

Preparative and Spectral Investigation of Palladium(II) Complexes with Aryl Tellurols and Diaryl Ditellurides

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(Received September 29, 1988; revised February 6, 1989)

Abstract

Tellurol complexes of types $[\text{Pd}(\text{COD})\text{Cl}(\text{TeAr})]$ (I) and $[\text{Pd}(\text{COD})(\text{TeAr})_2]$ (II) (COD = 1,5-cyclo-octadiene; Ar = phenyl, *p*-tolyl, *p*-anisyl and *p*-phenetyl) are readily obtained by the reactions between $\text{Pd}(\text{COD})\text{Cl}_2$ and NaTeAr in 1:1 and 1:2 molar ratios respectively in ethanol at room temperature. Similar complexes also resulted in reactions between $\text{Pd}(\text{COD})\text{Cl}_2$ and Ph_3SnTeAr in chloroform. The diolefin ligand is easily displaced by PPh_3 in chloroform to give the corresponding phosphine complexes $[\text{Pd}(\text{PPh}_3)_2\text{Cl}(\text{TeAr})]$ (III) and $[\text{Pd}(\text{PPh}_3)_2(\text{TeAr})_2]$ (IV). ^{31}P NMR spectra of III and IV indicate their *cis* configuration in solution. Solid Te_2Ar_2 on treatment with $[\text{Pd}_2\text{Cl}_2(\mu\text{-Cl})_2(\text{PPh}_3)_2]$ in dichloromethane yielded $[\text{Pd}_2\text{Cl}_4(\mu\text{-Te}_2\text{Ar}_2)(\text{PPh}_3)_2]$ (V) in which the bridging chloride ligands are replaced by one molecule of ditelluride. The complexes were characterized by elemental analysis, IR, Raman, ^1H and ^{31}P NMR spectra and where possible, by conductivity measurements and molecular weight determinations.

Introduction

A few tellurol complexes such as $[\text{Cu}(\text{TePh})]_n$ [1], Ph_3MTeAr (M = Ge, Sn and Pb) [2] and $\pi\text{-CpNiPBu}_3\text{-TePh}$ [3] have been prepared using sodium tellurol reagent. We have recently reported the formation of complexes $[\text{M}(\text{PPh}_3)_2\text{Cl}(\text{TeAr})]$, $[\text{M}(\text{PPh}_3)_2(\text{TeAr})_2]$, $[\text{MCl}(\text{TeAr})]_n$ and $[\text{M}(\text{TeAr})_2]_n$ (where M = Pt(II)/Pd(II)) using the same reagent [4, 5]. In this paper we report the preparation of complexes $[\text{Pd}(\text{COD})\text{Cl}(\text{TeAr})]$ (I) and $[\text{Pd}(\text{COD})(\text{TeAr})_2]$ (II) using NaTeAr as well as Ph_3SnTeAr . Also, in continuation of our earlier work on the synthesis of palladium(II)–ditelluride complexes [5], where two molecules of PdCl_2 are bridged by two molecules of diaryl ditellurides, interestingly we now report the synthesis of

binuclear complexes, where two $\text{PdCl}_2(\text{PPh}_3)$ moieties are bridged by only one molecule of diaryl ditelluride.

Experimental

All operations were carried out under purified argon. Solvents were dried and distilled before use.

Melting points were recorded in open capillary tubes and are uncorrected. IR spectra were recorded in the solid state as CsI pellets on a Nicolet 5DX FT instrument and far IR ($450\text{--}50\text{ cm}^{-1}$) on a Polytec FIR model 30 as polyethylene pellets. Raman spectra were recorded on a Cary model 82 Raman spectrometer using krypton ion laser at $6471\text{ \AA}$ with 120 MW power. ^1H NMR spectra were recorded in CDCl_3 or DMSO-d_6 solutions on a Jeol FX 100 FT instrument with TMS as an internal standard. $^{31}\text{P}\{^1\text{H}\}$ NMR spectra were done in CD_2Cl_2 or CDCl_3 solutions on a Bruker AM-500 MHz FT instrument with H_3PO_4 as an external reference. Elemental analyses were carried out on a Perkin-Elmer 240 C rapid analyser. Conductance was measured in acetonitrile using a high sensitive Pye conductance bridge (Model No. 11700) and molecular weights were determined in chloroform using a Knauer vapour pressure osmometer (Model No. 11.00).

