

*“ You have very intelligent chromatographers on hand to answer method development questions. ”*

**Timothy E. Mason**  
**AkzoNobel**

The opinions stated herein are solely those of the speaker and not necessarily those of any company or organization.

363- 372

### SFC Media

Chiral: Lux™ SFC Media .....	364
Achiral: Kinetex™, Luna™, and Synergi™ SFC Media .....	370
Preparative SFC Media .....	369

## Supercritical Fluid Chromatography (SFC)

SFC is recognized by scientists worldwide as a clean, green, and efficient tool for analysis and purification. With recent advancements and accessibility of instrumentation, improved column hardware, and the wide variety of surface chemistries available, SFC has enjoyed an ever-increasing range of applications in many industries:

- Pharmaceutical
- Nutraceutical
- Petrochemical
- Natural Products
- Food & Beverage
- Environmental
- Academic
- and more...

### Complete SFC Product Offering

Phenomenex offers solutions for your SFC needs.

- Over 20 selectivities for use in SFC
- Chiral and achiral phases available
- Multiple particle sizes ranging from 1.7  $\mu\text{m}$  to 20  $\mu\text{m}$ \*
- Scalable packed column dimensions (2.0mm – 50.0mm ID)

### Chiral columns (pp. 365-369)

#### 5 Coated Lux Polysaccharide Chiral Stationary Phases

- Lux™ Amylose-1
- Lux Cellulose-1
- Lux Cellulose-2
- Lux Cellulose-3
- Lux Cellulose-4

#### 3 Immobilized Lux Phases

- Lux i-Amylose-1
- Lux i-Amylose-3
- Lux i-Cellulose-5

\*Not all media available in a full range of particle sizes, please inquire.



### Expanding the Range of Selectivity for SFC

Selecting a column is one of the most critical parameters during SFC method development. Having a variety of complementary and orthogonal selectivities to choose from can mean the difference between partial or no separation and achieving an optimal fully resolved separation that can be validated and scaled-up in your lab or contract lab.

Phenomenex offers a large collection of packed SFC analytical and preparative columns that have earned their reputations for performance, reliability, high efficiency, reproducibility, and long lifetimes.

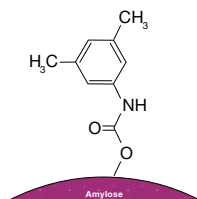
### Achiral columns (pp. 370-372)

- Kinetex™ Phenyl-Hexyl
- Kinetex F5
- Kinetex Biphenyl
- Kinetex HILIC
- Luna HILIC
- Luna PFP(2)
- Luna™ NH<sub>2</sub>
- Luna Si
- Luna CN
- Synergi™ Polar-RP



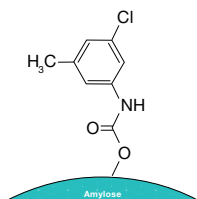
## Chiral SFC Media

### Three Robust Immobilized Chiral Columns



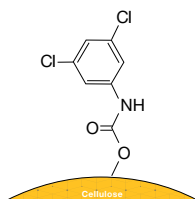
**Lux™ i-Amylose-1**

Amylose tris  
(3,5-dimethylphenylcarbamate)



**Lux i-Amylose-3**

Amylose tris  
(3-chloro-5-methylphenylcarbamate)



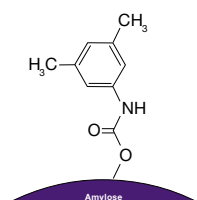
**Lux i-Cellulose-5**

Cellulose tris  
(3,5-dichlorophenylcarbamate)



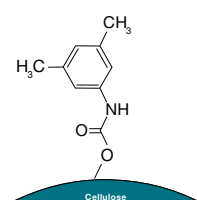
See pp. 301-310 for additional information on Immobilized and Coated Lux Polysaccharide Chiral Phases

### Combined with Six Coated Lux Polysaccharide LC/SFC Chiral Stationary Phases



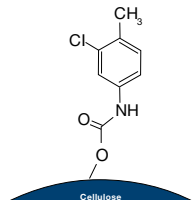
**Lux Amylose-1**

Amylose tris  
(3,5-dimethylphenylcarbamate)



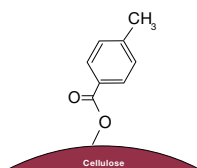
**Lux Cellulose-1**

Cellulose tris  
(3,5-dimethylphenylcarbamate)



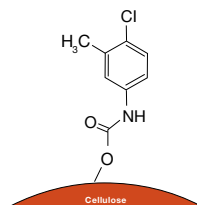
**Lux Cellulose-2**

Cellulose tris  
(3-chloro-4-methylphenylcarbamate)



**Lux Cellulose-3**

Cellulose tris  
(4-methylbenzoate)



**Lux Cellulose-4**

Cellulose tris  
(4-chloro-3-methylphenylcarbamate)

### Easily upgrade from your existing chiral columns to Lux LC/SFC columns!

If you are using one of the DAICEL® columns below:	Guaranteed alternative:	Phase description:
CHIRALPAK® IA® and IA-3	<b>Lux i-Amylose-1</b>	Amylose tris(3,5-dimethylphenylcarbamate)
CHIRALPAK IG® and IG-3	<b>Lux i-Amylose-3</b>	Amylose tris(3-chloro-5-methylphenylcarbamate)
CHIRALPAK IC® and IC-3	<b>Lux i-Cellulose-5</b>	Cellulose tris(3,5-dichlorophenylcarbamate)
CHIRALPAK AD®, AD-H®, AD-3, AD-RH®, and AD-3R	<b>Lux Amylose-1</b>	Amylose tris(3,5-dimethylphenylcarbamate)
CHIRALCEL® OD®, OD-H®, OD-3, OD-RH®, and OD-3R	<b>Lux Cellulose-1</b>	Cellulose tris(3,5-dimethylphenylcarbamate)
CHIRALCEL OZ®, OZ-H®, OZ-3, OZ-RH®, and OZ-3R	<b>Lux Cellulose-2</b>	Cellulose tris(3-chloro-4-methylphenylcarbamate)
CHIRALCEL OJ®, OJ-H®, OJ-3, OJ-RH®, and OJ-3R	<b>Lux Cellulose-3</b>	Cellulose tris(4-methylbenzoate)
CHIRALCEL OX-H, OX-3, OX-RH, and OX-3R	<b>Lux Cellulose-4</b>	Cellulose tris(4-chloro-3-methylphenylcarbamate)

