

Introduction to Alkyl Halides

UCI Chem 51A
Dr. Link

Goals

- * After this lesson you should be able to
 - * Identify an alkyl halide
 - * Name a simple alkyl halide
 - * Describe and compare properties of alkyl halides
 - * Describe in general reactions of alkyl halides

Alkyl Halides

- * C-X bonds

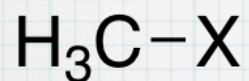
 - * X = F*, Cl, Br, I

- * Polar! Electrophilic C

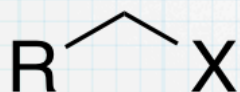
 - * Electrophile: compound with an atom lacking electron density. Can accept a pair of electrons

Types of R-X Compounds

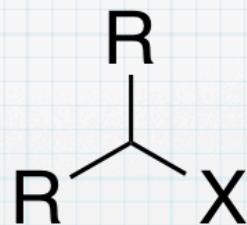
methyl



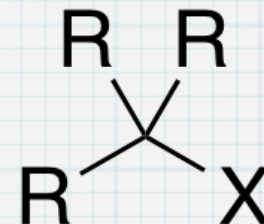
1°



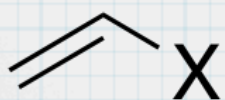
2°



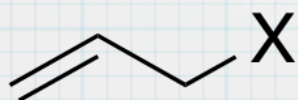
3°



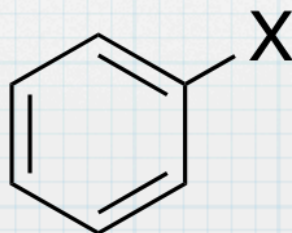
vinyl



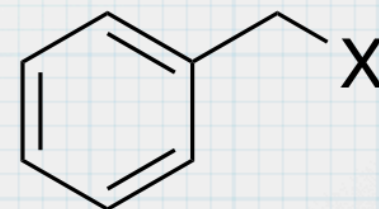
allyl



aryl



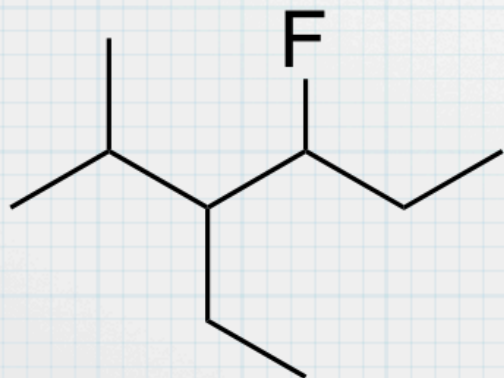
benzyl



Naming Alkyl Halides

- * Similar to alkane rules
- * Halogen must be attached to longest chain
- * Number & name as usual with halogen as a substituent

Halogen fluoro bromo
Substituents: chloro iodo

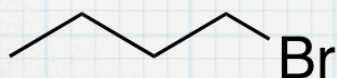
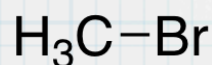


Alkyl Halide Properties

* Dipoles!

Size of R

↑ R, ↑ BP, MP



Size of X

↑ X, ↑ BP, MP



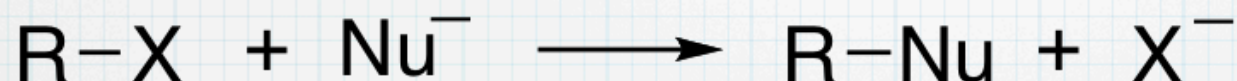
Solubility

organic solvents: yes

water: no

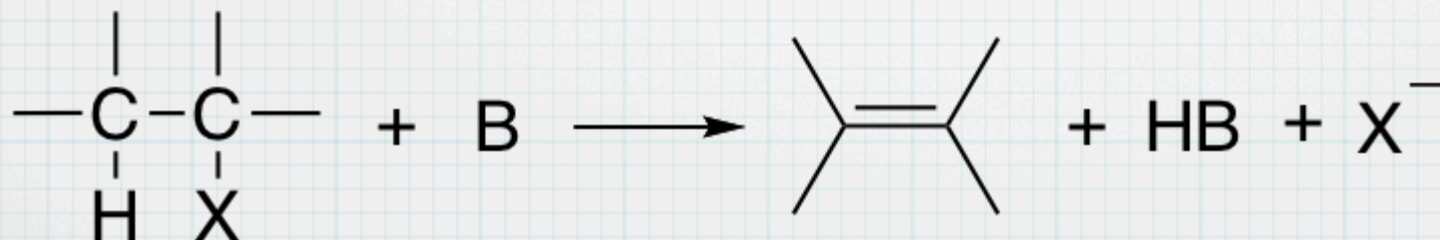
Reactions of Alkyl Halides

Substitution



Nucleophile:
electron-rich
compound that
can donate
electrons form
a bond

Elimination



Wrapping Up

- * Practice identifying alkyl halides
- * Practice naming alkyl halides
- * Practice comparing properties of alkyl halides