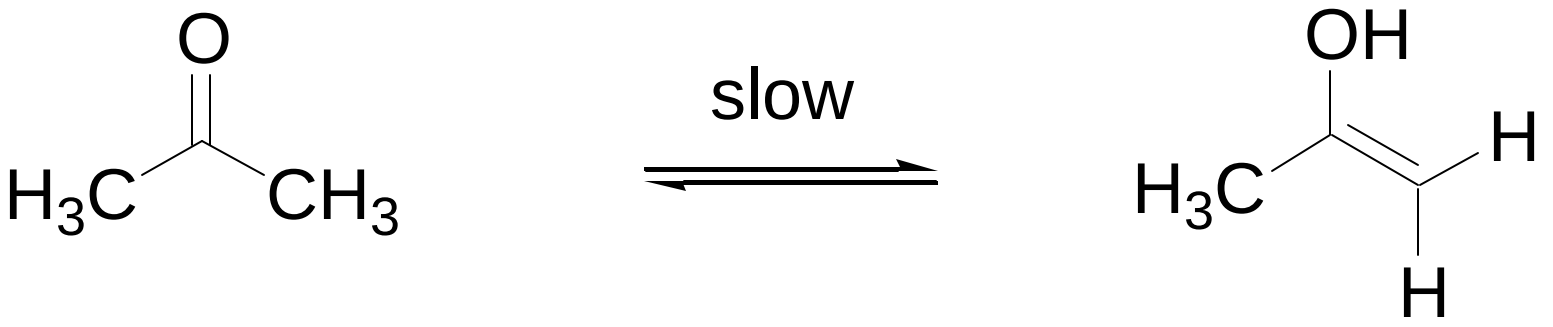
Lecture 23 – Chapter 18 : Enols and Enolates

- Enolization and enol content
- Stabilized enols
- Base-catalyzed enolization – enolate ions
- The iodoform reaction
- The aldol condensation

