

# Dr. Maisch

Any Column, Any Size, Any Media



**ReproSil pHoenix**  
extreme pH-stable

MADE BY DR. MAISCH

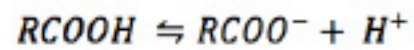
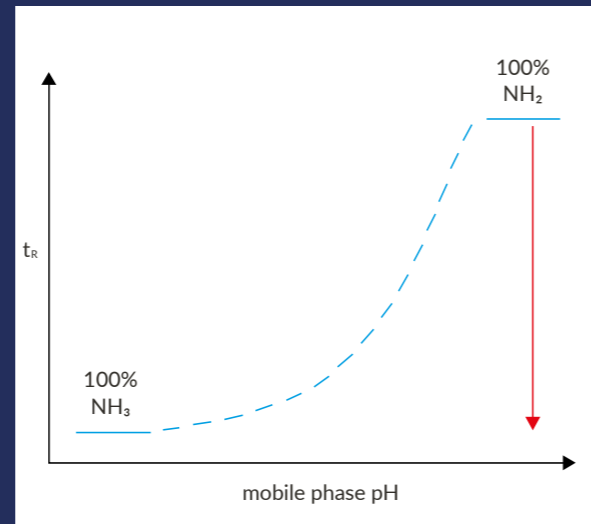
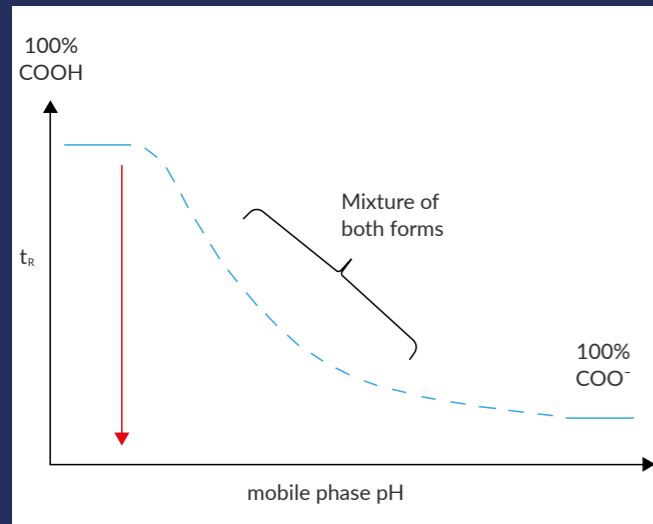
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**ReproSil pH<sup>en</sup>ix**  
MADE BY DR. MAISCH

From one of the biggest **High-Performance Liquid Chromatography (HPLC)** - Column Manufacturer in Europe.

