

# Thermo Scientific UltiMate 3000 RSLCnano System

Giving you more



Now sold under the  
Thermo Scientific brand

**Thermo**  
SCIENTIFIC

 **DIONEX**

Part of Thermo Fisher Scientific

# Separation Power of RSLC Plus Sensitivity

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

The Thermo Scientific 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 Thermo Scientific 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 75 °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

# of Nano LC

## UltiMate 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 Thermo Scientific DCMSLink™
- Full range of consumables for all application areas



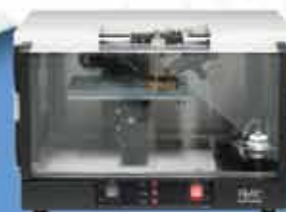
## High-Performance Columns

- 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

- DCMSLink for single point LC-MS control
- eWorkflows for simplified operation
- Thermo Scientific Dionex Chromeleon™ software panels for intuitive instrument control
- System diagnostics for wellness monitoring and improved uptime



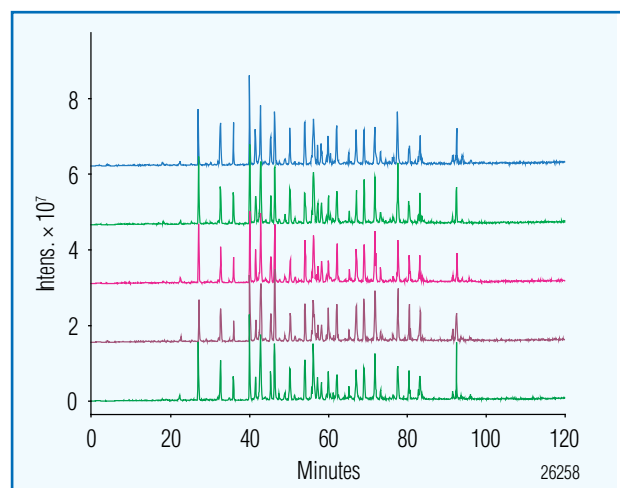
## Enabling Solutions

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

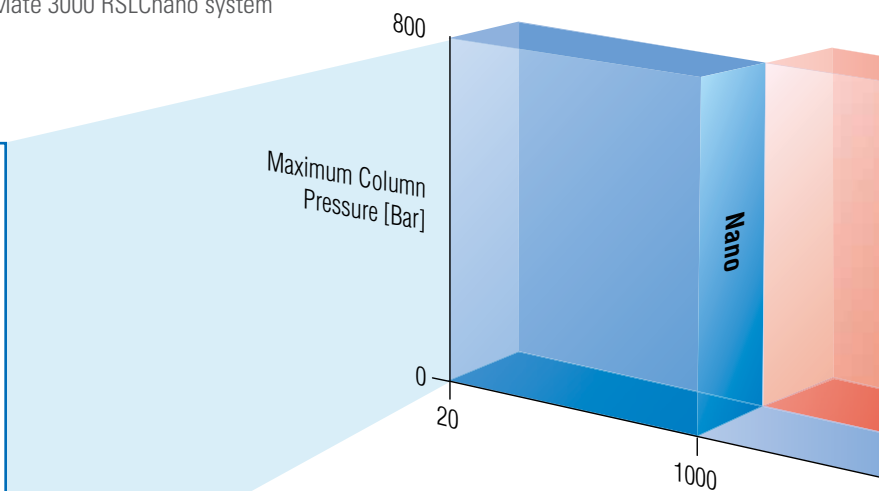
# Pump Power to Drive Any Separation

## Taking Advantage of the Flow-Pressure Footprint

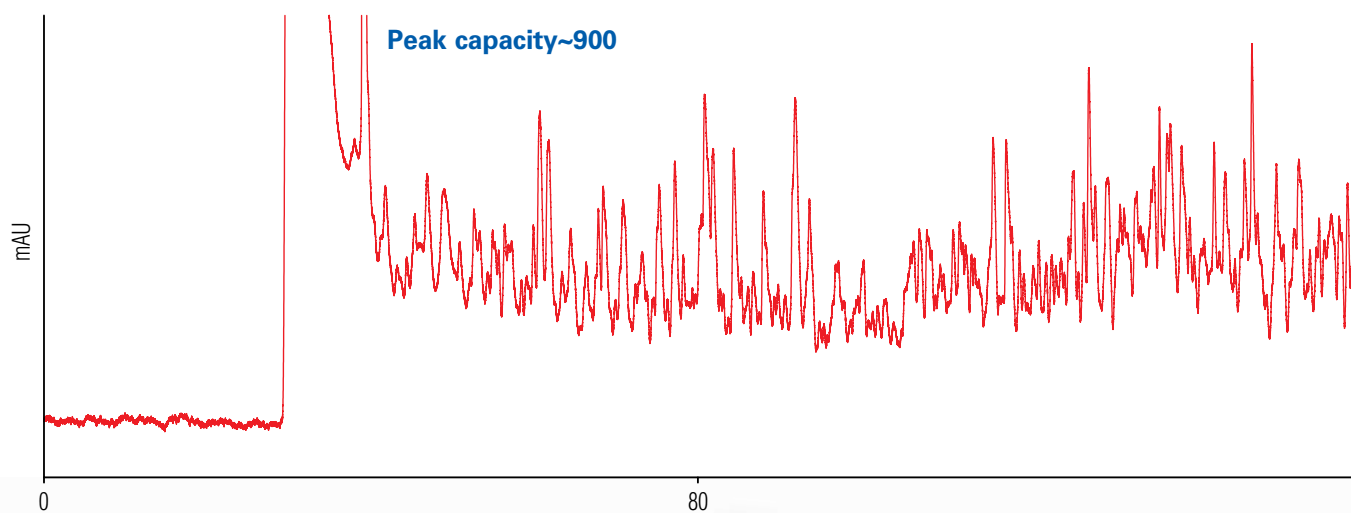
The wide flow-pressure footprint of the UltiMate 3000 RSLCnano system supports nano, capillary, and micro applications with pump power up to 800 bar. The built-in micro pump can deliver ternary gradients at micro and analytical flow rates for preconcentration or 2D applications. This unique combination 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.



