ThermoFisher SCIENTIFIC

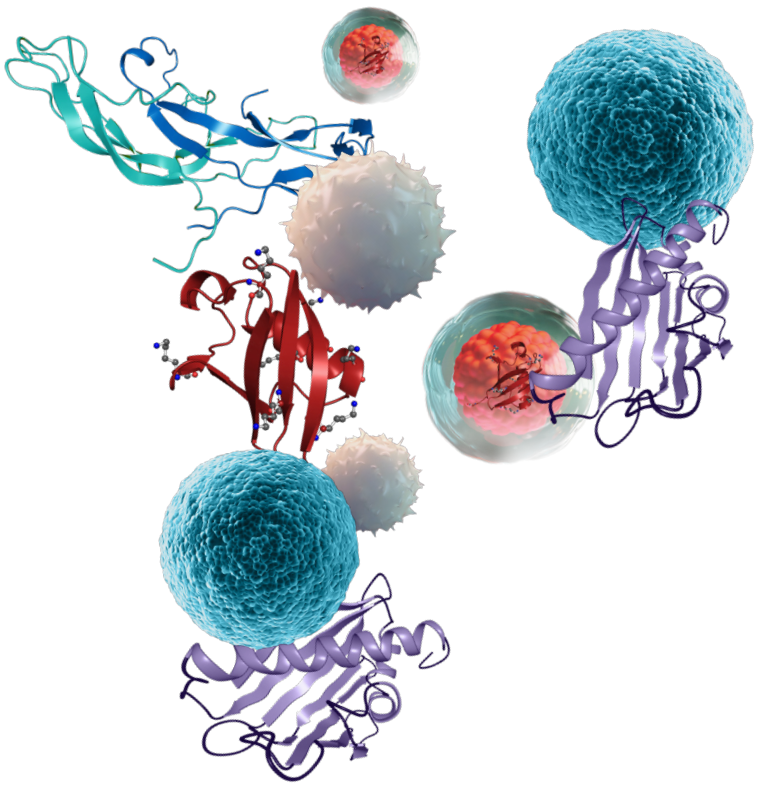
HPLC columns

Connected chromatography solutions

Low-flow columns and accessories

thermo scientific

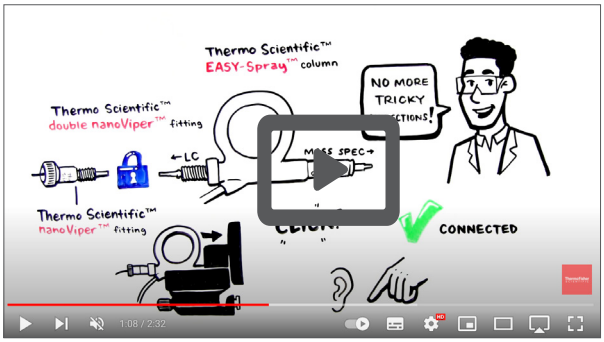
Contents



Introduction

Low-flow chromatography is ideal when detailed sample information is required from small sample volumes, such as proteomics, metabolomics, and intact protein analysis. The Thermo Scientific range of nano-, capillary-, and micro-flow columns offer excellent sensitivity and resolution in easy-to-use formats.

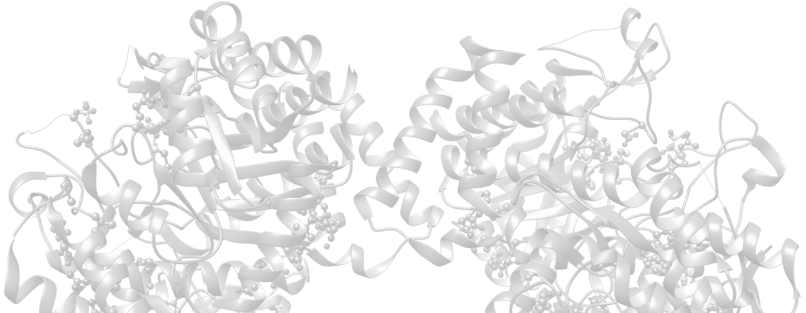
- Thermo Scientific™ µPAC™ Neo Plus HPLC Columns
- Thermo Scientific™ EASY-Spray™ (U)HPLC Columns
- Thermo Scientific™ nanoViper™ (U)HPLC Columns



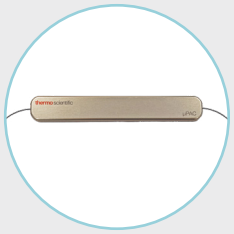
Video: Low-flow HPLC columns connectivity

Column selection guide

	Pillar array column format	Packed bed column format	
	µPAC Neo Plus HPLC columns	**EASY-Spray HPLC columns**	**nanoViper™ HPLC columns**
Technology			
Benefits	**Ultimate separation** • Excellent separation performance, robustness and reproducibility ensure high sample coverage every time • Separate emitters • Compatible with many low-flow LC systems and a wide range of ion sources • Thermo Scientific™ nanoViper™ Fingertight Fittings	**Ease-of-use** • Click-and-spray connect with Thermo Scientific™ EASY-Spray™ Source • Thermo Scientific™ nanoViper™ Connections • Integrated column and emitter • Integrated temperature control • For use with Thermo Scientific™ mass spectrometry systems	**Analytical flexibility** • nanoViper fingertight fittings • Simple zero-dead-volume (ZDV) connections • Separate emitters • Compatible with most low-flow LC systems
Application areas/chemistries	Deliver excellent column-to-column reproducibility with flow rate flexibility, ideally suited for large scale bottom-up proteomic studies. • 50 cm column: 15–60 min gradient time • 110 cm column: 90–150 min gradient time • High Throughput column: <15 min gradient time	**Wide application range** Thermo Scientific™ PepMap™ Neo UHPLC Columns provide efficient and reproducible separations for a variety of high-sensitivity reversed-phase applications from bottom-up proteomics to small molecules including lipids, metabolites, pesticides, and beyond. **Top- and middle-down proteomics applications** The Thermo Scientific™ MAbPac™ Reversed-Phase Capillary HPLC Column is best suited for the characterization of intact proteins in top- and middle-down proteomics applications where sample amount is limited.	



µPAC Neo Plus HPLC columns



µPAC Neo Plus columns are specifically suited for bottom-up proteomics applications where separation performance is critical to the success of the analysis. µPAC Neo Plus HPLC columns offer the highest sensitivity and deepest coverage for complex biological samples. The unique µ-pillar backbone improves column-to-column reproducibility and robustness, providing more confidence in analytical results.

Additional reading

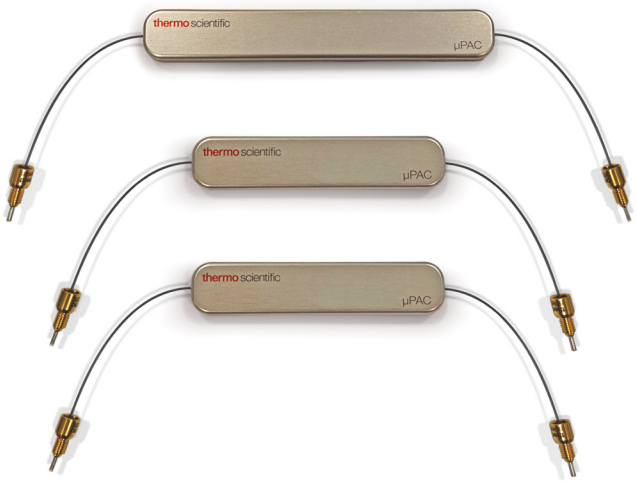
Links	Type	Description
	Reference guide	Chromatography consumables reference guide for low-flow LC-MS proteomic research
	Flyer	Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomic research
	Learn more **thermofisher.com/lowflowhplccolumns**	

Choose a µPAC Neo Plus (U)HPLC column when

- Deep proteome coverage is required
- Reproducibility and quantitative precision are crucial
- You need maximum sensitivity for low sample loads (e.g. single-cell proteomics)
- You want columns that last longer
- You prefer working at much lower back pressures than with packed bed columns

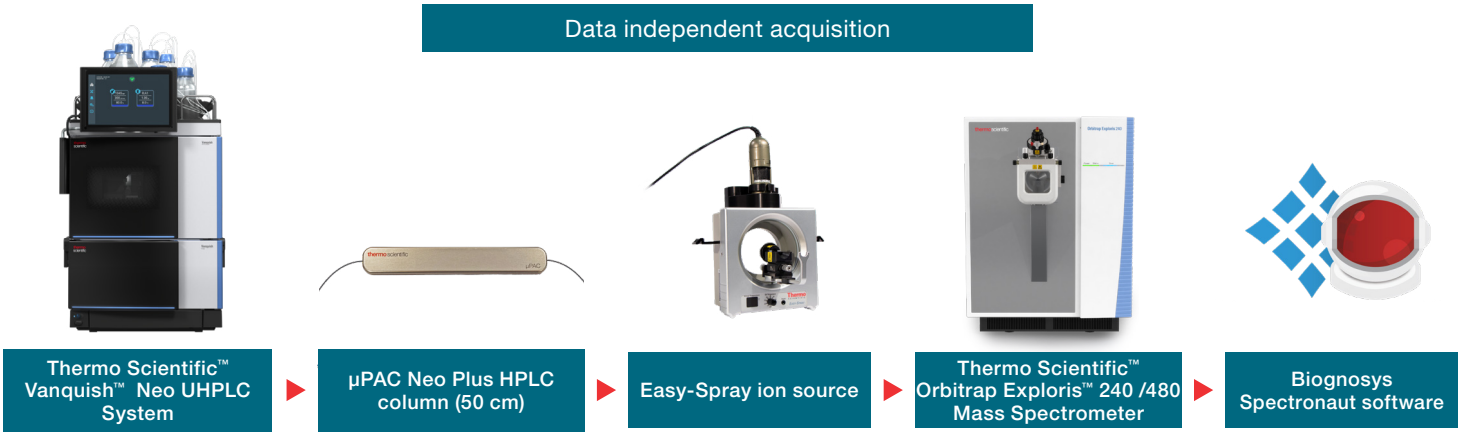
What makes µPAC Neo Plus HPLC columns special?

- µ-pillar stationary backbone, micromachined in a silicon wafer provides robust separations and high reproducibility
- Flow path designed for highest analyte concentration during elution, yielding deeper coverage and higher sensitivity
- Low back pressure separations, improving column and emitter robustness



µPAC Neo Plus HPLC columns (continued)

Label-free quantitation (LFQ) data independent acquisition (DIA) platform



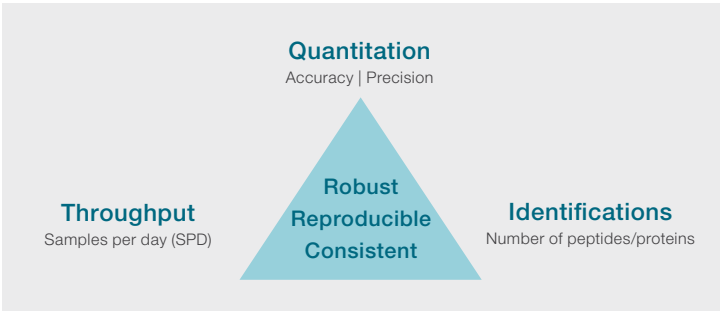


Figure 1. Graphical schematic of HR-DIA workflow for label-free quantitation. The different components of the workflow are depicted on the top. The main goal of the setup is the quantitative performance at high sample throughput while delivering robust and reproducible results to make it a perfect fit for large scale clinical and biomarker discovery studies.

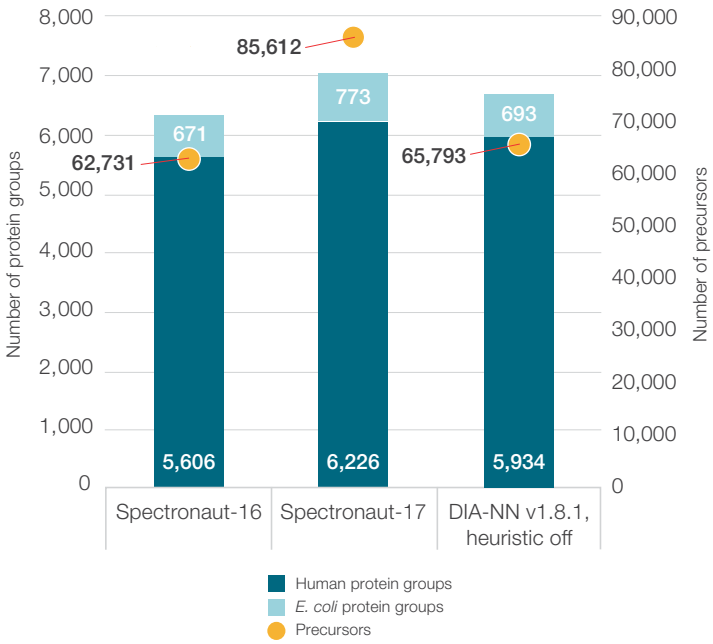
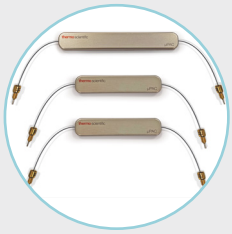


Figure 2. HR-DIA Workflow delivers confident proteome coverage utilizing next generation library-free analysis approaches. Bar graph comparison of protein group (human and E. coli) and precursor (total) numbers identified in 12 runs of two-proteome mix by use of three different software packages. Data analysis has been done by library-free analysis. All protein group results are filtered for 1% experiment-wide FDR.

µPAC Neo Plus HPLC columns (continued)



Ordering information

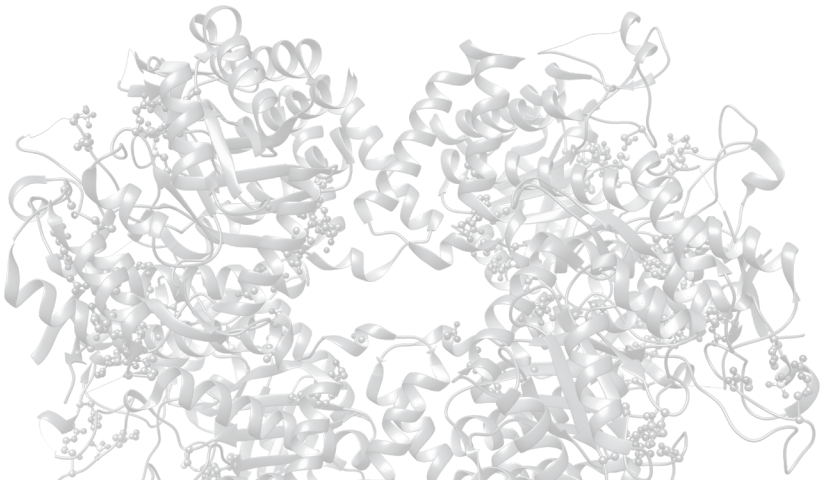
Column type	Column length	Flow rate range	Sample loading	Gradient time	Cat. no.
µPAC Neo Plus column	50 cm	100–750 nL/min	10–500 ng	15–60 min	COL-UPAC050NAN
µPAC Neo Plus column	110 cm	100–1,000 nL/min	500–2,000 ng	90–150 min	COL-UPAC110NAN
µPAC Neo Plus High Throughput column	5.5 cm	300–3,000 nL/min	10–500 ng	<15 min	COL-UPAC005CAP

Ordering information

Column type	Column length	Pillar diameter	Column ID	Cat. no.
Thermo Scientific™ µPAC™ Trapping Column	1 cm	5 µm	300 µm	COL-TRPNANO16G1B2

Ordering information

Description	Details	For use with	Inner diameter	Cat. no.
Thermo Scientific™ EASY-Spray™ Nano Emitter	Bullet type without transfer line	EASY-Spray ion source	10 µm	ES993
Thermo Scientific™ EASY-Spray™ Capillary Emitter	Bullet type without transfer line	EASY-Spray ion source	15 µm	ES994



EASY-Spray (U)HPLC columns

Simple, robust nano- and capillary-flow LC-MS analysis using EASY-Spray UHPLC columns. The integrated column/emitter design minimizes dead volume and is temperature-controlled for maximum reliability and performance. Rigorously tested to ensure quality, these columns deliver simplicity and ease-of-use. The capillary-flow HPLC columns support sensitive protein, peptide, and monoclonal antibody (MAb) analyses.

Additional reading

Links	Type	Description
	Reference guide	Chromatography consumables reference guide for low-flow LC-MS proteomic research
	Flyer	Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomic research
	Learn more **thermofisher.com/lowflowhplccolumns**	

Choose an EASY-Spray column when

- You need the versatility of the widest range of nano and capillary column dimensions
- You require high sensitivity to identify low-level biomolecules
- You need to perform high-throughput analysis of biofluids

What makes an EASY-Spray column special?

Unique design provides uncompromised performance in an easy-to-use format for nano and capillary LC-MS analysis

Features for optimum data quality:

- Simple connection to LC and MS instruments
- Precision machined and positioned glass emitters
- Integrated nanoViper zero-dead-volume (ZDV) unions
- Integrated temperature control

Video:
Thermo Scientific EASY-Spray 150 µm LC columns

EASY-Spray (U)HPLC columns (continued)

Bottom-up proteomics

PepMap Neo UHPLC columns

The EASY-Spray PepMap Neo UHPLC columns are perfect for bottom-up proteomics applications. Packed at higher pressure and rated to 1500 bar, they provide consistent column-to-column performance, long column lifetime, and excellent efficiency. These benefits are true at any pressure.

