

KINETICS



Previously: Thermodynamics \rightarrow predict position of equilibrium.

\hookrightarrow Ground state energies

But most organic rxns involve irreversible steps

\uparrow kinetically controlled by energies of TS's

Thermodynamics is not enough.

We need kinetics.

Energy Surface

Consider Claisen Rearrangement:

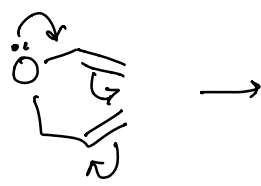


1) Concerted:
(typical mechanism)

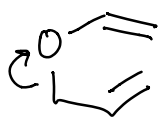


C-C forms +
C-O breaks
at same
time.

2) Ionic

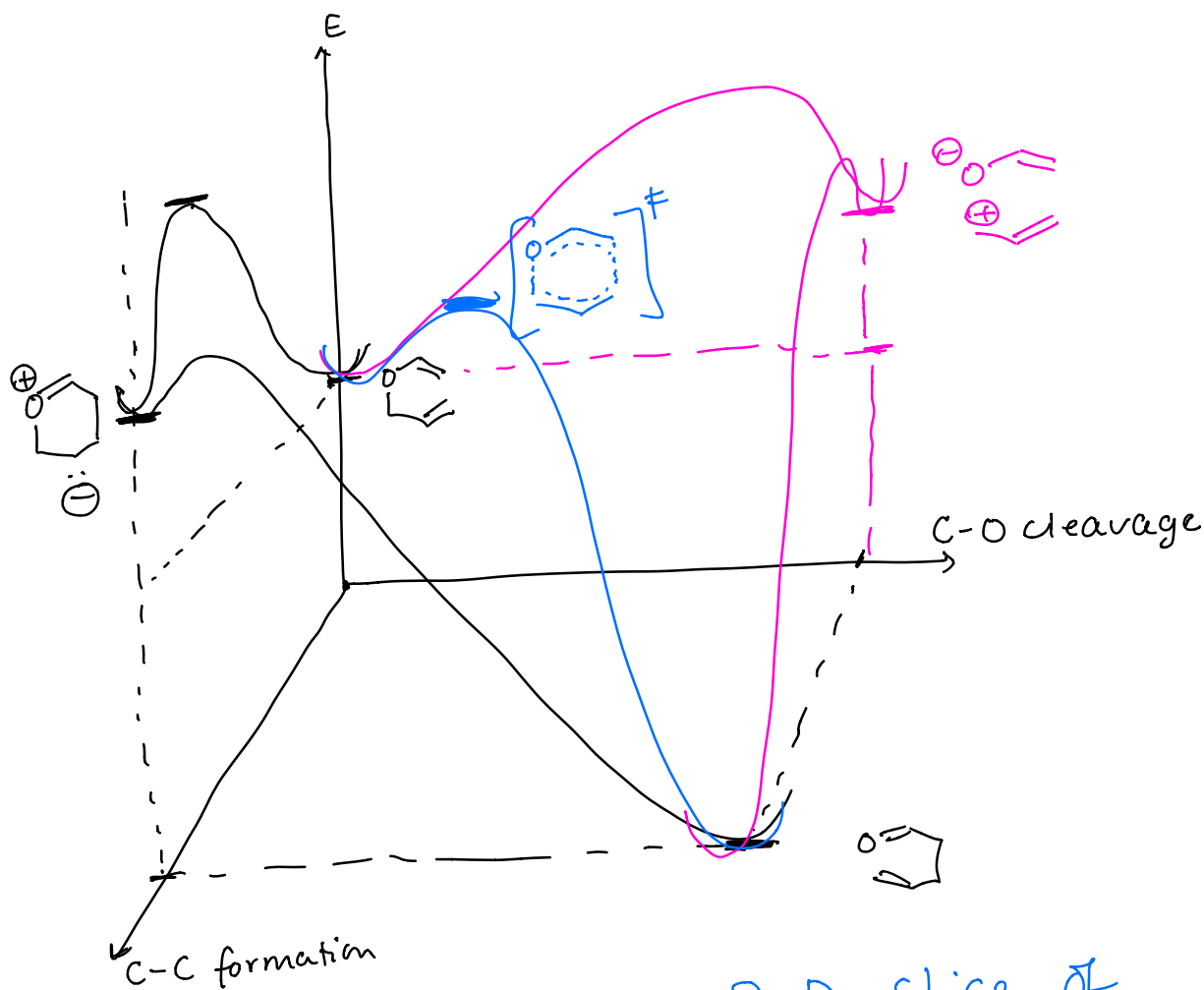


C-C forms
first



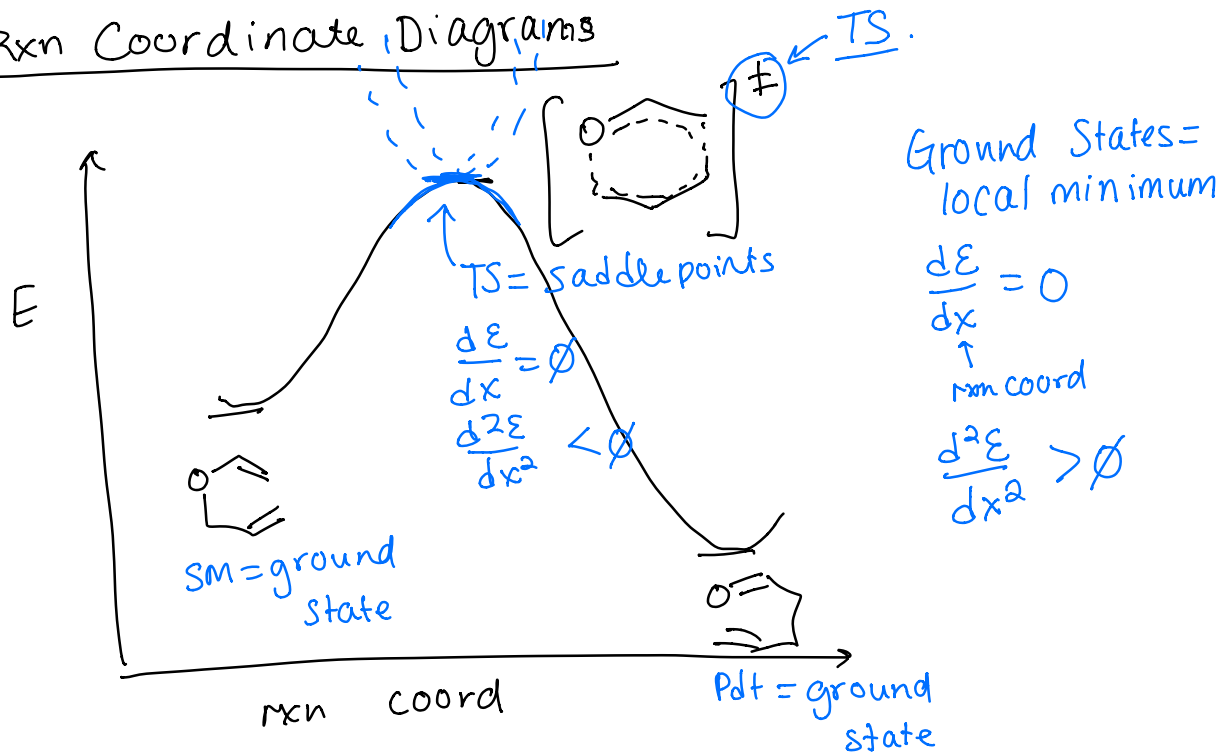
C-O breaks
first

3) Radical



Rxn coord diagram is 2-D slice of energy surface.

Rxn Coordinate Diagrams



Lifetime of TS = 1 molecular vibration along rxn coord.

