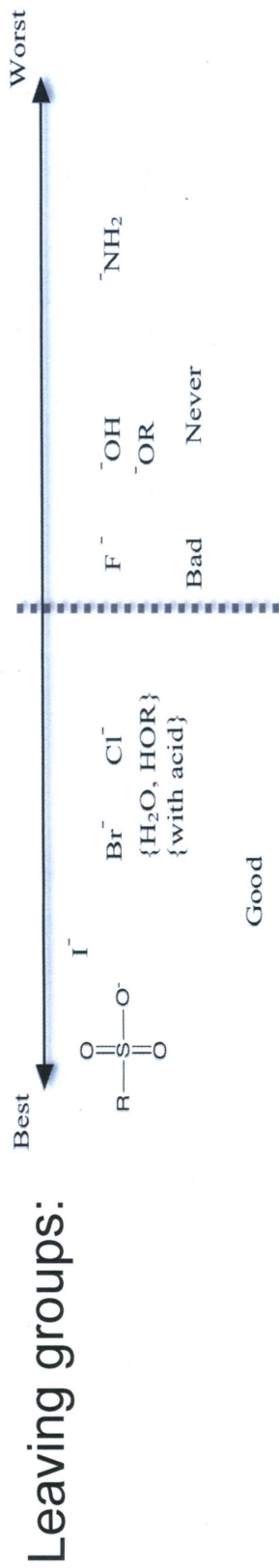


Alcohols and Ethers from Alkyl Halides



examples:



not formed



product

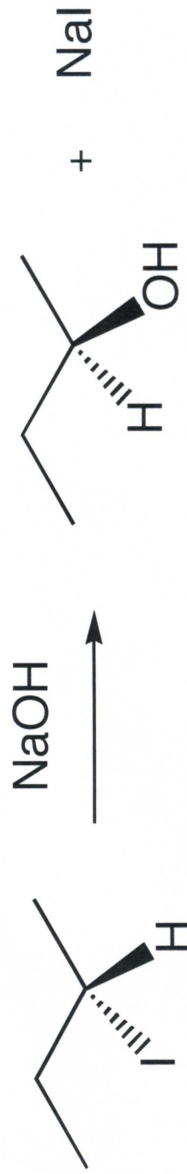


$\text{S}_{\text{N}}2$



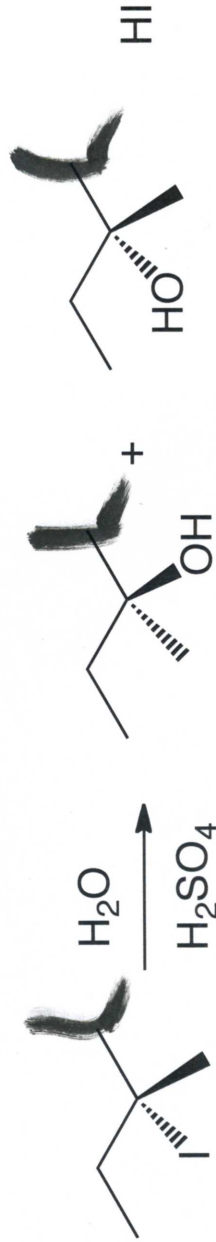
Alcohols and Ethers from Alkyl Halides

Walden inversion for S_N2 :



S_N1 process proceeds through cation (loses stereochemistry usually)

H has been changed to CH_3 in example below



1:1 mixture of enantiomers

Substitution Reactions - Examples and Limitations

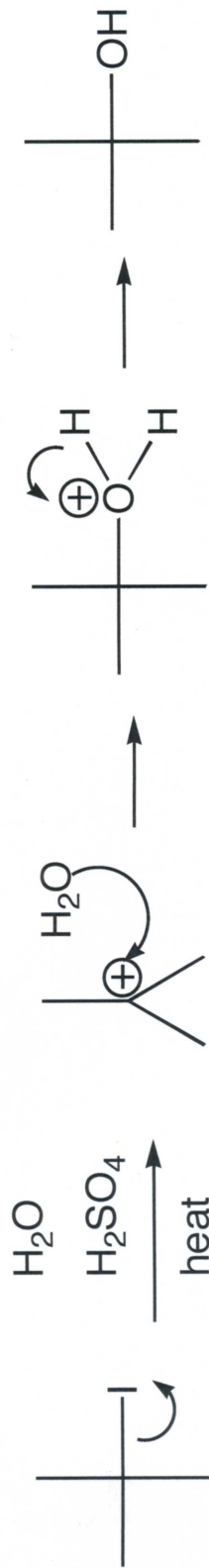
Would the following reaction occur?



