The principle of corresponding states.

(1) In 1881, Vander Waal's demonstrated that if the pressure, volume and temperature of a gas are expressed in terms of its P_c, V_c and T_c, then an important generalization called the principle of corresponding states would be obtained.

(2) According to this principle, "If two substances are at the same reduced temperature (θ) and pressure (π) they must have the same reduced volume (ϕ)," i.e. $\boxed{\left(\pi + \dfrac{3}{\phi^2}\right)(3\phi - 1) = 8\theta}$

Where, $\phi = V / V_c$ or $V = \phi V_c$; $\pi = P / P_c$ or $P = \pi P_c$; $\theta = T / T_c$ or $T = \theta T_c$

This equation is also called **Vander Waal's reduced equation of state**. This equation is applicable to all substances (liquid or gaseous) irrespective of their nature, because it is not involving neither of the characteristic constants.

(3) This principle has a great significance in the study of the relationship between physical properties and chemical constitution of various liquids.