



Study of copper(II) thiophenecarboxylate complexes with nicotinamide.

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Rok wydania

2012

Czasopismo

Polyhedron

Numer woluminu

45

Strony

94-102

DOI

10.1016/j.poly.2012.07.069

Kolekcja

Naukowa

Język

Angielski

Streszczenie

The synthesis and characterization of $[\text{Cu}(\text{3-Me-2-tpc})_2(\text{nia})_2]$ (**1**), $[\text{Cu}(\text{5-Me-2-tpc})_2(\text{nia})_2]$ (**2**), $[\text{Cu}(\text{2-tpc})_2(\text{nia})_2]$ (**3**) and $[\text{Cu}(\text{5-Me-2-tpc})_2(\text{nia})_2(\text{H}_2\text{O})]$ (**4**) (where 2-tpc is 2-thiophenecarboxylate, 3-Me-2-tpc is 3-methyl-2-thiophenecarboxylate, 5-Me-2-tpc is 5-methyl-2-thiophenecarboxylate and nia is nicotinamide) are reported. The complexes under study were characterized by electronic, IR, EPR spectroscopy, magnetic susceptibility over the temperature range and X-ray structure analysis. The coordination arrangement around each copper(II) atom is a distorted tetragonal bipyramidal. The discrepancies between two Cu–O axial bond distances increases in the order: 0 Å (complex **1**) < 0.050 Å (complex **3**) < 0.209 Å (complex **2**) < 0.516 Å (complex **4**, Cu1) < 0.746 Å (complex **4**, Cu2), indicating that in the same order a distortion of the respective tetragonal bipyramids increases. This is in a good agreement with the ligand field band position in their electronic spectra.

The complex molecules of all compounds are connected through H-bonds into supramolecular chains or frameworks. Spectral and magnetic behaviours are discussed with regard to X-ray parameters. Small negative value of Weiss constants confirm an existence of a very weak antiferromagnetic interaction between Cu(II) magnetic center in the crystal lattice.

The EPR parameters are typical for a tetragonal bipyramidal Cu(II) complexes. The g_{av} values at r.t. are somewhat lower than those at 77 K.

Słowa kluczowe

copper(II), nicotinamide, crystal structure, hydrogen bonds, thiophenecarboxylate

Adres publiczny

<https://doi.org/10.1016/j.poly.2012.07.069>

Artykuł

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Plik został wygenerowany dnia 2026-10-14 01:57:48

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