وزارة التعليم العالي والبحث العلمي

كلية المستقبل الجامعة

قسم الصيدلة

مختبر الصيدلة الفيزياوية / المرحلة الثانية

EXP 2

Determination the surface tension of Liquid

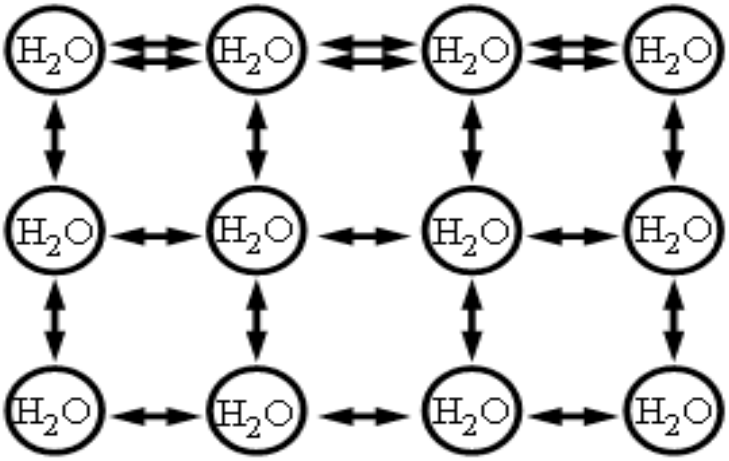
The purpose of the experiment:

To determine the surface tension of different type of liquids by using a capillary tube method.

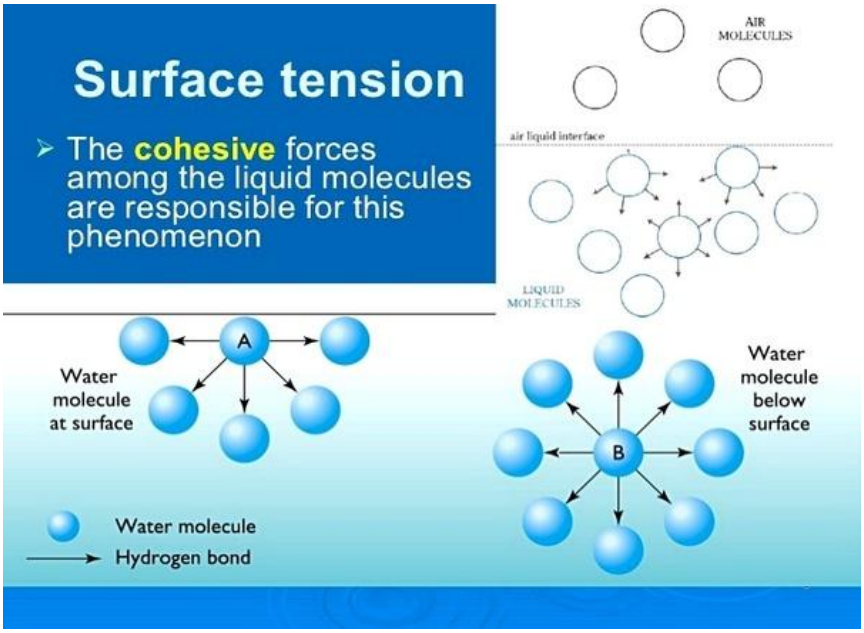
Principle:

This property represents the attraction between the liquid molecules. The molecules of the liquid in the middle of the liquid attract with the neighboring molecules in all directions, while the particles on the surface of the liquid that are in homogeneity with the vapor state, from a scientific point of view there are no forces that attract them towards the top, but there are neighboring molecules to them that attract them towards the bottom, so a Surface tension force is formed, makes it bond with a force higher than the cohesion of the particles at the edge of the glass, and makes it withstand bodies on the surface much higher than its density.

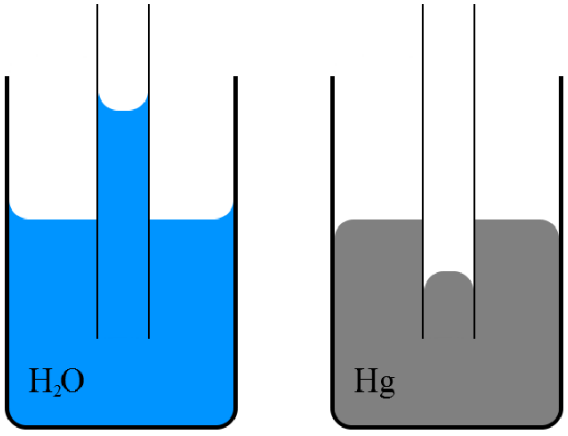
SURFACE



Surface tension—molecules at the surface form stronger bonds



There are many methods for calculating surface tension, among the simplest and most common of these methods is the method of fluid elevation in capillaries (capillary _ rise method).



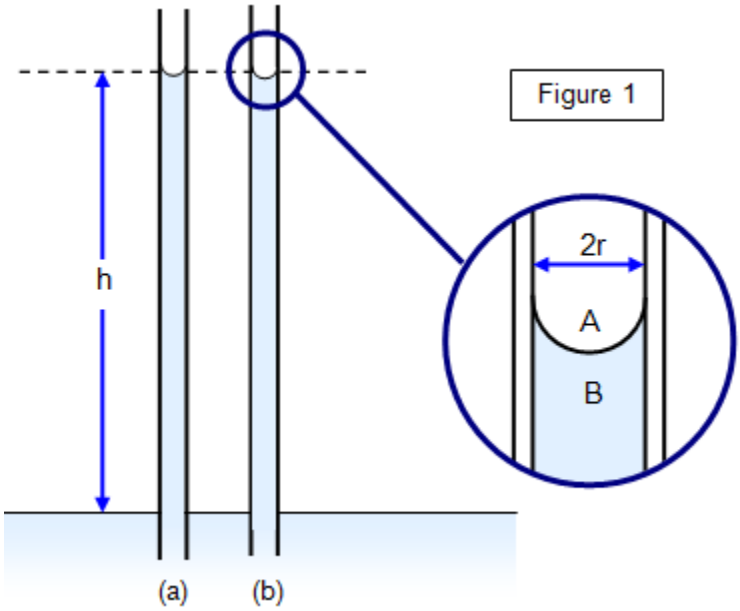


Figure 1

Procedure

1- Determine the radius of capillary tube.

2- Cleaning the capillary tube and dry it.

3- Pull carefully certain volume of mercury in the capillary tube.

4- Measure the high mercury in the capillary tube

$$\gamma = \frac{r\ d\ h\ g}{2}$$

γ = Surface tension

d= density of liquid

h= high of liquid in capillary tube

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