

Formula showing the simplest possible ratio of atoms in a molecule

Can be determined if the percent composition, the moles of each component element, or the grams of each component element is known

Steps to determine (empirical):

1. Determine the % composition
2. Treat % as grams and then convert grams of each element to moles of each element
3. Find the smallest whole number ratio of atoms
4. If the ratio is not composed of all whole numbers, multiply each by an integer so that all the elements are in a whole number ratio

Steps to determine (molecular):

1. Find the empirical formula
2. Find the mass of the empirical formula
3. Divide the known molar mass by the mass of the empirical number
4. Multiply the subscripts in the empirical formula by the quotient to determine the molecular formula

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