

The aim of this work is the study of a simple method of preparing macrocyclic ligands for complexation of fullerenes. Necessary attribute of those ligands is their construction of electron-rich building blocks, which are prerequisite for π - π interactions with electron-deficiency fullerene spherical systems. Tetrathiafulvalene (TTF) is a known electron-rich system and for this reason, 2,3-bis(butylthio)-6,7-bis(2-cyanoethylthio)-tetrathiafulvalene was chosen as a basic building block. The protecting cyanoethyl group in this derivative can be removed by the acting of a base and thus generated thiolate function group is used in alkylation reactions of bis(bromomethyl)aryls. In reactions of these two components of bifunctional alkylation reactions was produced (in addition to the prevalent oligomeric products) a mixture of macrocycles with different sizes, the number of included building units was marked as [2 +2], [3 +3] and [4 +4] macrocycles. Reactions of TTF derivative with 4,4'-bis(bromomethyl)biphenyl and 4,4'-bis(bromomethyl)diphenylether have been performed. Column chromatography fractions of cyclic products were in both cases analyzed by gel permeation chromatography, NMR spectroscopy.

The performed study has shown, that an equivoice to the simplicity of the synthetic protocol are low yields of cyclic products and difficult chromatographic dividing of mixture. The comparison was made with biphenyl building block attached two-step macrocycle synthesis by using an acyclic precursor. Results of these methods showed that this two-step synthesis is a good compromise of the aspects mentioned before.