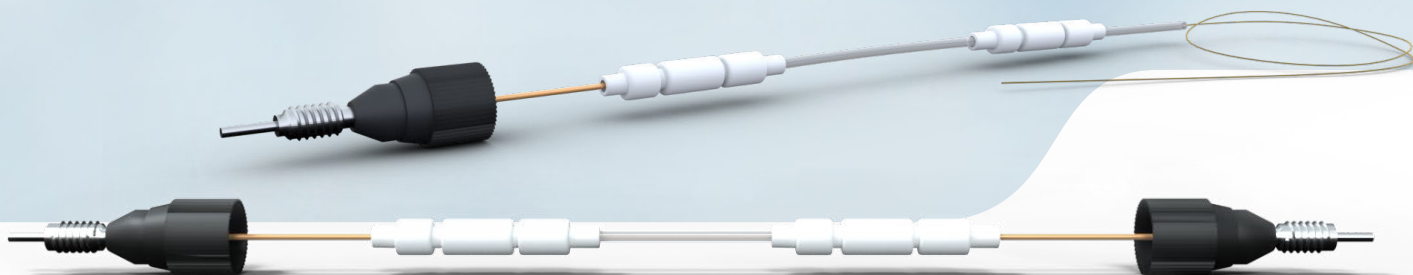
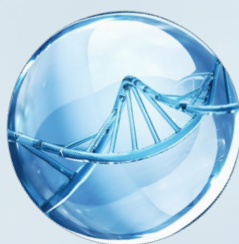


# nano

LC Columns for Omics Analysis

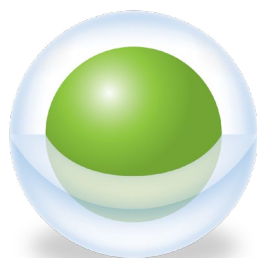


- Optimize IDs
- Consistent Results
- Easy Connections



# Advanced Particle Platform

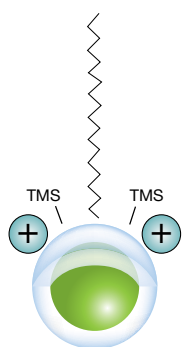
The Biozen nano particle platform were designed and built by Phenomenex to take advantage of integral levels of performance, ruggedness, and reproducibility for omics applications. The platform uses a proprietary processing technique used to control particle size and morphology.



Core-Shell Technology

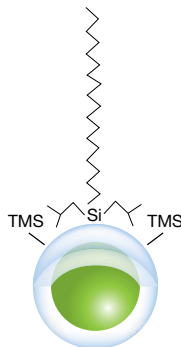
- High Efficiency
- Excellent Inertness
- Increased Sensitivity
- Exceptional Quality and Robustness

## 3 Unique Nano Chemistries and Growing!



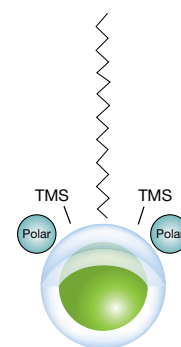
### Biozen Peptide PS-C18

Excellent retention by combined positively charged surface ligand and C18 ligand.



### Biozen Peptide XB-C18

Overall retention of both acidic and basic peptides through C18 stationary phase with di-isobutyl side chains.



### Biozen Polar C18

Enhanced selectivity / retention for polar analytes without diminishing useful non-polar retention

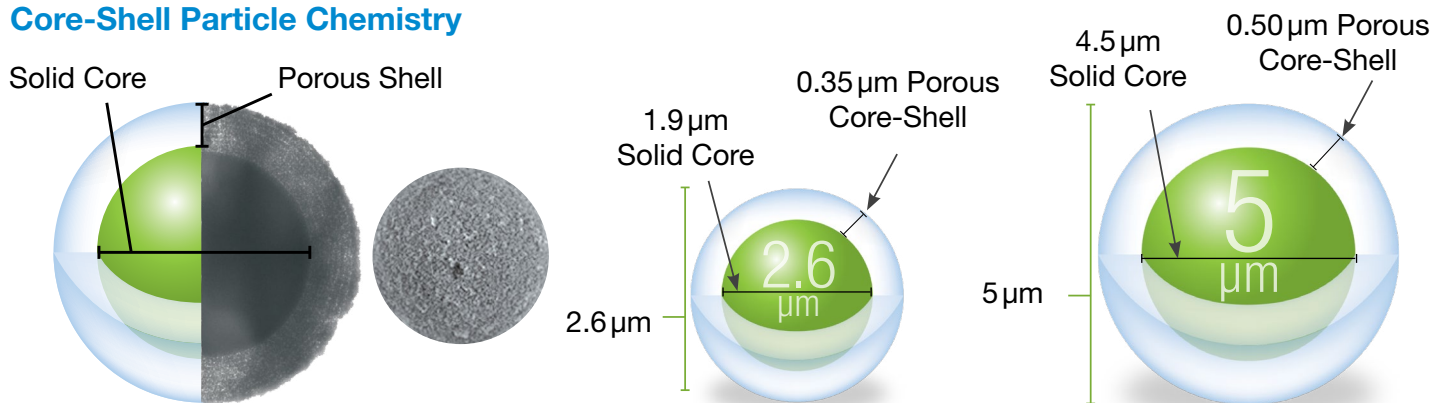
## Material Characteristics

Biozen Nano Phases	Particle Size (µm)	Pore Size (Å)	Surface Area (m <sup>2</sup> / g)	pH Stability*	Temp* (°C)	Pressure (psi)
Peptide XB-C18	2.6, 5	100	200	1.5-9	90	10,000
Peptide PS-C18	2.6	100	260	1.5-8.5	60	10,000
Polar C18	2.6	100	260	1.5-8.5	60	10,000

# Advanced Core-Shell Particle in Nano Format

The Biozen Nano Columns utilize core-shell particles with a highly consistent morphology that minimizes band broadening associated with diffusion and mass transfer, leading to higher efficiency and minimal peak widths, which enhances the separation for omics analysis.

## Core-Shell Particle Chemistry



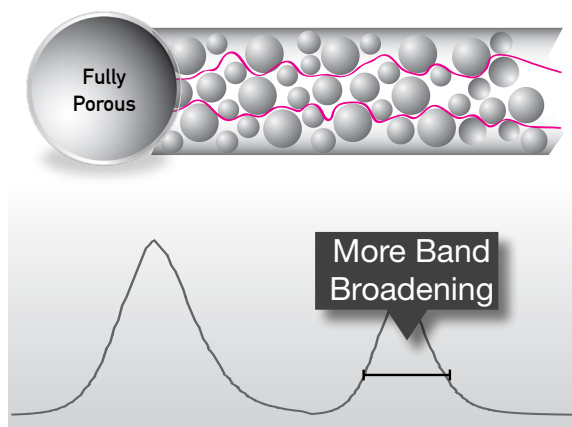
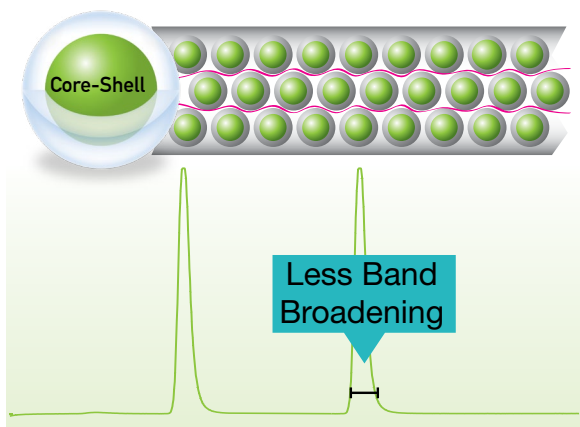
## High Efficiency Core-Shell Particle

Using a rigorous core construction process, a uniform porous silica layer is grown around the spherical solid silica core. This unique combination of precise particle architecture and particle size provides dramatic leaps in performance.

Fully Porous	vs	Biozen Nano Core-Shell	Average Efficiency Gain with Biozen Nano Core-Shell
5 μm		5 μm	90 % Higher
3 μm		2.6 μm	85 % Higher
1.7 μm		2.6 μm	Equivalent Efficiency

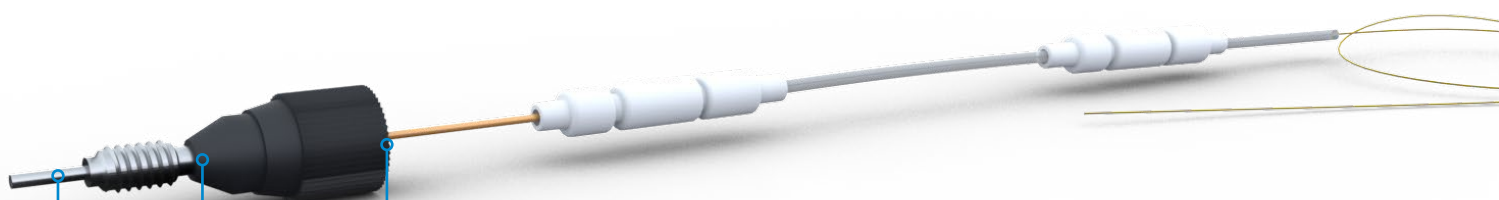
## Better Performance than Fully Porous Particles

Core-Shell Technology provides extremely high efficiencies for omics analysis. Industry leading column packing technology in combination with high particle consistency produces highly reproducible columns that generate greater performance compared to fully porous particles. This ultra-high efficiency can be leveraged to achieve increased resolution, improved sensitivity, and higher productivity.



# Zero Dead-Volume Nano LC Connections in a CLICK

Biozen Nano's fully integrated SecurityLINK™ fingertight fitting system simplifies your system connections while providing consistent performance through Torque Limiting Technology that prevents overtightening or undertightening making every connection leak-free. Available in single sided SecurityLINK and double-sided SecurityLINK formats for ease-of-use and convenience.



## Fingertight

Easy fingertight installation the "CLICK" feedback confirms connection is secure

## Click n' Done

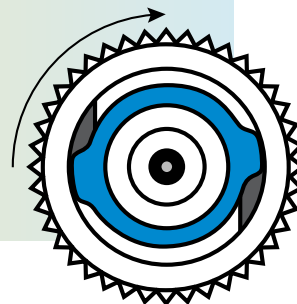
Torque Limiting Technology prevents overtightening or undertightening

## Zero Dead-Volume

Sealing technology eliminates extra internal volume

## What is Torque Limiting Technology?

Once the perfect connection has been made through fingertightening, the SecurityLINK fitting offers a haptic "CLICK" to confirm that optimum torque has been reached. This ensures a consistent connection each and every time and prevents over or undertightening that may cause column performance issues.

