Joint Event

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The NMR study of biologically active metallated alkanol ammoinium ionic liquids

Abstract:

The complexes in which triethanolamine (TEA) acts as a tetradentate ligand are known as atrans-es, tricyclic systems in which the formation of the intramolecular N→M coordination bond forms the basis of their specific properties. Thus, atranses have a special chemistry that allows access to interesting molecular architectures that are of great application importance in various fields, in-cluding medicine and agriculture. The 1H, 13C, 15N, and 111Cd NMR spectra of new biologically active metallated ionic liquids have been obtained in D2O solution reproducing biomimetic condi-tions (1,2). Under these conditions the metallated alkanol ammonium ionic liquids exist as mono-bi- and tricyclic structures, which are in equilibrium. Shift of the equilibrium depends upon nature of a metal and effects all the parameters of the NMR spectra. Peculiarities of ligand exchange, typical for the studied compounds, have been studied in a wide range of temperatures. It is found that the NMR data can be used to control structure of the compounds formed in the course of synthesis. Revealed exchange interactions of TEA complexes suggest that in aqueous solution TEA can be easily replaced by stronger ligand.

Biography

Vladimir Voronov's research interests are related to solving problems of molecular spectroscopy and physico-organic chemistry by methods of nuclear magnetic resonance and quantum chemistry. He is the author of more than three hundred publications in periodicals, including more than thirty books. He received a number of awards established by the Russian Academy of Natural Sciences, including the Gold Medal "For innovative work in the field of higher education". Member of the American Chemical Society.