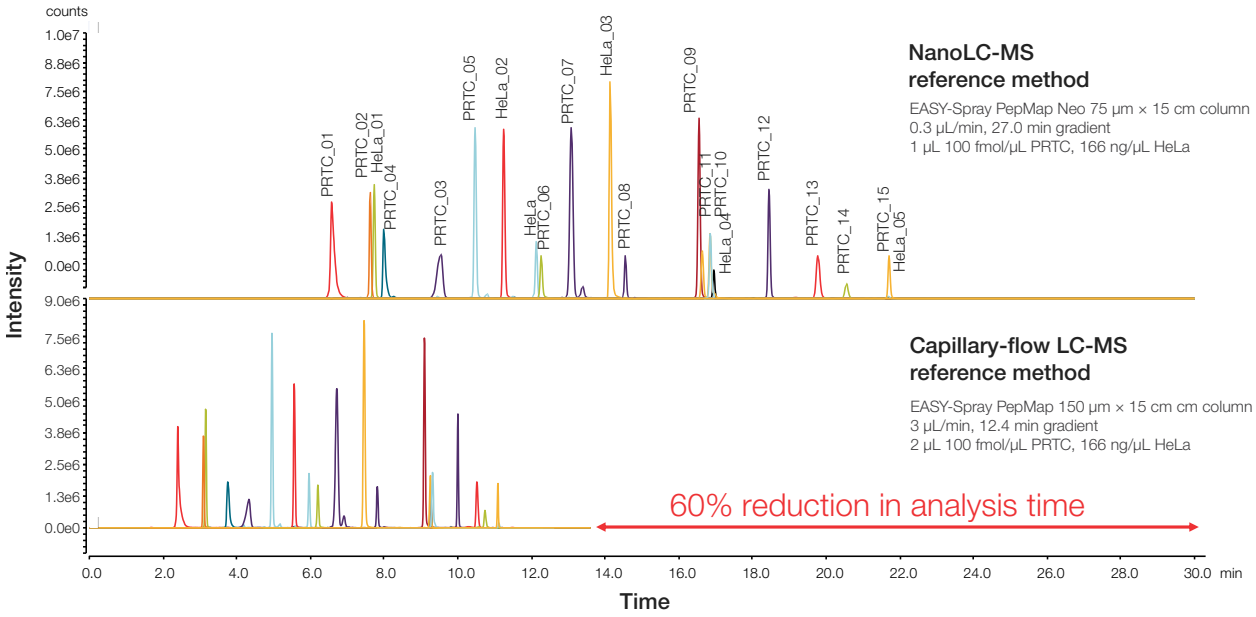


Figure 3. Versatile nano- and capillary-flow separations enabled by EASY-Spray UHPLC columns

Ordering information

Description	Length	Column ID	Max. pressure	Cat. no.
EASY-Spray PepMap Neo UHPLC columns	150 mm	75 µm	1,500 bar	ES75150PN
	500 mm	75 µm	1,500 bar	ES75500PN
	750 mm	75 µm	1,500 bar	ES75750PN
EASY-Spray PepMap UHPLC columns	150 mm	50 µm	800 bar	ES901
	25 mm	75 µm	1,000 bar	ES902
	150 mm	150 µm	1,200 bar	ES906

EASY-Spray (U)HPLC columns (continued)

Top-down proteomics

MAbPac reversed-phase capillary HPLC column

The Thermo Scientific™ MAbPac™ Reversed-Phase Capillary HPLC Column is best suited for the characterization of intact proteins in top-down proteomic, clinical, and anti-doping applications where sample amount is limited or sensitivity is crucial.

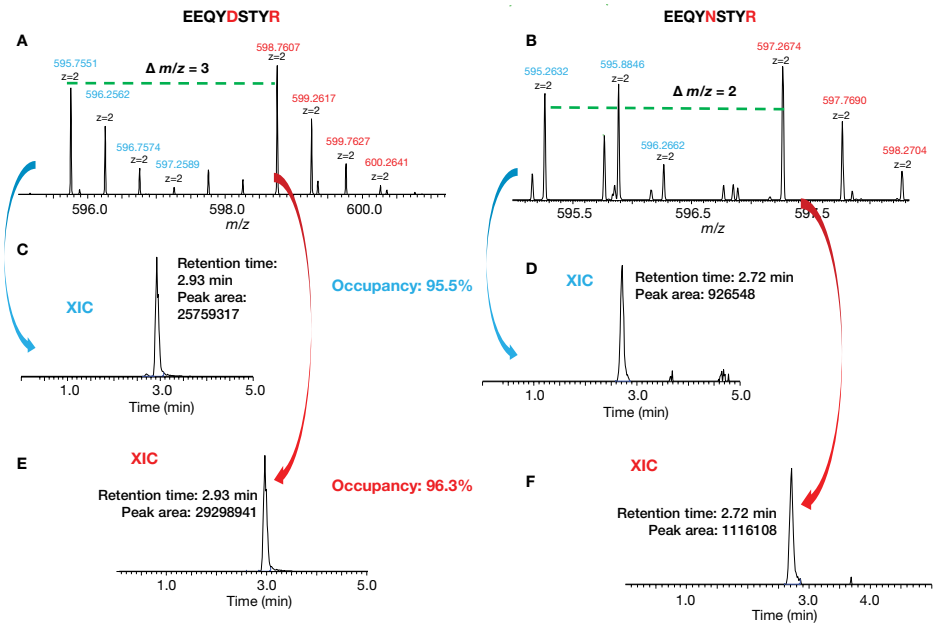
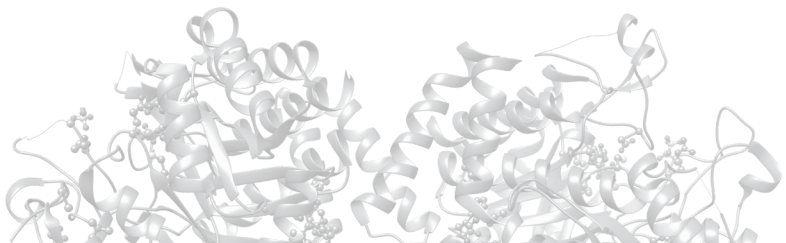


