New Ni(II) coordination compounds with aminomethyl and hydroxymethyl substitued benzimidazoles

Vladimír Kuchtanin, Mária Tkáčová, Rudolf Varga, and Ján Moncoľ

Faculty of Chemical and Food Technology STU in Bratislava, Radlinského 9, Bratislava 812 37, Slovakia

In 1872, Hobrecker reported the first benzimidazole synthesis and over the years of active research, benzimidazole and its derivatives have evolved as important structure in coordination chemistry. The main features of benzimidazoles are the basic character, high stability, facile synthesis and its capability to form hydrogen bonds. Therefore presented study demonstrates preparation and characterization of Ni(II) coordination compounds with aminomethyl and hydroxymethyl substituted benzimidazoles.

The 2-hydroxymethylbenzimidazole (H_2L) and 2-aminomethylbenzimidazole dihydrochloride ($H_2L{\cdot}2HCl$) ligands were prepared by a modified Phillips method which involves condensation of o-phenylenediamine with glycolic acid or glycine. Coordination of prepared ligands to nickel(II) ions afforded new mononuclear complexes with octahedral stereochemistry of central atom, as well as new tetranuclear complexes depending on the counter anion.

Finally our study shows that 2-hydroxymethylbenzimidazole and 2-aminomethylbenzimidazole are typical chelating ligands. Prepared types of coordination compounds depends on used anions. Obtained complexes were characterized by IR and UV-VIS spectroscopy and suitable crystals were characterized by RTG structure analysis.

This work was supported by Grant agencies of the Slovak Republic (VEGA 1/0639/18, APVV-14-0078, APVV-16-0039 and APVV-18-0016).