# WHY IS THERE A NEED TO DO CHROMATOGRAPHY AT EXTREME pH?



Acids are best retained with optimal peak shape at low pH



Bases are best retained with optimal peak shape at high pH

# EFFECT OF EXTREME pH ON SILICA BASED MEDIA

## High pH:

Hydrolysis of silica gel backbone

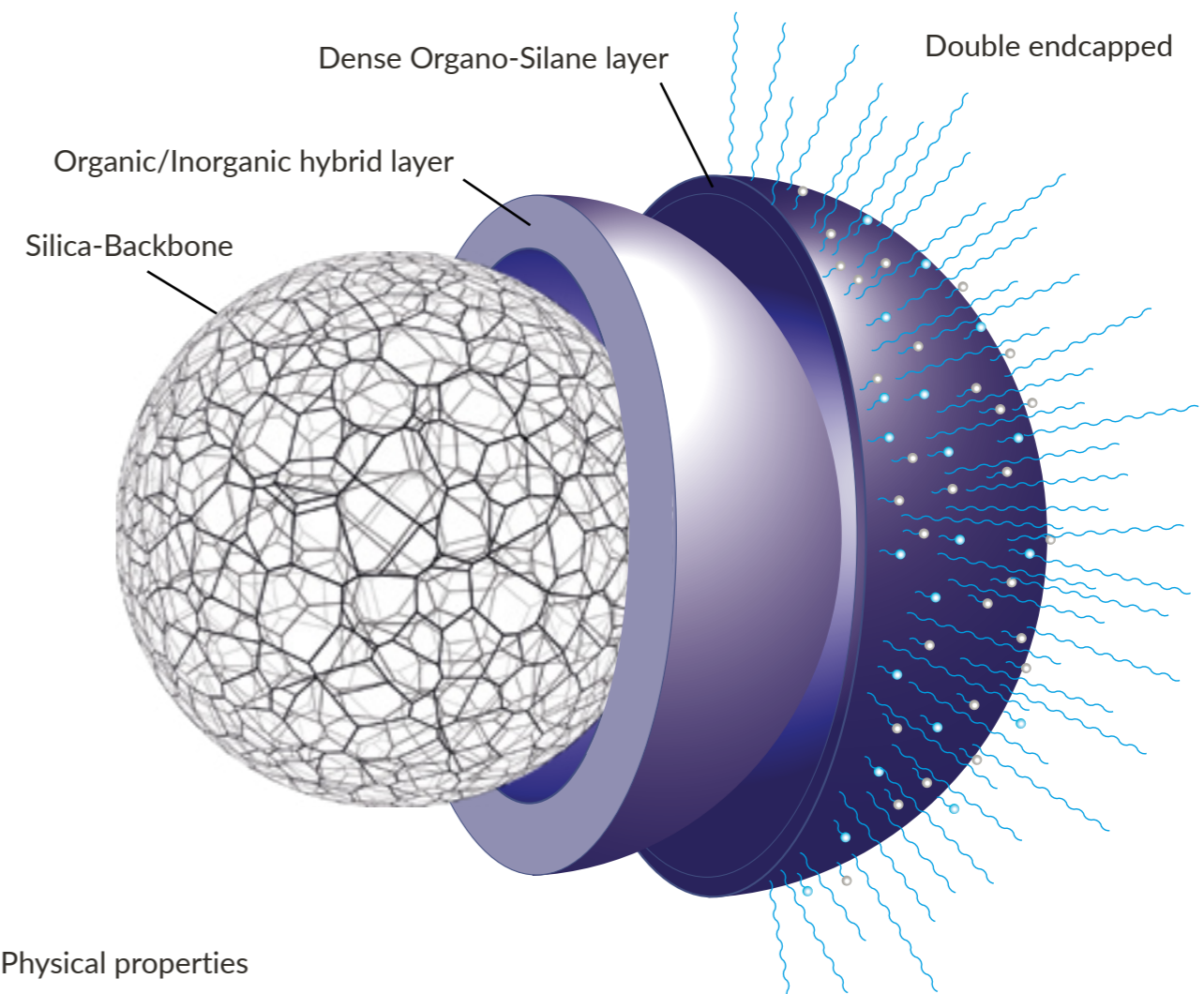
- Severe peak distortion
- loss of efficiency

