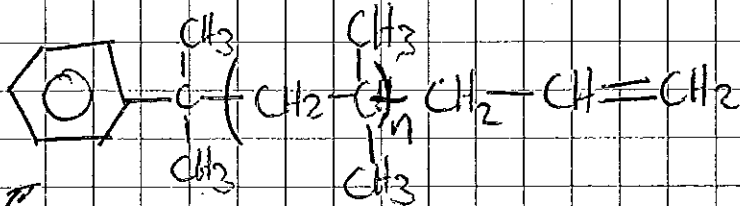
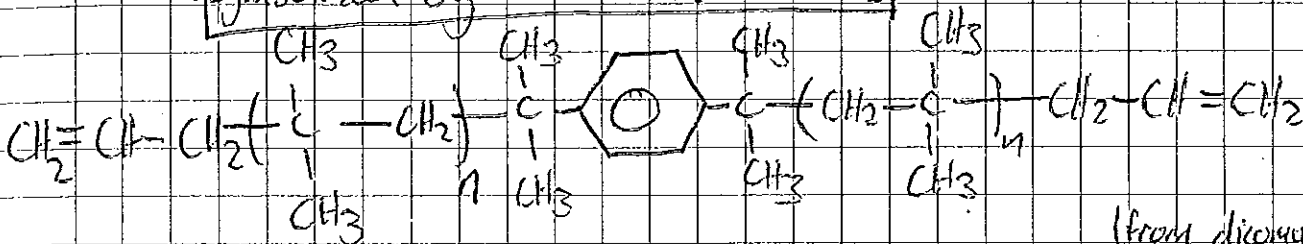


PIB can be polymerized using living polymerization techniques followed by oxepot allyl functionalization to give the following basic structures



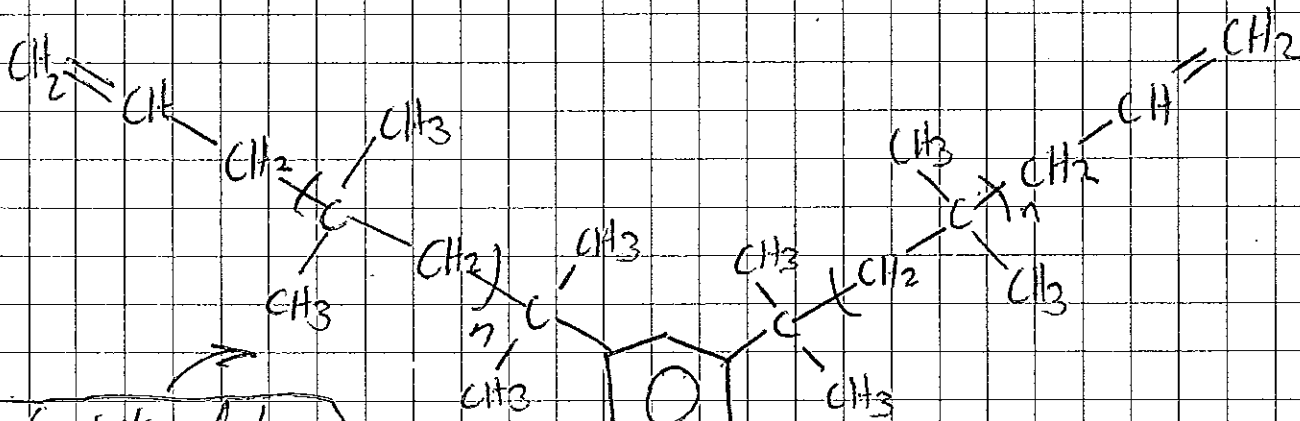
(From cumyl-Cl/TiCl<sub>4</sub>/IB followed by treatment with allyltrimethylsilane)

Symbolized by  $\sim\sim\sim\text{CH}_2 - \text{CH}=\text{CH}_2$

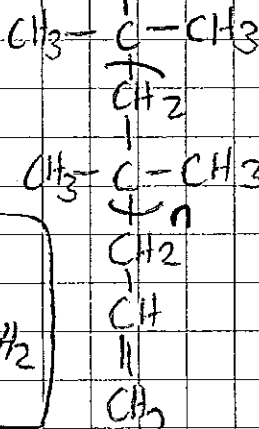
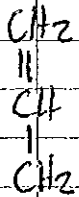


(From dicumyl-Cl/TiCl<sub>4</sub>/IB followed by ATRP treatment)

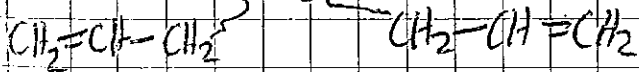
Symbolized by  $\text{CH}_2=\text{CH} - \text{CH}_2 \sim\sim\sim \text{CH}_2 - \text{CH}=\text{CH}_2$



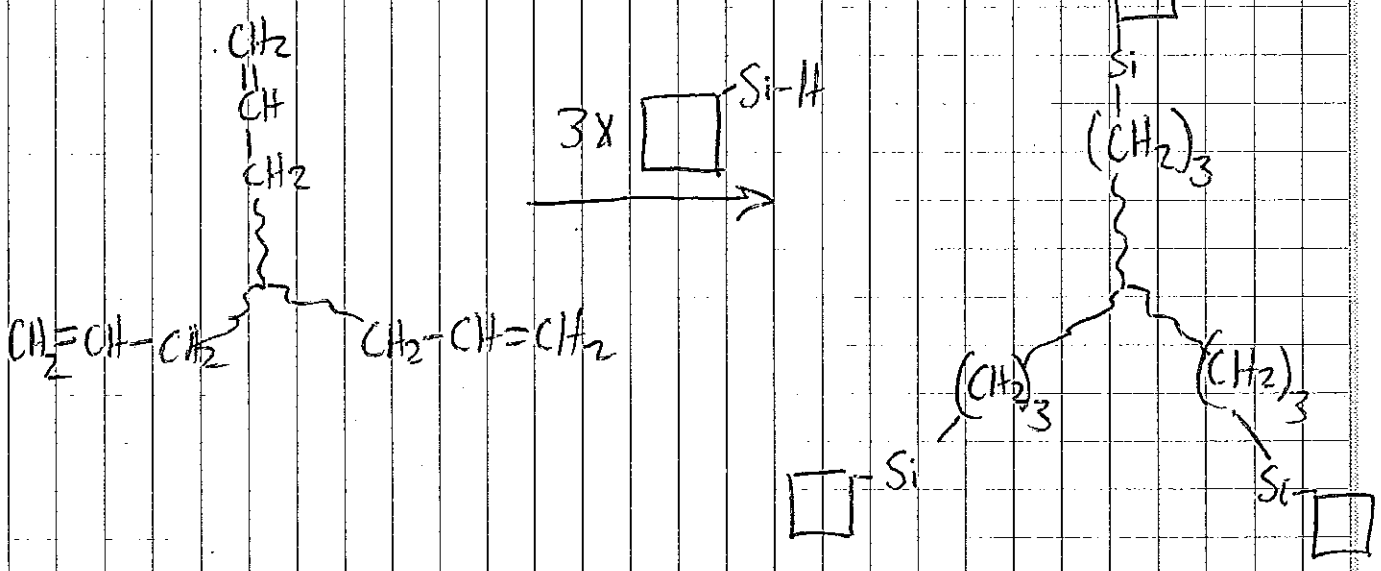
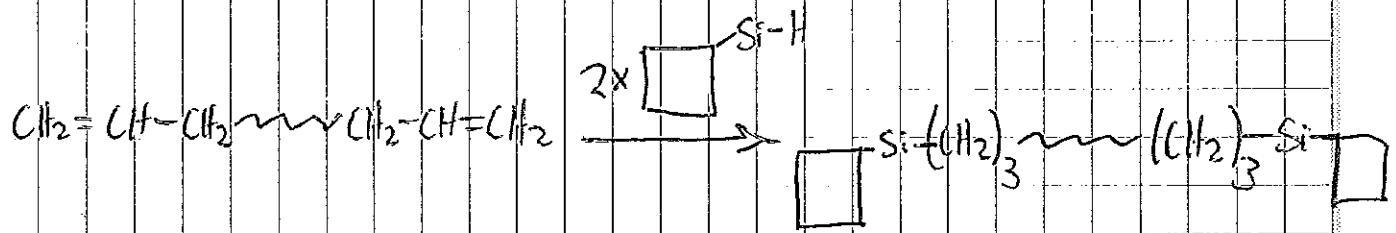
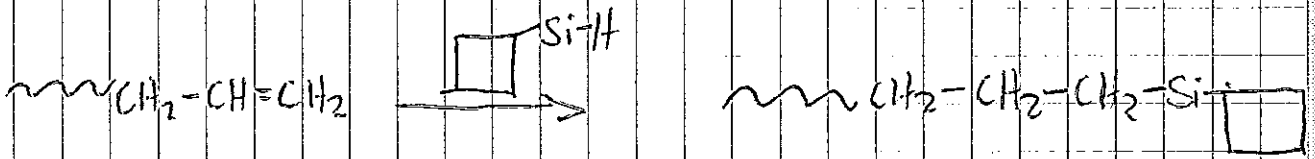
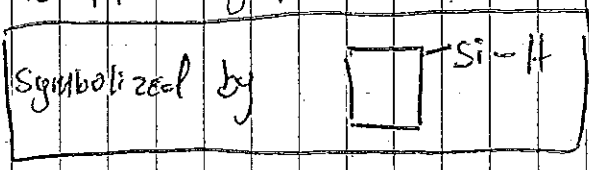
Symbolized by