Enolization and Tautomerism



keto form

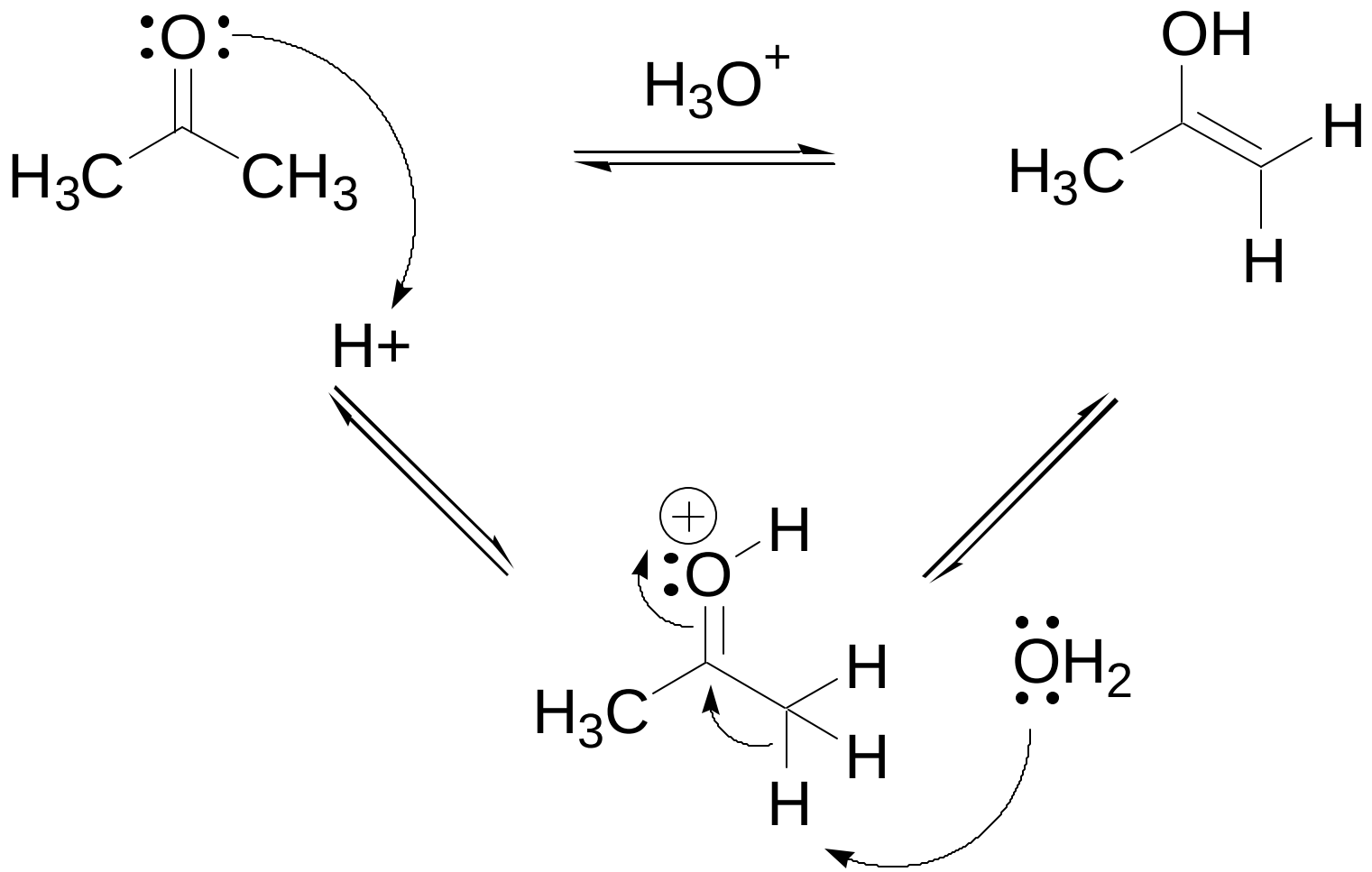
enol form

Tautomers – two structures that differ by placement of an atom or a group

The enol form is usually only present in low concentration since the C=O is more stable