## Low pH:

Hydrolysis of bonded phase and endcapping

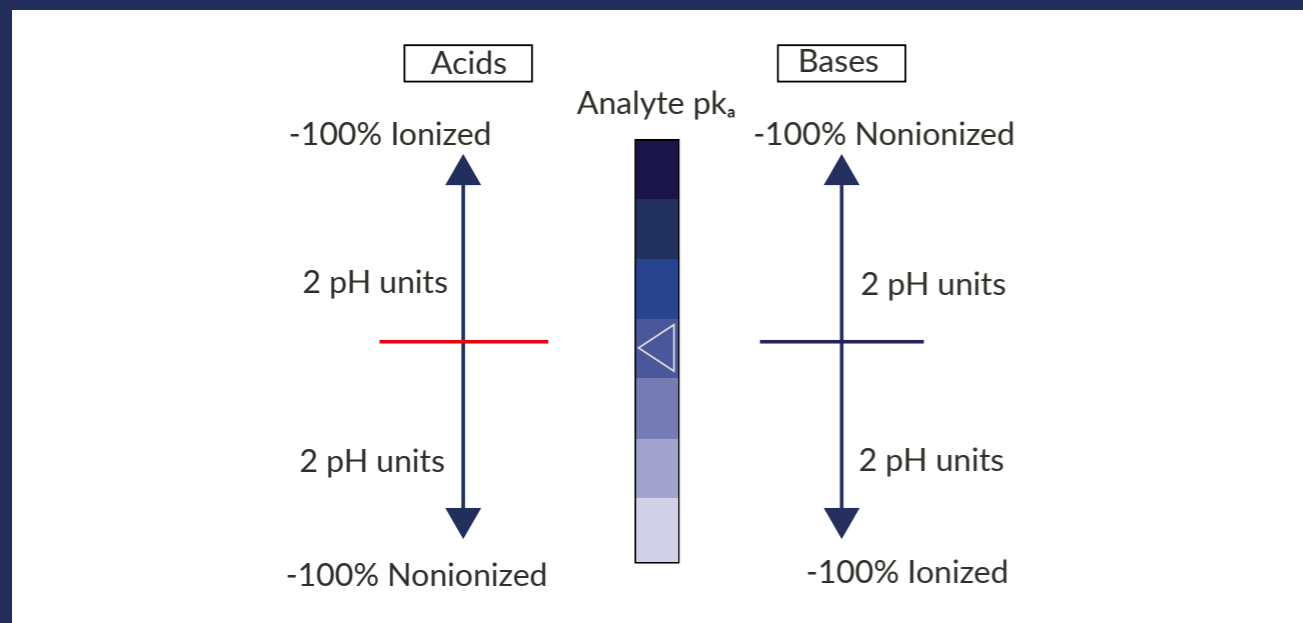
- Loss of retention time
- Peak tailing for basic compounds

## INCREASING pH STABILITY NEW HYBRID DOUBLE SHIELDED SILICA



### Physical properties

- Pore size: 100 Å
- Particle size: 1.9 μm, 3 μm, 5 μm, 7 μm, 10 μm
- Surface area: 470 m<sup>2</sup>/g
- Modification: C18
- Carbon content: 22%
- Endcapping: yes



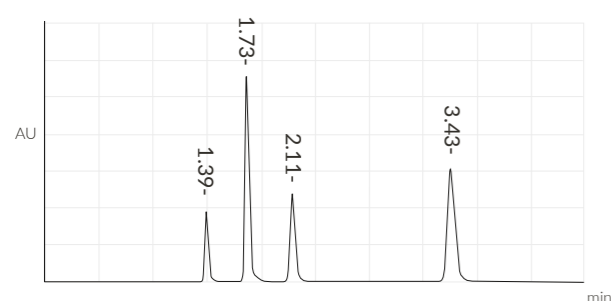
# LONG TERM pH STABILITY

Purging conditions:  
NaOH(aq) pH 12

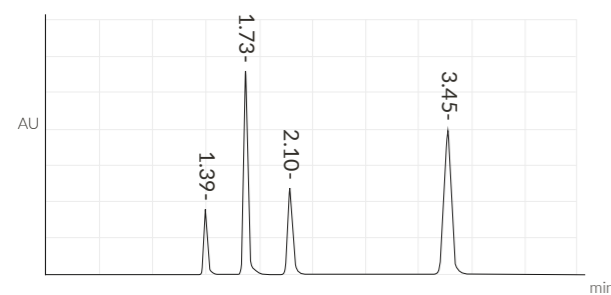
Test conditions:

Mobile phase: MeOH/H<sub>2</sub>O 85/15  
Flow rate: 1 ml/min  
Detector: UV @ 254 nm

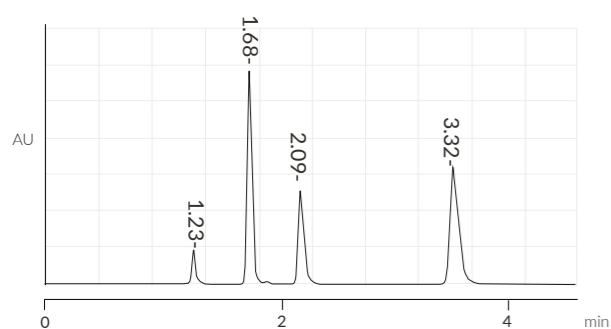
Name:	Conc. mg / mL
1 Uracil	0.015
2 Phenol	0.700
3 N,N-Diethyl-M-Toluamide	0.600
4 Toluene	4.000



