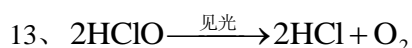
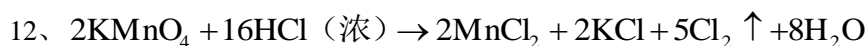
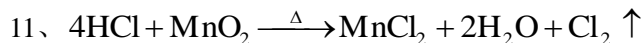
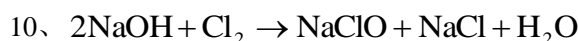
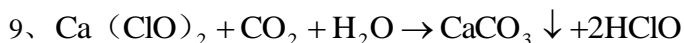
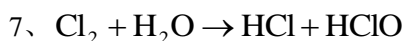
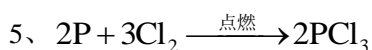
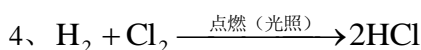
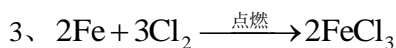
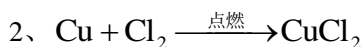
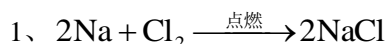
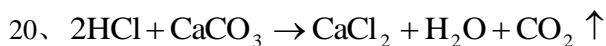
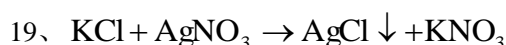
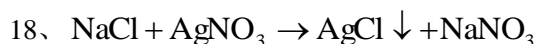
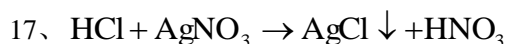
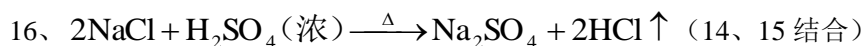
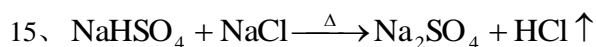
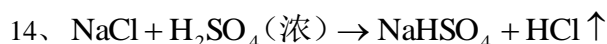


## 第一章 卤素

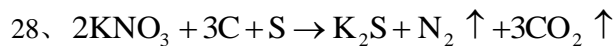
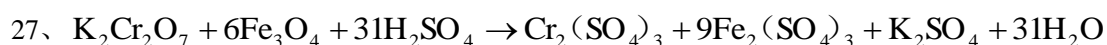
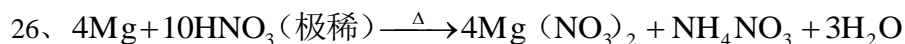
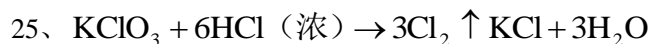
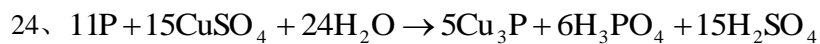
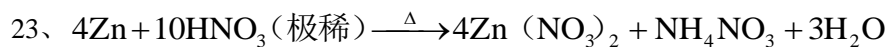
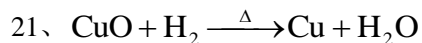
### 第一节 氯气



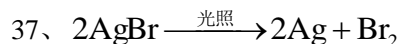
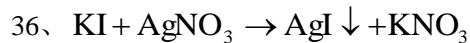
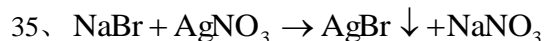
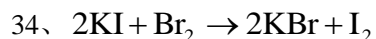
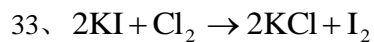
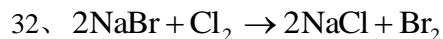
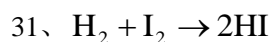
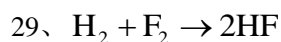
### 第二节 氯化氢



### 第三节 氧化还原反应

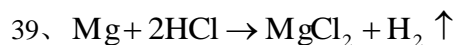
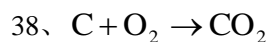


#### 第四节 卤族元素

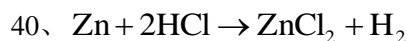


## 第二章 摩尔 反应热

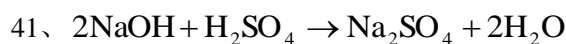
### 第一节 摩尔



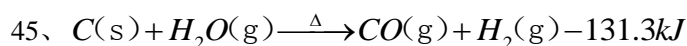
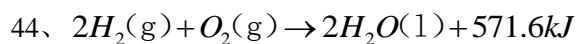
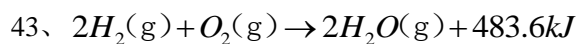
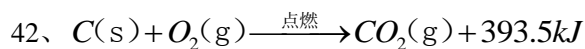
### 第二节 气体摩尔体积



### 第三节 物质的量浓度

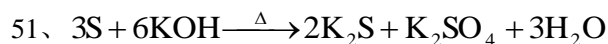
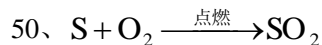
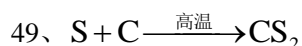
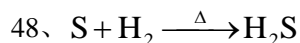
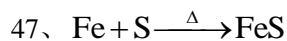
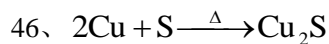


### 第四节 反应热

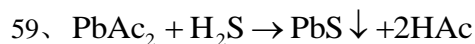
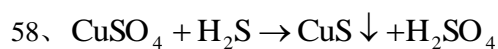
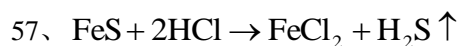
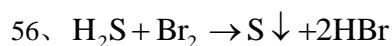
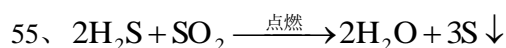
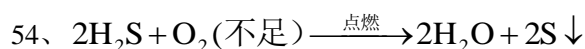
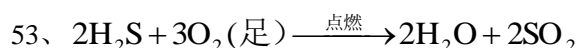
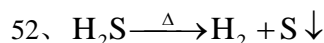


## 第三章 硫 硫酸

### 第一节 硫



### 第二节 硫的氢化物和氧化物



- 61、 $\text{NaHS} + \text{NaOH} \rightarrow \text{Na}_2\text{S} + \text{H}_2\text{O}$
- 62、 $\text{H}_2\text{S} + 2\text{NaOH} \rightarrow \text{Na}_2\text{S} + 2\text{H}_2\text{O}$  (60、61 结合)
- 63、 $\text{H}_2\text{S} + 2\text{FeCl}_3 \rightarrow \text{S} \downarrow + 2\text{FeCl}_2 + 2\text{HCl}$
- 64、 $\text{H}_2\text{SO}_4(\text{稀}) + \text{FeS} \rightarrow \text{FeSO}_4 + \text{H}_2\text{S} \uparrow$
- 65、 $\text{SO}_2 + \text{H}_2\text{O} \rightleftharpoons \text{H}_2\text{SO}_3$
- 66、 $2\text{SO}_2 + \text{O}_2 \xrightleftharpoons[\Delta]{\text{V}_2\text{O}_5} 2\text{SO}_3$
- 67、 $\text{SO}_3 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{SO}_4$
- 68、 $\text{Na}_2\text{SO}_3 + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O} + \text{SO}_2 \uparrow$
- 69、 $\text{SO}_2 + 2\text{NaOH} \rightarrow \text{Na}_2\text{SO}_3 + \text{H}_2\text{O}$
- 70、 $\text{SO}_2 + \text{CaO} \rightarrow \text{CaSO}_3$
- 71、 $\text{SO}_2 + 2\text{Ca}(\text{OH})_2 \rightarrow \text{CaSO}_3 \downarrow + \text{H}_2\text{O}$
- 72、 $\text{SO}_2 + \text{CaSO}_3 + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{HSO}_3)_2$
- 73、 $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 3\text{S} \downarrow + 2\text{H}_2\text{O}$
- 74、 $\text{SO}_2 + \text{Cl}_2 + 2\text{H}_2\text{O} \rightarrow 2\text{HCl} + \text{H}_2\text{SO}_4$
- 75、 $\text{SO}_2 + \text{Br}_2 + 2\text{H}_2\text{O} \rightarrow 2\text{HBr} + \text{H}_2\text{SO}_4$
- 76、 $5\text{SO}_2 + 2\text{H}_2\text{O} + 2\text{KMnO}_4 \rightarrow \text{MnSO}_4 + \text{K}_2\text{SO}_4 + 2\text{H}_2\text{SO}_4$

### 第三节 硫酸的工业制法

- 77、 $4\text{FeS}_2 + 11\text{O}_2 \xrightarrow{\text{高温}} 2\text{Fe}_2\text{O}_3 + 8\text{SO}_2 \uparrow$
- 78、 $2\text{SO}_2 + \text{O}_2 \xrightleftharpoons[\Delta]{\text{V}_2\text{O}_5} 2\text{SO}_3$
- 79、 $\text{H}_2\text{O} + \text{SO}_3 \rightarrow \text{H}_2\text{SO}_4$

### 第四节 硫酸 硫酸盐

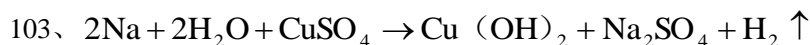
- 80、 $\text{C} + 2\text{H}_2\text{SO}_4(\text{浓}) \xrightarrow{\Delta} \text{CO}_2 \uparrow + 2\text{SO}_2 \uparrow + 2\text{H}_2\text{O}$
- 81、 $\text{S} + 2\text{H}_2\text{SO}_4(\text{浓}) \xrightarrow{\Delta} 3\text{SO}_2 \uparrow + 2\text{H}_2\text{O}$

