Non-aqueous titration

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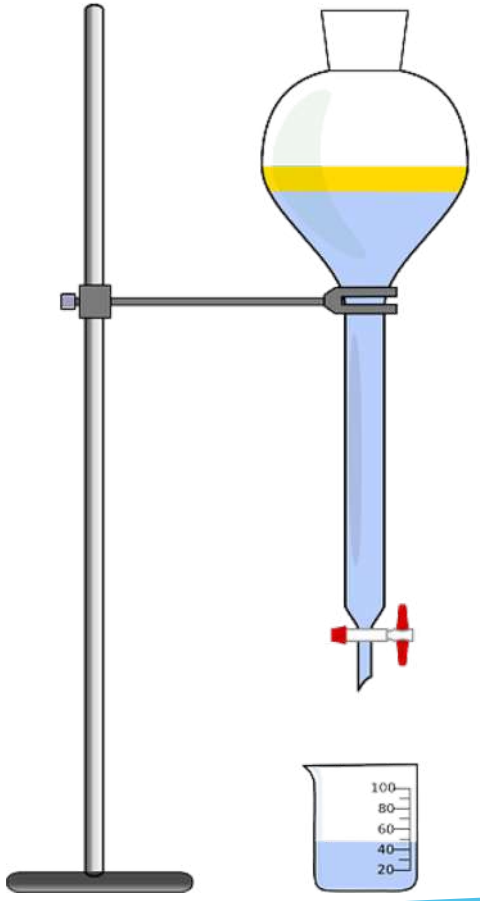
ILOS:

Define Non -aqueous titration

List types Of Non-aqueous solvents

Discuss Application of Non-aqueous titration

List Advantages and Disadvantages Non-aqueous titration

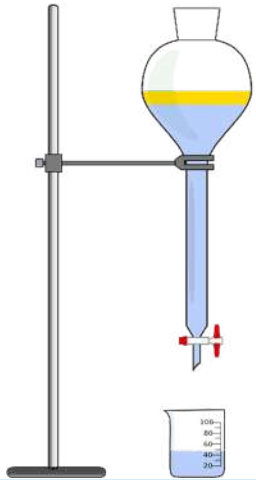


Definition of Non-aqueous titration:

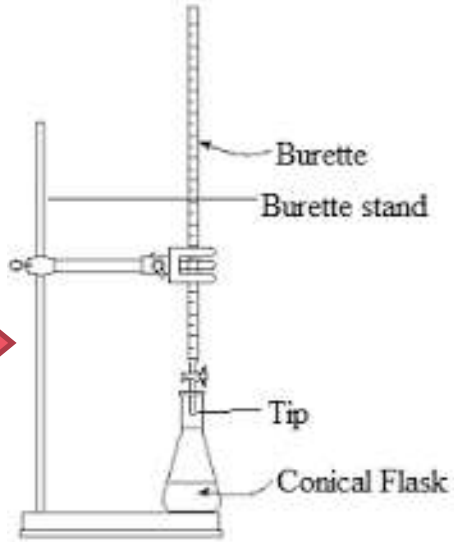
- Non-aqueous titration refers to a type of titration in which the analyte substance is dissolved in a solvent that does not contain water, This procedure is a very important one in pharmacopoeial assays.

- The need for non-aqueous titration arises, because water can behave a weak acid and weak base.

- The procedure of non-aqueous titration is very useful because it satisfies two different requirements.
- Substances which give poor endpoints.
- Substances which are insoluble in water but soluble in organic solvents



Equipment of titration

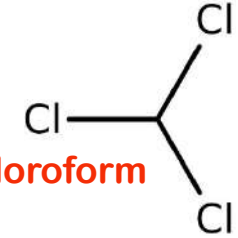


Types of Non Aqueous Solvents:

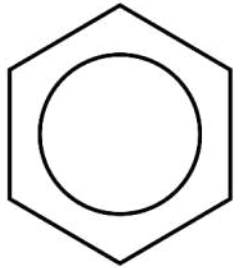
1. Aprotic Solvents
2. Protophilic Solvents
3. Protogenic Solvents
4. Amphiprotic Solvents

1 Aprotic Solvents

These solvents are neutral in charge and are chemically inert. They also generally have a low dielectric constant. Examples of these types of solvents include chloroform and benzene

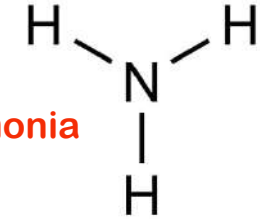


Chloroform

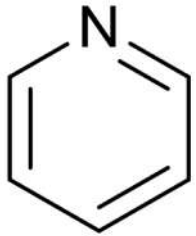

Benzene

2 Protophilic Solvents

These solvents have a basic character and tend to react with the acids they come in contact with, leading to the formation of solvated protons. Examples of protophilic solvents are ammonia and pyridine



Ammonia

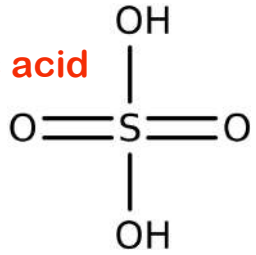


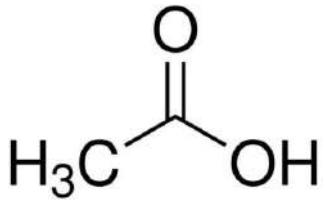
Pyridine

❸ Protogenic Solvents

These solvents have a more acidic character and tend to have a levelling effect on the bases they come in contact with Examples of protogenic solvents used in non-aqueous titration are sulphuric acid and acetic acid.

sulphuric acid



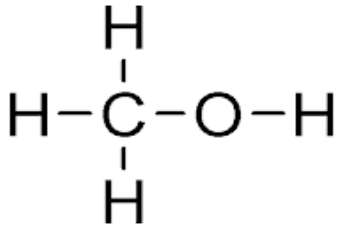


acetic acid

❹ Amphiprotic Solvents

These solvents have properties which are protophilic as well as protogenic, Examples of these types of solvents are acetic acid and alcohols.

Alcohols



Advantage	Disadvantage
Organic acids or bases that are insoluble in water are soluble in non-aqueous.	Temperature, moisture ,CO2 should be control
Organic acids which is of comparable strength to water can be titrated easily in non-aqueous solvent.	Solvent are expensive
It can be used for titration of mixture of acids as well	Volatile solvent can pollute environment
Non aqueous titration are accurate	Indicator must be prepare in non-aqueous medium

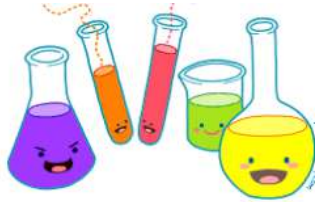
Application of non-aqueous titration

Non-aqueous titration has various uses in numerous fields.

Specially, in medicinal field non-aqueous titration is very useful We have listed here few of it's application.

- Used to know the purity of assays
- It is used for determination of concentration expressions
- Used in determination of hydrocarbon compounds, phenobarbitone, diuretics, steroids
- Used for determination of composition of anti TB drugs and adrenergric drugs

Summary



- Non-aqueous titration refers to substance in a solvent that does not contain water
- Their types of solvents such as Protogenic Solvents and Amphiprotic Solvents etc…
- Its have application like is very important in pharmacopoeial assays
- Advantage of Non-aqueous titration like is Non aqueous titration are accurate and Disadvantage like Solvent are expensive.

References

Books:

Vogel's Textbook of Quantitative Chemical Analysis
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Wep:

https://www.vedantu.com/chemistry/non-aqueous-titration
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