



SELECTRA® PFPP

PENTAFLUOROPHENYLPROPYL STATIONARY PHASE

HPLC COLUMNS



INNOVATION THROUGH CHEMISTRY

Product Benefits

- Can be used for Reverse Phase, Normal Phase, or HILIC separations
- Excellent first-choice column for method development
- Excellent for LC/MS/MS
- Strongly retentive for basic compounds
- Special selectivity compared to C18 phases
- May exhibit pi-pi overlap
- Fully endcapped



Selectra® PFPP HPLC Columns		
Dimensions	Particle Size	Part Numbers
50 x 2.1 mm	1.8 µm	SLPFPP50ID21-18UM
100 x 2.1 mm	1.8 µm	SLPFPP100ID21-18UM
50 x 4.6 mm	1.8 µm	SLPFPP50ID46-18UM
100 x 4.6 mm	1.8 µm	SLPFPP100ID46-18UM
10 x 2.1 mm guard (sold as a 2 pack)	1.8 µm	SLPFPPGDC20-18UM
10 x 4.6 mm guard (sold as a 2 pack)	1.8 µm	SLPFPPGDC46-18UM
50 x 2.1 mm	3 µm	SLPFPP50ID21-3UM
100 x 2.1 mm	3 µm	SLPFPP100ID21-3UM
50 x 4.6 mm	3 µm	SLPFPP50ID46-3UM
100 x 4.6 mm	3 µm	SLPFPP100ID46-3UM
150 x 4.6 mm	3 µm	SLPFPP150ID46-3UM
10 x 2.1 mm guard (sold as a 2 pack)	3 µm	SLPFPPGDC20-3UM
10 x 4.6 mm guard (sold as a 2 pack)	3 µm	SLPFPPGDC46-3UM
50 x 2.1 mm	5 µm	SLPFPP50ID21-5UM
100 x 2.1 mm	5 µm	SLPFPP100ID21-5UM
50 x 4.6 mm	5 µm	SLPFPP50ID46-5UM
100 x 4.6 mm	5 µm	SLPFPP100ID46-5UM
150 x 4.6 mm	5 µm	SLPFPP150ID46-5UM
250 x 4.6 mm	5 µm	SLPFPP250ID46-5UM
10 x 2.1 mm guard (sold as a 2 pack)	5 µm	SLPFPPGDC20-5UM
10 x 4.6 mm guard (sold as a 2 pack)	5 µm	SLPFPPGDC46-5UM

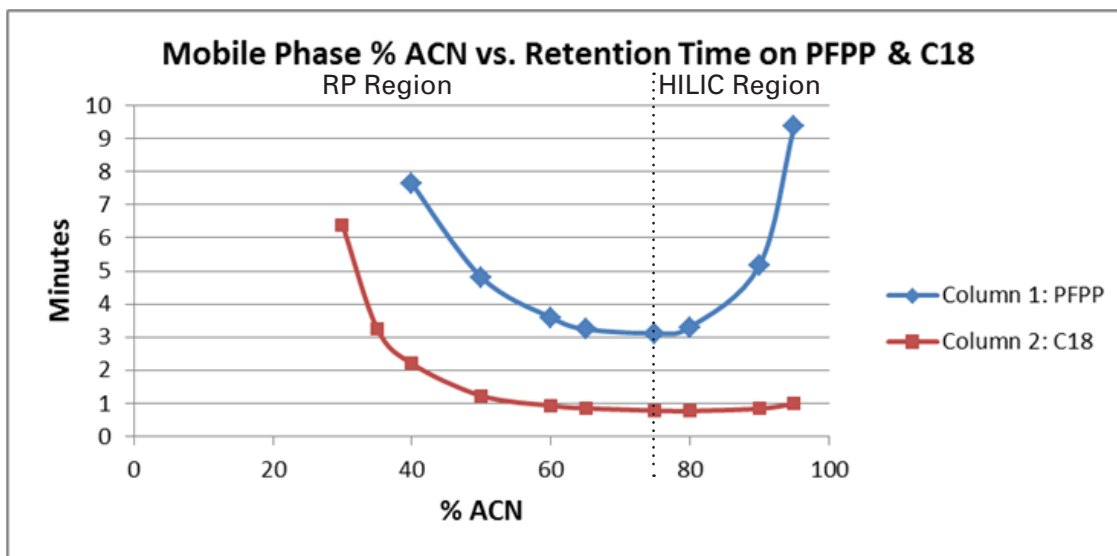
HPLC Guard Holder	
HPLC Guard Cartridge Holder	SLGRDHLDLDR

The Selectra® PFPP (pentafluorophenylpropyl) phase interacts strongly with basic, halogenated and nitrogen-containing analytes. The pentafluorophenyl ring exhibits higher selectivity for electron rich aromatic containing molecules as compared to other sorbents. This phase also shows affinity for molecules with fluorine and other halogen atoms. The PFPP phase uses multiple selectivity mechanisms including hydrogen bonding, dipole-dipole, pi-pi overlap, hydrophilic (HILIC), and hydrophobic interactions.

UCT's Selectra® PFPP HPLC column is an excellent choice for the retention and selectivity of amine-containing compounds, and charged bases. Typical compound classes include nucleosides, nucleotides, purines, pyrimidines, [beta]-blockers, tricyclic antidepressants, fluorinated corticosteroids, and taxanes. Selectra® PFPP columns are ideal for pharmaceutical and natural products research.

