RSolv®

LIFE SCIENCES

Elara

COLUMNS

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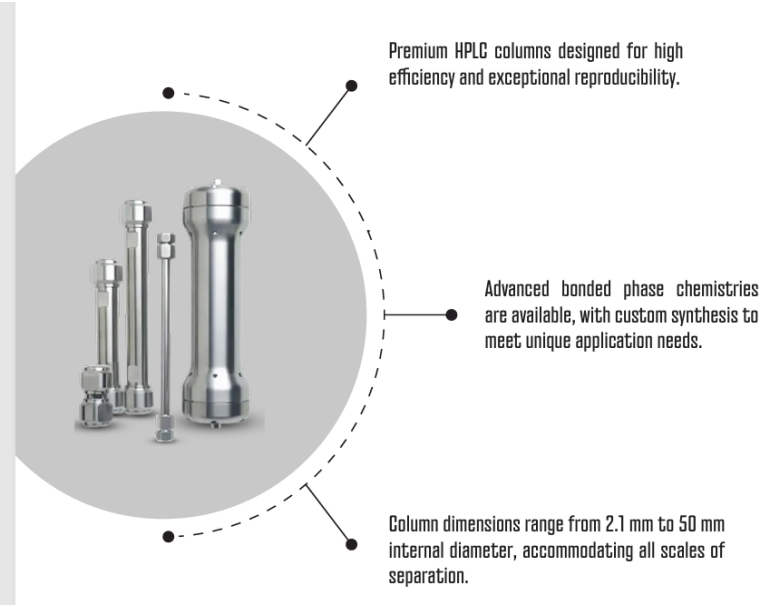
RSolv Lifesciences delivers a comprehensive portfolio of chromatography solutions to meet the evolving needs of today's advanced laboratories. From raw material analysis to final product testing, our specialized product lines offer the precision, reliability, and versatility required for confident separations and accurate results. Explore our catalogue to discover the full range of columns, chemistries, and support services designed to empower your laboratory's success.

Our extensive experience allows us to deliver products renowned for their performance, durability, and consistent results across a wide range of applications.



Our column offerings include:

- **Elara Bond** – Classic reversed-phase and specialty columns
- **Elara ARO** – Aromatic and specialty phase columns
- **Elara FSep** – Fast separation and high-throughput columns
- **Elara BIO** – Wide-pore columns for proteins, peptides, and biomolecules
- **Elara SFC** – Columns optimized for supercritical fluid chromatography
- **Elara SEC** – Size Exclusion Columns for large molecules
- **Elara HILIC** – Combining NP, RP, Ion chromatography for separations

From small-bore analytical columns to preparative and bulk materials, our products are designed to support chromatographers at every scale and in every field. We invite you to discover our complete range of traditional, innovative, and industry-leading column solutions.

Column Selection:

Choosing the right stationary phase is essential for effective chromatographic separation. Begin by assessing your sample's solubility, molecular weight, and chemical properties, then match these with the most appropriate separation mode, such as reversed-phase, normal-phase, ion-exchange, or size-exclusion chromatography.

Key factors to guide your selection:

• **Molecular size:** Utilize pore size and column chemistry that are suitable for your analytes (e.g., 100–120 Å for small molecules, 300–400 Å for proteins and peptides).

• **Solubility:** Water-soluble, organic-soluble, or chiral compounds may require different stationary phases.

• **Separation mode:** Choose reversed phase for most small molecules, size exclusion for large biomolecules, ion exchange for charged species, and chiral columns for enantiomeric separations.

• **Method Development:** Utilize columns with different selectivities during method development to optimize resolution and robustness.

Our columns are designed for high efficiency, reproducibility, and robust performance across a wide range of analytical challenges.

Reversed Phase Separations:

Reversed-phase (RP) chromatography is the most commonly used HPLC separation mode, making it ideal for analytes that are soluble in water or water–organic mixtures. RP columns are a preferred choice for small molecules and a wide range of applications due to their versatility and reliable performance.

