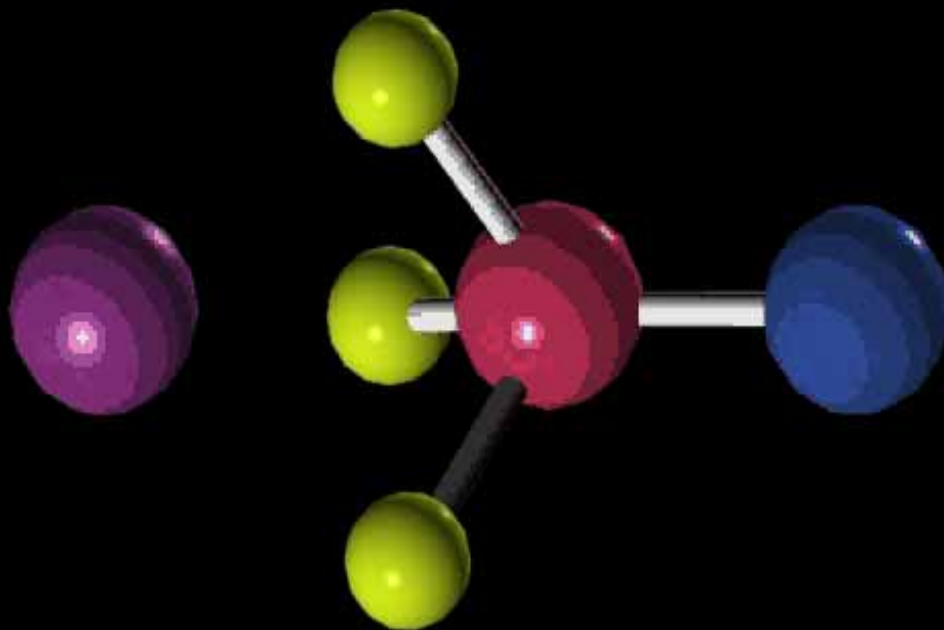
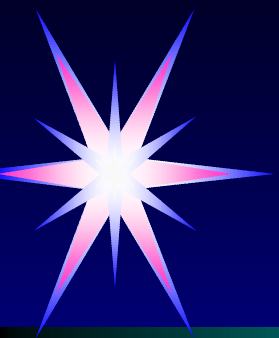


# 有机化学

( Organic Chemistry )

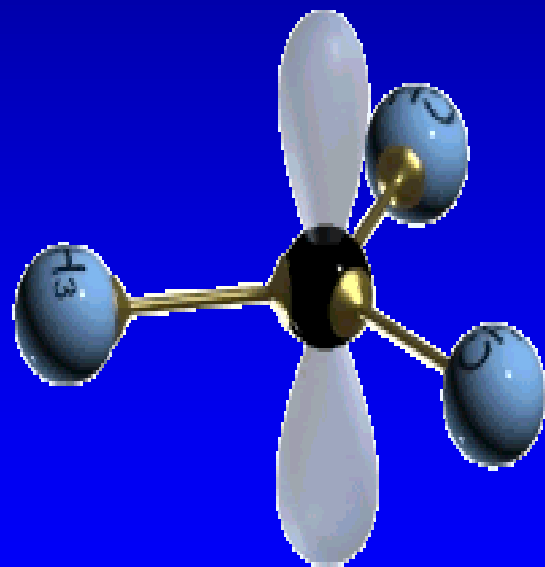


制作：付蕾 朱凤岗

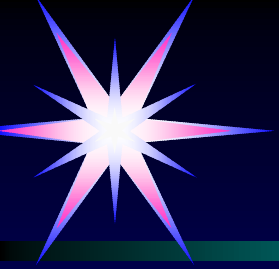


# 有机化学

( Organic Chemistry )



制作：付蕾 朱凤岗



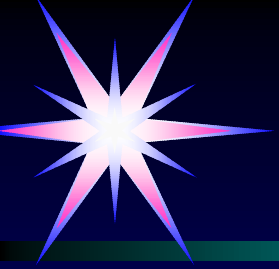
# 第十一章 取代酸

## ( Substituted acids )

第一节 羟基酸 ( Hydroxyl acids )

第二节 羧基酸 ( Carbonyl acid )

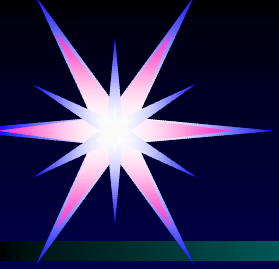
第三节 互变异构现象 ( Tautomerism )



