al to \( \cos^{2}\varphi \). This indicates that the contribution of this conjugation to the establishment of the stability of the chelate ring is practically the same in the molecules of compounds I-III.

Thus the x-ray structural study of the phenylmercury derivative of quinoline-8-thiol has established that it contains a chelate ring which is more stable than that in the \( \text{Ph}_2\text{Sn} \) and \( \text{Ph}_3\text{Pb} \) derivatives of quinoline-8-thiol, in agreement with the results of the study of the exchange equilibria (1) in solutions in chloroform [2].

LITERATURE CITED

REFINEMENT OF THE CRYSTAL STRUCTURE OF \((\text{NH}_4)_4[\text{UO}_2(\text{CO}_3)_3]\)  

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The crystal structure of \((\text{NH}_4)_4[\text{UO}_2(\text{CO}_3)_3]\) has been refined (CAD-4-SDP 55 diffractometer, \(\lambda\text{Mo}, 1630 \) reflections, anisotropic MLS, \( R = 0.032 \)), and the coordinates of the hydrogen atoms have been determined. The structure is made up of tetrahedral ammonium cations and mononuclear \([\text{UO}_2(\text{CO}_3)_3]^{-}\) anions, joined by hydrogen bonds. The coordination polyhedron of the U atom is a hexagonal bi-pyramid \(\text{UO}_4\) (\( U-O_{\text{ax}} = 1.790, U-O_{\text{eq}} = 2.438-2.442 \) Å).

In an examination of the products of the reaction of the salts \(\text{UO}_2\text{EO}_2\cdot n\text{H}_2\text{O} \) with urea, a study was made of the crystalline substances formed by the reaction of \(\alpha-\text{UO}_2\text{MoO}_4\cdot 2\text{H}_2\text{O} \) with \(\text{CO}(\text{NH}_3)_2 \) in aqueous solution. Since at room temperature the products were fine crystalline substances, some of the syntheses were carried out in sealed quartz ampuls at temperatures of 50, 80, or 110°C. When an aqueous suspension of uranyl molybdate and urea in the molar ratio \(1:5 \) was heated for 40-60 days under these conditions, the product was a uniform coarse-grained crystalline substance, which contained analysis indicated the composition \(\text{UO}_2\text{CO}_5\cdot 2\text{CO}\cdot (\text{NH}_2)_2\cdot 4\text{H}_2\text{O} \) (I). An x-ray structural analysis of these crystals, the results of which are given below, established that the substance obtained is \((\text{NH}_4)_4[\text{UO}_2(\text{CO}_3)_3]\), in which the atomic ratio \(U:O:C:N:H \) is identical to that given for compound (I).
The x-ray diffraction pattern of the single crystal was recorded, and the crystalline structure determined, on a CAD-4-SDP 55 automatic diffractometer system. The unit cell parameters: \( a = 10.679(4) \), \( b = 9.373(2) \), \( c = 12.850(3) \) Å, \( \beta = 96.43(2) ^\circ \), \( Z = 4 \), space group \( C2/c \), were refined from 25 reflections at a temperature of 21°C. A spherical crystal with a radius of 0.2 mm was studied by the \( u \)-scanning method (\( \lambda \text{Mo}K\alpha \), rate of scanning 0.168 deg/sec, \( \Delta \omega = 0.85 ^\circ + 0.347 \tan \theta \)); the intensities of 1851 independent reflections with a maximum value of \( \sin \theta/\lambda = 0.7 \) Å\(^{-1} \) were measured; of these, 1630 reflections with \( I > 2\sigma(I) \) were used for the subsequent calculations. With allowance for the experimentally established block structure of the crystal, equal to 0.55\(^\circ \), a vertical slit of height 5 mm was used, and the width of the horizontal slit, which was varied during the recording, was determined by the relationship \( APT = 1.3 + 2.1 \tan \theta \) (mm).

The coordinates of the U atoms were determined from an analysis of the three-dimensional distribution of the interatomic function, and the position of the other atoms, including the H atoms, was established from a series of successively calculated difference Fourier syntheses. After the introduction of a correction for absorption (\( \mu r = 2.45 \)), the refinement of the coordinates of the atoms by the full-matrix MLS using the set of programs SDP-ENX was carried out with allowance for the anisotropy of the thermal vibrations of the atoms (the H atoms were refined in the isotropic approximation) and for the secondary extinction g using the weighting scheme \( w = 1/[561.29T_1(x) + 595.84T_2(x) + 375.93T(x)] \), where \( T \) represents the truncated Chevyshev polynomials, and \( x = F_{\text{expt}}/F_{\text{max}} \). In the final stage of the refinement, \( g = 7.7(1)10^{-7} \), \( R = 0.032 \), \( R_w = 0.033 \). The coordinates and thermal parameters of the basis atoms are given in Table 1.

The established coordinates of all the atoms other than hydrogen (the H atoms were not located in [1]), and the corresponding interatomic distances and valence angles, agree with those previously established for \((\text{NH}_4)_4\text{UO}_2(\text{CO}_3)_3\) [1] to within three times the uncertainty of their measurement, and the values obtained in the present work for the standard deviations of all the quantities indicated in Tables 1 and 2 were found to be smaller by a factor of approximately 2-3.

It follows from Table 2 and Figs. 1 and 2 that the structure of \((\text{NH}_4)_4\text{UO}_2(\text{CO}_3)_3\) can be regarded as made up of tetrahedral ammonium cations and mononuclear \([\text{UO}_2(\text{CO}_3)_3]^{2-}\) anions, joined by hydrogen bonds N-H...O. The coordination polyhedron of the U atom is a hexagonal bipyramid \(\text{UO}_6\), in which the oxygen atoms of the uranyl group are on the principal axis, and six oxygen atoms from three carbonate groups are situated in the equatorial plane; the carbon-