Modern RP columns extend beyond traditional C18 and C8 chemistries, now including “AQ” types for improved retention of polar analytes and specialty phases that provide enhanced selectivity. RSolv Elara’s portfolio features not only these classic phases but also advanced options such as naphthyl, phenyl-hexyl, and pentafluorophenyl (PFP) columns, which offer exceptional aromatic and π–π selectivity for challenging separations.

All RSolv Elara RP columns are engineered for high efficiency, reproducibility, and exceptional peak shape, accommodating everything from routine analyses to advanced method development in today's demanding laboratories.

Normal Phase Chromatography:

Normal-phase (NP) chromatography is a classic liquid chromatography technique that separates analytes based on their polarity using a polar stationary phase and a nonpolar mobile phase. In normal-phase separations, silica or bonded polar groups (such as amino, cyano, or diol) are commonly used as the stationary phase, attracting polar compounds, while nonpolar organic solvents like hexane and ethyl acetate serve as the mobile phase.

NP chromatography is particularly effective for the analysis of nonpolar or moderately polar compounds that are poorly soluble in water but dissolve readily in organic solvents. This mode is often chosen for the separation of geometric and positional isomers, lipids, and compounds with subtle differences in polarity.

Modern NP columns go beyond bare silica and now include specialized chemistries like amino, cyano, and diol phases for improved selectivity and method versatility. The RSolv Elara portfolio features high-purity silica columns and functionalized normal-phase options, allowing precise separations across a diverse set of applications in pharmaceuticals, environmental studies, food additives, and natural products.

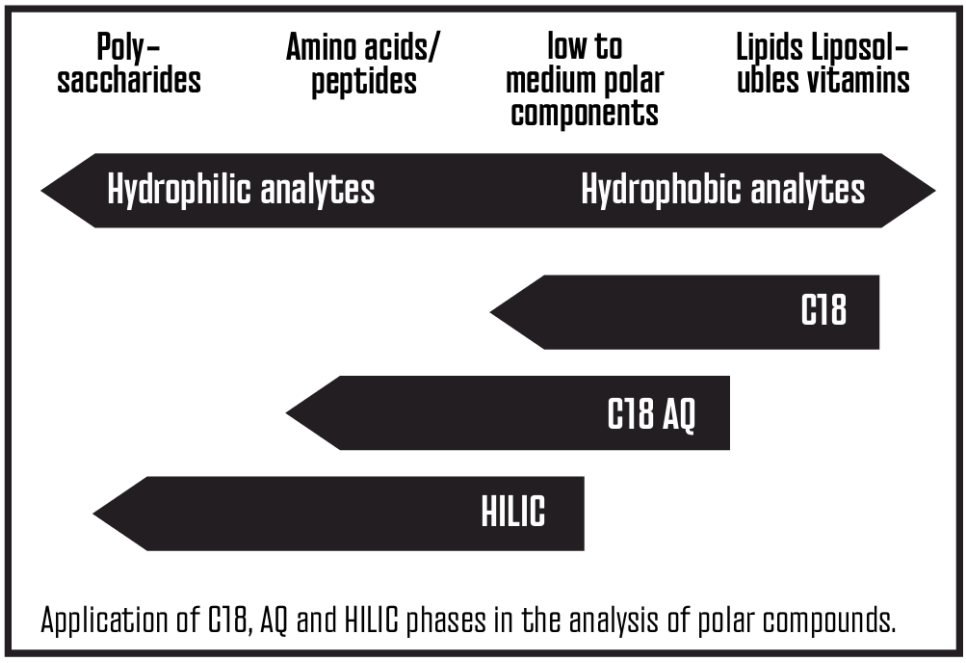
All RSolv Elara NP columns are designed for high efficiency, reproducibility, and robust separation performance, supporting both routine analyses and specialized method development.

Preparative Chromatography:

Preparative chromatography is a powerful method for isolating and purifying pharmaceutical compounds, natural products, and biomolecules. Scaling up from analytical to preparative HPLC can be challenging, but developing the separation on an analytical column is essential for method optimization and successful scale-up. Evaluating different analytical columns helps determine the best conditions for preparative separations. The RSolv Elara product line is fully scalable, offering

both analytical and preparative columns to support seamless transition from method development to large-scale purification.
Preparative HPLC is always a trade-off between sample throughput and sample purity. The length of a given column depends on the quality of the separation. Separation quality is generally based on several factors including relative selectivity (α), resolution (Rs) and sample loading. Resolution is a combination of α, peak sharpness (plates) and peak shape (tailing factor). Column length affects all quality factors, but it affects resolution most – the shorter the column the lower the resolution. If the required purity for isolated compounds is low then the quality of the separation (resolution) is less important and therefore a column of shorter length maybe utilized. However, if the required purity for the isolated compounds is high then the quality of the separation (resolution) is greater and therefore a column with the same length or longer than the analytical column may be required. The selection of column length starts with the analytical column.
Column diameter has a direct effect on sample loading – columns with large diameters have a higher sample loading capacity than columns with small diameters. Column flow directly affects throughput the higher the f low rate the faster the separation can be completed. However, high flow rates will reduce resolution.

HILIC Separations:
Hydrophilic interaction liquid chromatography (HILIC) combines aspects of normal phase, reversed phase, and ion chromatography. HILIC uses reversed phase-type eluents with polar stationary phases, enabling the separation of highly polar compounds. A water-rich layer forms on the polar stationary phase, promoting liquid–liquid partitioning, while dipole–dipole and electrostatic interactions also contribute to retention. As a result, more polar analytes are retained longer, and elution order is opposite to reversed phase HPLC.
RSolv Elara offers a comprehensive range of Elara HILIC columns, including the innovative Elara HILIC POH phase—featuring a polyhydroxylated polymer coating on silica for enhanced performance and higher hydroxyl content compared to conventional diol phases. These columns provide alternative selectivity and robust retention for challenging polar analytes.



Application of C18, AQ and HILIC phases in the analysis of polar compounds.

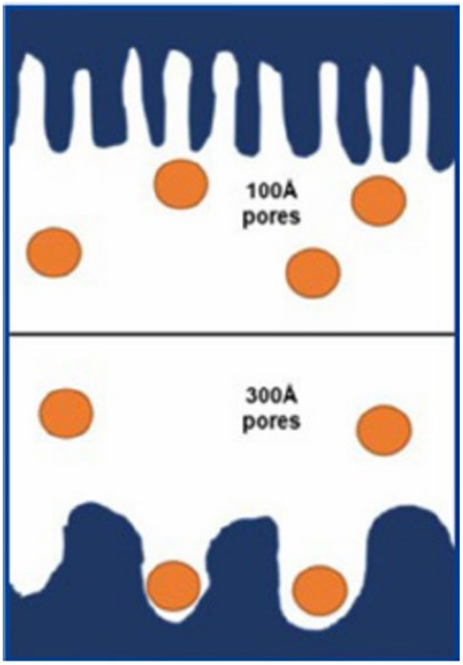
Size Exclusion Separations:

Size exclusion chromatography (SEC) is a key technique for separating and characterizing proteins and polymers by size, with larger molecules eluting first and minimal interaction between analyte and stationary phase. Smaller molecules penetrate the pores and take longer paths, resulting in effective separation by hydrodynamic volume. SEC is also widely used to determine the molar mass distribution of polymers.

Elara SEC columns are available in silica, diol-bonded silica, and TMS-bonded silica phases, ensuring effective separation of both aqueous and organic-soluble analytes.

Wide Pore Reverse Phase Separations:

Reversed-phase HPLC is widely used for separating peptides and proteins. Standard small-pore silicas (~100 Å) are effective for small peptides but perform poorly with larger peptides and proteins, which cannot access the interior of the pores and interact only with the limited external surface. Wide-pore silicas (~300 Å and above) allow larger biomolecules to enter the pores, resulting in improved resolution and peak shape. While small-pore columns are suitable for small peptides, wide-pore columns can be used for both small and large biomolecules, often providing different selectivity and enhanced separation. Elara BIO wide-pore columns offer superior performance for the analysis of proteins, peptides, and other biomolecules, giving bioanalytical chromatographers the resolution and reliability needed for demanding applications.

