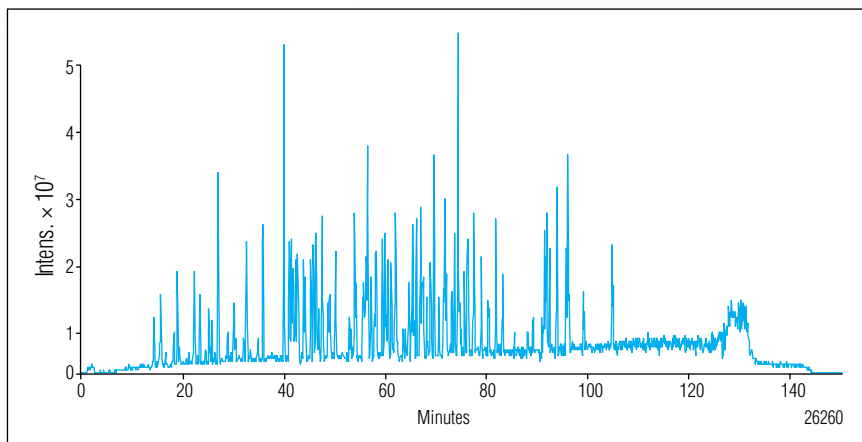
26104

10000

50000

Micro

Cap

Nano

Cap

Micro

200

mAU

0   30   60

Seconds

160
Minutes

240

315

26056

0   60   70   80   90   100

Application Flexibility

There are many levels of sample complexity, each requiring a different analytical workflow. The UltiMate 3000 RSLCnano system has been specifically designed to support these workflows with the maximum ease-of-use. The unique nanoViper fittting system reduces plumbing complexity, brings unparalleled ease-of-use, and provides zero-dead-volume connections. The nanoViper fittings and the snap-in switching valves simplify all fluidic setups, including preconcentration, MudPit, and advanced 2D-LC.

Setup for sample preconcentration and on-line desalting. This setup fully exploits the combination of the dual pump design, heated column compartment, and switching valve all integrated in one module.

Base peak chromatogram of a complex tryptic peptide sample.

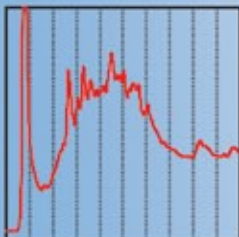*Valves can be moved forward for maximum ease-of-use when making fluidic connections.*

The nanoViper fitting system provides fingertight, zero-dead-volume connections for any column, any flow, any valve, and any pressure up to 800 bar. Its elegant design ensures easy connection of all fluidics for every operator experience level.

Workflows

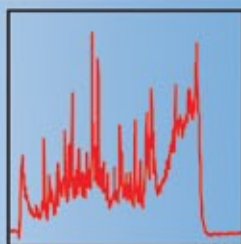**Sample protein extraction**

Separate proteins 1D

Fractionate protein sample

Separate proteins 2D

In-well digestion

Separate peptides LC-MS/MS
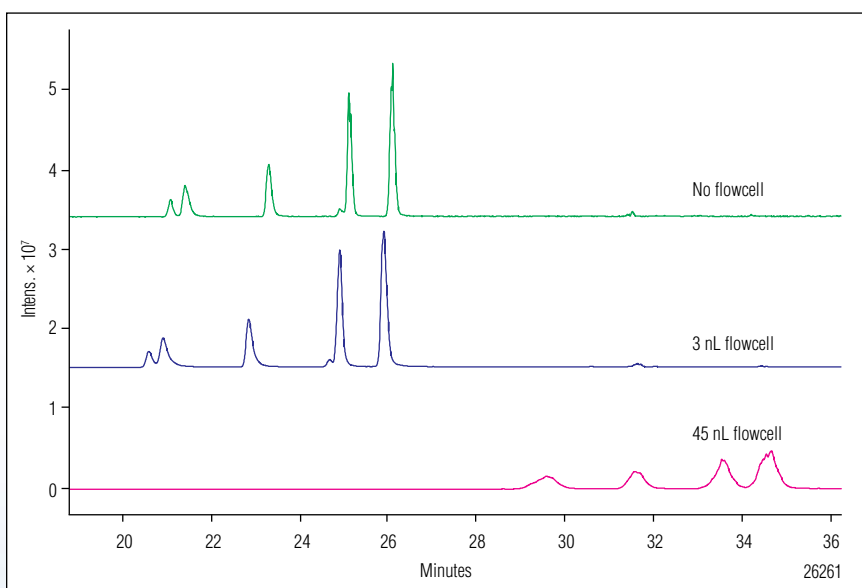
Database serach, protein ID

Advanced workflows, such as automated off-line 2D-LC, can be supported easily by the UltiMate 3000 RSLCnano system. Utilizing both pumps, two switching valves, and the microfractionation option of the autosampler, this set-up demonstrates the full flexibility of the system.