# 第一节 羧基酸

## ( Hydroxyl acids )

- 一、分类和命名  
( Classification and nomenclature )
- 二、羧基酸的化学性质  
( Reactions of hydroxyl acids )



# 一、分类和命名

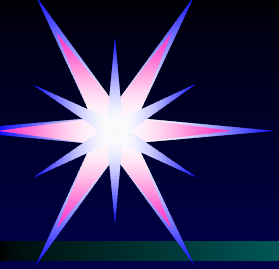
## ( Classification and nomenclature )

### 1. 分类 ( Classification )

(1) R – 不同：醇酸，酚酸

(2) – OH位置：

– , – , – 羟基酸



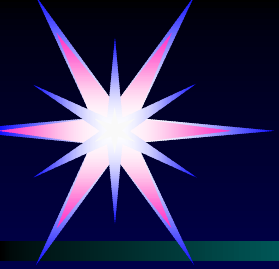
## 2. 命名 ( Nomenclature)

**Common name :**

俗名：来源

**Systematic name :**

酸为母体，-OH为取代基



## 二、化学性质

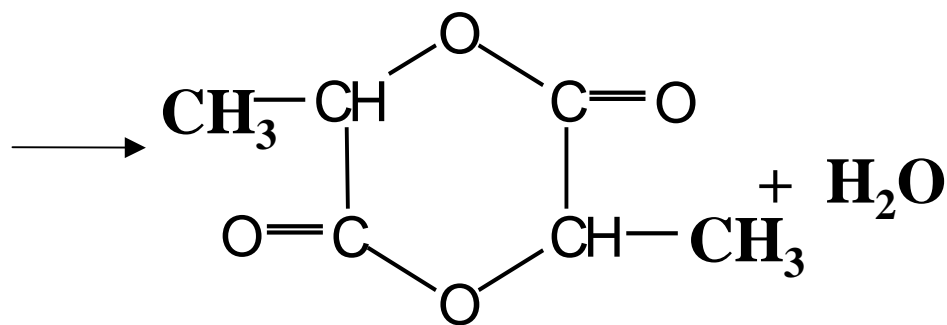
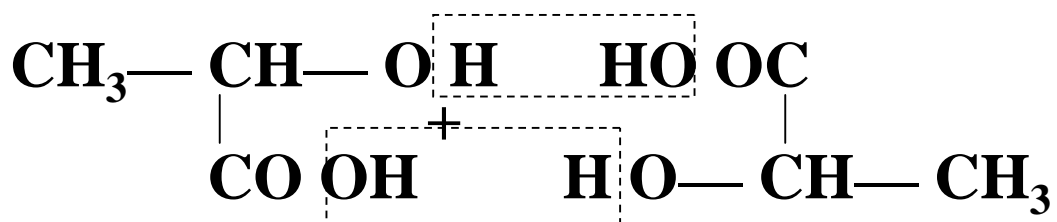
### ( Reactions of hydroxyl acids)

具酸、醇、酚的通性，又具特性

#### 1、酸性：比相应羧酸大

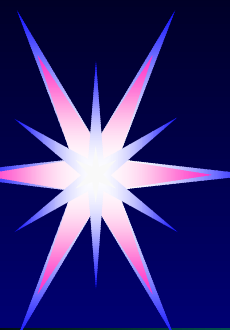
$\text{CH}_3\text{CH}_2\text{COOH}$	$\text{CH}_3-\underset{\text{OH}}{\text{CH}}-\text{COOH}$	$\underset{\text{OH}}{\text{CH}_2}-\text{CH}_2-\text{COOH}$	
$pK_a$	4.88	3.87	4.50