## Chiral SFC Media (cont'd)

Exceptional Stability and Separating Power under SFC Conditions

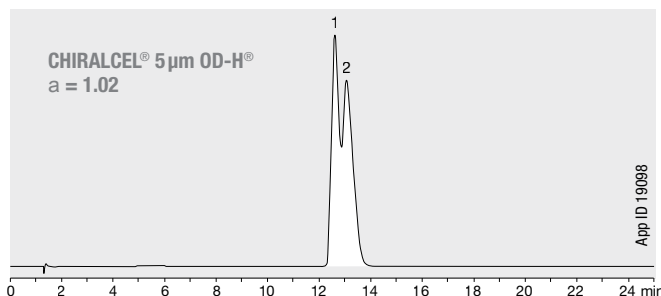
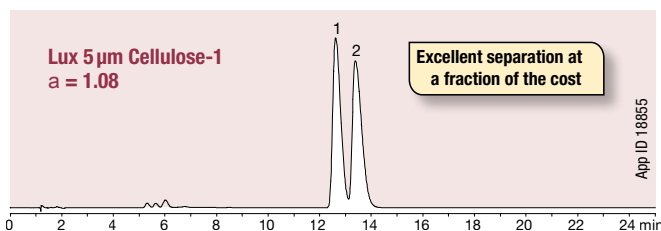
- Multiple complementary polysaccharide stationary phases
- High efficiency and loading capacity
- Pressure stability up to 300 bar
- 3  $\mu\text{m}$ , 5  $\mu\text{m}$  packed columns and 10 and 20  $\mu\text{m}$  bulk media for scale-up

## Extreme Stability and Separating Power under SFC Conditions.

Never fear crushed media or loss in efficiency again. With a pressure stability up to 300 bar (4350 psi), you can feel confident about running at high operating pressures (if necessary). Lux™ media is

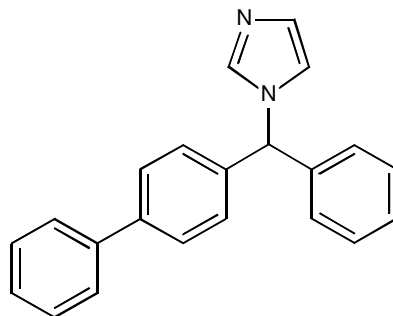
SFC approved and versatile enough to satisfy all of your chiral separation needs.

### Bifonazole



Conditions for both columns:

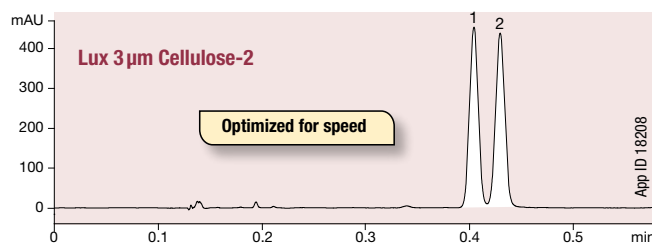
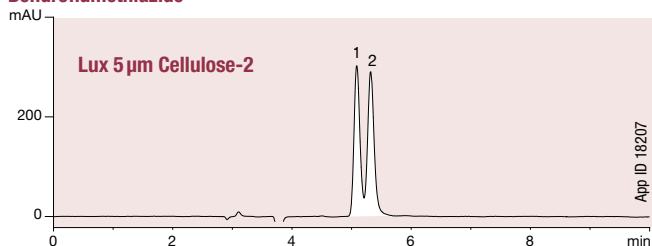
- Dimensions:** 250 x 4.6 mm
- Mobile Phase:** 0.1 % Diethylamine in Methanol / Carbon Dioxide (15:85)
- Flow Rate:** 2.5 mL/min
- Temperature:** 35 °C
- Detection:** Diode Array Detector



## Smaller Particles for Higher Efficiency

Scaling down to a 3  $\mu\text{m}$  particle gives you exceptional efficiencies and significantly reduced runtimes without compromising enantioselectivity.

### Bendroflumethiazide



- Column:** Lux 5  $\mu\text{m}$  Cellulose-2
- Dimensions:** 250 x 4.6 mm
- Part No.:** [00G-4457-E0](#)
- Mobile Phase:** 0.1 % Diethylamine with 0.1 % Trifluoroacetic acid in Methanol / Carbon Dioxide (30:70)
- Flow Rate:** 2 mL/min
- Detection:** UV @ 273 nm
- Temperature:** Ambient

- Column:** Lux 3  $\mu\text{m}$  Cellulose-2
- Dimensions:** 50 x 4.6 mm
- Part No.:** [00B-4456-E0](#)
- Mobile Phase:** 0.1 % Diethylamine with 0.1 % Trifluoroacetic acid in Methanol / Carbon Dioxide (30:70)
- Flow Rate:** 4 mL/min
- Detection:** UV @ 273 nm
- Temperature:** Ambient

Comparative separations may not be representative of all applications. Columns used for comparison were manufactured by DAICEL Corporation.