0 hours



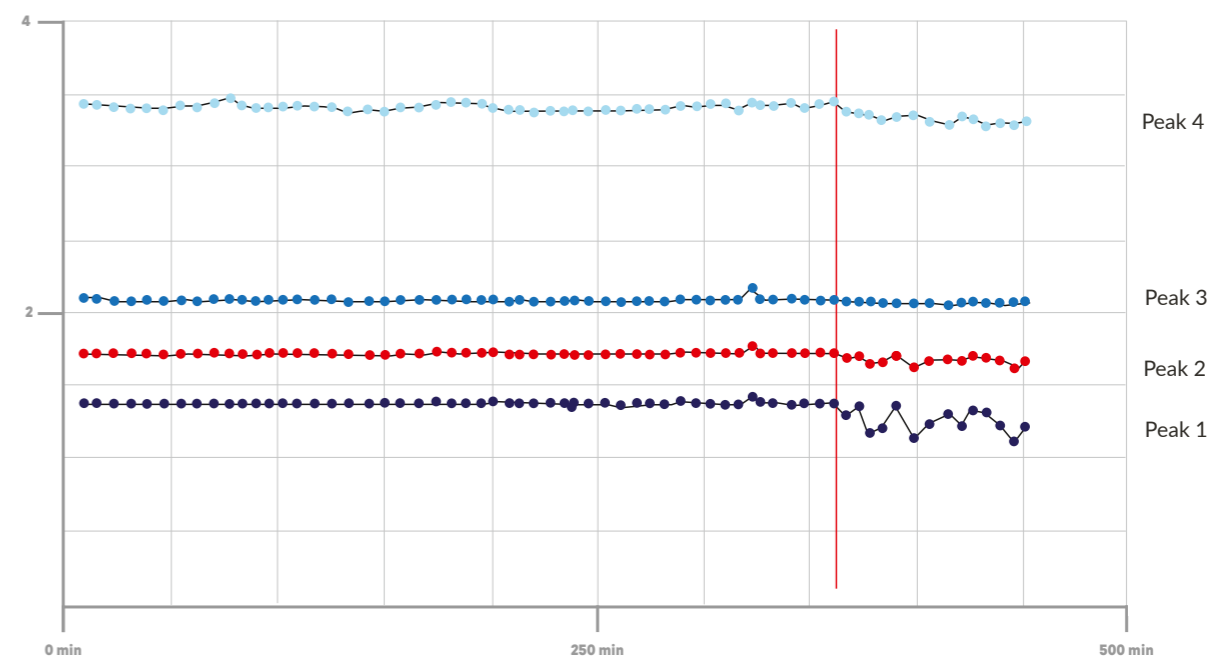
210 hours



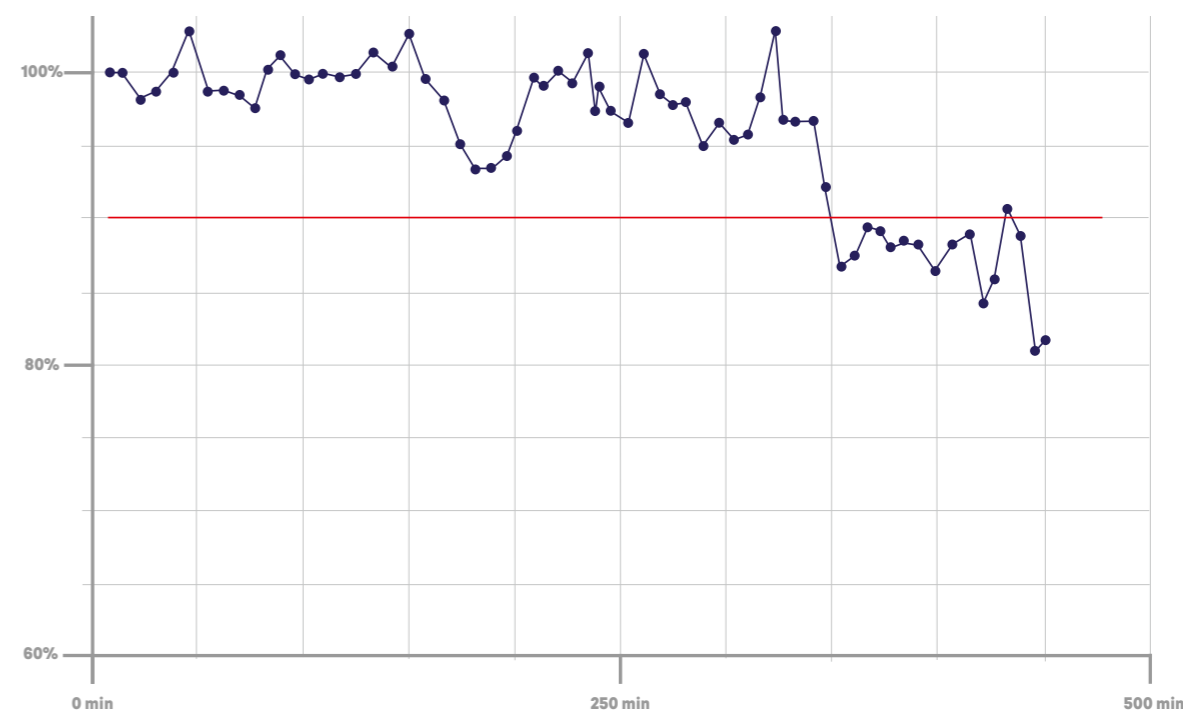
400 hours

# LONG TERM pH STABILITY

## Peak retention vs. purging time with NaOH(aq) pH 12



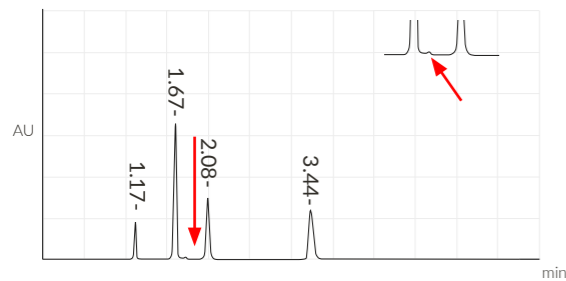
## Th. plates (Peak 4) % vs. purging time



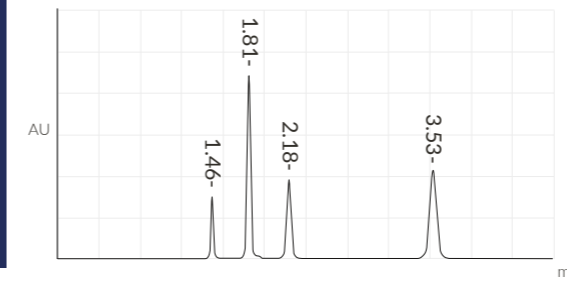