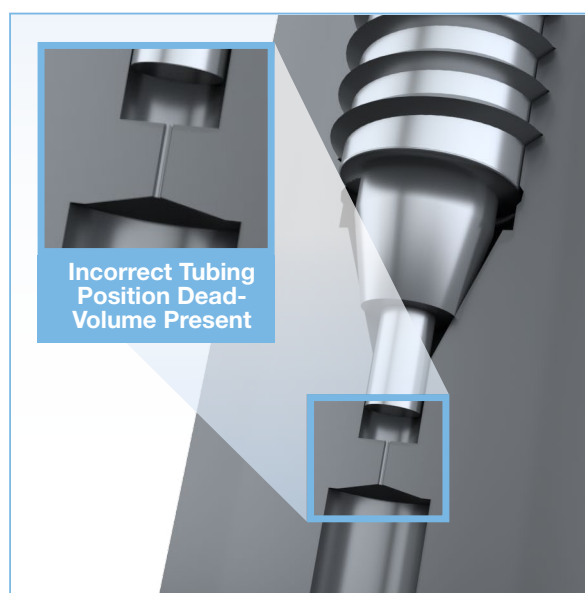


## Biozen Nano Column with Integrated SecurityLINK Fingertight Fittings



vs.

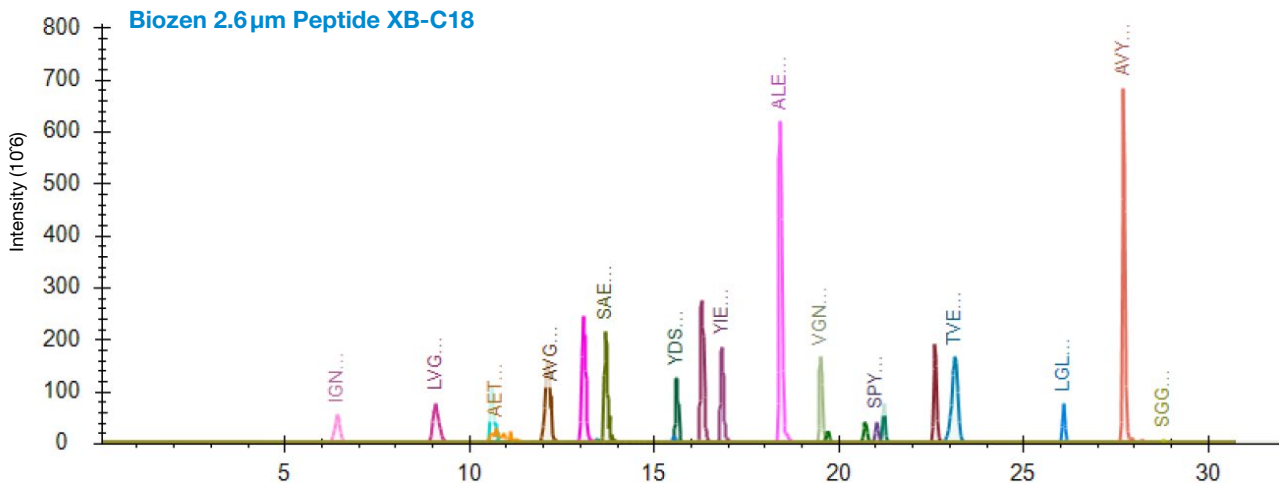
## Nano Columns using Standard Nut Ferrule Fittings



# Robust Selectivity Portfolio for Improved IDs and Improved Peak Shape

## Column Peak Width Comparison

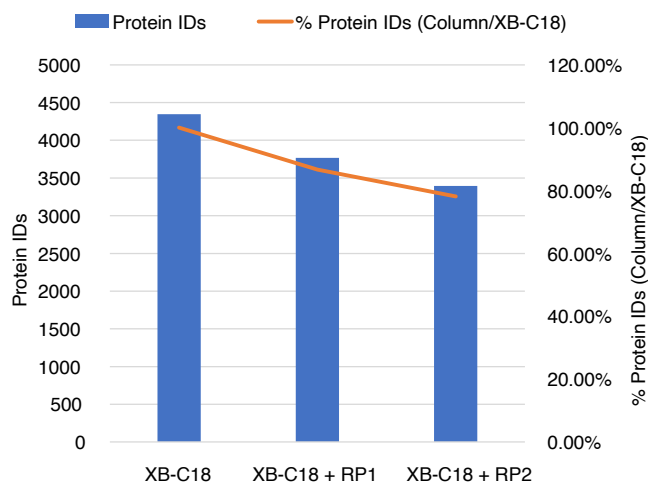
The core-shell based Peptide XB-C18 column had narrower peaks overall.