## 2、脱水反应和脱羧反应

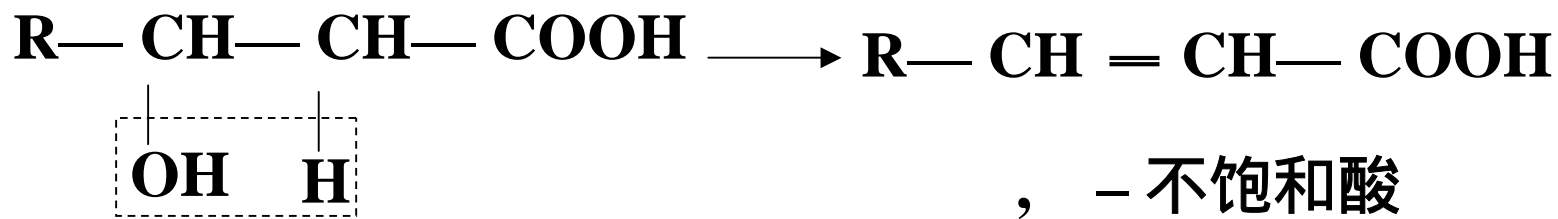


丙交酯

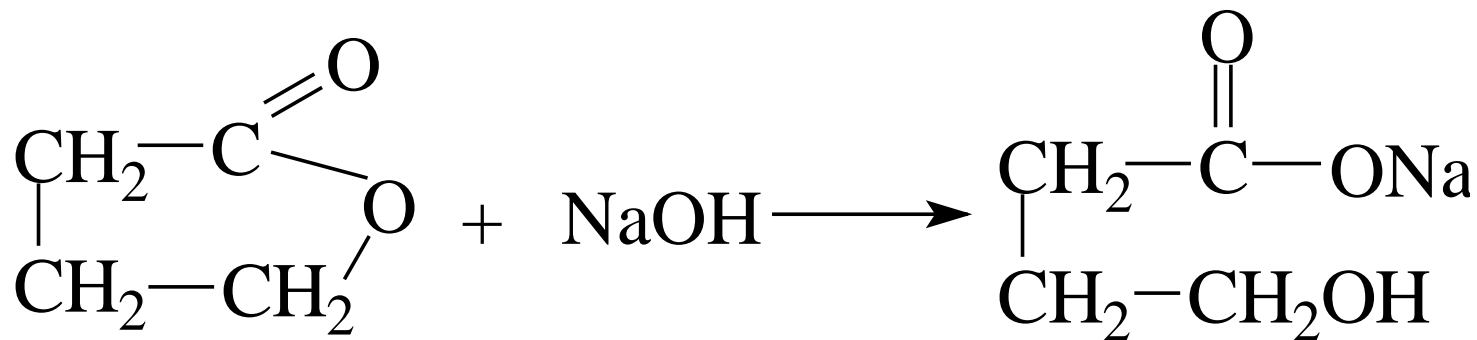
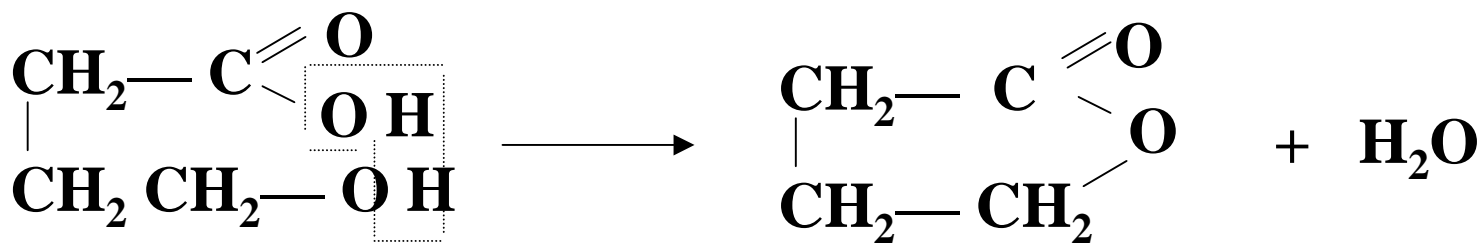