$\text{Pd}(\text{COD})\text{Cl}_2$ [6], $\text{Pd}_2\text{Cl}_4(\text{PPh}_3)_2$ [7], Ph_3SnTeAr [2] and Te_2Ar_2 [8–10] were prepared by published methods and their purities were verified by elemental analyses and melting points.

*Preparation of $[\text{Pd}(\text{COD})\text{Cl}(\text{TeAr})]$ (I) (Ar = Phenyl, *p*-tolyl, *p*-anisyl and *p*-phenetyl)*

Method a

The appropriate Te_2Ar_2 (0.5 mmol) was dissolved in the minimum amount of ethanol at room temperature and an alcoholic solution of NaBH_4 was added dropwise to it under stirring. The red colour of the ditelluride quickly faded due to the formation of NaTeAr . Sodium borohydride addition was stopped when the reduction was complete as indicated by the

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pale yellow (completely free from any tinge of red) colour of the solution. $\text{Pd}(\text{COD})\text{Cl}_2$ (1 mmol) in ethanol was then added to the tellurolate solution all at once and the mixture stirred for 6 h. A dark brown solid formed during this period was separated by filtration, washed successively with water, alcohol and ether and dried in air.

Method b

Solid Ph_3SnTeAr (Ar = *p*-phenetyl) (1 mmol) was added to a solution of $\text{Pd}(\text{COD})\text{Cl}_2$ (1 mmol) in chloroform. Immediately after addition, a brown suspension appeared which was kept stirring for 6 h. The solution was centrifuged when a brown solid separated out. It was washed with chloroform and ether and dried in air.

Preparation of $[\text{Pd}(\text{COD})(\text{TeAr})_2]$ (II) (Ar = phenyl, *p*-tolyl, *p*-anisyl and *p*-phenetyl)

These were prepared in the same way as $[\text{Pd}(\text{COD})\text{Cl}(\text{TeAr})]$ (I) except that $\text{Pd}(\text{COD})\text{Cl}_2$ and NaTeAr were taken in a 1:2 molar ratio. The same product II was obtained on mixing Ph_3SnTeAr (Ar = *p*-phenetyl) and $\text{Pd}(\text{COD})\text{Cl}_2$ in chloroform in a 2:1 molar ratio.

Reaction between $[\text{Pd}(\text{COD})\text{Cl}(\text{TeAr})]$ (I) and PPh_3 (Ar = phenyl, *p*-tolyl, *p*-anisyl and *p*-phenetyl)

To a suspension of $[\text{Pd}(\text{COD})\text{Cl}(\text{TeAr})]$ (1 mmol) in chloroform was added PPh_3 (2 mmol) and the solution was stirred overnight. The clear solution thus obtained was concentrated under low pressure and poured into a large volume of petroleum ether–ether (1:1 vol./vol.) mixture when an orange solid was separated out. It was washed with the same mixture and dried *in vacuo*.

Reaction between $[\text{Pd}(\text{COD})(\text{TeAr})_2]$ (II) and PPh_3 (Ar = phenyl, *p*-tolyl, *p*-anisyl and *p*-phenetyl)

A 250 mg sample of $[\text{Pd}(\text{COD})(\text{TeAr})_2]$ was treated with an excess of PPh_3 in chloroform and the mixture was kept on stirring overnight. The clear solution thus obtained was concentrated and treated with *n*-pentane when a brown solid separated out. It was washed with *n*-pentane and diethyl ether and dried *in vacuo*.

