



Vanquish High-throughput LC Systems

Maximize productivity

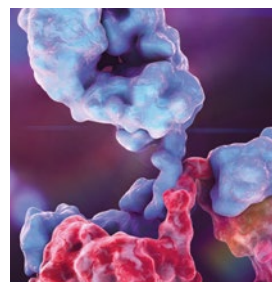
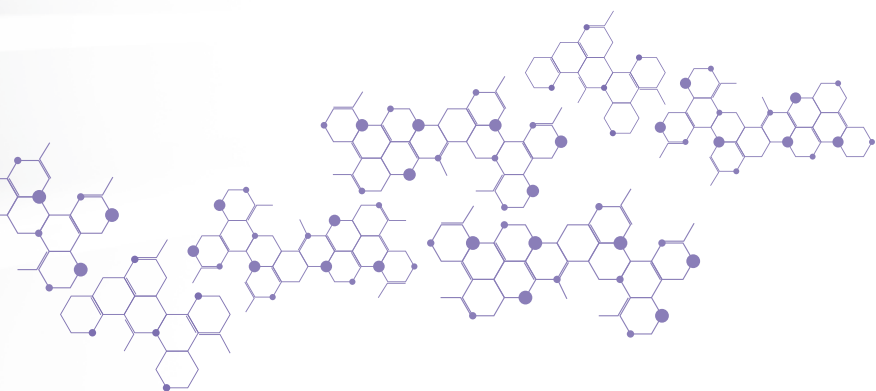
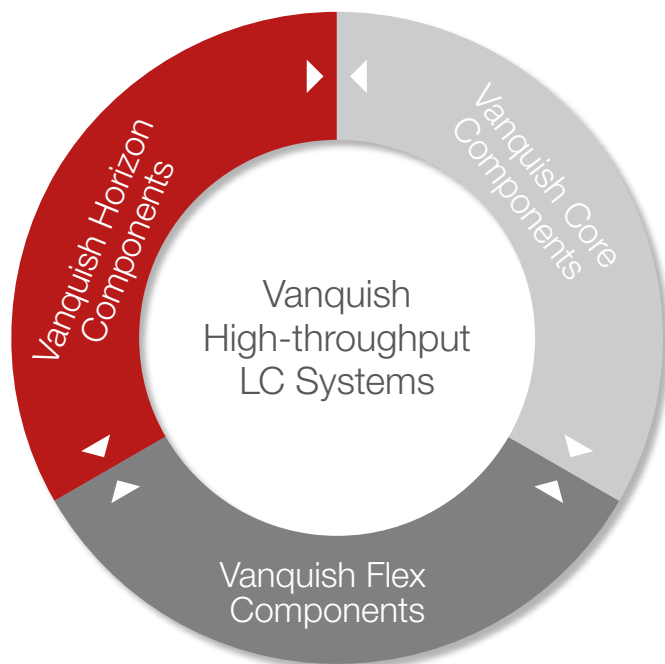


# Optimize your productivity

In today's challenging research and production environments, you are being asked to be more productive without increasing spending or compromising quality.

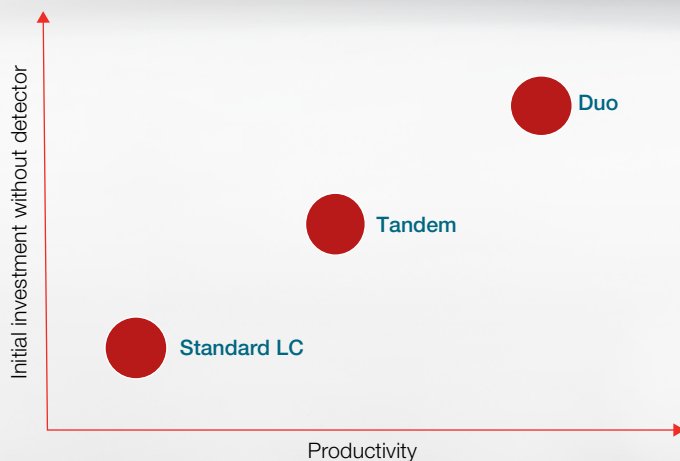
At the same time, advancements and innovations are needed to improve operational efficiency and performance.