(From tricumyl-Cl/TiCl<sub>4</sub>/IB followed by ATRP treatment)

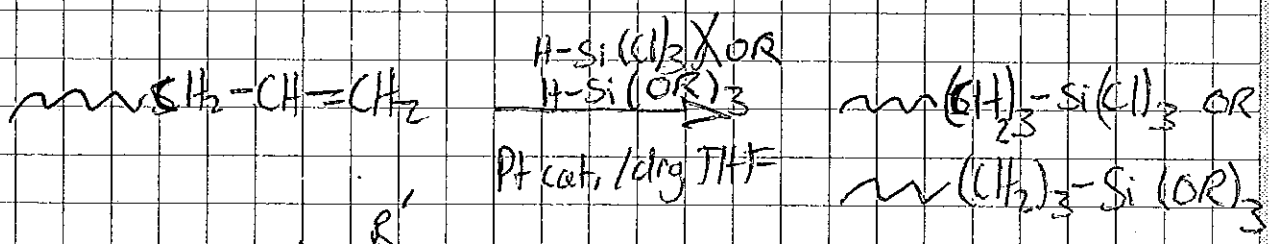


The following materials can be made via hydrosilylation of  
 - [hydride/dimethylsiloxy]-3,5,7,9,11,13,15-heptacyclopentylpenta-  
 cyclo[9,10,13,9,15,17,13]octasiloxane to any of the  
 structures shown on page 07 of this book in dry THF using an  
 appropriate Pt catalyst.