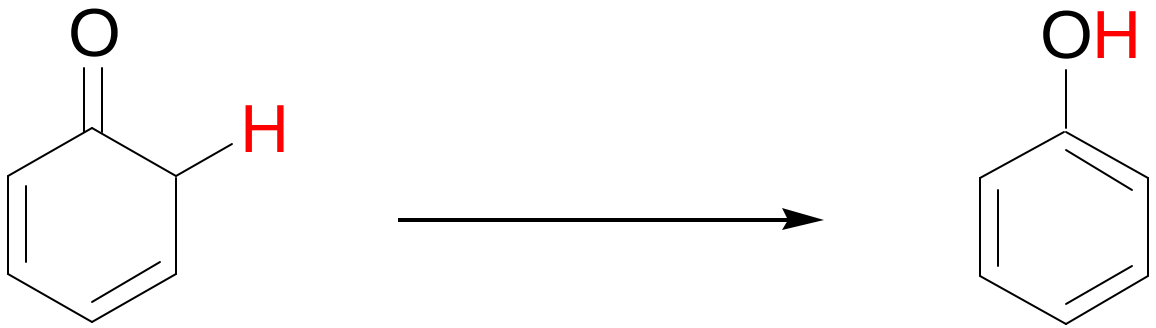
Tautomerism is acid-catalyzed

Acid-catalyzed Tautomerism

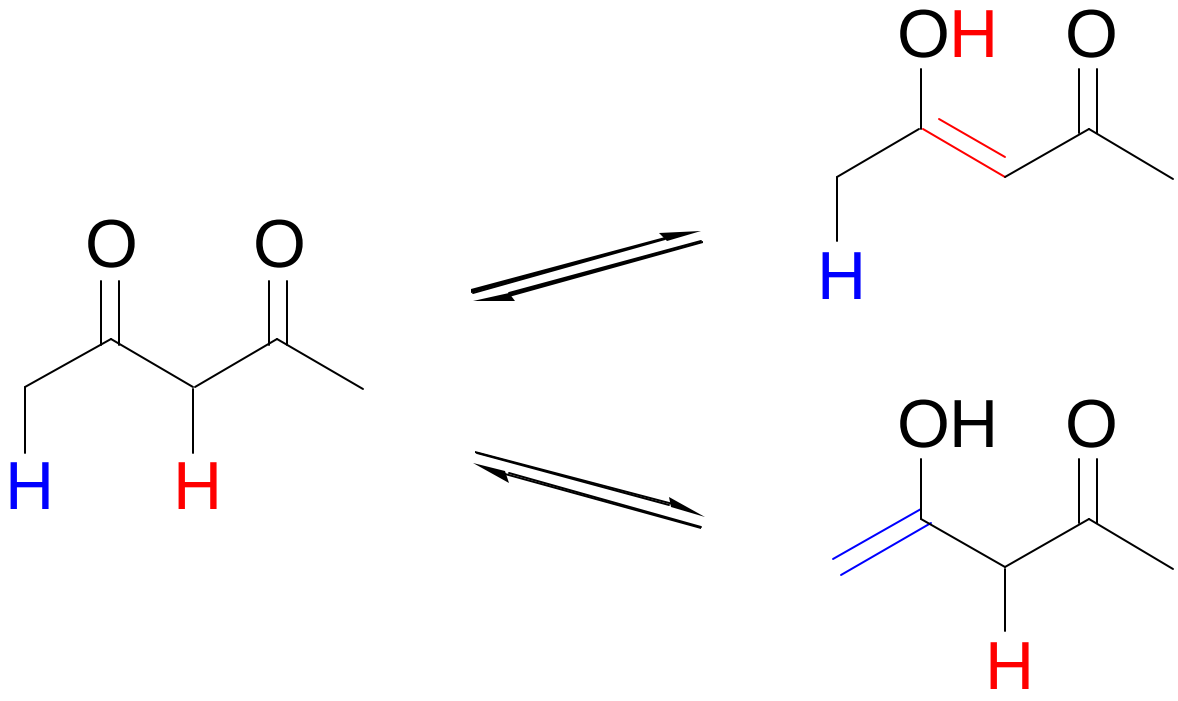


Sequential proton transfers

Stabilized enols

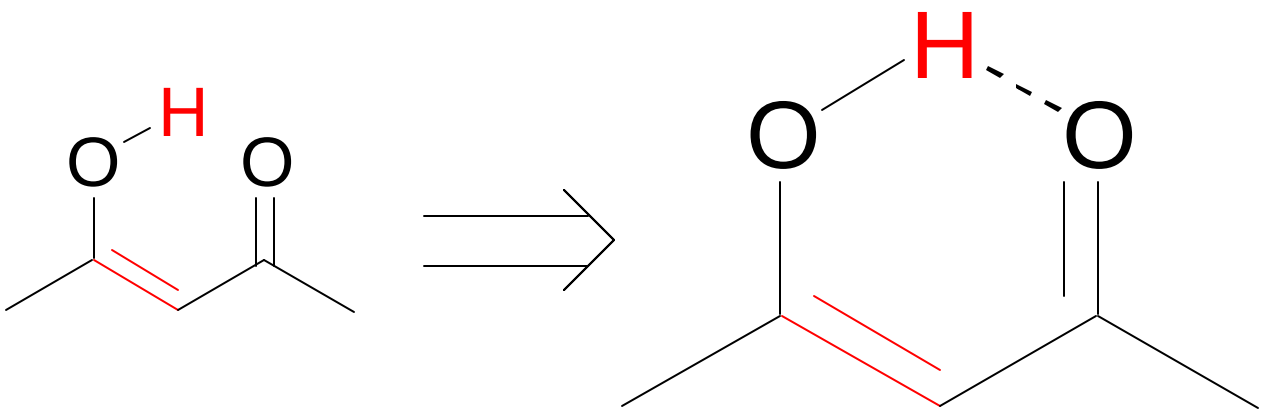


K too large
to measure



K = 4

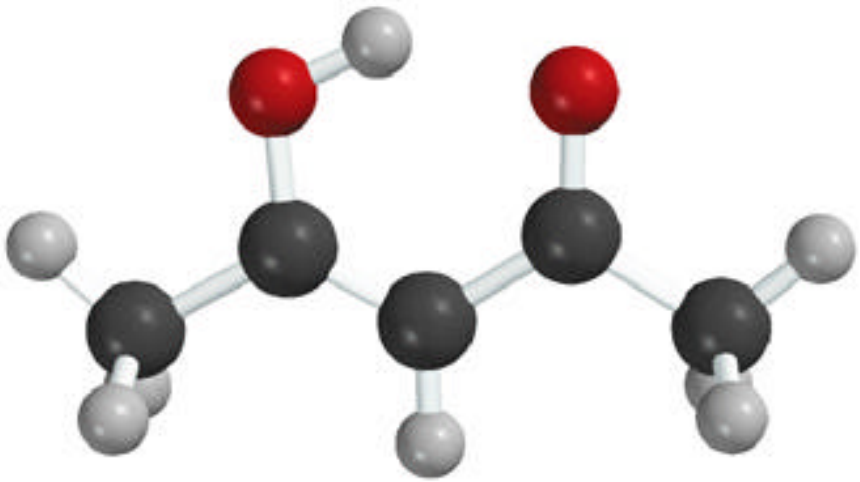
Enolization in 1,3-dicarbonyl compounds



intramolecular
hydrogen bond

