Lab. 4

Determination of Surface Tension of Liquids

Surface tension is the force per unit length (dyne/cm) or the work per unit area (ergs/cm^2) on the surface of a liquid that opposes expansion of the surface area. There are different methods to determine the surface tension of liquids.

(1) Drop Weight Method:

The surface tension of a liquid is related to the weight of a drop of that liquid which falls freely from the end of the tube, by the expression:

$$\gamma = \frac{mg}{2\pi rF} \quad \ldots\ldots\ldots (6)$$

γ = surface tension (dyne/cm)

m = mass of the drop (g)

g = the acceleration due to gravity (981cm/sec)

r = radius of the end of the tube (cm)

F = correction factor, function of $v/r^{1/3}$ where v volume of drop.

(2) Modification of the Drop Weight Method:

The drop weight method may also be performed by counting the number of drops (n) in a certain volume of liquid under conditions similar to these described above. Under these conditions: