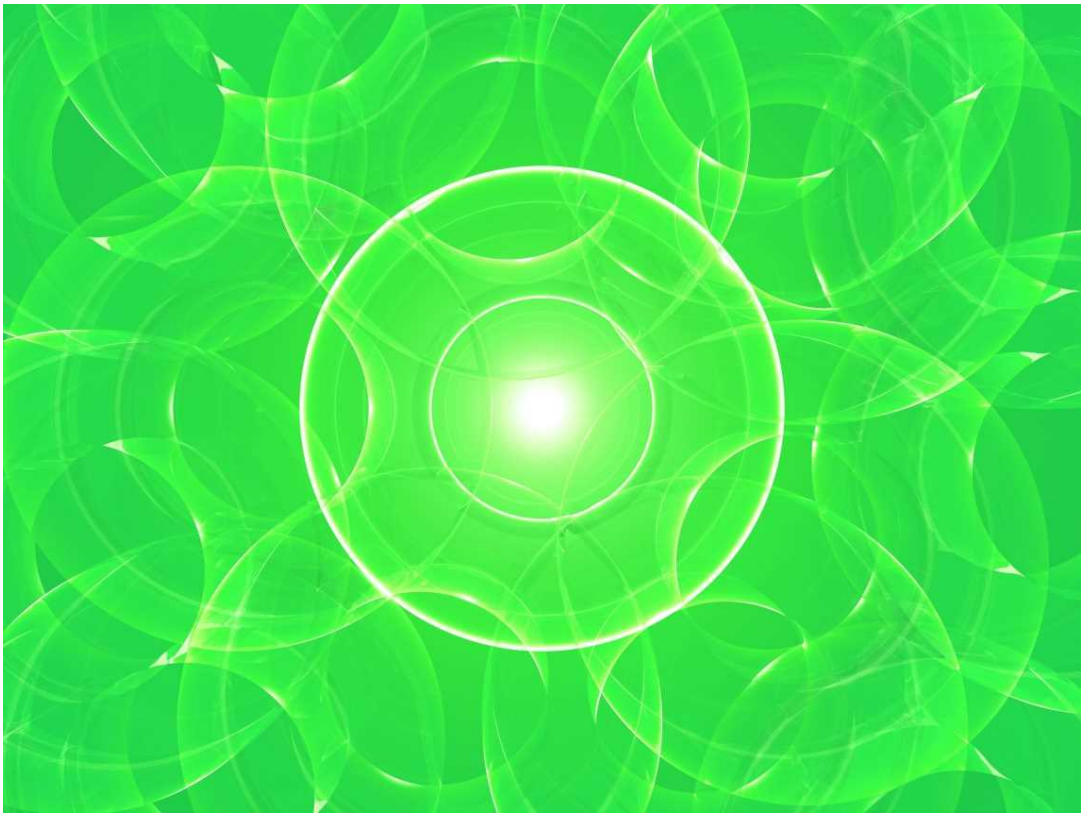
Innovations United

ChromaNik Technologies Inc.

C18-16, C18-30, C8-30, C4-30

HPLC column for peptides and proteins

SunShell



Core Shell Particle

America Sales:
www.innovationsunited.com

ChromaNik Technologies Inc.

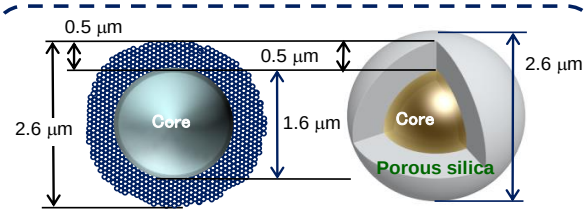
ChromaNik Technologies Inc.

The next generation to Core Shell particle

Superficially porous silica

Features of SunShell 2.6 µm and 5 µm

*1.6 µm and 3.4 µm of core and 0.5 µm and 0.6 µm of superficially porous silica layer
*Same efficiency and high throughput as a Sub 2 µm and 3 µm particle
*Same pressure as a 3 µm and 5 µm particle
*Same chemistry as Sunniest technology (reference figure 1)
*Good peak shape for all compounds such as basic, acidic and chelating compounds
*High stability (pH range for SunShell C18, 1.5 to 10)

