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Exploring the Chemistry of the P-Complexed Parent Phosphine

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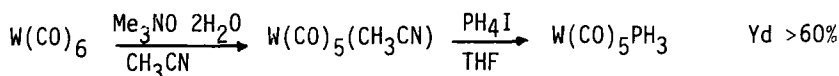
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Exploring the Chemistry of the P-Complexed Parent Phosphine

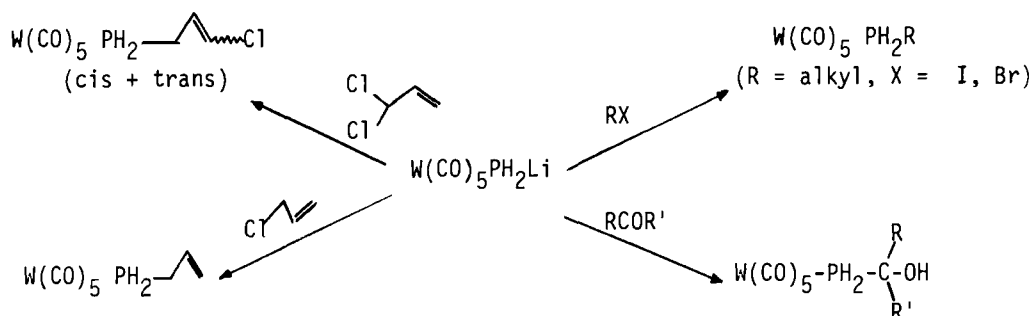
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Whereas the parent phosphine is a highly poisonous, easily oxidized gas, a phosphine complex such as $W(CO)_5PH_3$ is much easier to handle, as this complex is an air stable white solid.

A simple one-pot synthesis has been developed which allows preparation in multigram quantities :



$W(CO)_5PH_3$ can be metalated with one mole of *n*-BuLi to give $W(CO)_5PH_2Li$, which can react with a variety of electrophiles to give monosubstituted products :



The reaction of $PH_3W(CO)_5$ with 3 moles of *n*-BuLi followed by 3 moles of an electrophile such as Me_3SiCl eventually gives the trisubstituted compound, not through a complex of PLi_3 but rather through successive substitution by Me_3SiCl and proton abstraction by BuLi