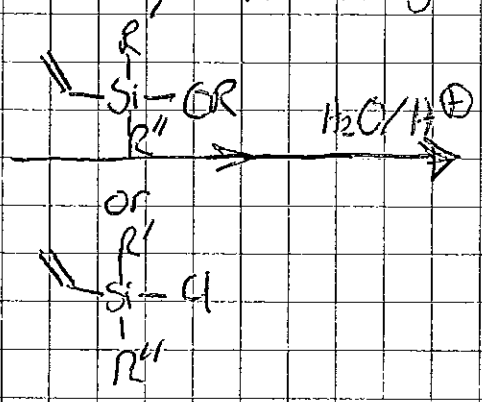


Important: *(faint text)*

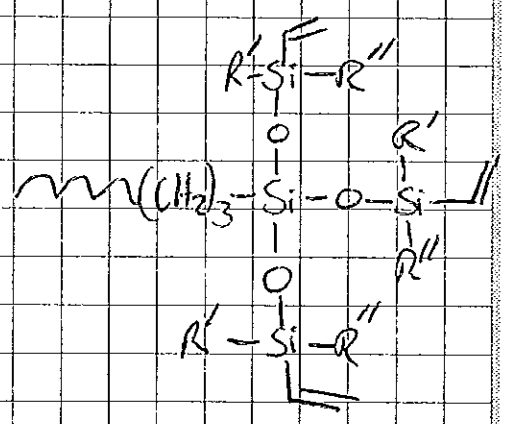
The allyl functionality of PIBs could be increased in any of the following manners with any of the materials given on page 07 of this notebook to give the following



