

## 14

## TYPES OF CHEMICAL REACTIONS

**Text Reference**  
Section 11.2

**PURPOSE**

To identify and classify chemical reactions based on five general categories.

**BACKGROUND**

Although countless chemical reactions exist, nearly all of them can be classified into a few specific categories. In this experiment, you will learn to differentiate five general types of chemical reactions. Some of the reactions you will perform; others will be demonstrated by your teacher. From observations, you will identify the products of each reaction and determine the type of reaction that has taken place. You will consider the following reaction types: combination reactions, decomposition reactions, single-replacement reactions, double-replacement reactions, and combustion reactions. The majority of common chemical reactions can be classified as belonging to one of these categories.

**MATERIALS (PER PAIR)****(Student Experiment)**

safety goggles and apron  
2 small test tubes  
centigram balance  
dropper pipet  
2 medium test tubes  
test-tube rack  
crucible tongs  
gas burner  
ring stand  
utility clamp

0.1M copper(II) sulfate,  $\text{CuSO}_4$   T  
iron filings, Fe  
0.1M lead(II) nitrate,  $\text{Pb}(\text{NO}_3)_2$   T  
0.1M potassium iodide, KI  T  
6M hydrochloric acid, HCl  C  T  
magnesium turnings, Mg  F  
2 wood splints  
book of matches  
3% hydrogen peroxide,  $\text{H}_2\text{O}_2$

**(Teacher Demonstration)**

electrolysis apparatus  
rubber stopper, one-holed  
large test tube  
glass tube, 25-cm length, bent  
at  $90^\circ$  angle in center  
gas burner  
ring stand

utility clamp  
sodium hydrogen carbonate,  
 $\text{NaHCO}_3$   
wood splints  
matches  
limewater, saturated solution of  
calcium oxide, CaO  I  C