No, this is a tertiary halide, too crowded
Elimination would occur

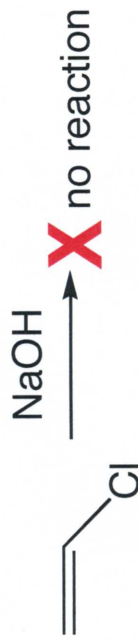


What reagents instead of NaOH could be used ? Do Sn1 Reaction



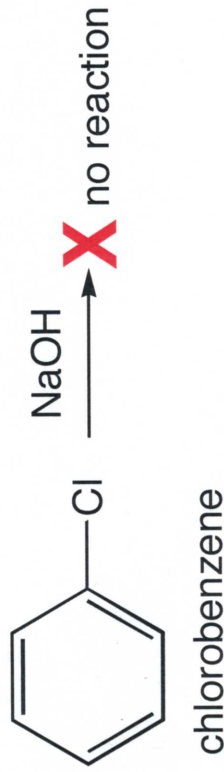
Substitution Reactions - Examples and Limitations

Would the following reactions occur?



vinyl chloride

No S_N2 or S_N1 on alkene centres

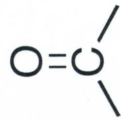


chlorobenzene

Aldehydes and Ketones: Nomenclature

carbonyl group has a pi (π) bond between carbon and an oxygen

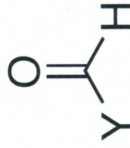
oxo group is any atom with a double bond to oxygen



carbonyl



oxo



aldehyde if $Y=C,H$

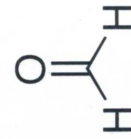
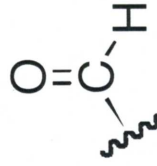


ketone

Aldehyde Nomenclature

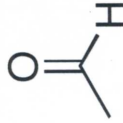
change the $-e$ ending of the parent hydrocarbon and replacing it with $-al$
the aldehyde the first carbon of the chain

formyl group



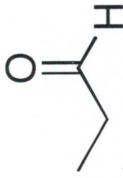
formaldehyde

methanal



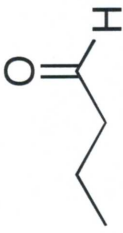
acetaldehyde

ethanal



propionaldehyde

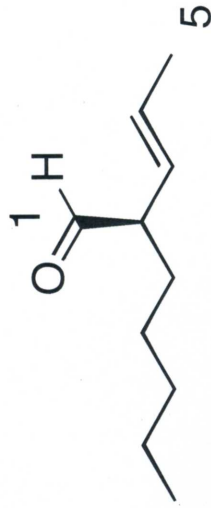
propanal



butyraldehyde

butanal

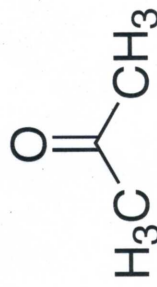
Aldehyde Nomenclature



(2R,3E)-2-pentylpent-3-en-1-al

Ketone Nomenclature

substitute the *-e* ending of the parent hydrocarbon & replace with *-one*
give number of carbonyl position

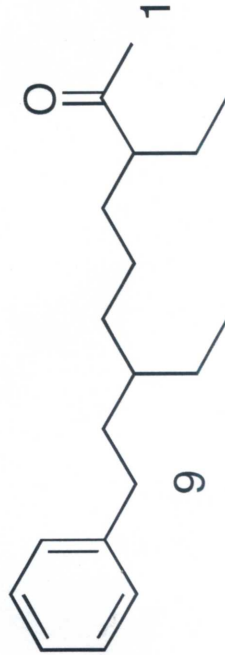


acetone

2-propanone or propan-2-one

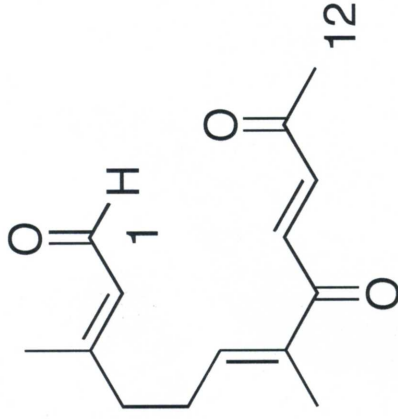


4-tetradecanone



3,7-diethyl-9-phenyl-2-nonanone
(sex pheromone of crocodile)

Aldehydes and Ketones: Nomenclature



3,7-dimethyl-8,11-dioxo-2E,6E,9E-dodecantrienal
(gyrinal)

from the water boatman beetle (*Corixa* species),
it is toxic to fish

Physical Properties of ketones & aldehydes

- more polar than alkanes but less polar than alcohols
- have dipoles and are hydrogen bond acceptors (cannot donate H bond)
- good solvents for organic compounds
- usually immiscible in water if > 3 carbons