How do you accomplish this? It's easy with the Thermo Scientific™ Vanquish™ High-throughput LC systems built for enhanced productivity. Vanquish High-throughput LC systems combine individual Vanquish components and software wizards to deliver increased throughput or detector utilization.



# Two flow paths for maximized productivity

Your laboratory may be facing increased pressure to improve working efficiency and deal with limiting resources, such as budget, space, or manpower. Vanquish High-throughput LC systems are designed to overcome these limitations by providing multiple flow paths for parallelization of specific stages of the LC run.



## Unique dual technology

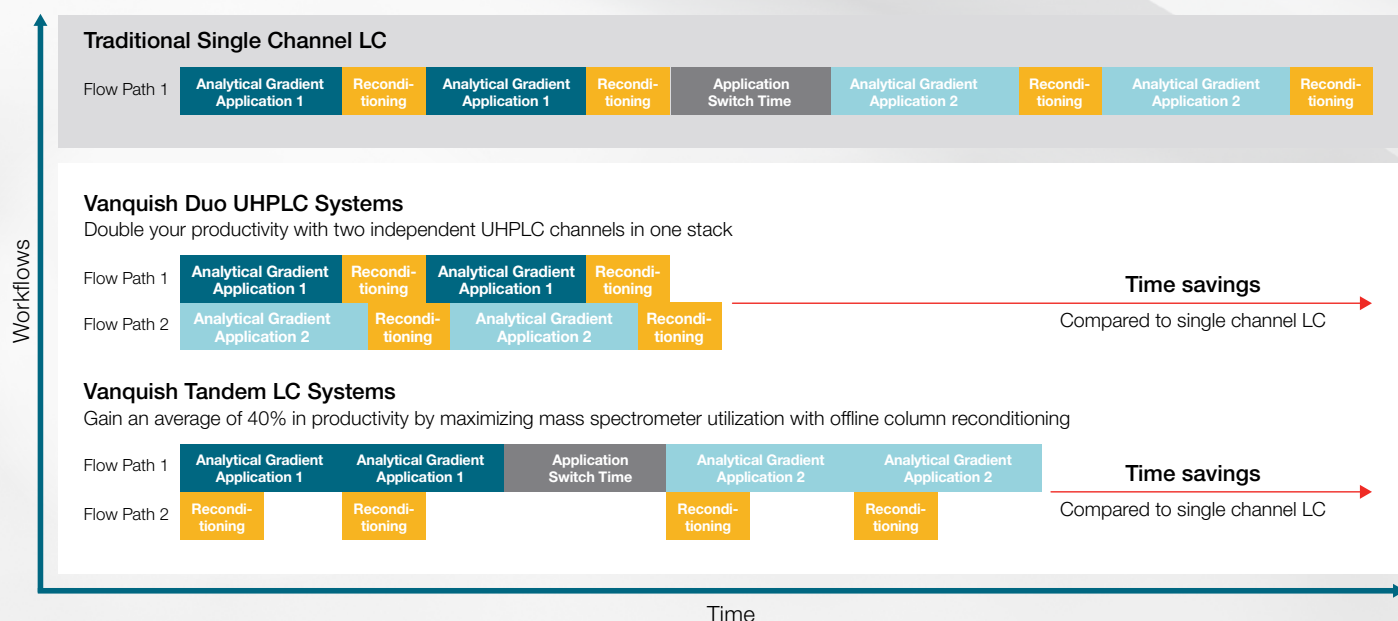
The Vanquish platform contains two unique dual modules. Vanquish dual pumps merge two individual, low pressure mixing pumps in one housing enabling separate eluents and gradients for each pump.

Vanquish dual split samplers possess two independently controlled injection units including separate injection valves and injection needles. Used in Dual LC and LC-MS workflows only, this enables high throughput and extensive sample characterization workflows.



# Two configurations to best serve your needs

Vanquish High-throughput workflows are configured with Thermo Scientific™ Vanquish™ Core system, Thermo Scientific™ Vanquish™ Flex system or Thermo Scientific™ Vanquish™ Horizon system modules. Both workflows make use of two pumps to increase instrument productivity.