UCT's Selectra® PFPP is well suited to LC-MS instrumentation due to its reliability and efficiency with acidic mobile phases. The Selectra® PFPP shows excellent peak shape in neutral mobile phases as well. The Selectra® PFPP columns are available packed with 3 or 5 µm particles and are offered in various column dimensions.

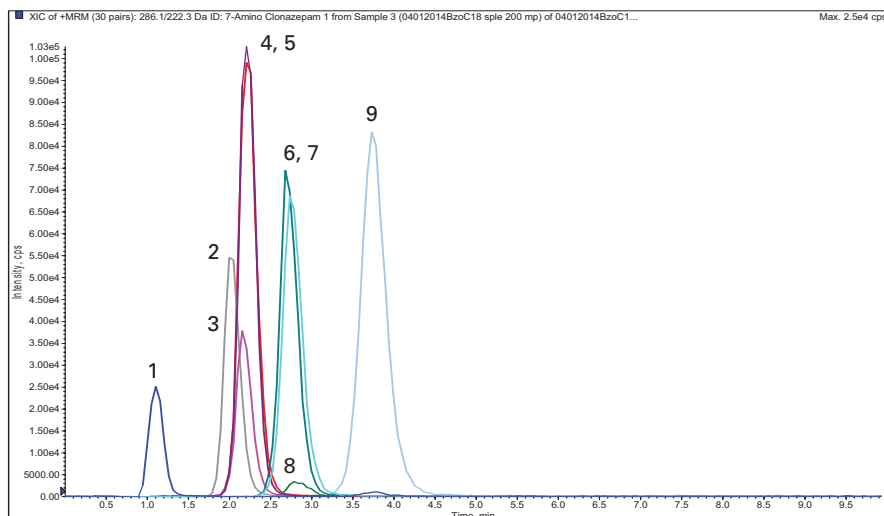
Retention Profile of Imipramine on a



C18 does not have HILIC character, whereas, PFPP does (one of PFPP's major advantages).

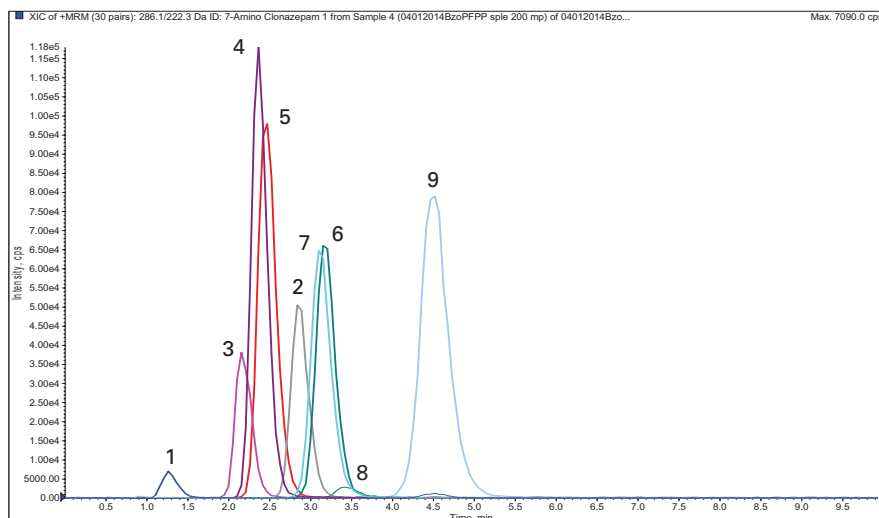
Column 1	Selectra® PFPP, 5 cm x 2.1 mm, 3 µm
Column 2	Selectra® C18, 5 cm x 2.1 mm, 3 µm
Mobile Phase	10mM NH ₃ HCOOH: ACN (adjusted to pH = 4 with Formic Acid)
Detector	UV@254nm
Flow Rate	0.2 mL/min
Sample	Imipramine

Comparison of Benzodiazepenes on a C18 vs. PFPP C18



Column	C18 100 x 2.1 mm, 5 µm
Mobile Phase	A = 40% H ₂ O w/ 0.1% Formic Acid B = 60% MeOH w/ 0.1% Formic Acid
Flow Rate	0.5 mL/min
Column Temp	50 °C
Injection Volume	5 µL

