وزارة التعليم العالي والبحث العلمي

كلية المستقبل الجامعة

قسم الصيدلة _ المرحلة الاولى

مختبر الكيمياء التحليلية / الكورس الاول

EX.4

Determination of Chloride by Mohr method

Purpose of this experiment

Determination the concentration of silver in precipitation method

Principle of Mohr's method

* Mohr's method used to determines the chloride ion concentration of a solution by titration with silver nitrate$AgNO_3$. A soluble chromate salt (K2CrO4) is added as the indicator. This produces a yellow color solution as the silver nitrate solution is slowly added, a precipitate of silver chloride formed.

$$Ag(aq) + Cl(aq) \rightarrow AgCl(s)$$

This method use chromate as an indicator, chromate forms a precipitant with Ag ions, but this precipitant has a greater solubility than that of AgCl therefore AgCl is formed first and after all Cl ions is consumed

* The end point of the titration occurs when all the chloride ions are precipitated, then additional silver ions react with the chromate ions of indicator, potassium chromate, to form a red brown precipitant of silver chromate.

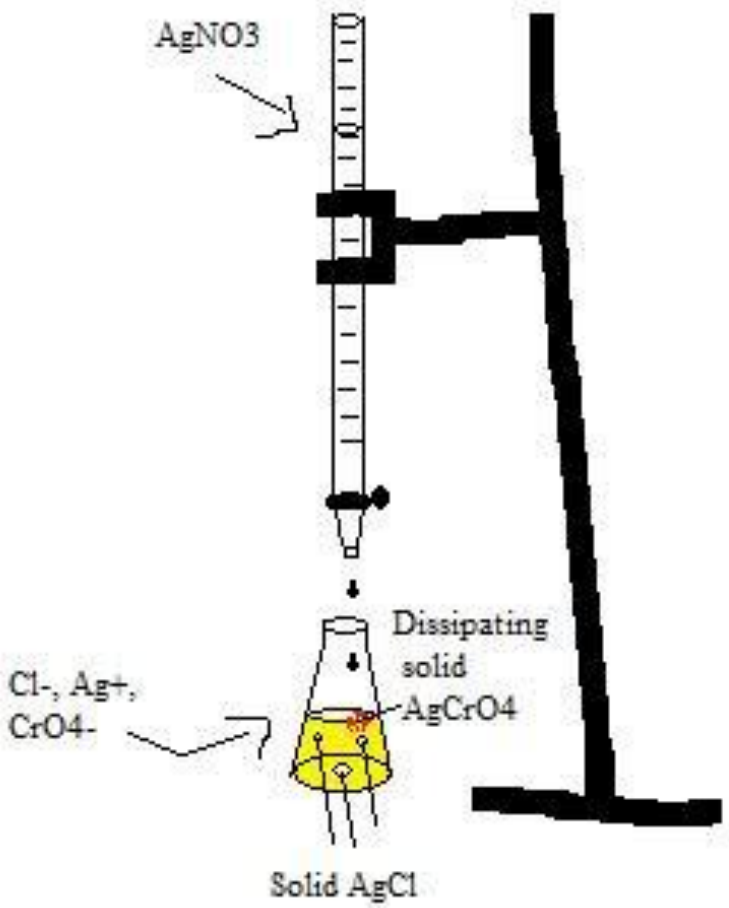
$$2Ag^{+}_{(aq)} + {CrO_4}^{-2}_{(aq)} \rightarrow Ag_2CrO_{4(s)}$$

Chemicals and tools

$AgNO_3$, K_2CrO_4, , NaCl, distilled water, burette, pipette, stand, clump, brush, conical flask, spatula, funnel, volumetric flask, washing bottle, beaker, dropper, balance, watch glass.

Experimental work:

1- Wash the burette with distilled water and small amount of (0.1) N of$AgNO_3$.
2- Fill the burette with (0.1) N of$AgNO_3$.
3- Take (5) ml of NaCl by pipette and put it in a conical flask.
4- Add (5) drops of K_2CrO_4 indicator to the conical flask and mix well.
5- Titrate with $AgNO_3$until the appearance of red-brown precipitate.
6- Repeat the titration 3 times and take the average.


AgNO3
Dissipating
solid
AgCrO4
Cl-, Ag+,
CrO4-
Solid AgCl

- Calculate the concentration of Chloride ion in normality by using the law:

$(N \times V)_{AgNO_3} = (N \times V)_{NaCl}$

(Average = V1 + V2 + V3 /3)