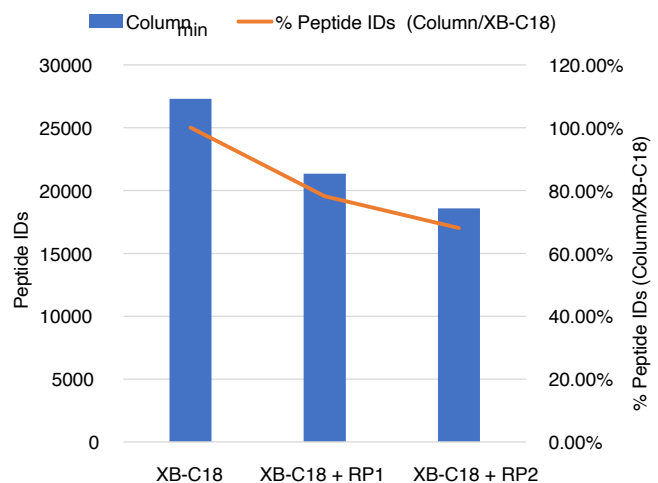
## Improved IDs for Trap and Elute Analysis

Number of proteins and peptides that were identified on a nano LC-MS analysis of a digested HeLa sample using a Biozen 2.6 μm Peptide XB-C18 column formatted in direct inject, trap and elute using a RP-1 trap and a RP-2 trap respectively.

### Peptide XB-C18 + Trap Selectivity Protein Identifications



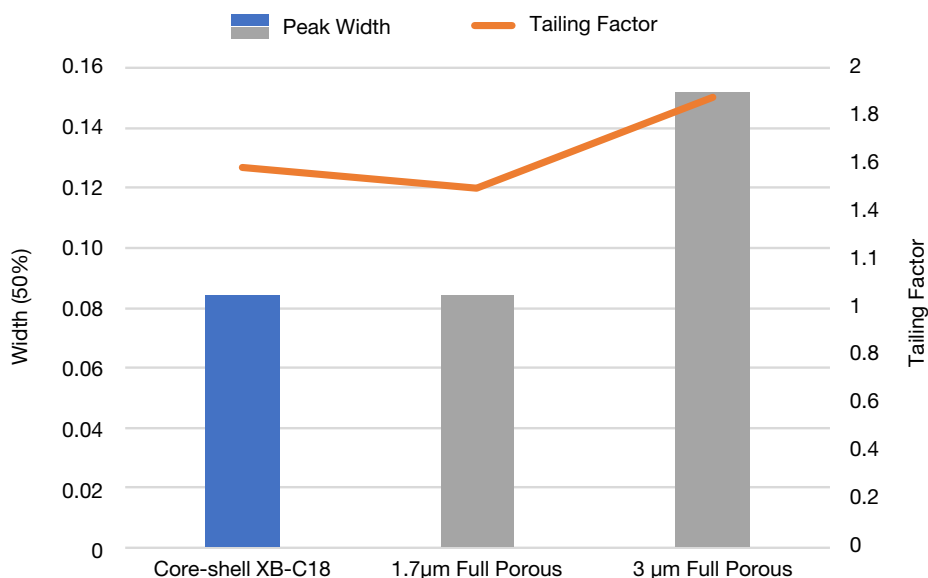
### Peptide XB-C18 + Trap Selectivity Peptide Identifications



# Robust Performance for Low-Flow Analysis

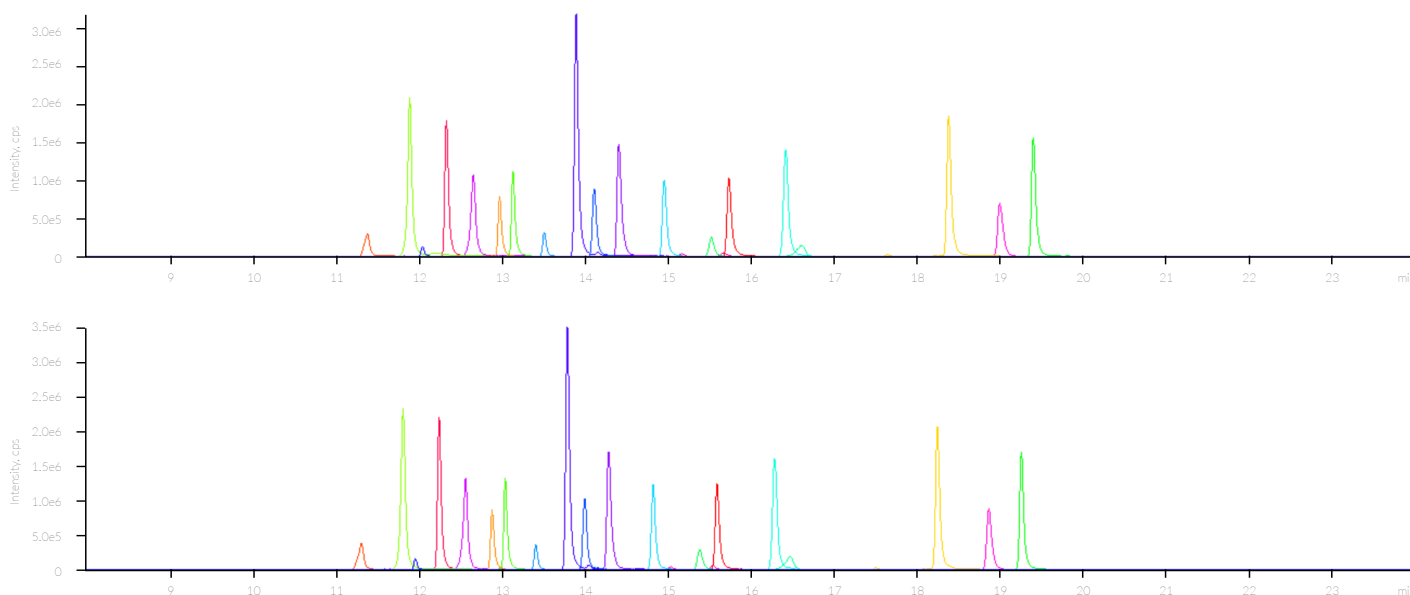
Peak widths and tailing factors obtained from a mixture of 20 isotopically labeled peptides injected on columns packed with Biozen 2.6  $\mu\text{m}$  core-shell Peptide XB-C18, Thermo Fisher<sup>®</sup> Acclaim<sup>™</sup> PepMap<sup>™</sup> 100 nanoViper<sup>™</sup> 3  $\mu\text{m}$  fully porous C18, and Waters<sup>®</sup> nanoEase<sup>®</sup> M/Z Peptide BEH 1.7  $\mu\text{m}$  fully porous C18 particles, respectively