- 82、 $\text{P} + \text{H}_2\text{SO}_4(\text{浓}) \xrightarrow{\Delta} \text{H}_3\text{PO}_4 + \text{SO}_2 \uparrow + 2\text{H}_2\text{O}$
- 83、 $\text{H}_2\text{S} + \text{H}_2\text{SO}_4(\text{浓}) \xrightarrow{\Delta} \text{S} + \text{SO}_2 + 2\text{H}_2\text{O}$
- 84、 $\text{Cu} + 2\text{H}_2\text{SO}_4(\text{浓}) \xrightarrow{\Delta} \text{CuSO}_4 + \text{SO}_2 \uparrow + 2\text{H}_2\text{O}$
- 85、 $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 \downarrow + 2\text{HCl}$
- 86、 $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 \downarrow + 2\text{NaCl}$
- 87、 $\text{BaCl}_2 + \text{Na}_2\text{CO}_3 \rightarrow \text{BaCO}_3 \downarrow + 2\text{NaCl}$
- 88、 $\text{BaCO}_3 + 2\text{HCl} \rightarrow \text{BaCl}_2 + \text{H}_2\text{O} + \text{CO}_2 \uparrow$
- 89、 $\text{BaCO}_3 + 2\text{HNO}_3 \rightarrow \text{Ba}(\text{NO}_3)_2 + \text{H}_2\text{O} + \text{CO}_2 \uparrow$
- 90、 $\text{Na}_2\text{CO}_3 + \text{H}_2\text{SO}_3 \rightarrow \text{Na}_2\text{S} + \text{H}_2\text{O} + \text{CO}_2 \uparrow$
- 91、 $2\text{H}_2\text{SO}_3 + \text{O}_2 \rightarrow 2\text{H}_2\text{SO}_4$
- 92、 $2\text{Na}_2\text{SO}_3 + \text{O}_2 \rightarrow 2\text{Na}_2\text{SO}_4$
- 93、 $2\text{CaSO}_3 + \text{O}_2 \rightarrow 2\text{CaSO}_4$
- 94、 $2\text{Fe} + 6\text{H}_2\text{SO}_4(\text{浓}) \xrightarrow{\Delta} \text{Fe}_2(\text{SO}_4)_3 + 3\text{SO}_2 \uparrow + 6\text{H}_2\text{O}$
- 95、 $2\text{NaBr} + 2\text{H}_2\text{SO}_4(\text{浓}) \xrightarrow{\Delta} \text{Br}_2 + \text{SO}_2 \uparrow + \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
- 96、 $2\text{NaCl} + \text{H}_2\text{SO}_4(\text{浓}) \xrightarrow{\Delta} \text{Na}_2\text{SO}_4 + 2\text{HCl} \uparrow$
- 97、 $\text{C}_{11}\text{H}_{22}\text{O}_{11} \xrightarrow{\text{浓H}_2\text{SO}_4} 11\text{C} + 11\text{H}_2\text{O}$

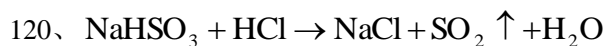
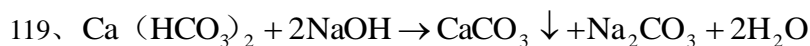
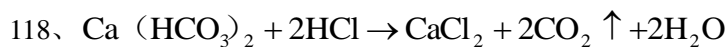
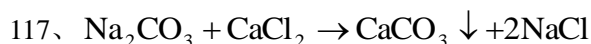
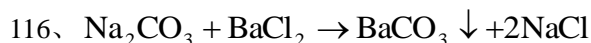
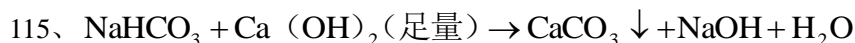
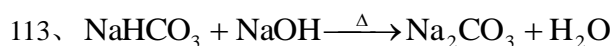
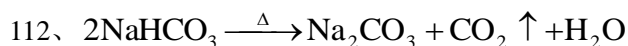
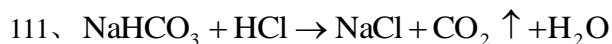
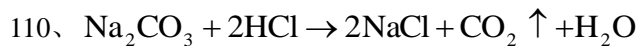
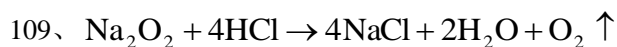
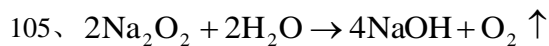
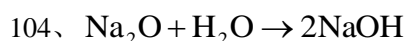
#### 第四章 碱金属

##### 第一节 钠

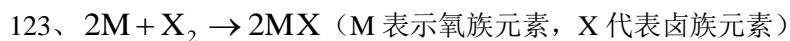
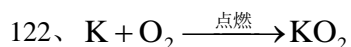
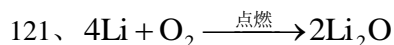
- 98、 $4\text{Na} + \text{O}_2 \rightarrow 2\text{Na}_2\text{O}$
- 99、 $2\text{Na} + \text{O}_2 \rightarrow \text{Na}_2\text{O}_2$
- 100、 $2\text{Na} + \text{Cl}_2 \xrightarrow{\text{点燃}} 2\text{NaCl}$
- 101、 $2\text{Na} + \text{S} \xrightarrow{\text{研磨}} \text{Na}_2\text{S}$
- 102、 $2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2 \uparrow$

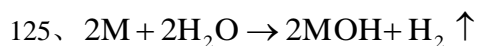
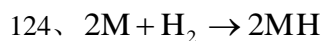


### 第二节 钠的氧化物

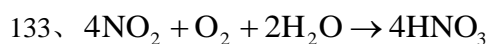
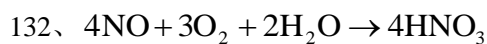
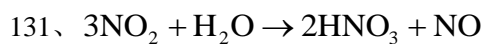
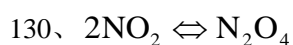
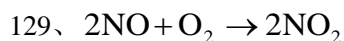
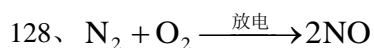
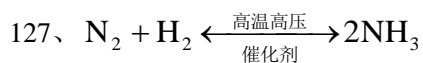
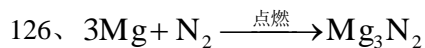


### 第三节 碱金属元素

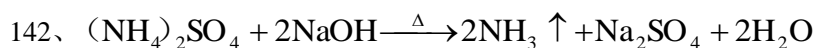
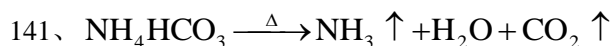
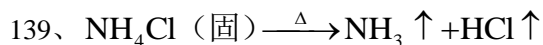
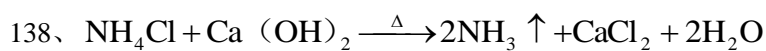
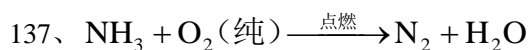
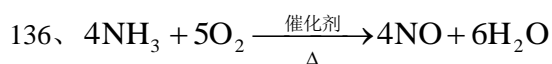




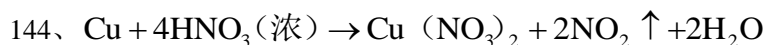
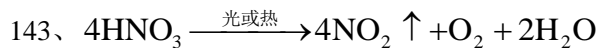
## 第二节 氮气

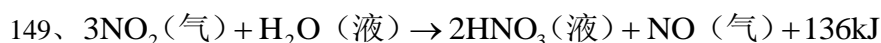
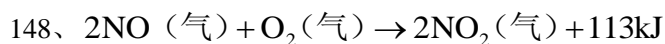
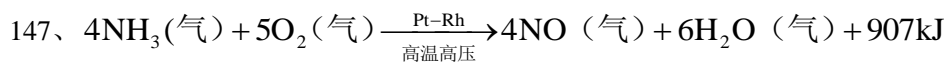
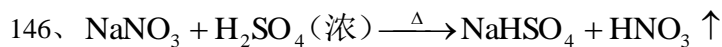


## 第三节 氨 铵盐

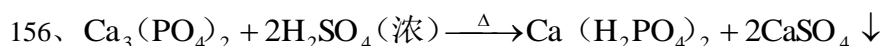
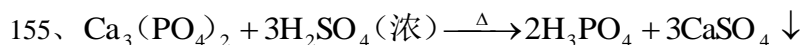
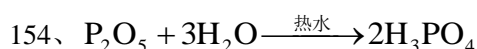
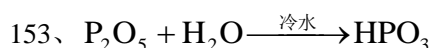
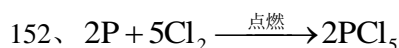
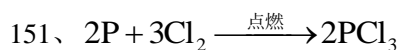


## 第四节 硝酸

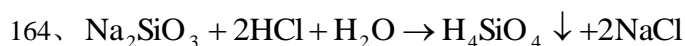
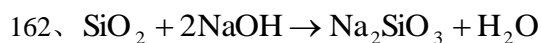
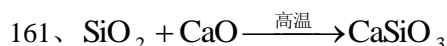
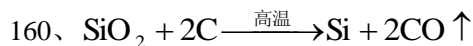
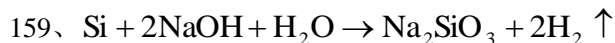
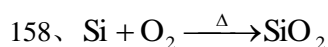




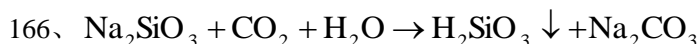
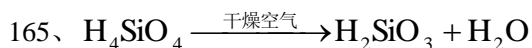
### 第六节 磷 磷酸



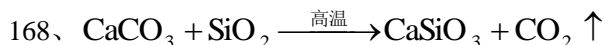
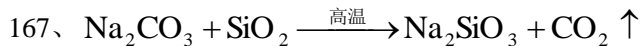
### 第二节 硅及其重要的化合物





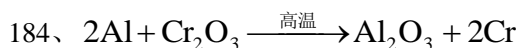
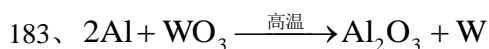
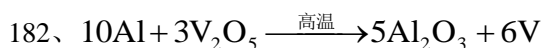
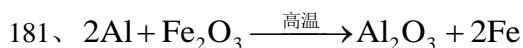
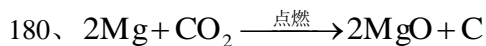
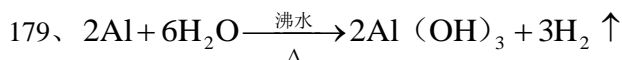
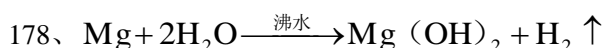
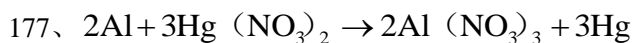
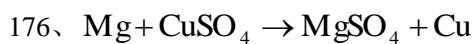
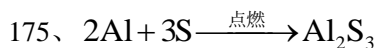
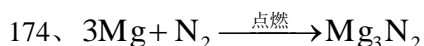
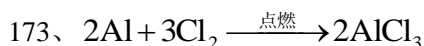
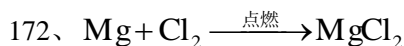
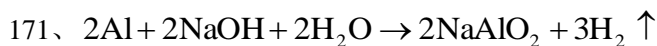
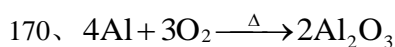
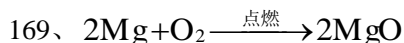


### 第三节 硅酸盐工业简述

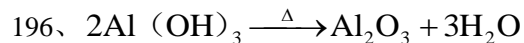
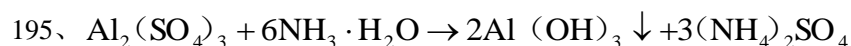
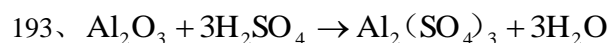
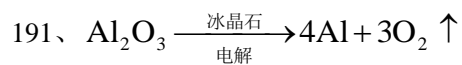
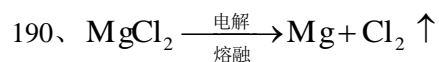
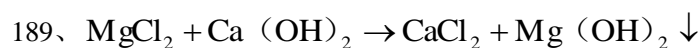
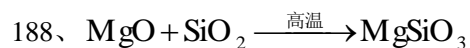
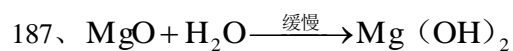
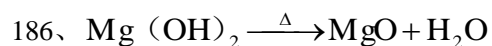
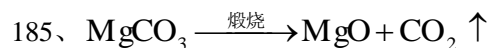


