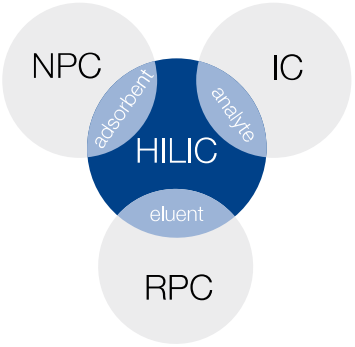
NUCLEOSHELL® HILIC

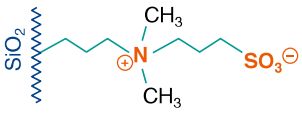
Hydrophilic interaction chromatography



Hydrophilic interaction chromatography (HILIC) is a separation technique using polar stationary phases and organic-aqueous mobile phases. A minimum water content of at least 2 % is indispensable to provide a permanent water layer between the adsorbent surface and the organic fraction of the mobile phase. The sample molecules become separated in a partition chromatography, in which polar analytes are more strongly retained than neutral, less hydrophilic compounds. Consequently, increasing the aqueous part in the mobile phase will diminish retention of the polar sample constituents. In this way HILIC behaves inverse to classical RP chromatography. The particular retention profile of HILIC enables the chromatography of very polar and often small molecules, which will not show any retention on C_8 or C_{18} reversed phases

Ultra-fast separations at moderate back pressure

NUCLEOSHELL® HILIC is a core-shell technology based stationary phase with a covalently bonded 3-*N,N*-dimethylaminopropane sulfonic acid ligand. The betaine character of the strong ion-exchanger results in full charge balancing and facilitates fast equilibration times.



Good separation of polar compounds like the physiologically important substances creatine and creatinine can be achieved on NUCLEOSHELL® HILIC as well as on NUCLEODUR® HILIC, 1.8 µm at similar retention but much lower back pressure.

Key features

- Ideal for reproducible and stable chromatography of highly polar analytes
- Very short column equilibration times
- Suitable for LC/MS

Technical data

- Zwitterionic ammonium-sulfonic acid phase; not endcapped
- Pore size 90 Å, particle size 2.7 µm; carbon content 1.3 %; pH stability 2–8.5

Recommended applications

- Hydrophilic compounds such as polar organic acids and bases, polar natural compounds, nucleosides, oligonucleotides, amino acids, peptides, water-soluble vitamins

Good to know

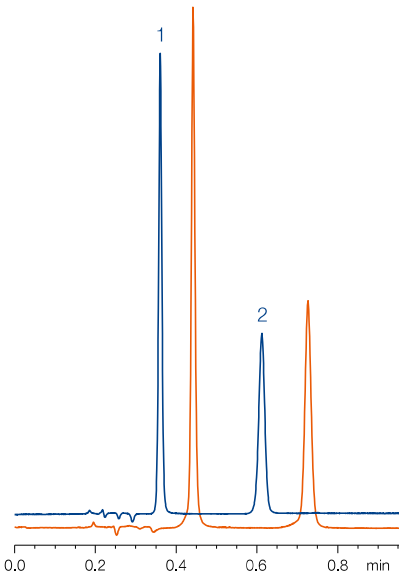
NUCLEODUR® HILIC is a patented phase modification (pat. number DE102009006007 (B4))

Separation of creatine and creatinine

MN Appl. No. 124990

Columns:	50 x 4 mm NUCLEOSHELL® HILIC, 2.7 µm
	50 x 4 mm NUCLEODUR® HILIC, 1.8 µm
Eluent:	acetonitrile – 10 mmol/L ammonium acetate, pH 4.0 (90:10, v/v)
Flow rate:	1.7 mL/min
Pressure:	129 bar
	180 bar
Temperature:	25 °C
Detection:	UV, 210 nm

Peaks:
1. Creatinine
2. Creatine



NUCLEOSHELL® HILIC

The following chromatograms show the method transfer from a fully porous 3 µm HILIC phase to 2.7 µm core-shell silica with equal selectivity features.

