

NOTE

Some Molecular Adducts of $(C_6H_5CH_2)_2Te$ and $(C_6H_4)_2Te$ with Monodentate Ligands

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Twenty molecular adducts of the type $RR'Te.L$ (where $R = R' = C_6H_5CH_2$, $RR' = (C_6H_4)_2$ and $L =$ monodentate ligands) have been synthesised and their structures were determined by various physico-chemical techniques, *i.e.*, elemental analysis, molar conductivity, and X-ray photoelectron spectra.

In the continuation of our previous communications^{1,2}, this paper deals with the reaction of $(C_6H_5CH_2)_2Te$ and $(C_6H_4)_2Te$ with various monodentate, *i.e.*, pyridine, pyridine-N-oxide, morpholine, 4-picoline, $N(CH_3)_3$, DMSO, DMF, triphenylphosphine sulfide, triphenylphosphine oxide and triphenyl phosphine.

The $(C_6H_5CH_2)_2Te^3$ and $(C_6H_4)_2Te^4$ have been prepared, purified and characterised by reported methods.

1 mmol of $RR'Te$ in 25 mL of dry chloroform is refluxed with 1 mmol of ligand, *i.e.*, pyridine, pyridine-N-oxide, morpholine, 4-picoline, trimethylamine, dimethylsulphoxide, dimethyl formamide, Ph_3PS , Ph_3PO or $(C_6H_5)_3P$, for 3 h. The reacted mixture was rotary evaporated and the concentration solution was allowed to stay overnight in the deep freeze. The crystals obtained were washed with pet-ether (60–80°C) and dried in vacuum.

All the prepared molecular adducts $(C_6H_5CH_2)_2Te.L$ and $(C_6H_4)_2Te.L$ were stable at room temperature. The elemental analyses for C, H and N were within $\pm 0.5\%$. The molar conductivities were observed in the range of 20–30 $ohm^{-1} cm^2 mol^{-1}$ in the acetone at room temperature, suggesting a non-electrolyte nature⁵. Both elemental analysis and molar conductivity have suggested the composition of these prepared molecular adducts as $RR'Te.L$.

Conductance measurements in acetone were made at room temperature using a Digisum electronic conductivity bridge. Infrared spectra were recorded on a Perkin-Elmer 457 spectrophotometer in CsI. The X-ray photoelectron spectra were recorded on a VG Scientific ESCA-3 MK-II electron spectrometer. The AlK_{α} (1486.6 eV) was used for photoexcitation. The $Cu2p_{3/2}$ ($BE = 932.8 \pm 0.2$)

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and $Au4f_{7/2}$ ($BE = 83.8 \pm 0.1$) lines were used to calibrate the instrument and $Ag3d_{5/2}$ ($BE = 368.2$ eV) was used for cross-checking⁶.

It was observed that the binding energy of $Te3d_{3/2, 5/2}$ in the starting material $RR'Te$ was higher than prepared molecular adduct $RR'Te.L$. One can conclude from these XPS results that the electron density on Te metal ion has been increased by coordination of Schiff base ligands with tellurium metal ion⁶.

On the basis of elemental analysis, molar conductance, and XPS, one can assign the geometry of these prepared molecular adducts as shown in Fig. 1.

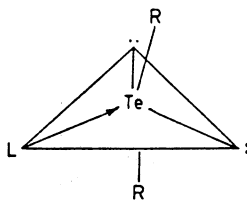


Fig. 1 Geometry of $RR'Te.L$

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