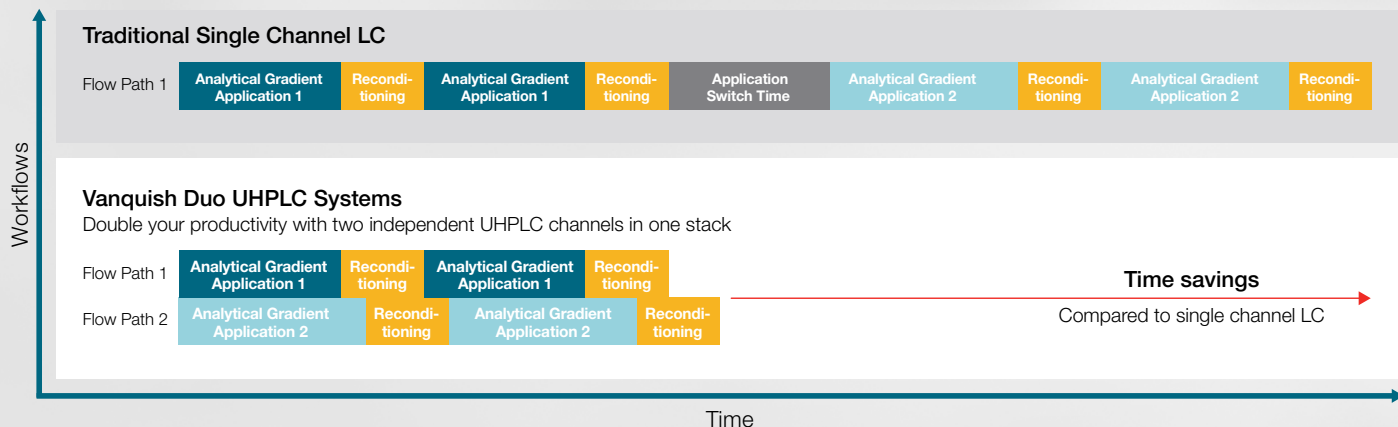
	Vanquish Duo UHPLC Systems	Vanquish Tandem LC Systems
<b>Supported systems</b>	<ul style="list-style-type: none"> <li>• Vanquish Horizon</li> <li>• Vanquish Flex</li> </ul>	<ul style="list-style-type: none"> <li>• Vanquish Horizon</li> <li>• Vanquish Flex</li> <li>• Vanquish Core</li> </ul>
<b>Sampler</b>	Dual split sampler	Split sampler
<b>Detector</b>	Two out of the complete detector portfolio	One out of the complete detector portfolio and/or one mass spectrometer
<b>Software control</b>	<ul style="list-style-type: none"> <li>• Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS)</li> <li>• Thermo Scientific™ Standard Instrument Integration (SII) for Waters™ Empower™ 3 CDS</li> </ul>	<ul style="list-style-type: none"> <li>• Chromeleon CDS</li> <li>• Standard System Integration for Thermo Scientific™ Xcalibur™ software</li> </ul>



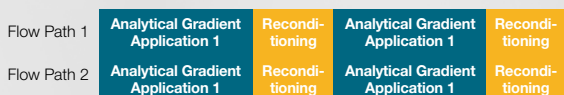
# Vanquish Duo UHPLC systems

A Vanquish Duo UHPLC system enables you to run two methods simultaneously on one instrument, doubling your throughput or deepening your sample knowledge while maximizing your productivity and performance. The unique Vanquish Duo UHPLC system will:

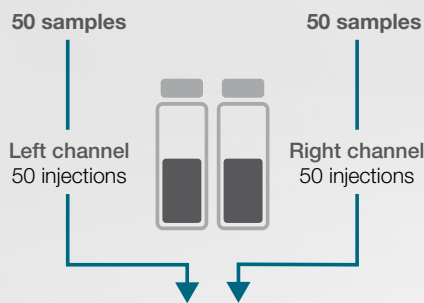
- Improve return on investment by reducing cost per sample
- Increase sample throughput without changing validated methods
- Increase capacity without sacrificing bench space
- Accelerate your method development process
- Analyze the same set of samples with multiple methods reducing sample preparation time and maximizing sample knowledge



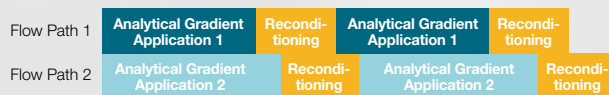
## What can you do with a Vanquish Duo UHPLC system?



