

Chemical equations and solutions

Chapter 6 and 7

Review

- ◆ Two parts to a reaction
- ◆ reactants (what you start with) and products (what you make)
- ◆ In the middle is always a "→" (yields sign), this separates the products and reactants

An example

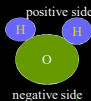
- ◆ Sodium and chlorine gas react to form table salt
- ◆ $\text{Na} + \text{Cl}_2 \rightarrow \text{NaCl}$
- ◆ To balance it
- ◆ $2 \text{Na} + \text{Cl}_2 \rightarrow 2 \text{NaCl}$

Phase letters

- ◆ The phase of substance is often denoted by letters in parentheses
- ◆ solid -s, liquid-l, gas-g
- ◆ $\text{Na(s)} + \text{Cl}_2(\text{g}) \rightarrow \text{NaCl(s)}$
- ◆ Some ionic compounds tend to dissolve in water
- ◆ Ions dissolved in water get the subscript- (aq)
- ◆ it stands for aqueous (water-like)

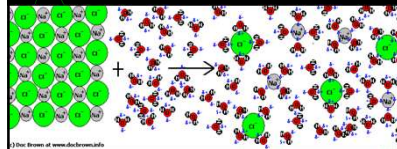
Why it dissolves in water

Water is a polar molecule (meaning it has a positive and negative side)



The positive side attaches itself to anions and the negative side attaches to cations, water then rips the ions away from each other, allowing the ions to float freely in the water.

Dissolving in water



Dissociation Equations

- ◆ dissociation- separating of ionic compounds into free ions in a solution
- ◆ for NaCl in water
- ◆ $\text{NaCl}_{(\text{s})} \rightarrow \text{Na}^+_{(\text{aq})} + \text{Cl}^-_{(\text{aq})}$
- ◆ $\text{MgF}_{2(\text{s})} \rightarrow \text{Mg}^{2+}_{(\text{aq})} + 2 \text{F}^-_{(\text{aq})}$
- ◆ Why did you need 2 in front of F?
- ◆ Because there are two F's on the reactant side

Where to draw that 2

- ◆ there is a difference between MgF_2 and $\text{Mg}^{2+} + 2 \text{F}^-$
- ◆ MgF_2 means the Fluorine ions are bonded to the magnesium ion. Everything is clumped together in an ionic crystalline structure
- ◆ $\text{Mg}^{2+} + 2 \text{F}^-$ implies there is a magnesium and 2 fluoride ions NOT bonded together floating around

Polyatomic Ions

- ◆ In this chapter we do NOT break apart polyatomic ions
- ◆ Calcium hydrogen carbonate
- ◆ $\text{Ca}^{2+} \text{HCO}_3^-$
- ◆ $\text{Ca}(\text{HCO}_3)_2(\text{s}) \rightarrow \text{Ca}^{2+}(\text{aq}) + 2 \text{HCO}_3^-(\text{aq})$

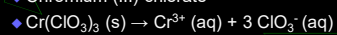
Write the dissociation equation for

◆ Chromium (III) chlorate

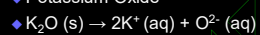
◆ Potassium Oxide

Write the dissociation equation for

◆ Chromium (III) chlorate



◆ Potassium Oxide



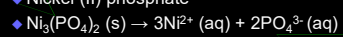
Write the dissociation equation for

◆ Nickel (II) phosphate

◆ Calcium Chloride

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◆ Nickel (II) phosphate



◆ Calcium Chloride

