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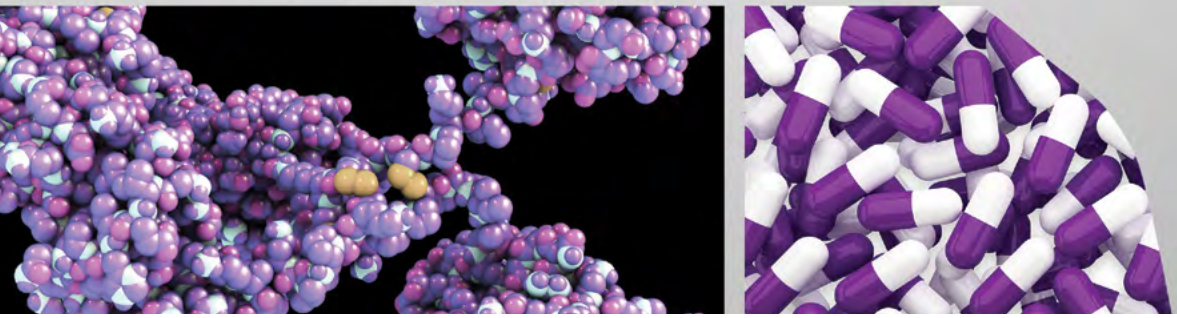
Vanquish HPLC and
UHPLC Systems

LC that takes your productivity to new heights



ThermoFisher
SCIENTIFIC

Get more from liquid chromatography

No trade-offs in performance, robustness or ease-of-use

Today's scientists need to solve the challenges faced to produce life-saving medicines and improve the quality of our food and the environment. This work deserves the best analytical tools available; tools that empower you to achieve your next scientific breakthrough, measure the previously unmeasurable, and deliver outstanding quality results dependably.

Designed with innovative technology and attention to fine detail, Thermo Scientific™ Vanquish™ HPLC and UHPLC systems are the most advanced LC instruments available. The Vanquish systems improve performance and repeatability with no trade-offs in quality, robustness, or ease-of-use. Regardless of which Vanquish HPLC or UHPLC system is used, chromatographers have all they need to solve their toughest analytical challenges with confidence.

- **Deliver results without compromise**—Unsurpassed retention time and peak area precision
- **Easier method development and routine analysis**—Dedicated tools for fast method development and validation with exceptional instrument robustness to maximize uptime
- **Improve productivity**—Better throughput, improved sample characterization, and faster return on investment
- **Detect the lowest sample quantities**—Higher detector sensitivity and lower baseline noise
- **Seamlessly integrate MS**—Dedicated kits and software solutions provide exceptional LC-MS performance
- **Maximize your results**—Easy to use, control, and process data with Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS)

Thermo Scientific™ Vanquish™ Core HPLC system

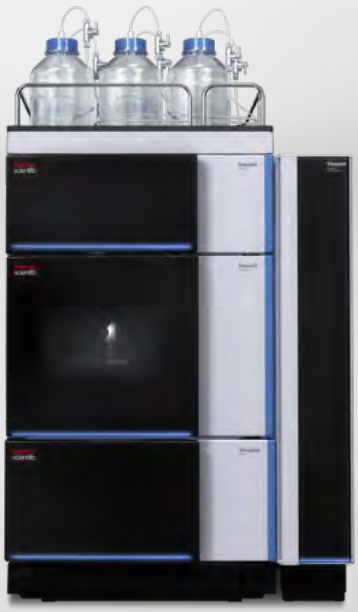
Absolute dependability to enable worry-free applications

Run more samples, unattended

For any application—whether HPLC or UHPLC, small or large molecules, simple or complex mixtures—the Vanquish platform was designed to handle it all. This innovative, simple-to-operate, and easy-to-maintain platform delivers confident separations that push chromatographic boundaries. Regardless of the configuration you choose, you will get a highly integrated solution with optimized fluidic connections, providing unsurpassed retention time and peak area precision.

