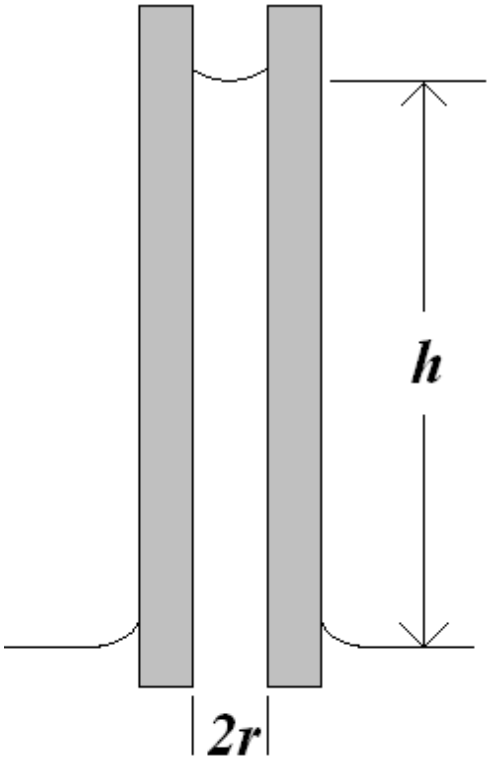
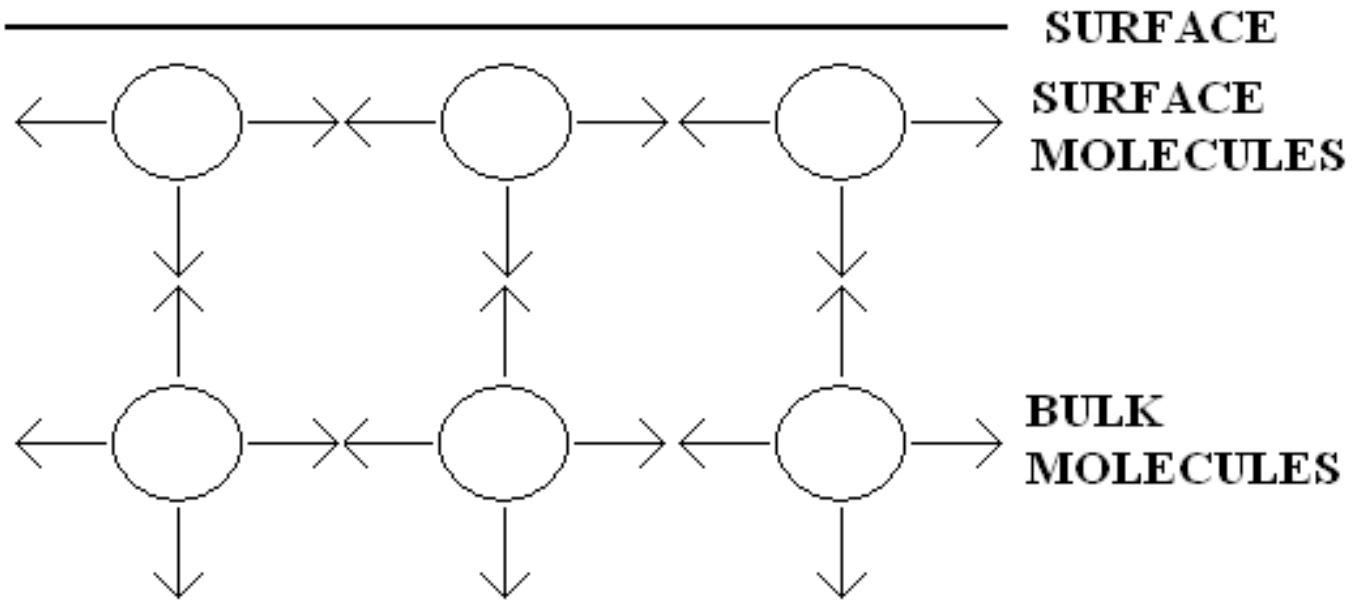
Chemistry 2201 Lab: SURFACE

Measuring the height a liquid travels up a capillary, capillary rise(h), to determine the surface tension(γ).

