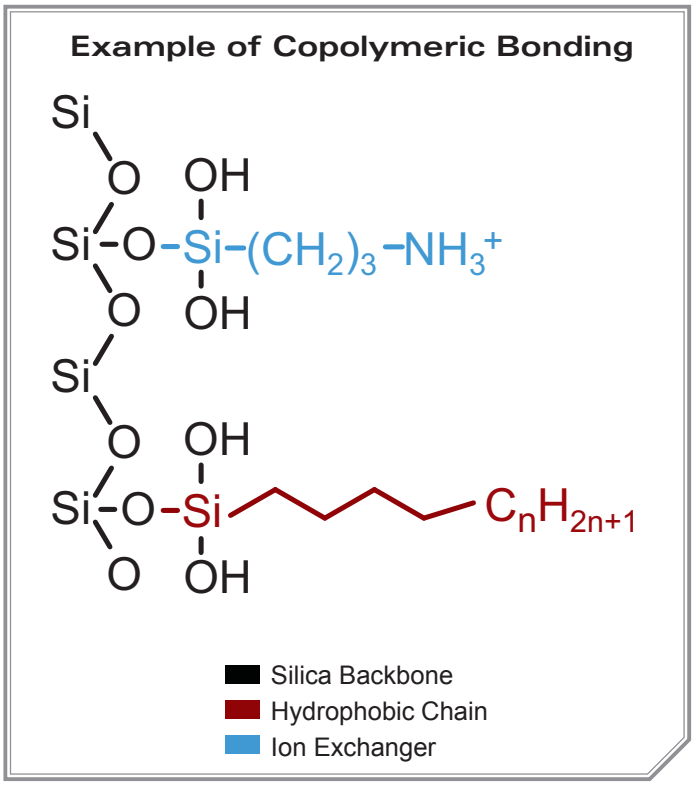
CLEAN-UP® COPOLYMERIC EXTRACTION SORBENTS

This sorbent is composed of a silica backbone bonded with two types of functional chains. One type is either an ion exchanger or polar chain. The other is a hydrophobic carbon chain. The copolymeric phases manufactured by UCT are produced in a way to allow for equal parts of each functional group to attach to the silica substrate. This copolymerization technique yields reproducible bonded phases and unique copolymeric chemistries which allow the controlled use of mixed mode separation mechanisms. This type of dual chemistry is beneficial when one is looking to extract both a neutral and a charged compound.



Sorbent	Category	Structure	pKa
Benzenesulfonic Acid (BCX2)	Strong Cation	-Si-$(CH_2)_2$-Ph-SO_3H	Always Charged
Propylsulfonic Acid (PCX2)	Strong Cation	-Si-$(CH_2)_3SO_3H$	<1
Carboxylic Acid (CCX2)	Weak Cation	-Si-$(CH_2)_2COOH$	4.8
Quaternary Amine (QAX2)	Strong Anion	-Si-$(CH_2)_3N+(CH_3)_3$	Always Charged
Aminopropyl (NAX2)	Weak Anion	-Si-$(CH_2)_3NH_3$	9.8
Cyanopropyl (CNP2)	Hydrophilic	-Si-$(CH_2)_3CN$	N/A
Cyclohexyl (CYH2)	Hydrophobic	-Si-(CH_2)-C_6H_{12}	N/A

Analytes	Washes	Elutions
Cations/Anions Alkanes Alkenes Aromatics	1) Aqueous to disrupt hydrophilic interactions.	1) Organic, possibly with some aqueous to elute hydrophobic-ally bound analytes.
	2) Methanol to disrupt residual hydrophobic and hydrophilic interferences.	2) Aqueous buffer with a pH that would neutralize ionically bound analytes or an aqueous with high ionic strength or a solvent with a counter ion that would bond to sorbent.