Thermo Scientific™ Vanquish™ Flex UHPLC systems

Complete flexibility for method development or fast and reliable UHPLC



Thermo Scientific™ Vanquish™ Horizon UHPLC system

Unrivaled performance and throughput for applications requiring high-end UHPLC

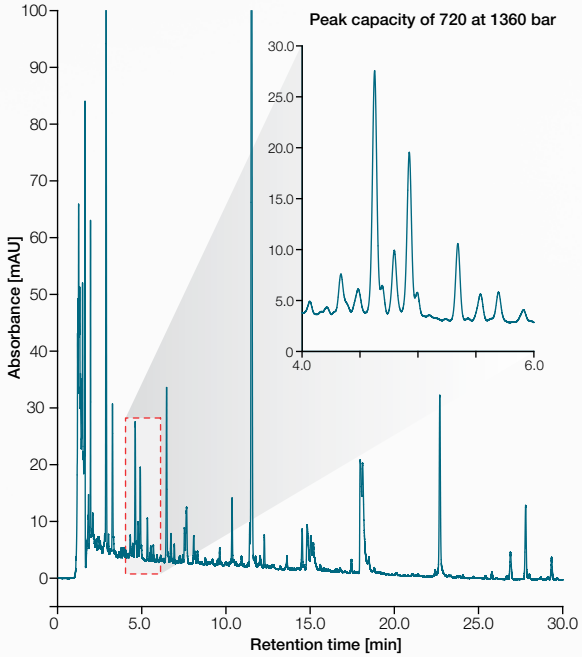
Thermo Scientific™ Vanquish™ Duo HPLC and UHPLC systems

Increased productivity with two completely independent flow paths for higher throughput and improved sample characterization

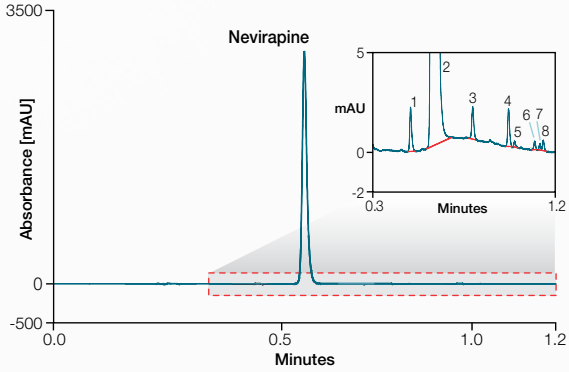
Deliver results without compromise

Vanquish Horizon UHPLC system

The Thermo Scientific Vanquish Horizon UHPLC system is an integrated, fully biocompatible state-of-the-art binary UHPLC system with ultra-low gradient delay volume, designed to provide unrivaled performance for high resolution and high-throughput LC and LC-MS applications.



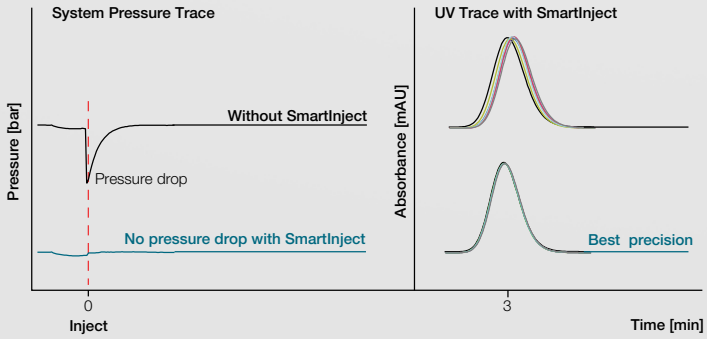
Ultra high peak capacity for a complex herbal extract analysis.



Impurity profiling of nevirapine (0.66 mg/mL) with UHPLC gradient and zoom into the baseline to show related impurities.

Why SmartInject Technology?

Unlike traditional UHPLC systems, Vanquish LC systems utilize SmartInject Technology. A novel injection feature that significantly reduces dramatic pressure pulses that would otherwise lead to reduced column lifetime and challenges with retention time precision. SmartInject Technology enables improved data confidence and reduced cost of ownership.

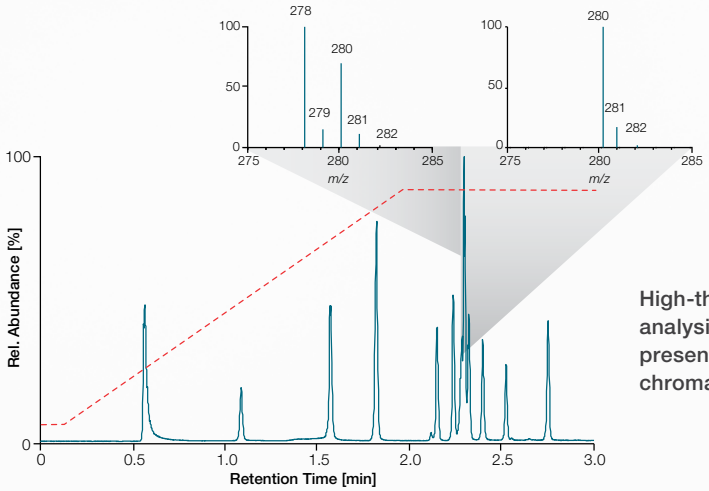


Significant reduction of pressure drop after injection using SmartInject Technology resulting in improved retention time reproducibility (6 replicates) and enhanced column lifetime.

Easier method development and routine analysis

Vanquish Flex UHPLC systems

The Thermo Scientific Vanquish Flex systems offer binary and quaternary solvent blending. Binary solvent blending results in low gradient delay volumes that are ideal for routine UHPLC and LC-MS applications. Quaternary solvent blending allows multicomponent gradient formation for flexible UHPLC method development.



High-throughput pesticides analysis by full scan LC-MS presented as extracted ion chromatogram.

Vanquish Core HPLC system

The Thermo Scientific Vanquish Core HPLC systems offers highly dependable HPLC analysis for binary, quaternary and isocratic solvent blending. A new level of user experience, the highest system productive time, and its ease to adopt within any given laboratory infrastructure make it ideal for all traditional HPLC analyses.

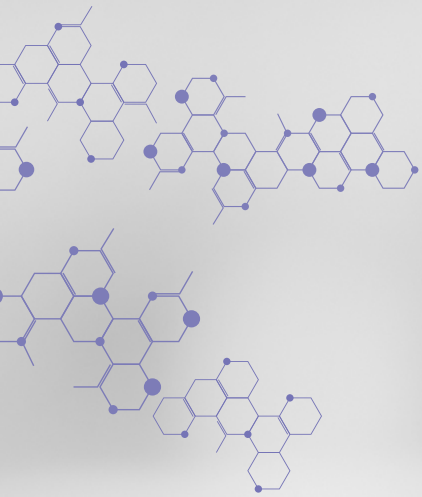
= System Suitability Test (SST) passed

Test sites of a Vanquish Core system round robin test using eight different instruments with individual samples, users, and columns. Each analysis passed the specified SST criteria highlighting the reliability of the instrument and the ease of use for each user resulting in a successful SST.

Four workflows. Two flow paths. One integrated UHPLC solution.

Vanquish Duo UHPLC systems

The Thermo Scientific Vanquish Duo UHPLC systems improve productivity and sample knowledge to deliver a faster return on investment. The Vanquish Duo UHPLC systems expand the benefits of our award-winning Vanquish platform with four workflows (Dual LC, Tandem LC or LC-MS, Transcend Duo LX-2, and Inverse Gradient). Vanquish Duo UHPLC systems use a separate second flow path in one integrated system set up by using Vanquish Flex or Vanquish Horizon modules.