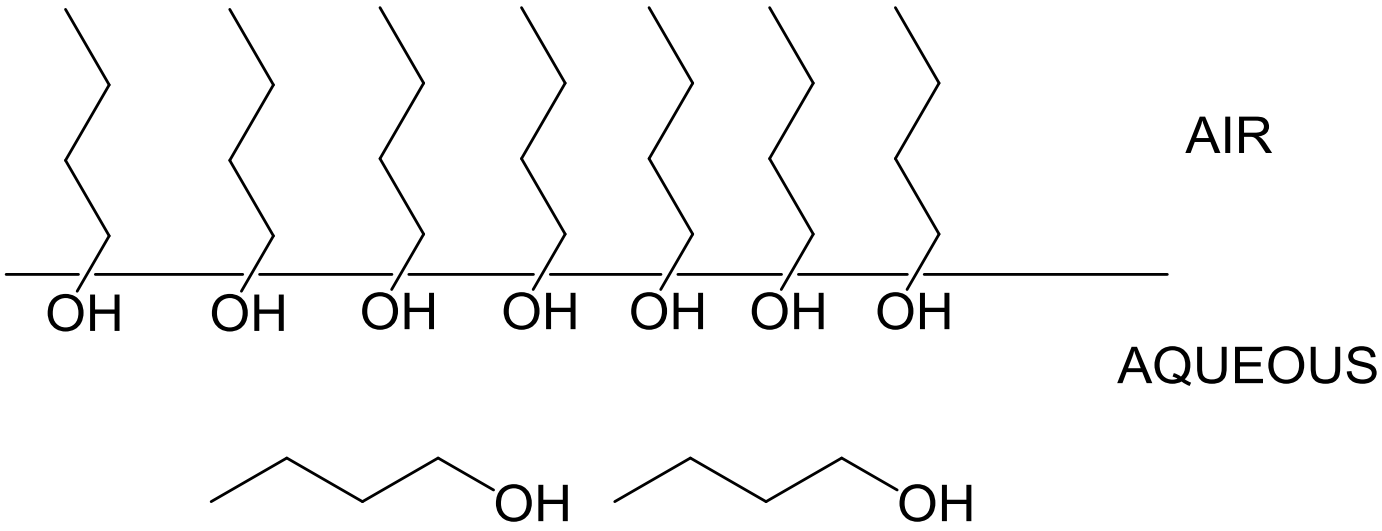


$$\gamma_1 = \frac{1}{2}\mathrm{hr}\rho\mathrm{g}$$

γ: A measure of the attraction forces acting at the surface of a liquid.



Mixture1:
1-butanol/water



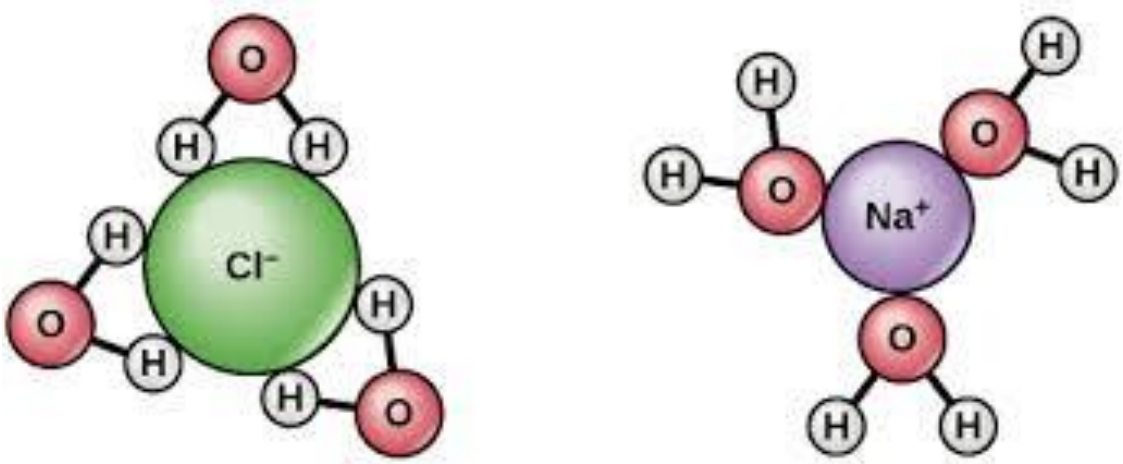
Γ: surface concentration. Difference in concentration compared to bulk liquid.
Γ has units of mol/m^2. Can determine size of a 1-butanol molecule.

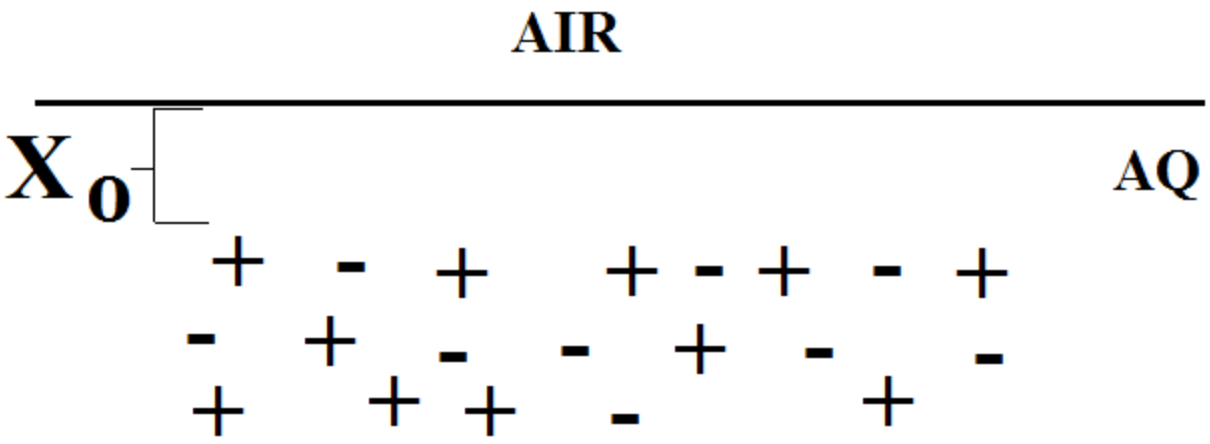
$$\Gamma = -\frac{1}{2.303RT}\frac{d\gamma}{d(\log c)}$$

Measure γ as a function of concentration(c).

Plot of γ vs. Logc. Slope = dγ/dLogc

Mixture2:
NaCl/water





Plot of γ vs. c. Slope = dγ/dc

$$\frac{\Gamma}{c} = -\frac{1}{RT}\frac{d\gamma}{dc}$$

Can determine Γ/c.

$$x_o = -\frac{\Gamma}{c_o} = -\frac{\Gamma}{2c'}$$