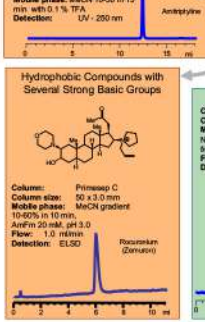
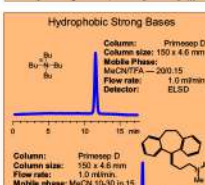
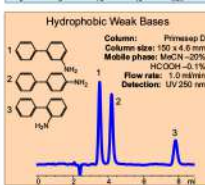
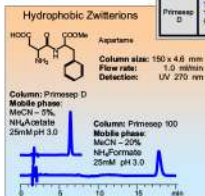
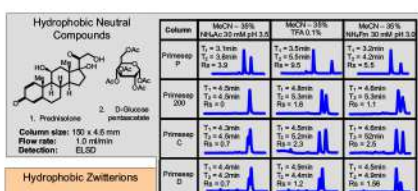
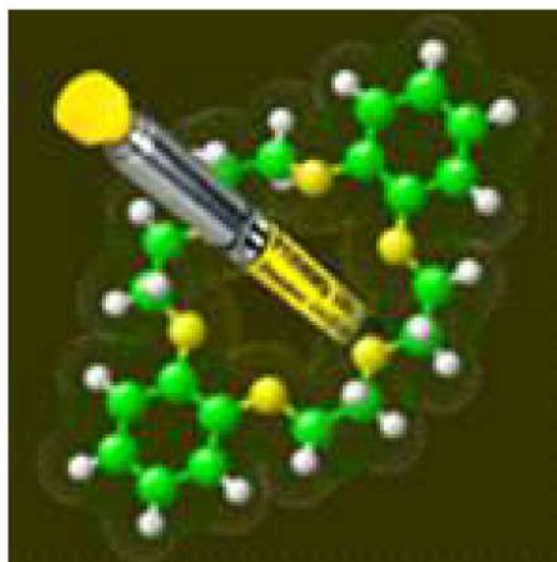


New Alternative to Ion Chromatography

Primesep® Separation of Ions

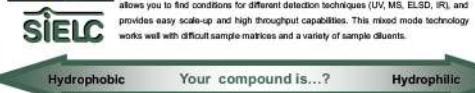
- ➔ Primesep mixed mode columns are a powerful separation tool for analysis of polar compounds and complex mixtures with compounds of different polarity
- ➔ Combination of Primesep columns with ELSD offers simple alternative to ion-chromatography
- ➔ Anions and cations can be analyzed at the same time with the same mobile phase
- ➔ Ion-chromatography with concentration of organic modifier from 0 to 100% can be performed with possibilities to adjust resolution and peaks elution order
- ➔ Inorganic and organic compounds can be analyzed at the same time using ELSD alone or in combination with UV detector



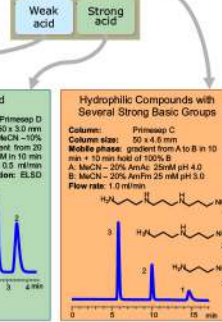
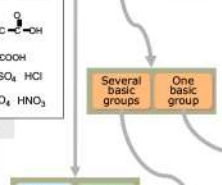
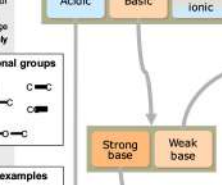
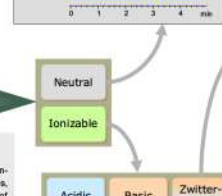
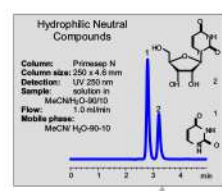
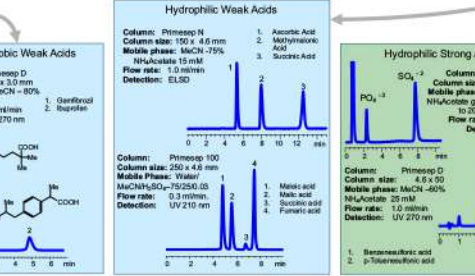
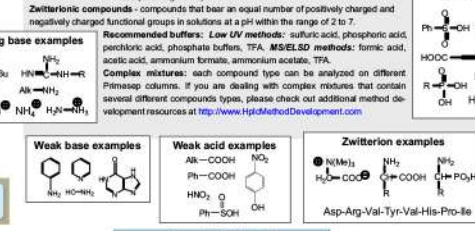
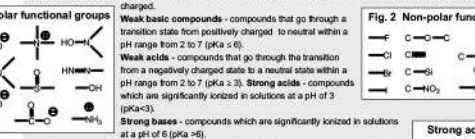
A Guide for HPLC Separation of Small Molecules



