وزارة التعليم العالي والبحث العلمي

كلية المستقبل الجامعة

قسم الصيدلة _ المرحلة الثانية

مختبر الصيدلة الفيزياوية

EX.3

Three Component systems containing liquid phases

Purpose of this experiment

Ability of miscibility of three component at different concentration . In order to make one phase completely miscible.

Introduction

The mutual miscibility between two poorly mixed liquids is affected by the addition of a third liquid to them .

It is also called as Gibbs phase triangle, triangle plot, A three component system consists of three components. We can independently change the pressure, temperature, and two independent composition variables for the system as a whole.

Chemicals and tools

Burette

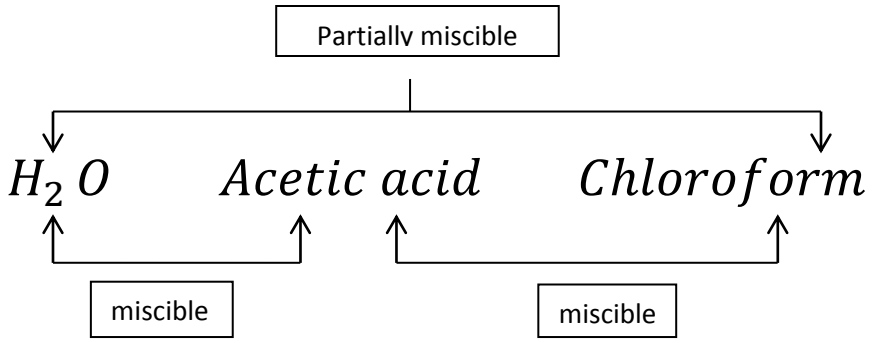
Conical flask

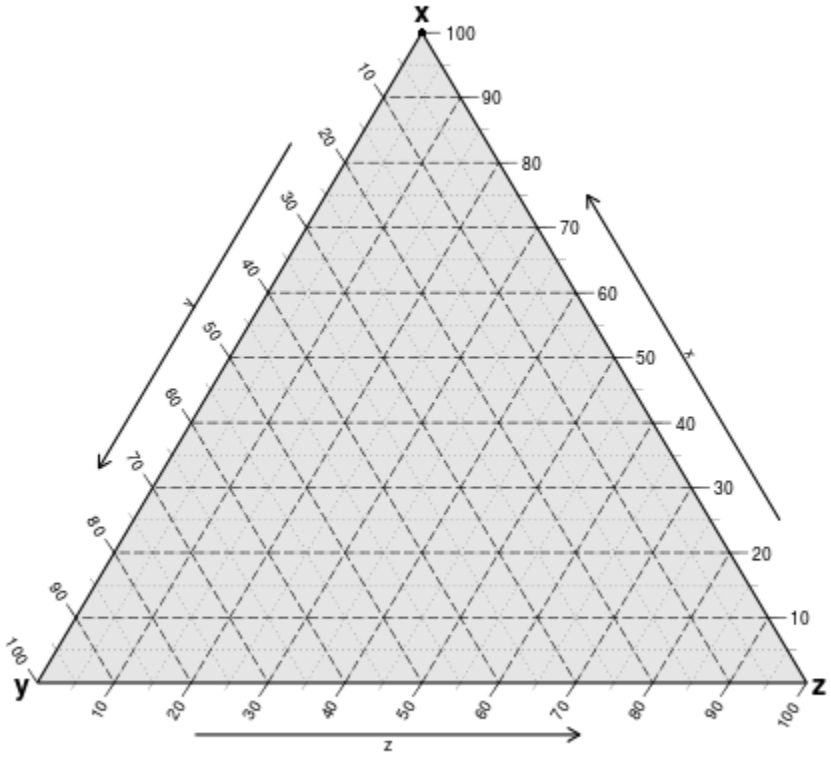
Funnel

Chloroform

Acetic acid

Water





Experimental work

1- Point at the top of triangle, this point represent the 100 % percentage for one component
2- Point at side of the triangle, this point represent this mixture of two substances.
3- Point inside the triangle, this point mean that the system is mixture of three component , the percentage of each component depends on the distance between this point and the top of the triangle.

