of Yb and Cu along c. Based on this result and the high resolution transmission electron microscopy images a 3-dimensional model of the superstructure was constructed in space group C2 [1]. Yb was distributed on 336 (4c) sites, 7 (2b) sites and 7 (2a) sites, while Cu was distributed on 1519 (4c) sites. Three different types of Yb co-ordination were found in the structure with their relative abundances 2:1:1 which is consistent with observed Mössbauer spectra. The Yb sites near the shear planes show Yb - Yb distances of the order of 3.6 Å which are presumably related to the formation of shear planes, and might be of relevance for the interpretation of the magnetic properties. The composition and calculated density of the model are consistent with observed values. The calculated and observed X-ray structure factors agreed to R = 12%.

Interaction of Cu(NO₃)₂·3H₂O with 2-hydroxethyl (propyl) imine-BENZALDEHYDE.

The composition and calculated density of the complex as well. In order to analyze the transmission electron microscopy images a 3-dimensional model was synthesized and next analyzed by X-ray methods:

Cu(HL)NO₃[II],Cu(3-pic)(HL)NO₃[III], Cu(4-pic)(HL)NO₃[III], CuL [IV], CuL'[V], Cu(Py)(HL)NO₃ [VI]. were H₃L = 2HOC₆H₄CHN(CH₃)₂OH. H₃L' = 2HOC₆H₄CHN(CH₃)₂OH.

It was determined, that the coordination polyhedron around the central atom in the complexes I-III is an extended tetragonal pyramid instead of the complex are polymers. The compound II is an dimer. The nitrate group serves in the polymer complexes as bridge-ligand, but in dimers this function fulfills the oxygen atom of the角 of the square is occupied by the oxygen atom of the ion in through the centre of symmetry.

Pb(II) coupled with the initial complex CuL' combined with the initial complex through the centre of symmetry.

For Tl(I) atoms two principally different kinds of coordination spheres formed by oxygen atoms are known: (i) The Tl(I) atom is strongly covalently bound to a small number of neighbours with short Tl-I-O bonds. In these cases usually two to four ligands with 2.50 Å < Tl-I-O < 2.80 Å have been found to be arranged at one side of the Tl(I) atom. Additional ligands have definitely longer Tl-I-O bonds starting by Tl-I-O > 3.00 Å. These coordination figures are in accordance with expectations from the electron configuration of Tl(I) atoms with their lone-pair electrons. (ii) The Tl(I) atom is coordinated by a large number of O atoms with more or less equal Tl-I-O bond lengths or at least without larger gap in the distribution of the distances. Regular polyhedra with up to 12 ligands are known. The Tl-I-O bond lengths as a rule start with larger values as found for the type (ii) coordination. The type (ii) Tl(I) atoms sometimes replaces alkali or earth alkali atoms like K, Rb, Cs, and Ca or NH₄. It is to be mentioned that transitions between these two principally different kinds of coordination figures are known. A similar crystal chemical behaviour shows e.g. Pb(I).

In connection with an investigation of the geometry of the coordination figures of the Tl(I) atoms three Tl(I) arsenates have been synthesized hydrothermally and their crystal structures were determined by single crystal X-ray diffraction methods:

Tl(I)(As₂O₇)₃, Tl(I)(As₂O₅)₃, and Tl(I)(As₂O₄)₃. All these compounds represent type (i) examples. In Tl(I)(As₂O₇)₃ the O bond lengths are 2.527, 2.542 and 2.562 Å, in Tl(I)(As₂O₅)₃ they are 2.487, 2.565 and 2.778 Å for Tl(I) and 2.509, 2.743, 2.749 and 2.847 Å for Tl(II), and in Tl(I)(As₂O₄)₃ they are 2.565 and 2.640 Å, next Tl(I)-O distances are ≥ 3.0 Å.