Preparation of $[\text{Pd}_2\text{Cl}_4(\mu\text{-Te}_2\text{Ar}_2)(\text{PPh}_3)_2]$ (V) (Ar = phenyl, *p*-tolyl, *p*-anisyl and *p*-phenetyl)

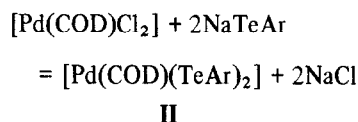
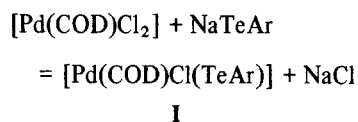
Solid Te_2Ar_2 (1 mmol) was added to the suspended solution of $\text{Pd}_2\text{Cl}_4(\text{PPh}_3)_2$ (1 mmol) in dichloromethane and the solution was stirred for 6 h. The addition of *n*-hexane to the clear solution thus obtained afforded a brown solid which was washed with *n*-hexane and diethyl ether and dried *in vacuo*.

Reaction between $[\text{Pd}_2\text{Cl}_4(\mu\text{-Te}_2\text{Ar}_2)(\text{PPh}_3)_2]$ (V) and PPh_3

An excess of PPh_3 in diethyl ether (50 ml) was added to $[\text{Pd}_2\text{Cl}_4(\mu\text{-Te}_2\text{Ar}_2)(\text{PPh}_3)_2]$ (Ar = *p*-tolyl or *p*-anisyl) (0.1 g) and the suspension stirred for 1 h at room temperature. The ether solution turned red by this time. It was filtered and the clear filtrate thus obtained was evaporated to dryness to give a red solid. ^1H NMR of this in CDCl_3 showed it to be a mixture of Te_2Ar_2 and PPh_3 . Ditelluride was also detected *in situ* from a reaction mixture of the two reactants in CDCl_3 by ^1H NMR.

Results and Discussion

Reactions between $[\text{Pd}(\text{COD})\text{Cl}_2]$ and NaTeAr in ethanol led to the formation of complexes I and II according to the equations given below



(Ar = phenyl, *p*-tolyl, *p*-anisyl and *p*-phenetyl)

Characterization data of the complexes along with their yields are given in Table 1. Elemental analyses for all the complexes were satisfactory. Infrared spectra (in the solid state as CsI pellets) (Table 2) showed a single $\nu(\text{Pd}-\text{Cl})$ band for I and none for II. A strong $\nu(\text{C}=\text{C})$ band for the COD ligand ($1469-1488\text{ cm}^{-1}$) and another for the aromatic group ($1560-1587\text{ cm}^{-1}$) were present in all the cases. The complexes have very low solubility in most of the common organic solvents and hence their ^1H NMR could not be recorded. Since the COD ligand always occupies two adjacent positions in a metal complex, the complexes I and II have necessarily a *cis* structure (Fig. 1).

It is interesting to note that the reactions between $\text{Pd}(\text{COD})\text{Cl}_2$ and Ph_3SnTeAr (Ar = *p*-phenetyl) in chloroform at room temperature also afforded the complexes I and II according to the equations given below

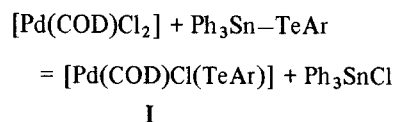
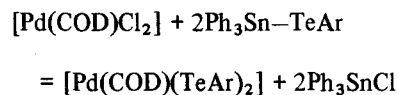