Figure 4. Calculation of site occupancy of N306 in Fab glycosylated mAb

Ordering information

Description	Length	Column ID	Cat. no.
EASY-Spray HPLC column	150 mm	150 µm	ES907



EASY-Spray (U)HPLC columns (continued)

EASY-Spray accessories

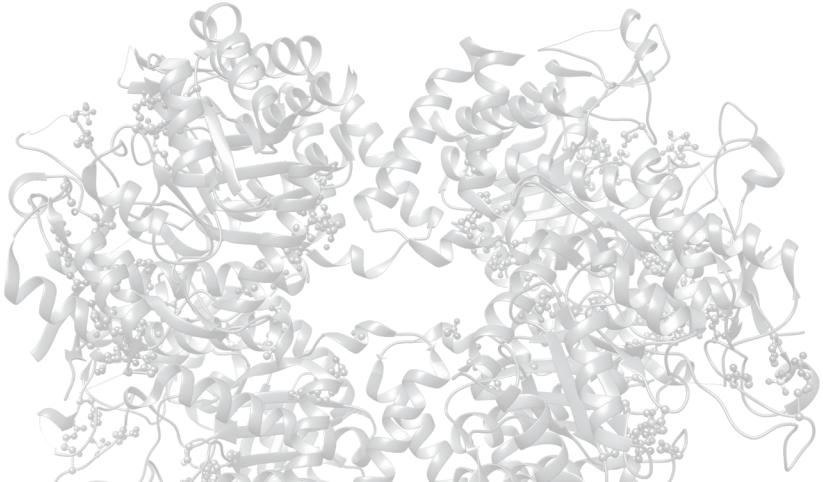
For the best performance from your EASY-Spray column consider investing in these accessories.

Ordering information

Description	Union type	Particle size	Column ID	Media bed length	Trap length	Cat. no.
PepMap Neo Trap cartridge	N/A	5 µm	300 µm	5 mm	5 mm	174500
Thermo Scientific™ Acclaim™ PepMap™ 100 C18 HPLC Column, Trap Column	Double nanoViper	5 µm	100 µm	20 mm	150 mm	164750
	Double nanoViper	3 µm	75 µm	20 mm	150 mm	164535
	Double nanoViper	3 µm	75 µm	20 mm	70 mm	164946

Ordering information

Description	For use with	Cat. no.
PepMap Neo Trap cartridge kit (Holder and PEEK tubing with nanoViper fittings)	PepMap Neo Trap cartridge	174502
PepMap Neo Trap tubing, (PEEK tubing with nanoViper fittings)	PepMap Neo Trap cartridge	174501



nanoViper (U)HPLC columns

The Thermo Scientific™ Viper™ and nanoViper™ Fingertight Fitting Systems provide tool-free connections designed to be used for the entire fluidic pathway in LC systems to improve chromatographic results.

Virtually dead-volume free, Viper and nanoViper fittings combine usability with high performance. Viper and nanoViper connections can be used on all standard LC modules, valves, and columns quickly, independent of different connection geometries and system backpressures. Dedicated capillary kits for standard LC system configurations and application-specific setups enable high qualitative and reproducible results for all flow rates and pressure ranges.

Additional reading

Links	Type	Description
	Reference guide	Chromatography consumables reference guide for low-flow LC-MS proteomic research
	Flyer	Enabling high sensitivity LC-MS analysis for bottom-up and top-down proteomic research
	Product specifications	Viper and nanoViper fingertight fitting systems
	Learn more **thermofisher.com/lowflowhplccolumns**	

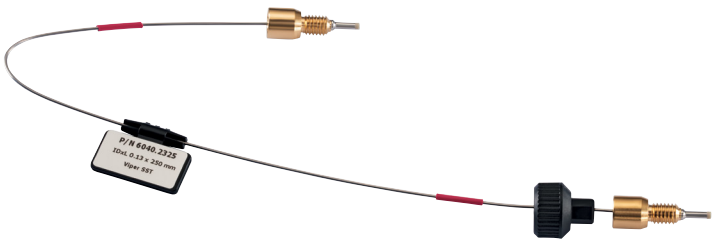
Choose these columns when:

- Maximum flexibility is required
- Changing the emitter and column independently is important

What makes these columns special?

These stand-alone nano-, capillary-, and micro-flow columns are:

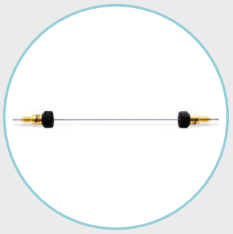
- Designed with single nanoViper and double nanoViper fingertight fittings for trouble-free connection
- For robust separation in proteomics research, drug discovery, and high-throughput proteomics laboratories



Video:
Discover a better LC connection

nanoViper (U)HPLC columns (continued)

Bottom-up proteomics



Double nanoViper PepMap Neo UHPLC columns

Separate challenging peptide mapping samples with Thermo Scientific™ nanoViper™ PepMap™ Neo UHPLC Columns. These columns feature easy connectivity, high reproducibilty, and excellent separations. Our Neo columns are packed to higher pressure and provide 1500 bar pressure capability, improved column-to-column consistency, and increased efficiency. The column media is manufactured and selected to exacting standards and packed at high pressure, resulting in enhanced peak symmetry, resolution, and column-to-column reproducibility that allows you to obtain greater sample coverage and sample insights.

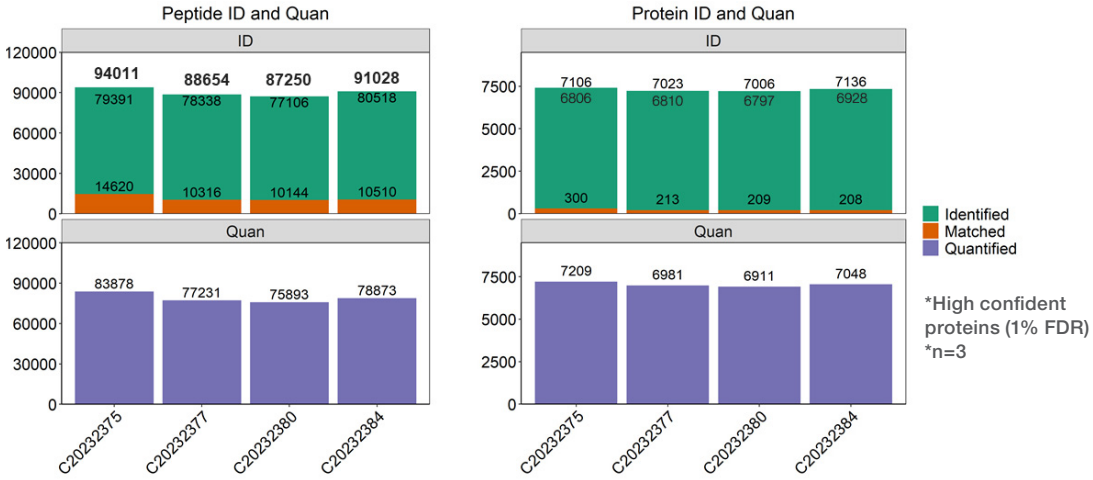


Figure 5. Reproducible identification and quantification of HeLa peptides and proteins over 4 EASY-Spray PepMap Neo columns while using the Vanquish Neo UHPLC system coupled with the Thermo Scientific™ Orbitrap Exploris™ 480 Mass Spectrometer

Ordering information

Format	Length	Column ID	Max. pressure	Cat. no.
Double nanoViper PepMap Neo UHPLC columns	150 mm	75 µm	1,500 bar	DNV75150PN
	500 mm	75 µm	1,500 bar	DNV75500PN
	750 mm	75 µm	1,500 bar	DNV75750PN
	150 mm	150 µm	1,500 bar	DNV150150PN
Single nanoViper PepMap Neo UHPLC columns	750 mm	75 µm	1,500 bar	SNV75750PN
	150 mm	150 µm	1,500 bar	SNV150150PN
	150 mm	75 µm	1,500 bar	164534
	250 mm	75 µm	1,500 bar	164941
	150 mm	50 µm	1,500 bar	164943

nanoViper (U)HPLC columns (continued)

Top-down proteomics

MAbPac reversed-phase capillary HPLC column

The MAbPac reversed-phase capillary column is best suited for the characterization of intact proteins in top-down proteomic, clinical, and anti-doping applications where sample amount is limited or sensitivity is crucial.