Resolution of „impurity“ on ReproSil pHoenix

Mobile phase: MeOH/NH<sub>3</sub>-resolution (pH 12) 85/15  
 Flow rate: 1 ml/min  
 Detector: UV @ 254 nm

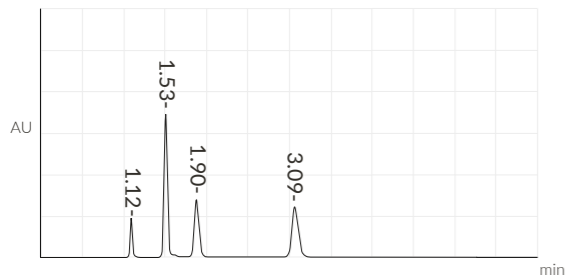
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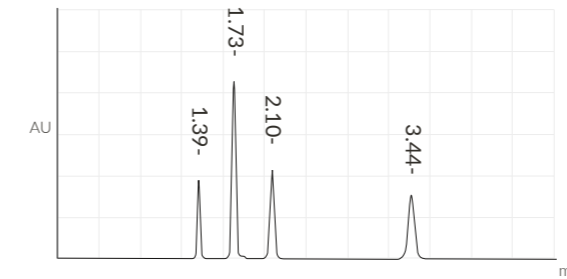
ReproSil pHoenix