## Minimum Peak Widths with Nano Core-Shell



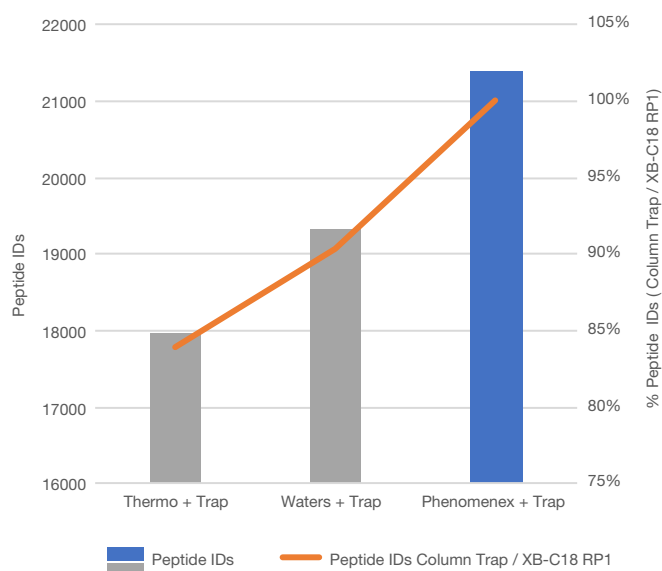
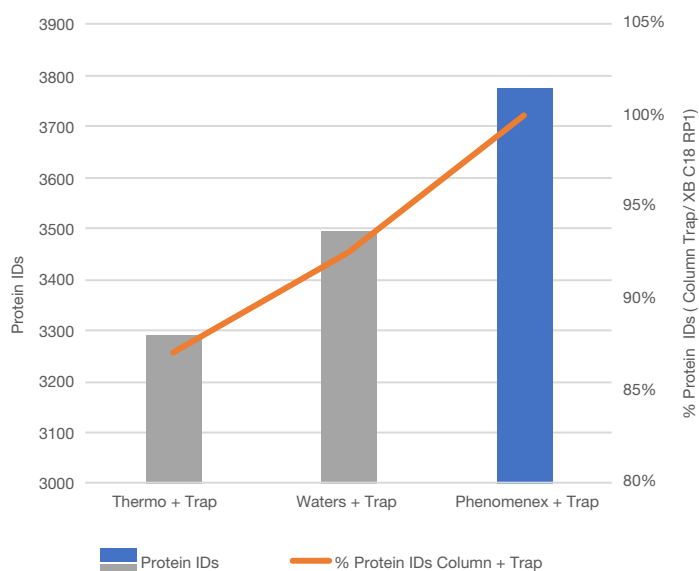
## Reproducible Performance

Extracted Ion chromatograms of injection 1 and 100 from a mixture of 20 isotopically labeled peptides run on a Biozen 2.6  $\mu\text{m}$  Peptide XB-C18 150 x 0.075 mm column.



# Robust Column Performance

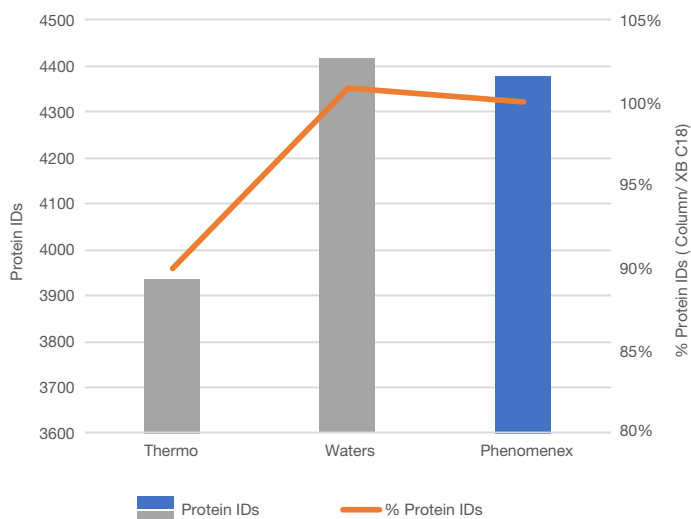
Number of proteins and peptides that were identified on a nano LC-MS analysis of a digested HeLa sample using a Thermo Fisher® Acclaim™ PepMap™ 100 nanoViper™ 3 µm C18, Waters® nanoEase® M/Z Peptide BEH 1.7 µm C18, and Biozen 2.6 µm Peptide XB-C18, in trap and elute mode with Thermo Fisher Acclaim PepMap nanoViper, Waters nanoEase M/Z Symmetry C18, and Nano Trap RP-1 (General RP) traps, respectively.