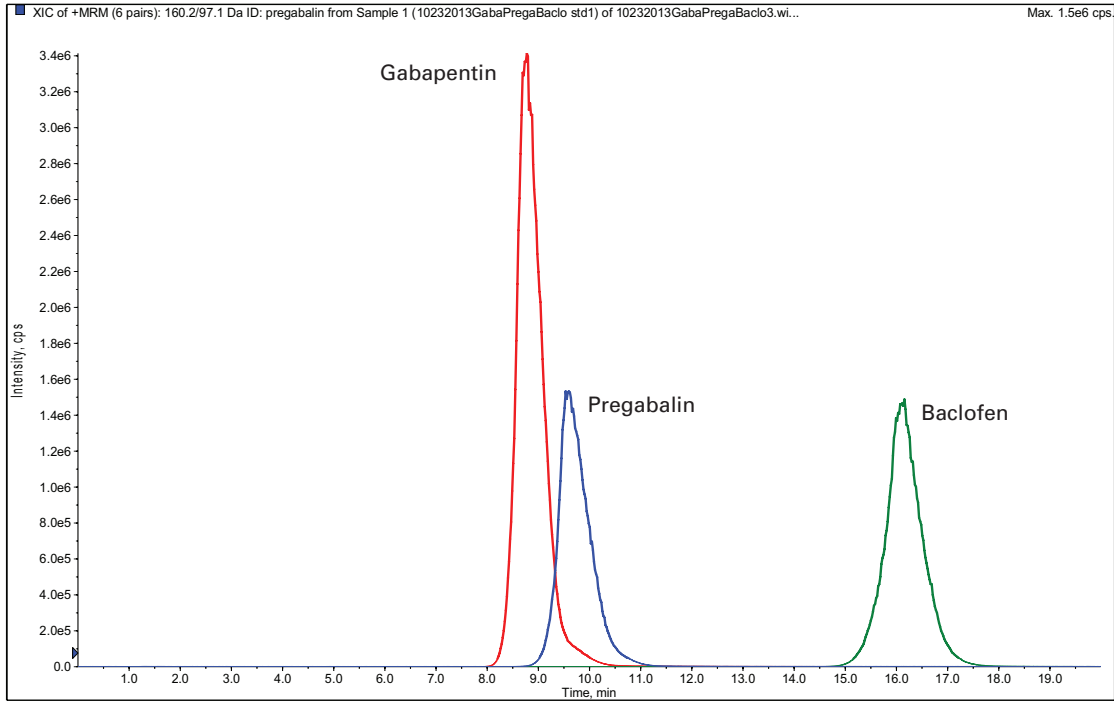
PFPP



Column	Selectra® PFPP LC 100 x 2.1 mm, 5 µm
Part Number	SLPFPP100ID21-5UM
Mobile Phase	A = 40% H ₂ O w/ 0.1% Formic Acid B = 60% MeOH w/ 0.1% Formic Acid
Flow Rate	0.5 mL/min
Column Temp	50 °C
Injection Volume	5 µL

	Analyte	C18 RT (min)	PFPP RT (min)
1.	7 Aminoclonazepam	1.11	1.26
2.	Clonazepam	2.02	2.86
3.	Lorazepam	2.16	2.16
4.	Oxazepam	2.20	2.36
5.	Alpha Hydroxy Alprazolam	2.22	2.45
6.	Nordiazepam	2.70	3.18
7.	Temazepam	2.75	3.12
8.	Alprazolam	2.79	3.41
9.	Diazepam	3.74	4.50

Gabapentin/Pregabalin/Baclofen



Instrument: Agilent 1200 Binary Pump SL

Detector: ABSciex 4000 Qtrap MS/MS

Mode: ESI +

Column: Selectra® PFPP, 100 x 2.1 mm, 5 µm (UCT p/n SLPFPID21-5UM)

Flow Rate: 0.5 mL/min

Column Temp: 50 °C

Injection Volume: 10 µL

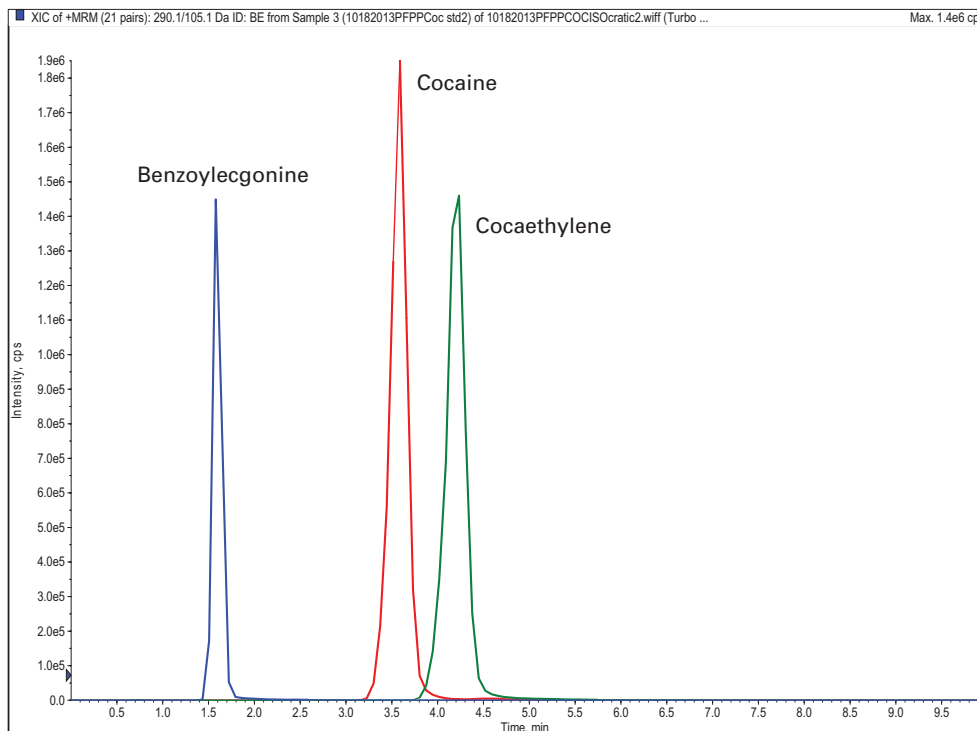
Mobile Phase A: 0.1% Formic Acid in H₂O

Mobile Phase B: 0.1% Formic Acid in MeOH

Isocratic: A:B (85:15)

Analyte	Precursor ion	Product ion 1	Product ion 2
Gabapentin	172.1	137.1	67.1
Baclofen	214.01	150.8	65.0
Pregabalin	160.2	124.1	97.1

Cocaine / Benzoylecgonine / Cocaethylene



Instrument: Agilent 1200 Binary Pump SL

Detector: ABSciex 4000 Qtrap MS/MS

Mode: ESI +

Column: Selectra® PFPP, 100 x 2.1 mm, 5 µm (UCT p/n SLPFPP100ID21-5UM)

Flow Rate: 0.5 mL/min

Column Temp: 50 °C

Injection Volume: 10 µL

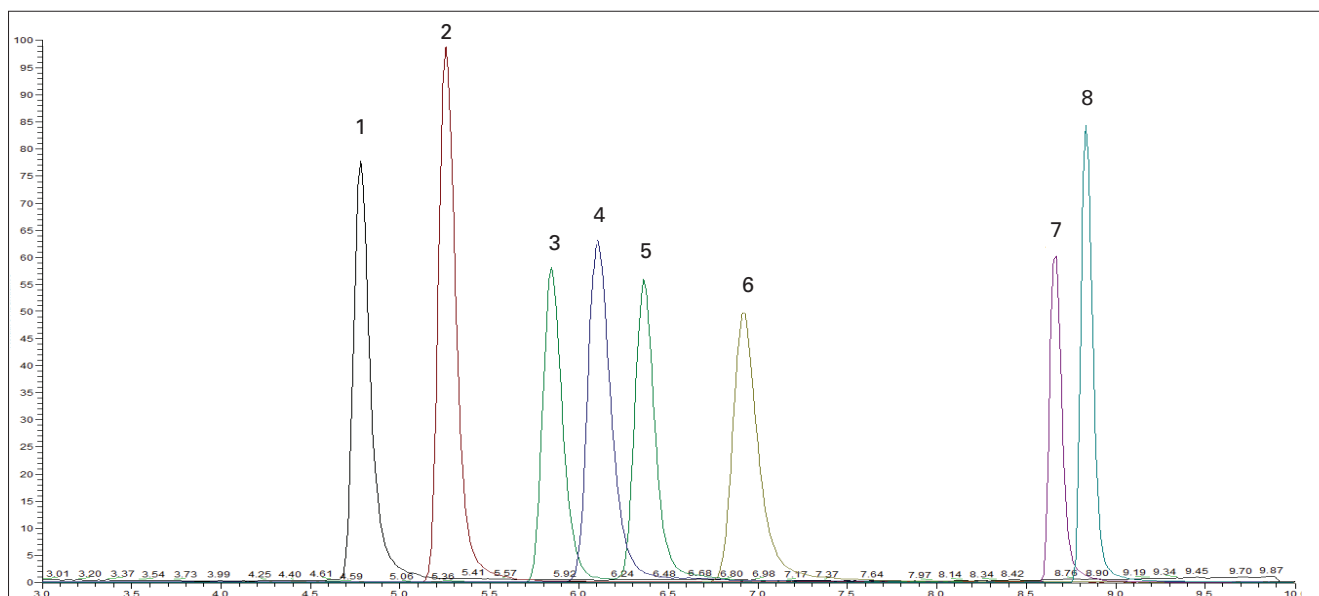
Mobile Phase A: 0.1% Formic Acid in H₂O

Mobile Phase B: 0.1% Formic Acid in MeOH

Isocratic: A:B (30:70)

Analyte	Precursor ion	Product ion 1	Product ion 2
Benzoylecgnonine	290.1	168.1	105.1
Cocaine	304.1	182.1	105.1
Cocaethylene	318.2	196.4	82.7

Bath Salts



Analyte		MRM Transitions		Relative Retention Time (minutes)
		Q1	Q3	
1.	Flephedrone	182.1	164.2	4.78
2.	Methylone	208.1	160.1	5.26
3.	Ethylone	222.0	131.0	5.84
4.	Mephedrone	178.1	145.0	6.10
5.	Butylone	222.0	131.0	6.36
6.	Methcathinone	192.2	144.0	6.93
7.	MDPV	276.2	126.1	8.67
8.	Pyravalorone	246.2	105.2	8.83

Instrument: Thermo Scientific Dionex Ultimate 3000 LC

Detector: Thermo Scientific TSQ Vantage tandem mass spectrometer

Mode: ESI +

Column: Selectra® PFPP, 100 x 2.1 mm, 5 µm (UCT p/n SLPFPF100ID21-5UM)