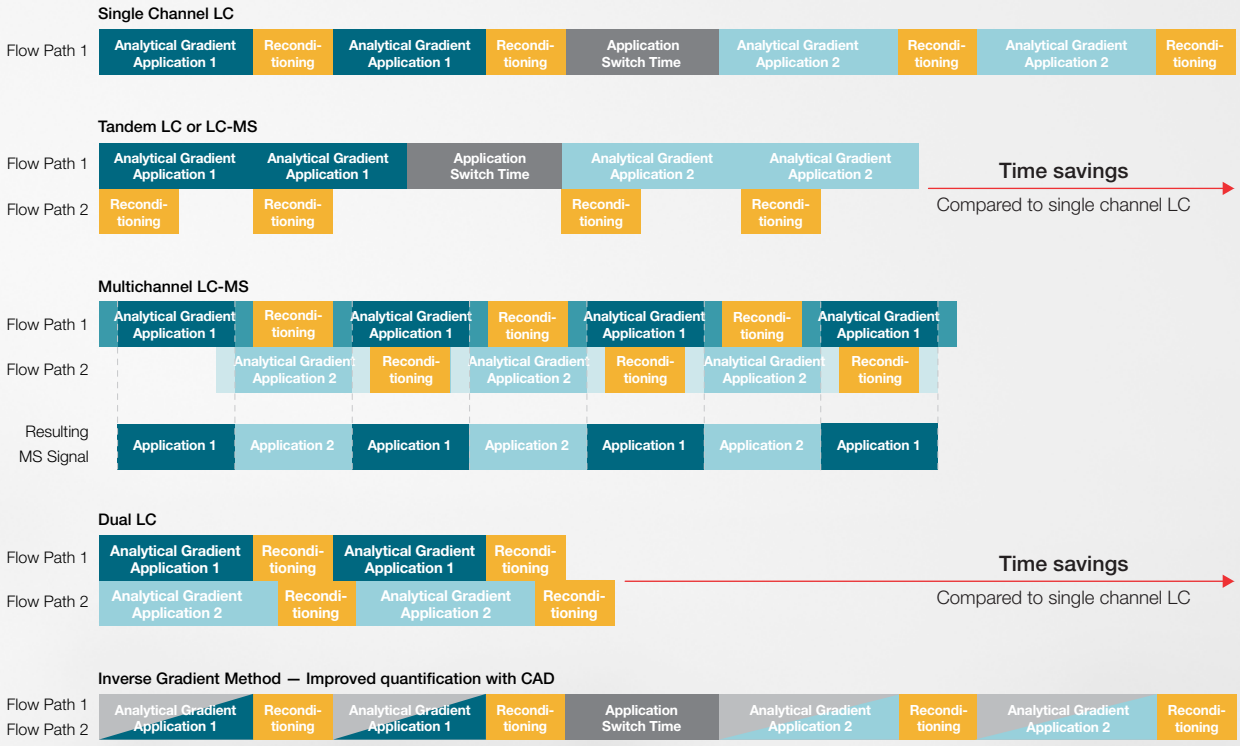


Vanquish Duo for Dual LC

Double your throughput deepen your sample knowledge and better utilize your bench space with the Vanquish Duo for Dual LC workflow. Two completely independent flow paths for maximum productivity.

Vanquish Duo for Tandem LC or LC-MS

Increase your lab's throughput by 30% with the Vanquish Duo for Tandem LC or LC-MS workflow.[1] Maximize the utilization of your optical detector or mass spectrometer.



Vanquish Duo for Transcend Duo LX-2

Double the throughput of your LC-MS application with the Vanquish Duo for Transcend Duo LX-2. Run up to two applications simultaneously with a multi-channel LC while benefiting from the robustness, performance, and ease of use inherent of the Vanquish LC platform.