## Chiral SFC Media (cont'd)

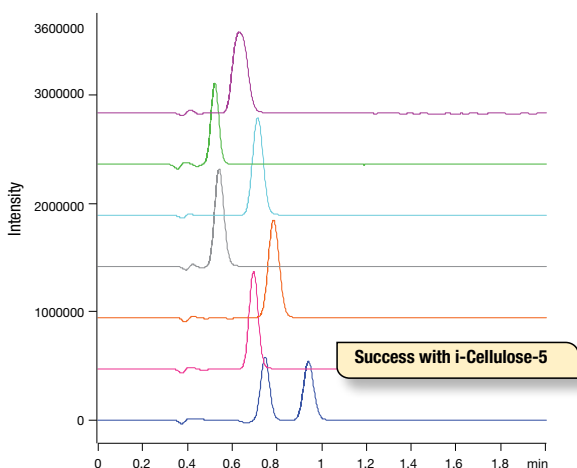
Eight distinct yet complementary Lux™ CSPs allow for excellent success rate over reversed phase, polar organic, normal phase, and SFC conditions, with the i-Amylose-3, i-Cellulose-5, and i-Amylose-1, adding strong solvent capability to this versatile family of products.

For SFC, having this breadth of selectivities is incredibly useful for

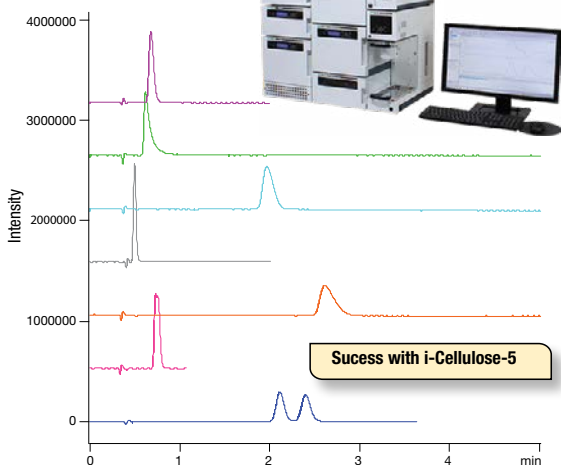
### A variety of compounds were separated including:

- Beta-Blockers
- Anti-Anxiety
- Pain Relievers
- Anti-Allergenic agents
- Anti-Arrhythmia
- Anti-Asthmatic
- Anti-Coagulants
- Anti-Depressive
- Anti-Inflammatory
- Calcium Channel Blockers

#### Nimopidine



#### Acebutolol

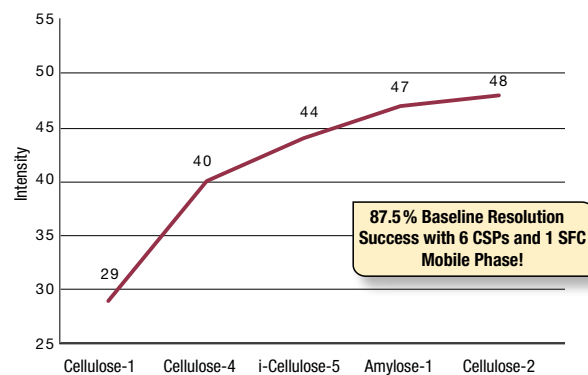


#### Nimopidine and Acebutolol

**Columns:** Lux 3 μm Amylose-1  
 Lux 3 μm Cellulose-4  
 Lux 3 μm Cellulose-3  
 Lux 3 μm Cellulose-2  
 Lux 3 μm Cellulose-1  
 Lux 3 μm i-Cellulose-5  
**Dimensions:** 150 x 3.0 mm

screening and discovery work. Below is a portion of a study where 56 racemic pharmaceutical compounds were run on a variety of Lux stationary phases under various mobile phase options to help develop useful screening protocols. Over the course of the study, it was determined that with one SFC mobile phase and the use of 6 different Lux CSPs, a lab could get 87.5% success (baseline resolution).

#### Cumulative baseline separation with Lux phases



#### SFC Screen

**Columns:** Lux 5 μm Cellulose-1  
 Lux 5 μm Cellulose-4  
 Lux 5 μm i-Cellulose-5  
 Lux 5 μm Amylose-1  
 Lux 5 μm Cellulose-2  
**Dimensions:** 250 x 4.6 mm

Conditions for all columns:

**Mobile Phase:** 80% CO<sub>2</sub> / 20% Methanol + 0.1% Isopropylamine and 0.1% TFA  
**Flow Rate:** 3 mL/min  
**Detection:** UV @ 220 nm  
**Temperature:** 30 °C  
**System:** JASCO® 4000 Series Analytical SFC



Lux columns are interchangeable between normal phase and SFC modes with a simple solvent switch. Request Technical Note, [TN-9004](#), for more details on chiral SFC screening strategies.

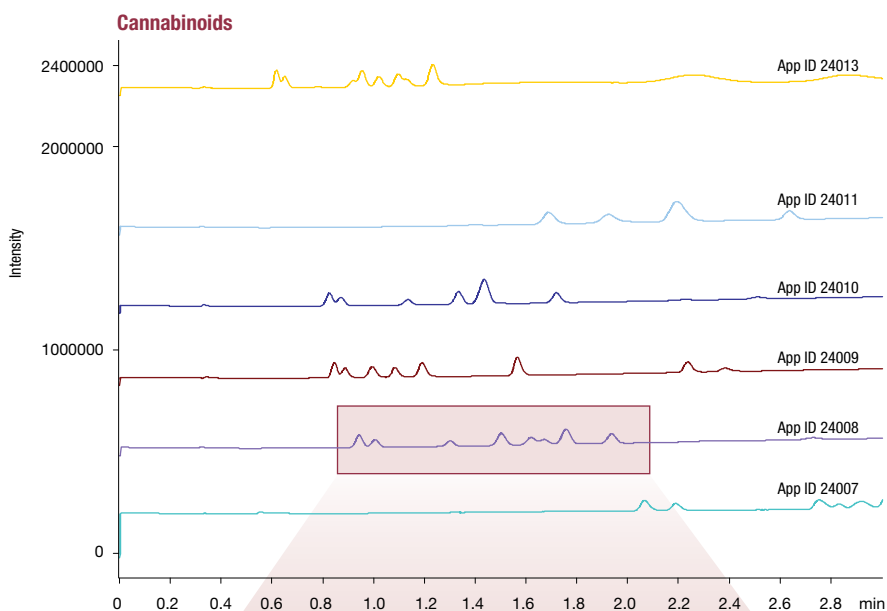


## Chiral SFC Media (cont'd)

### Achiral SFC Success with Chiral Columns!

While the incredible range of interaction mechanisms (polar, electrostatic, hydrophobic, van der Waals, and others) present in each Lux™ material are fundamental for ensuring baseline separation of chiral compounds, these same interaction mechanisms can also be used as an excellent screening tool for achiral work. Here we

