## Parachor

Macleod proposed an empirical relation between surface tension of a liquid ($\gamma$) and its density ($D$), in the form

$$\frac{\gamma^{\frac{1}{4}}}{(D-d)} = C \text{ (constant)}$$

where $d$ = density of vapour

Multiplying both sides by $M$, the mol. wt. of the substance,

$$\frac{M\gamma^{\frac{1}{4}}}{(D-d)} = M \cdot C = P \text{ (constant)}$$

Since $M$ is also constant for a given substance.

It is remarkable that the constant $P$, called the parachor is quite independent of temperature. If the vapour density $d$, which is quite small, be ignored, then

$$P = \frac{M}{D} \cdot \gamma^{\frac{1}{4}} = V_m \gamma^{\frac{1}{4}}$$

$V_m$ = molar volume of the substance

If at suitable temperatures, the surface tensions of two liquids be equal the their parachors would be proportional to their molar volumes.