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SUMMARY IN ENGLISH

The main purpose of this study was the synthesis of macrocyclic systems containing 1,2,3-triazole ring. As the main tool which I used during this study was Huisgen 1,3-dipolar cycloaddition reaction of the 'click' type, between azide and acetylene derivatives.

During the study I obtained a set of new macrocyclic systems containing two 1,2,3-triazole rings using alkyne-azide cycloaddition catalyzed by Cu(I) ions. I have established that the best results can be achieved using a non-aqueous conditions of 'click' reaction (CuI, DIPEA, acetonitrile) and the high dilution method (1 mg/ml).

I introduced a modified Appel reaction as a powerful and efficient transformation of primary alcohols into azide and thiol derivatives. This method was used to modify not only the derivatives of ethylene glycols and their sulfur analogs but also for derivatives of adamantane, furane or proline. All products have been obtained in *one pot* reaction and *in-situ* generated halogenating agent.

In the last stage of research the selected ligands were subjected to tests their complexing properties toward silver(I) ions. The results confirmed the coordination of the silver ion is mainly achieved by the sulfur atoms of the ethylene bridge and by the nitrogen atoms of the 1,2,3-triazole ring.