

Abstract

This study reports chiral separation of orthoconic antiferroelectric liquid crystals using ultra-high performance liquid chromatography. The materials studied in this paper differ in the presence and/or position of the fluorine atom on the phenyl ring and in the alkoxy-spacer length. Reversed non-aqueous mode using chiral stationary phase based on derived polysaccharides was used. In the first part of the thesis, the effect of the mobile phase flow rate and the column temperature on the enantioseparation efficiency was observed. Subsequently, under optimum flow rate and column temperature, the effect of mobile phase composition was examined. The mobile phase was based on acetonitrile, while various ratios of methanol, ethanol or isopropanol were added using isocratic elution. Two chromatographic columns containing different chiral stationary phase were compared – CHIRALPAK® IA-U amylose tris(3,5-dimethylphenylcarbamate) and CHIRALPAK® IG-U amylose tris(3-chloro-5-methylphenylcarbamate). We studied the influence of chromatographic conditions and analyte structure on resolution, enantioselectivity and retention.

Key words: ultra-high performance liquid chromatography, enantioseparation, liquid crystals, reversed phase