Simultaneous Separation of Inorganic and Organic Compounds in Single HPLC Run

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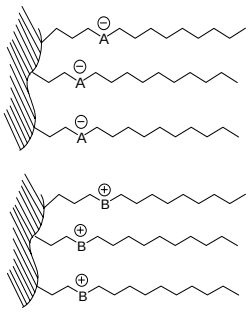
In many instances, ionizable compounds exist as salts of organic molecules with inorganic counter ions. This is common for drugs, surface active compounds, biological molecules, and many other industrial and research substances. Usually two independent analytical methods are created for analysis of these salts – reverse phase for organic parts and ion chromatography method, or titration, for inorganic parts. PrimesepTM columns offer unique ability to analyze both parts of such salts at the same time. ELSD in combination with standard UV detector is a convenient tool for the purpose. The application of this approach to quantitation of organic and inorganic substances will be presented and discussed.

Schematic Structure of Primesep Stationary Phases

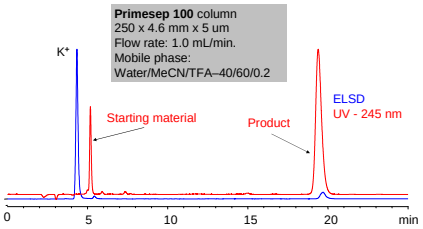


Primesep A
Primesep 100
Primesep 200
Primesep C

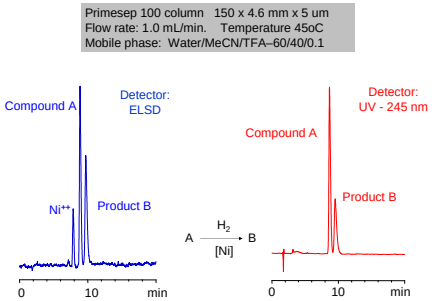
Primesep B
Primesep B2
Primesep D

With an embedded ion-pairing group, a Primesep column separates and retains organic molecules and inorganic ions.

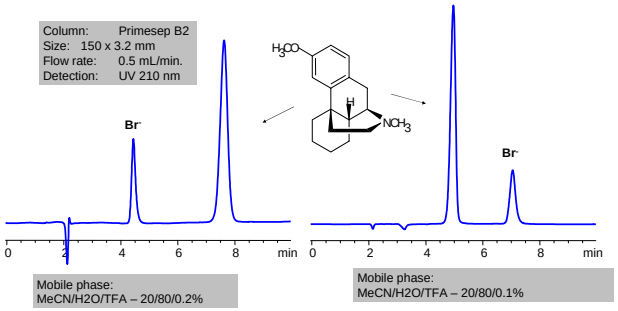
Quantitation of potassium



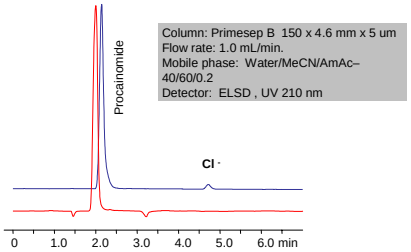
Analysis of nickel in hydrogenation reaction



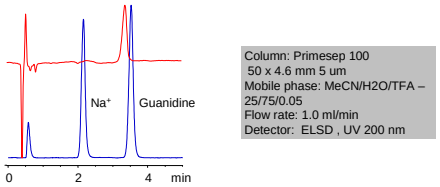
Dextromethorphan bromide analysis



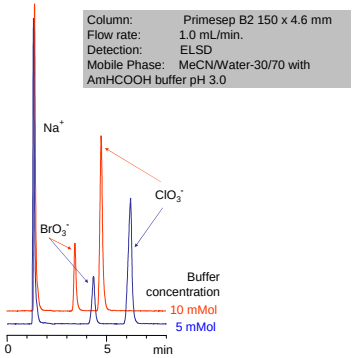
Both a cationic drug and chloride anion are analyzed with single isocratic method



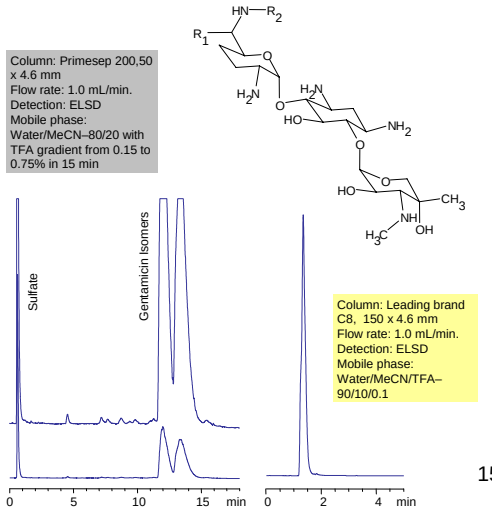
Analysis of Guanidine and Na



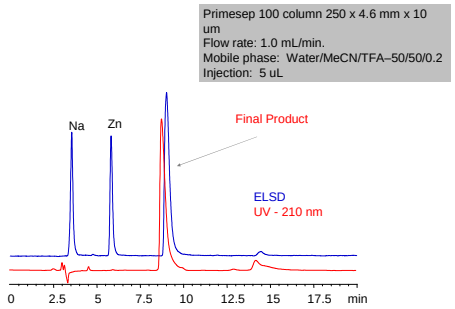
Chlorate/bromate separation



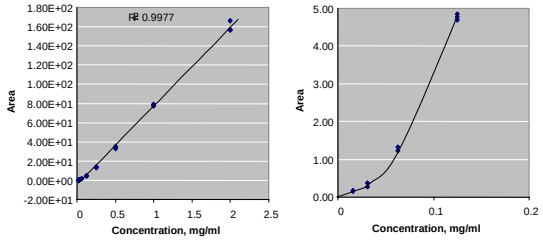
Gentamicin sulfate separation



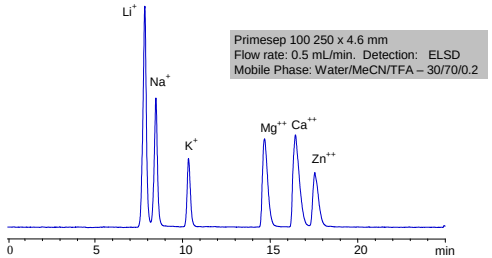
Inorganics in drug



Quantitation of inorganic components of the mixture can be performed using an ELSD signal. This detector is inherently not linear, but if the concentration of inorganic ion is significant, which is usually the case in pharmaceuticals, then significant linear region can be exploited with ELSD technology.
At low concentration, a non-linear treatment of calibration curve should be used to get accurate results.



Different inorganic cations can be analyzed with Primesep mixed-mode columns.



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