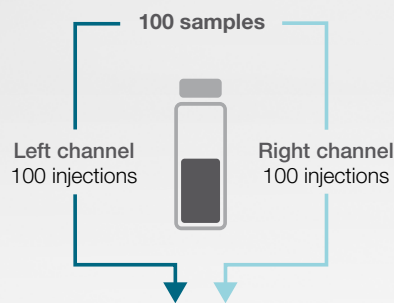
### Run two identical columns in parallel



**Double sample throughput**



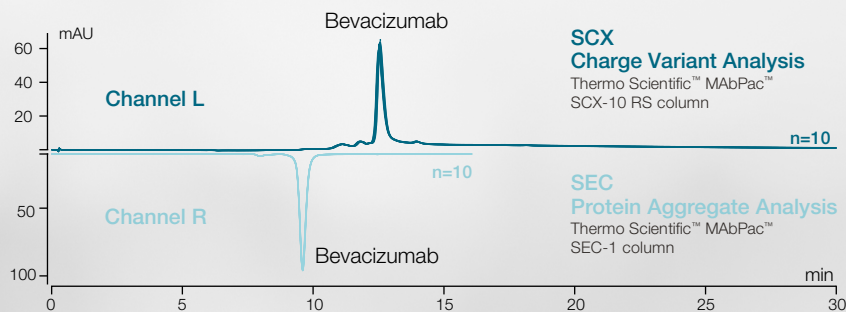
### Run your complementary columns in parallel



**Get more information out of every sample**



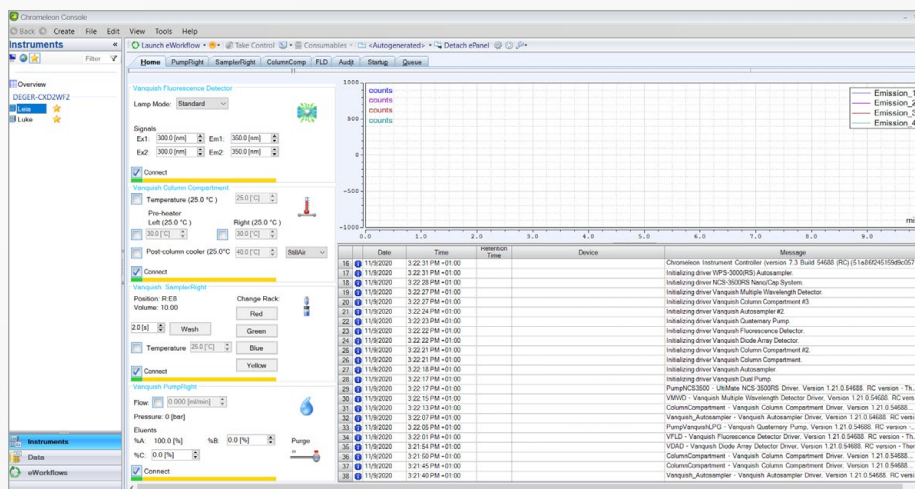
Sample injected on two complementary columns



Two independent assays run simultaneously from a single sample on one LC instrument to deepen your sample knowledge.

“The instrument offers a fantastic increase in throughput, either while running the same separation chemistry or most excitingly when running two different separation chemistries, enabling us to generate large amounts of characterization data from the same sample quickly.”

—Dr. Jonathan Bones, Principal Investigator, National Institute for Bioprocessing Research and Training



Complete control with just a few clicks

Chromleon CDS delivers industry-leading ease-of-use for the Vanquish Duo system. Independently control the two channels of the Vanquish Duo system from a single interface with full traceability of all actions that is 21 CFR Part 11 compliant.

Easy-to-use and intuitive system control of the Dual LC workflow within Chromleon CDS.



