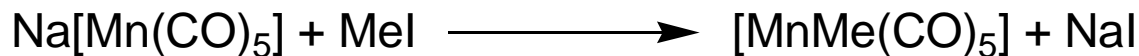
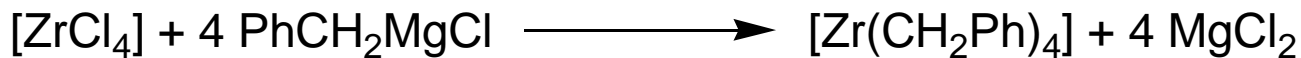


# Alkyl Ligands

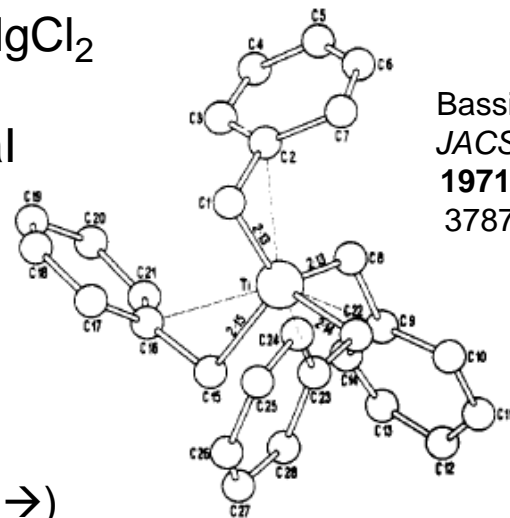


- **Not that many homoleptic TM alkyl complexes.**

$[\text{WMe}_6]$  = melts 30 °C

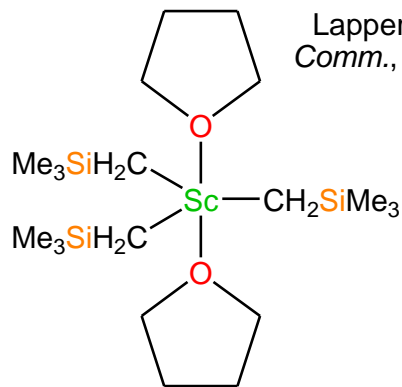
$[\text{TiMe}_4]$  = decomposes -40 °C

$[\text{TiBn}_4]$  = stable above room temperature (see crystal structure →)



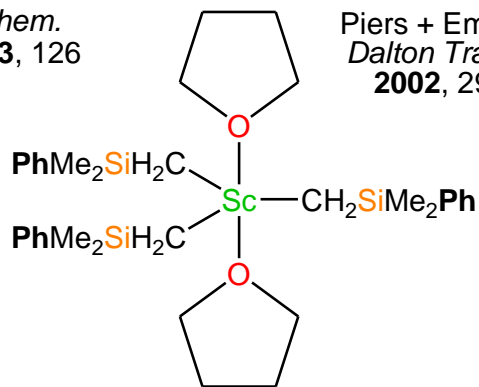
Bassi,  
*JACS*,  
**1971**,  
3787

- **More sterically hindered complexes generally more stable.**



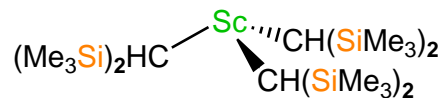
Lappert, *Chem. Comm.*, **1973**, 126

decomp > 0 °C



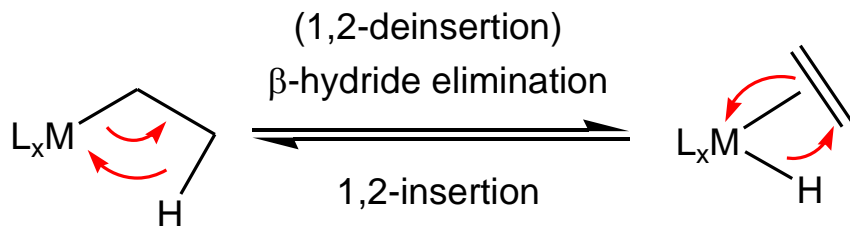
Piers + Emslie,  
*Dalton Trans.*,  
**2002**, 293

decomp > 40 °C



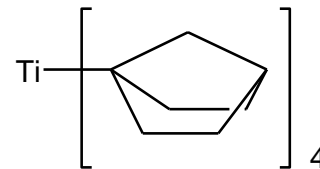
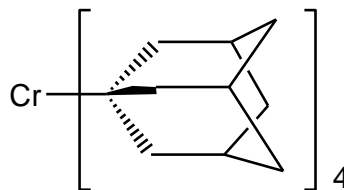
# Alkyl Ligands

- Alkyl complexes far more stable if they lack  $\beta$ -hydrogens.



- Common alkyl groups unable to undergo  $\beta$ -hydride elimination:

- Me,  $\text{CH}_2\text{Ph}$
- $\text{CH}_2\text{CMe}_3$ ,  $\text{CH}_2\text{SiMe}_3$ ,  $\text{CH}(\text{SiMe}_3)_2$
- $\text{CH}_2\text{CF}_3$
- 1-adamantyl, 6-norbornyl (see diagrams  $\rightarrow$ )



- Related ligands:

