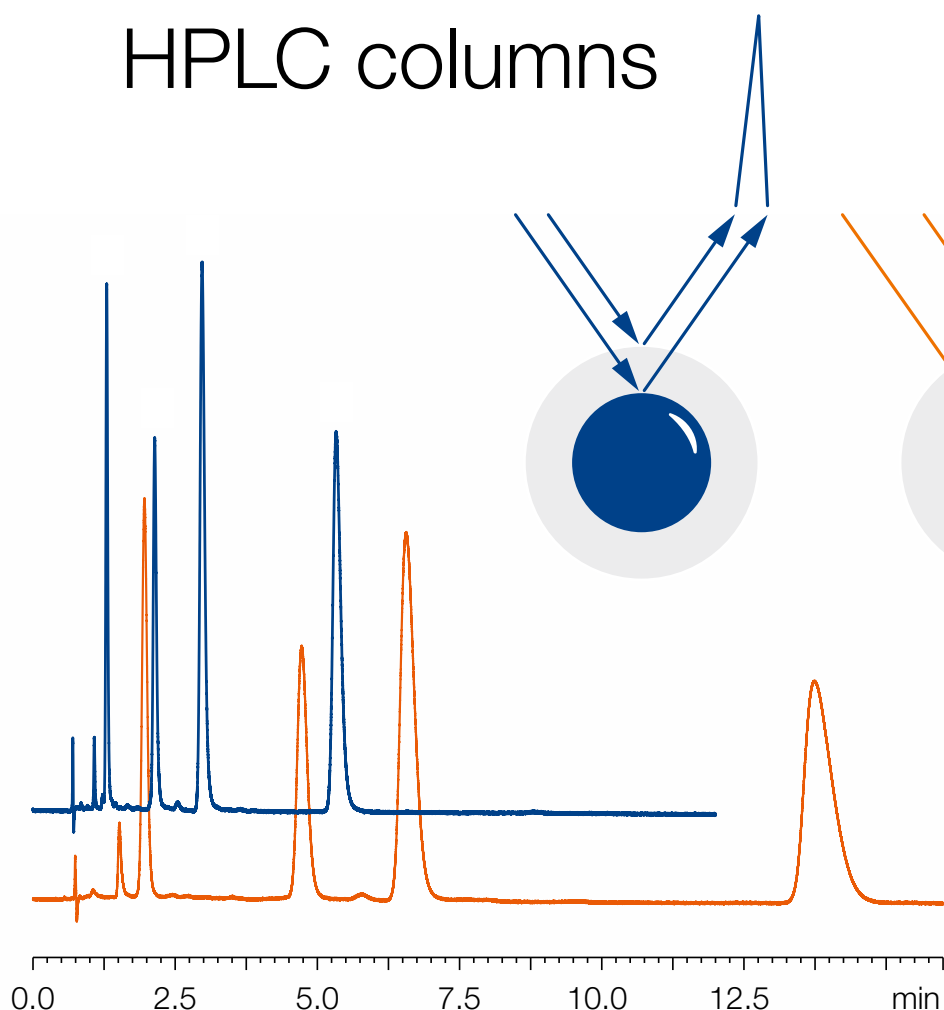


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HPLC columns



Phase overview

- Solid core of silicon dioxide, homogeneous shell of porous silica
- Sharper signals and shorter elution times compared to traditional fully porous particles
- Available in 5 μm and 2.7 μm , 90 $\text{\AA}$ pore size



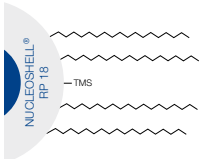
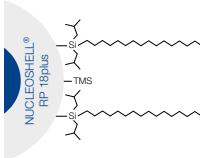
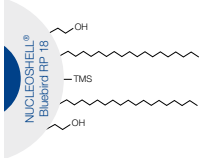
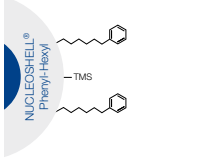
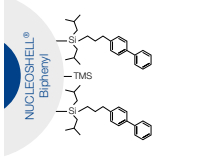
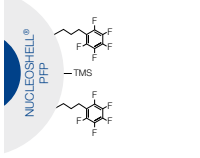
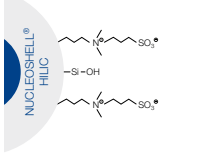
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NUCLEOSHELL® phase overview

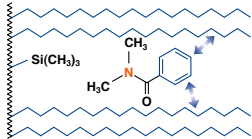
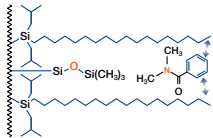
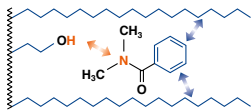
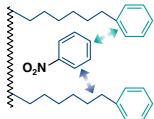
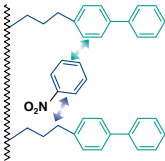
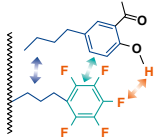
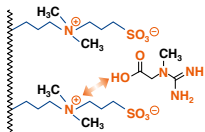
Overview of NUCLEOSHELL® HPLC phases

