

SYNTHESIS AND CRYSTAL STRUCTURE OF BIS(CITRATO)GERMANATE AND STANNATE WITH TRIS(PHENANTHROLINE)NICKEL(II) CATION

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Abstract. The new complexes $[\text{Ni}(\text{phen})_3][\text{Ge}(\text{HCit})_2] \cdot 2\text{H}_2\text{O}$ (**1**), $[\text{Ni}(\text{phen})_3][\text{Sn}(\text{HCit})_2] \cdot 3\text{H}_2\text{O}$ (**2**) (where phen is 1,10-phenanthroline, H_4Cit is citric acid) were synthesized. The identity, composition, and thermal stability of the complexes were established by elemental analysis, thermogravimetry, and IR spectroscopy. According to the data of X-ray diffraction, the bis(citrate)germanate/bis(citrate)stannate $[\text{Ge}/\text{Sn}(\text{HCit})_2]^{2-}$ is the anion, while $[\text{Ni}(\text{phen})_3]^{2+}$ is the cation in the studied complexes. The coordination polyhedrons of Ge, Sn and Ni atoms are octahedral and are formed by three pairs of oxygen atoms of different types of two HCit^{3-} ligands or by three 1,10-phenanthroline molecules.

Keywords: citric acid, 1,10-phenanthroline, germanium(IV), tin(IV), nickel(II) complex.

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