SYNTHESIS AND STUDY OF URANILE COORDINATION COMPOUNDS WITH DERIVATIVES OF 3-(2-HYDROXYPHENIL)-1,2,4-TRIAZOLE

The article is devoted to investigation of coordination compounds of uranyl-ion with derivatives of 3-(2-hydroxyphenil)-1,2,4-triazole. Three new types of ligands and coordination compounds on their base were syntesised. Obtained compounds were studied by means of NMR-spectroscopy.

Ligands synthesis was based on thermal cyclization of acylamidrazons obtained from hydrazides and imidoesters. Synthesized ligands can be divided into 3 types: 1). O, N - chelate ligands ($R=R^1$); 2). O,N,N ligand that due to presents of the amino-group is able to form an additional metallacycle ($R=R^2$); 3). O, Nx,O ligand systems that are able to form several chelate metallocycles ($R=R^3$, R^4). Synthesis scheme are presented in the article.

NMR-spectra of all complexes with derivatives of 3-(2hydroxyphenyl)-1,2,4-triazole have several common features. In contrast to ligands in complex NMR spectra observed the disappearance of the signal of -OH group and low-field shift and constriction of triazole ring protons signals. All protons of oxyphenyl ring also undergo low-field shift. In the case where $R=R^2$ in the spectrum of the complex is observed doubling of the signals of all protons. This can be due to the fact that one molecule of ligand is coordinated in tridentate type and the second is bidentate. One of the feature of 1,2,4-triazoles is that they can have three tautomeric forms. As a result we can observe doubling and tripling of signals of protons in NMR-spectra of the corresponding compounds. Considering the spectra of complexes based on ligands with $R=R^3$ it can be argued that as a result of complexation certain conformation of the ligand is stabilized.

As a result of the work, synthesis methods of ligands was developed and improved. Ligand systems and their corresponding complexes were studied by NMR spectroscopy. On the basis of results of investigation, structures of obtained complexes were proposed.

Keywords: 1,2,4-Triazole, deprotonation, uranile.