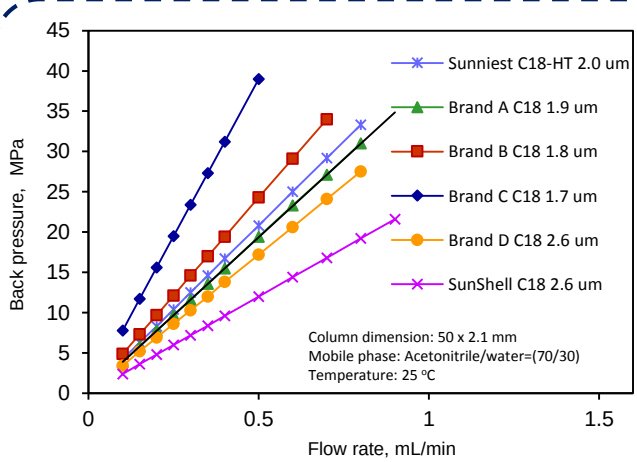


Schematic diagram of a core shell silica particle, 2.6 µm

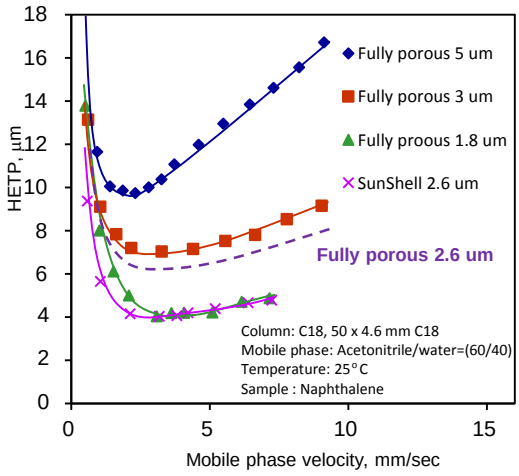
Van Deemter Equation

$$H = Ad_p + B\frac{D_m}{u} + C\frac{d_p^2}{D_m}u$$

A term : Eddy diffusion(dp is particle diameter)
B term : Longitudinal diffusion
(Dm is diffusion coefficient)
C term : Mass transfer



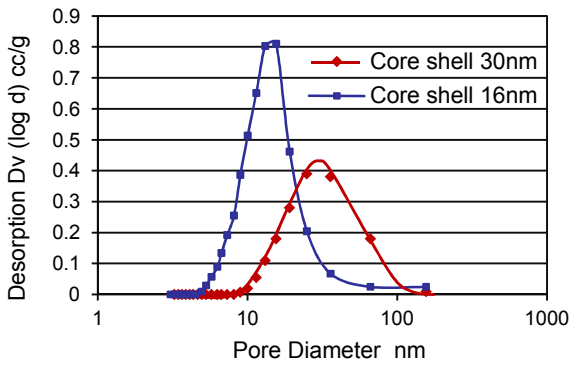
Comparison of back pressure for high throughput columns



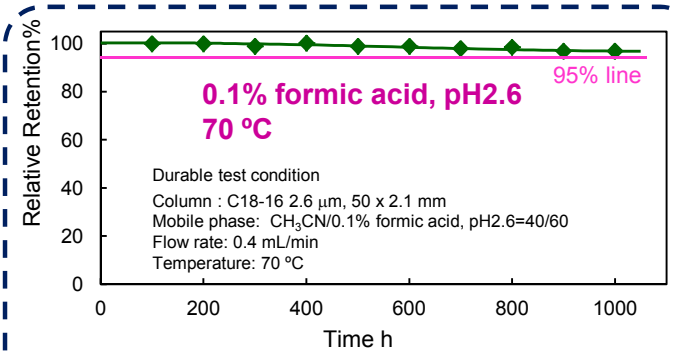
Comparison of plate height plots

SunShell C18 shows same efficiency as a sub 2 µm C18. In comparison between fully porous 2.6 µm and core shell 2.6 µm (SunShell), SunShell shows lower values for A term, B term and C term of Van Deemter equation. The core shell structure leads higher performance to compare with the fully porous structure.

Furthermore back pressure of SunShell C18 is less than a half to compare with sub-2 µm C18s.