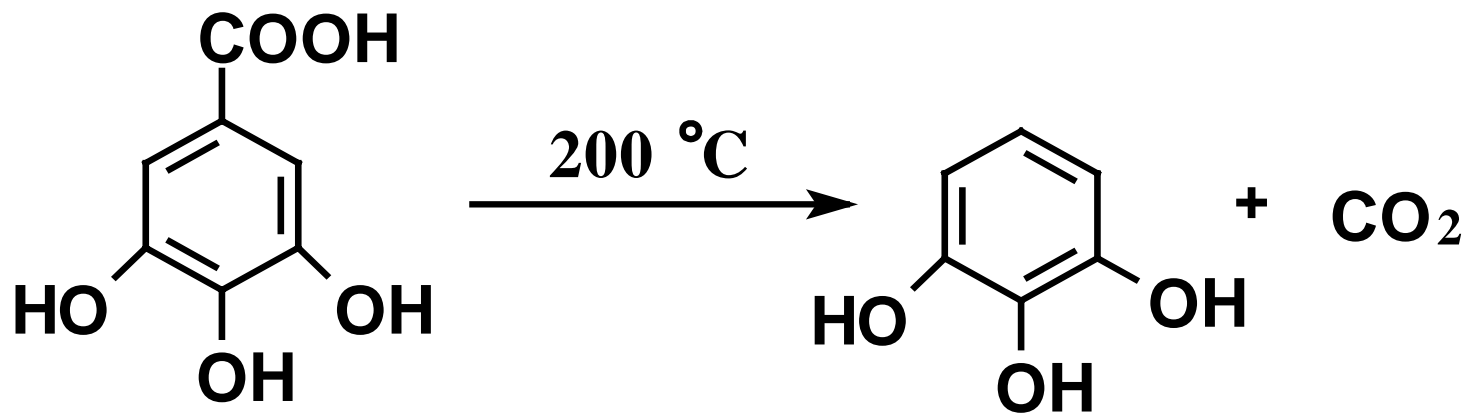
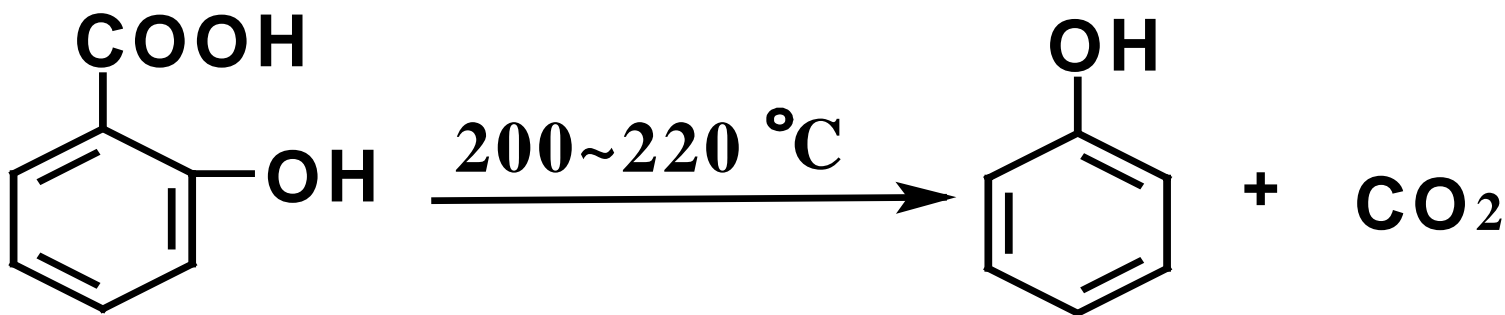
(2) 醇酸  $\xrightarrow{-\text{H}_2\text{O}}$  不饱和酸



(3) 醇酸  $\xrightarrow{-\text{H}_2\text{O}}$  内酯



# 邻位和对位酚酸受热时易发生脱羧反应



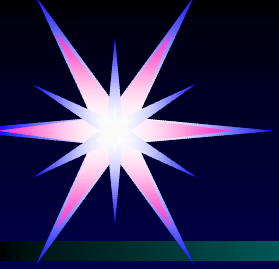


### 3、-醇酸的氧化



### 4. -醇酸的分解反应

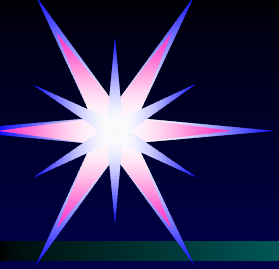




## 第二节 羧基酸

( Carbonyl acid )

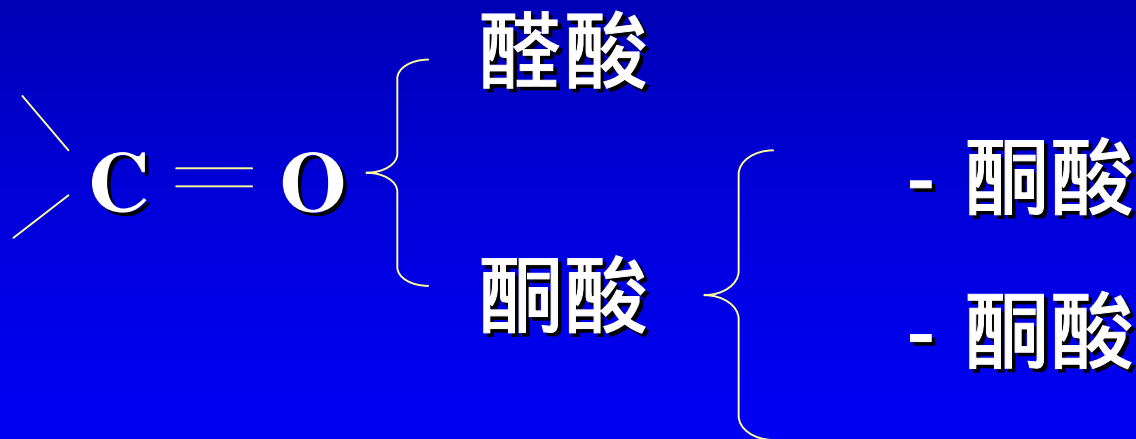
- 一、分类和命名  
( Classification and nomenclature )
- 二、羧基酸的化学性质  
( Reactions of carbonyl acids )

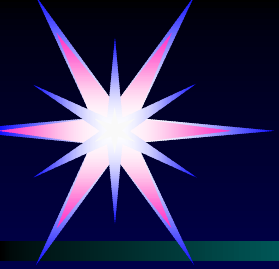


# 一、分类和命名

## ( Classification and nomenclature )

### 1. 分类 ( Classification )



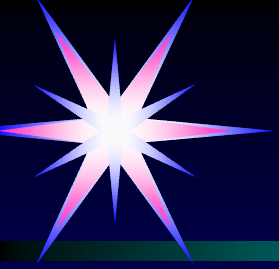


## 2. 命名 ( Nomenclature)

**Systematic name :**

1. 位置 ( 羰基 ) - × 酮 ( 醛 ) 酸

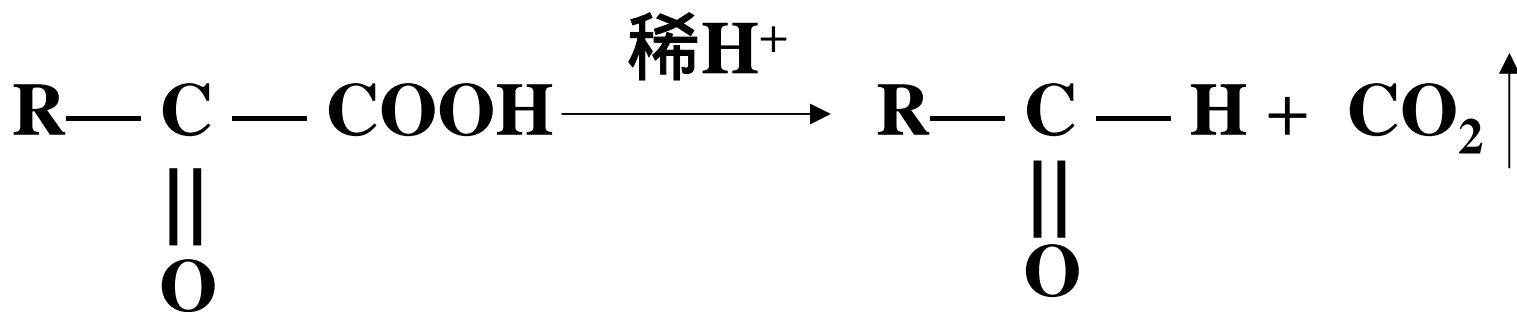
2. 酰基法 : × 酰 × 酸 见234页



