

# UHPLC<sup>2</sup>

## It's your choice!

Chromolith® and  
Purospher® STAR UHPLC columns.



# Chromolith® HPLC columns fast and robust analyses

Monolithic silica-based Chromolith® columns have proven to be a useful and advantageous tool for fast and robust analyses of even "relatively" dirty samples. In contrast to conventional particle-packed columns, monolithic silica columns are made of a continuous piece of porous silica, which possess a defined bimodal pore structure with macro and mesopores in the micro- and nanometer range.

High permeability and porosity of the silica skeleton and the resulting low back-pressure allow for more flexible flow rates compared to particulate columns and enable high throughput analysis without loss of separation efficiency and peak capacity.

Chromolith® 2 mm I.D. columns with 1.5 µm macropores are designed for particularly high column efficiencies (minimum 100,000 N/m), therefore even short columns could ensure baseline separation of relatively complex samples.

- Fast and ultra-fast HPLC separations at low pressure – every HPLC or UHPLC system is suitable
- Extremely robust silica skeleton for long lifetime and fast analysis with less sample preparation

Because high sample throughput and less solvent consumption are important customer needs, fast and ultra-fast separations have become more and more important.

Only what do we mean by fast?



# Purospher® STAR UHPLC columns speed at highest performance

Purospher® STAR RP-18 endcapped UHPLC columns are ideal for ultra-fast applications, where resolution, sensitivity, and sample throughput is crucial. It is the first choice for high-throughput screening and QC analyses, process monitoring, method development, and LC/MS applications.

Due to its balanced selectivity, a Purospher® STAR RP-18 endcapped UHPLC column can be used for a broad range of demanding separations with tailing-free chromatograms.

- Ultra fast results with highest resolution of peaks
- Maximum flexibility with outstanding pH stability and sensitivity

Depending on the sample the demands on chromatography are different. Relatively clean samples are optimally separated on columns with narrow inner diameters and small particle sizes like Purospher® STAR UHPLC columns for ultra fast separations. Other samples with more complex matrices need intensive sample preparation to avoid column contamination or clogging. For these kinds of samples Chromolith® is the best choice to get fast separations with minimum sample preparation – saving time and money.

Pick your choice for fast  
and ultra fast HPLC.

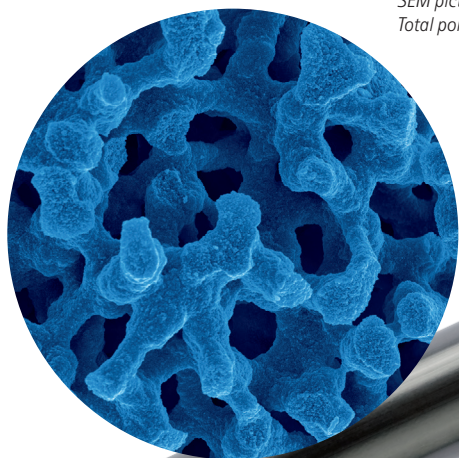




# Chromolith® Fast Gradient HPLC columns

Fast at low pressure for reliable results  
even with difficult samples

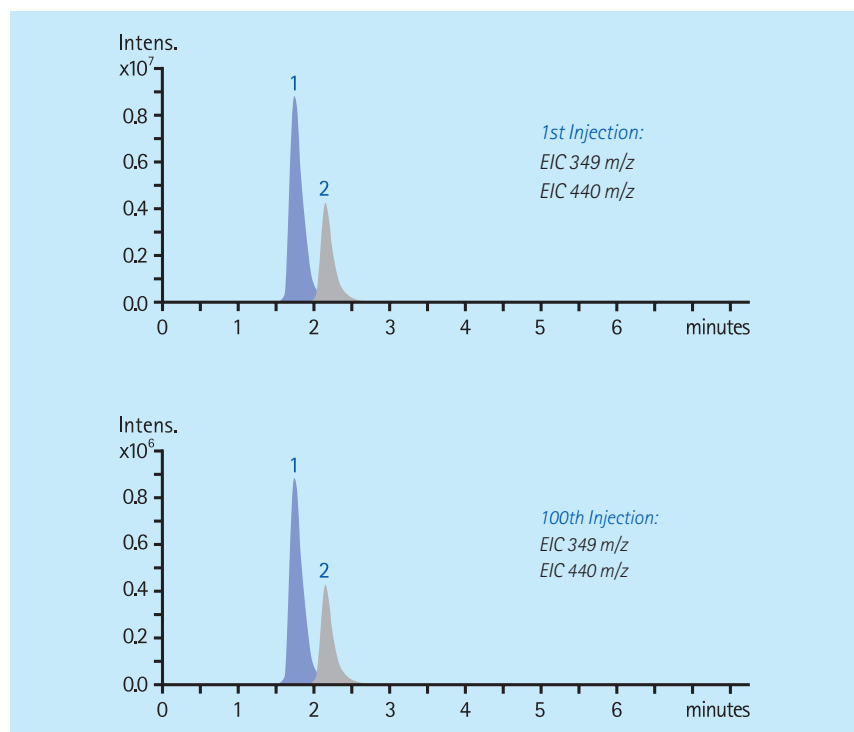
*SEM picture of a cross section from a silica monolith.  
Total porosity > 80 %.*



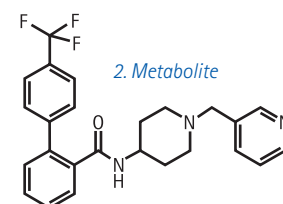
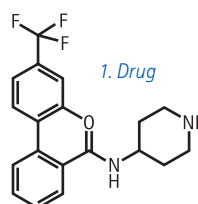
Monolithic silica columns offer extremely low back-pressures compared to particulate columns, therefore you will have more freedom adjusting the flow rates. High structure permeability ensures superior lifelong stability and data reproducibility even when analyzing matrix-rich samples, like serum or protein digests.

The lifetime of a Chromolith® monolithic silica column is twice longer than particulate columns. Much higher flow rates allow speeding up the overall analysis: with faster separation, column rinsing and re-equilibration.

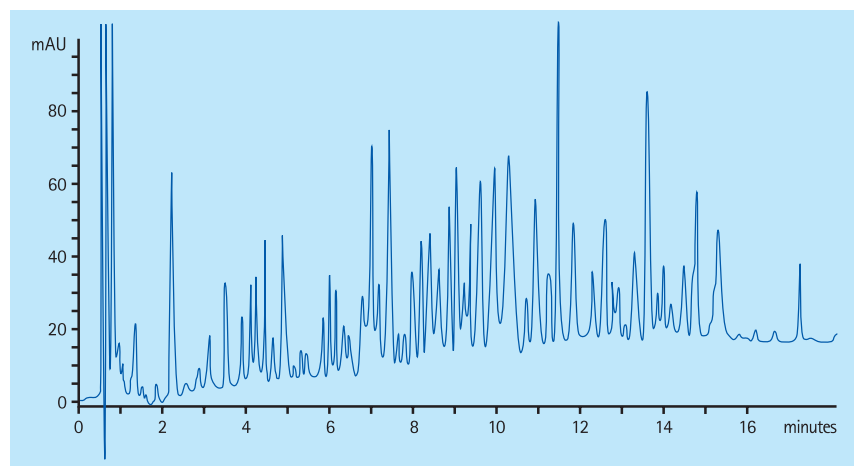
## Direct LC/MS analysis of drug/metabolite in serum without sample preparation.



**Column:** Chromolith® Speed ROD RP-18e  
**Mobile Phase:** A: 0.1 % Acetic acid in ACN  
 B: 0.1 % Acetic acid in water  
**Samples:** 1. LR 3384 9 µg/ml  
 2. LR 19370 7 µg/ml  
 in bovine serum,  
 diluted 1:1 with water  
**Detection:** Bruker esquire 3000 plus  
**Ionization:** ESI (+)  
**Nebulizer:** 50 psi  
**Dry Gas:** 10 l/min  
**Dry Temperature:** 365 °C  
**Target Mass:** 400 m/z  
**Scan:** 50 – 2,000 m/z  
**ICC Target:** 50,000  
**Max. Accu Time:** 50 ms



## Separation of 1 µl BSA digest (1 mg/ml)



**Column:** Chromolith® Performance RP-18  
 endcapped 100 – 2 mm  
**Eluents:** A. 95 % H<sub>2</sub>O / 5 % ACN/0.1 % TFA (v/v/v),  
 B. 5 % H<sub>2</sub>O / 95 % ACN/0.085 % TFA (v/v/v)  
**Gradient:** from 5 % B to 50 % B in 20 min  
**Flow rate:** 0.3 ml/min  
**Detection:** UV 214 nm

## Ordering information

Chromolith® 2 mm ID columns		
Product	Length	VWR Cat. No.
Chromolith® Performance RP-18 endcapped	100 mm	97025-820
Chromolith® SpeedRod RP-18 endcapped	50 mm	97007-930
Chromolith® Flash RP-18 endcapped	25 mm	EM1.52014.0001
Chromolith® Guard Cartridge RP-18 endcapped three guard cartridges	5 mm	97025-828
Chromolith® Guard Cartridge Kit RP-18 endcapped starter kit with holder and three guard cartridges	5 mm	97025-824