TABLE 1. Physical and analytical data

Complex	Yield (%)	Colour	Decomposition temperature (°C)	Analysis ^a (%)				<i>M</i> ^b
				C	H	Cl	Te	
[Pd(COD)Cl(TePh)]	75	dark brown	140	36.8 (36.9)	3.7 (3.7)	7.5 (7.8)	28.4 (28.0)	
[Pd(COD)Cl(TeC ₆ H ₄ Me-4)]	50	dark brown	134	38.5 (38.4)	4.0 (4.0)	7.2 (7.5)	27.5 (27.2)	
[Pd(COD)Cl(TeC ₆ H ₄ OMe-4)]	80	dark brown	143	37.3 (37.1)	3.8 (3.9)	7.5 (7.3)	26.6 (26.3)	
[Pd(COD)Cl(TeC ₆ H ₄ OEt-4)]	67	dark brown	137	38.4 (38.5)	4.2 (4.2)	7.4 (7.1)	25.7 (25.5)	
[Pd(COD)(TePh) ₂]	54	dark brown	130	38.3 (38.4)	3.4 (3.5)		41.2 (40.9)	
[Pd(COD)(TeC ₆ H ₄ Me-4) ₂]	58	dark brown	135	40.6 (40.5)	3.8 (3.9)		40.0 (39.1)	
[Pd(COD)(TeC ₆ H ₄ OMe-4) ₂]	57	dark brown	132	38.6 (38.6)	3.8 (3.8)		37.7 (37.3)	
[Pd(COD)(TeC ₆ H ₄ OEt-4) ₂]	70	dark brown	145	40.5 (40.4)	4.2 (4.2)		36.1 (35.8)	
[Pd(PPh ₃) ₂ Cl(TePh)]	65	orange	165	57.9 (57.8)	4.0 (4.0)	4.4 (4.0)	14.0 (14.6)	915 (870)
[Pd(PPh ₃) ₂ Cl(TeC ₆ H ₄ Me-4)]	56	orange	171	58.6 (58.3)	4.2 (4.1)	4.5 (4.0)	14.7 (14.4)	850 (884)
[Pd(PPh ₃) ₂ Cl(TeC ₆ H ₄ OMe-4)]	54	orange	175	57.2 (57.3)	4.2 (4.1)	4.3 (3.9)	14.8 (14.1)	958 (900)
[Pd(PPh ₃) ₂ Cl(TeC ₆ H ₄ OEt-4)]	56	orange	186	57.8 (57.7)	4.2 (4.2)	4.6 (4.2)	14.5 (13.9)	875 (914)
[Pd(PPh ₃) ₂ (TePh) ₂]	50	brown	151	55.2 (55.4)	3.7 (3.8)		25.1 (24.5)	988 (1039)
[Pd(PPh ₃) ₂ (TeC ₆ H ₄ Me-4) ₂]	52	brown	147	56.3 (56.2)	4.2 (4.1)		24.2 (23.9)	1014 (1067)
[Pd(PPh ₃) ₂ (TeC ₆ H ₄ OMe-4) ₂]	48	brown	149	54.7 (54.5)	4.1 (4.0)		23.6 (23.2)	1051 (1099)
[Pd(PPh ₃) ₂ (TeC ₆ H ₄ OEt-4) ₂]	50	brown	144	55.2 (55.3)	4.2 (4.2)		23.0 (22.6)	1091 (1127)
[Pd ₂ Cl ₄ (PPh ₃) ₂ (Te ₂ Ph ₂)]	41	brown	135	43.9 (43.7)	2.9 (3.1)	10.6 (11.0)	18.6 (19.8)	1265 (1288)
[Pd ₂ Cl ₄ (PPh ₃) ₂ (Te ₂ (C ₆ H ₄ Me-4) ₂)]	55	light brown	141	44.7 (45.5)	3.2 (3.3)	10.2 (10.7)	19.0 (19.3)	1293 (1316)
[Pd ₂ Cl ₄ (PPh ₃) ₂ (Te ₂ (C ₆ H ₄ OMe-4) ₂)]	65	reddish-brown	138	44.3 (44.5)	3.0 (3.2)	10.1 (10.5)	19.2 (18.9)	1321 (1348)
[Pd ₂ Cl ₄ (PPh ₃) ₂ (Te ₂ (C ₆ H ₄ OEt-4) ₂)]	50	light brown	145	45.0 (45.3)	3.3 (3.4)	9.8 (10.3)	18.0 (18.5)	1352 (1376)

^aCalculated values are given in parentheses.^bMolecular weights were determined in CHCl₃.

II

These reactions are reasonable since SnPh₃TePh has been found to afford the tellurol complex [Cu(TePh)]_n from CuCl in good yield [1, 11].