# See the Vanquish Duo UHPLC system

The Vanquish Duo UHPLC system has been built to utilize a wide range of analytical detectors, including mass spectrometry (MS), diode array detection (DAD), charged aerosol detection (CAD), variable wavelength detection (VWD), and fluorescence detection (FLD).

## 1 Vanquish Solvent Monitor

Use the Vanquish Solvent Monitor to increase your regulatory compliance, productivity, and safety of your laboratory. That device guarantees that your HPLC systems will never run dry and the waste will not spill over during your analysis, reducing loss of valuable measurement time and sample material.

## 2 Vanquish User Interface

With the Vanquish User Interface, you are the master of your LC instrument. The display always shows you the key parameters of your instrument such as flow and pressure and guides you in a visual step-by-step video tutorial through key maintenance tasks.

## 3 Versatile detection capabilities

Differing molecular characteristics of your analyte, from small molecules to complex biomolecules, necessitate multiple detector methodologies. Vanquish Duo UHPLC systems can be used with any two detectors out of the broad detector portfolio including MS, DAD, VWD, FLD and CAD.

## 4 Compatible with your software infrastructure

A Vanquish Duo UHPLC systems can be operated in various software environments including the latest Chromeleon software feature release, Chromeleon CDS long-term, and extended support version and Waters Empower.

## 5 Versatile column management

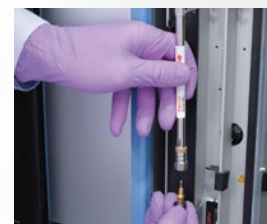
Greater column capacity (two 30 cm columns or a greater number of shorter columns per compartment), plus class-leading temperature range and temperature stability.

## 6 Delivering powerful separations

Run samples with two similar or different columns to increase throughput or maximize output. Setup with optional second compartment for independent column temperatures.

## 7 Easier operation

Patented tool-free Thermo Scientific™ Viper™ Fingertight Fittings with near-zero dead volume operation and ergonomic design.



## 8 Unique Thermo Scientific™ SmartInject technology

Superior retention time precision and enhanced column protection with intelligent SmartInject technology on both flow paths.

## 9 Two proprietary injection valves

Two separate injection valves with no shared fluidics allowing full application flexibility, including individual eluents, wash liquids and loop sizes.

## 10 Easier sample handling

Automated barcode reader to eliminate tedious rack configuration.

## 11 Higher sample capacity

High sample capacity is standard (four plates versus two plates on industry average). Increase capacity further with the optional Thermo Scientific™ Vanquish™ Charger module.

## 12 Accurate flow for more data confidence

The flow is delivered by a dual pump offering two truly individual devices in a single housing with ternary gradient proportioning.

## 13 Simple maintenance

Module maintenance is reduced to a minimum and can be worked on without instrument de-stacking, plus smart light bars on the front of the system provide instant system status update.

## 14 Keep the lab tidy

The built-in drawer stores accessories, related documents, or any other useful material for the system.



