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HETEROTRINUCLEAR $[Fe_2^{III}Ni^{II}]$-μ_3-OXO-CLUSTER BASED ON SALICYLIC ACID. SYNTHESIS, STRUCTURE AND PHYSICO-CHEMICAL PROPERTIES

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Abstract. The reaction of iron nitrate and nickel chloride with ammonium salicylate in the presence of methanol and dimethylformamide (DMF) results in the formation of a new trinuclear heterometallic complex [hexa- μ_2-salicylato- μ_3-oxo-(methanol) (dimethylformamide) aquadiiron(III) nickel(II)] methanol dimethylformamide. The complex crystallizes in the monoclinic space group *C*2/*c* and was structurally characterized by single crystal X-ray diffraction as $[Fe_2NiO(SalH)_6(CH_3OH)(DMF)(H_2O)]\cdot DMF\cdot CH_3OH$, where SalH are monodeprotonated salicylic acid ions. The IR and Mössbauer spectra and thermal properties were studied. The parameters of the Mössbauer spectrum (δ_{Fe}= 0.45 mm/s, ΔE_Q= 1.086 mm/s, 300 K) suggest the high-spin state of the Fe^{3+} ions (S= 5/2).

Keywords: heterotrinuclear μ_3-oxo complex, X-ray, IR analysis, Mössbauer spectrum, TG data.

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