With an aim to prepare Na₂[Pd(TeAr)₄], a reaction between Pd(COD)Cl₂ (1 mol) and NaTePh

TABLE 2. Important IR^a frequencies of [Pd(COD)Cl(TeAr)] (I) and [Pd(COD)(TeAr)₂] (II)

Complex	$\nu(\text{Pd}-\text{Cl})$ (cm ⁻¹)	$\nu(\text{C}=\text{C})$ from COD (cm ⁻¹)	$\nu(\text{C}=\text{C})$ from aromatic group (cm ⁻¹)
[Pd(COD)Cl(TePh)]	302	1472	1560
[Pd(COD)Cl(TeC ₆ H ₄ Me-4)]	309	1485	1561
[Pd(COD)Cl(TeC ₆ H ₄ OMe-4)]	315	1488	1584
[Pd(COD)Cl(TeC ₆ H ₄ OEt-4)]	311	1487	1583
[Pd(COD)(TePh) ₂]		1469	1567
[Pd(COD)(TeC ₆ H ₄ Me-4) ₂]		1483	1587
[Pd(COD)(TeC ₆ H ₄ OMe-4) ₂]		1486	1584
[Pd(COD)(TeC ₆ H ₄ OEt-4) ₂]		1485	1585

^aRecorded in the solid state as CsI pellets, for Pd(COD)Cl₂, $\nu(\text{Pd}-\text{Cl})$ 334, 297 cm⁻¹ and $\nu(\text{C}=\text{C})$ from COD 1534 cm⁻¹.

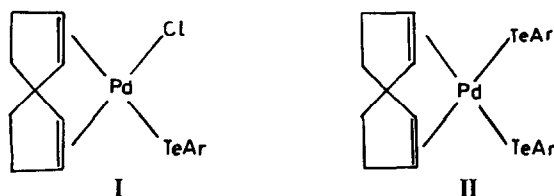
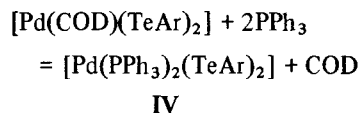
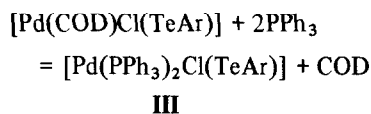


Fig. 1. Suggested structures for complexes I and II.

(4 mol) was carried out in ethanol. However, the isolated compound showed the stoichiometry corresponding to **II** only.

In order to study the displacement reactions of COD by PPh₃, complexes **I** and **II** were treated with appropriate amounts of PPh₃ in chloroform. These reactions led to the isolation of corresponding phosphine complexes **III** and **IV** according to the equations given below



The yield, colour, decomposition temperature, analytical and molecular weight data of all the isolated complexes **III** and **IV** are compiled in Table 1. All the monotellurol complexes **III** are orange while bis-tellurol complexes **IV** are brown in colour. They are soluble in benzene, dichloromethane, chloroform, DMF and DMSO but insoluble in petroleum ether and diethyl ether. Conductivity measurements in acetonitrile showed their non-electrolytic nature. IR spectra (in the solid state as CsI pellets) showed one $\nu(\text{Pd}-\text{Cl})$ band in **III** (Ar = phenyl, 302 cm⁻¹; Ar = *p*-tolyl, 298 cm⁻¹; Ar = *p*-anisyl, 309 cm⁻¹; Ar = *p*-phenetyl, 300 cm⁻¹) sug-

gestive of the presence of a terminal chloride ligand, and none in **IV**. All complexes showed the absence of the $\nu(\text{C}=\text{C})$ band for COD ligand indicating its displacement by PPh₃ from the complexes **I** and **II**. ¹H NMR spectra (Table 3) showed all the expected resonances in the correct intensity ratio. ³¹P{¹H} NMR spectra (Table 3) (in CDCl₃ solution, H₃PO₄ as an external reference) of **III** showed two doublets of equal intensities which indicated the non-equivalence of the two phosphorus atoms in the complexes. The coupling constant ²J(P-Pd-P) is of the order of 20–26 Hz characteristic of a *cis*-Ph₃P-Pd-PPh₃ system [12, 13]. Complex **IV** showed one ³¹P signal in the high downfield side. Thus a *cis* configuration (Fig. 2) is reasonably assigned to complexes **III** and **IV**.

