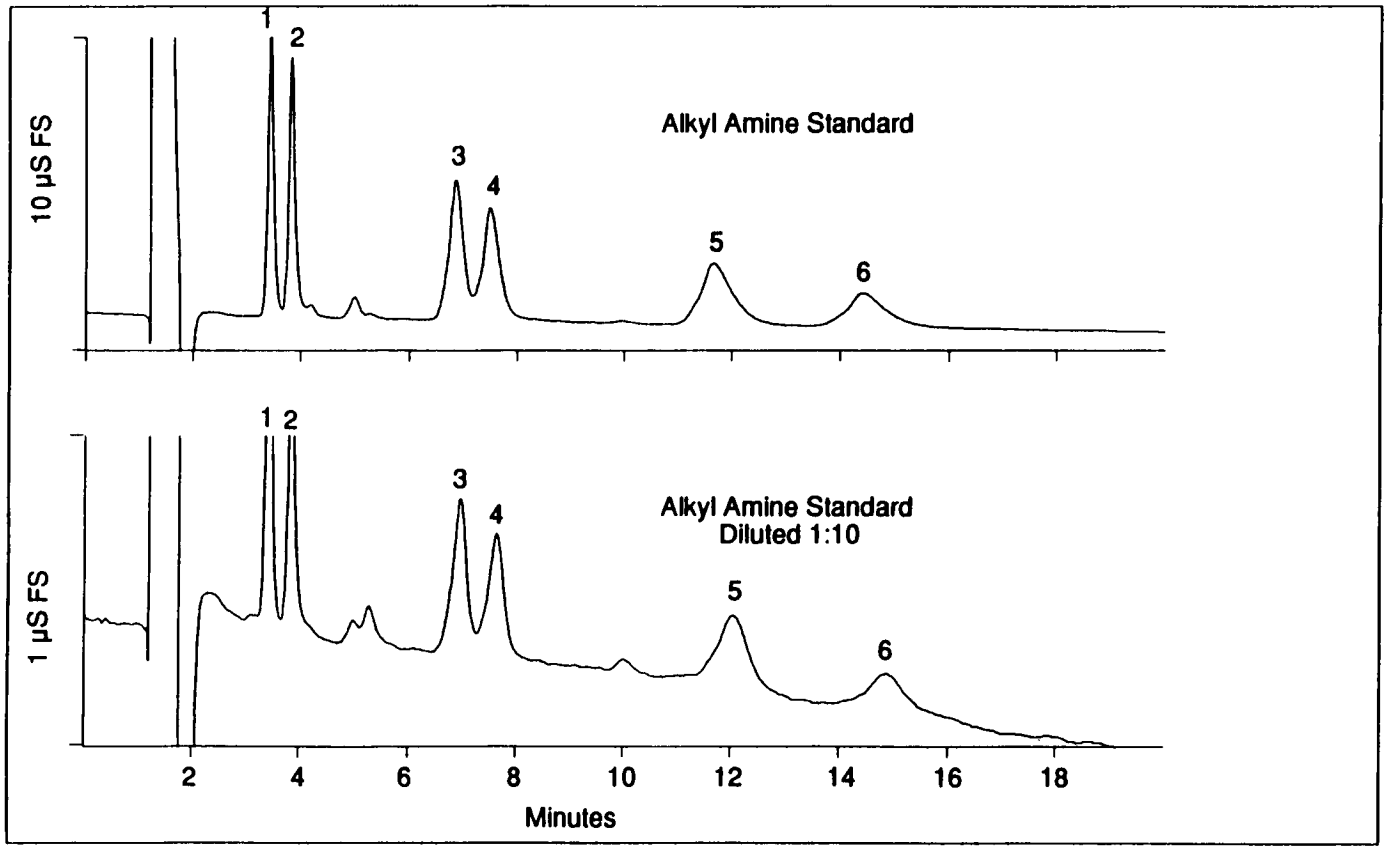
The Use of Waters IC Pak Cation M/D for Alkyl Amine Separations



This chromatography can be modified by varying the HNO_3 between 2mM and 5mM which works on the cation exchange mechanism, and varying acetonitrile between 0% and 30% which works on the reverse phase mechanism.

Conditions:

Column: Waters IC Pak Cation M/D (3.9 mm x 15 cm)

Eluent: 3.5 mM HNO_3 / 0.1 mM EDTA (free acid) / 2.5% Acetonitrile

Flow Rate: 1 ml/min

Detection: Indirect Conductivity using Waters 431 Conductivity Detector

Back Cond: 1220 µS

Injection Volume: 100 µL

Peak Identification

1. Sodium = 1 ppm
2. Ammonium = 1 ppm
3. Morpholine = 5 ppm
4. Methoxypropyl Amine = 5 ppm
5. Cyclohexyl Amine = 5 ppm
6. Methyldiethanolamine = 5 ppm

Goal

To demonstrate the utility of the IC Pak Cation M/D column for the analysis of low molecular weight alkyl amines.

Details:

Low molecular weight alkyl amine are difficult to separate using conventional reverse phase and cation exchange columns, and since they are non-UV absorbing they are difficult to detect especially at sub ppm concentrations. This 5µm silica based column has both cation exchange and reverse phase characteristics which allows for separation of amines of similiar molecular weight. The use of indirect conductivity allows for less than 100 ppb amine detection.

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System:

Waters polymeric ACTION Analyzer with Rheodyne fixed loop injector with 431 Conductivity Detector. Data acquired on Waters 860.

References: