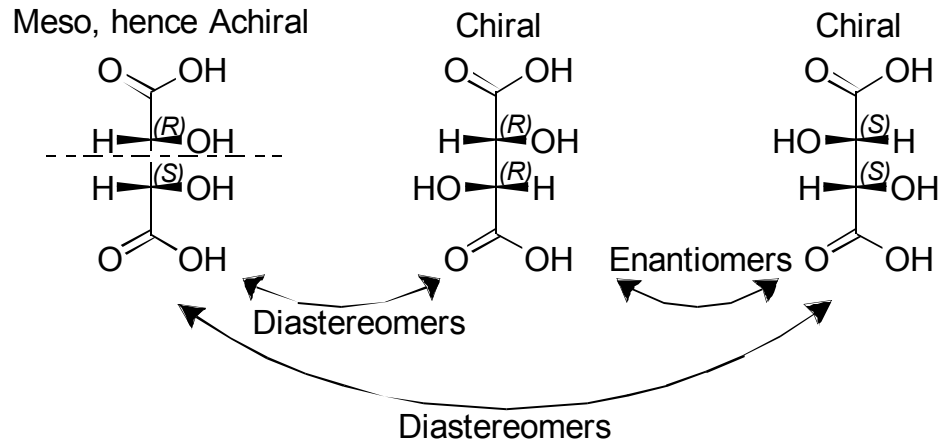
Review:



Separation of Enantiomers:

To separate the Enantiomers ➔ Create Diastereomers

Resolution by reaction to diastereomers (these can be separated by conventional means)

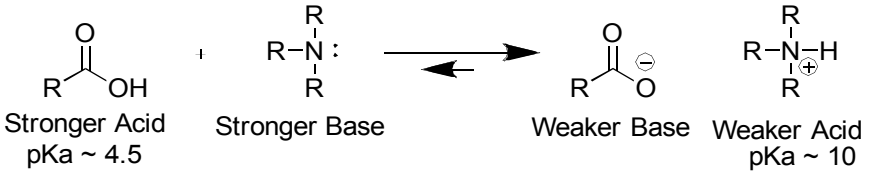
Formation of Diastereomeric Salts

Racemate:

RR Acid + SS Acid (50/50 Mix)

React with Optically Pure R-Enantiomer of the Base

Reactant R-SS Acid + Reactant R-RR Acid
RRR **RSS**



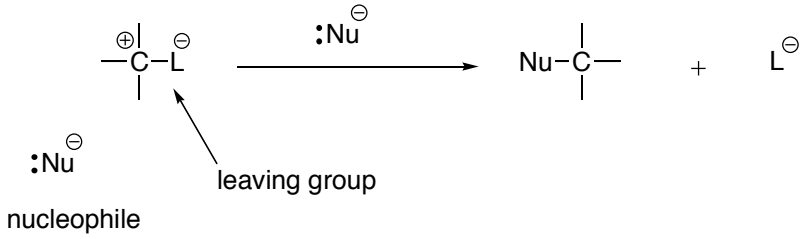
RR Acid + SS Acid + R Base ⟶ **R-RR Salt + R-SS Salt**

Substitution Reactions – 2 types: S_N1 and S_N2

S_N2 Reactions:

S = Substitution
N = nucleophilic
2 = # of Reactants in the Rate Determining Step: bimolecular reaction (i.e, rate of reaction depends on 2 reagents)

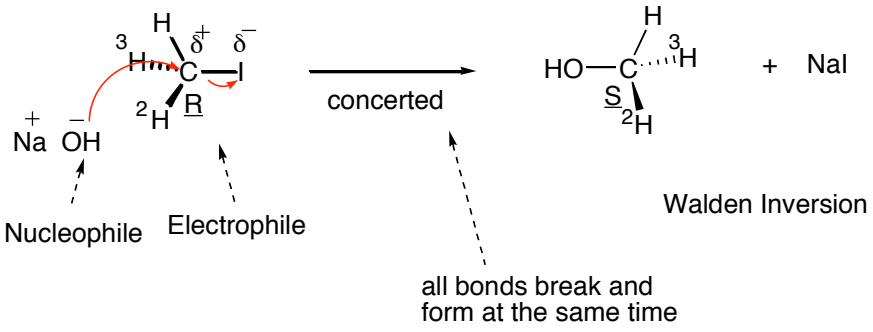
- stereospecific reaction
- inversion of configuration
- concerted reaction
- rate depends on two reagent concentration: [Nu] and [SM]
- works best for primary 1° leaving groups
- works ok for 2° leaving groups
- fails for 3° leaving groups
- fails for leaving group on sp^2 carbons



Nucleophile: Substance that seeks a positive centre.

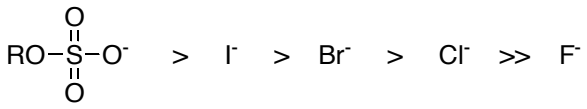
Electrophile: Substance that seeks a negative centre.

Eg.



Leaving group ability:

Excellent to Good Leaving Groups



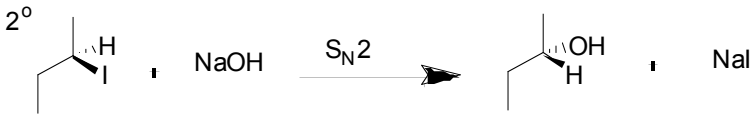
very good poor

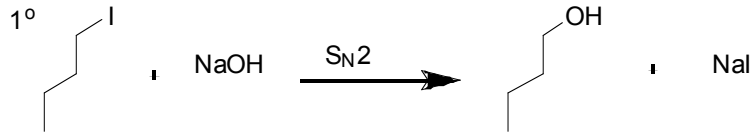
The order of halide leaving group ability is due to solvation and size.

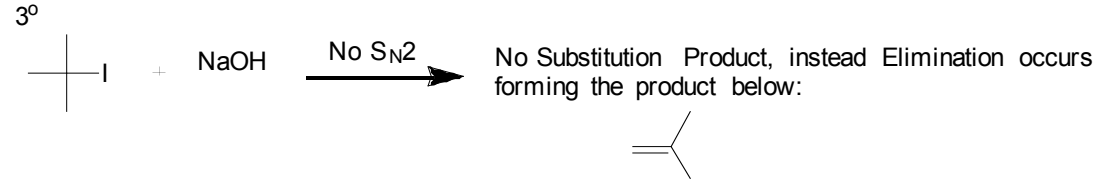
Examples of groups that will not leave under normal conditions:

F^-, OH^-, OR^-, NR_2^-

Examples of S_N2 Reactions:







- S_N2 **never** occurs at double bonds: