VISCOSITY

Viscosity

- The resistance to flow. The thicker a liquid, the higher the viscosity (the slower a liquid moves).

What has higher viscosity, water or honey?

- Viscosity usually dec n a liquid is heated.

What is more viscous, oil in a hot wok or oil in a cold wok?

Viscosity

- **Blood viscosity can be described as the thickness and stickiness of blood.**
- **It is a measure of the resistance of blood to flow.**
- **The viscocity of blood is 5 times more than that of water**

  (based on time taken for the flow of both in a tube)
- **It depends on :**
  - **RBCs**
  - **Plasma proteins**

Measurement units of viscosity

- pascal seconds (Pa·s)
- millipascal second (mPa·s)
- centipoise (cP)

0.001 Pa·s	=	1 mPa·s	=	1 cP
pascal seconds		millipascal seconds		centipoise

Viscosity of liquid

Purpose : To determine the viscosity of medium by using a small sphere falls with a constant terminal velocity

Apparatus:

1-A long glass tube about 50cm long closed at one end

2- Glycerin

3- Meter scale

4-small sphere

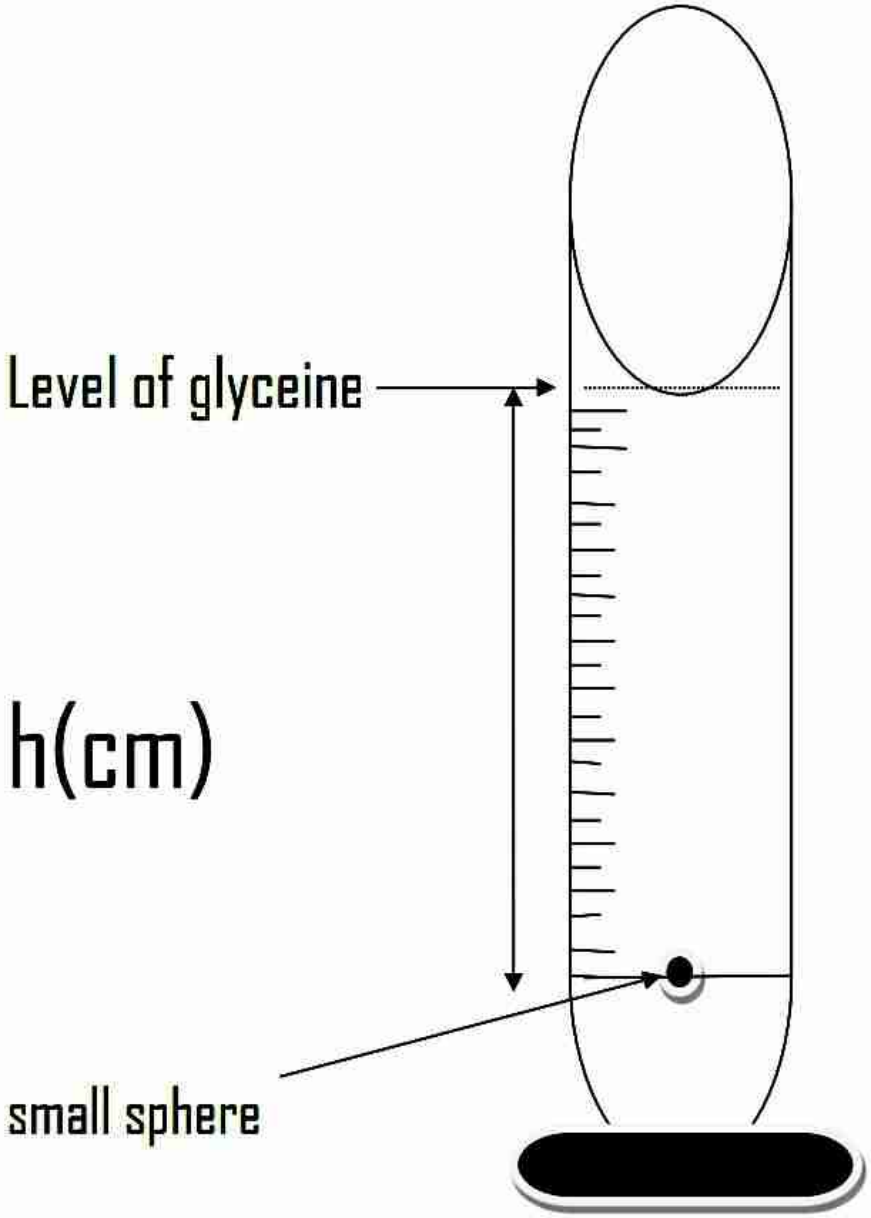
5- Rubber bands

6- Manget

7-Stop-watch

Method:

1- Adjust the distance between the rubber bands.
2- Record the distance (h) between them (about 30cm)
3- Drop a sphere centrally down the tube and with stop-watch find the time it take to traverse the distance between the rubber bands
4- Obtain two values of the time of fall
5- Repeat the experience for the different values of (h) and obtain two values of the time of fall for each new distance apart



reading:

Distance between the rubber h(cm)	(time of fall) T(Sec)

Plot a graph with value of (h)(cm) as ordinates against the corresponding value of T(Sec)

Slope=h/T=Velocity (cm/sec)