Pore size distribution of the core-shell filler

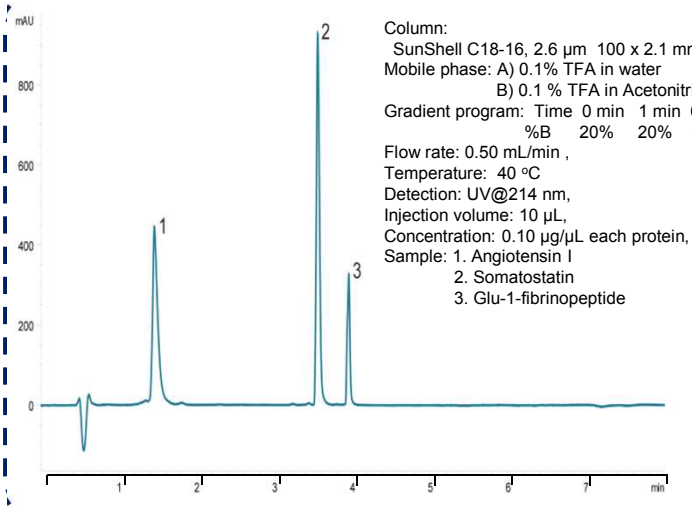


Acid resistance test of SunShell C18-16
Condition setting of 70 ℃ of 0.1% formic acid mobile phase, which is frequently used in LC/MS Durability of 100 hours or more was shown

	CoreShell Silica			Bonded Phases				
	Particle Size (um)	Pore Size (nm)	Surface Area (m2/g)	Carbon Content (%)	Bonded Phases	Bond Density (umol/m2)	Bonded Phases	PH Range
SunShell C18-16	2.6	16	90	2.5	C18	1.2	Sunniest endscapping	2 - 9
SunShell C18-30	2.6	30	40	1.3	C18	1.2	Sunniest endscapping	2 - 9
SunShell C8-30	2.6	30	40	1.2	C8	2.5	Sunniest endscapping	1.5 - 9
SunShell C4-30	2.6	30	40	0.9	C4	3	Sunniest endscapping	2 - 9

Peptide and Protein Application Data

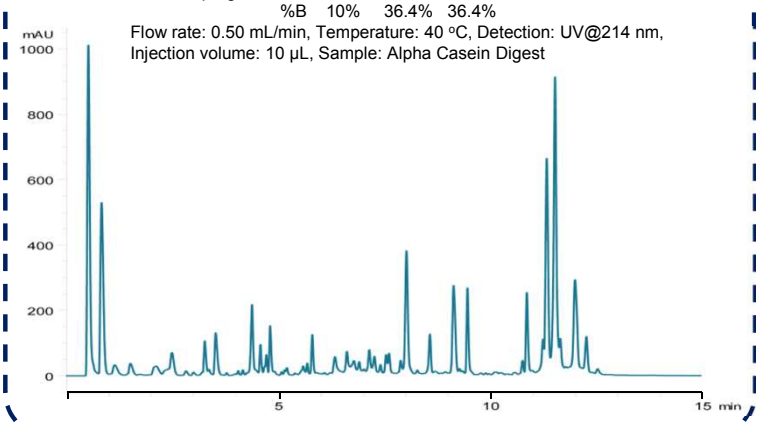
Separation of Standard Peptides



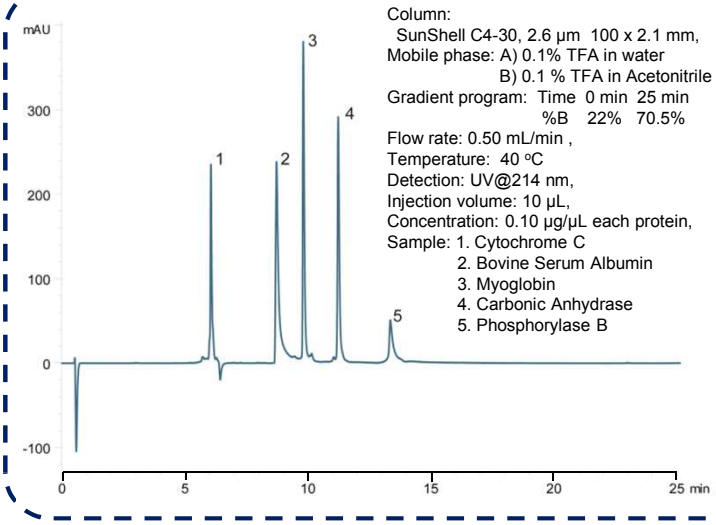
Column:
SunShell C18-16, 2.6 µm 100 x 2.1 mm,
Mobile phase: A) 0.1% TFA in water
B) 0.1 % TFA in Acetonitrile
Gradient program: Time 0 min 1 min 6 min
%B 20% 20% 95%
Flow rate: 0.50 mL/min ,
Temperature: 40 °C
Detection: UV@214 nm,
Injection volume: 10 µL,
Concentration: 0.10 µg/µL each protein,
Sample: 1. Angiotensin I
2. Somatostatin
3. Glu-1-fibrinopeptide