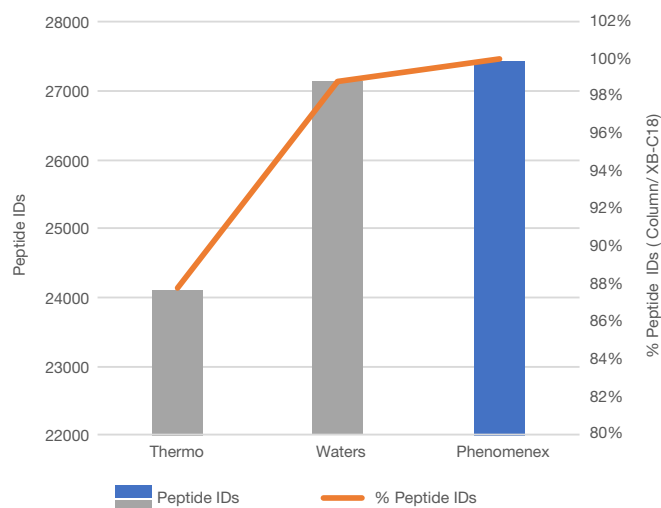
## Nano LC Column Manufacturer Comparison

Number of proteins and peptides that were identified on a nano LC-MS analysis of a digested HeLa sample using a Thermo Fisher Acclaim PepMap 100 nanoViper C18, Waters nanoEase M/Z Peptide BEH 1.7 µm C18, and Biozen 2.6 µm Peptide XB-C18, in direct inject mode.

### Protein ID Comparison



### Peptide ID Comparison



# Find an Application for Your Nano Analysis:



**Core-shell Technology Results in Improved Peptide Identifications in HeLa Cell Lysates**



**Column Reproducibility and Robustness for Nano LC**



**Coupling Minaturized SPE Combine with Nano LC for the Detection of SARS-CoV-2 Nucleocapsid Protein Viral Peptides in Nasopharyngeal Samples**



**Deep Proteome Coverage on HeLa Lysate for High pH (Basic Reversed Phase) Fractionation in Combination for Nano Flow LC-MS**



**Determining Trap Loadability for Biozen Nano LC Columns**



**Increasing Sensitivity by Scaling Down from Micro to Nano Flow LC**



**Nanoflow Lipidomics for Characterization of Lipid Mediators at Trace Levels**



**Number of Protein and Peptide Identifications in HeLa Lysate**



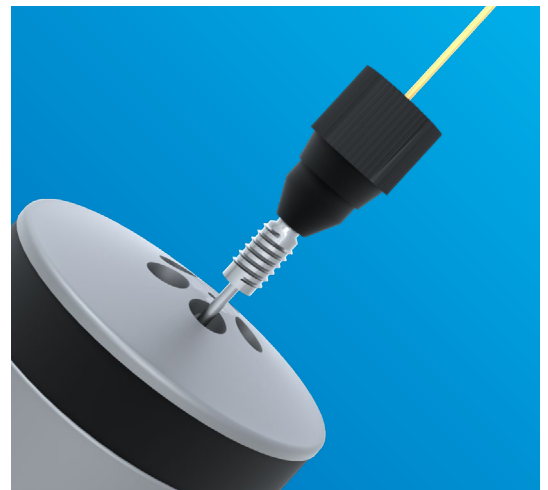
# Fingers Only Installation Leak-Free Connections in 2 Easy Steps

The Biozen Nano LC Column's integrated SecurityLINK™ fingertight fitting system simplifies your system connection process and provides consistent performance with Torque Limiting Technology that prevents column damaging overtightening. No tools required for installation ever again!

## STEP 1

### Insert Biozen Nano LC Column...

SecurityLINK fitting into the column port.



## STEP 2

### Slowly fingertighten the...

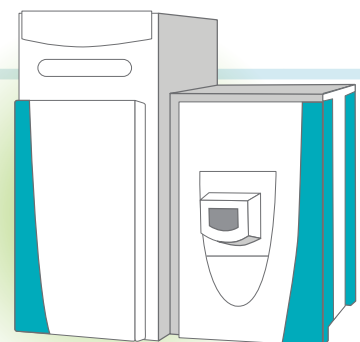
SecurityLINK fitting until the first "**CLICK**" is received.  
Your **Leak-Free** connection is now complete!



### System Compatibility

Biozen Nano Columns with integrated SecurityLINK Fittings were designed to be compatible with the majority of systems that are available on the market today.

**Compatible with any System with  $1/16$  in. Ports.**



# Ordering Information

## Biozen Nano LC Columns with Integrated SecurityLINK™ Fitting



Phases	150 x 0.075 mm	250 x 0.075 mm	500 x 0.075 mm
Biozen 2.6 µm Peptide PS-C18	<a href="#">00F-4797-AW-21</a>	<a href="#">00G-4797-AW-21</a>	-
Biozen 2.6 µm Peptide XB-C18	<a href="#">00F-4768-AW-21</a>	<a href="#">00G-4768-AW-21</a>	<a href="#">00J-4768-AW-21</a>
Biozen 2.6 µm Polar-C18	<a href="#">00F-4796-AW-21</a>	<a href="#">00G-4796-AW-21</a>	-
Biozen 5 µm Peptide XB-C18	-	-	<a href="#">00J-4792-AW-21</a>

