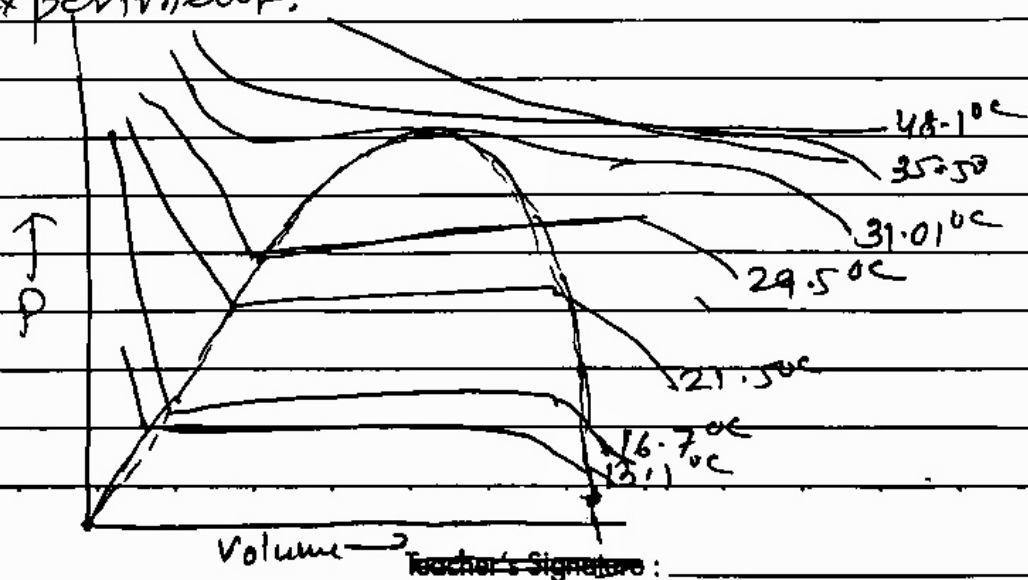


Liquifaction of gases:- →

The term liquifaction of gas means the gas converts into liquid state. Gas exist their state at high temperature and low pressure. As we decrease the temperature the kinetic energy of gaseous molecule decreases, so its speed decreases and hence volume decreases, at ~~that~~ that time (means at low temperature) if pressure is increases then the gaseous molecule can be compressed easily and gas can be liquify easily. For liquifaction of gas the role of temperature is more important than the pressure.

Andrew experiment:- → In 1869 T. Andrew studied the behaviour of CO_2 and try to find the minimum temperature at which CO_2 can be liquified, this experiment is called Andrew experiment.



Teacher's Signature: _____

In this PV Curve it is clear that at high temperature 48°C gas do not liquify even at a high pressure, even at $35-50^{\circ}\text{C}$ also it is not possible, but at 31.01°C (approx) ~~gas~~ and below this temperature ~~when~~ high pressure is applied CO_2 gas can be liquified. It means ~~at~~ 31.01°C is such a temperature above this temperature whatever high pressure we apply gas could not be liquid, this temperature is called critical temperature for CO_2 gas. below this temperature (T_c) 31.01°C other all temperature favours the liquification of gas at suitable pressure.

This graph also predict Very low temperature like 13.1°C requires ~~very~~ less pressure to liquify the gas ~~but~~ but if the temperature increases (below 31.01°C) the corresponding pressure value increases to liquify the CO_2 . In very simple way we can say Andrew experiment relate T & P for CO_2 liquification, even it predict the critical temperature & pressure.

Boyle's temperature: →

We know real gas do not obey ideal gas equation at all temperature and pressure, but at a high temperature & low pressure the gaseous molecule becomes so far from each other by which no force of attraction occur among themselves and the volume of one molecule becomes negligible with respect to entire volume of gas, even the Z value becomes one hence these characteristics are followed by the gas i.e. or gas follow the ideal gas equation i.e. $PU = nRT$. That minimum temperature at which a real gas behave ideally at all range of ~~low~~ pressure is called Boyle's Temperature.