

## Characteristics of Chemical Reactions

### Aim

- identify the characteristics of a chemical reaction

### Notes

**Definition** — any change that results in the formation of new substances

★ Synonym — chemical change

**Identifying characteristics** — any one of the following:

- ★ change in temperature
  - ☆ exothermic — give off heat
  - ☆ endothermic — absorb heat
- ★ release of a gas
- ★ formation of a precipitate (solid that comes out of solution)
- ★ change in color
- ★ change in odor

### Examples

- ★  $\text{AgNO}_3(aq) + \text{NaCl}(aq) \rightarrow \text{NaNO}_3(aq) + \text{AgCl}(s)$ 
  - ☆ AgCl is a white precipitate
- ★  $\text{C}(s) + \text{O}_2(g) \rightarrow \text{CO}_2(g)$  (as when charcoal burns)
  - ☆  $\text{CO}_2$  is a gas
  - ☆ the reaction is exothermic

**Answer the questions below by circling the number of the correct response**

1. The fact that burning wood gives off heat is evidence of a (1) change in mass, (2) chemical change, (3) physical change, (4) phase change.
2. A reaction in which heat is given off is (1) exothermic, (2) endothermic, (3) caloric, (4) acaloric.
3. Which of the following is *NOT* evidence of a chemical change?  
(1) release of a gas (2) change in color (3) change in odor (4) change in shape
4. When silver nitrate solution is mixed with sodium chloride solution, a white solid forms immediately with no noticeable change in temperature. Which of the following is a true statement regarding the observed change. (1) The change is probably only physical because there is no change in temperature. (2) The change is probably only physical because no gas is released. (3) The change is probably chemical because a precipitate forms. (4) The change is probably chemical because the reaction is exothermic.