Advanced Automation and Detection Technology

Precision and Sensitivity

The UltiMate 3000 RSLCnano system includes a powerful well-plate autosampler. The unique dual-injection needle design and customizable programs ensure maximum fexibility and operational performance. Dedicated injection routines and tray cooling are available for zero sample loss and preservation of precious biological samples. The efficient wash routines prevent sample carryover and avoid the generation of redundant data. The instrument also offers sample derivitization (e.g., tryptic digests) and micro fractionation.

UV detection can be of significant advantage in nano LC-MS. Using dedicated nano LC flow cells adds a powerful monitoring tool while preserving the chromatographic results.

No effect on resolution and MS performance when using a dedicated nano (3 nL) flow cell.

The VWD-3400RS UV detector with dedicated flow cells for nano and capillary LC.

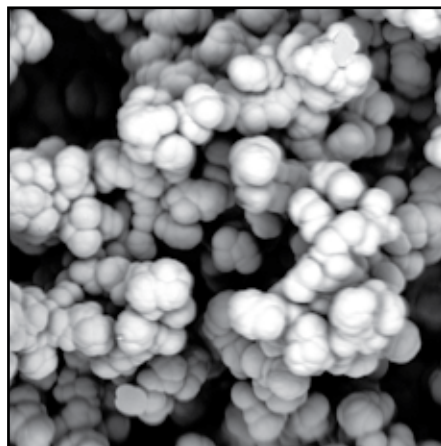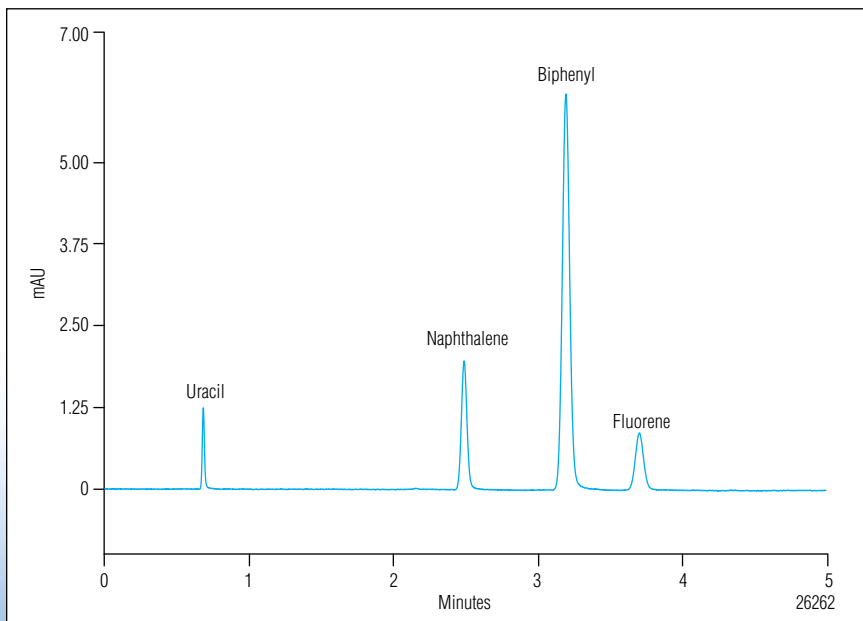*The WPS-3000PLRS nano LC autosampler with 1000 bar-rated injection valve.*

Consumables for All Separation Needs

Chemistries for Challenging Separations

Dionex has a long history of supplying world class columns for biomolecule separations, offering multiple chemistries for different application needs:

• Reversed Phase

• Ion Exchange

• Affinity

• Hydrophic Interaction

• Mixed Mode

In addition to these stationary phases, Dionex has developed a range of dedicated Acclaim PepMap RSLC nano columns packed with 2 µm particles to provide maximum speed or resolution. Up to 50 cm in length, these nano columns fully exploit the 800 bar capabilities of the UltiMate 3000 RSLCnano system. PepSwift monolithic columns are available up to 25 cm in length, and with nanoViper fittings four columns can be connected easily to get the separation power of a 1 meter long monolithic column.

