

Ch 10

Sec 10.3A

HW: Sec Asses 41,42,45,46 Rev Con 67,69

obj: Derive both Empirical and Molecular formulas from experimental data.

Empirical Formula

- A chemical formula developed from experimental data.
- Is the Lowest whole number ratio of the atoms/ions in the compound.
- * An Empirical Formula is identical to the chemical formula of an ionic compound.

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* An Empirical Formula may or may not be identical to a Molecular formula.

- Developing an Empirical Formula depends on % Composition

Compound 1) Rewrite the % Composition as grams.
 N - 25.9%
 O - 74.1% 25.9g N 74.1g O

- 2) Convert mass to moles for each element.

$$\frac{25.9\text{g N}}{14\text{g}} \times \frac{1\text{mol N}}{1\text{mol N}} = 1.85\text{mol N}$$

$$\frac{74.1\text{g O}}{16\text{g}} \times \frac{1\text{mol O}}{1\text{mol O}} = 4.63\text{mol O}$$

- 3) Convert moles to lowest whole number ratios.

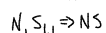
$$\frac{1.85\text{mol N}}{1.85} = 1$$

$$\frac{4.63\text{mol O}}{1.85} = 2.5$$

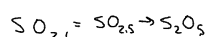


Conventions

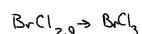
- * .1 - .2 Round to Whole Number.



- * .4 - .6 Round to .5



- * .8 - .9 Round up to whole Number



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