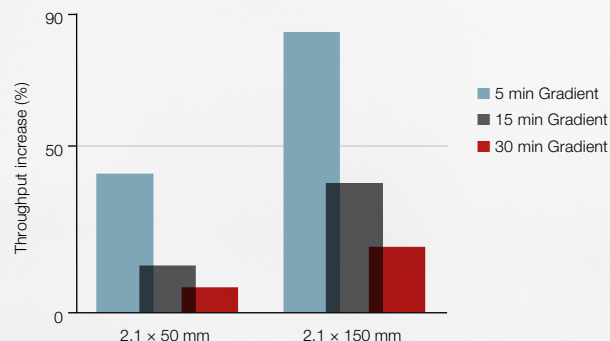


# Vanquish Tandem LC systems

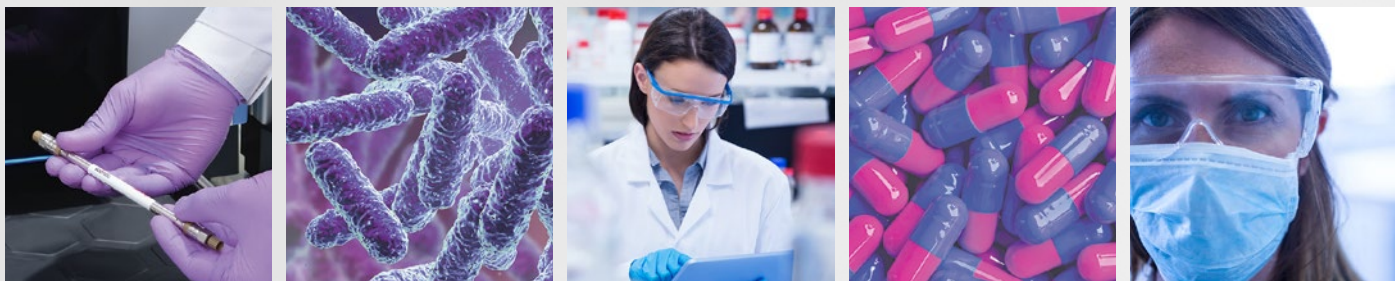
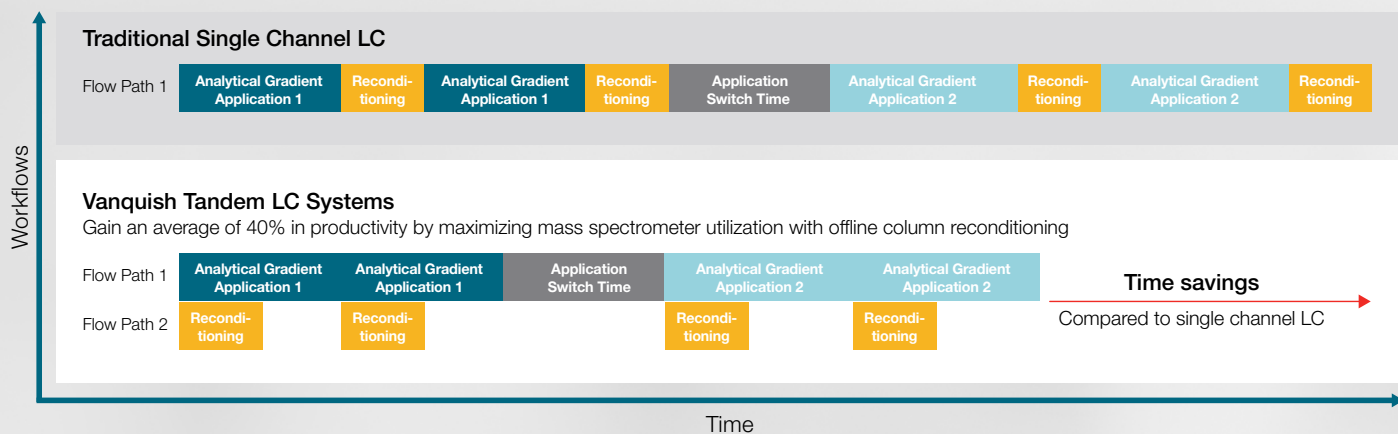
Gradient separations are commonly used in LC or LC-MS. Column reconditioning, such as washing and re-equilibration, takes time and reduces your overall sample throughput. The Vanquish Tandem LC systems eliminate these limitations and improves productivity by:

- Increasing sample throughput without modifying a validated method
- Improving return on investment by maximizing mass spectrometer utilization
- Reducing column carry over through extended column washing without sacrificing throughput
- Simplifying method setup with automatic method conversion from your original gradient method

## Throughput increase using Tandem LC



Throughput increase by Tandem LC is between 10–80% for most common conditions.

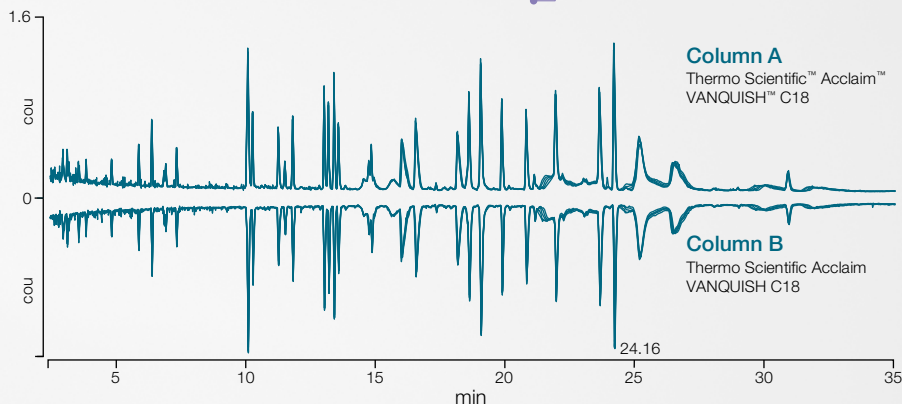


“Since installing the Tandem LC-MS system we have doubled our throughput and increased the precision of our data!”

