HICHROM

Chromatography Columns and Supplies

LC COLUMNS
SIELC
SHARC

Catalogue 9

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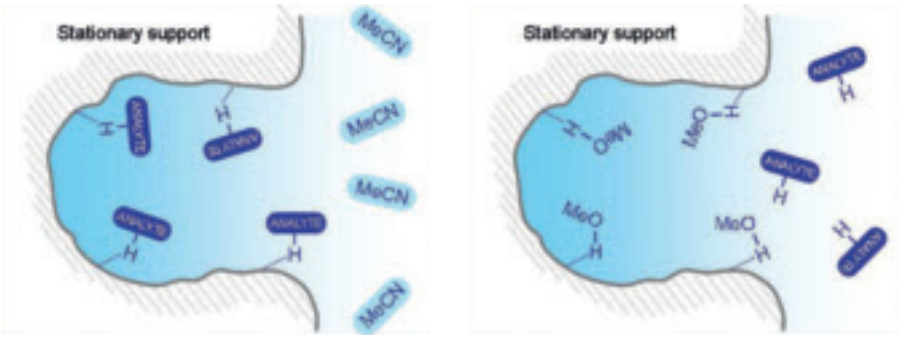
SHARC™

SHARC™ (**S**pecific **H**ydrogen-bond **A**dsorption **R**esolution **C**hromatography) columns are the latest columns developed by SIELC Technologies. They are the first commercially available columns which provide separations based primarily on hydrogen bonding. SHARC 1 achieves separation based on the analyte's ability to act as a hydrogen atom donor or acceptor.

Operating Conditions

Solvents used for SHARC separations are acetonitrile (MeCN) as the weak solvent and methanol (MeOH) as the strong solvent. Acetonitrile alone has a low level of hydrogen bonding with the SHARC stationary phase, whereas methanol interacts strongly, reducing retention of analytes capable of hydrogen interactions (Figure 16). By altering the ratio of acetonitrile/methanol, the optimum retention profile can be obtained for many types of molecules.

Analytes can retain on the stationary phase by more than one hydrogen bond and act as a donor or acceptor. The SHARC 1 column is a hydrogen atom acceptor type stationary phase, showing increased retention towards molecules with higher numbers of polar X-H bonds such as alcohols, amines, acids, amides, phenols etc.



(a) Interaction with H-bonding analytes in MeCN

(b) MeOH competes with analytes for stationary phase surface sites

Figure 16. SHARC technology

Benefits of SHARC Columns

1) Acetonitrile-methanol mixtures have lower viscosity than aqueous solvent mixtures, enabling the use of smaller particles and faster flow rates, for fast analyses.
2) Methanol is one of the most universal solvents for organic compounds.
3) Acetonitrile-methanol mixtures have a low boiling point and are much easier to evaporate than water, a benefit for preparative separations.
4) Acetonitrile-methanol mixtures are MS friendly, enabling mass directed preparative strategies.
5) A wide range of compounds with functional groups containing oxygen and nitrogen can be retained and separated.

Figure 17 shows the separation of a mixture of four neurotransmitters, based on their ability to form hydrogen bonds with the SHARC 1 stationary phase. Elution order corresponds to the number and strength of interaction points.

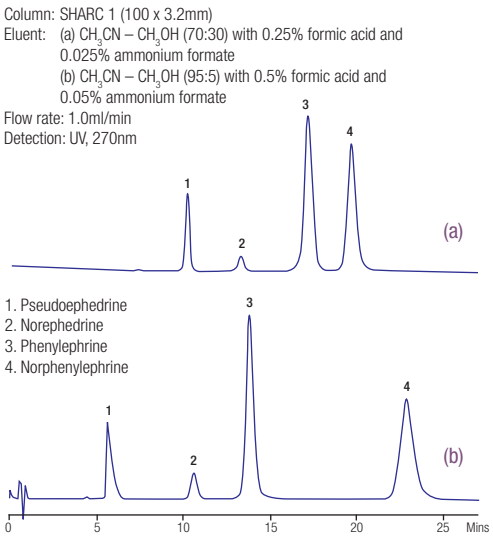


Figure 17. Effect of eluent composition on separation on SHARC 1

Ordering Information – SHARC 1 (5µm, 100Å)

Column i.d.[1] (mm)	Column Length[1] (mm)				Guards[2] (2/pk)
	50	100	150	250	
2.1	SH1-21.050.0510	SH1-21.100.0510	SH1-21.150.0510	SH1-21.250.0510	SH1-21.G.0510
3.2	SH1-32.050.0510	SH1-32.100.0510	SH1-32.150.0510	SH1-32.250.0510	SH1-32.G.0510
4.6	SH1-46.050.0510	SH1-46.100.0510	SH1-46.150.0510	SH1-46.250.0510	SH1-46.G.0510
10	SH1-100.050.0510	SH1-100.100.0510	SH1-100.150.0510	SH1-100.250.0510	-
22	SH1-220.050.0510	SH1-220.100.0510	SH1-220.150.0510	SH1-220.250.0510	-
22 (10µm)	SH1-220.050.1010	SH1-220.100.1010	SH1-220.150.1010	SH1-220.250.1010	-

[1] Other dimensions available, including capillary

[2] Direct connect - no holder required