## 第二章 镁 铝

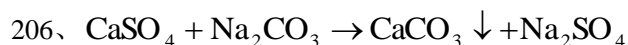
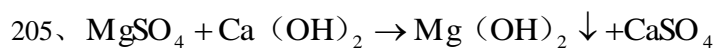
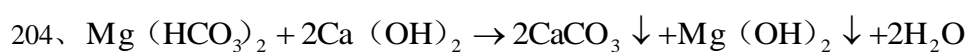
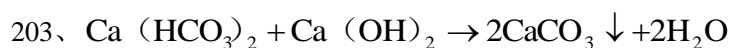
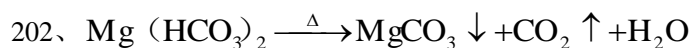
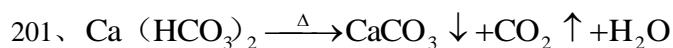
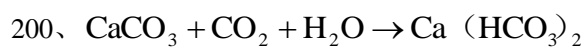
### 第二节 镁和铝的性质



### 第三节 镁和铝的重要化合物

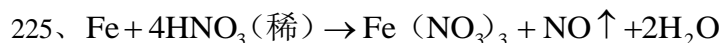
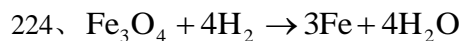
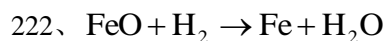
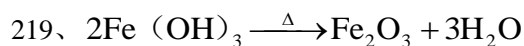
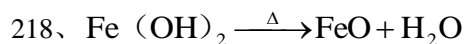
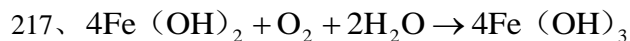
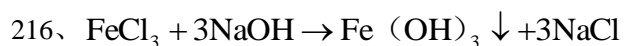
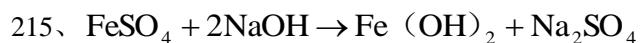
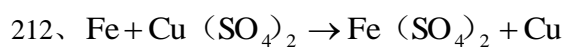
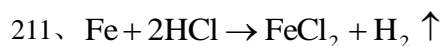
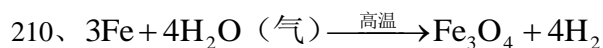
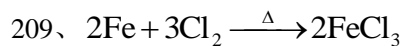
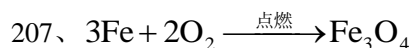


#### 第四节 硬水及其软化

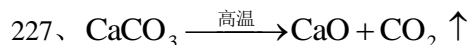
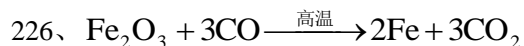


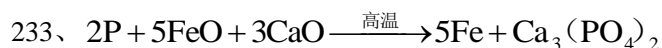
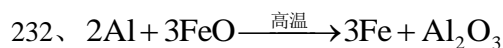
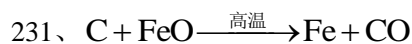
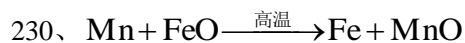
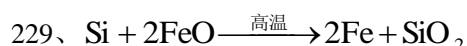
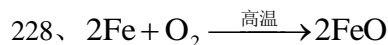
### 第三章 铁

#### 第一节 铁和铁的化合物



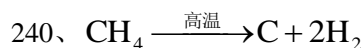
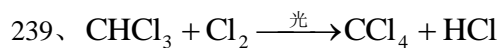
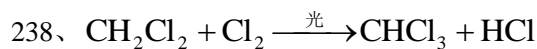
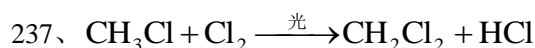
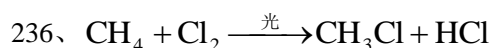
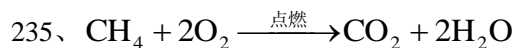
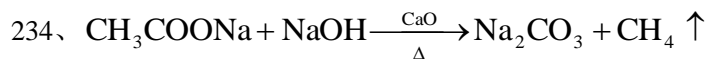
#### 第二节 炼铁和炼钢



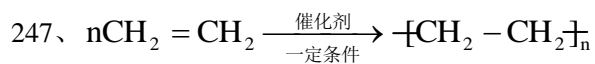
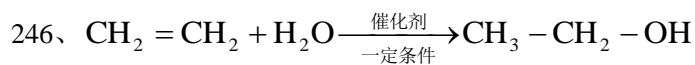
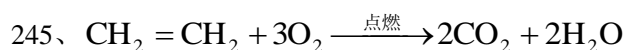
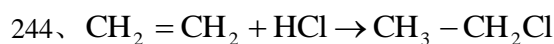
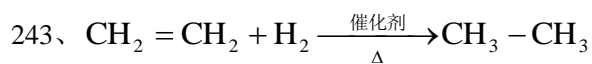
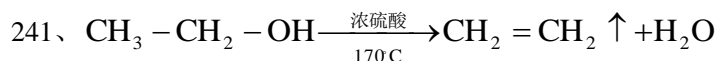


## 第四章 烃

### 第二节 甲烷

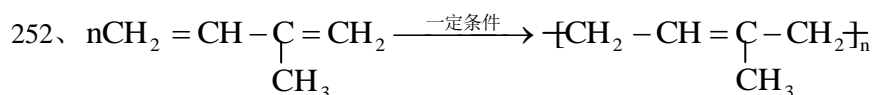
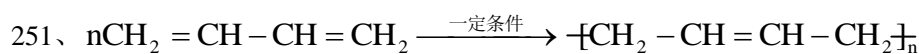
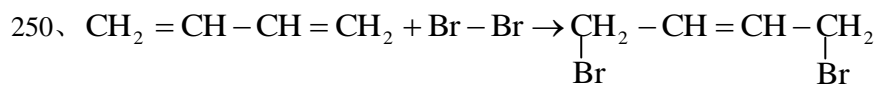
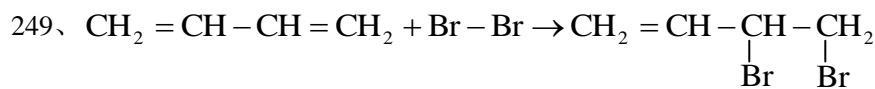
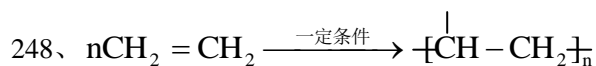


### 第四节 乙烯

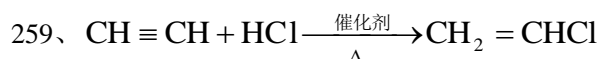
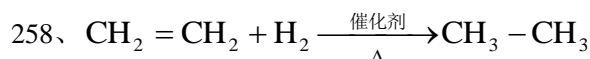
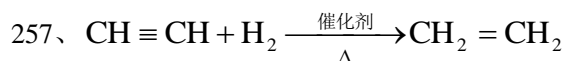
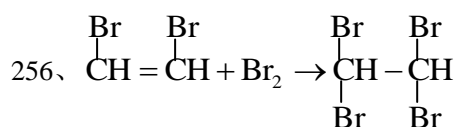
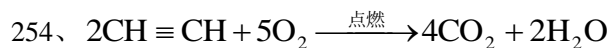
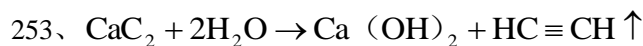


### 第五节 烯烃

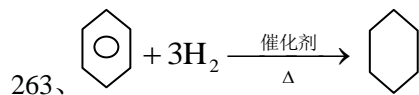
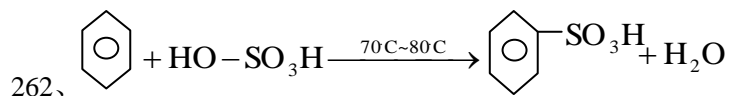
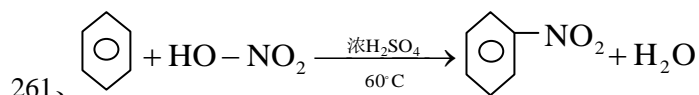
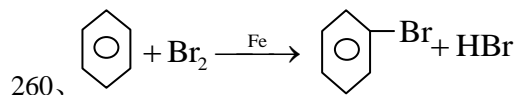


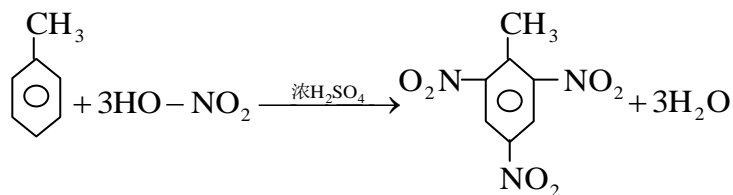


### 第六节 乙炔

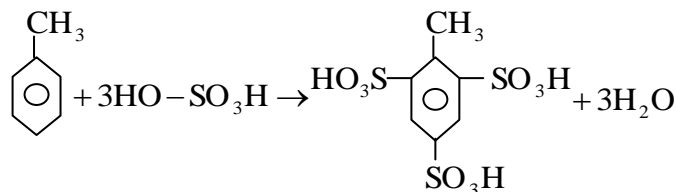


### 第七节 苯 芳香烃



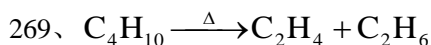
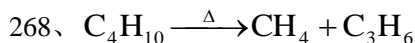
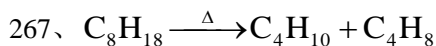
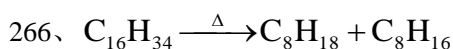


264、



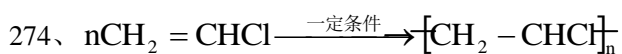
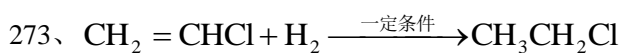
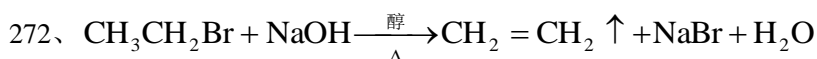
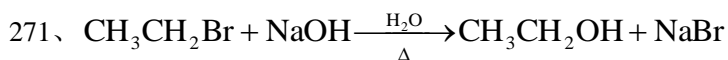
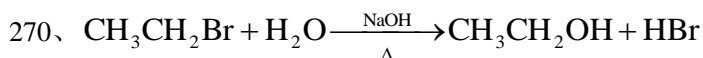
265、

### 第八节 石油和石油产品概述

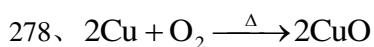
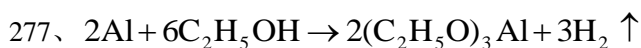
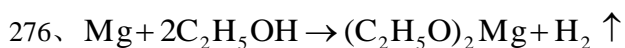
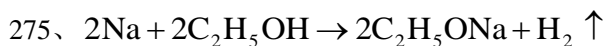


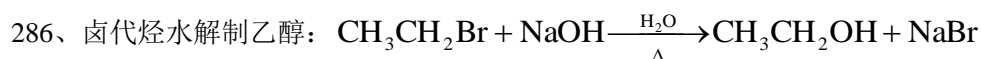
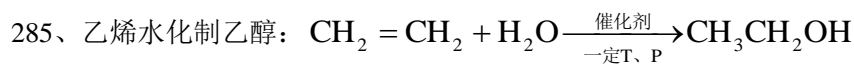
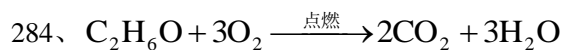
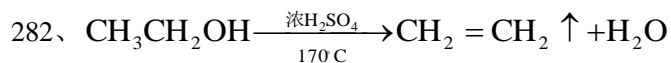
## 第五章 烃的衍生物

### 补充课程 卤代烃

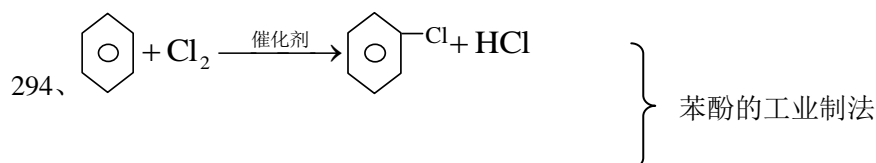
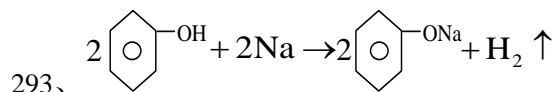
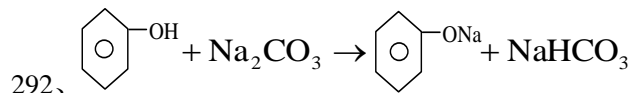
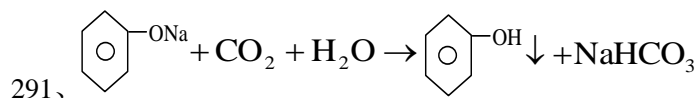
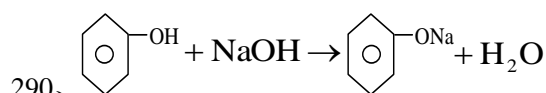
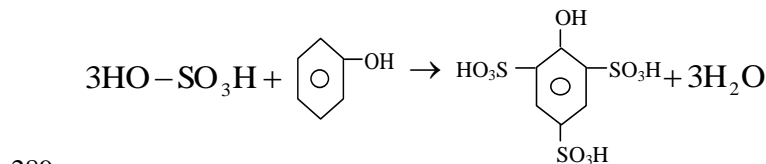
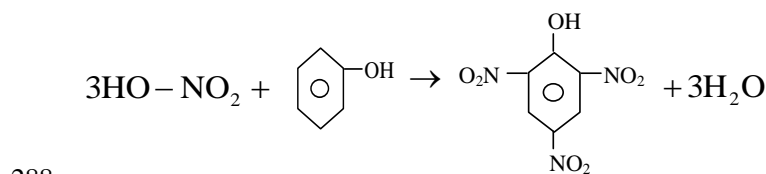
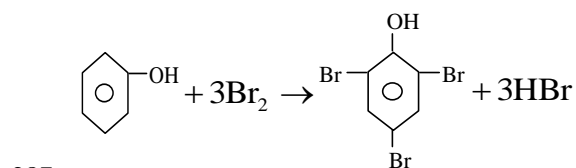


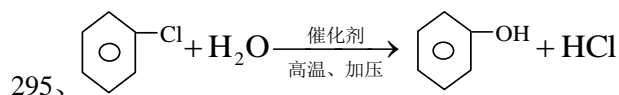
### 第一节 乙醇



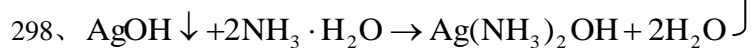
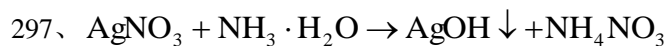
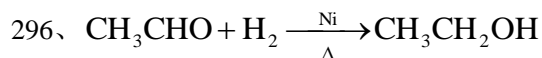


