

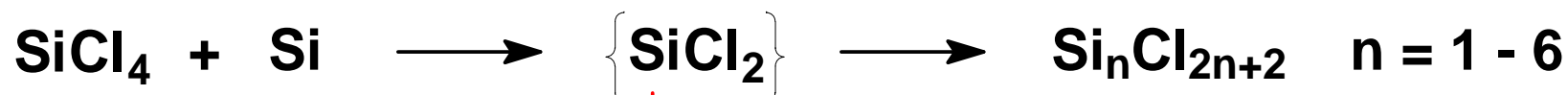
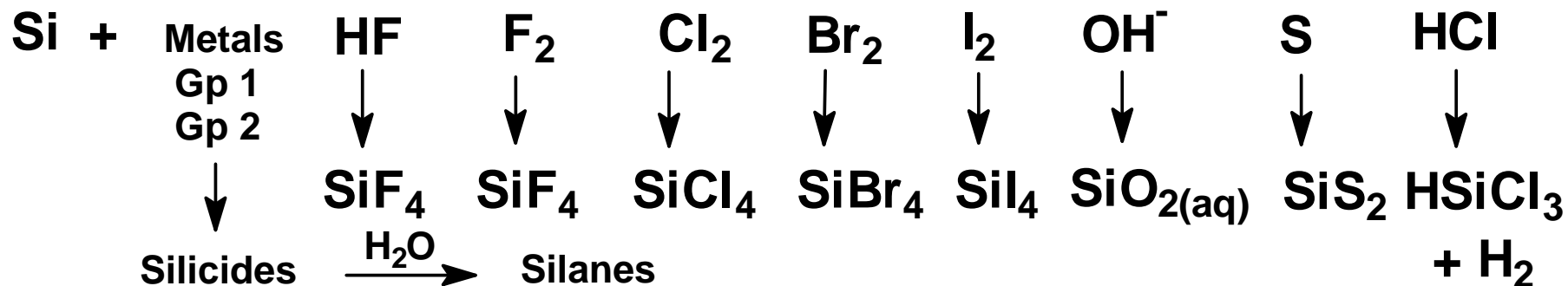
# **Greenwood & Earnshaw**