Flow Rate: 0.3 mL/min

Injection Volume: 10 µL

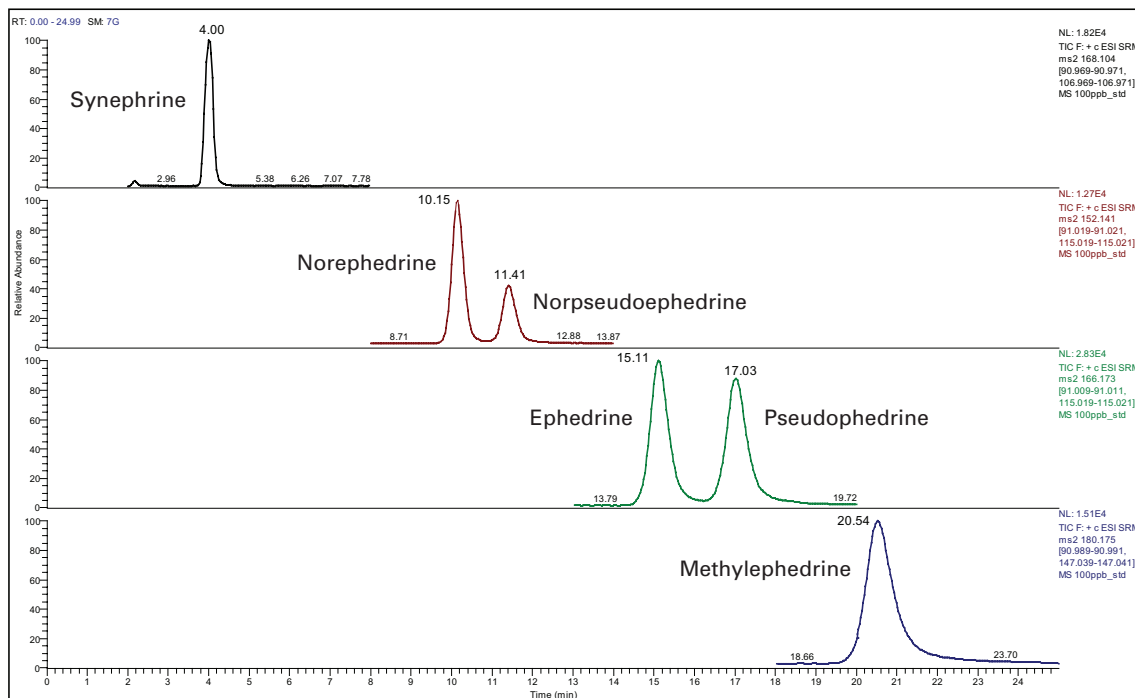
Mobile Phase A: 0.1% Formic Acid in H₂O

Mobile Phase B: 0.1% Formic Acid in MeOH

Gradient:

Time	%A	%B
0.00	98	2
1.00	65	35
5.00	65	35
7.00	0	100
10.00	0	100
10.20	98	2
15.00	STOP	

Ephedra Alkaloids



Instrument: Thermo Scientific Dionex Ultimate 3000 LC

Detector: Thermo Scientific TSQ Vantage tandem mass spectrometer

Mode: ESI +

Column: Selectra® PFPP, 100 x 2.1 mm, 3 µm (UCT p/n SLPFPF100ID21-3UM)

Guard Column: Selectra PFPP, 10 x 2.0 mm, 3 µm (UCT p/n SLPFPFGDC20-3UM)

Flow Rate: 0.3 mL/min

Column Temp.: 40 °C

Injection Volume: 8 µL

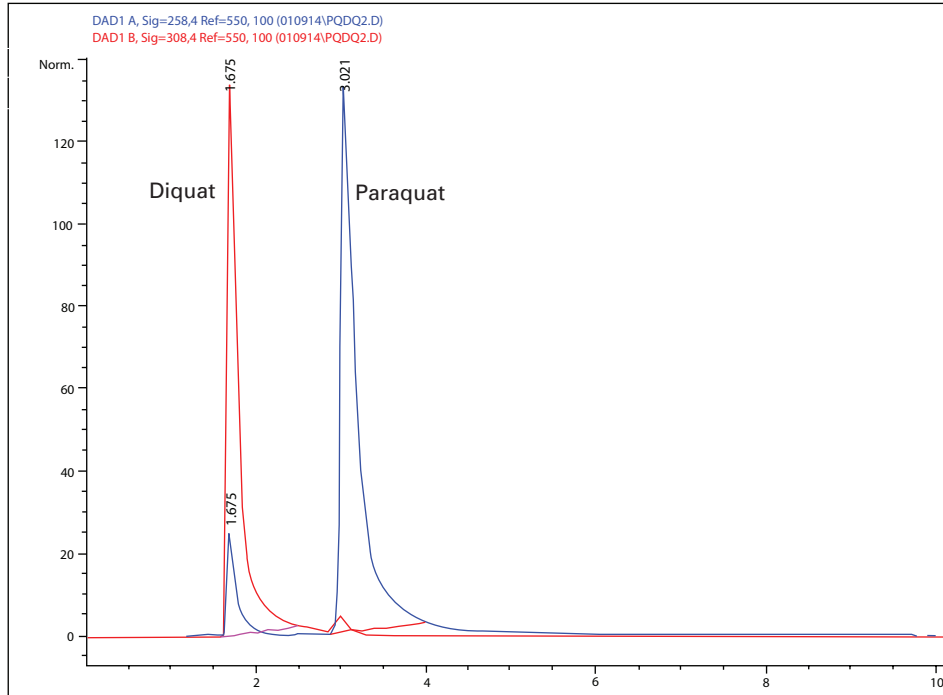
Mobile Phase A: 10mM Ammonium Acetate

Mobile Phase B: MeOH

Isocratic: A:B (80:20)

Analyte	RT (min)	Precursor ion	Product ion 1	Product ion 2
Synephrine	4.00	168.1	91.0	107.0
Norephedrine	10.15	152.1	91.0	115.0
Norpseudoephedrine	11.41	152.1	91.0	115.0
Ephedrine	15.11	166.2	91.0	115.0
Pseudoephedrine	17.03	166.2	91.0	115.0
Methylephedrine	20.54	180.2	91.0	147.0

Diquat/Paraquat



Instrument: HP 1050

Detector: HP Photo Diode Array

Column: Selectra® PFPP, 100 x 2.1 mm, 3 µm (UCT p/n SLPFPP100ID21-3UM)

Flow Rate: 0.2 mL/min

Injection Volume: 1 µL

Mobile Phase A: 10mM Ammonium Acetate (pH=4)