present an achiral screening of natural cannabinoids using 7 Lux selectivities under one SFC mobile phase. The initial resolution and separation provided by the Lux Cellulose-2 was then further optimized to provide even greater resolution.



Conditions for all columns:

**Columns:** Lux 3 μm i-Cellulose-5  
Lux 3 μm Amylose-1  
Lux 3 μm Cellulose-4  
Lux 3 μm Cellulose-3  
Lux 3 μm Cellulose-2  
Lux 3 μm Cellulose-1

**Dimensions:** 150 x 3.0 mm

**Mobile Phase:** A: Carbon Dioxide  
B: Methanol

Gradient:	Time (min)	% B
	0	5
	2.5	25
	3	25

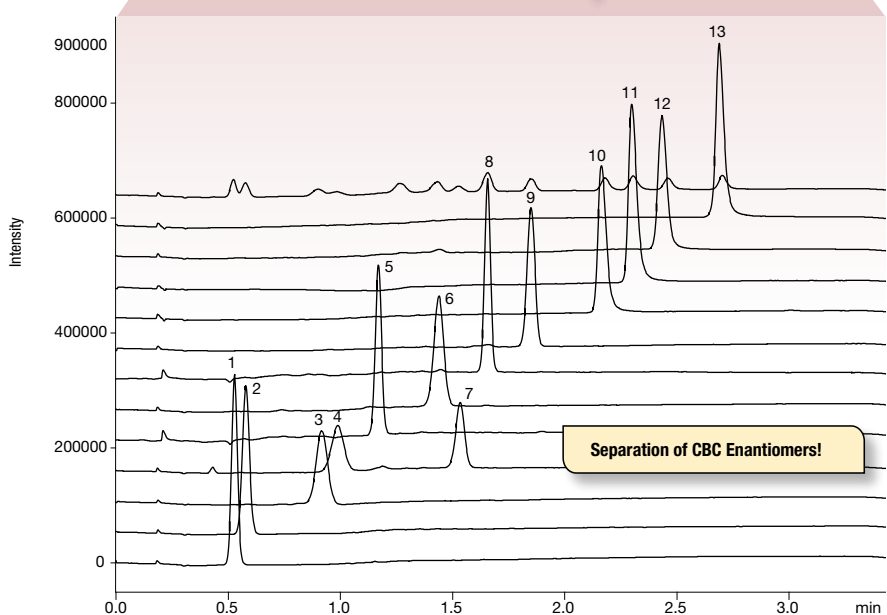
**Flow Rate:** 3 mL/min

**Detection:** UV @ 220 nm

**Temperature:** 40 °C

**Sample:** Cannabinoid mix of 8

Expanded and optimized method separates achiral and chiral species!



**Column:** Lux 3 μm Cellulose-2

**Dimensions:** 150 x 3.0 mm

**Part No.:** [00F-4456-Y0](#)

**Mobile Phase:** A: Carbon Dioxide  
B: Methanol

Gradient:	Time (min)	% B
	0	4
	3	25
	3.5	25

**Flow Rate:** 5 mL/min

**Detection:** UV @ 220 nm

**Temperature:** 40 °C

**Sample:** Cannabinoid mix of 12

- |                       |           |
|-----------------------|-----------|
| 1. CBDV               | 8. THCV   |
| 2. CBN                | 9. CBG    |
| 3. Delta-8-THC        | 10. CBDVA |
| 4. CBC (Enantiomer 1) | 11. CBDVA |
| 5. CBD                | 12. THCA  |
| 6. Delta-9-THC        | 13. CBGA  |
| 7. CBC (Enantiomer 2) |           |

Separation of CBC Enantiomers!

App ID 24342

## Chiral SFC Media (cont'd)

### Chiral Material Characteristics

Packing Material Porous	Particle Size (µm)	Pressure Stability (bar)	pH Stability
Lux™ Cellulose	3, 5, 10, 20	300	2.0 - 9.0
Lux Amylose	3, 5, 20*	300	2.0 - 9.0

\* Please inquire

### 3.0mm ID Lux Screening Columns

#### Ordering Information

3 µm MidBore™ Columns (mm)†		SecurityGuard™ Cartridges (mm)
Phases	150 x 3.0	4 x 2.0*
		/10pk
i-Cellulose-5	<a href="#">00F-4755-Y0</a>	<a href="#">AJ0-8631</a>
i-Amylose-3	<a href="#">00F-4778-Y0</a>	<a href="#">AJ0-8651</a>
Cellulose-1	<a href="#">00F-4458-Y0</a>	<a href="#">AJ0-8402</a>
Cellulose-2	<a href="#">00F-4456-Y0</a>	<a href="#">AJ0-8398</a>
Cellulose-3	<a href="#">00F-4492-Y0</a>	<a href="#">AJ0-8621</a>
Cellulose-4	<a href="#">00F-4490-Y0</a>	<a href="#">AJ0-8626</a>
Amylose-1	<a href="#">00F-4729-Y0</a>	<a href="#">AJ0-9337</a>
	for ID:	2.0–3.0mm

† Additional dimensions available upon request.

