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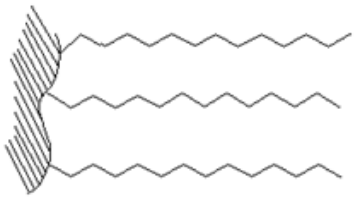
CoAp # 2019-1

Cool Applications

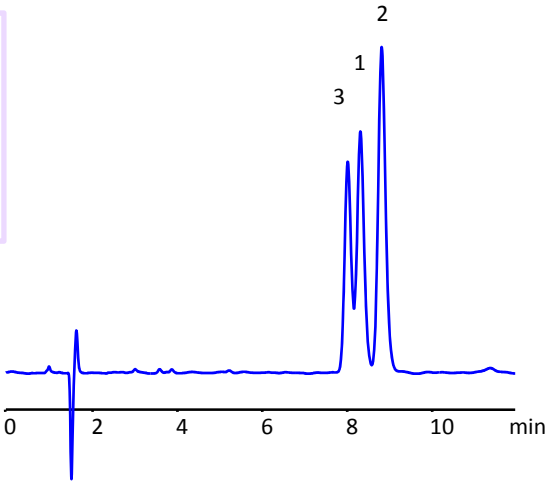
"Making Tough LC Applications Look Cool"

HPLC SEPARATION OF MIXTURE OF PHENYLPROPANOLS

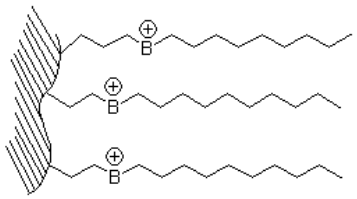
Reverse phase columns



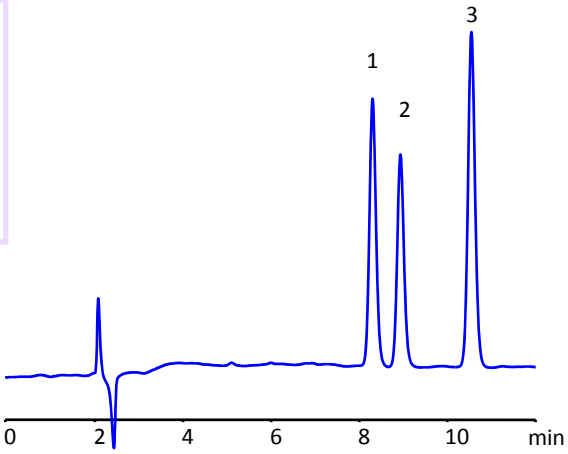
Column: C18
Column size: 4.6 × 150 mm, 5 µm
Mobile phase: MeCN /H2O -30/70%
Buffer: Acetic Acid 0.1%
Flow rate: 1 mL/min
UV detection: 207 nm



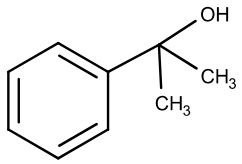
Primesep SB mixed-mode column



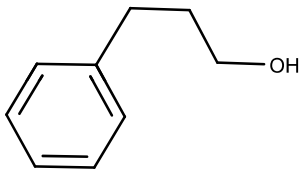
Column: Primesep SB
Column size: 4.6 × 100 mm, 5 µm
Mobile phase: Gradient MeCN – 10-30% 15 min
Buffer: Acetic Acid 0.1%
Flow rate: 1 mL/min
UV detection: 207 nm



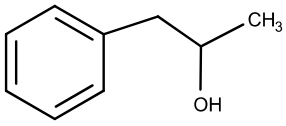
1 2-Phenyl-2-propanol



2 3-Phenyl-1-propanol



3 1-Phenyl-2-propanol



Application Comments

Separation of structural isomers in reverse phase (RP) chromatography can be a challenging task. Many different RP columns of C18, C8 or phenyl type can be screened to find one which is selective enough to resolve peaks of structurally similar compounds. Mixed-mode columns are generally used for separation of charged molecules, but can also be used as an alternative RP media for neutral molecules.

Example here shows a chromatogram of 2-phenylpropanol isomers separation. In order to obtain a base line resolution, many brands of RP columns were screened. However no satisfactory separation was found. When Primesep SB column - a reverse phase-anion exchange mixed mode column - was used, the separation was obtained with resolution of 2.0 for closely eluted peaks.

Thus, a positively charged reverse stationary phase provides selectivity as an alternative to most other RP phases, which generally have a negative surface charge due to residual silica effect.