## 二、化学性质

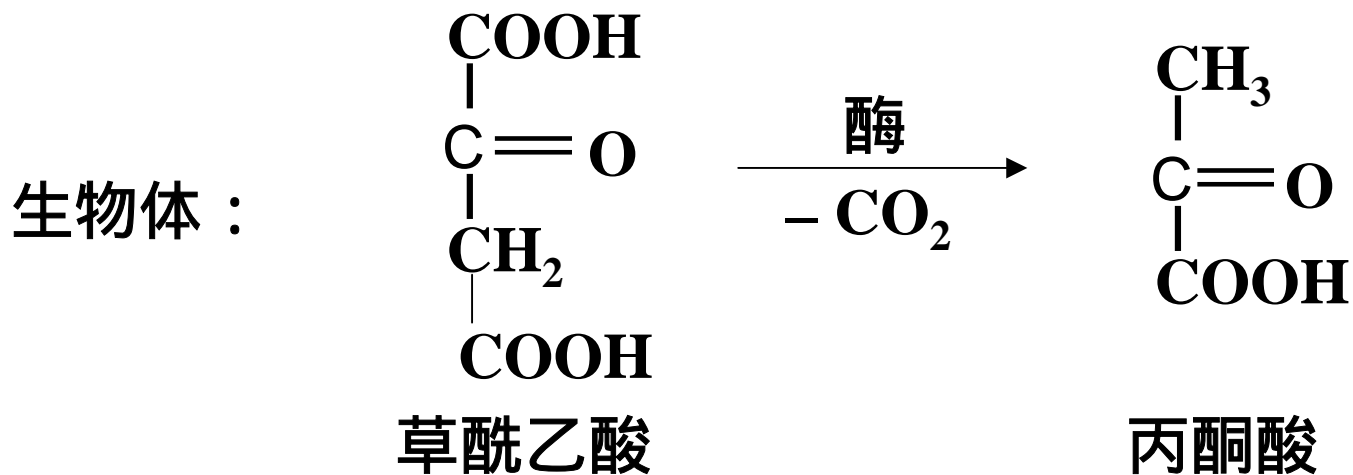
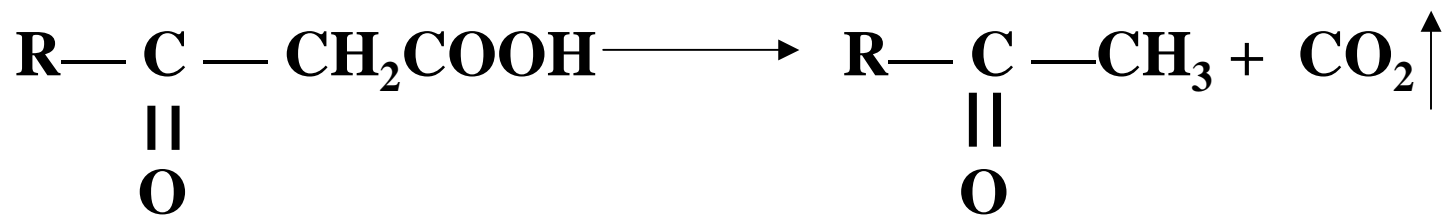
### ( Reactions of carbonyl acids)

#### 1. 脱羧反应



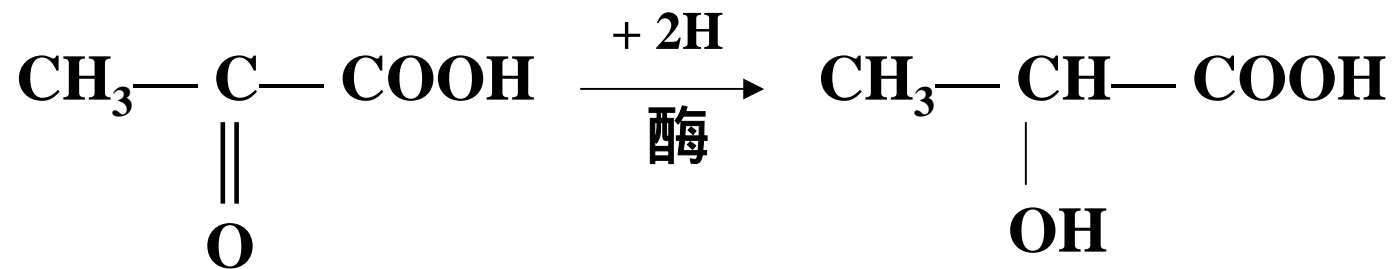


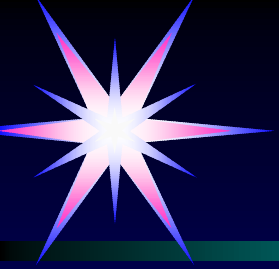
# 1. 脱羧反应





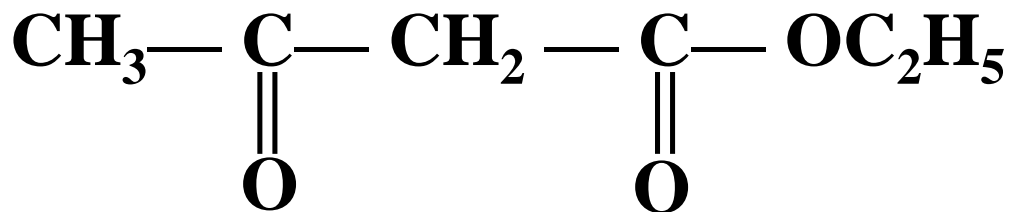
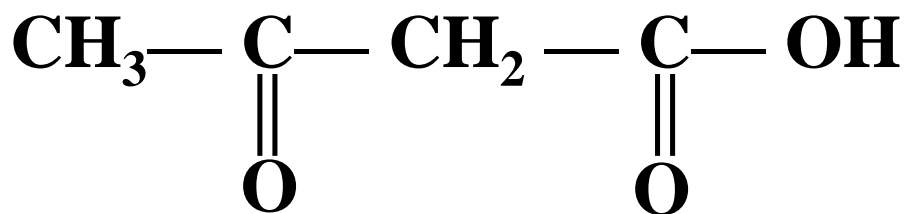
## (2) 氧化还原反应：