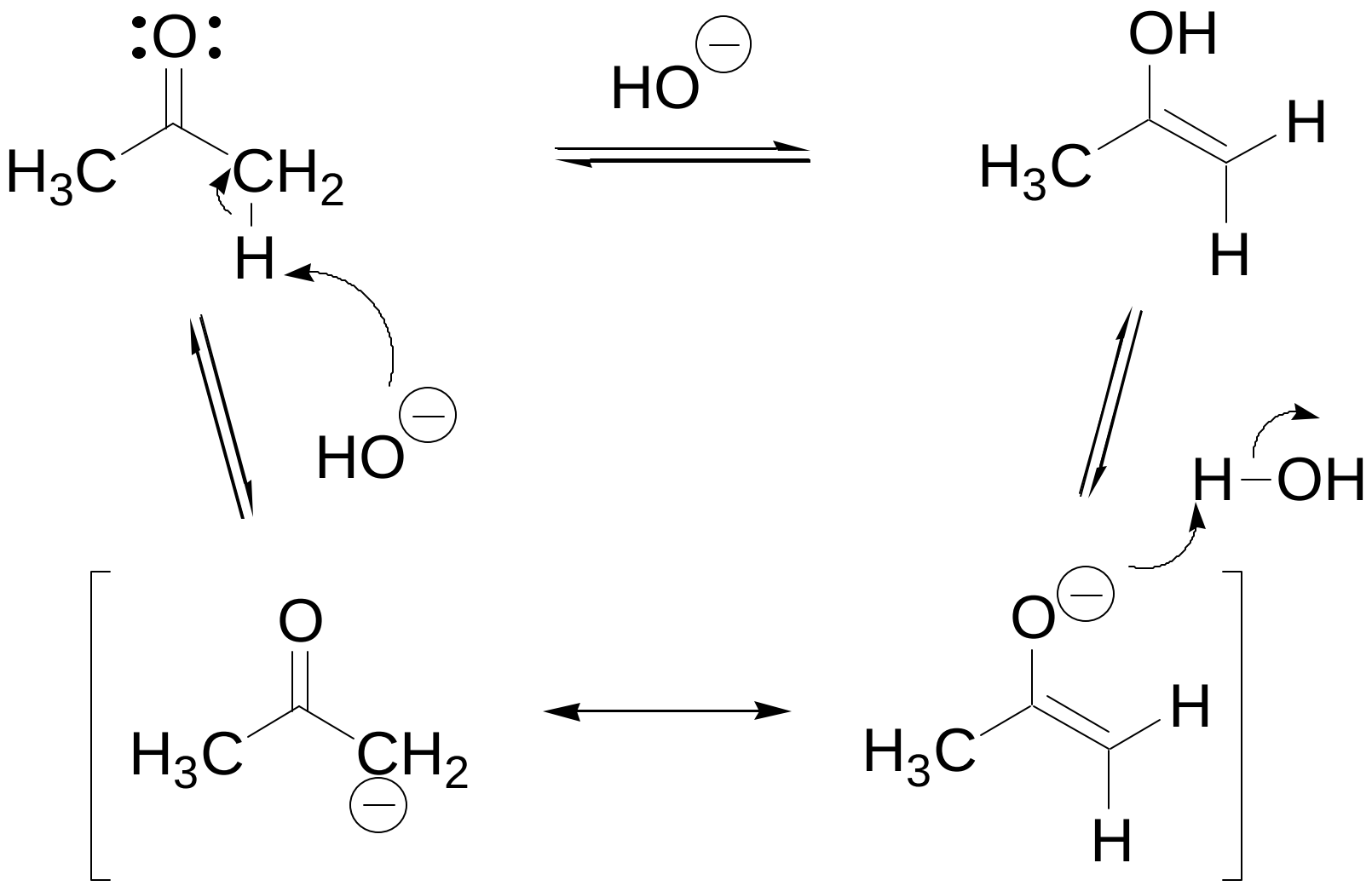
Molecular model

Figure 18.2



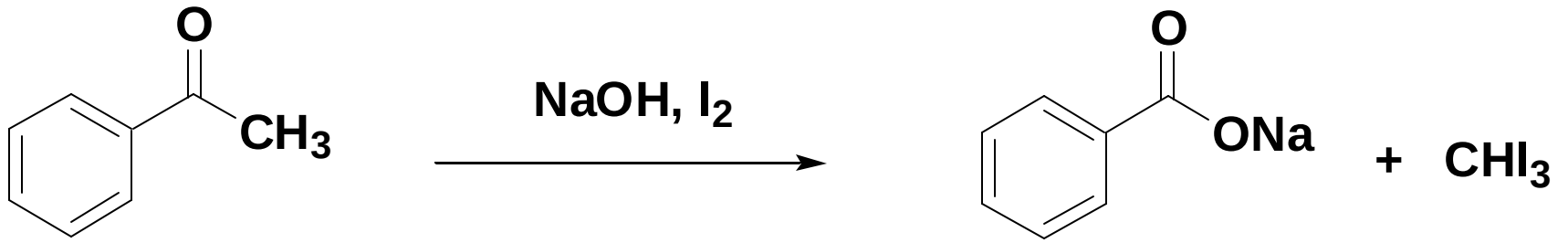
(*a*)

Base-catalyzed enolization - enolates



Enolate resonance forms – not tautomers

First reaction involving enolates – the iodoform reaction



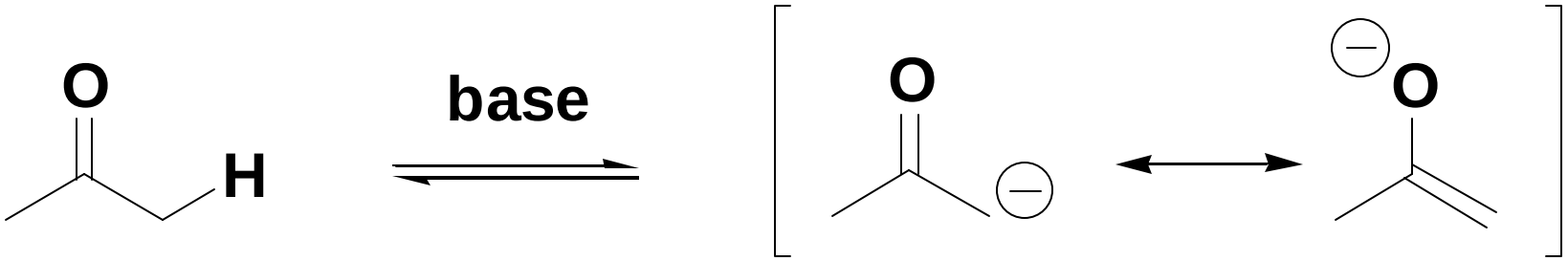
A methyl ketone

iodoform

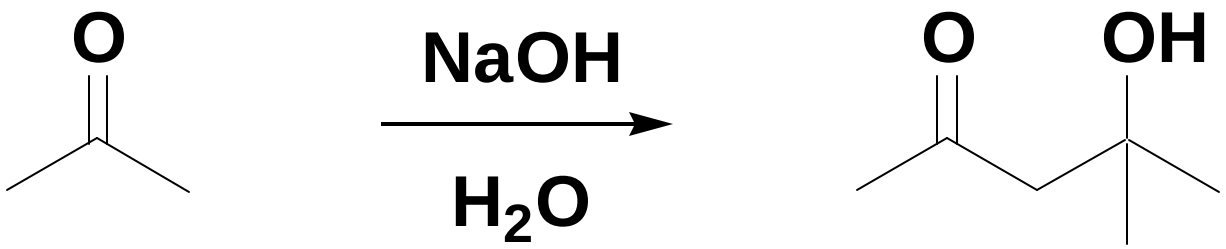
Mechanism involves sequential α-halogenations of enolate anions followed by a nucleophilic acyl substitution

Chemical test for methyl ketones, iodoform is a bright yellow compound

The aldol condensation



When appropriate base is used, both ketone and enolate present in solution, this leads to the aldol reaction



Friday

- Mixed aldols
- Conjugate addition
- Other aldol-type reactions