

## 15.11 Introduction to the Vapor Pressure of a Solution (Raoult's Law) (Video)

This project was preformed to supply **Libretext Authors** with videos on General Chemistry topics which can be used to enhance their projects. Also, these videos are meant to act as a learning resource for **all General Chemistry students**.

### Video Topics

The methods for calculating the vapor pressure of a solution are dependent on the characteristics of the solute. A nonionic-nonvolatile solute will cause the vapor pressure of the solvent to decrease. Because the solute is nonvolatile it will not create a vapor pressure of its own. Examples are: sugar, caffeine, fats, and proteins. An ionic-nonvolatile solute will also cause the vapor pressure of the solvent to decrease. Because the solute is nonvolatile it will not create a vapor pressure of its own. However, we will need to adjust our calculations to account for the Van't Hoff factor of the solute (i). Examples are salts such as NaCl or NaOH. A nonionic-volatile solute will also cause the vapor pressure of the solvent to decrease. However, because the solute is volatile it will also have a vapor pressure. To find the overall vapor pressure of the solution the vapor pressure of the solute and the solvent must be combined. These calculations will all involve Raoult's Law.

Raoult's Law  $P_a = X_a P_{ao}$

$P_a$  = Vapor pressure of solution

$X_a$  = Mol fraction of the solvent

$P_{ao}$  = Vapor pressure of the pure solvent

Raoult's Law says that the vapor pressure of a solvent tends to decrease when it is part of a solution.  $P_a$  less than  $P_{ao}$ .

### Link to Video

Introduction to the Vapor Pressure of a Solution (Raoult's Law): <https://youtu.be/YZ5vTzUe0yg>



### Attribution

- Prof. Steven Farmer (Sonoma State University)

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