**2<sup>nd</sup> Edition**

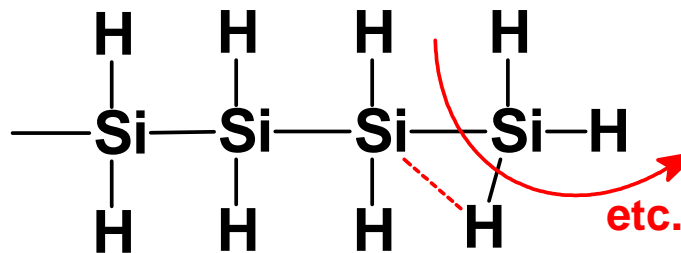
## **Chapter 9**

**Silicon**

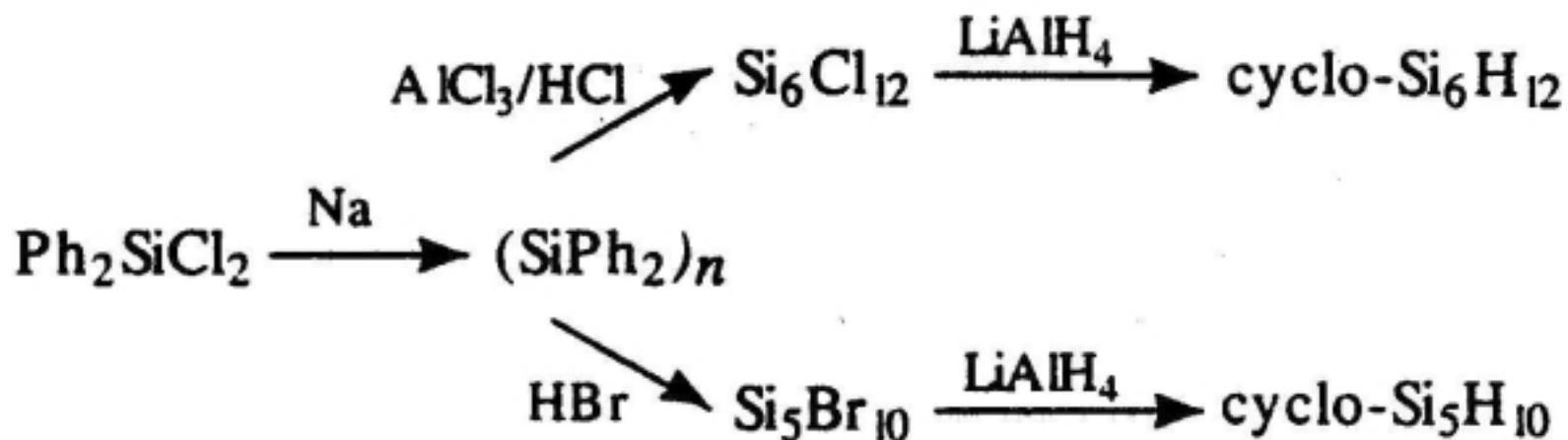
# Silicon Reactivity



is the only stable silane, others decompose by a  $\mu$ -silyl carbene mechanism whose rate slows w/ n.



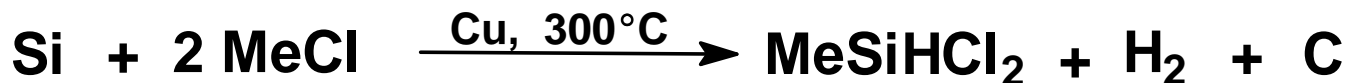
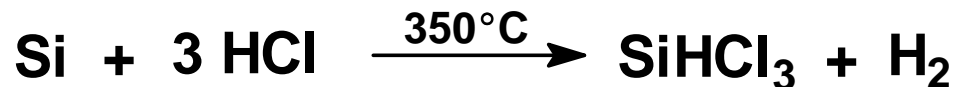
# Cyclic Silicon Hydrides



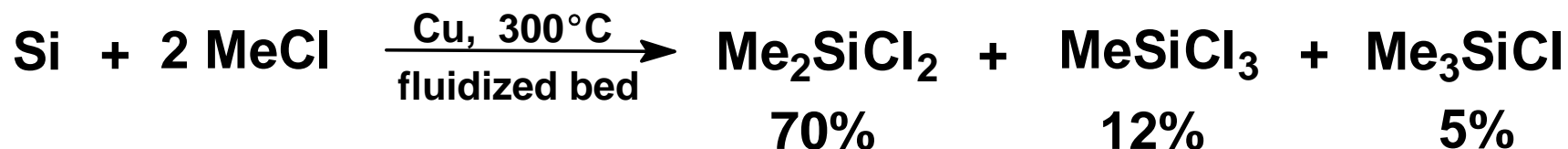
**Silanes do not hydrolyse in very pure water, but even minute traces of base result in complete hydrolysis. They react explosively with the halogens although bromine and presumably iodine can be controlled by low temperatures .**



# Rochow Synthesis & Silicones

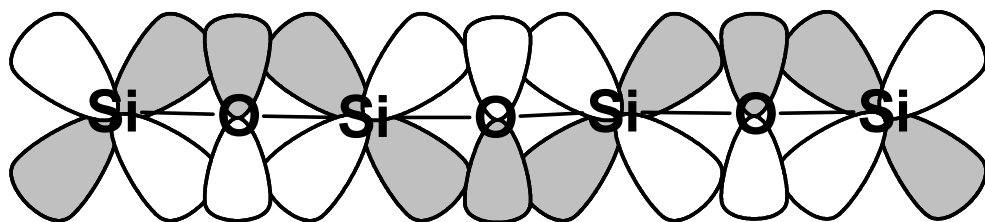


Rochow Synthesis:

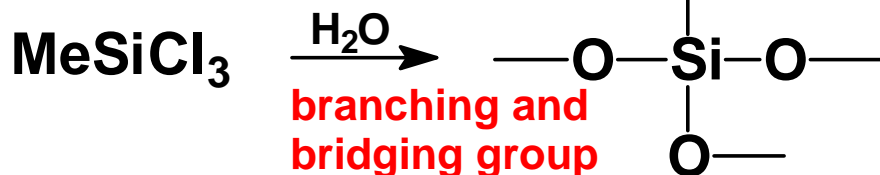
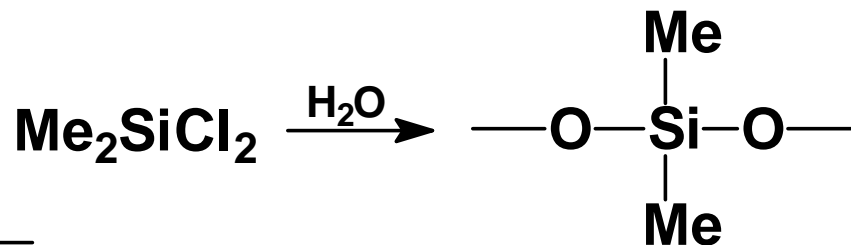
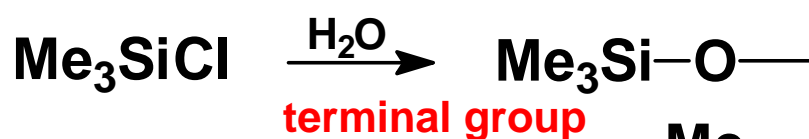


**dπ-pπ bonding**  
(a second set at 90°)

Even small amounts of HCl drastically reduce the yields of Me<sub>2</sub>SiCl<sub>2</sub>.