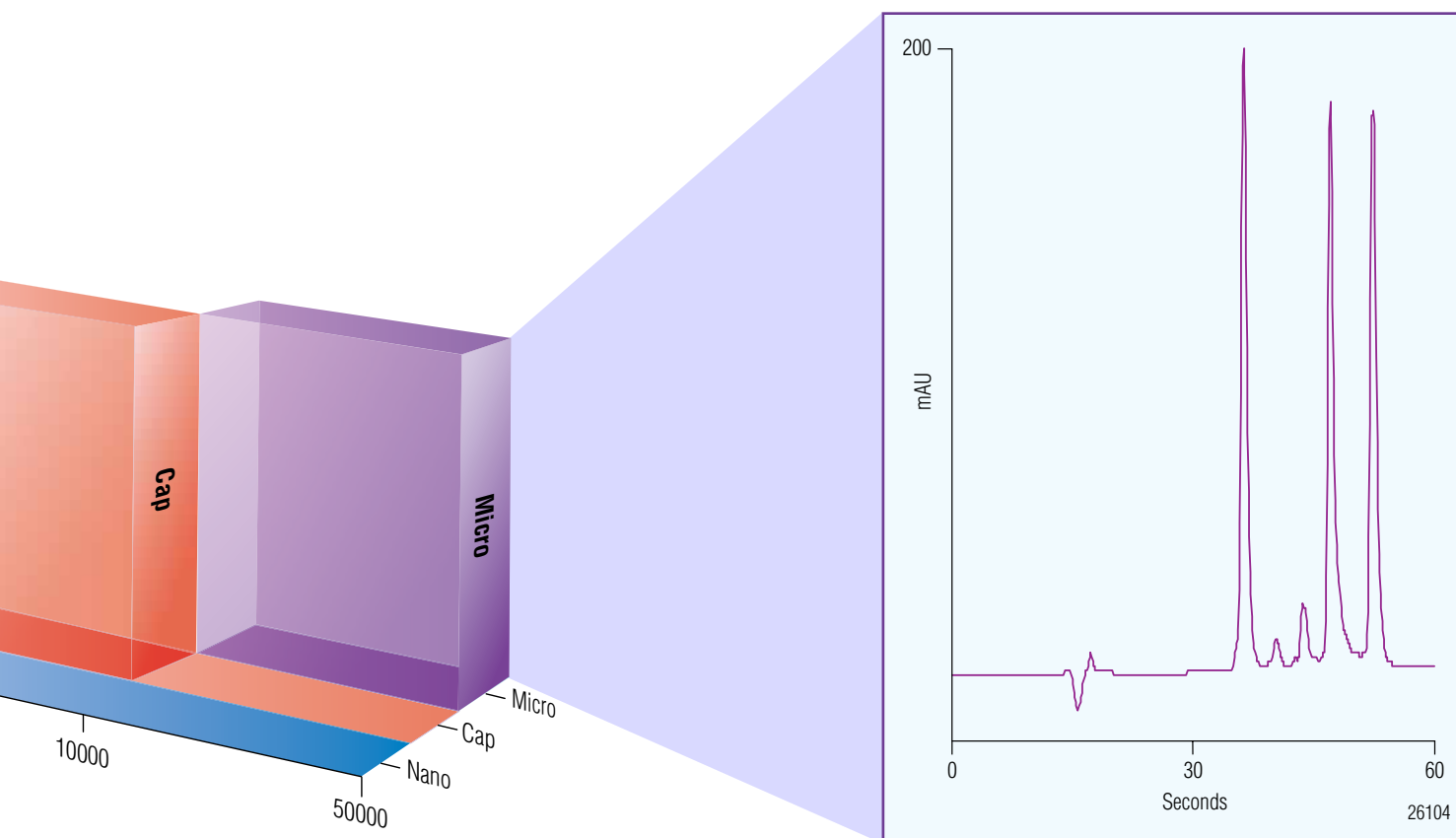
Pump at 300 nL/min with exceptional gradient reproducibility.



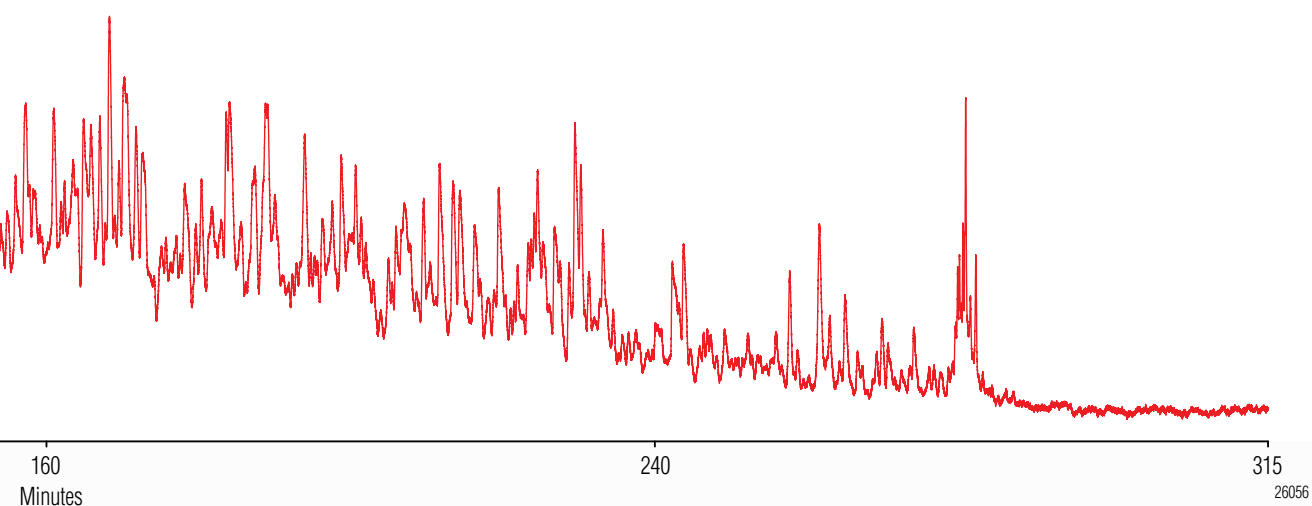
The UltiMate 3000 RSLCnano system provides the most extensive flow-pressure footprint for nano, capillary, and micro applications. This offers analytical laboratories unprecedented flexibility in a single system.



