Abstract

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Title of Thesis: The employment of HPLC in the field of chiral separations VII.

Boron clusters are inorganic, synthetically prepared, three-dimensional, cage-like structures. Boron cluster compounds which are made only of boron and hydrogen atoms are completely symmetrical. Their symmetry can be disrupted by endo- or exoskeletal substitution resulting in chiral compounds. Carboranes, subgroup of the boron cluster compounds, contain at least one carbon atom in their structure and usually include exoskeletal substitution. Therefore, the metallacarboranes containing cobalt bis(dicarbollides) and 7,8-dicarba-*nido*-undecaborates that have been studied can be found among these chiral structures. Thanks to the specific properties such as high lipophilicity, metabolic stability and delocalized negative charge, the studied compounds can be used as isosteric substitution of phenyl ring in pharmacophores. Due to the growing interest in cobalt bis(dicarbollides) and 7,8-dicarba-*nido*-undecaborates and the importance of chirality in pharmacy, suitable conditions for chiral separation need to be determined. The separation of these substances has been studied in the past using high performance liquid chromatography and ß-cyclodextrin chiral selectors. The focus of this study was the chiral separation of carboranes using polysaccharide and quinidine chiral selectors. Polysaccharides are among the most effective chiral selectors while quinidine selectors are suitable for the separation of anions due to the positive charge. At least partial chiral separation was achieved in thirteen out of twenty-one analytes as well as successfully determining suitable conditions for separation of cobalt bis(dicarbollides) and 7,8-dicarba-*nido*-undecaborates.