Complex **III** (Ar = phenyl) slowly turned black with H₂ in EtOH/C₆H₆ indicating the reduction of Pd(II) into the metallic state.

Solid Te₂Ar₂ on treatment with *trans*-[Pd₂Cl₂(μ-Cl)₂(PPh₃)₂] in dichloromethane yielded complexes of the type [Pd₂Cl₄(μ-Te₂Ar₂)(PPh₃)₂] (**V**), consistent with their molecular weight measurements. Their elemental analyses corresponded to the empirical formula [PdCl₂(TeAr)(PPh₃)]. The possibility of any ionic structure is eliminated by their conductance measurements in acetonitrile which showed their non-electrolytic nature. ³¹P NMR spectra of the complexes **V** (in CD₂Cl₂, H₃PO₄ as an external reference) (Table 4) showed a single ³¹P resonance indicating thereby the equivalence of the two phosphorus atoms in the *trans* position in the complexes (*trans*-[Pd₂Cl₄(μ-Cl)₂(PPh₃)₂] showed a single ³¹P chemical shift at δ33.25 ppm). The red to brown colour of the products strongly suggests that the tellurium–tellurium bond has survived the complex forming reactions. The presence of the ditelluride ligand in the complexes was confirmed by their reactions with PPh₃ in diethyl ether which liberated the ditelluride. Far IR spectra (Table 4) of the complexes (in the solid state as polyethylene pellets) showed only two $\nu(\text{Pd}-\text{Cl})$ bands in the regions 322–314

TABLE 3. ^1H NMR^a and ^{31}P NMR^b spectra of $[\text{Pd}(\text{PPh}_3)_2\text{Cl}(\text{TeAr})]$ (III) and $[\text{Pd}(\text{PPh}_3)_2(\text{TeAr})_2]$ (IV)

Complex	δ Aromatic H (ppm)	δCH_2 (ppm)	δCH_3 (ppm)	δP (ppm)	$^2J(\text{PP})$ (Hz)
$[\text{Pd}(\text{PPh}_3)_2\text{Cl}(\text{TePh})]$	6.97–7.81(m)			18.6(d) 17.6(d)	22
$[\text{Pd}(\text{PPh}_3)_2\text{Cl}(\text{TeC}_6\text{H}_4\text{Me-4})]$	6.45–7.68(m)		2.27(s)	19.2(d) 18.7(d)	20
$[\text{Pd}(\text{PPh}_3)_2\text{Cl}(\text{TeC}_6\text{H}_4\text{OMe-4})]$	6.50–7.90(m)		3.75(s)	17.2(d) 16.5(d)	25
$[\text{Pd}(\text{PPh}_3)_2\text{Cl}(\text{TeC}_6\text{H}_4\text{OEt-4})]$	6.24–7.76(m)	3.88(q) ($J = 7$ Hz)	1.37(t) ($J = 7$ Hz)	17.1(d) 16.3(d)	23
$[\text{Pd}(\text{PPh}_3)_2(\text{TePh})_2]$	6.71–7.82(m)			26.1(s)	
$[\text{Pd}(\text{PPh}_3)_2(\text{TeC}_6\text{H}_4\text{Me-4})_2]$	6.67–7.49(m)		2.26(s)	29.4(s)	
$[\text{Pd}(\text{PPh}_3)_2(\text{TeC}_6\text{H}_4\text{OMe-4})_2]$	6.49–7.34(m)		3.76(s)	29.5(s)	
$[\text{Pd}(\text{PPh}_3)_2(\text{TeC}_6\text{H}_4\text{OEt-4})_2]$	6.56–7.78(m)	3.91(q) ($J = 7$ Hz)	1.36(t) ($J = 7$ Hz)	23.3(s)	