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



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

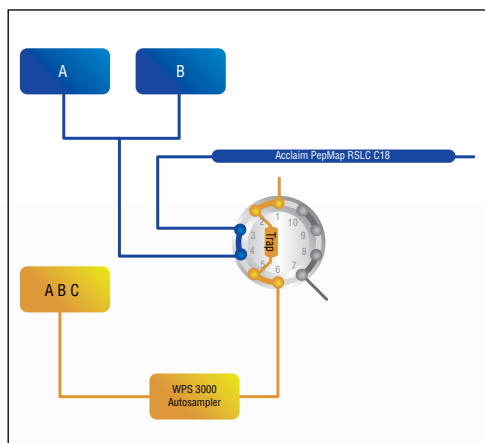


# Optimized Fluidics for All Workflows

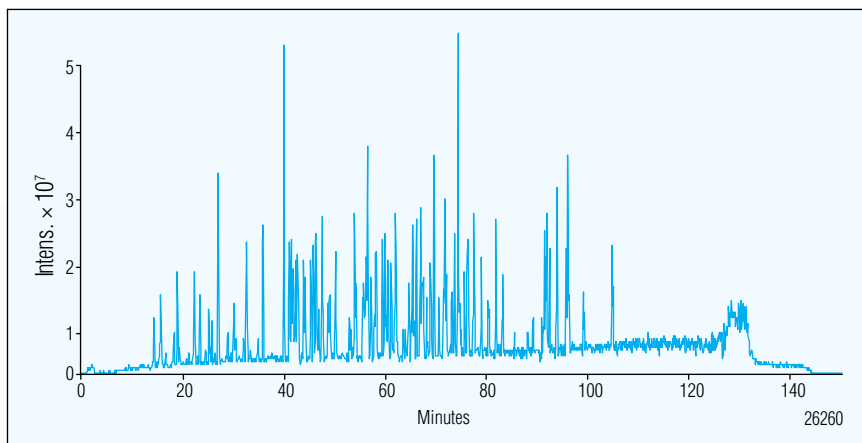
## Application Flexibility

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 maximum ease-of-use. The unique nanoViper fitting system reduces plumbing complexity, brings unparalleled simplicity, 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.

The NCP-3200 RS pump module is perfect for nano, capillary, or micro flow delivery in direct sample loading workflows or as an additional nano pump supporting advanced 2D methods.



*Configuration 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.*



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

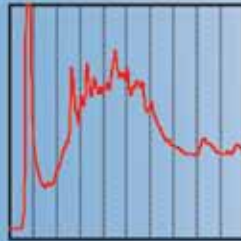


*Valves can be moved forward for maximum ease-of-use when making fluidic connections.*