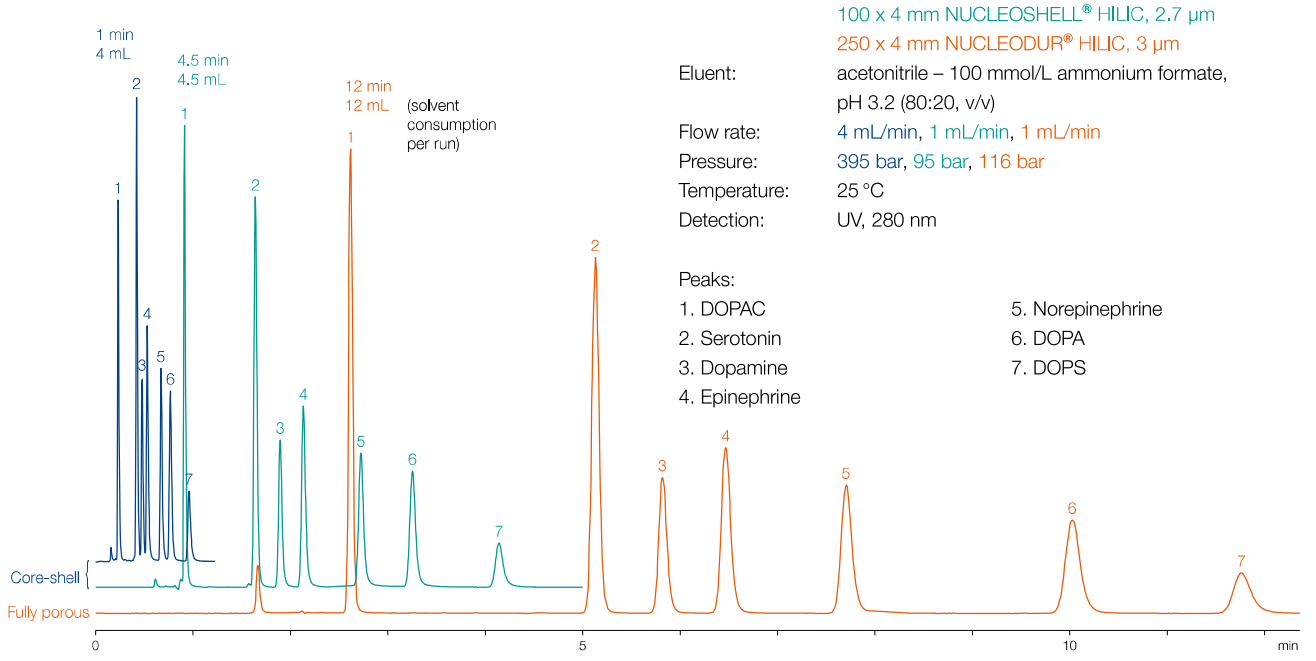
Run time has been cut down to 1 min. Column back pressure remains modest < 400 bar, while solvent demand is reduced to less than 35 %.

Good to know

NUCLEOSHELL® HILIC provides stable and reproducible chromatography, comprising all the benefits of a state-of-the-art core-shell silica.

Separation of catecholamines

MN Appl. No. 125440



Columns: 100 x 4 mm NUCLEOSHELL® HILIC, 2.7 µm
100 x 4 mm NUCLEOSHELL® HILIC, 2.7 µm
250 x 4 mm NUCLEODUR® HILIC, 3 µm

Eluent: acetonitrile – 100 mmol/L ammonium formate, pH 3.2 (80:20, v/v)

Flow rate: 4 mL/min, 1 mL/min, 1 mL/min

Pressure: 395 bar, 95 bar, 116 bar

Temperature: 25 °C

Detection: UV, 280 nm

Peaks:

1. DOPAC
2. Serotonin
3. Dopamine
4. Epinephrine
5. Norepinephrine
6. DOPA
7. DOPS

Ordering information

NUCLEOSHELL® HILIC

Analytical EC columns NUCLEOSHELL® HILIC (pack of 1)

Length (mm)	ID (mm)	Particle size (µm)	REF	Guard columns*
150	4.6	2.7	763336.46	763338.30
150	4	2.7	763336.40	763338.30
150	3	2.7	763336.30	763338.30
150	2	2.7	763336.20	763338.20
100	4.6	2.7	763334.46	763338.30
100	3	2.7	763334.30	763338.30
100	2	2.7	763334.20	763338.20
50	4	2.7	763332.40	763338.30
50	3	2.7	763332.30	763338.30
50	2	2.7	763332.20	763338.20

* Pack of 3, EC guard columns require column protection system REF 718966. For more information, see page 90.

For more products and information
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