

NOVEL IRON(II) AND COPPER(II) POLYMERIC COORDINATION COMPOUNDS WITH *N,N'*-BIPYRIDINE-TYPE LIGANDS: SYNTHESIS AND CHARACTERIZATION

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Abstract. Two new coordination compounds $\{(\text{bpyH}_2) \cdot [\text{Fe}(\text{bpy})_2(\text{H}_2\text{O})_2(\text{SO}_4)_2] \cdot 2(\text{H}_2\text{O})\}_n$ (**1**) and $\{[\text{Cu}(\text{bpp})_2(\text{H}_2\text{O})] \cdot (\text{BF}_4)_2 \cdot \text{dmf} \cdot 0.75(\text{H}_2\text{O})\}_n$ (**2**), (where, bpy= 4,4'-bipyridine and bpp= 1,3-bis(4-pyridyl)propane, dmf= *N,N*-dimethylformamide) have been synthesized by slow evaporation method based on rigid and flexible bis(pyridine) ligands. The obtained compounds were characterized by thermal analysis, FT-IR spectroscopy and single crystal X-ray diffraction analysis. The structure of **1** is a channel-containing open framework constructed through the hydrogen-bonding supported by the criss-cross arrangement of the 1D Fe-bpy anionic chains, in which the surrounding of the metal atom is completed by oxygen atoms belonging to water molecules and SO_4^{2-} anions. The structure of **2** is formed by a one-dimensional polymeric cationic chain, in which the four bpp ligands connect with Cu(II) by four nitrogen atoms and one oxygen atom that belongs to a molecule of water that completes the surrounding of each metal atom. The complexes crystallize in the monoclinic space groups *C2/c* and *P2₁* respectively, where Fe(II) and Cu(II) ions present a N_2O_4 octahedral and N_4O square pyramidal environment. The hydrophilic regions absorb bpyH_2^{2+} and water molecules in **1** and BF_4^- anions, water and dmf molecules in **2**, which are held in the crystal lattices *via* hydrogen bonds.

Keywords: crystalline coordination polymer, bridging ligand, supramolecular system, π - π stacking interaction.

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