Separation of Alpha Casein Digest

Column: SunShell C18-16, 2.6 µm 100 x 2.1 mm,
Mobile phase: A) 0.1% TFA in water
B) 0.1 % TFA in Acetonitrile
Gradient program: Time 0 min 10 min 14 min
%B 10% 36.4% 36.4%
Flow rate: 0.50 mL/min, Temperature: 40 °C, Detection: UV@214 nm,
Injection volume: 10 µL, Sample: Alpha Casein Digest



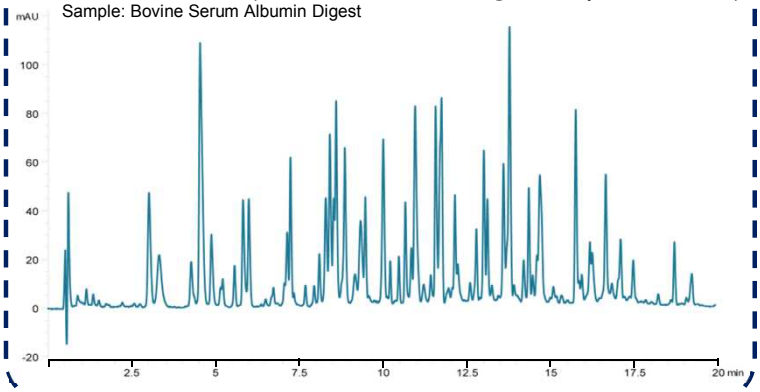
Separation of Standard Proteins



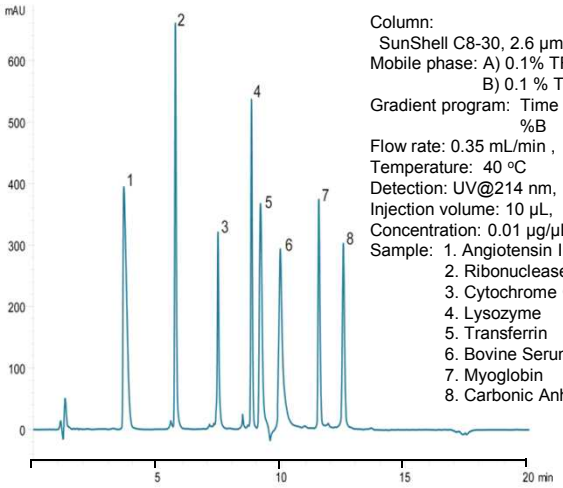
Column:
SunShell C4-30, 2.6 µm 100 x 2.1 mm,
Mobile phase: A) 0.1% TFA in water
B) 0.1 % TFA in Acetonitrile
Gradient program: Time 0 min 25 min
%B 22% 70.5%
Flow rate: 0.50 mL/min ,
Temperature: 40 °C
Detection: UV@214 nm,
Injection volume: 10 µL,
Concentration: 0.10 µg/µL each protein,
Sample: 1. Cytochrome C
2. Bovine Serum Albumin
3. Myoglobin
4. Carbonic Anhydrase
5. Phosphorylase B

Separation of Bovine Serum

Column: SunShell C18-16, 2.6 µm 100 x 2.1 mm,
Mobile phase: A) 0.1% TFA in water
B) 0.1 % TFA in Acetonitrile
Gradient program: Time 0 min 1 min 21 min
%B 10% 10% 40%
Flow rate: 0.50 mL/min, Temperature: 40 °C Detection: UV@214 nm, Injection volume: 10 µL
Sample: Bovine Serum Albumin Digest