The unique structure of monoliths provides robust operation over long time periods, allowing for fast, reproducible chromatograms time and time again.
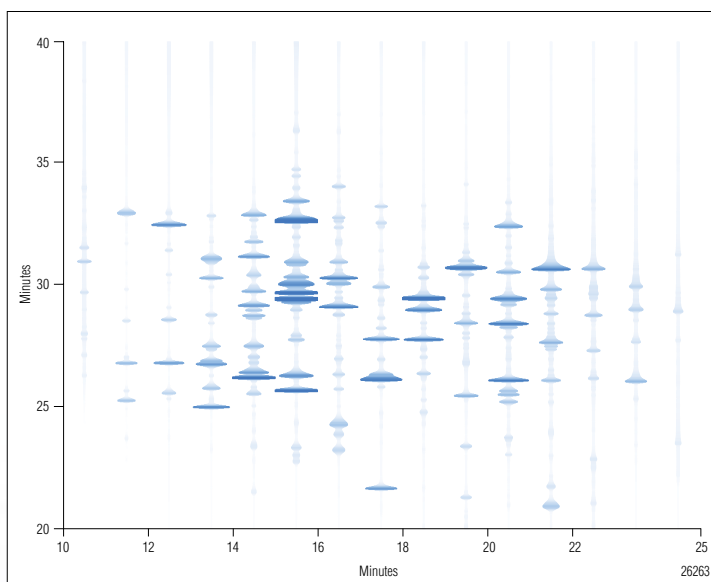
The 800 bar-rated nano columns offer incredible separation performance, with efficiencies of >150,000 plates per meter.
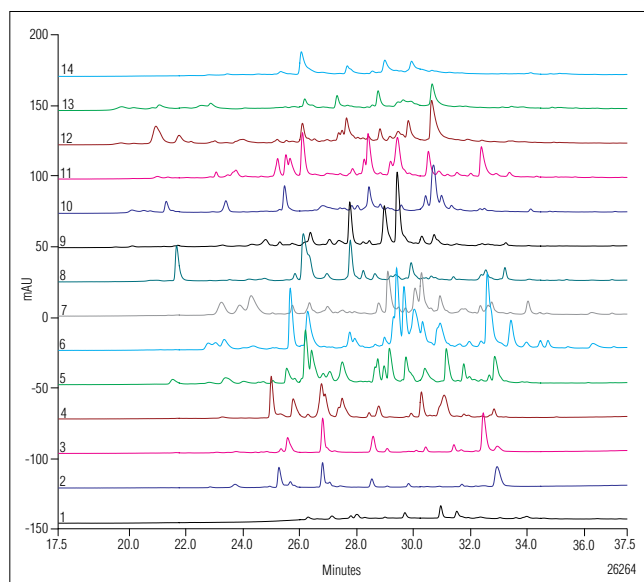
Simply Intelligent
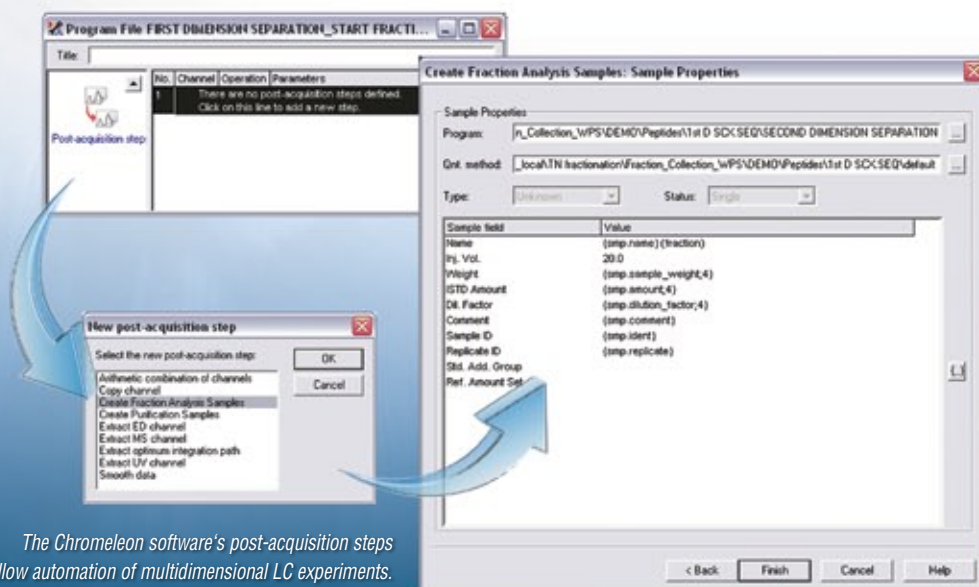
Powerful Software Solutions

The Chromeleon Chromatography Data System delivers intelligent functionality to streamline laboratory workflows. The thoughtfully designed user interface guides you effectively towards your goal and features a set of diagnostic functions that allows for optimal system usage.

