

§4.1.2 The classification of electrochemical methods

I. Potentiometry

1. direct potentiometry:



when the cell potential is determined and correlated to the activity or the concentration of the individual chemical species



2. potentiometric titrations:

when the variation of the cell potential is monitored as function of the reagent addition to the sample

Fig.4-0 1 Equipement of direct potentiometry

Fig.4-0 2 Equipement of indirect potentiometry
The development of different high sensitive and high accurate electrodes is the most active research field.

II. Electrogravimetric and coulometric analysis

1. Electrogravimetric analysis

The method is under the constant current or controlling potential condition, make the analyte deposit on the electrode, realizing the purpose of quantitative separation and determination

2. Electrogravimetry

The mass that deposit during the procedure of electrogravimetry usually can be determined by weighing

3. Coulometric analysis:



The method is based on Faraday rule, to determine the quantity of analyte deposited on the electrode by the electric quantity passed through the electrode during the process of electrogravimetry. Fig.4-0 3 Equipment for coulometric analysis
Fig.4-0 4 Equipment for voltammetry

Current titration or coulometric titration: Under constant current, the titrant produced by electrolysis works with the analyte.

III. Polarography and voltammetry



Voltammetry is a generic name for methods of analyzing the composition and content by determining the current-volt curve under special conditions. There are many kinds of types and equipments. Polarography is a special one of Voltammetry, is the basis of modern Voltammetry.

IV. Conductometric method To determine the content of analyte according to the relationship between the concentration and conductivity of the electrolyte solution, including direct conductometric method, conductometric titration, high frequency conductometric titration etc.

The key point in this page: the main kind of electrochemical methods, the principle of classification.

Problem for this page: In electrochemical methods, which methods exist no current passing through the electrode during the determination, which methods exist current passing through the electrode during the determination?

Problem for next page: How to measure electrode potential?