



POTENTIOMETRY

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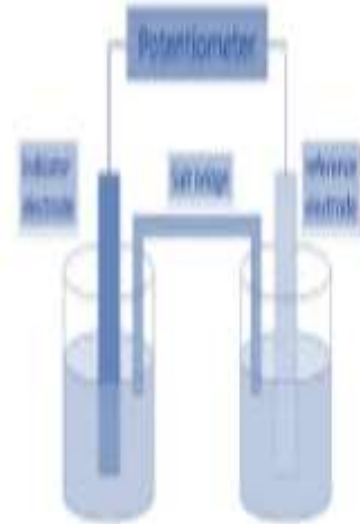
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Introduction

Potentiometry is an analytical technique used to measure the voltage of an electrochemical cell to determine the concentration of an analyte in a solution.

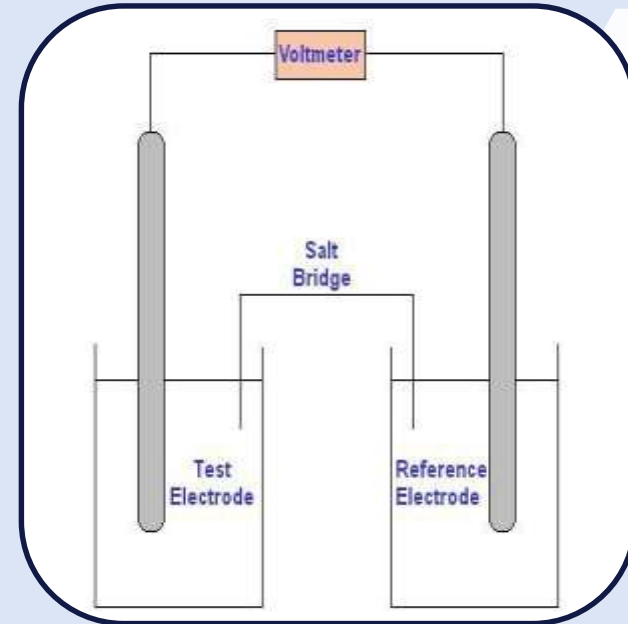


principle

Potentiometry principles state that the change in the potential difference between 2 electrodes of a cell is. It determines the analyte concentration by a change in the concentration of ions. Ans.

Potentiometric titration is another term given to

Potentiometry



Theory

when the known potential electrode immersed in the sample solution then the potential is given by Nernst

equation: $E = E_o + (0.592/n) \log c$

Where E is the potential of the solution E_o is the standard electrode potential n is the valency of the ions

c is the concentration of the sample solution

0.592 is the value obtained from the RT/F : where R is the gas constant, T is the temperature in Kelvin, F is

the faradays constant




Importance

The importance of potentiometry lies in the fact that it is an analytical technique used to calculate the concentration of an analyte or a solution.

Pharmaceutical companies widely use this property.

One can use this technique to determine the nature of an analyte, whether it is an acid or a base



Type Potentiometry

1-Direct Potentiometry

2-Potentiometric Titration

3-Ion-Selective Electrode(ISE)
Potentiomer



4-Redox Potentiometry

5-Membrane Potentiometry

6-Differential Potentiometry



Types of electrode used in Potentiometry

1. Reference electrode :

Ex. Silver silver chloride
electrode

Saturated calomel electrode



2. Indicator electrode:

Ex: Glass electrode.
Antimony -antimony
oxide electrode



Applications



1. Clinical chemistry



2. Environmental chemistry

3. Potentiometric titrations



4.Agriculture

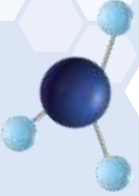
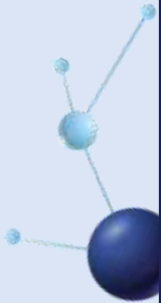
5.Detergent manufacturing

6.Food processing



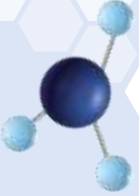
Advantages

1. Accuracy.
2. Ease of Use.
3. Versatile.
4. Quick Response.
5. Non-intrusive Chemical Analysis.



Disadvantages

1. Sensitivity to External Factors.
2. Need for Reference Standards.
3. Effect of Impurities.
4. Electrode Lifespan.



Conclusion




In this presentation we talked about potentiometry is an analytical technique used to measure the voltage of an electrochemical cell to determine the concentration of an analyte in a solution. Potentiometry principles state that the change in the potential difference between 2 electrodes of a cell is. It determines the analyte concentration by a change in the concentration of ions. Ans.

Potentiometric titration is another term given to Potentiometry



References



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**THANK YOU FOR
LISTENING**