

Synthesis, characterization and magnetic properties of phenoxido bridged dinuclear iron(III) complex with bis(phenolate) ligand.

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Streszczenie

A new dinuclear Fe(III) complex, $[\text{Fe}_2(\text{bp})_2(\text{N}_3)_2] \text{CH}_3\text{OH}$ (**1**), was synthesized by the reaction of $\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$, NaN_3 and H_2bp in methanol where H_2bp is the bis(phenolate) ligand obtained from the Mannich condensation of 4-fluorophenol, formaldehyde and 2-(aminomethyl)pyridine. The ligand was characterized by spectroscopic methods (NMR, FT-IR, UV-Vis) and elemental analysis. Complex **1** was characterized by spectroscopic methods, elemental analysis and single crystal X-ray diffraction analysis. X-ray studies revealed that complex **1** is a centrosymmetric phenolate bridged dinuclear Fe(III) complex in which the Fe(III) ions have a distorted octahedral coordination environment. The complex was further studied by TGA analysis and magnetic measurements. Magnetic studies indicated that the bis(phenolate) bridging ligand mediates an antiferromagnetic interaction between the Fe(III) ions with $J = -7.3 \text{ cm}^{-1}$, $H = -2JS_1S_2$.

Słowa kluczowe

Dinuclear iron(II) complex, crystal structure, Magnetic properties, spectroscopic studies, Bis(phenolate) ligands

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