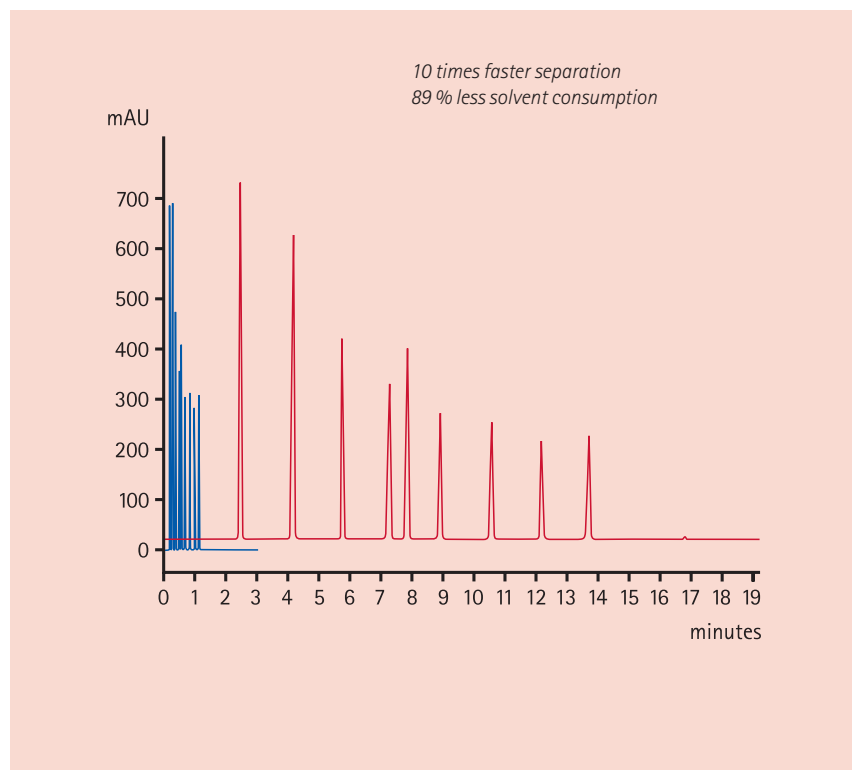
# Purospher® STAR RP-18 endcapped UHPLC columns

Excellent peak symmetry, performance and pH stability for highest flexibility and reliability in QC



## Separation of alkylphenones

By using a 50 – 2.1 Purospher® STAR UHPLC column instead of a 150 – 4.6 HPLC column, for separation of alkylphenones, solvent consumption was reduced by 89 % and separation time was decreased by a factor of 10.



### Chromatographic conditions

Column temperature: 40 °C  
Eluents: A. Water, B. Acetonitrile  
UV: 247 nm  
Injection volume: 10 µl

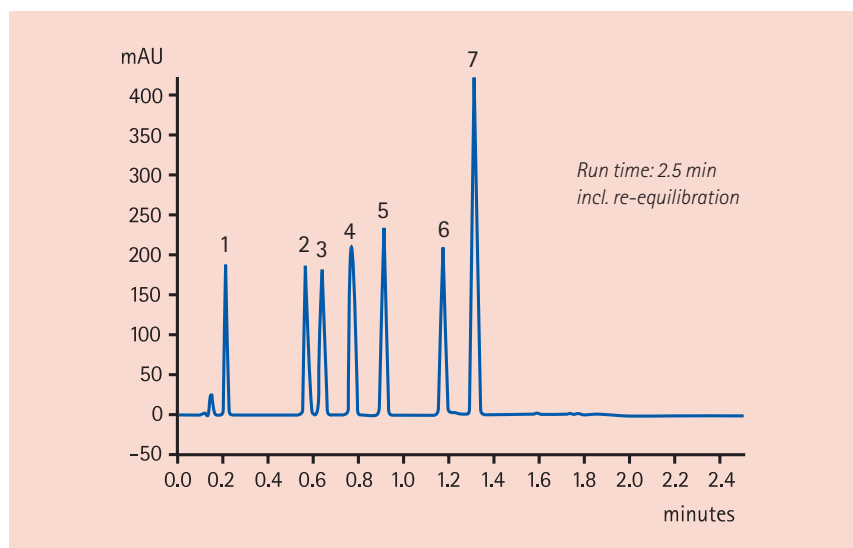
### Red: Purospher® STAR RP-18 endcapped (5 µm) LiChroCART® 150 – 4.6 mm

Gradient: 0 min 45 % B, from 45 to 95 % B in 15 min, from 15.1 to 20 min re-equilibration with 45 % B  
Flow rate: 1.0 ml/min  
Pressure: 105 bar  
Total run time: 20 min

### Blue: Purospher® STAR RP-18 endcapped (2 µm) Hibar® HR 50 – 2.1 mm

Gradient: 0 min 55 % B, from 55 to 100 % B in 0.8 min, from 0.9 to 2 min re-equilibration with 55 % B  
Flow rate: 1.1 ml/min  
Pressure: 505 bar  
Total run time: 2 min