**Sample protein extraction**



**Separate proteins 1D**



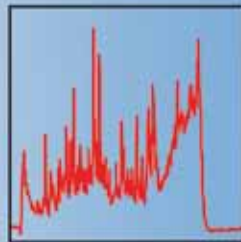
**Fractionate protein sample**



**Separate proteins 2D**



**In-well digestion**



**Separate peptides LC-MS/MS**



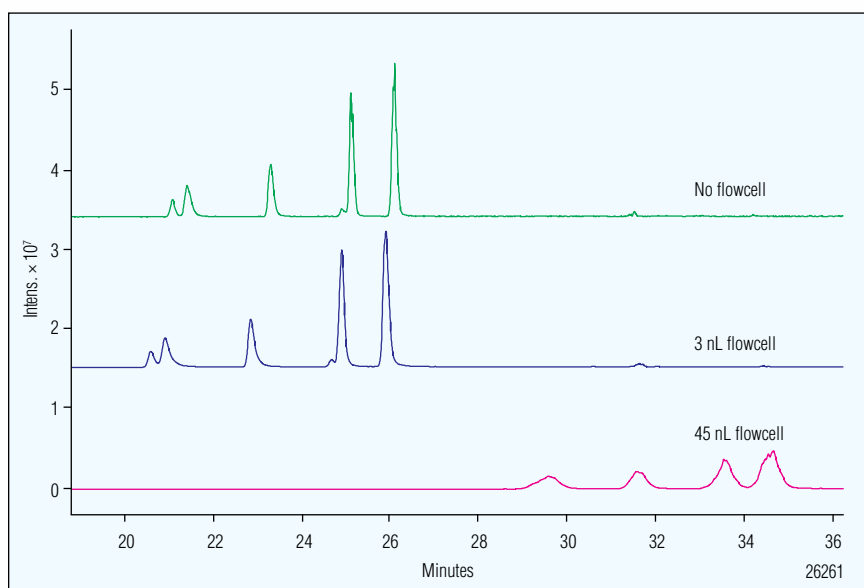
**Database search, protein ID**

# 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 flexibility 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 microfractionation.

UV detection can offer significant advantages 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 is demonstrated when using a dedicated nano (3 nL) flow cell.*



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



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



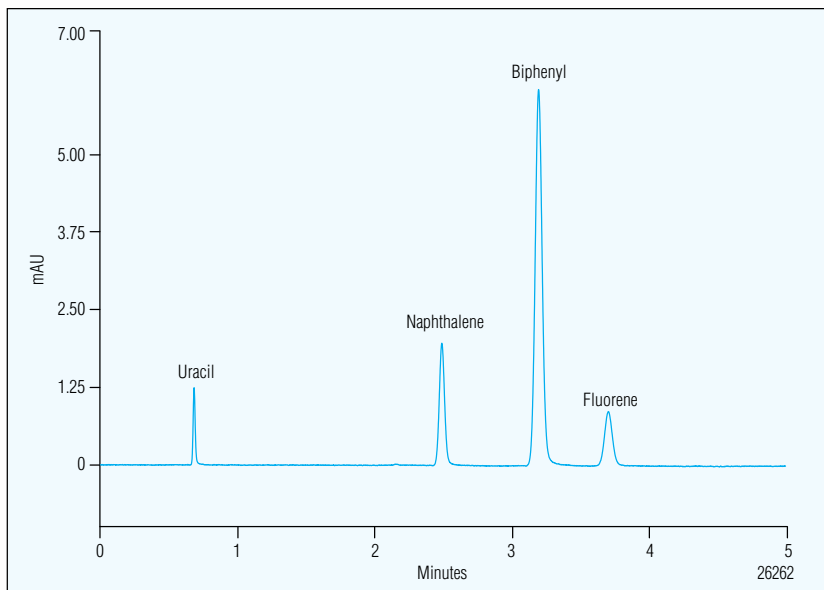
# Consumables for All Separation Needs

## Chemistries for Challenging Separations

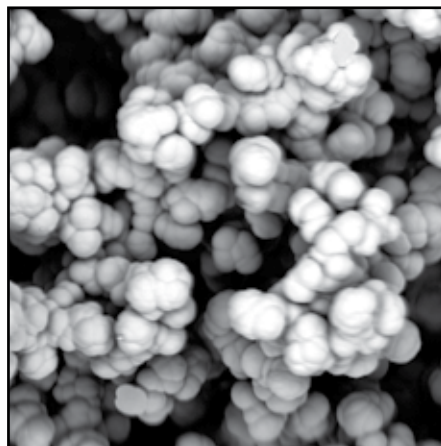
With a long history of supplying world-class columns for biomolecule separations, we offer multiple chemistries for different application needs including:

- Reversed Phase
- Ion Exchange
- Affinity
- Hydrophobic Interaction
- Mixed Mode

In addition to these stationary phases, we have developed a range of dedicated Thermo Scientific Acclaim™ PepMap™ RSLC nano columns packed with 2  $\mu\text{m}$  particles to provide maximum speed or resolution. Up to 50 cm in length, these nano columns fully exploit the 800-bar pressure 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 achieve the separation power of a 1 meter monolithic column.



The 800 bar-rated nano columns offer incredible separation performance, with efficiencies of >150,000 plates per meter.



*The unique structure of monoliths provides robust operation over long time periods, allowing for fast, reproducible chromatograms time and time again.*

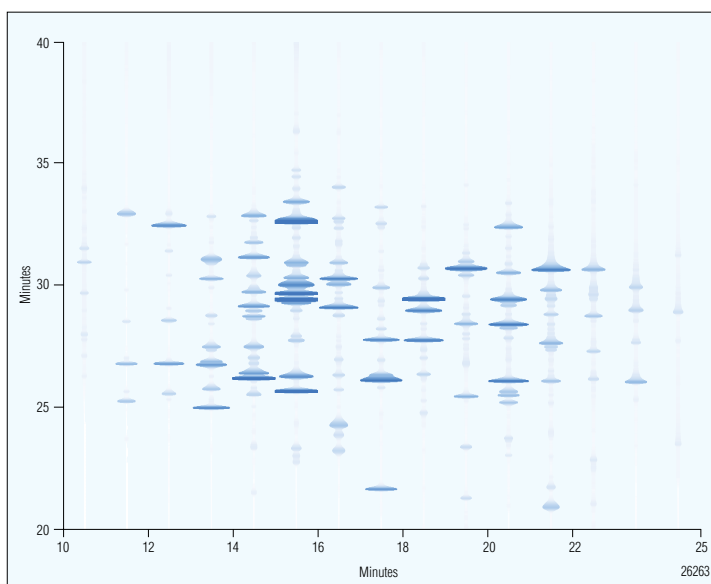


*Nano trap column with Dionex nanoViper connections.*

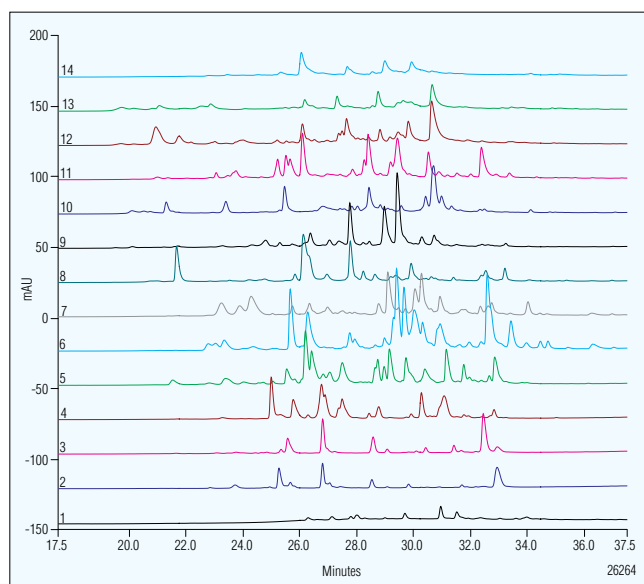
# Simply Intelligent

## Powerful Software Solutions

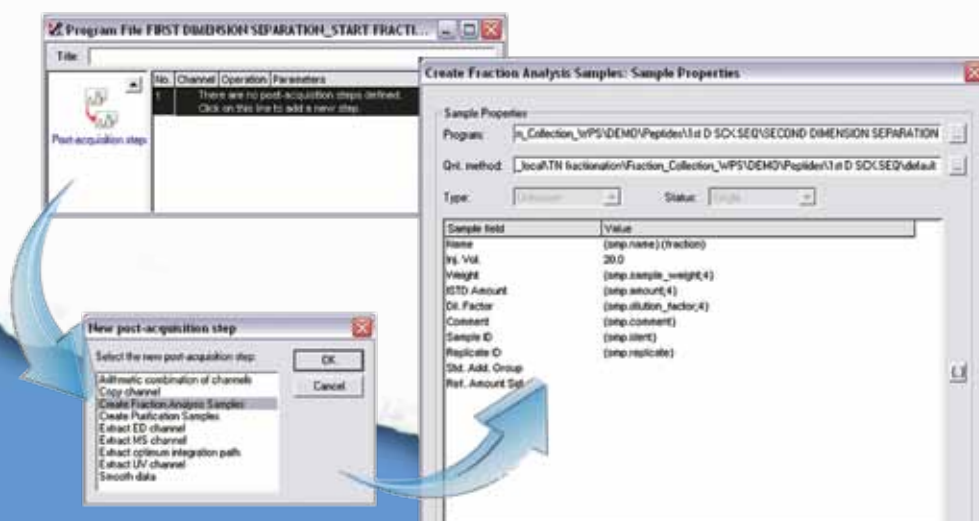
The Thermo Scientific Chromeleon Chromatography Data System delivers intelligent functionality to streamline laboratory workflows. The thoughtfully designed user interface guides you effectively towards your goal and features a set of diagnostic functions that allows for optimal system usage.



Discover more with 2D retention plots.



Overlay of a series of second-dimension separations.



Dionex 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. Our LC-MS solutions are designed to achieve these goals through smart integration of hardware and software.

Full integration with all major MS software platforms is achieved with Thermo Scientific<sup>®</sup> DCMS<sup>Link</sup>, 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 Thermo Scientific Probot<sup>™</sup> MALDI spotter.



DCMS<sup>Link</sup> software provides single-point LC-MS control for Applied Biosystems, Bruker Daltonics, and Thermo-Fisher MS instruments.



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



Spotting on a MALDI target.



## Enjoy Industry-Leading Support

Our 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 Thermo Scientific LC instrumentation and software capabilities. Support Centers provide accessible locations for advanced training and enhanced application development capabilities. customers can visit these laboratories or sign up to learn new skills in addressing challenging applications, receive training and support, and discover new, innovative HPLC and IC solutions.

## Corporate Headquarters

Dionex Corporation  
1228 Titan Way  
P.O. Box 3603  
Sunnyvale, CA 94088-3603  
Tel: (408) 737-0700  
Fax: (408) 730-9403

## Worldwide Sales and Service

### North America

U.S./Canada (847) 295 7500

### South America

Brazil (55) 11 3731 5140

### Europe

Austria	(43) 1 616 51 25
Benelux	(31) 20 683 9768
	(32) 3 353 42 94
Denmark	(45) 36 36 90 90
France	(33) 1 39 30 01 10
Germany	(49) 6126 991 0
Ireland	(353) 1 644 0064
Italy	(39) 02 51 62 1267
Sweden	(46) 8 473 3380
Switzerland	(41) 62 205 9966
United Kingdom	(44) 1276 691722

### Asia Pacific

Australia	(61) 2 9420 5233
China	(852) 2428 3282
India	(91) 22 2764 2735
Japan	(81) 6 6885 1213
Korea	(82) 2 2653 2580
Singapore	(65) 6289 1190
Taiwan	(886) 2 8751 6655

[www.dionex.com](http://www.dionex.com)



Part of Thermo Fisher Scientific



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

© 2011 Thermo Fisher Scientific, Inc.  
All trademarks are property of  
Thermo Fisher Scientific Inc. or its subsidiaries..  
LPN 2325-02 PDF 11/11 Printed in U.S.A.