Remove HSiCl<sub>3</sub>  
or HSi(OR)<sub>3</sub>  
that is unreacted

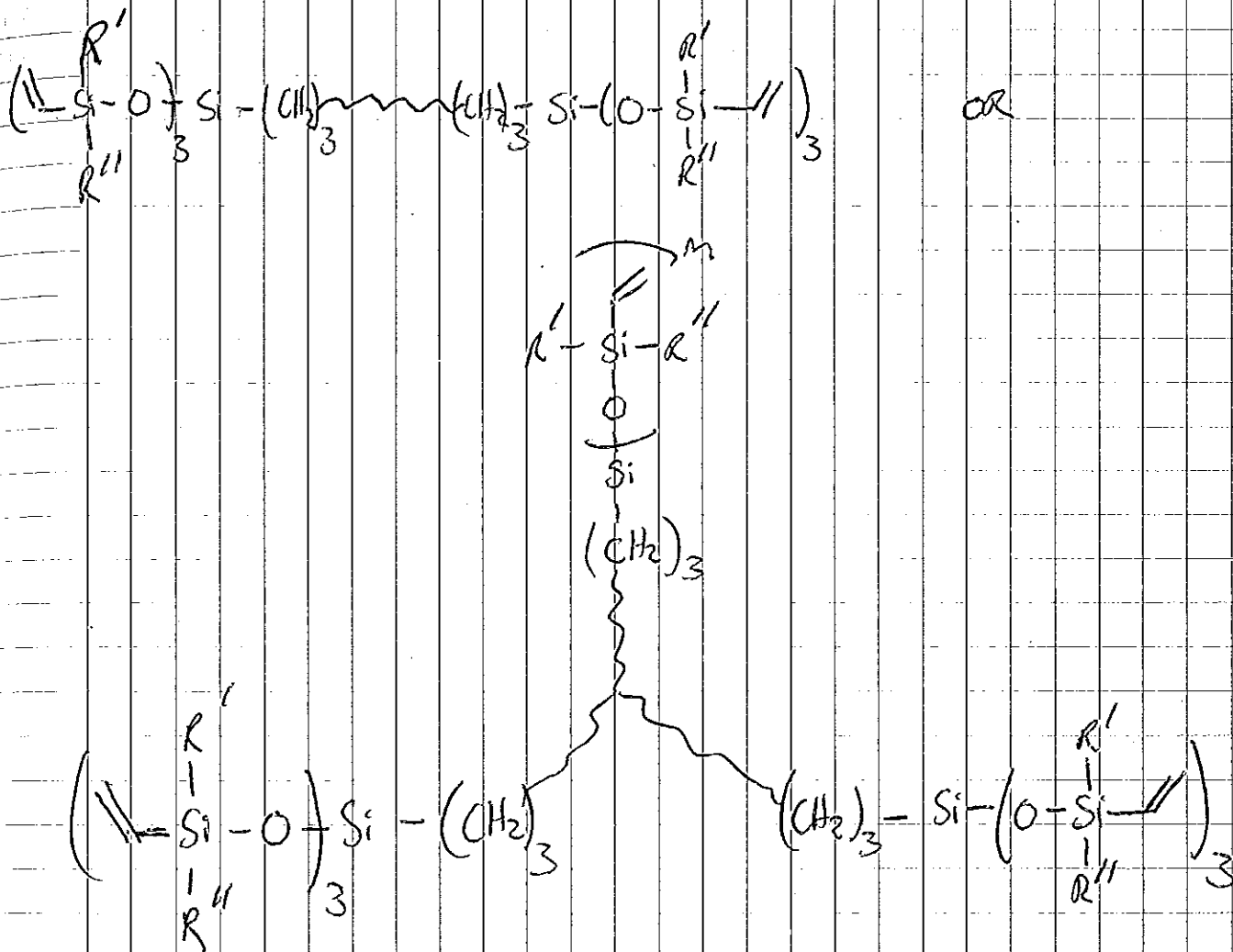


R', R'' = vinyl or CH<sub>3</sub>

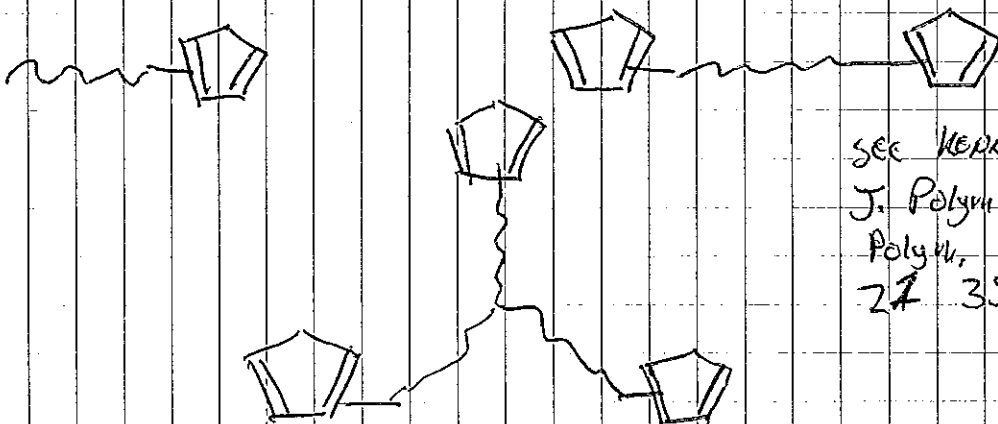


or if  $\text{CH}_2=\text{CH}-\text{CH}_2\text{~}-\text{CH}_2-\text{CH}=\text{CH}_2$  or  $\text{CH}_2=\text{CH}-\text{CH}_2$   $\begin{matrix} | \\ \text{CH}_2-\text{CH}=\text{CH}_2 \\ | \\ \text{CH}_2 \\ | \\ \text{CH} \\ || \\ \text{CH}_2 \end{matrix}$

are used in a similar series of rxn's you can have:



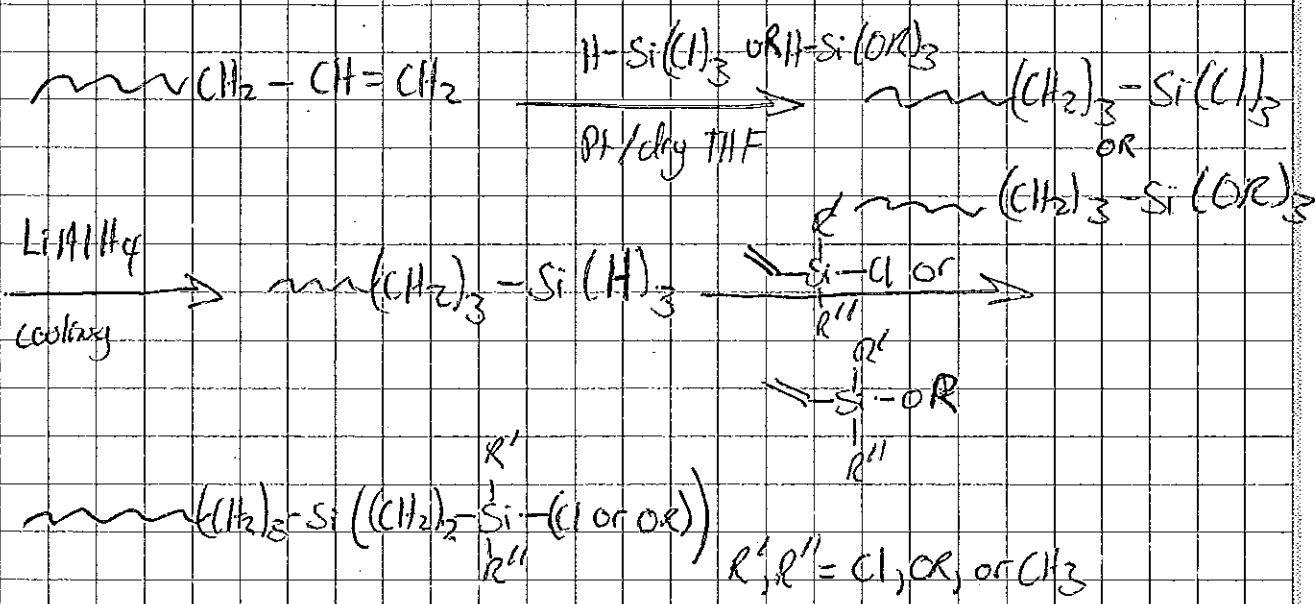
This series of rxns  $\rightarrow$  hydrosilylation followed by carbosilylation can  
 OR course be repeated as many times as desired to increase the number  
 of Si= bonds/groups. Additionally, a similar series of reactions  
 could be carried out on the cyclopentadiene derivatives of the  
 structures shown on page 07 of this book, specifically



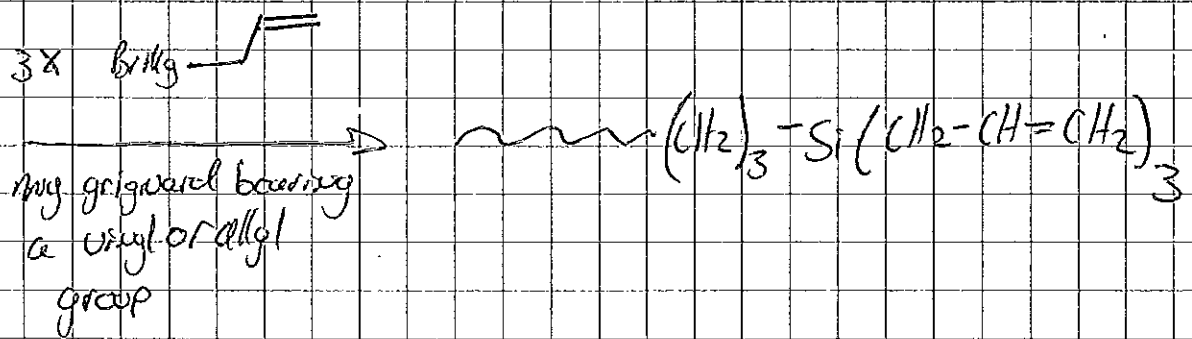
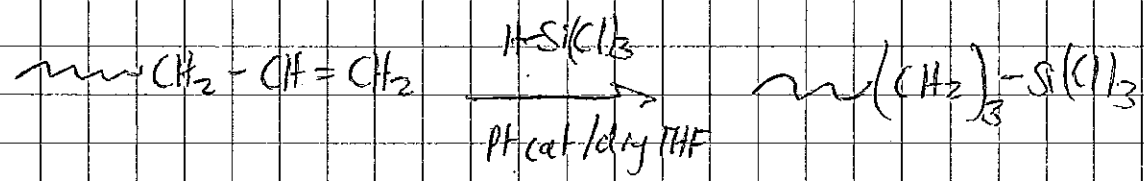
see Kennedy/Carlson  
 J. Polym. Sci.,  
 Polym. Chem. Ed.  
 27 3551

Important:

Similar expansion of allyl or vinyl end groups on PIB can be done through either of 2 additional methods



This is the least useful technique - makes multiple alkoxy silyl groups through less desirable routes or reactions



These should be very favorable rxns - easy to do