## 第二节 苯酚

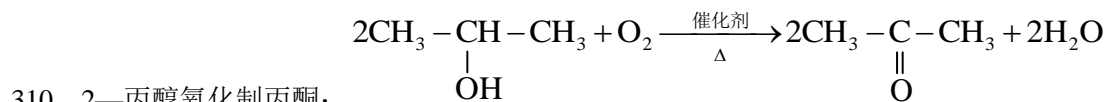
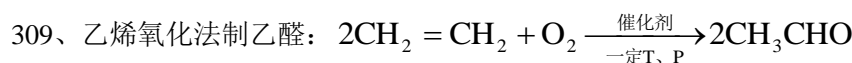
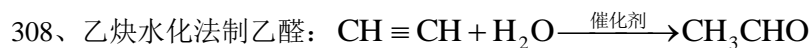
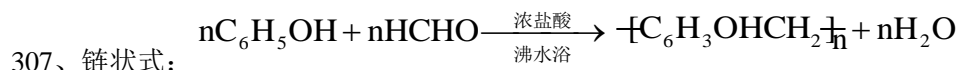
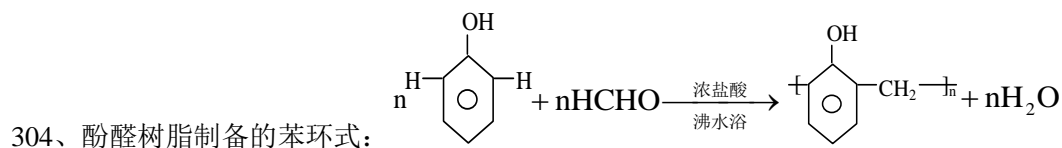
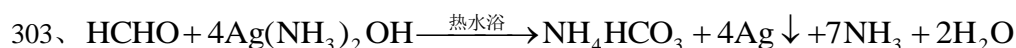
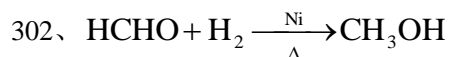
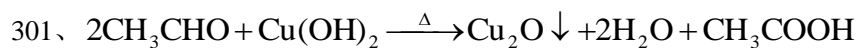
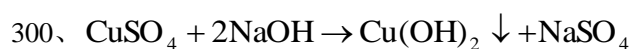
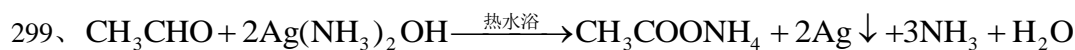




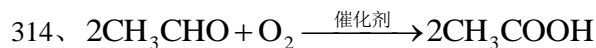
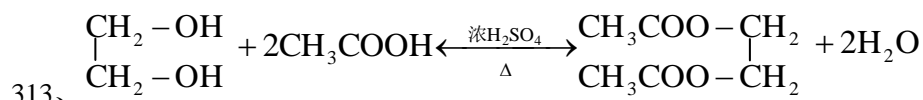
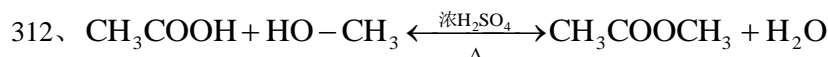
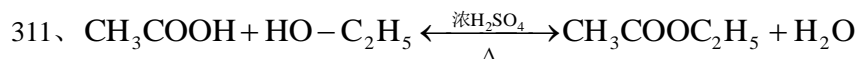
### 第三节 醛



} 银氨溶液制备



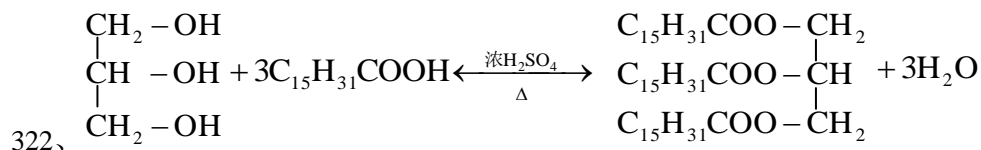
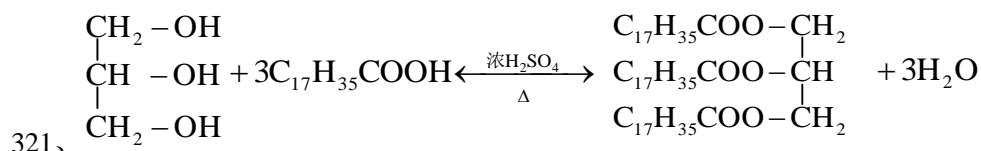
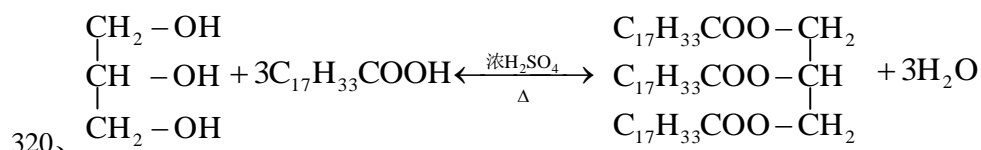
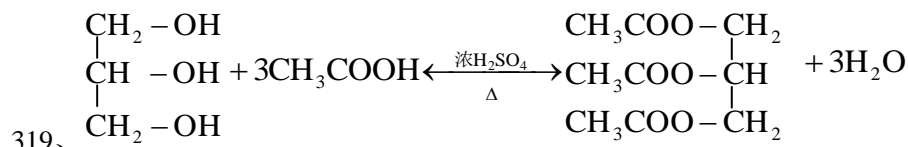
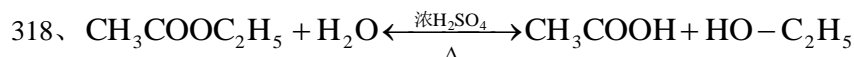
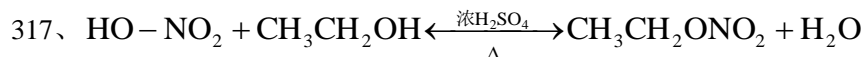
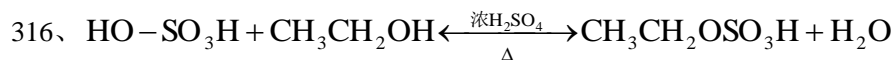
### 第四节 乙酸







### 第五节 酯



### 第六节 油脂