Phase	Specification	Characteristic*	Stability	Structure
 RP 18	octadecyl, multi-endcapping 7.8 % C (2.7 µm particles) 6.1 % C (5 µm particles) USP L1	A ● ● ● ● ● B ● C ● ● ●	pH 1 – 11, suitable for LC/MS	NUCLEOSHELL® (Si-O) ₂ n 
 RP 18plus	octadecyl (monomeric), multi-endcapping 5.7 % C (2.7 µm particles) 4.4 % C (5 µm particles) USP L1	A ● ● ● ● ● B ● ● ● C -	pH 2 – 9, suitable for LC/MS	NUCLEOSHELL® (Si-O) ₂ n 
 Bluebird RP 18	octadecyl, hydrophilic endcapping 5 % C (2.7 µm particles) USP L1	A ● ● ● ● ● B ● ● ● C ● ●	stable in 100 % aqueous eluent, pH 1 – 8, suitable for LC/MS	NUCLEOSHELL® (Si-O) ₂ n 
 Phenyl-Hexyl	phenylhexyl, multi-endcapping 4.5 % C (2.7 µm particles) USP L11	A ● ● ● B ● ● ● ● ● C ●	pH 1 – 10, suitable for LC/MS	NUCLEOSHELL® (Si-O) ₂ n 
 Biphenyl	biphenylpropyl, multi-endcapping 5.2 % C (2.7 µm particles) USP L11	A ● ● ● ● ● B ● ● ● ● ● C ● ● ● ● ●	stable in 100 % aqueous eluent, pH 1.5 – 8.5, suitable for LC/MS	NUCLEOSHELL® (Si-O) ₂ n 
 PFP	pentafluorophenyl, multi-endcapping ~ 3 % C (2.7 µm particles) USP L43	A ● ● ● B ● ● ● ● ● C ● ● ● ● ●	pH 1 – 9, suitable for LC/MS	NUCLEOSHELL® (Si-O) ₂ n 
 HILIC	zwitterionic ammonium-sulfonic acid, no endcapping 1.3 % C (2.7 µm particles)	A ● B ● ● ● ● ● ● ● C -	pH 2 – 8.5, suitable for LC/MS	NUCLEOSHELL® (Si-O) ₂ n 

* A = ● hydrophobic selectivity, B = ● polar / ionic selectivity, C = ● steric selectivity

** phases which provide a similar selectivity based on chemical and physical properties

NUCLEOSHELL® phase overview

Application	Similar phases**	Interactions · retention mechanism
overall sophisticated analytical separations, e. g., analgesics, anti-inflammatory drugs, antidepressants; herbicides; phytopharmaceuticals; immunosuppressants	Kinetex® C18; Cortecs® C18; Raptor® C18; Accucore® C18; Ascentis® Express C18; HALO® C18; Shim-pack Velox® C18	hydrophobic (van der Waals interactions) 
overall sophisticated analytical separations, especially for polar compounds, e. g., pharmaceuticals like antibiotics, water-soluble vitamins, organic acids	Kinetex® XB-C18; Bonshell® ASB-C18; Raptor® ARC-C18; Shim-pack Velox® SP-18	hydrophobic (van der Waals interactions) 
overall sophisticated analytical separations, especially for very polar compounds, e. g., pesticides, sweeteners, nitrosamines, water-soluble vitamins, organic acids, pharmaceuticals	Kinetex® Polar C ₁₈	hydrophobic and polar (H bonds) 
aromatic and unsaturated compounds, polar compounds like pharmaceuticals, antibiotics	Ascentis® Express Phenyl-Hexyl; Kinetex® Phenyl-Hexyl; Accucore® Phenyl-Hexyl; Ultracore® Phenyl-Hexyl; Poroshell® Phenyl-Hexyl; HALO® Phenyl-Hexyl	π-π and hydrophobic 
aromatic and unsaturated compounds, mycotoxins, phthalates, hormones, polar compounds like pharmaceuticals, antibiotics, pesticides	Kinetex® Biphenyl, Raptor® Biphenyl, HALO® Biphenyl; Shim-pack Velox® Biphenyl	π-π and hydrophobic 
aromatic and unsaturated compounds, phenols, halogenated hydrocarbons, isomers, polar compounds like pharmaceuticals, antibiotics	Kinetex® PFP; Ascentis® Express F5; Accucore® PFP; Shim-pack Velox® PFP; HALO® PFP; Raptor® PFP	polar (H bond), dipole-dipole, π-π and hydrophobic 
hydrophilic compounds such as organic polar acids and bases, polar natural compounds	—	ionic / hydrophilic and electro-static 

NUCLEOSHELL® phase overview

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Modern HPLC phases



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