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Report:

Platinum blues [l] and greens [2] are amorphous and antitumor active platinum complexes. Pt-uridine blue sulfate is formed when cis-diaquodiammineplatinum(I1) reacts with uridine at temperature of about 70 C.

Earlier WAXS experiments with MoKalpha radiation [3] and AWAXS experiments at Pt LIII absorption edge [4] indicated that Pt-uridine blue sulfate contains dinuclear Pt(II) complexes with the Pt-Pt distance of 3 A. However, the total RDF obtained with MoKalpha radiation contained another maximum at 2.55 A, which could be a Pt-Pt distance of dinuclear Pt(II1) complex. Because of the limited k-range in the AWAXS experiments at LIII edge the maximum at 2.55 Å was not resolved in the Pt-Pt partial radial distribution function. The purpose of the AWAXS experiments at PtK absorption edge was to find out whether Pt-uridine blue sulfate contains dinuclear Pt(III) complexes.

Experiments

The synthesis of Pt-uridine blue sulfate was carried out as previously [4] with minor modifications.The samples were pressed pellets and the symmetrical transmission geometry was used. The intensity curves were measured with a solid state detector at energies of 70 and 78 keV below the PtK absorption edge. No vacuum chamber was available and the background scattering was quite strong at small scattering angles. The background was measured separately and subtracted from the experimental intensity curves.The intensity of the primary beam was not high enough to produce sufficiently precise data for AWAXS analysis but for WAXS analysis the intensity curves were reliable enough upto k=25 1/Å.

Results

The data-analysis were performed basically as described in [5]. The share of multiple scattering was estimated smaller than 10 % and ignored. The total RDF was found out to be in a good agreement with that measured previously with MoKalpha radiation [3] and contained pronounced maxima at 2.55, 3.0 and 5.9 Å. The RDF was compared with those of model Pt-complexes and it was concluded that all these maxima may arise from Pt-Pt distances. It is proposed that the sample is a mixture of dinuclear Pt(III) and Pt(II) complexes. Figure 1 presents the RDF taken at 78 keV with that of the mixture model.

References

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