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Immobilization of a phosphonium ionic liquid on a silica monolith for hydrophilic interaction chromatography

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Highlights

- • Trioctyl(3/4-vinylbenzyl)phosphonium ionic liquid was synthesized.
- • The ionic liquid was immobilized to silica monolithic column.
- • Columns were evaluated in HILIC mode.
- • Separation of nucleobases, nucleosides, and 2-deoxynucleosides was achieved.

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Abstract

A methodology for preparing phosphonium-based ionic liquid modified silica-based monolithic capillary columns is presented. The columns with dimensions of 150 x 0.1 mm were modified by a phosphonium-based ionic liquid (trioctyl(3/4-vinylbenzyl)phosphonium chloride) *via* 3-(trimethoxysilyl)propyl methacrylate. The prepared columns were evaluated under hydrophilic interaction liquid chromatography separation conditions, employing a sample mixture containing purine and pyrimidine bases and nucleosides. Detection was made by UV. The high efficiency of the original silica monolith was preserved even after modification, and it reached values in the range of 98 000 - 174 000 theoretical plates/m. The effects of the concentration of acetonitrile in the mobile phase, the presence of additives in the mobile phase, such as, acetic acid or ammonium acetate, and the pH of the mobile phase on the

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