

## **SYNTHESIS AND INVESTIGATIONS OF ANIONIC LANTHANIDE COMPLEXES WITH N-(DIALLYLAMINOPHOSPHORYL)-4-METHYLBENZENESULFONAMIDE**

Using Kirsanov's phosphoroazo- reaction and further reaction of [(4-methylphenyl)sulfonyl]phosphoramidic dichloride with allylamine, the new sulfonylamidophosphate type ligand (HL =  $n\text{-CH}_3(\text{C}_6\text{H}_4)\text{SO}_2\text{N}(\text{H})\text{P}(\text{O})(\text{N}(\text{H})\text{CH}_2\text{CH}=\text{CH}_2)_2$ ) has been synthesized. Its sodium salt (NaL) was obtained through the exchange reaction between neutral ligand and sodium methanolate in methanol solution. Some of lanthanide (III) coordination compounds of general formula  $\text{Na}[\text{LnL}_4]$  (where Ln = La, Nd, Eu, Tb) have been prepared.

They were characterized by means of  $^1\text{H}$  NMR, IR and UV-Vis – spectroscopy. For all complexes the metal contents were determined by complexometric titration with xylenol orange as indicator. In IR spectra of the complexes the low field shifts of stretching vibrations of  $\text{SO}_2$  and  $\text{P}(\text{O})$  groups in comparison with spectrum of NaL prove the bidentate coordination of the ligand via the oxygens of such groups ( $\Delta\text{SO}_{2(\text{as})}$  about  $40\text{ cm}^{-1}$  and  $\Delta\text{P}(\text{O})$  about  $42\text{ cm}^{-1}$ ).

PMR spectra of sodium salt and lanthanum (III) complex solutions in deuterio- DMSO reveal the significant strong-field shifts for all proton's signals in comparison with free ligand (for NaL 0.12-0.15 ppm for aromatic and 0.04-0.12 for aliphatic parts; for  $\text{NaLaL}_4$  0.25-0.37 ppm for aromatic and 0.08-0.16 for aliphatic parts). Such a phenomenon should be explained in terms of electron density redistribution in chelate  $-\text{SO}_2\text{NP}(\text{O})=$  frame caused by deprotonation with formation of anion in case of NaL and further coordination of acido-ligand to La cation with formation of tetrakis-complex-anion  $[\text{LaL}_4]$ .

According to absorption spectrum of neodymium (III) coordination compound in acetonitrile solution, the coordination number 8 have been proposed and one type of absorption centrum was determined.

Key words: sulfonylamidophosphates, lanthanides, coordination compounds.