—Dr. Richard Rogers, Just Biotherapeutics, Inc.



The Vanquish Tandem LC system splits the analysis between two pumps and two columns. One pump delivers the analytical gradient while the second pump runs the reconditioning gradient. This configuration allows you to use two identical columns to run your sequence faster without compromising data quality.



Reproducible results for the Thermo Scientific™ Vanquish™ Horizon Tandem UHPLC system—Thermo Scientific™ Q Exactive™ HF hybrid quadrupole-Orbitrap™ mass spectrometer showing an overlay of five total ion current chromatograms. The sample shown is digested Infiximab using the Thermo Scientific™ SMART™ Digest Kit.

“With the Vanquish [Tandem LC-MS system], we have two instruments in one in terms of analysis time but it’s only occupying the footprint of a single LC system. Of course it saves space, but furthermore it gives us a more efficient utilization of our MS system.”

—Dr. Dan Bach Kristensen, Principal Scientist, Symphogen

## Simply upgrade your method

Implementing Tandem LC-MS into your workflow is easy with compliance-ready Chromeleon software for LC or LC-MS users and Thermo Scientific Standard Instrument Integration (SII) for Thermo Scientific Xcalibur software for LC-MS users.

A simple dedicated instrument method wizard enables you to create new methods without the need for additional training.

No	Time	Flow [ml/min]	%B	Curve
1	0.000	0.500	20.0	S
2	0.000	0.500	60.0	S
3	5.000	0.500	60.0	S
4	5.100	0.500	90.0	S
5	7.100	0.500	90.0	S
6	7.200	0.500	20.0	S
7	New Row			
8	10.000			Stop Run

Chromeleon CDS and SII for Xcalibur guides users through the implementation of a Tandem LC or LC-MS method with automatic system volume considerations and gradient formation of the reconditioning pump.

## Thermo Scientific LC portfolio overview

### Analytical HPLC and UHPLC

#### Application-specific HPLC and UHPLC

Thermo Scientific™ Vanquish™ High-throughput LC Systems  
 Thermo Scientific™ Vanquish™ Inverse Gradient LC Systems  
 Thermo Scientific™ Vanquish™ Method Development LC Systems  
 Thermo Scientific™ Vanquish™ Online 2D-LC Systems  
 Thermo Scientific™ Vanquish™ Analytical Purification LC System  
 Thermo Scientific™ Transcend™ UHPLC Systems

### Nano-, cap-, micro-flow UHPLC

#### Dependability



#### Thermo Scientific™ Vanquish™ Core HPLC Systems

- High-pressure binary, low-pressure quaternary solvent blending or isocratic flow delivery
- Workhorse instrument
- Seamless method transfer
- System intelligence for improved productivity

700 bar

#### Flexibility



#### Thermo Scientific™ Vanquish™ Flex UHPLC Systems

- High pressure binary and low-pressure quaternary solvent blending
- Biocompatible
- Unparalleled flexibility and control

1000 bar

#### Performance



#### Thermo Scientific™ Vanquish™ Horizon UHPLC System

- High-pressure binary solvent blending
- Biocompatible
- Industry-leading specifications
- Unmatched detection sensitivity

1500 bar

#### Sensitivity



#### Thermo Scientific™ Vanquish™ Neo UHPLC System

- All-in-one nano-, capillary-, and micro-flow LC systems
- Accelerating productivity with long-term, trouble-free operation
- Intelligent at-system or remote control, method setup, diagnostics, and troubleshooting

1500 bar

Learn more at [thermofisher.com/vanquishhighthroughput](https://thermofisher.com/vanquishhighthroughput)

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