EXTRACTION MECHANISMS OF COPOLYMERIC BONDED PHASES

A sample composed of a theoretical neutral parent drug and its charged (acidic) metabolite is applied at a pH of 6 (figure 1). At this pH, many amine groups are positively charged. Since this sorbent is positively charged, compounds with positively charged cations are repelled. Depending on the pKa of the metabolite, carboxylic acid groups may be negatively charged, allowing the metabolite to bond to the positively charged sorbent. The column also possesses a hydrophobic chain which allows the neutral parent drug to bond to the sorbent.

Water or a weak aqueous buffer (pH 6) washes away hydrophilically bound interferences (figure 2). The column is then dried taking care to ensure the column is free of any residual aqueous phase that would interfere with elution.

After drying, analytes of interest can be eluted using a two step process. During the first elution (figure 3). The hydrophobically bound neutral parent drug is eluted with a solvent of minimal polarity, such as hexane/ethyl acetate (80:20). The second elution (figure 4) employs an acid to neutralize the charge of acidic analytes. The ionic interaction is released, and analytes are eluted in an appropriate solvent mixture.

Sample Application

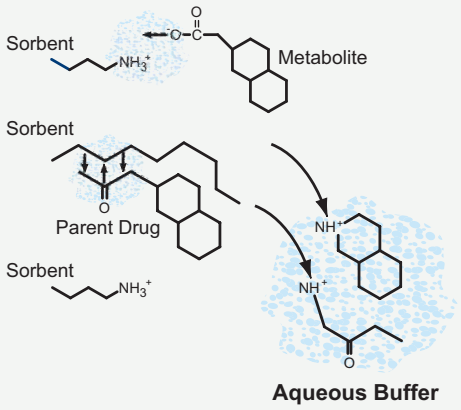


figure 1

Column Wash

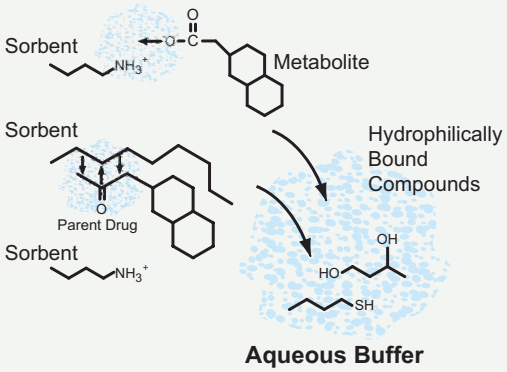


figure 2

First Elution

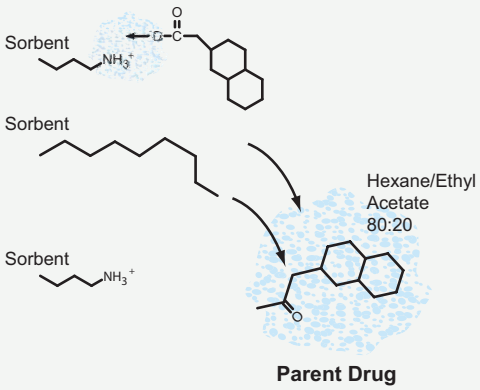


figure 3

Second Elution

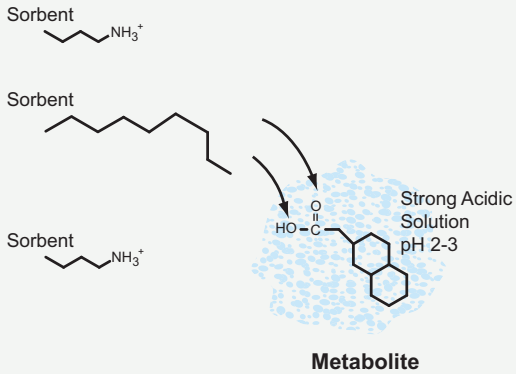


figure 4

CLEAN-UP®
OCTYL PLUS CYCLOHEXYL SORBENT

Organic Loading = 14.0%
Surface Area = 500 m^2/g
Average Pore Size = 60Å
Pore Volume = 0.77 cm^3/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
6	500	50	CUCYH256
6	1000	30	CUCYH21M6
6	100	50	CUCYH21Z

