Mass Laws and Compounds

Quantitative studies of compounds in the late 1700s-early 1800s by many scientists (including Antoine Lavoisier, Joseph Proust, and John Dalton) revealed that compounds obey certain Mass Laws:

- **Law of Constant Composition (Law of Definite Proportions):** The masses of the constituent elements in a compound always occur in fixed proportions, regardless of the quantity or source of the compound. These fixed proportions of elements are often represented as ratios, or, as mass percentages:

  \[
  \text{Mass Percentage of an element in a compound} = \frac{\text{mass of element}}{\text{mass of compound}} \times 100
  \]

- **Law of Multiple Proportions:** When several compounds can be formed from the same elements, for a fixed mass of one element, the ratio of the masses of the other element will occur as small whole number values.