Mobile Phase B: Acetonitrile

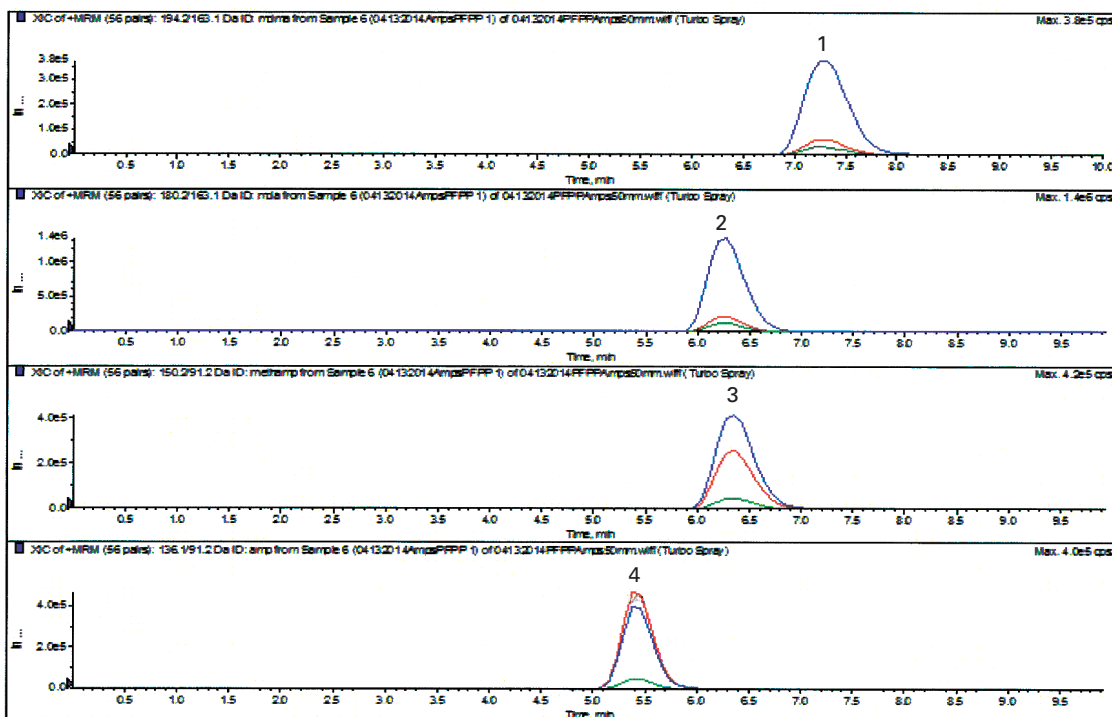
Isocratic: A:B (99:1)

Monitoring Wavelength: Diquat: 308 nm

Paraquat: 258 nm

Sympathomimetic Amines

SELECTRA® PFPP HPLC Column



Analyte	MRM Transitions		Relative Retention Time (minutes)
	Q1	Q3	
1. Amphetamine	136.1	91.2	5.41
2. MDA	180.2	163.1	6.24
3. Methamphetamine	150.1	91.2	6.35
4. MDMA	194.2	163.1	7.29

Instrument: Agilent 1200 Binary Pump SL

Detector: ABSciex API 4000 Qtrap MS/MS

LC Column: Selectra® PFPP HPLC Column 50 x 2.1 mm, 5 µm (UCT P/N SLPFP50ID21-5UM)

Mode: ESI +

Flow Rate: 0.3 mL/min

Injection Volume: 10 µL

Mobile Phase A: 0.1% Formic Acid in D.I. H₂O

Mobile Phase B: 0.1% Formic Acid in Methanol

Isocratic: A:B (30:70)

Column Care & Usage

Each UCT, LLC high performance liquid chromatography (HPLC) column is individually packed and tested to ensure superior performance. A HPLC CoA is included with each column. It contains a chromatogram, the column serial number, and the lot number of the packing material. Retain this information for as long as you have the column; it may be useful if troubleshooting is ever required.

Guard Columns & Filters

In-line filters and/or guard cartridges can extend the life of an analytical column. They are connected in-line prior to the analytical column.

- Pressure Recommendation

UCT, LLC HPLC columns are silica based. To ensure optimal column life, operating pressures of 3000psi or lower are recommended. Column pressures may increase as the column ages as particulates from the system accumulate on the column. Sudden increases in pressure are usually a result of a blocked frit. Pressure will vary with different mobile phases. For example Water/Methanol mixtures will generally give higher back pressure than Water/Acetonitrile mobile phases. (see Table I)

- Guard Cartridges

Guard cartridges are used to capture impurities that may otherwise lodge on the HPLC column. Guard cartridges are especially useful with samples from biological sources as these may contain lipids and proteins that pass through frits can quickly block columns. Guard cartridges should have the same phase as the column they are protecting. Guard cartridges should be replaced when the chromatography begins to deteriorate or when the guard cartridge contributes excessive back pressure to the HPLC system.

Mobile Phase

When shipped, the column contains the storage solvent listed on its HPLC CoA. Before use the first time, ensure that your initial planned mobile phase is compatible with this solvent (see Table II). If it is not, you must flush the column with an intermediate solvent that is compatible with both the storage solvent and your planned mobile phase. Be especially cognizant if you are using buffers; the storage solvent for most columns contains greater than 50% organic solvent, and contact with a buffer could cause a salting out effect. The resulting precipitate can plug the column.

Flow Direction & Flow Rate

The arrows on the column label indicate the recommended flow direction.

Begin by connecting the inlet end of the column to the injector or autosampler and allow mobile phase to flow from the outlet end of the column into a beaker for 10–15 minutes. Gradually increase the flow rate. For recommended flow rates refer to Table III. Then, stop the mobile phase flow and connect the column to your detector. Because every LC system is unique, especially when used in gradient mode, your results may slightly differ from those obtained in our laboratory. UCT, LLC Technical Service can assist you in optimizing your separations. Be sure to record the operating pressure before calling.

Increasing Column Lifetime

Silica based UCT, LLC HPLC column packing materials have a pH operating range of 2-8. Extended use of any column at extreme pH can shorten column lifetime.

The upper temperature limit for silica based HPLC columns is 80 °C. Elevated temperatures can improve efficiency by lowering solvent viscosity, but column lifetime may be compromised.

Use of HPLC-Grade solvents is strongly recommended. Residue and chemical contaminants in non-HPLC grade solvents can alter a column's selectivity and, potentially plug the inlet frit leading to an increased system pressure. Mobile phase filtering and degassing (either off-line or in-line) is highly recommended.

Column lifetime is also governed by stationary phase type. Hydrocarbon phases, such as C18, are relatively chemically inert. Polar phases, such as cyano or amino, require somewhat more care as they can be chemically active.

Column Maintenance

Columns should not be subjected to mechanical or pressure shock. This can cause irreversible damage to the column.

Columns should be run in the flow direction as marked on the column. The one exception is for column cleaning. The flow can be reversed to back-flush frits if blockages occur.

Do not store the column in an aqueous buffer, this will promote microbiological contamination. First flush the column with water and then with 50/50 organic solvent/water prior to storage.

Washing Procedure for Reverse-Phase Columns

Washing the column successively with non-polar eluents will usually remove accumulated impurities. Follow the washing sequence below, using 30mL of each solvent, to thoroughly clean the column.

1. Distilled water 90%, 10% Methanol
2. 0.5M H₃P₀₄ 90%, 10% Methanol (Optional)*
3. Distilled water 90%, 10% Methanol (Optional)*
4. Methanol
5. Methanol/Chloroform (1:1) (Optional)
6. Methanol or Acetonitrile (Optional)
7. Distilled water 90%, 10% Methanol
8. Eluent to recondition column

***NOTE:** Whenever step 2 is used, it must be followed by step 3.

It is recommended that columns be dedicated for the specific method when ion pairing reagents are used. This is because it is difficult to remove all of the ion pairing reagent.

- Protein Contamination

Proteins can adsorb onto columns causing loss of performance. In this situation rinse the column overnight with 20% 0.1M nitric acid/80% isopropanol at a flow rate of 1/5th the usual flow rate (i.e. at 0.2 mL/min for 4.6mm ID columns). Ensure that the rinse solution is directed directly to solvent waste and not through the detector.

- Lipid Contamination

If lipids or other highly hydrophobic compounds have contaminated the column use the full washing procedure except replace step 5 with 100% chloroform or dichloromethane.