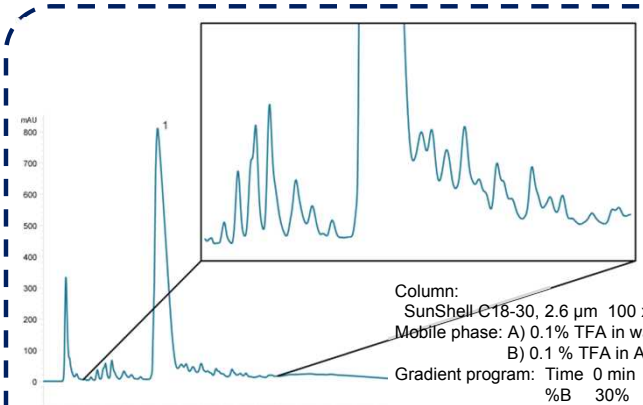


Separation of Standard Proteins



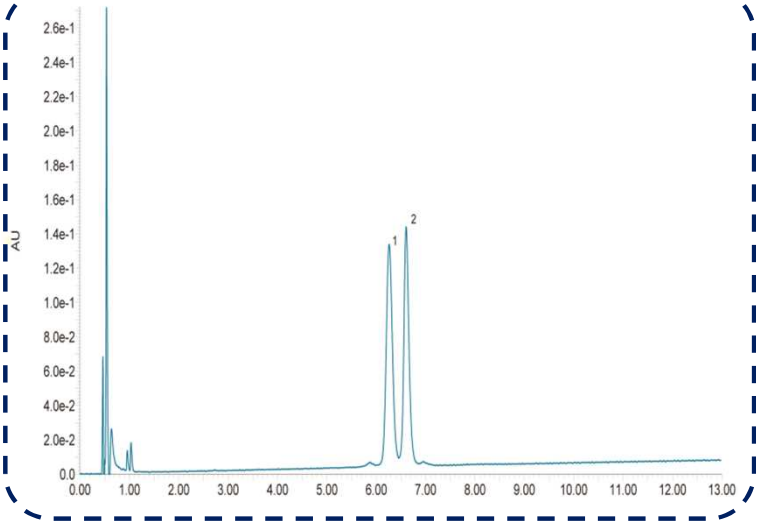
Column:
SunShell C8-30, 2.6 µm 150 x 2.1 mm,
Mobile phase: A) 0.1% TFA in water
B) 0.1 % TFA in Acetonitrile
Gradient program: Time 0 min 20 min
%B 22% 70.5%
Flow rate: 0.35 mL/min ,
Temperature: 40 °C
Detection: UV@214 nm,
Injection volume: 10 µL,
Concentration: 0.01 µg/µL each protein,
Sample: 1. Angiotensin I
2. Ribonuclease A
3. Cytochrome C
4. Lysozyme
5. Transferrin
6. Bovine Serum Albumin
7. Myoglobin
8. Carbonic Anhydrase

Separation of Oxidized Insulin

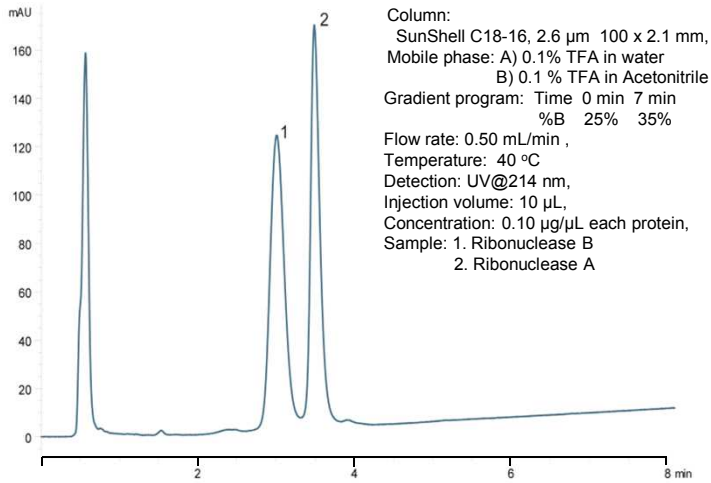


Column:
SunShell C18-30, 2.6 µm 100 x 2.1 mm,
Mobile phase: A) 0.1% TFA in water
B) 0.1 % TFA in Acetonitrile
Gradient program: Time 0 min 10 min
%B 30% 40%
Flow rate: 0.50 mL/min ,
Temperature: 40 °C
Detection: UV@214 nm,
Injection volume: 10 µL,
Concentration: 0.10 µg/µL each protein,
Sample: Oxidized insulin