## Biozen Nano LC Columns with Double SecurityLINK Fitting



Phases	150 x 0.075 mm	250 x 0.075 mm	500 x 0.075 mm
Biozen 2.6 µm Peptide PS-C18	<a href="#">00F-4771-AW-22</a>	<a href="#">00G-4771-AW-22</a>	-
Biozen 2.6 µm Peptide XB-C18	<a href="#">00F-4768-AW-22</a>	<a href="#">00G-4768-AW-22</a>	<a href="#">00J-4768-AW-22</a>
Biozen 2.6 µm Polar C18	<a href="#">00F-4796-AW-22</a>	<a href="#">00G-4796-AW-22</a>	-
Biozen 5 µm Peptide XB-C18	-	-	<a href="#">00J-4792-AW-22</a>

## Biozen Nano LC Columns with Open Fused-Silica Inlet Fitting



Phases	150 x 0.075 mm	250 x 0.075 mm	500 x 0.075 mm
Biozen 2.6 µm Peptide PS-C18	<a href="#">00F-4797-AW-11</a>	<a href="#">00G-4797-AW-11</a>	-
Biozen 2.6 µm Peptide XB-C18	<a href="#">00F-4768-AW-11</a>	<a href="#">00G-4768-AW-11</a>	<a href="#">00J-4768-AW-11</a>
Biozen 2.6 µm Polar-C18	<a href="#">00F-4796-AW-11</a>	<a href="#">00G-4796-AW-11</a>	-
Biozen 5 µm Peptide XB-C18	-	-	<a href="#">00J-4792-AW-11</a>

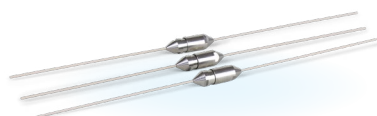
## High pH Fractionation Column

Fractionation Column		
Part No.	Description	Dimension
<a href="#">00F-4793-AN</a>	Biozen 3 µm High pH Fractionation Column	150 x 2.1 mm



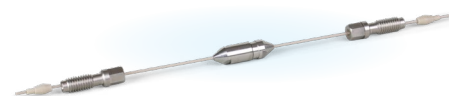
## Nano Trap Columns

Trap Columns		
Phases	10 x 0.075 mm	Unit
RP-1 (General RP)	<a href="#">05N-4252-AW</a>	3/pk
RP-2 (Aqueous Stable RP)	<a href="#">05N-4754-AW</a>	3/pk



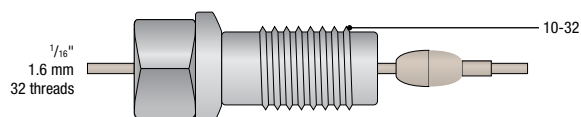
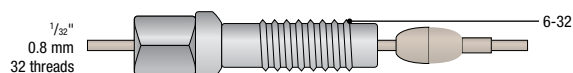
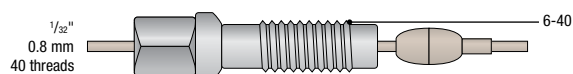
## Fittings

Trap Fittings		
Part No.	Description	Unit
<a href="#">AQ0-7602</a>	PEEKlok™ fittings with 6-40 thread for 1/32" OD tubing (2 x fittings, 6 x ferrules and 1 x tightening tool)	ea
<a href="#">AQ0-7603</a>	PEEKlok fittings with 6-32 thread for 1/32" OD tubing (2 x fittings, 6 x ferrules and 1 x tightening tool)	ea
<a href="#">AQ0-7600</a>	PEEKlok fittings with 10-32 thread for 1/32" OD tubing with low profile hex head (2 x fittings, 6 x ferrules and 1 x wrench)	ea



## Trap Fitting Guide

Traps		
Threads per Inch	Pitch (inches)	Pitch (mm)
32	0.0313	0.794
40	0.025	0.635



## Caution

The installation of an improper nut could potentially cause cross-threading or damage to the port and fitting

Verify fit: Traps are available for 1/16" connections (10-32 thread) or with 1/32" connections (6-40 or 6-32 thread).

## BE-HAPPY™ GUARANTEE

Your happiness is our mission. Take 45 days to try our products. If you are not happy, we'll make it right.  
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# Ordering Information

Nano Cartridge		
Part No.	Description	Dimension
<a href="#">00F-4768-AW-SX</a>	Biozen 2.6 µm Peptide XB-C18 Nano Cartridge for SCIEX	150 x 0.075 mm
<a href="#">00G-4768-AW-SX</a>	Biozen 2.6 µm Peptide XB-C18 Nano Cartridge for SCIEX	250 x 0.075 mm
<a href="#">00J-4768-AW-SX</a>	Biozen 2.6 µm Peptide XB-C18 Nano Cartridge for SCIEX	500 x 0.075 mm
<a href="#">00F-4796-AW-SX</a>	Biozen 2.6 µm Peptide Polar-C18 Nano Cartridge for SCIEX	150 x 0.075 mm
<a href="#">00G-4796-AW-SX</a>	Biozen 2.6 µm Peptide Polar-C18 Nano Cartridge for SCIEX	250 x 0.075 mm
<a href="#">00F-4797-AW-SX</a>	Biozen 2.6 µm Peptide PS-C18 Nano Cartridge for SCIEX	150 x 0.075 mm
<a href="#">00G-4797-AW-SX</a>	Biozen 2.6 µm Peptide PS-C18 Nano Cartridge for SCIEX	250 x 0.075 mm
<a href="#">00J-4792-AW-SX</a>	Biozen 5 µm Peptide XB-C18 Nano Cartridge for SCIEX	500 x 0.075 mm

