



**Centurion
UNIVERSITY**

*Shaping Lives...
Empowering Communities...*

MODIFIED VOLHARDS & FAJANS METHOD

BY, LIPSA SAMAL

ASST. PROF (PA & QA), SPLS, CUTM



Centurion
UNIVERSITY

*Shaping lives
Empowering Communities...*

FAJANS METHOD

• **Otherwise known as indicator adsorption method**

- **The precipitation titration in which silver ions is titrated with halide or thiocyanate ions in presence of adsorption indicator is called fajan's method**
- **Since the adsorption of indicator takes place at end point the method is also called indicator adsorption method**
- **The indicator, which is a dye, exists in solution as the ionized form, usually an anion.**



Centurion
UNIVERSITY

*Shaping Lives...
Empowering Communities...*

- The method is generally used for the quantitative analysis of halide ions or thiocyanate ions .
- For eg :titration of Cl^- ions with AgNO_3 in presence of adsorption indicator .here AgNO_3 is kept in burette and the Cl^- ion solution with indicator is taken in titration flask.
- a. Before the **equivalence point** :before the eqv.point ,colloidal particles of AgCl are negatively charged due to the adsorption of Cl^- from the solution . The adsorbed Cl^- from the primary layer which attract the positively charged Na^+ ions from the solution to form a more loosely held secondary layer.



Centurion
UNIVERSITY

Shaping Lives...
Empowering Communities...

- **b) After the eqv.point** ,excess of silver ions Ag^+ displace the Cl^- ions and form the primary layer which attract the negatively charged nitrate ions NO_3^- . c) At the end point ,anion of indicator in (weak organic acid or base)replace the negatively charged ion NO_3^- – from the second layer and give the intense color . - This intense color gives the end point of titration

PRECAUTIONS:

- The AgCl should not be allowed to coagulate into large particles at the eqv.point since this will greatly decrease the surface available for adsorption of the indicator .



Centurion
UNIVERSITY

Shaping Lives...

Empowering Communities

- **A protective colloid such as dextrin should be added to keep the precipitate highly dispersed .in the presence of dextrin the color change is reversible and if the end point is overrun ,one can back titrate `with a standard chloride solution .**
- **The adsorption of indicator should start just before the eqv.point and increase rapidly at the eqv.point .some unsuitable indicators are so strongly adsorbed that they actually displace the primary adsorbed ion well before the eqv.point is reached**
- **The pH of the titration medium must be controlled to ensure a sufficient concentration of the ion of the weak acid or base indicator**



Centurion
UNIVERSITY

Shaping Lives...
Empowering Communities...

MODIFIED VOLHARD'S METHOD

This is the advanced version of volhard's method, where AGCL ppt. Formed Is covered by a substance by making a coat so that the actual conc. Of the ppt. Can be measured accurately.



Centurion
UNIVERSITY

Shaping Lives...
Empowering Communities...

THANK YOU