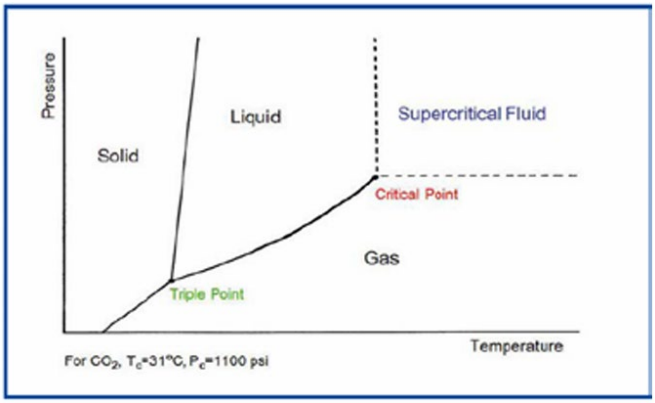


Representation of small pore particles (~ 100 Å) vs. wide pore particles (~ 300 Å). Smaller pores do not allow most proteins to enter the pores, which limits interaction.

Supercritical Fluid Chromatography Separations:

Supercritical fluid chromatography (SFC) is an environmentally friendly technique that uses CO_2 as the primary mobile phase, making it ideal for both preparative and rapid analysis of complex

mixtures. CO_2-based mobile phases allow for high-performance separations on preparative columns (10–50 mm ID) with particle sizes from 3 to 20 µm, enabling fast and efficient purification. SFC serves as an excellent orthogonal technique to reversed-phase HPLC, offering robust performance and selectivity similar to normal phase LC. While traditional normal phase stationary phases—such as unmodified silica, diol, amino, and cyano—often show limitations in SFC (including low capacity and poor peak shape), Elara SFC stationary phases are specifically engineered for SFC applications. These columns provide high capacity, excellent selectivity, and superior peak shape for demanding separations.



Phase diagram for carbon dioxide.

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1. Elara Bond

Elara Bond, Elara Bond MU, Elara ARO, and Elara FSep columns represent a comprehensive and modern portfolio of HPLC solutions, each engineered to address a wide range of analytical challenges. Elara Bond columns are built on ultra-high purity, metal-free silica with proprietary high-density monomeric bonding, providing exceptional pH stability, improved peak shapes, and reproducibility. Available in a variety of surface areas and scalable from microbore to preparative formats, the Elara Bond line covers a broad spectrum of stationary phase chemistries—including C18, C8, shorter alkyl chains, HILIC, Cyano, Amine, Aqua stable, and advanced polar phases—making them ideal for demanding method development and routine separations across pharmaceuticals, environmental, and life science applications. Every column undergoes strict quality control to ensure robust performance over a wide pH range and with diverse sample types.

Complementing this, Elara Bond MU phases, utilize a multi-step process with proprietary multiple endcapping, resulting in highly base-deactivated, inert columns well-suited for acids, bases, and orthogonal selectivity needs. These use a lower surface area silica for alternative retention profiles and are especially valuable for legacy USP methods, amines, acids, and specialized applications like petroleum and ion-exchange analysis. The portfolio is further enhanced by Elara ARO aromatic chemistries, which leverage π-π interactions for aromatic and conjugated systems, and Elara FSep fluorinated phases, which offer low bleed, LC-MS compatible options for trace analysis and unique selectivity with halogenated or fluorinated compounds. Together, these lines ensure chromatographers have access to a toolkit that delivers proven performance, scalability, and reproducibility—solving virtually any separation challenge with confidence and flexibility.

Features and Benefits

• Ultra-high purity silica for improved peak shape, especially for basic compounds
• Extensive range of stationary phase chemistries with innovative bonding chemistry to enhance method development
• High density bonding produces columns with better pH stability, increased sample loading and better lot-to-lot reproducibility
• Extended pH stability across commonly used mobile phase buffers
• Microbore to preparative dimensions available to allow flexibility and full scalability

Brand	Phase	Particle Size (µm)	Pore Size (Å)	Carbon %	End Cap	pH Range	USP Code
Elara Bond	Aqua	3, 5, 10	100	16	No	1–10	L7
Elara Bond	C18	3, 5, 10	100	12	No	1–10	L1
Elara Bond	Amino Cyano	3, 5, 10	60, 100	—	No	1–10	L18
Elara Bond	C2	5, 10	60	—	No	1–10	L16
Elara Bond	C6	3, 5	60	6	No	1–10	L15
Elara Bond	MC18	3, 5, 10	100	18	Yes	1–10	L1
Elara Bond	PSC C8/C18	3, 5, 10	100	14	Yes	1–10	L42
Elara Bond	UL C18	3, 5, 10	100	12	Yes	1–10	L1
Elara Bond	UL C8	3, 5, 10	80	12	Yes	1–10	L7
Elara Bond	Amine HD	1.8, 3, 5, 10	60, 100, 200	—	No	1–10	L8
Elara Bond	C18	1.8, 3, 5, 10	120	18	Yes	1–10	L1
Elara Bond	C18 MS	1.8, 3, 5, 10	120	22	No	1–10	L1
Elara Bond	C18 SD	1.8, 3, 5, 10	120	25	Yes	1–10	—
Elara Bond	C4 SD	1.8, 3, 5, 10	120	12	Yes	1–10	L26
Elara Bond	C8	1.8, 3, 5, 10	120	10	Yes	1–10	L7
Elara Bond	Cyano	1.8, 3, 5, 10	120	—	No	1–10	L10
Elara Bond	Diol	1.8, 3, 5, 10	60, 120	—	No	1–10	L20
Elara Bond	Polar	1.8, 3, 5, 10	120	18	No	1–10	L1
Elara Bond	Silica	1.8, 3, 5, 10	120	—	—	1–10	L3
Elara Bond	Si60	3, 5	60, 100	—	—	1–10	—
Elara Bond MU	C18	1.8, 3, 5, 7, 10	120	16	Yes	1–10	L1
Elara Bond MU	C4	3, 5, 10	120	5	Yes	1–10	L26
Elara Bond MU	C8	3, 5, 10	120	—	No	1–10	L7
Elara Bond MU	Cyano	3, 5, 10	120	—	No	1–10	L10
Elara Bond HILIC	HILIC FL	1.8, 3, 5, 10	120	—	—	1–10	—
Elara Bond HILIC	HILIC RP	1.8, 3, 5, 10	120	—	—	1–10	—
Elara Bond HILIC	HILIC PI	1.8, 3, 5, 10	120	—	—	1–10	—
Elara Bond HILIC	HILIC POH	1.8, 3, 5, 10	120	—	—	1–10	—
Elara Bond HILIC	HILIC Silica	1.8, 3, 5, 10	120	—	—	1–10	—
Elara Bond Petro	DNAP	5	100	—	No	1–10	—
Elara Bond Petro	DNAP2	5	100	—	No	1–10	—
Elara Bond Petro	Rsep	5, 10	60	—	No	1–10	—
Elara Bond	RP-SCX/IPI	5, 10	60, 200	—	No	1–10	L44

2. Elara ARO & Elara FSep Columns

RSolv Elara's aromatic selectivity portfolio is anchored by two advanced product lines—Elara ARO and Elara FSep—engineered to deliver exceptional performance for the separation of aromatic, halogenated, and conjugated compounds across pharmaceutical, environmental, and chemical applications. Both lines are built on ultra-high-purity silica and leverage proprietary bonding chemistries to provide unique selectivity profiles that surpass those of traditional C18 columns, empowering chromatographers to resolve complex mixtures with confidence.

- **Elara ARO**

Columns feature a range of aromatic stationary phases— including Phenyl, Biphenyl, Diphenyl, Naphthyl, and Phenyl Hexyl—each designed to maximize π-π interactions and shape selectivity. These phases are ideal for analytes with aromatic rings, conjugated systems, and polarizable electrons, offering enhanced retention and resolution for challenging compounds such as antibiotics, nucleosides, natural products, and aromatic pharmaceuticals. The high-density bonding technology ensures robust performance, durability, and excellent lot to-lot reproducibility. The Elara ARO line is available in multiple particle sizes and dimensions, ranging from analytical to preparative scales, supporting both routine analysis and advanced method development.

- **Elara FSep**

Elara FSep columns represent the next generation of aromatic and fluorinated stationary phases, engineered for fast, high throughput separations and outstanding LC-MS compatibility. This product line features advanced chemistries such as pentafluorophenyl (PFP LB), perfluorooctyl (FO LB), and specialty fluorosep phenyl (FSP) phases, each designed to deliver unique selectivity profiles that excel where traditional C18 and even standard PFP columns fall short. Elara FSep 5Phenyl utilizes bonded pentafluorophenyl groups to provide strong π-π and dipole interactions, enabling superior retention and resolution for halogenated compounds, aromatics, and trace impurities— even in complex matrices. The FO LB phase utilizes perfluorooctyl chemistry for the selective analysis of halogenated analytes and hydrophobic contaminants, providing ultra-low bleed for sensitive LC-MS applications. The FSP phase further expands selectivity options, delivering robust performance and enhanced interaction with aromatics, halogens, and epimers. Across all phases, proprietary stabilization and low-bleed technology ensure exceptional baseline stability, extended column lifetimes, and reliable quantification for the most demanding applications in pharmaceuticals, environmental analysis, and impurity profiling1.
Together, Elara ARO and Elara FSep columns provide laboratories with a comprehensive toolkit for tackling the most demanding aromatic and halogenated separations. Both lines are supported by a full range of guard columns and custom configurations, ensuring scalability from method development to preparative purification.

	Elara ARO	**Elara FSep**
Selectivity Mechanism	π-π interactions (phenyl, biphenyl, naphthyl)	π-π, dipole, and fluori nated interactions
Target Analytes	Aromatics, conjugated systems, natural products	Halogenated, fluorinated, aromatic compounds
Phases	Phenyl, Biphenyl, Diphenyl, Naphthyl, Phenyl Hexyl	PFP LB, FO (Fluoro Octyl),FSP (Fluorosep Phenyl)

3. **Elara BIO**

Elara BIO columns are engineered to meet the rigorous demands of bio analytical chromatography, providing highly efficient, state-of-the-art wide pore HPLC columns for the analysis of proteins, peptides, and other high molecular weight biomolecules. Manufactured from ultra-high purity, metal-free silica with precisely controlled pore sizes of 400 Å, 700 Å, or 1200 Å, Elara BIO columns deliver outstanding peak shape, efficiency, and reproducibility across a broad range of bio separation applications. The advanced bonding technology ensures superior base deactivation, resulting in excellent recoveries and minimal adsorption—especially critical for sensitive or basic biomolecules. These columns feature high-density bonding and full endcapping, offering exceptional resistance to both acidic and alkaline conditions. Tight process control during silica preparation, bonding, and column packing guarantees consistent column performance, high symmetry, and reproducibility from batch to batch. Elara BIO columns are available in multiple particle sizes to support both analytical and preparative workflows, making them a versatile and reliable solution for the separation and purification of proteins, peptides, and other biological compounds. With their wide pore surface, ultra-high purity silica, and robust chemical stability, Elara BIO columns set a new standard for performance and reliability in biomolecule chromatography.

