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The Steric Bulk of Trimesitylphosphine: An Upper Limit

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The Steric Bulk of Trimesitylphosphine: An Upper Limit

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Trimesitylphosphine is the largest tertiary phosphine known ($\theta=212^\circ$, $\text{CPC}=109.7^\circ$). This and the fact that it was first synthesized in 1901 make it very surprising that the coordination chemistry of this phosphine has been so little studied in comparison with other triarylphosphines. We report here on some chemistry of trimesitylphosphine with the Group VI elements (O,S,Se) and the catalytically active Groups IB and VIII metals. Our results to date clearly indicate that the chemistry observed is dominated by steric as opposed to electronic effects. For example, the large trimesitylphosphine moiety favours low coordination numbers (Cu(I),Ag(I),Pd(0) and Pt(0)) and facile cyclometallation reactions (Pd(II) and Pt(II)).