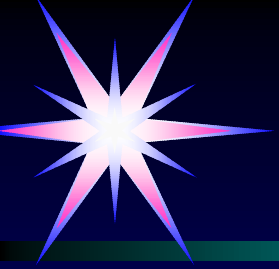


## 第三节 互变异构现象

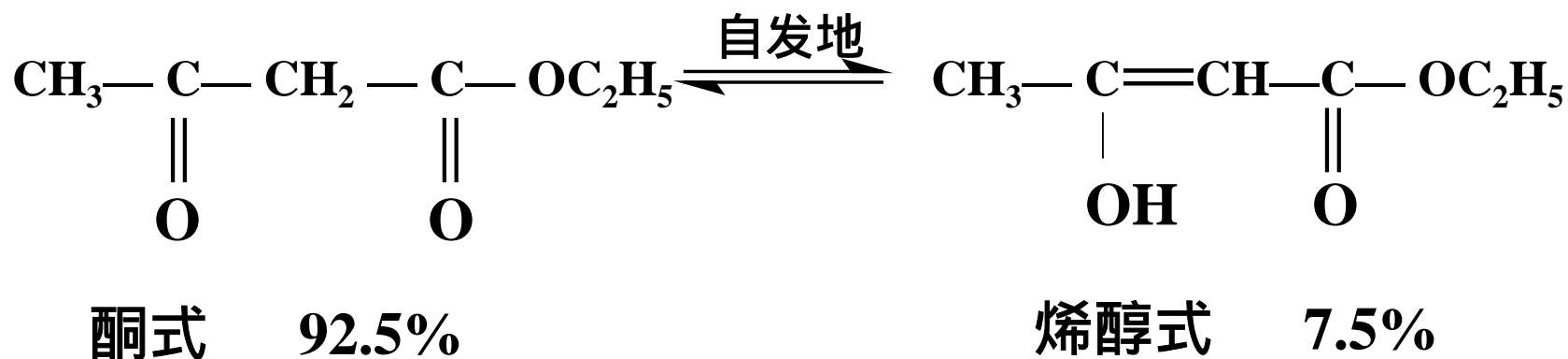
### ( Tautomerism )



与2,4-二硝基苯肼,  $\text{NaHSO}_3$ ,  $\text{HCN}$  .....反应, 与 $\text{Na}$ , 乙酰氯,  $\text{Br}_2/\text{CCl}_4$ ,  $\text{FeCl}_3$ .....反应



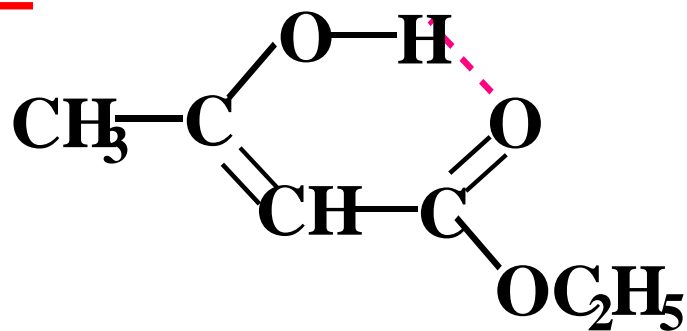
# 互变异构现象 (Tautomerism)



