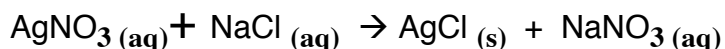


WRITING AND NAMING
CHEMICAL FORMULASI. INTRODUCTION

So far you have learned what a chemical symbol is. For example, Pb is the symbol for the element lead. Elements are not often found pure in nature. Most elements are chemically combined in a definite ratio with other elements. These types of substances are called compounds. Most of the earth's hydrogen is not in the form H₂, but is in water in the form H₂O. Just as elements have symbols, compounds have formulas. It is very important that a chemistry student learn how to name formulas and learn to write the correct formula from a given name.

The elements in a compound are in a definite or set ratio. Water is always H₂O, never anything else. The ratio is always 2 hydrogens to 1 oxygen. This definite composition is what makes compounds unique from mixtures. In experiment 5 you learned that a mixture of two substances can be in any ratio or proportion.

Chemistry is largely about describing chemical reactions and predicting their results. In order to correctly write a chemical equation we must first learn how to write and name chemical formulas. For example, we may be given a reaction in sentence form: When aqueous silver nitrate reacts with aqueous sodium chloride a precipitate silver chloride is formed and the sodium and nitrate ions remain in solution. It is impractical to leave the reaction in sentence form. Chemists have a short hand version that looks like this:



Before we can successfully write a chemical equation, we must first learn how to write formulas from the names of compounds and how to name formulas.

In this experiment you will:

Write the chemical formulas of given named compounds

Write the names of given compound formulas

II. PROCEDURE

A Writing Formulas of Ionic Compounds

Formulas with two monatomic ions in which there is only one form of the metal ion:

Example:

barium oxide

BaO

potassium chloride

aluminum bromide

calcium oxide

strontium nitride

aluminum oxide

cadmium phosphide

silver fluoride

Formulas with two monatomic ions in which there is more than one form of the metal ion

Example:

cuprous fluoride

CuF

ferric chloride

copper (I) sulfide

nickel (II) oxide

iron (II) bromide

stannic oxide

plumbic iodide

lead (II) sulfide

gold (III) oxide

Formulas with polyatomic ions

Example:

cadmium chlorate



calcium carbonate

sodium phosphate

aluminum sulfate

cupric acetate

Iron (III) nitrate

ammonium oxalate

aluminum carbonate

B. Naming Formulas of Ionic Compounds

Formulas with monatomic ions

Example:

MgI₂

Magnesium iodide

CaF₂

CuCl₂

LiI

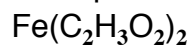
FeO

Pb₃N₂

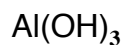
CdS

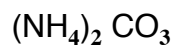
Formulas with polyatomic ions

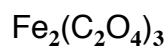
Example:

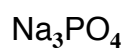


Iron (II) Acetate









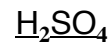




C. Writing Formulas of Acids

Example:

Sulfuric Acid



Nitric Acid

Carbonic Acid

Perchloric acid

Example:

Hydroiodic acid



Hydrobromic acid

Hydrofluoric acid

Example:

Chlorous acid



Nitrous acid

Sulfurous acid

D. Naming Acids

Example

HCl

Hydrogen chloride

Hydrochloric acid

H₃PO₄

HCN

HC₂H₃O₂

H₂C₂O₄

HClO

E. Writing Formulas of Covalent Compounds

Example:

Carbon dioxide

CO₂

Sulfur hexafluoride

Carbon tetrachloride

diphosphorous pentoxide

F. Naming Covalent Compounds

N₂O

BF₃

Si₂Br₆

P₂I₄

CHEM. 110 LAB REPORT

Name _____

Date _____

Lab Section _____

Initials _____

EXPERIMENT 6

WRITING AND NAMING CHEMICAL FORMULAS

For each of the following indicate the type of compound using "A" for acid, "I" for ionic or "C" for covalent.

Write the formulas of the following compounds.

Write the names of the following compounds.

____ Sodium nitrite	_____	____ CaBr_2	_____
____ Aluminum bisulfite	_____	____ PbS_2O_3	_____
____ Nitrous acid	_____	____ $\text{Cd}(\text{NO}_3)_2$	_____
____ Ferrous Oxide	_____	____ $\text{Cu}(\text{ClO}_3)_2$	_____
____ Silver oxalate	_____	____ PbCr_2O_7	_____
____ Iodic acid	_____	____ P_2O_5	_____
____ Chlorine monobromide	_____	____ $\text{Al}(\text{ClO}_3)_3$	_____
____ Stannous phosphate	_____	____ Na_3N	_____
____ Hydrocyanic acid	_____	____ $\text{Sb}_2(\text{SO}_3)_5$	_____
____ Copper (II) hydroxide	_____	____ $\text{Hg}_2(\text{ClO})_2$	_____
____ Sulfurous acid	_____	____ $\text{Mg}(\text{OH})_2$	_____
____ Sulfuric acid	_____	____ P_2O_5	_____
____ Phosphorous acid	_____	____ NH_4Cl	_____
____ Periodic acid	_____	____ FeCl_3	_____
____ Dichlorine monoxide	_____	____ FeCl_2	_____
____ Sulfur hexafluoride	_____	____ HF	_____
____ Ammonium phosphite	_____	____ CdI_2	_____