Features and Benefits

- Wide pore surface for the analysis of proteins and peptides
- Ultra-high purity metal free silica for improved peak shape, especially for basic compounds
- State-of-the-art base deactivation to ensure superior recoveries of proteins and peptides

Brand	Phase	Particle Size (µm)	Pore Size (Å)	End Cap	pH Range	USP Code
Elara BIO	Aqua	3, 5, 10	400, 700, 1200	No	2–8	L7
Elara BIO	Biphenyl	1.9, 3, 5, 10	400, 700, 1200	Yes	2–9	L11
Elara BIO	C18	1.9, 3, 5, 10	400, 700, 1200	Yes	2–9	L1
Elara BIO	C4	1.9, 3, 5, 10	400, 700, 1200	Yes	2–9	L26
Elara BIO	C8	1.9, 3, 5, 10	400, 700, 1200	Yes	2–9	L7
Elara BIO	Diphenyl	1.9, 3, 5, 10	400, 700, 1200	Yes	2–9	L11
Elara BIO	HPR	1.9, 3, 5, 10	400, 700, 1200	Yes	2–9	—
Elara BIO	Naphthyl	1.9, 3, 5, 10	400, 700, 1200	Yes	2–9	—
Elara BIO	PFP	1.9, 3, 5, 10	400, 700, 1200	Yes	2–9	L43

Preparative columns of these phases are also available.

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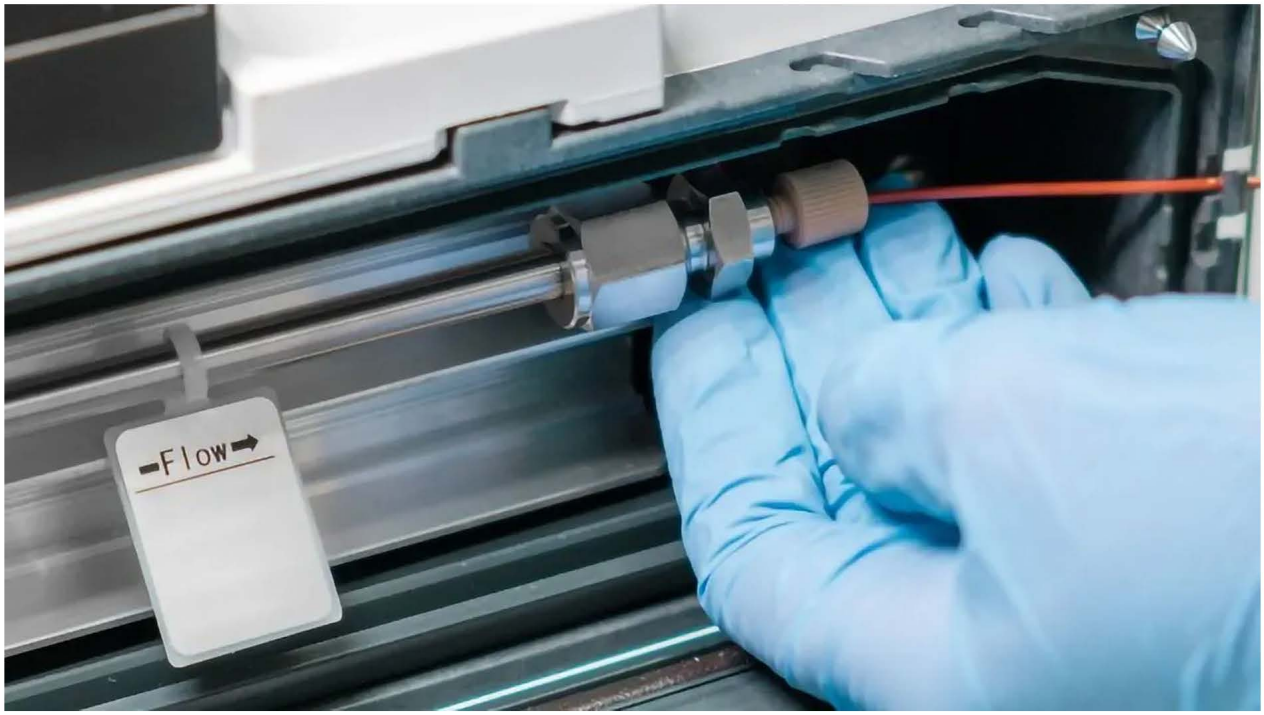

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