# Structure and properties of the dinuclear complex $[Co_2(\mu\text{-}OAc)_2(OAc)_2(\mu\text{-}H_2O)(phen)_2]$.

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Streszczenie

The dinuclear complex $[Co_2(\mu\text{-}OAc)_2(OAc)_2(\mu\text{-}H_2O)(phen)_2]$ has been prepared and its structure was determined. The compound crystallizes in the monoclinic space group *P*2(1)/*c*. The Co–Co distance is 3.574 Å and is similar to the Fe–Fe distance in the reduced methane monooxygenase hydroxylase. The electronic and IR spectra of the complex confirm octahedral coordination of the cobalt atoms and formation of strong O–H···O hydrogen bonds in the solid state. The dependence of the magnetic susceptibility of the complex on temperature indicates an antiferromagnetic interaction, the value of the isotropic exchange parameter *J* was estimated to be −2.1 $cm^{-1}$. The $^1H$ NMR spectra show that in organic solvents the structure of compound is the same as in the solid state, however, in water solution the complex dissociates giving compounds with different Co:phen ratios.

Słowa kluczowe

Cobalt, Dinuclear complex, Antiferromagnetic interaction, Dicobalt model hydrolase

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