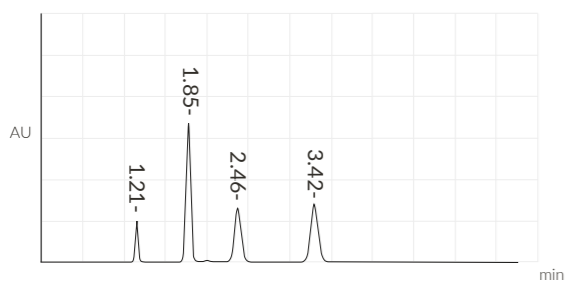
ReproSil pHoenix, pH 7



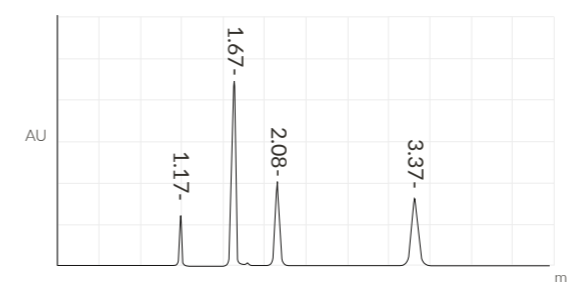
Kromasil Eternity



ReproSil pHoenix, pH 3



YMC Triart

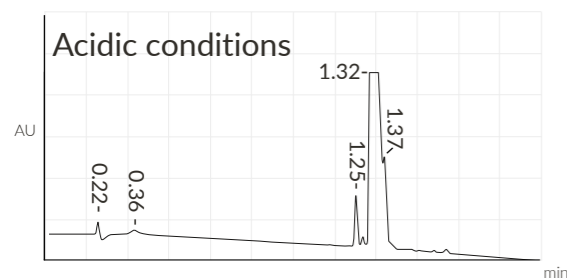


ReproSil pHoenix, pH 12

# SELECTIVITY AND PEAK SHAPE UNDER BASIC AND ACIDIC ELUENT CONDITIONS

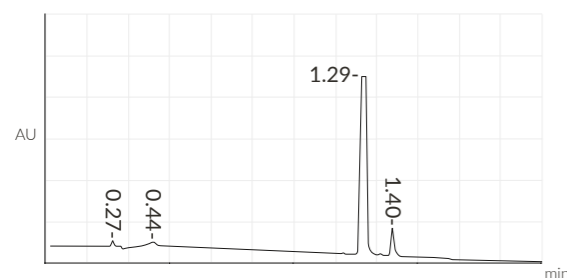
Observe superior selectivity / resolution of ReproSil pHoenix vs. Waters Acquity

Data courtesy of Nuvisan ICB GmbH



**Waters Acquity**

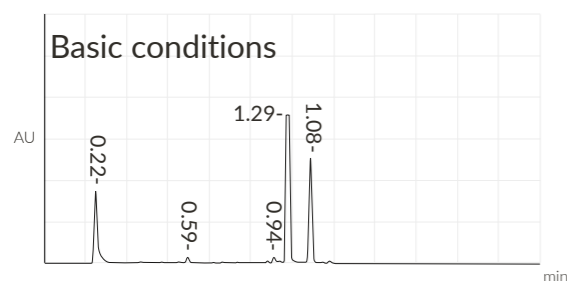
Column: Acquity UPLC BEH C18 1.7  $\mu$ m, 50x2.1mm;  
eluent A: water + 0.1 vol% formic acid;  
eluent B: acetonitrile;  
gradient: 0-1.6 min 1-99 % B, 1.6-2.0 min 99 % B