Mixed mode chromatography is a powerful technique for the separation of various compounds. These separations are based on a combination of reverse phase, ion-exchange, ionendother or π-π interactions. Polar and hydrophobic, acidic and basic compounds, zwitterions and neutral molecules can be separated with high selectivity and efficiency during the same run. This guide will help in developing methods for the separation of small molecules with different properties. The flexibility of mixed mode chromatography allows you to find conditions for different detection techniques (UV, MS, ELSD, IR), and provides easy scale-up and high throughput capabilities. This mixed mode technology works well with difficult sample matrices and a variety of sample diluents.



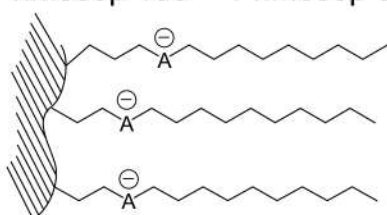
Before you start... become familiar with the terms used in this guide:
Hydrophilic compounds - compounds with a better solubility in water than in organic solvents, or completely non-soluble in organic solvents (e.g. acetone, ethanol). Examples of such compounds are amino acids, sugars, peptides, nucleotides, protonated amines and any other molecules with one or several polar groups (Fig. 1). The presence of some functional groups does not make a molecule significantly polar in terms of LC hydrophobic interaction (Fig. 2).
Ionizable compounds - molecules which have at least one charged functional group in a solution within a pH range from 2 to 7. Under these conditions, basic compounds are positively ionized and acidic compounds are negatively charged.



Mixed-Mode Primesep Columns

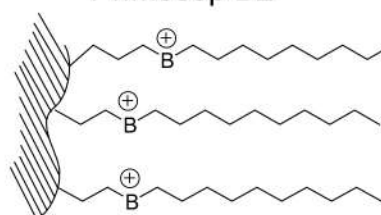
With an embedded ion-pairing group, a Primesep column requires no ion-pairing reagent in the mobile phase to retain and separate ionizable polar compounds.

Primesep A
Primesep 100



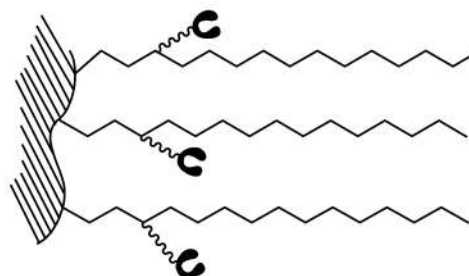
Primesep 200
Primesep 300

Primesep B
Primesep B2



- A newly developed Primesep C column (C Stand for "complex") forms a weak complex with amino compounds and metal ions.
- The column offers a typical RP retention profile for neutral compounds.
- In addition, embedded hosting groups interact with amines and other ions, and form a unique retention pattern.
- Amines with equal hydrophobicity retain on Primesep C in the following order.
- Tertiary < secondary < primary. Alkali metals are retained in order $K^+ < Na^+ < Li^+$, which is a reverse order compared to the classical ion-exchange.

Primesep C Column



SWITCH Phase™ Technology

Columns based on SWITCH Phase™ technology change their properties depending on pH of the mobile phase. Embedded carboxylic acid is fully ionized at pH above transition point and loses charge when mobile phase pH goes below transition point. By controlling pH of the mobile phase, the polar properties of the stationary phase can be altered to tune your separation needs.

Primesep 300

Transition @ pH=3

Primesep 200

Transition @ pH=2

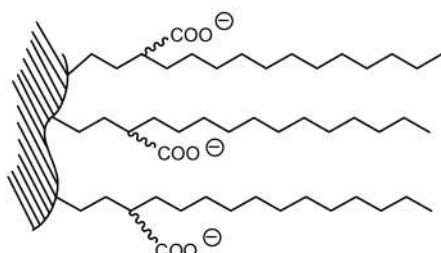
Primesep 100

Transition @ pH=1

Primesep A

Transition @ pH=0

Primesep 300 at pH > 3.5



Primesep 300 at pH < 2.5