Calculations:

1- Calculate the weight for each components then total mass for each conical

$$w = d \times v$$

D for acetic acid = 1.05 gm/cm3

D for chloroform = 1.50 gm/cm3

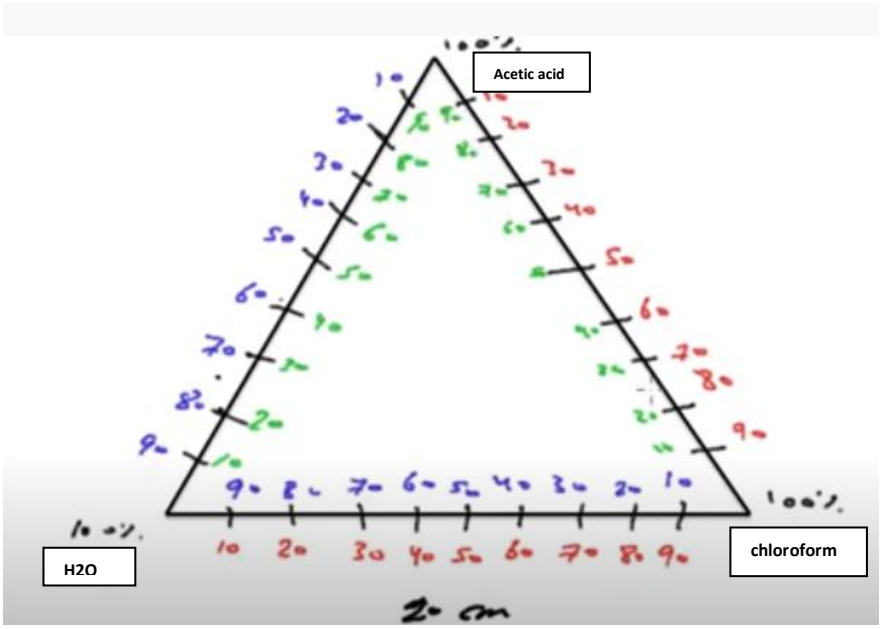
D for water = o.99 gm/cm3

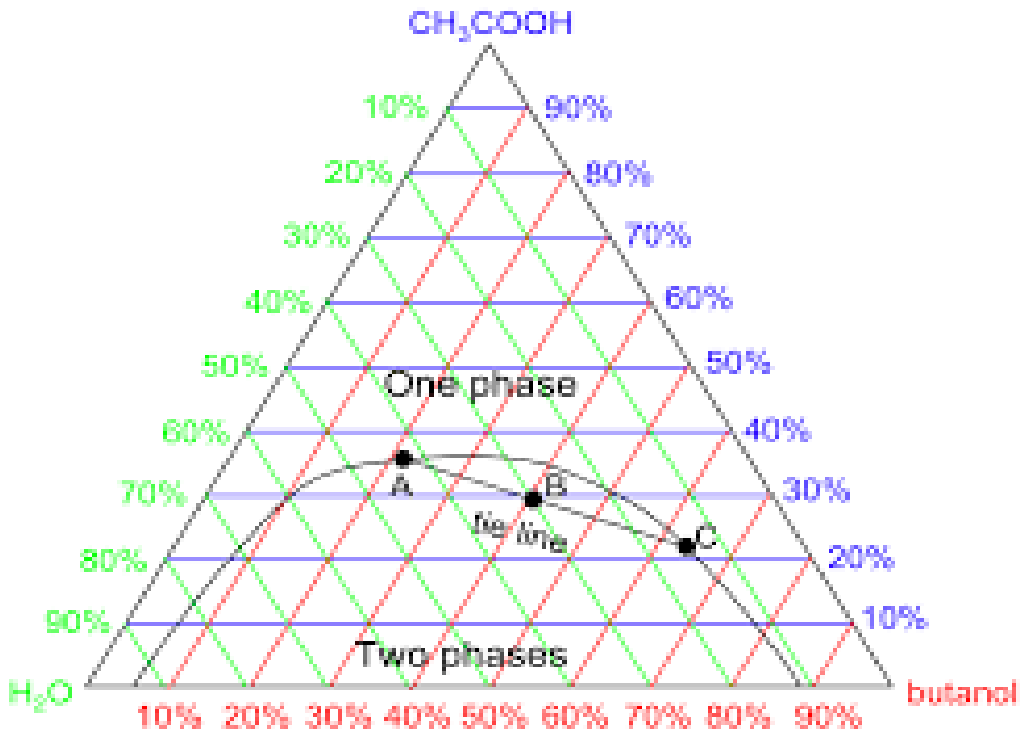
component	chloroform		water		Acetic acid		Total mass
Conical no.	V ml	Wt. gm	V ml	Wt. gm	V ml	Wt. gm	Total mass
1							
2							
5							
4							
5							

2- Calculate component percentage

w/w % = mass of the component / total mass* 100

Component	Chloroform	water	Acetic acid
Conical no.	w/w%	w/w%	w/w%
1			
2			
3			
4			
5			




CH3COOH
10%
90%
20%
80%
30%
70%
40%
60%
50%
50%
One phase
60%
40%
70%
30%
A
B
tie line
C
80%
20%
90%
10%
Two phases
H2O
butanol
10% 20% 30% 40% 50% 60% 70% 80% 90%