Vanquish Duo for Inverse Gradient LC

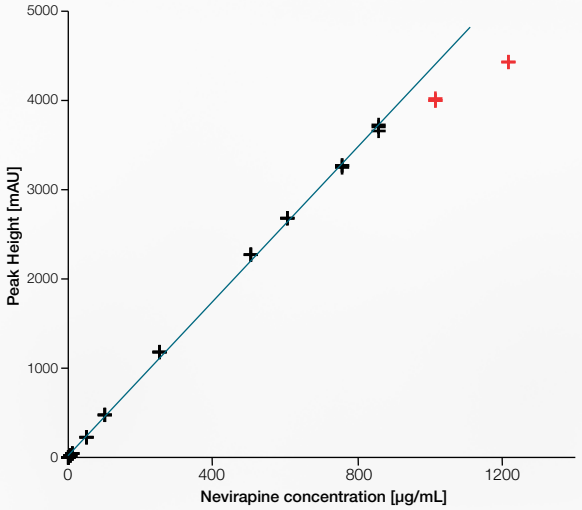
Improve your lab's quantification capabilities with the Vanquish Duo for Inverse Gradient, employing the unique and universal Charged Aerosol Detection, to quantify all non-volatile and semi-volatile compounds even when no individual reference standard is available.

Detect the lowest sample quantities

Choosing the right detection technology is key to revealing all the components of interest in your sample. The Vanquish HPLC and UHPLC platforms offers a wide range of detection capabilities that can be easily integrated and combined to fit your methods.

Industry-leading diode array detection

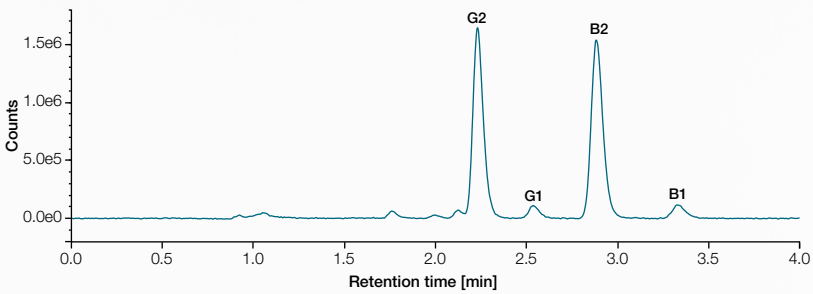
The industry-leading Thermo Scientific™ Vanquish™ diode array detectors offers the widest linear range and excellent signal-to noise performance, exceeding that of variable wavelength detectors. For extremely demanding applications, increase your detection sensitivity with the Thermo Scientific™ Diode Array Detector HL using Thermo Scientific™ LightPipe™ flow cells. LightPipe technology achieves excellent signal-to-noise performance with low baseline noise and drift, and low peak dispersion. Leverage the Thermo Scientific™ Diode Array Detector FG or CG for the highest linear range and smooth LC-MS coupling.



Concentration vs. peak height plot of nevirapine with data points that were considered for calibration (black) and data points that were eliminated from calibration due to curve decline (red). Linear calibration with permitted offset and no weighting.

Powerful fluorescence detection

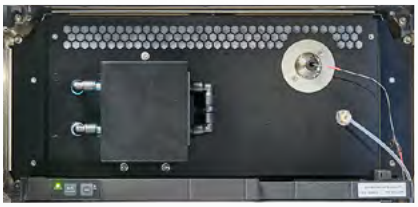
Fluorescence detection enables high sensitivity detection of fluorescent compounds with a long-life lamp technology.



FLD chromatogram of the four aflatoxins: G2, G1, B2 and B1 at a concentration of 0.9 µg/kg for G2 and B2 and 2.9 µg/kg for G1 and B1.

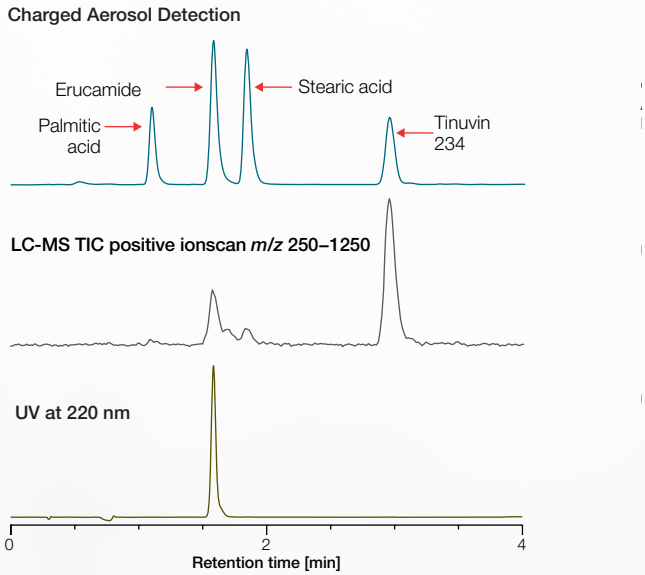
Cost-effective, reliable UV-Vis

UV-Vis detection with excellent sensitivity and linearity is available to streamline in targeted compound analysis.