Discover more with 2D retention plots.

Overlay of a series of second-dimension separations.

The Chromeleon software's post-acquisition steps allow automation of multidimensional LC experiments.
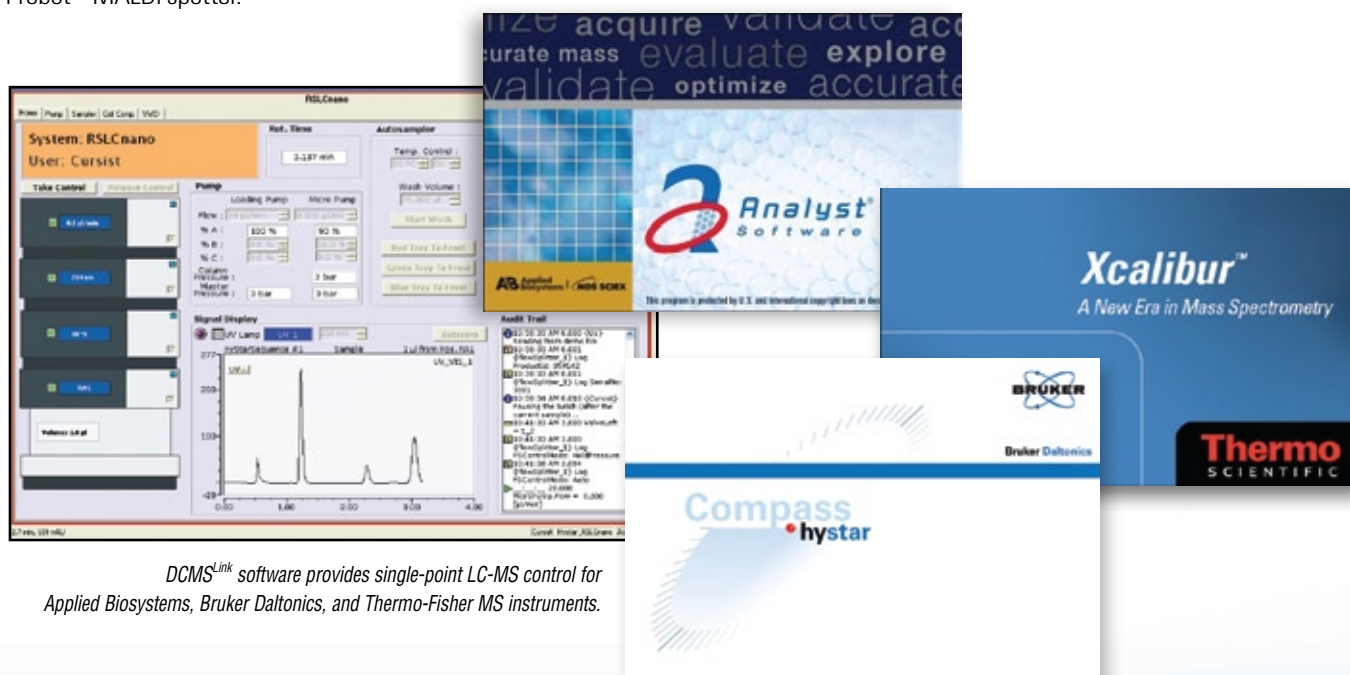
Detection Flexibility

MS Solutions

Mass spectrometry is usually the preferred detection method for nano and capillary LC to maximize sensitivity and the amount of information. Dionex LC-MS solutions are aimed to achieve these goals through smart integration of hardware and software.

Full integration with all major MS software platforms is achieved with DCMS[Link], a powerful interface that allows for single point control and easy system operation in ESI-MS.

MALDI MS is supported through the highly accurate, rugged and reliable Probot[TM] MALDI spotter.

DCMS[Link] software provides single-point LC-MS control for Applied Biosystems, Bruker Daltonics, and Thermo-Fisher MS instruments.

Probot MALDI spotter, the ideal instument for interfacing LC with MALDI-MS.

Spotting on a MALDI target.