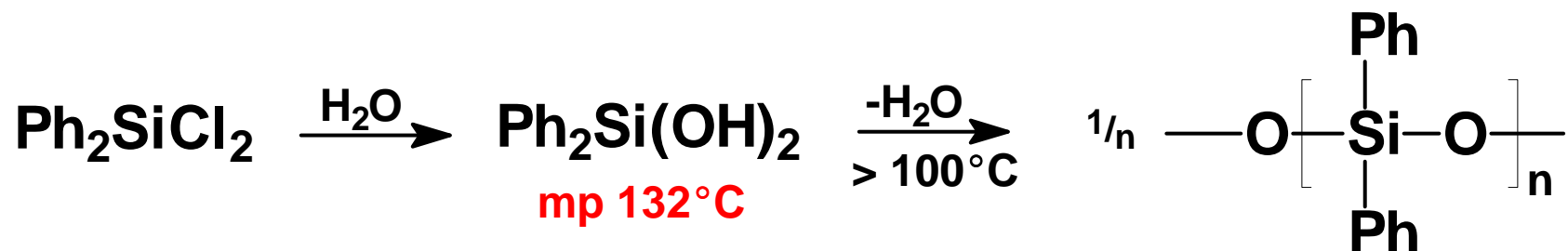
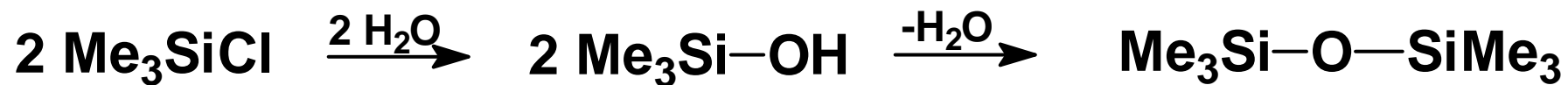


The Si-O-Si linkage is unusually strong and flexible. dπ-pπ bonds do not impart rigidity to the chain.

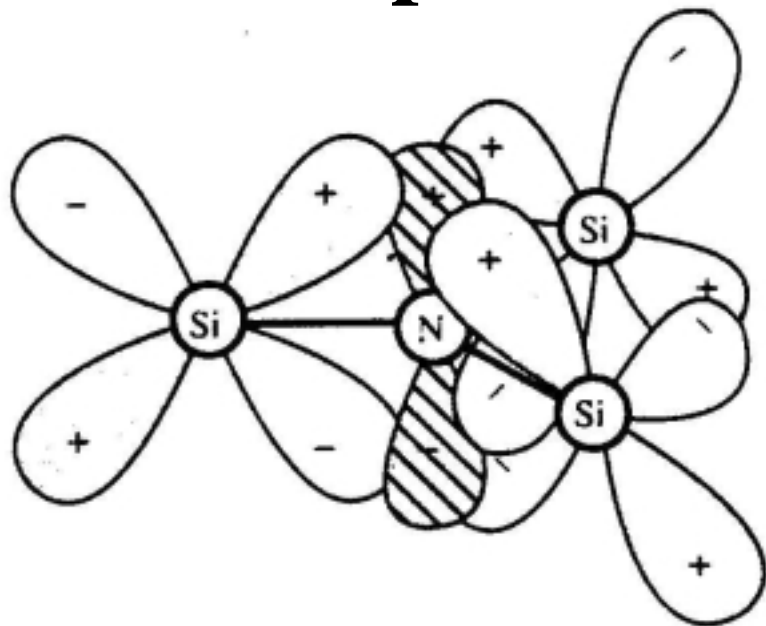


chain-forming group

# Silicones and Silyl Ethers



## dπ-pπ Bonding in Silyl Amines



**Trisilylamines are planar and non-basic. The silicon-nitrogen bonds are very strong as a result of extensive dπ-pπ Bonding.**

# Orthosilicic Acids and Orthosilicates

