

MS30-P31 Coordination polymers of the types $[MX_2(4\text{-cpy})_x]_n$ and $[MX_2py_x]_n$: syntheses, polymorphism and structure relations

Alexander Bodach¹, Haishuang Zhao², Yasar Krysiak², Lothar Fink¹, Miriam Heine¹, Jürgen Glinnemann¹, Edith Alig¹, Martin U. Schmidt¹

1. Institute of Inorganic and Analytical Chemistry, Goethe University, Max-von-Laue-Str. 7, 60438 Frankfurt/Main, Germany
2. Institute of Physical Chemistry, Johannes Gutenberg University, Jakob-Welder-Weg 11, 55128 Mainz, Germany

email: ax.bodach@yahoo.com

Syntheses and structural characterizations of coordination polymers have constituted a rapidly expanding field of research in the last decades, due to their interesting physical properties and potential applications. [1]

We report on the polymorphism of $[\text{CoBr}_2(4\text{-cpy})_2]_n$ and $[\text{NiCl}_2[4\text{-cpy})_2]_n$ (4-cpy = 4-cyanopyridine). Both phases show octahedral coordination of the M^{II} ions, which is built up by two N-donor ligands and completed by bridging halide ions in the equatorial plane. This motif typically leads to chains in the $[MX_2(4\text{-cpy})_x]_n$ and the $[MX_2py_x]_n$ phases with $M^{\text{II}} = \text{Mn, Co, Ni, Cu, Pd, X} = \text{Cl, Br}$.

For the phases of the types $[MX_2(4\text{-cpy})_x]_n$ and $[MX_2py_x]_n$, ($x < 2$), the degree of polymerization increases with decreasing x which results in the constitution of double chains, bands or planes, depending on the structural requirements of the bridging halide ions and the potential bidentate co-ligand 4-cyanopyridine.

The structure relations of the above mentioned coordination polymers with different values of x are discussed. [2-5]

References:

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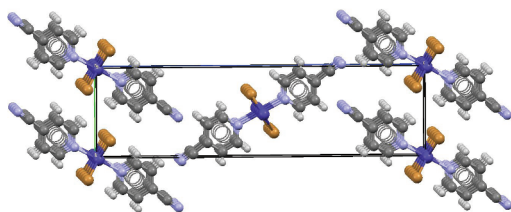


Figure 1. Crystal structure of $[\text{CoBr}_2(4\text{-cpy})_2]_n$ projected along a . Monoclinic space group $P 1 2_1/n 1$. Pseudo orthorhombic, minimal non-isomorphic supergroup $P 2/m 2_1/n 2_1/n$.

Keywords: Coordination polymers, structure relations, crystal engineering, polymorphism, condensed networks, substituted pyridine ligands

MS30-P32 A row of $(\text{XeF}_5^+)\text{M}_2+(\text{SbF}_6)_3$ ($\text{M}=\text{Mg, Ni, Mn, Co, Cu, Zn}$) compounds: peculiarities of crystal structure, limit of isomorphic substitution, merohedral twinning

Evgeny Goreshnik¹, Zoran Mazej¹

1. Department of Inorganic Chemistry and Technology Jožef Stefan Institute Jamova 39 1000 Ljubljana Slovenia

email: evgeny.goreshnik@ijs.si

Mixed-cation compounds of general formula $(\text{XeF}_5^+)\text{M}_2+(\text{SbF}_6)_3$ ($\text{M}=\text{Mg, Ni, Mn, Co, Cu, Zn}$) have been synthesized and structurally investigated using single crystal diffraction technique. A wide row ($\text{Mg, Mn, Co, Cu, Zn}$) derivatives are isotypic and crystallize in a monoclinic $P2_1/n$ space group with a β angle varying from 90.064(3) (Zn) to 90.432(2) (Co). Apex-shared MF_6 and SbF_6 octahedra are interconnected into infinite tridimensional framework with cavities, occupied by XeF_5^+ cations (Fig. 1). All investigated $(\text{XeF}_5^+)\text{M}_2+(\text{SbF}_6)_3$ salts demonstrate more or less pronounced merohedral twinning with the same twinning law. Increasing of ionic radii (Hg) has led to a formation of completely different $(\text{XeF}_5)_3[\text{Hg}(\text{HF})_2(\text{SbF}_6)_7]$ compound.

Keywords: Mixed-cation compounds