

SYNTHESIS AND STRUCTURE OF NEW COBALT AND NICKEL COMPLEXES

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Metal complexes of cobalt (**1**) and nickel (**2**) composition $ML_2(An)_2(H_2O)_n$, where $An=NO_3^-$, $n = 4$ obtained by ligand – autocomplex 3,5-dinitro-N-(4-pyridyl) benzamide having dinitrobenzamide acceptor moiety and the remainder of pyridine as an N-containing heterocyclic donor fragment potentially having a biological activity, and ability to bind transition metal cations. Structurally related metal complexes, in particular bis- {4- [N- (benzamido) piridinat]} cobalt (II) nitrate • $2H_2O$, simplistically denoted as a $Co(NPBA)_2(H_2O)_2$ are known in the literature [1], and were useful as colorimetric sensor in research. Note that although we have obtained complexes that are similar in structure to those described in the literature but have different solvation shell structure because they have metal atom is surrounded by four molecules of H_2O , but not two, and NO_3^- counterions are on the outside area, and not tied directly to the metal atom, as in the $Co(NPBA)_2(H_2O)_2$, which follows from the contact data obtained X-ray diffraction (XRD) patterns for both bis [4- (3,5-dinitrobenzamido) pyridine] – cobalt (II) nitrate tetrahydrate (**1**) and bis [4- (3,5-dinitrobenzamido)pyridine] nickel (II) nitrate tetrahydrate (**2**), see **Fig. 1a**. Among other things, managed to isolate and characterize the X-ray diffraction anhydrous Ni $^{2+}$ complex of the same ligand having very different, different from the previously described geometry, see **Fig. 1b**.

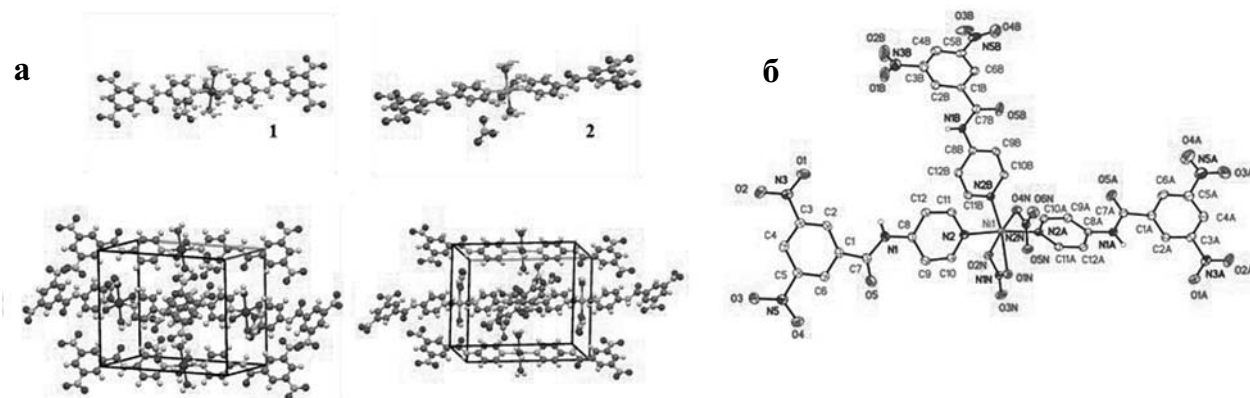


Fig. 1. Structure aquacomplexes Co – (1a), Ni- (2a) and anhydrous complex Ni- (b)
According to X-ray diffraction

These differences of structures of metal complexes are clearly visible in the figures given above and determine the possibility of their use as ionophore substances in new metal-complex systems of membrane ion-selective electrodes due to their higher lability.

1. J.C. Noveron, M.S. Lah, R.E. Del Sesto, A.M. Arif, J.S. Miller, P.J. Stang. *J. Am. Chem. Soc.*, 2002, 124, 6613-6625.

This work was supported by RFBR projects 17-03-01070, 16-03-00743.