

Synthesis of Antimony(III and V) Complexes of Schiff Bases Derived from S-Benzylthiocarbamate

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Five novel adducts of antimony(III and V) halides with the Schiff bases of S-benzylthiocarbamate in 1 : 1 stoichiometry have been synthesised and characterised on the basis of different physicochemical studies.

The pronounced biological activity¹ of the metal complexes of ligands derived from dithiocarbamic acids has led to interest in their coordination chemistry. However, studies made so far deal exclusively with the stereochemistry of transition metal complexes² and the coordination behaviour of these ligands with organometallic moieties.³ Since only limited information is available for the Sb(III) halides,⁴ therefore it was considered of interest to examine the interaction of SbX_3 ($X = Cl^-, Br^-$) and $SbCl_5$ with Schiff bases derived from benzaldehyde, acetophenone Schiff bases of S-benzylthiocarbamate. Ligands were prepared by methods similar to those reported in an earlier communication.³ The complexes were prepared by direct interaction of Schiff bases with antimony halides in an inert non-aqueous solvent in an atmosphere of nitrogen. The resulting solid product was washed repeatedly with dichloromethane and it was finally dried *in vacuo* over anhydrous calcium chloride.

Thermogravimetric analysis of the representative compounds was carried out at the heating rate of 5°C per min. The complexes are stable up to 230°C and start decomposing at 260°C. The decomposition is complete at 340°C where residue left corresponds to Sb_2O_3 .

A very strong absorption band in the ligand at 1600 cm^{-1} assignable to $\nu(C=N)$ is shifted to higher frequency at 1630 ± 15 cm^{-1} in all the spectra of the complexes showing the coordination through azomethine nitrogen atom. A strong band at 1050 cm^{-1} in the IR spectrum of the Schiff bases is tentatively assigned as the $\nu(C=S)$. The band is absent in the spectra of metal complexes due to the change in the nature of the C=S bond on coordination of the ligand through S atom. The complexes are formed in 1 : 1 stoichiometry.

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