Abstract

This bachelor thesis deals with the chiral separation of newly synthesized orthoconic antiferroelectric liquid crystals using ultra-high performance liquid chromatography. These studied compounds differ in the alkyloxy-spacer length, in the presence and/or position of the fluorine atom on the phenyl ring and in the chiral center. The separation took place in a reverse separation mode using a chiral stationary phase based on derivatized amylose. First, the effect of mobile phase flow rate and column temperature on separation efficiency was exanimated. The effect of the composition of the mobile phase on the enantioseparation were studied at the optimum temperature and flow rate. The mobile phase was based on acetonitril, while deionized water was added gradually using isocratic elution. Furthermore, the effect of chromatographic conditions and the structure of the studied analytes on resolution and enantioselectivity was investigated, concretely the presence and position of fluorine atom on pfenyl ring, the length of alkyloxy-spacer and the effect of divergent chiral center. Under optimized chromatography conditions we succeeded to separate all examined substances on the base line.

Key words: ultra-high performance chromatography, liquid crystals, enantioseparation, chiral stationary phase, reverse mode