Uniquely universal charged aerosol detection

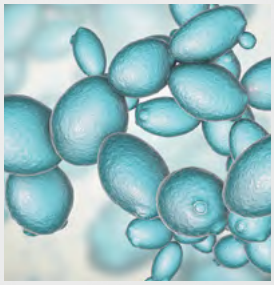
The Thermo Scientific™ Vanquish™ charged aerosol detector is powerful and universal, able to detect virtually any large and small molecule that lacks a chromophore, or that poorly ionizes, with sub-nanogram-level sensitivity and near-uniform response. The flexibility and performance of charged aerosol detection is ideal for analytical R&D, while its simplicity and reproducibility benefit manufacturing QA/QC applications.



Unlike mass spectrometry (A) and UV (B), the CAD is able to measure all analytes in the sample. Mass spectrometry (MS) requires the analyte to form gas phase ions while response by a UV detector depends upon the nature of the chromophore.

Single quadrupole mass detection

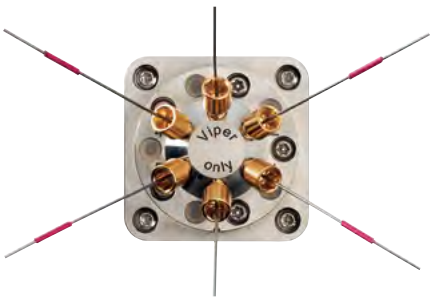
Mass spectrometry gives access to valuable data no other technology can deliver. The easy to use Thermo Scientific™ ISQ™ EM single quadrupole mass spectrometer or the Thermo Scientific™ ISQ™ EC single quadrupole mass spectrometer integrates with LC systems for reliable, robust, and easy LC-MS routine analysis with an extended mass range for more flexibility. Integrated software allows both novices and experts to quickly master MS to gain more insights from every sample.


Seamlessly integrate MS

The Vanquish platform combines seamlessly with Thermo Scientific™ mass spectrometers, providing an extra level of information, confidence and productivity. Mass spectrometry provides sensitivity and selectivity for your analyses, giving you more insight into your samples and ability to resolve difficult separations, including co-eluting peaks, using differing mass-to-charge (*m/z*) ratios.

Thermo Scientific Vanquish system with the Thermo Scientific™ Orbitrap Exploris™ 480 mass spectrometer.



Viper fingertight fittings

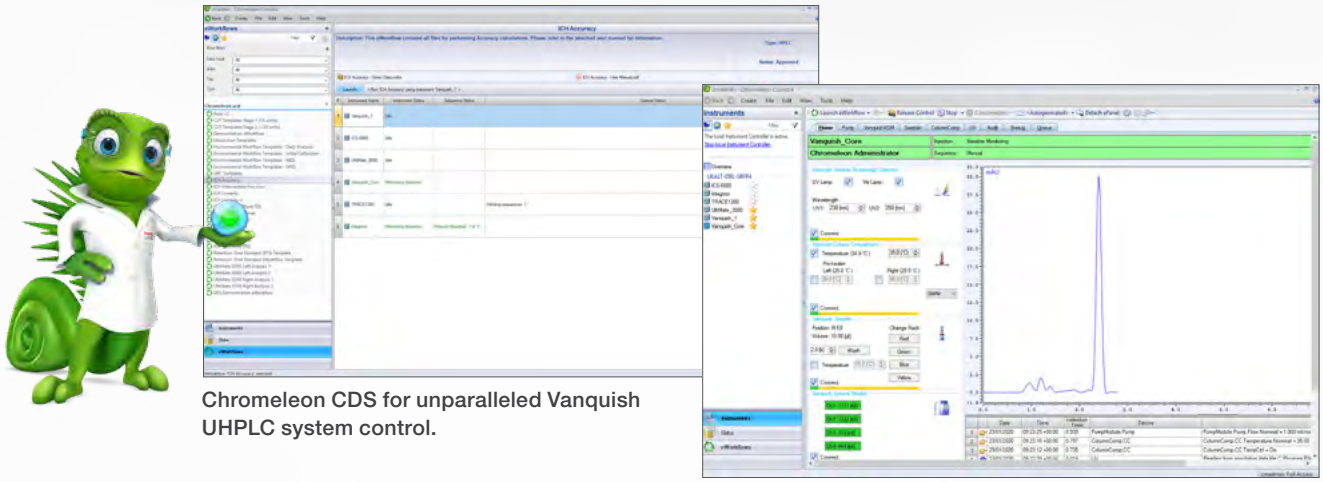
Get better LC connections

Thermo Scientific™ Viper™ fingertight fittings revolutionize the way UHPLC connections are made. Viper fittings pave the way for easy setup of virtually dead-volume-free chromatography, even for your most advanced column configurations. Now you can enjoy tool-free system fluidics setup and other connections.

Maximize your results

One CDS to do it all

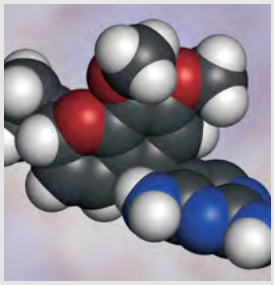
Benefit from the industry-leading, easy-to-use and compliant Chromeleon CDS with eWorkflow™ procedures for error-free sequence and method setup, dedicated ePanels for direct instrument control, walk-up Open Access software, and smart tools to streamline data processing and reporting. Chromeleon CDS delivers advanced system communication with single-point intelligent control and functionality, and provides plugins for the Vanquish UHPLC systems.

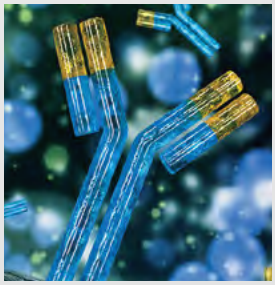


Chromeleon CDS for unparalleled Vanquish UHPLC system control.

Optimize your separations with Thermo Scientific columns

The Vanquish HPLC and UHPLC systems are designed around the column, the core to every LC separation. Our family of Thermo Scientific™ Vanquish™ LC columns, partnered with the Vanquish platform to take advantage of its extended pressure capabilities and robustness allowing you to optimize your separations faster and more easily. In addition, all Vanquish LC valves are biocompatible, have a long-lifespan, and low maintenance, meeting the performance needs to make LC run robustly and routinely.





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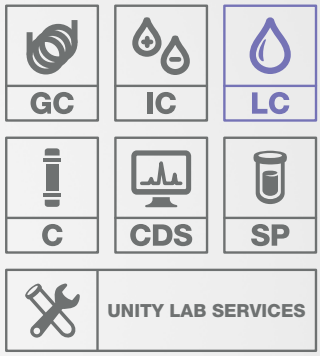
The collective power of chromatography

LC that takes your productivity to new heights

Laboratories are constantly asked to do more with less. Built from the ground up, Thermo Scientific HPLC and UHPLC instruments enable you to raise your productivity to the next level and give you confidence in your results. Time and cost associated with staff training are minimized allowing your laboratory to meet ever-increasing productivity demands, making it faster to bring products to market. With the largest portfolio of LC solutions, we remain a steadfast and committed partner in your endeavor to improve the world around us.



References

1. Thermo Fisher Scientific. TN72203: Tandem UHPLC operation for high-throughput LC-MS peptide mapping analyses, 2018, Germering, Germany. https://assets.thermofisher.com/TFS-Assets/CMD/Technical-Notes/tn-72203-tandem-uhplc-peptide-mapping-tn72203-en.pdf

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