

## Crystallographic report

## Bis(triphenylphosphoranylidene)ammonium phenyltetrachlorotellurate

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Unlike most previously described organotetrachlorotellurate complexes, neither secondary Te···Cl interactions nor significant cation–anion interaction are observed in the molecular structure of  $[\text{Ph}_3\text{PNPPh}_3][\text{PhTeCl}_4]$ . Copyright © 2005 John Wiley & Sons, Ltd.

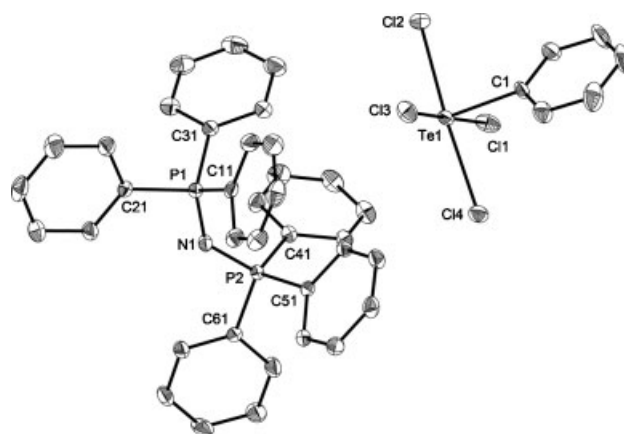
**KEYWORDS:** crystal structure; tellurium

## COMMENT

Owing to their inherent Lewis acidity, organotellurium trihalides  $\text{RTeX}_3$  undergo complexation upon addition of halides  $\text{X}^-$  to give organotetrahalotellurate anions,  $\text{RTeX}_4^-$ . Until recently only  $[\text{Me}_3\text{Te}][\text{MeTeCl}_4]$ ,  $\text{Bu}_4\text{N}[\text{PhTeCl}_3\text{I}]$ , and  $\text{Et}_2\text{NH}_2[p\text{-PhOC}_6\text{H}_4\text{TeCl}_4]$  had been investigated by X-ray crystallography, but during the course of this work Lang *et al.* reported a series of phenyltetrahalotellurates featuring different counteranions.<sup>1,2</sup> All of these compounds possess secondary  $\text{Te}\cdots\text{X}$  interactions and significant cation–anion interactions. The title compound of this study,  $[\text{Ph}_3\text{PNPPh}_3][\text{PhTeCl}_4]$ , lacks such interactions (Fig. 1).

## EXPERIMENTAL

The title compound was prepared by reacting  $\text{PhTeCl}_3$  (0.50 g, 1.61 mmol) with  $[\text{Ph}_3\text{PNPPh}_3]\text{Cl}$  (0.92 g, 1.61 mmol) in chloroform (50 ml) and crystallizing from a concentrated solution at room temperature. Yield: 93%, m.p. 200–204 °C.  $^1\text{H}$  NMR (299.98 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 7.20–7.80 (m, Ph);  $^{13}\text{C}\{^1\text{H}\}$  NMR (75.44 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 126.86 [ $^1J(^{13}\text{C}-^{31}\text{P})$  = 108], 127.94, 129.30, 129.55 (m), 132.03 (m), 133.56, 133.84;  $^{125}\text{Te}\{^1\text{H}\}$  NMR (94.78 MHz,  $\text{CDCl}_3$ ):  $\delta$  = 1209.8. Intensity data were collected at 293 K on a Bruker SMART Apex CCD diffractometer for a colourless rod 0.10 × 0.15 × 0.50 mm<sup>3</sup>.  $\text{C}_{22}\text{H}_{35}\text{Cl}_4\text{NP}_2\text{Te}$ ,  $M$  = 885.05, orthorhombic,  $Fdd2$ ,  $a$  = 32.8648(18),  $b$  = 53.156(3),  $c$  = 9.1057(5) Å,  $V$  = 15907.3(15) Å<sup>3</sup>,  $Z$  = 16, 8942 unique data ( $\theta_{\text{max}}$  = 27.5°),  $R$  = 0.054 [7129 ( $I > 2\sigma(I)$ ) reflections],  $wR$  = 0.098 (all data), Flack parameter 0.005(17),  $\rho_{\text{max}}$  = 1.20 e Å<sup>−3</sup>



**Figure 1.** Molecular structure of  $[\text{Ph}_3\text{PNPPh}_3][\text{PhTeCl}_4]$  with hydrogen atoms omitted. Key geometric parameters:  $\text{Te1}-\text{Cl1}$  2.497(2),  $\text{Te1}-\text{Cl2}$  2.504(2),  $\text{Te1}-\text{Cl3}$  2.528(1),  $\text{Te1}-\text{Cl4}$  2.539(2),  $\text{Te1}-\text{C1}$  2.130(6) Å;  $\text{Cl1}-\text{Te1}-\text{Cl2}$  89.12(6),  $\text{Cl1}-\text{Te1}-\text{Cl3}$  177.70(6),  $\text{Cl1}-\text{Te1}-\text{Cl4}$  88.72(5),  $\text{Cl2}-\text{Te1}-\text{Cl3}$  91.41(6),  $\text{Cl2}-\text{Te1}-\text{Cl4}$  176.28(5),  $\text{Cl3}-\text{Te1}-\text{Cl4}$  90.63(6),  $\text{Cl1}-\text{Te1}-\text{C1}$  89.03(15),  $\text{Cl2}-\text{Te1}-\text{C1}$  89.15(17),  $\text{Cl3}-\text{Te1}-\text{C1}$  88.74(15),  $\text{Cl4}-\text{Te1}-\text{C1}$  87.78(17)°.

(near tellurium). Programs used: SAINT, SADABS, SHELX-97, WinGX 2002, and DIAMOND. CCDC deposition number: 246615.

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