

Course

CHEM 343

Lecturer

Gellman

Day

Mon 1:20 PM

Date

11/14/11

Notes Taken By

Patrick

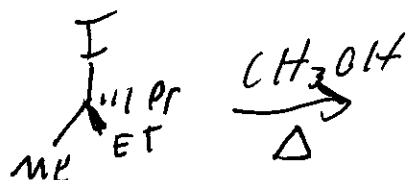
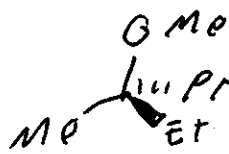
Total # of Pages

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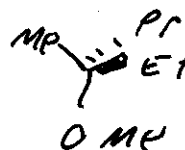
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Recall: stereochemistry provides mechanistic insight on  $S_N1$  rxns:

Et =  $\text{CH}_3\text{CH}_2-$ Pr =  $\text{CH}_3\text{CH}_2\text{CH}_2-$ Me =  $\text{CH}_3-$ 

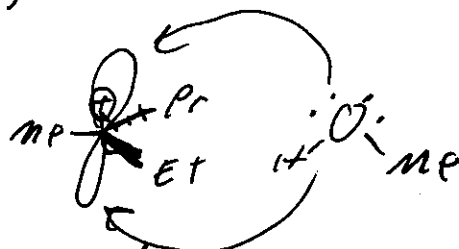
(R)



(S)

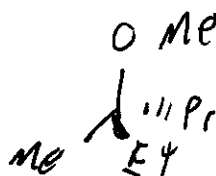
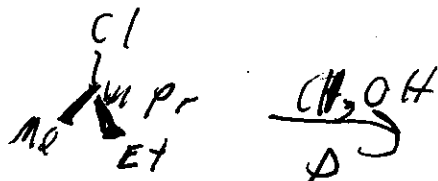
racemic

Rational



carbocation is planar

Sometimes, product is not racemic - ion pair intermediate



30%



70%



preferred

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$S_N1/E1/S_N2/E2$  rxn manifold - Summary of possibilities in table 9.7. Some cases can be readily predicted

-  $1^\circ$  alkyl halides  $\therefore S_N2$  likely;  $E2$  if strong base  
 $\Rightarrow$  no  $S_N1/E1$

-  $3^\circ$  alkyl halides - no  $S_N2$

• strong base  $E2$

• polar/protic solvent (w/o strong base) -  $S_N1/E1$   
 ( $H_2O$ ,  $MeOH$ ,  $EtOH$ )

-  $2^\circ$  alkyl halides - most challenging to predict products because all 4 mechanisms possible

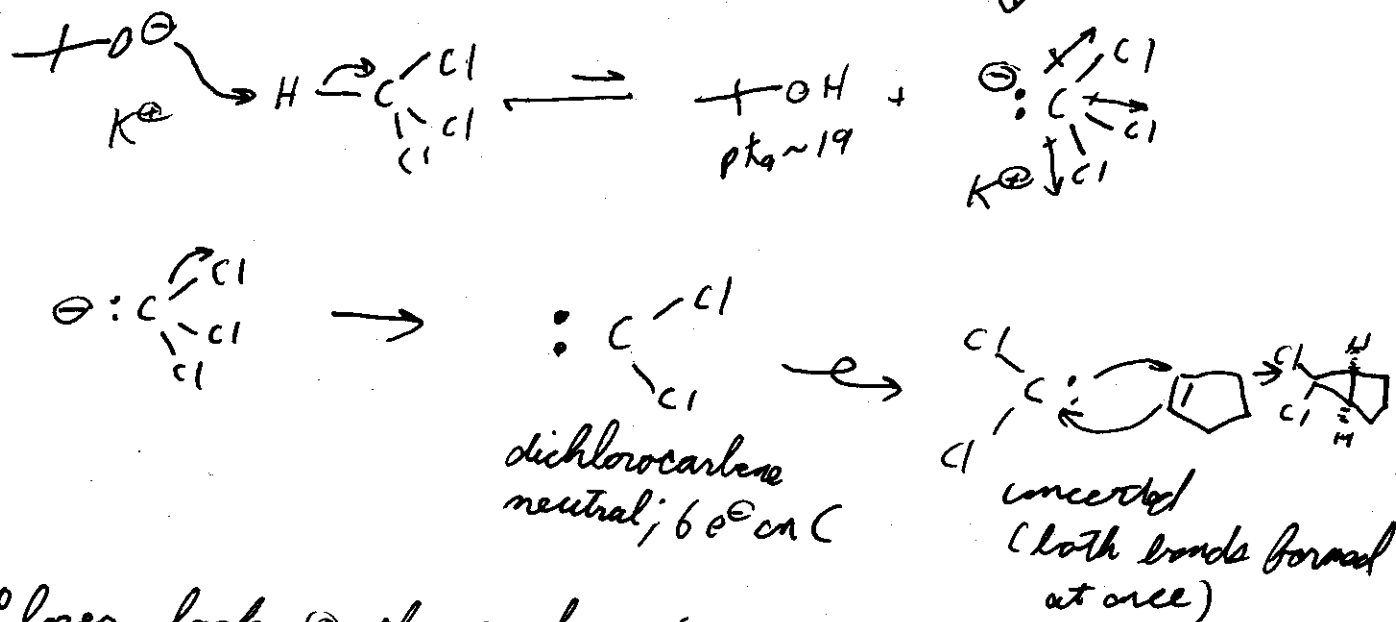
Carbenes - a new kind of reactive intermediate, highly electron deficient carbon

consider:

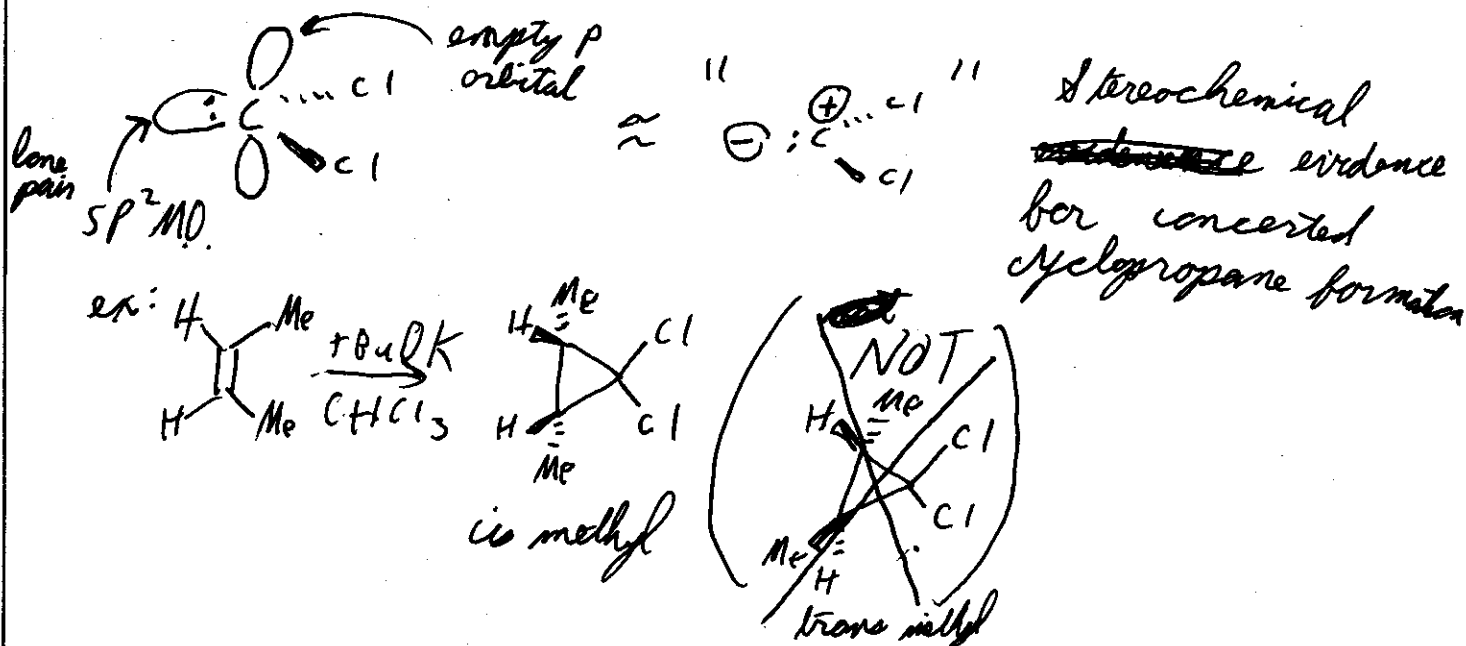


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Mechanism?? accepted hypothesis



Closer look @ the carbene:



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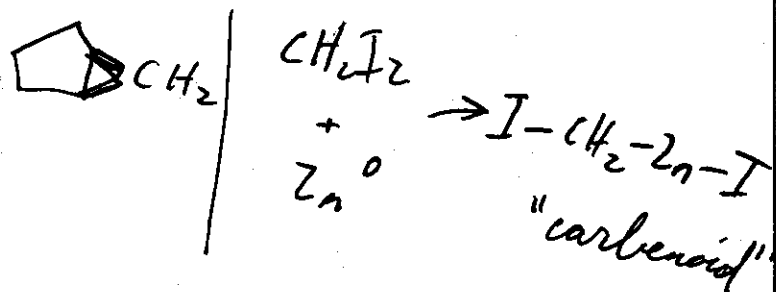
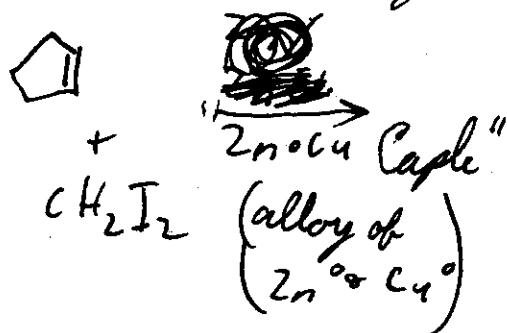
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Problem: Many carbenes are so reactive that their reactions are indiscriminate (poor product selectivity)

ex: "methylene"  $:CH_2$

• use a metal (Zn) to "tame" the carbene ("carbenoid")

Simmons-Smith reagent



Carbenes in interstellar space

