The dependence of some properties of coordination compounds of boron, for example, the solubility in water (25°C), IR-spectra, on structural type of boron-oxygen polyhedron, size of heterocycle, the nature of cation and hydrogen bonds, is shown on the examples of 8 crystal and molecular structures of the salts of V, III, II, H. White Department of Chemistry, University of Western Australia, Nedlands, Western Australia, Australia.

In the discussed complexes Co(C8H7NO)3 CH3OH (I), Co(C8H7NS)3 CHC12 (II) and Co(C6H5CH3)3NS3 (III) the 8-oxyquinolinate and 8-mercaptopquinolinate acts as bidentate ligand forming five membered metalloccycles with the help of oxygen, sulphur and nitrogen atoms. The monomeric complex I is co-crystallized with methanol molecule. The molecule of methanol forms hydrogen bond with the weaker bonded oxygen atom. The complex II with chloroform molecule which does not contact the metal atom. The coordination polyhedron of Co(III) ion is a slightly distorted octahedron, but Co(II) - tetrahedron. The dihedral angles between the coordination planes O-Co-N, S-Co-N (1.2, 1.3, 2.3) in the complexes I-III are 87.6°, 88.2°, 91.8° (I); 93.9°, 95.0°, 88.0° (II) and 90.7° (III). The angles O-Co-O and S-Co-O of chelate metalloccycles I-III are 172.2°, 91.7° and 90.3° in I; 90.8°, 173.0° and 86.0° in II and 123.2° in III.

Plausibility of the molecular containing ring is not identical. Therefore formed the breach in five membered metalloccycles through the lines O-N, S...N by dihedral angles; 0.3°, 2.8° and 2.9° (I); 1.9°, 4.9° and 0.7° (II) and 1.2° and 17.4° (III).

Crystal data: I - a=11.392(3), b=12.774(3), c=16.672(5)Å, β=92.56(2)°, Z=4, sp.gr. P21/n; II: a=8.762(3), β=20.237(4), γ=16.073(4)Å, β=101.05(2)°, Z=4, sp.gr. P21/n; III = a=7.494(2), b=9.852(8), c=12.516(4)Å, α=80.48(2), β=86.82(2), γ=69.27(2)°, sp.gr. F12.

The present research was made possible in part or Grants LBC000 and LL010 from the International Science Foundation.