\* SecurityGuard Analytical Cartridges require holder, Part No.: [KJO-4282](#)



#### Ordering Information

Supercritical Fluid Chromatography (SFC) Columns (mm)				SecurityGuard Cartridges (mm)	
Phase	150 x 4.6	250 x 4.6	250 x 10	4 x 3.0*	10 x 10.0 ‡
<b>Chiral Columns†</b>					
Lux 5 µm i-Amylose-1	<a href="#">00F-4762-E0</a>	<a href="#">00G-4762-E0</a>	<a href="#">00G-4762-N0</a>	<a href="#">AJ0-8641</a>	<a href="#">AJ0-8642</a>
Lux 5 µm i-Amylose-3	<a href="#">00F-4779-E0</a>	<a href="#">00G-4779-E0</a>	<a href="#">00G-4779-N0</a>	<a href="#">AJ0-8650</a>	<a href="#">AJ0-8652</a>
Lux 5 µm i-Cellulose-5	<a href="#">00F-4756-E0</a>	<a href="#">00G-4756-E0</a>	<a href="#">00G-4756-N0</a>	<a href="#">AJ0-8632</a>	<a href="#">AJ0-8633</a>
Lux 5 µm Cellulose-1	<a href="#">00F-4459-E0</a>	<a href="#">00G-4459-E0</a>	<a href="#">00G-4459-N0</a>	<a href="#">AJ0-8403</a>	<a href="#">AJ0-8404</a>
Lux 5 µm Cellulose-2	<a href="#">00F-4457-E0</a>	<a href="#">00G-4457-E0</a>	<a href="#">00G-4457-N0</a>	<a href="#">AJ0-8366</a>	<a href="#">AJ0-8399</a>
Lux 5 µm Cellulose-3	<a href="#">00F-4493-E0</a>	<a href="#">00G-4493-E0</a>	<a href="#">00G-4493-N0</a>	<a href="#">AJ0-8622</a>	<a href="#">AJ0-8623</a>
Lux 5 µm Cellulose-4	<a href="#">00F-4491-E0</a>	<a href="#">00G-4491-E0</a>	<a href="#">00G-4491-N0</a>	<a href="#">AJ0-8627</a>	<a href="#">AJ0-8628</a>
Lux 5 µm Amylose-1	<a href="#">00F-4732-E0</a>	<a href="#">00G-4732-E0</a>	<a href="#">00G-4732-N0</a>	<a href="#">AJ0-9336</a>	<a href="#">AJ0-9344</a>
			for ID:	3.2–8.0mm	9–16mm

† Additional dimensions available upon request.

for ID: 3.2–8.0mm

9–16mm

#### Supercritical Fluid Chromatography (SFC) Columns (mm) (cont'd)

Supercritical Fluid Chromatography (SFC) Columns (mm) (cont'd)				SecurityGuard Cartridges (mm)	
Phase	250 x 21.2	250 x 30	250 x 50	15 x 21.2**	15 x 30.0*
<b>Chiral Columns†</b>					
Lux 5 µm i-Amylose-1	<a href="#">00G-4762-P0-AX</a>	<a href="#">00G-4762-U0-AX</a>	<a href="#">00G-4762-V0-AX</a>	<a href="#">AJ0-8643</a>	<a href="#">AJ0-8644</a>
Lux 5 µm i-Amylose-3	<a href="#">00G-4779-P0-AX</a>	<a href="#">00G-4779-U0-AX</a>	<a href="#">00G-4779-V0-AX</a>	<a href="#">AJ0-8653</a>	<a href="#">AJ0-8654</a>
Lux 5 µm i-Cellulose-5	<a href="#">00G-4756-P0-AX</a>	<a href="#">00G-4756-U0-AX</a>	<a href="#">00G-4756-V0-AX</a>	<a href="#">AJ0-8634</a>	<a href="#">AJ0-8635</a>
Lux 5 µm Cellulose-1	<a href="#">00G-4459-P0-AX</a>	<a href="#">00G-4459-U0-AX</a>	<a href="#">00G-4459-V0-AX</a>	<a href="#">AJ0-8405</a>	<a href="#">AJ0-8406</a>
Lux 5 µm Cellulose-2	<a href="#">00G-4457-P0-AX</a>	<a href="#">00G-4457-U0-AX</a>	<a href="#">00G-4457-V0-AX</a>	<a href="#">AJ0-8400</a>	<a href="#">AJ0-8401</a>
Lux 5 µm Cellulose-3	<a href="#">00G-4493-P0-AX</a>	<a href="#">00G-4493-U0-AX</a>	<a href="#">00G-4493-V0-AX</a>	<a href="#">AJ0-8624</a>	<a href="#">AJ0-8625</a>
Lux 5 µm Cellulose-4	<a href="#">00G-4491-P0-AX</a>	<a href="#">00G-4491-U0-AX</a>	<a href="#">00G-4491-V0-AX</a>	<a href="#">AJ0-8629</a>	<a href="#">AJ0-8630</a>
Lux 5 µm Amylose-1	<a href="#">00G-4732-P0-AX</a>	<a href="#">00G-4732-U0-AX</a>	<a href="#">00G-4732-V0-AX</a>	<a href="#">AJ0-9338</a>	<a href="#">AJ0-9339</a>
			for ID:	18–29mm	30–49mm

† Additional dimensions available upon request.

for ID: 18–29mm

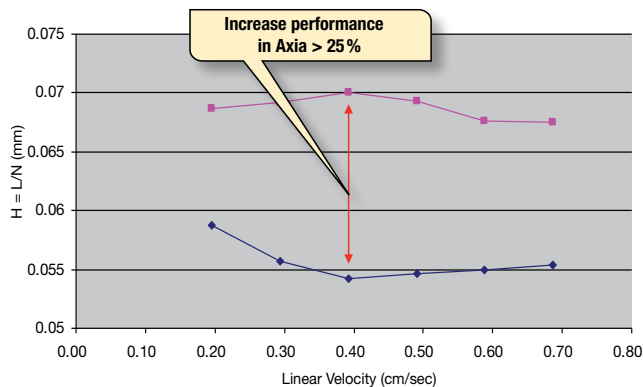
30–49mm

Bulk SFC media is available. Please contact your Phenomenex representative for more information.

For all other SecurityGuard Cartridge Holders and Cartridges, see pp. 330-334

## SFC Preparative Advantage Using Axia™ Packed Technology

Expect up to 25% higher resolution when using the same material packing in Axia versus standard hardware.



◆ Axia Technology

■ Standard Hardware



\*SecurityGuard Analytical Cartridges require holder, Part No.: [KJO-4282](#).

\*\*SemiPrep SecurityGuard Cartridges require holder, Part No.: [AJ0-9281](#).

\*\*SFC PREP 21.2mm ID SecurityGuard Cartridges require holder, Part No.: [AJ0-8617](#).

\*SFC PREP 30.0mm ID SecurityGuard Cartridges require holder, Part No.: [AJ0-8618](#).

## Achiral SFC Media

- Core-shell and fully porous media
- High surface area for increased loading
- Easy scale-up from lab to pilot plant
- Polar and non-polar selectivities for screening
- Columns interchangeable between SFC and HPLC modes

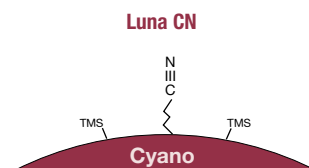
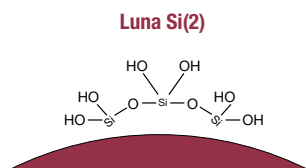
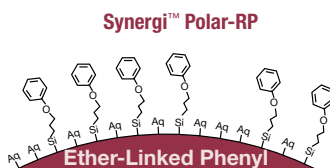
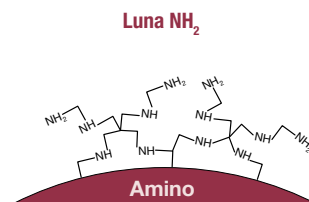
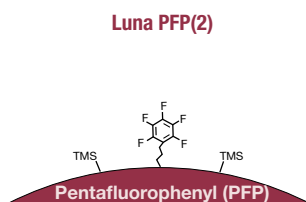
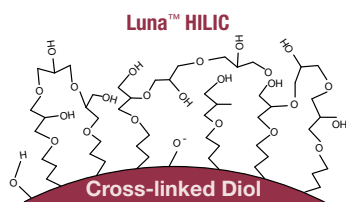
## Media Selectivity is Critical for Success

Utilizing differences in surface chemistries will ensure that you achieve a successful separation for any given project, as in the example below. Once the ideal column phase is identified, you have the ability to optimize for additional improvements in performance:

- Changing retention
- Increasing efficiency
- Altering selectivity
- Reversing elution orders

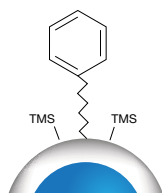
These optimization steps can easily be achieved by adjusting a few simple parameters. For instance, you can try different modifiers and/or additives, change the percent concentration of your modifier, or you can simply change your pressure, temperature, and/or flow rate.

## Fully Porous Particles

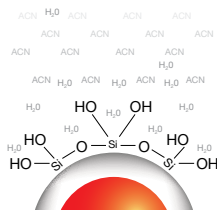


## Core-Shell Particles

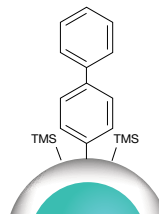
**Kinetex™ Phenyl-Hexyl**



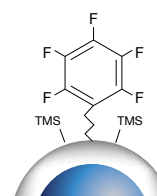
**Kinetex HILIC**



**Kinetex Biphenyl**



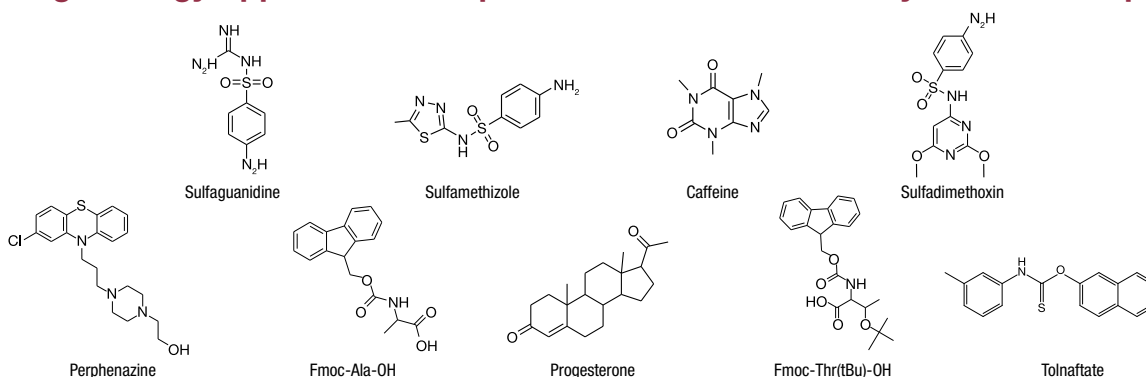
**Kinetex F5**





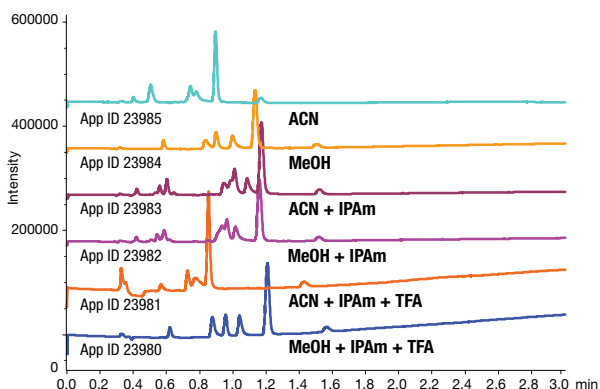
## Achiral SFC Media (cont'd)

### Screening Strategy Applied to the Separation of Pharmaceutically Related Compounds



#### Step 1. Screen Co-Solvents

- Use an appropriate sample that has a representative chromatographic profile
- Use a single column; this work used a Kinetex core-shell Biphenyl LC column
- Evaluate additives, this work used methanol to evaluate acidic, basic, acid/base mixed, and without any additives
- Use a fast gradient, an example would be 5% to 25% over 2 min with a 30 second hold
- Interpret results by comparing peak shape, retention and how many peaks were observed
- Evaluate other solvents such as acetonitrile, isopropanol, or mixtures if necessary
- Select the most promising conditions and move on to Step 2



**Column:** Kinetex™ 2.6 μm Biphenyl  
**Dimensions:** 150 x 3.0 mm  
**Part No.:** [00F-4622-Y0](#)  
**Mobile Phase:** A: Carbon Dioxide  
 B: As described

**Gradient:**

Time (min)	% B
0	5
2.5	25
3	25

**Flow Rate:** 3 mL/min  
**Temperature:** 40 °C  
**Detection:** UV @ 220 nm

#### Step 3. Method Optimization

##### Expand the gradient around the observed peaks

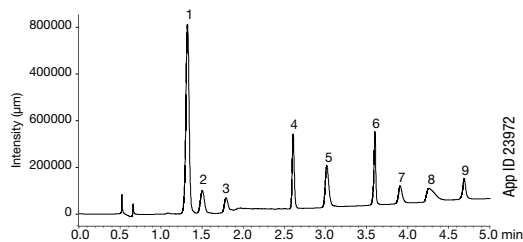
- If all of the peaks are early, lower the final gradient % co-solvent
- If all of the peaks are late, raise the initial gradient % co-solvent
- If the peaks are very close, extend the gradient over a longer period of time

##### Determine if a gradient is needed

- Evaluate if the chromatographic selectivity is dependent on the eluent density by screening with backpressure set higher and lower than typical; 20 – 30 bar difference is suitable

##### Finalize the gradient slope (if necessary)

- If the peaks are well resolved, shorten the time for the gradient
- If the peaks need more resolution, lengthen the time for the gradient



**Column:** Luna™ 3 μm HILIC  
**Dimensions:** 150 x 3.0 mm  
**Part No.:** [00F-4449-Y0](#)  
**Mobile Phase:** A: Carbon Dioxide  
 B: Methanol

**Temperature:** 40 °C  
**Detection:** UV @ 220 nm  
**Sample:**

1. Tolnaftate
2. Progesterone
3. Caffeine
4. Fmoc thr(tbu)
5. Sulfamethizol
6. Fmoc-ala
7. Sulfadimethoxine
8. Perphenazine
9. Sulfaguandine

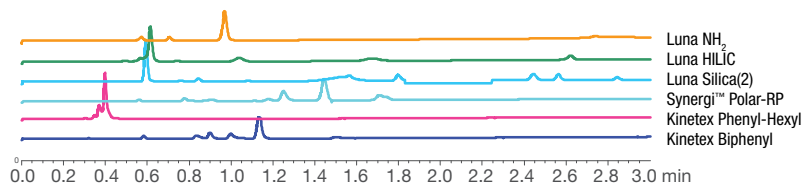
**Gradient:**

Time (min)	% B
0	1
1	1
5	40

**Flow Rate:** 3 mL/min

#### Step 2. Column Screening

- Use the best co-solvent additive combination found in Step 1
- Evaluate columns that have been previously successful with achiral SFC
- Use a gradient similar to the one used in Step 1
- Interpret results by comparing peak shape, retention and how many peaks were observed
- If nothing is promising, select other column chemistries and repeat
- If promising conditions are found, move on to Step 3



**Column:** As described  
**Dimensions:** 150 x 3.0 mm  
**Mobile Phase:** A: Carbon Dioxide  
 B: Methanol

**Gradient:**

Time (min)	% B
0	5
2.5	25
3	25

**Flow Rate:** 3 mL/min  
**Temperature:** 40 °C  
**Detection:** UV @ 220 nm

## Achiral SFC Media (cont'd)

### Achiral Material Characteristics

Packing Material Porous	Particle Size (µm)	Pore Size (Å)	Surface Area (m <sup>2</sup> /g)	Carbon Load %	End Capping	pH Stability
Luna™ Silica(2)	3, 5, 10, 15	100	400	0	No	2.0 - 7.5
Luna HILIC	3, 5	200	200	5.7	No	1.5 - 8.0
Luna PFP(2)	3, 5	100	400	11.5	Yes	1.5 - 9.0
Luna CN	3, 5, 10	100	400	7.0	Yes	1.5 - 7.0
Luna NH <sub>2</sub>	3, 5, 10	100	400	9.5	No	1.5 - 11.0
Synergi™ Polar-RP	2.5, 4, 10	80/100*	475/400*	11	proprietary	1.5 - 7.0
Packing Material Core-Shell						
Kinetex™ HILIC	1.7, 2.6, 5	100	200	0	No	2.0 - 7.5
Kinetex Biphenyl	1.7, 2.6, 5	100	200	11	Yes	1.5 - 8.5**
Kinetex Phenyl-Hexyl	1.7, 2.6, 5	100	200	11	Yes	1.5 - 8.5**
Kinetex F5	1.7, 2.6, 5	100	200	9	Yes	1.5 - 8.5**

\*\*Columns are pH stable from 1.5 - 10 under isocratic conditions. Columns are pH stable under 1.5 - 8.5 under gradient conditions.