Separation of Ribonuclease A / B

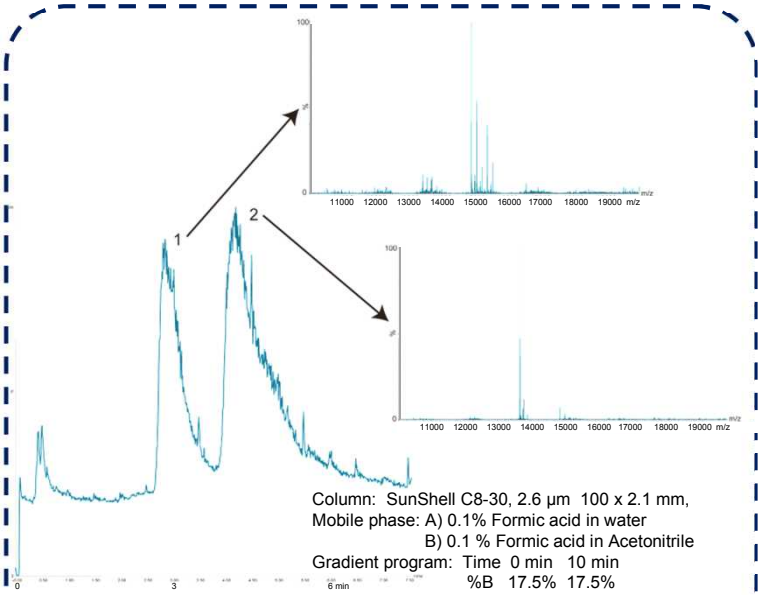


Separation of Ribonuclease A / B



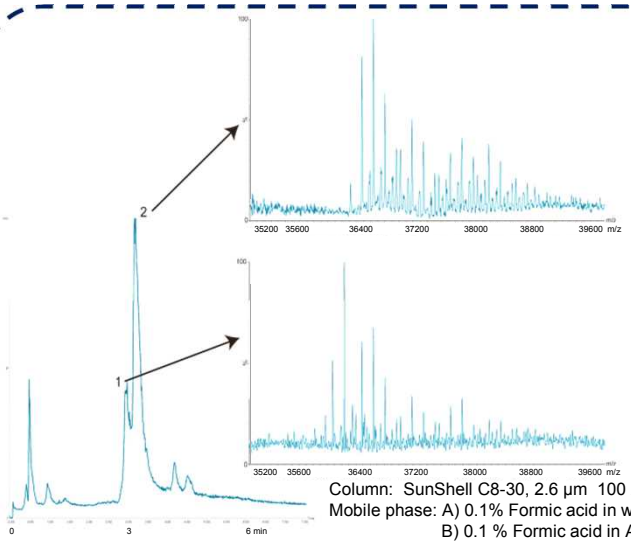
Column:
SunShell C18-16, 2.6 µm 100 x 2.1 mm,
Mobile phase: A) 0.1% TFA in water
B) 0.1 % TFA in Acetonitrile
Gradient program: Time 0 min 7 min
%B 25% 35%
Flow rate: 0.50 mL/min ,
Temperature: 40 °C
Detection: UV@214 nm,
Injection volume: 10 µL,
Concentration: 0.10 µg/µL each protein,
Sample: 1. Ribonuclease B
2. Ribonuclease A

Separation of Ribonuclease A / B



Column: SunShell C8-30, 2.6 µm 100 x 2.1 mm,
Mobile phase: A) 0.1% Formic acid in water
B) 0.1 % Formic acid in Acetonitrile
Gradient program: Time 0 min 10 min
%B 17.5% 17.5%
Isocratic separation
Flow rate: 0.50 mL/min, Temperature: 60 °C
Detection: MS, Injection volume: 10 µL,
Concentration: 0.10 µg/µL each protein,
Sample: 1. Ribonuclease B, 2. Ribonuclease A

Separation of Lipase



Column: SunShell C8-30, 2.6 µm 100 x 2.1 mm,
Mobile phase: A) 0.1% Formic acid in water
B) 0.1 % Formic acid in Acetonitrile
Gradient program: Time 0 min 10 min
%B 15% 60%
Flow rate: 0.50 mL/min, Temperature: 60 °C
Detection: MS, Injection volume: 10 µL,
Concentration: 0.10 µg/µL each protein,
Sample: 1. Lipase Impurity, 2. Lipase

SunShell

	内(mm)	2.1		3.0		4.6		
	長さ(mm)	型 番		型 番		型 番		
SunShell C18-16	50	A16941		A16341		A16441		
	100	A16961		A16361		A16461		
	150	A16971		A16371		A16471		
SunShell C18-30	50	A46941		A46341		A46441		
	100	A46961		A46361		A46461		
	150	A46971		A46371		A46471		
SunShell C8-30	50	A36941		A36341		A36441		
	100	A36961		A36361		A36461		
	150	A36971		A36371		A36471		
SunShell C4-30	50	A26941		A26341		A26441		
	100	A26961		A26361		A26461		
	150	A26971		A26371		A26471		

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