互变异构现象：这种能够自发互变的异构体之间存在的动态平衡现象

# 原因

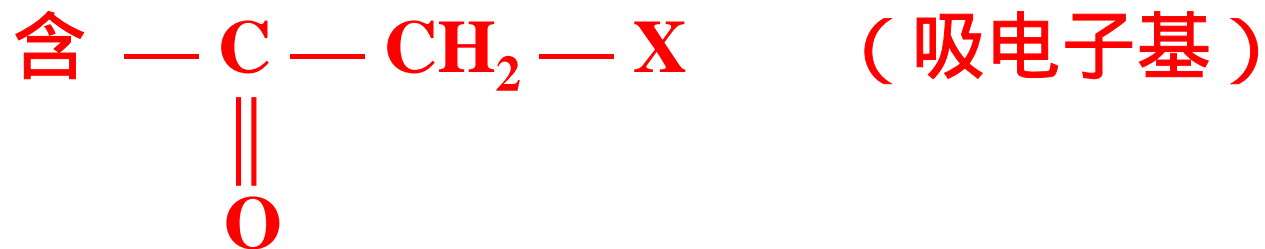
1. 该烯醇式结构能通过分子内氢键的缔合形成一个稳定的六元环。



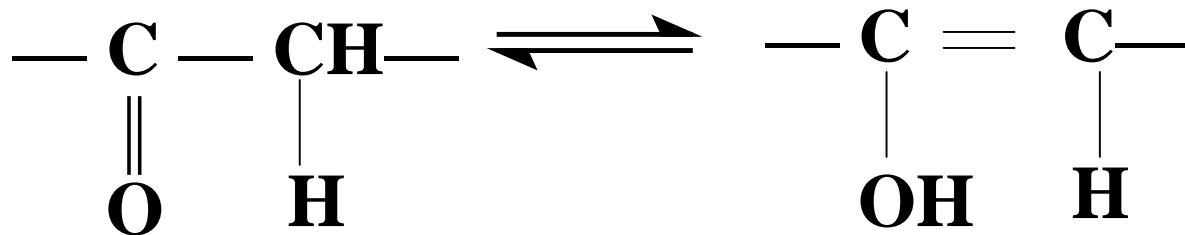
2. 烯醇式的羟基氧原子上的未共用电子对与碳碳双键、碳氧双键处于共轭体系，发生了电子的离域，使体系能量降低而趋于稳定。



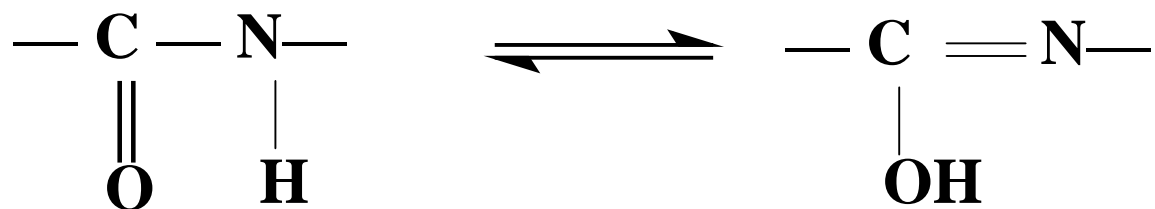
# 结构特点：



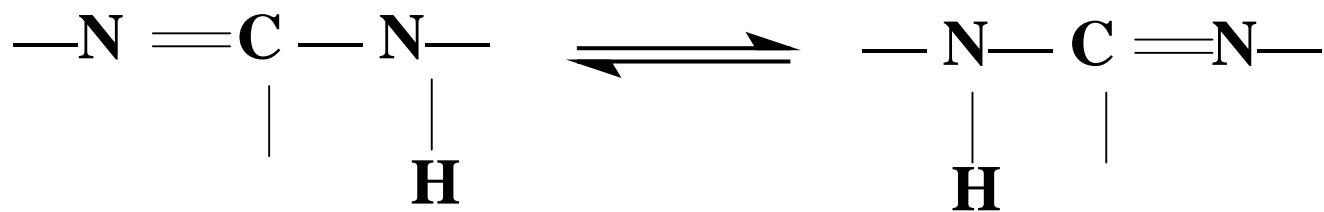
类型： 酮式  $\rightleftharpoons$  烯醇式

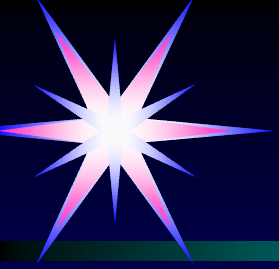


酰胺式  $\rightleftharpoons$  亚胺醇式



亚氨酸式  $\rightleftharpoons$  亚氨酸式



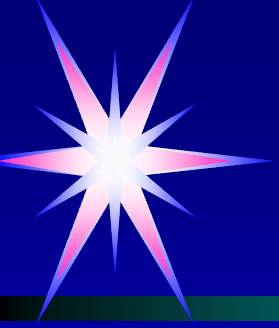


# 第十一章 重点讲解问题

1. 取代酸的命名

2. 取代酸的化学性质





再见  
Good-bye