Table I: Mobile Phase Viscosity Comparison

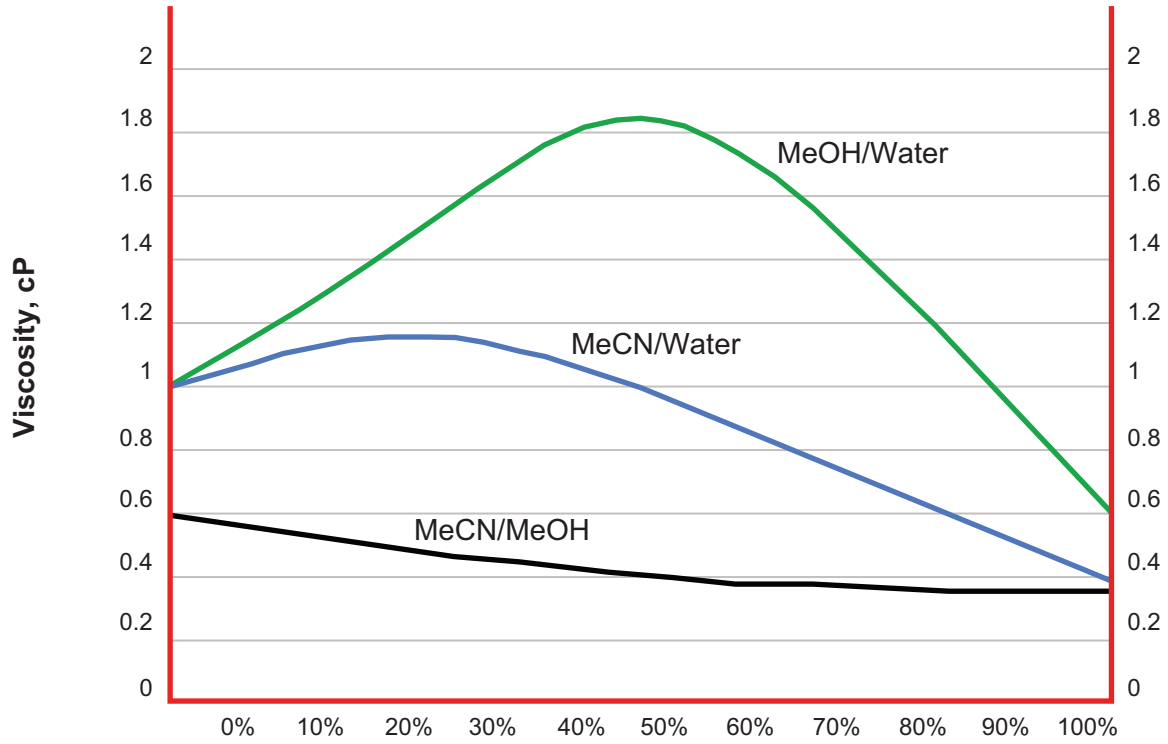
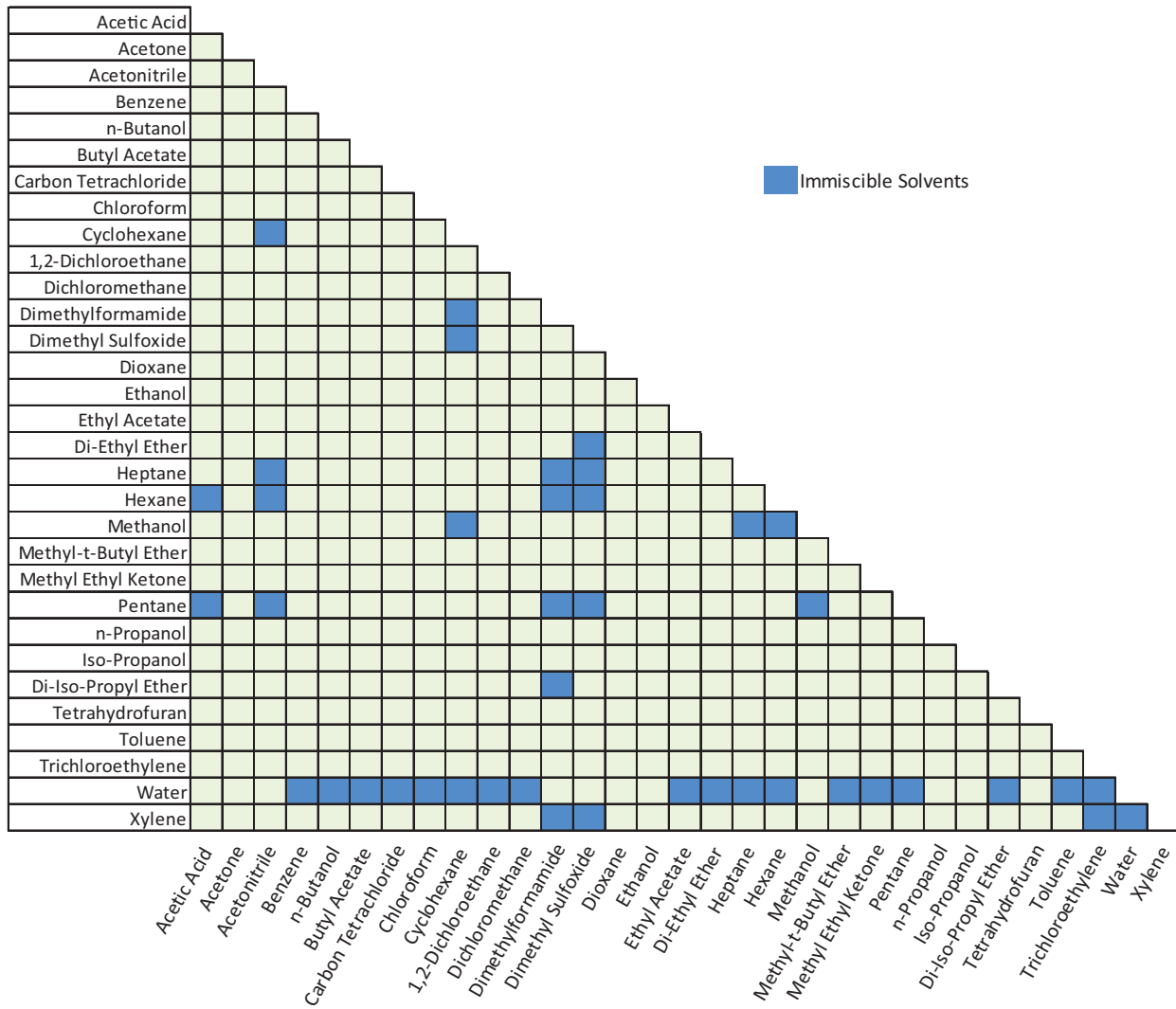


Table II: Solvent Miscibility Chart



PRICES AND TERMS

Our prices are subject to change without notice. The price in effect when we receive your order will apply. All prices are in US Dollars and are F.O.B. Terms of payment are net 30 days.

MINIMUM ORDERS

We welcome all orders, therefore, we do not have a minimum order requirement. When ordering, please include your purchase order number, complete "Ship To" and "Bill To" address, catalog number, quantity, and description of product(s). Also include your name and a phone number where you can be reached should we have any questions concerning your order.

SHIPMENTS

Normal processing is within 24 hours after receipt of an order. Unless special shipping requests have been made, our trained staff will send all orders by UPS Ground service. The appropriate shipping charges (freight & insurance costs) will be added to the invoice, unless otherwise instructed by the customer.

SPECIAL PRICING

We offer special pricing for volume purchases and standing orders. These discounts apply to bonded phase extraction column purchases only. Please call a sales representative for more information on special pricing qualifications.

RETURN POLICY

Our Quality Manager will handle all returns. Before returning merchandise, please call to obtain a return authorization number from the quality manager. We will need to know the reason for the return, date of purchase, purchase order number and invoice number in order to issue a return authorization number. Return merchandise must be received before a credit can be issued. Returns will not be accepted after 90 days. A restocking fee of 25% of the price paid, or a minimum of \$25.00 (whichever is greater) will be charged on all returns.

WARRANTY

All products manufactured by UCT are guaranteed against defects in materials and workmanship for a period of 90 days after shipment. UCT will replace any items that prove to be defective during this time period.

The exclusive remedy requires the end user to first advise UCT of the defective product by phone or in writing. Secondly, the defective product must be returned within 30 days after proper approval from our Quality Manager. All returns must indicate the purchase order number, the lot number and the shipping date. UCT's total liability is limited to the replacement cost of UCT products.

This warranty does not apply to damage resulting from misuse.

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