\*Specs. for 2.5µm Synergi Polar-RP

### Ordering Information

Supercritical Fluid Chromatography (SFC) Columns (mm)				Axia™ Packed Preparative Columns		SecurityGuard™ Cartridges (mm)			
Phase	150 x 4.6	250 x 4.6	250 x 10	250 x 21.2	250 x 30	4 x 3.0*	10 x 10 <sup>‡</sup>	15 x 21.2**	15 x 30 <sup>°</sup>
<b>Achiral Columns<sup>†</sup></b>						/10pk	/3pk	/ea	/ea
Luna 5 µm Silica(2)	<a href="#">00F-4274-E0</a>	<a href="#">00G-4274-E0</a>	<a href="#">00G-4274-N0</a>	<a href="#">00G-4274-P0-AX</a>	<a href="#">00G-4274-U0-AX</a>	<a href="#">AJ0-4348</a>	<a href="#">AJ0-7223</a>	<a href="#">AJ0-7229</a>	<a href="#">AJ0-8312</a>
Luna 5 µm HILIC	<a href="#">00F-4450-E0</a>	<a href="#">00G-4450-E0</a>	<a href="#">00G-4450-N0</a>	<a href="#">00G-4450-P0-AX</a>	<a href="#">00G-4450-U0-AX</a>	<a href="#">AJ0-8329</a>	<a href="#">AJ0-8902</a>	—	—
Luna 5 µm PFP(2)	<a href="#">00F-4448-E0</a>	<a href="#">00G-4448-E0</a>	<a href="#">00G-4448-N0</a>	<a href="#">00G-4448-P0-AX</a>	—	<a href="#">AJ0-8327</a>	<a href="#">AJ0-8376</a>	<a href="#">AJ0-8377</a>	<a href="#">AJ0-8378</a>
Luna 5 µm CN	<a href="#">00F-4255-E0</a>	<a href="#">00G-4255-E0</a>	<a href="#">00G-4255-N0</a>	<a href="#">00G-4255-P0-AX</a>	<a href="#">00G-4255-U0-AX</a>	<a href="#">AJ0-4305</a>	<a href="#">AJ0-7313</a>	<a href="#">AJ0-8220</a>	<a href="#">AJ0-8311</a>
Luna 5 µm NH <sub>2</sub>	<a href="#">00F-4378-E0</a>	<a href="#">00G-4378-E0</a>	<a href="#">00G-4378-N0</a>	<a href="#">00G-4378-P0-AX</a>	—	<a href="#">AJ0-4302</a>	<a href="#">AJ0-7364</a>	<a href="#">AJ0-8162</a>	<a href="#">AJ0-8309</a>
Synergi 4 µm Polar-RP	<a href="#">00F-4336-E0</a>	<a href="#">00G-4336-E0</a>	<a href="#">00G-4336-N0</a>	<a href="#">00G-4336-P0-AX</a>	<a href="#">00G-4336-U0-AX</a>	<a href="#">AJ0-6076</a>	<a href="#">AJ0-7276</a>	<a href="#">AJ0-7845</a>	<a href="#">AJ0-8307</a>
Phase	150 x 4.6	250 x 4.6	250 x 10	250 x 21.2	250 x 30	4.6*	10 x 10	15 x 21.2	15 x 30
<b>Core-Shell Kinetex Technology</b>						/3pk	/3pk	/ea	/ea
Kinetex 2.6 µm HILIC	<a href="#">00F-4461-E0</a>	<a href="#">00G-4461-E0</a>	—	—	—	<a href="#">AJ0-8772</a>	—	—	—
Kinetex 5 µm Biphenyl	<a href="#">00F-4627-E0</a>	<a href="#">00G-4627-E0</a>	<a href="#">00G-4627-N0</a>	<a href="#">00G-4627-P0-AX</a>	—	<a href="#">AJ0-9207</a>	<a href="#">AJ0-9280</a>	<a href="#">AJ0-9272</a>	<a href="#">AJ0-9273</a>
Kinetex 5 µm F5	<a href="#">00F-4724-E0</a>	<a href="#">00G-4724-E0</a>	<a href="#">00G-4724-N0</a>	<a href="#">00G-4724-P0-AX</a>	<a href="#">00G-4724-U0-AX</a>	<a href="#">AJ0-9320</a>	<a href="#">AJ0-9323</a>	<a href="#">AJ0-9324</a>	<a href="#">AJ0-9325</a>
Kinetex 5 µm Phenyl-Hexyl	<a href="#">00F-4603-E0</a>	<a href="#">00G-4603-E0</a>	—	<a href="#">00G-4603-P0-AX</a>	<a href="#">00G-4603-U0-AX</a>	<a href="#">AJ0-8774</a>	—	<a href="#">AJ0-9147</a>	<a href="#">AJ0-9216</a>

<sup>†</sup>Additional phases and dimensions available upon request.

for ID: 3.2-8.0 mm 9-16 mm 18-29 mm 30-49 mm

\* SecurityGuard ULTRA Cartridges require holder Part No.: [AJ0-9000](#)

\* SecurityGuard Analytical Cartridges require holder Part No.: [KJ0-4282](#)

‡ SemiPrep SecurityGuard Cartridges require holder Part No.: [AJ0-9281](#)

\*\* SFC PREP SecurityGuard Cartridges require holder Part No.: [AJ0-8617](#)

° SFC PREP SecurityGuard Cartridges require holder Part No.: [AJ0-8618](#)

### Additional Non-Polar Phases Available

- C18/C8/C4
- Phenyl-Hexyl
- TWIN™ Technology C18
- TWIN Technology C6-Phenyl
- Fusion-RP
- Hydro-RP and more...



For more information on core-shell Kinetex media, please see p. 246



Bulk SFC media is available. Please contact your Phenomenex representative for more information.