^aRecorded in CDCl_3 , s = singlet, t = triplet, q = quartet, m = multiplet.^bRecorded in CDCl_3 , s = singlet, d = doublet, H_3PO_4 as external reference.TABLE 4. ^1H ^a, ^{31}P ^b and IR ^c spectra of $[\text{Pd}_2\text{Cl}_4(\mu\text{-Te}_2\text{Ar}_2)(\text{PPh}_3)_2]$ (V)

Complex	δ Aromatic H (ppm)	δCH_2 (ppm)	δCH_3 (ppm)	δP (ppm)	$\nu(\text{Pd-Cl})$ (cm^{-1})	$\nu(\text{Te-Te})$ (cm^{-1})
V, Ar = Ph	6.40–8.54(m)			36.50	315, 318	191 182(R)
V, Ar = $\text{C}_6\text{H}_4\text{Me-4}$	6.27–8.33(m)		2.30(s)	35.87	312, 322	177
V, Ar = $\text{C}_6\text{H}_4\text{OMe-4}$	6.36–8.31(m)		3.76(s)	36.37	305, 314	197
V, Ar = $\text{C}_6\text{H}_4\text{OEt-4}$	6.33–7.68(m)	3.99(q) ($J = 7$ Hz)	1.36(q) ($J = 7$ Hz)	35.88	310, 317	198

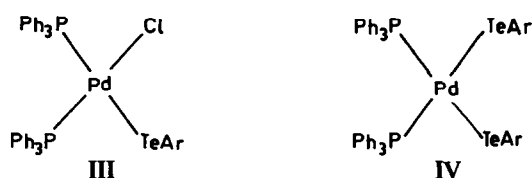
^aRecorded in DMSO-d_6 , s = singlet, t = triplet, q = quartet, m = multiplet.^bRecorded in CH_2Cl_2 , H_3PO_4 as external reference.^cRecorded in the solid state as polyethylene pellets.

Fig. 2. Suggested structures for complexes III and IV.

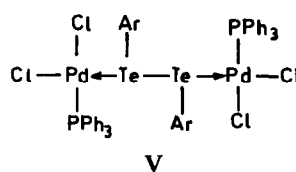
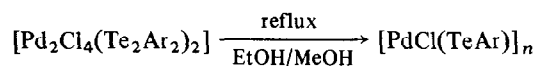
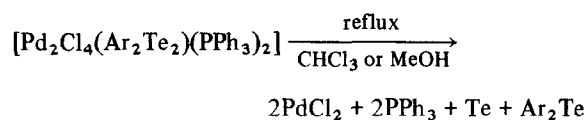


Fig. 3. Proposed structure for complex V.

and $315\text{--}305\text{ cm}^{-1}$ suggestive of the presence of terminal chloride and the absence of bridging chloride ligands; thus favouring the facile replacement of the bridging chloride ligands in the initial palladium complexes by diaryl ditelluride. Further, the $\nu(\text{Te-Te})$ band appeared in the far IR spectra of all the complexes in the region $177\text{--}198\text{ cm}^{-1}$ and at 182 cm^{-1} in the Raman spectrum of complex V (Ar = phenyl). Other complexes (V, Ar = *p*-tolyl, *p*-anisyl and *p*-phenetyl) decompose on exposure to laser radiation and hence their Raman spectra could not be recorded. ^1H NMR spectra (Table 4) (in DMSO-d_6)

showed the equivalence of all aryl groups in the complexes V. Thus a *trans* dimeric structure with two $\text{PdCl}_2(\text{PPh}_3)$ moieties bridged by one molecule of ditelluride is reasonably proposed for complexes V (Fig. 3).

Complex V (Ar = phenyl or *p*-anisyl) on refluxing with CHCl_3 or MeOH undergoes decomposition as suggested by the qualitative test and ^1H NMR. However, the ditelluride complex of the type $[\text{Pd}_2\text{Cl}_4(\text{Ar}_2\text{Te}_2)_2]$ on refluxing with ethanol/methanol, as reported earlier, resulted in the formation of polymeric tellurol [5].



Acknowledgements

We thank TIFR, Bombay for recording ^{31}P NMR on the 500 MHz FT NMR National Facility and RSIC, Madras for low frequency IR and Raman spectra.

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