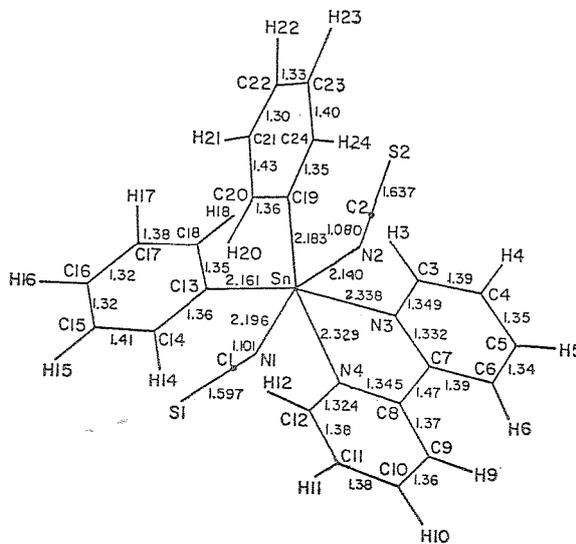
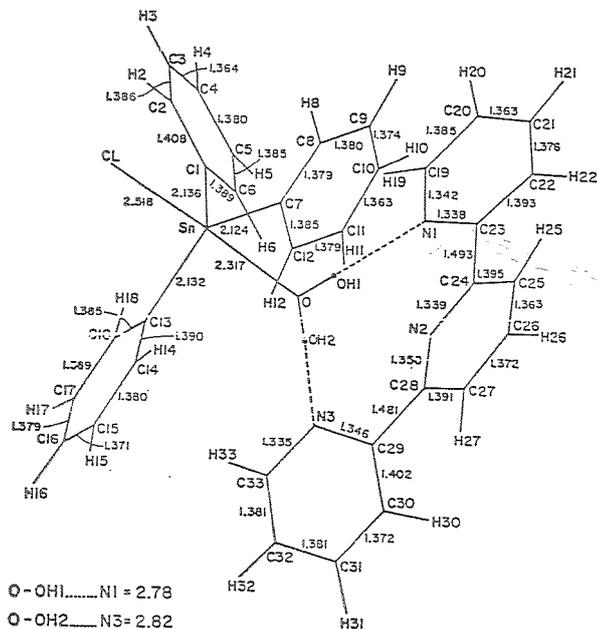


by hydrogen bonds between the N atoms of its two outer rings and the water molecule oxygen.



09.3-16 THE CRYSTAL STRUCTURE OF 2,2'-BIPYRIDYL DIPHENYL DIISOTHIOCYANATO TIN (IV). By L. Prasad, E.J. Gabe and Y. Le Page, Chemistry Division, National Research Council of Canada, Ottawa, Ontario, K1A 0R6, Canada and F.E. Smith, Chemistry Department, Kenyatta University College, P.O. Box 43844, Nairobi, Kenya.

White crystals of $C_{24}H_{20}N_4S_2Sn$ were obtained by adding 2,2'-bipyridyl to an ethanolic solution of diphenyl tin diisothiocyanate. The crystals are monoclinic, space group $P2_1/n$ $a = 10.722(3)$, $b = 15.752(4)$, $c = 14.131(2)$ Å $\beta = 92.32^\circ(2)$, $Z = 4$, $D_{calc} = 1.52$ Mg.m $^{-3}$. Intensities were measured with a four-circle Picker diffractometer using graphite monochromatised $MoK\alpha$ radiation. The Sn atom was found in an E-map based on phases derived by MULTAN (Germain, Main & Woolfson, Acta Cryst. (1971) A27, 368) and all the other non hydrogen atoms were located in a heavy atom phased Fourier map. The structure was refined by block diagonal least squares and the final R_F and R_{FW} are .043 and .036 respectively.

The coordination around Sn is a distorted octahedron, similar to the structure of (2,2'-bipyridyl)-dichloro-diphenyl tin (Harrison, King & Richards, J. Chem. Soc. (1974), Dalton Transactions, 1723). The Sn atom is coordinated to the two N atoms of the bipyridyl group, the two phenyl groups and to the N atoms of the two (NCS) groups. The two phenyl groups are in the *cis* configuration. The structure confirms the earlier result obtained from dipole moment and Mössbauer data (Smith, Grant and Gray, J. Inorg. Nucl. Chem. (1979) 41, 629).

09.3-17 PRIMARY AND SECONDARY BONDING IN PHENYL TELLURIUM (IV) COMPOUNDS. By N.W. Alcock and W.D. Harrison, Department of Chemistry and Molecular Sciences, University of Warwick, Coventry, CV4 7AL, U.K.

The crystal structures of biphenyl and monophenyl nitrates and chlorides of Te(IV) have been determined. Under the preparation conditions used, both nitrates are formed as basic species. Unit cell and bond length data are as follows.

	Space Gp	Z	$a/\text{Å}$
1 $[\text{Ph}_2\text{Te}(\text{NO}_3)]_2 \cdot \text{O} \cdot \text{Ph}_2\text{Te}(\text{NO}_3)(\text{OH})$	$P\bar{1}$	2	11.839(3)
2 $[\text{PhTeO}(\text{NO}_3)]_n$	$P\bar{1}$	4	11.555(5)
3 $[\text{PhTeCl}_3]_n$	$P\bar{1}$	4	7.468(1)
4 $\text{Ph}_2\text{TeCl}_2^n$ (at 173K)	Pbca	8	7.644(2)

	$b/\text{Å}$	$c/\text{Å}$	$\alpha/^\circ$	$\beta/^\circ$	$\gamma/^\circ$
1	11.220(1)	14.793(2)	90.85(2)	100.98(2)	99.28(2)
2	5.350(2)	14.987(3)	94.89(3)	110.68(3)	106.07(3)
3	8.610(1)	13.987(2)	98.89(1)	92.10(1)	90.81(1)
4	18.160(3)	18.014(3)	90.00	90.00	90.00

R	Te-C (mean)	Te-X bridge (mean)	Te-X terminal (mean)	Te---O Te---Cl
1	2.3	2.112(6)	0: 1.978(4) OH: 1.957(5) NO $_3$: 2.479(4)	0: 317
2	4.2	2.12	0: 1.95	NO $_3$: 2.52
3	1.8	2.122(4)	Cl: 2.755(1)	Cl: 3.94
4	3.6	2.106(7)	-	Cl: 2.505(2) Cl: 3.68

Compounds (2) and (3) exist as linear polymers, involving respectively Te-O-Te and Te-Cl-Te bridges. Compounds (1) and (4) exist as molecular units in the crystal. The primary geometries about Te are trigonal bipyramidal with one vacant position for (1), (2) and (4), with the phenyl groups equatorial. Compound (3)