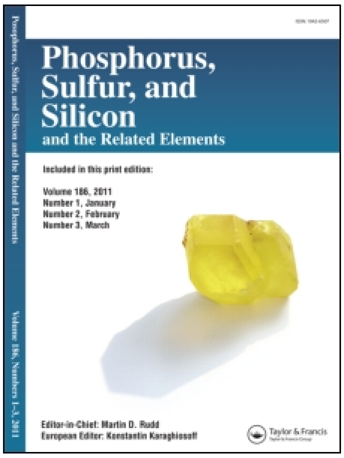

Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:
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To cite this Article Miyasato, Masataka , Mukuda, Takahiro , Minoura, Mao , Yamamoto, Yohsuke and Akiba, Kin-ya(2002) 'Coordination of Trimethylphosphine with Pentaphenyltelluronium Salts', Phosphorus, Sulfur, and Silicon and the Related Elements, 177: 8, 2043 — 2044

To link to this Article: DOI: 10.1080/10426500213441

URL: http://dx.doi.org/10.1080/10426500213441

Phosphorus, Sulfur and Silicon, 2002, Vol. 177:2043–2044

1042-6507/02 $12.00 + .00
DOI: 10.1080/10426500290094765

COORDINATION OF TRIMETHYLPHOSPHINE WITH PENTAPHENYLTELLURONIUM SALTS

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(Received July 29, 2001; accepted December 25, 2001)

Recently we reported synthesis of the first hypervalent tellurium cation, $Ph_5Te^+(C_6F_5)4B^-$ **1a**.[1] Pentaphenyltelluronium in **1a** is free from interaction with its counteranion and has square pyramidal structure which is rare in pentasubstituted main group element compounds. In the case of telluronium having large counteranion, $Ph_5Te^+[3,5\text{-}(CF_3)_2C_6H_3]4B^-$, **1b,** tellurium center is weakly coordinated by nitrogen atom of CH_3CN derived from recrystallization solvent in the solid state.[2] Here we report the coordination reaction between the telluronium and PMe_3.

The reaction of **1a** and an equimolar amount of PMe_3 was carried out in THF solution in a sealed tube. At −90°C, the ^{125}Te NMR resonance of the mixture was observed as sharp signals along with large ^{31}P-^{125}Te coupling constant ($J = 787$ Hz) which was shifted to higher field (δ 573) relative to the free state (δ 659). The same large coupling constant and lower field shift was also observed in the ^{31}P NMR (δ −31.8).

These observations indicated that the coordinated compound **2** was formed and the tellurium-phosphorus bond in this complex possessed a covalent bond character at a low temperature in solution. Since broad signals were observed in both NMR at room temperature, tellurium-phosphine complex may exist in the dissociation equilibrium between **1a** and **2**.

Although the isolated telluronium is thermally very stable, the phosphorus complex **2** gradually underwent decomposition in THF solution via ligand coupling reaction. This reaction proceeded at 50°C and was completed after 2 h leading to the quantitative formation of the phophonium salt, $PhMe_3P^+$ $(C_6F_5)_4B^-$, along with tetraphenyltellurium and its decomposition product.

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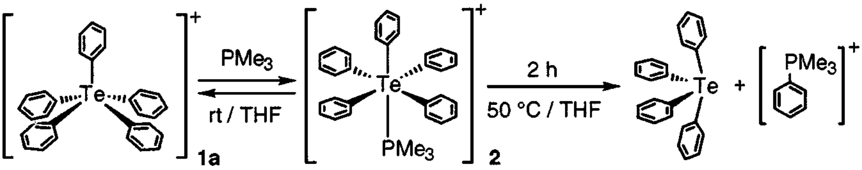

SCHEME 1

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