**ReproSil pHoenix**

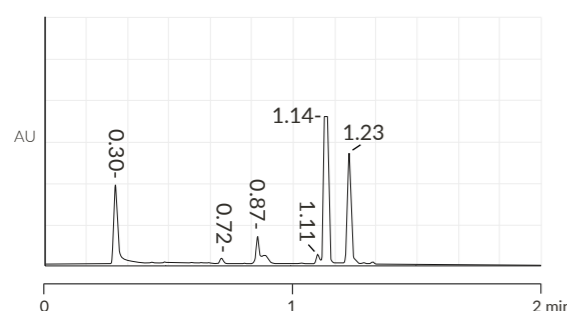
Column: ReproSil pHoenix C18 3  $\mu$ m, 75 x 2.1 mm;  
eluent A: water + 0.1 vol% formic acid;  
eluent B: acetonitrile;  
gradient: 0-1.6 min 1-99 % B, 1.4-2.0 min 99 % B

Observe superior peak shape of ReproSil pHoenix vs. Waters Acquity



**Waters Acquity**

Column: Acquity UPLC BEH C18 1.7  $\mu$ m, 50x2.1mm;  
eluent A: water + 0.2 vol% aqueous ammonia (32%);  
eluent B: acetonitrile;  
gradient: 0-1.6 min 1-99 % B, 1.6-2.0 min 99 % B

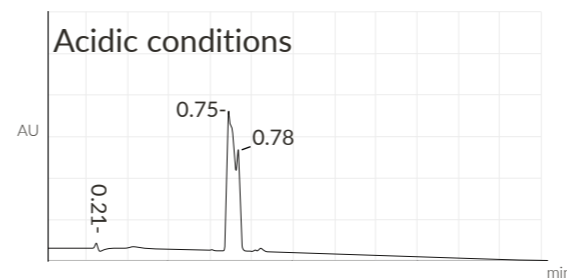


**ReproSil pHoenix**

Column: ReproSil pHoenix C18 3  $\mu$ m, 75 x 2.1 mm;  
eluent A: water + 0.2 vol% aqueous ammonia (32%);  
eluent B: acetonitrile;  
gradient: 0-1.4 min 1-99 % B, 1.4-2.0 min 99 % B

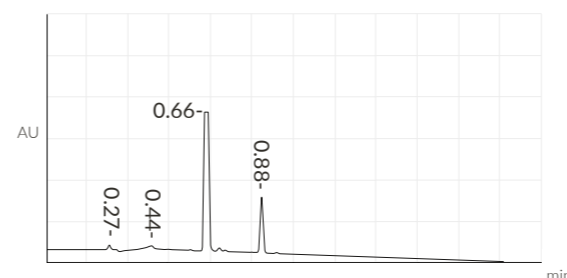
# SELECTIVITY AND PEAK SHAPE UNDER BASIC AND ACIDIC ELUENT CONDITIONS

Observe superior selectivity / resolution and peak shape of ReproSil pHoenix vs. Waters Acquity



**Waters Acquity**

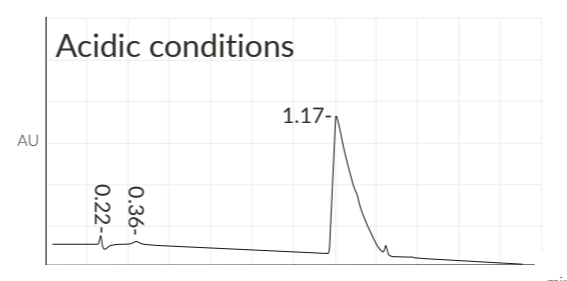
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**ReproSil pHoenix**

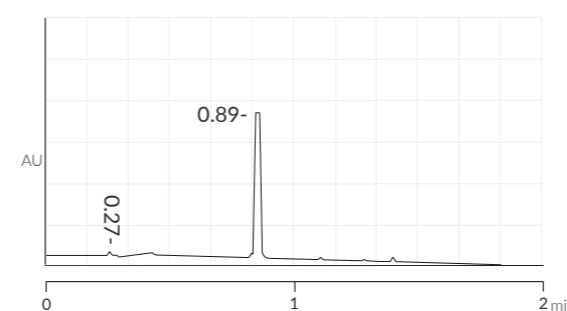
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**ReproSil pHoenix**

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eluent B: acetonitrile;  
gradient: 0-1.6 min 1-99 % B, 1.4-2.0 min 99 % B

# Dr. Maisch

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