## Ultra fast separation of explosives



### Sample: Explosive standard

1. 2,4-Dimethylphenol
2. 4-Methyl-3-Nitroanilin
3. 2-Methyl-5-Nitroanilin
4. 2,4-Dinitrophenol
5. 4-Amino-2,6-Dinitrotoluol
6. 2,4,6-Trinitrotoluol
7. 3-Nitrotoluol

### Column: Purospher® STAR RP-18 endcapped (2 µm), Hibar® HR 50 – 2.1 mm

Column temperature: 40 °C

Eluents: **A.** 0.1 % Phosphoric acid, **B.** Acetonitrile

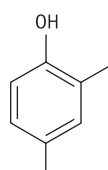
Gradient: 0 min 35 % B, from 35 to 40 % B  
in 0.6 min, from 40 % to 60 % B in 1.4 min,  
from 1.5 to 2.5 min re-equilibration with 35 % B

Flow rate: 0.9 ml/min

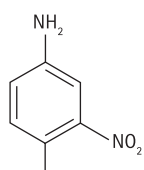
UV: 235 nm

Injection volume: 1 µl

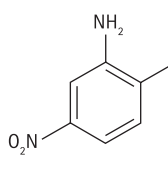
### Samples: 1.



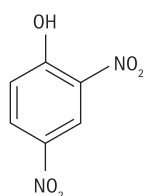
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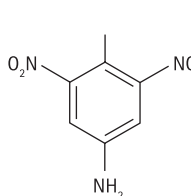
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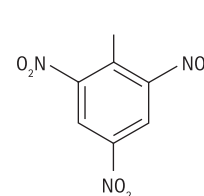
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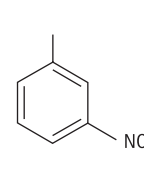
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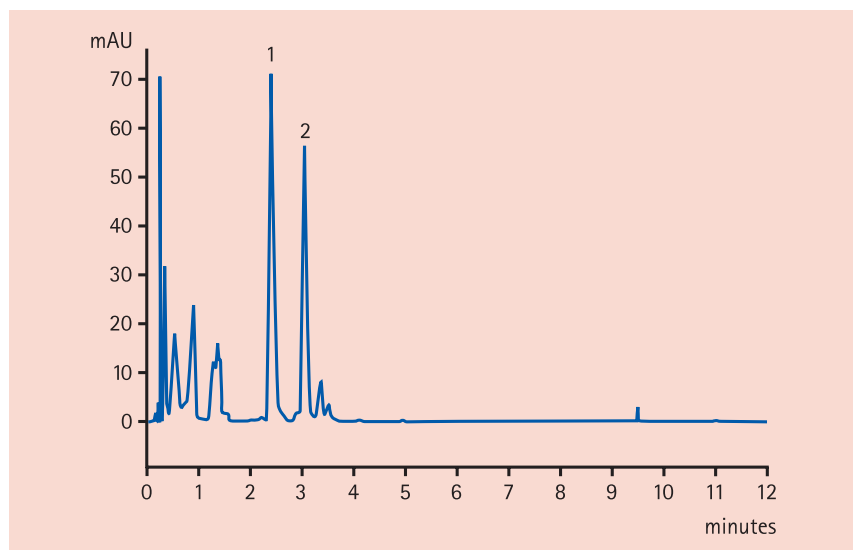
### 6.



### 7.



## Ultra fast separation of strychnine and brucine



### Sample: Strychnos tree seed (1:30 diluted)

1. Strychnine
2. Brucine

### Column: Purospher® STAR RP-18 endcapped (2 µm), Hibar® HR 50 – 2.1 mm

Column temperature: 40 °C

Eluents: **A.** 0.1 % Phosphoric acid, **B.** Acetonitrile

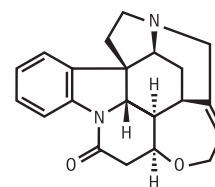
Flow rate: 0.9 ml/min

Gradient: from 8 % B to 17 % B in 6 min,  
30 % B in 8 min,  
8.1 – 12 min re-equilibration with 8 % B

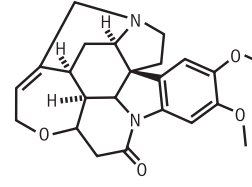
UV: 260 nm

Injection volume: 5 µl

### Samples: 1.



### 2.



## Ordering information

### Purospher® STAR RP-18 endcapped Hibar® HR UHPLC columns

	30 – 2.1	50 – 2.1	100 – 2.1	150 – 2.1	250 – 2.1
2 µm	97021-978	97021-980	97021-983	EM1.50649.0001	-
3 µm	97021-982	97021-984	97021-985	97021-986	EM1.50655.0001

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