

**SYNTHESIS, STRUCTURE AND PROPERTIES OF COORDINATION
COMPOUNDS OF 3d-METALS VALERATES AND BENZOATES
WITH PHENYLACETHYDRAZIDE**

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3d-Metals complexes with carboxylic acid hydrazides are a fairly well-studied class of coordination compounds. At the same time, complexes of 3d-metals carboxylates with hydrazides have been studied very little. In this paper, the interaction of cobalt(II), nickel(II), copper(II) and zinc valerates and benzoates with phenylacetylhydrazide (L) was studied. 7 Complexes of the composition $[ML_3](RCOO)_2$ ($R = C_4H_9-$, $M = Co, Ni, Zn$, $R = C_6H_5-$, $M = Co, Cu, Zn$) and $[NiL_3](RCOO)_2 \cdot 4H_2O$ have been isolated by the interaction of a methanolic solution of the corresponding 3d-metal carboxylate with an aqueous solution of phenylacetylhydrazide with heating. The composition and structure of the complexes are determined by the methods of chemical analysis, vibrational spectroscopy (IR in pure form and in tablets with KBr, Raman) and diffuse reflection spectroscopy. In all cases, the bidentate ligand is coordinated through oxygen and nitrogen, and the anions are outer-sphere. The thermal stability of the complexes has been studied by thermogravimetry. Thermostability decreases in the series of complexing agents: $Co^{2+} > Ni^{2+} > Zn^{2+} > Cu^{2+}$, and for benzoates is higher than for valerates. The X-ray diffraction method was used to establish the structure of $[NiL_3](RCOO)_2 \cdot 4H_2O$, this is the first structurally characterized complex with phenylacetylhydrazide. The structural units of the crystal are complex $[NiL_3]^{2+}$ cations, $C_6H_5COO^-$ anions and crystallization water molecules. The Ni atom is coordinated along the apexes of the octahedron by three oxygen atoms and three nitrogen atoms of three bidentate chelating (O, N) ligands of L in cis, a trans-medial (fac) conformation. The structural units of the crystal are joined together by a branched network of hydrogen bonds O-H ... O, N-H ... O.

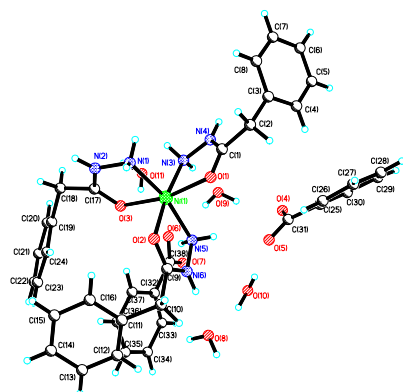


Fig. The structure of compound $[NiL_3](RCOO)_2 \cdot 4H_2O$

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