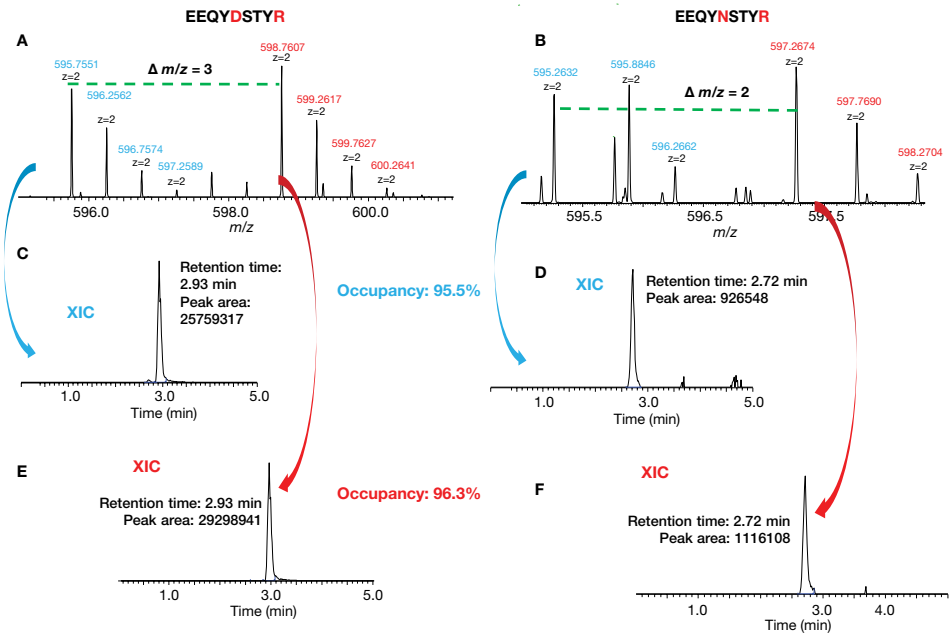
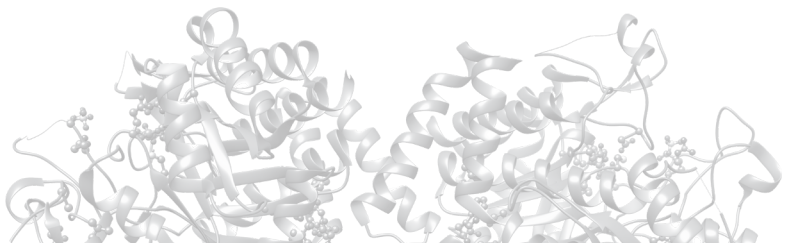


Figure 6. Calculation of site occupancy of N306 in Fab glycosylated mAb

Ordering information

Format	Length	Column ID	Cat. no.
MAbPac reversed-phase capillary HPLC column	150 mm	150 µm	164947



nanoViper (U)HPLC columns (continued)

LC-MS connection accessories and emitters

These emitters, nanoViper tubing kits, and unions offer easy connection from your LC system to an EASY-Spray source.

Ordering information

Description	For use with	Cat. no.
Connection union for Viper and nanoViper tubing	Double nanoViper columns	6040.2304
nanoViper fingertight fittings, 20 µm x 550 mm		6041.5260
EASY-Spray nano emitter, 10 µm		ES993
EASY-Spray capillary emitter, 15 µm		ES994

Traps and accessories

For the best performance from your double nanoViper column consider investing in these nanotraps.

Ordering information

Description	Union type	Particle size	Column ID	Media bed length	Trap length	Cat. no.
Thermo Scientific™ PepMap™ Neo Trap Cartridge	N/A	5 µm	300 mm	5 mm	5 mm	174500
Thermo Scientific™ Acclaim™ PepMap™ 100 C18 HPLC Column, Trap Column	Double nanoViper	5 µm	100 mm	20 mm	150 mm	164750
	Double nanoViper	3 µm	75 mm	20 mm	150 mm	164535
	Double nanoViper	3 µm	75 mm	20 mm	70 mm	164946

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Learn more at **thermofisher.com/lowflowhplccolumns**

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