

COLLIGATIVE PROPERTIES

A guide on what are colligative properties and how they help us in the understanding of chemistry, this will also give us the ability to look at modern research and understanding in the field of chemistry through a conceptual thinking to the dimensional analysis behind it.

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1 Colligative Properties

What are Colligative Properties?

Colligative Properties in chemistry are the solutions in chemistry that can depend on the ratio of the amount of solute properties there are to the number of solvent molecules in a chemical equation.

The 8 Major Methods to Finding Colligative Properties Are:

1. Mass Percentage
 - a. The number of properties found in the mass itself
 - b. The percentage of mass with properties in the element itself
 2. Volume Percentage
 - a. The percentage of volume that has properties
 3. The Mass of the Solute Inside a Definite Mass of a Solvent
 - a. The mass of a solute inside the known mass of a solvent itself
 4. The Mass of a Solute per the Definite Mass in a Solution
 - a. Mass of solute per definite known masses
 5. Molarity
 - a. A measurement of molar concentration
 - i. Amount of constituent divided by the volume of the mixture
 - ii. The [SI unit](#) is mol/m³
 6. Normality
 - a. The normal known concentration
 - i. Molar Concentration divided by equivalence factor
 1. Uses common number of reactive species in a solution
 7. Molality
 - a. Amount of substance as defined in the solute
 8. Mole Fraction
 - a. Amount of constituent of a chemical/by total # of constituents in a mixture
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Included in Colligative Properties are:

1. Relative Lowering of Vapor Pressure
 - a. Vapor pressure is called the pressure exerted by vapor in a thermodynamic equilibrium
 2. Elevation of Boiling Point
 - a. The action that the boiling point of a liquid gets higher when another compound is added
 3. Depression of Freezing Point
 - a. Process that happens when a solute added to a solvent and decreases the freezing point
 4. Osmotic Pressure
 - a. Is the pressure that needs to be applied to a solution to prevent inward flow of water toward a semipermeable membrane
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Partial Molar Free Energy:

1. In thermodynamics it is [known](#) as the chemical potential
 2. In Semiconductor Physics it is known as the [Fermi Level](#)
 3. Diffusion of Micro and Macro mol
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2 Colligative Properties

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