CLEAN-UP®
OCTYL PLUS PROPYLSULFONIC SORBENT

Organic Loading = 14.62%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Exchange Capacity = 0.11 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	50	100	CUPCX2L1
1	100	100	CUPCX211
3	200	50	CUPCX223
6	500	50	CUPCX256
10	200	50	CUPCX22Z

CLEAN-UP®
OCTYL PLUS CARBOXYLIC ACID SORBENT

Organic Loading = 11.45%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Exchange Capacity = 0.110 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	50	100	CUCCX2L1
1	100	100	CUCCX211
3	200	50	CUCCX223
6	500	50	CUCCX256
75	10000	10	CUCCX210M75

CLEAN-UP®
OCTYL PLUS BENZENESULFONIC ACID SORBENT

Organic Loading = 12.40%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g
Average Pore Size = 60Å
Exchange Capacity = 0.077 meq/g

COLUMNS			
Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	50	100	CUBCX2L1
1	100	100	CUBCX211
3	200	50	CUBCX223
3	500	50	CUBCX253
6	500	50	CUBCX256
6	1000	30	CUBCX2M6
10	100	50	CUBCX21Z
10	200	50	CUBCX22Z
10	500	50	CUBCX25Z

WELL PLATES				
Number of Wells	Sorbent Amount (mg)	Units per Pack	Extended Drip Tip	Part Number
48	500	1	NO	WIMBCX25
48	1000	1	NO	WIMBCX2M
96	50	1	NO	WSHBCX205
96	100	1	NO	WSHBCX21

CLEAN-UP®
OCTYL PLUS QUATERNARY AMINE SORBENT

Organic Loading = 13.00%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g

Average Pore Size = 60Å
Exchange Capacity = 0.170 meq/g

COLUMNS

Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	50	100	CUQAX2L1
1	100	100	CUQAX211
3	200	50	CUQAX223
3	500	50	CUQAX253
6	500	50	CUQAX256
6	1000	30	CUQAX2M6
10	200	50	CUQAX22Z
10	500	50	CUQAX25Z
15	2000	20	CUQAX22M15

WELL PLATE

Number of Wells	Sorbent Amount (mg)	Units per Pack	Extended Drip Tip	Part Number
96	50	1	NO	WSHQAX205

CLEAN-UP®
OCTYL PLUS AMINOPROPYL SORBENT

Organic Loading = 12.10%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g

Average Pore Size = 60Å
Exchange Capacity = 0.144 meq/g

COLUMNS

Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	50	100	CUNAX2L1
1	100	100	CUNAX211
3	50	50	CUNAX2L3
3	200	50	CUNAX223
3	500	50	CUNAX253
6	1000	30	CUNAX2M6
10	100	50	CUNAX21Z
10	200	50	CUNAX22Z
15	2000	20	CUNAX22M15

WELL PLATE

Number of Wells	Sorbent Amount (mg)	Units per Pack	Extended Drip Tip	Part Number
96	100	1	NO	WSHNAX21

CLEAN-UP®
OCTADECYL PLUS
BENZENESULFONIC ACID SORBENT

Organic Loading = 12.4%
Surface Area = 500 m^2/g
Pore Volume = 0.77 cm^3/g

Average Pore Size = 60Å
Exchange Capacity = 0.077 meq/g

COLUMNS

Tube Volume (mL)	Sorbent Amount (mg)	Units per Pack	Part Number
1	100	100	CUBCX311
3	50	50	CUBCX3L3
3	100	50	CUBCX313
3	200	50	CUBCX323
3	300	50	CUBCX333
3	500	50	CUBCX353
6	500	50	CUBCX356
6	1000	30	CUBCX3M6
10	100	50	CUBCX31Z
10	200	50	CUBCX32Z
10	300	50	CUBCX33Z
10	500	50	CUBCX35Z
15	2000	20	CUBCX32M15

WELL PLATE

Number of Wells	Sorbent Amount (mg)	Units per Pack	Extended Drip Tip	Part Number
96	30	1	YES	WSHBCX303-LD