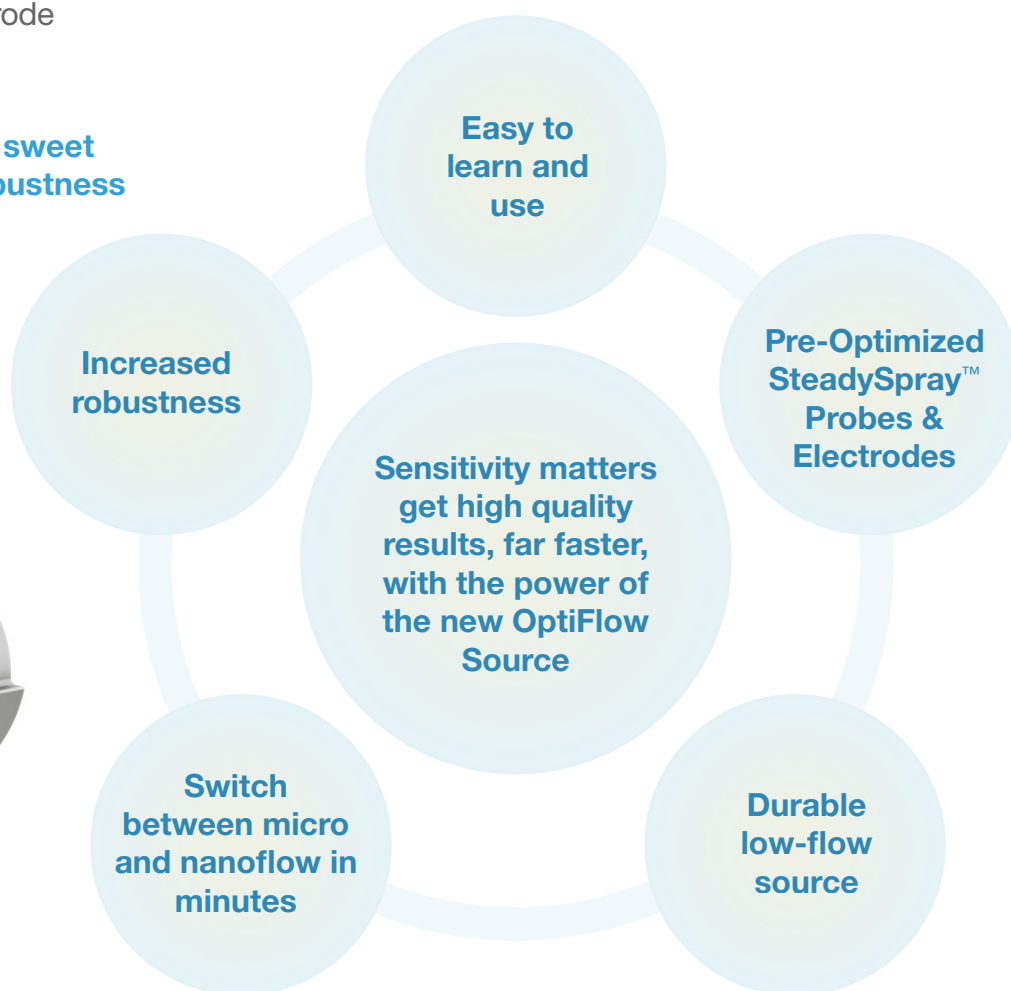


## SCIEX® OptiFlow® Source for Nanoflow Chromatography

### Single Source for All Low-Flow Chromatography

- Select the right chromatography for the workflow and samples because switching is easy and fast
- Couple with Phenomenex micro and nano columns for that plug-and-play experience
- Phenomenex column cartridge for plug-and-play solution SecurityLINK™ tubing for connection to inlet short tubing at outlet to connect to electrode

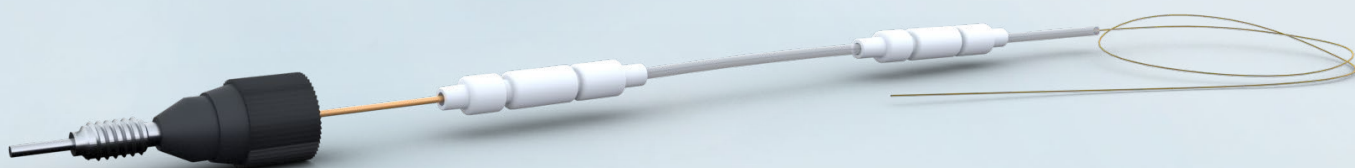
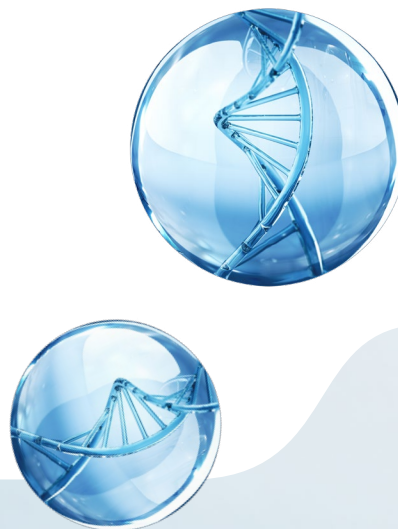
Always be working in the sweet spot of sensitivity and robustness





# nano

## LC Columns for Omics Analysis



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

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