To deduce the velocity (η) for liquid ,use the following equation

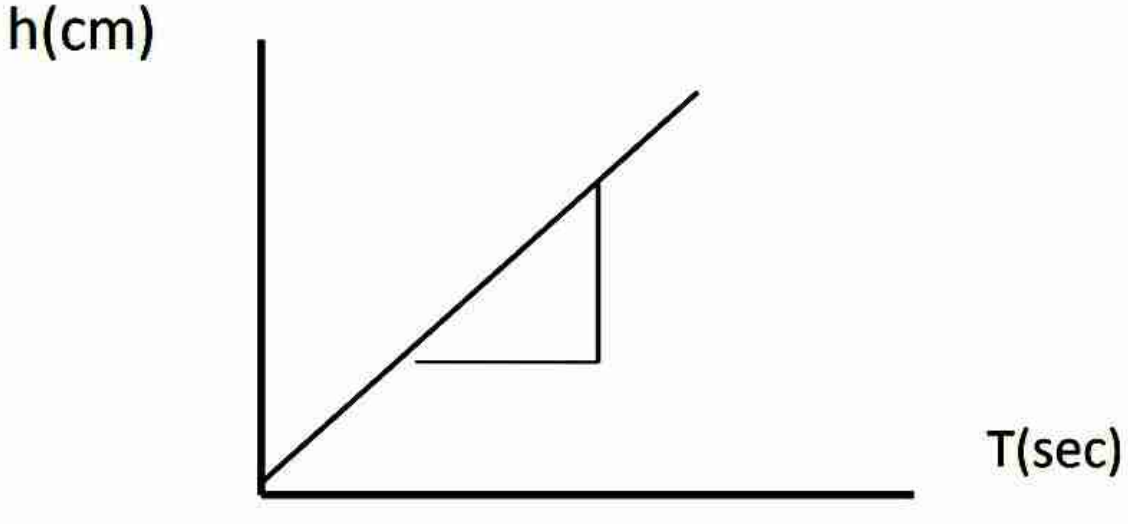
$$\eta=\frac{g(\rho-\sigma)d^2}{18.V}$$

g=980 cm/sec^2

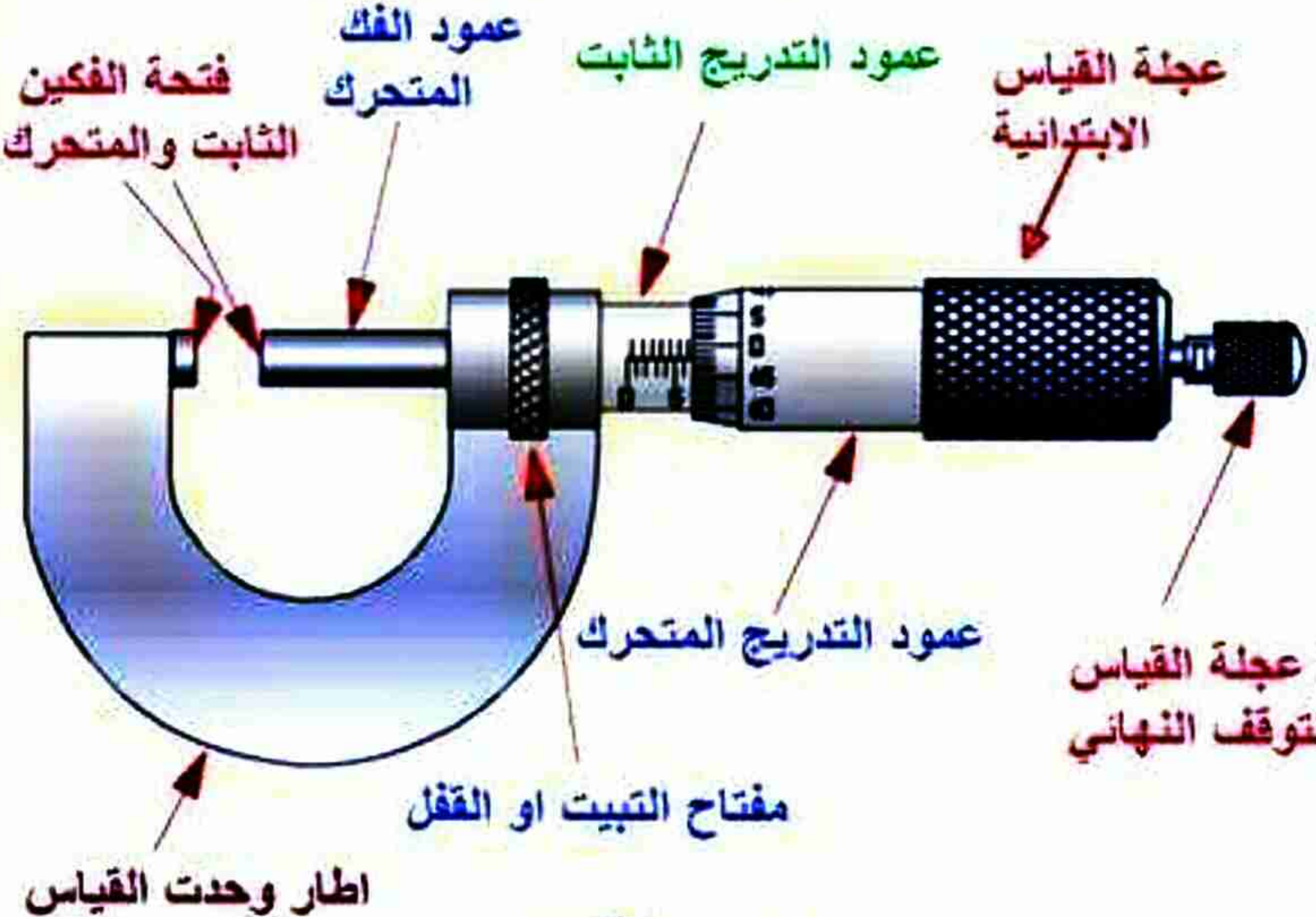
ρ=density of sphere $\rho=\frac{m}{\frac{4}{3}\pi r^3}$

σ=density of liquid =1.231gm/cm^3

V=Velocity (slope)



Micrometer



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