جامعة الانبار

كلية : الصيدلة

قسم : الكيمياء الصيدلانية

اسم المادة باللغة العربية: الكيمياء التحليلية

اسم المدة باللغة الإنكليزية: **Analytical Chemistry**

المرحلة: الأولى

التدريسي: م.م. سحر فائق عبد صالح

عنوان المحاضرة باللغة العربية: الكيمياء التحليلية العملي التجربة الخامسة

عنوان المحاضرة باللغة الإنكليزية: **Practical Analytical Chemistry (5)**

Exp. 5

Determination of Chloride by the Mohr Method

The formation of a second precipitate of distinctive color is the basis for end-point detection with the *Mohr method*. The procedure has been widely applied to the titration of chloride ion and bromide ion with standard silver nitrate. Chromate ion is the indicator, the point being signaled by the appearance of brick-red silver chromate, Ag_2CrO_4.

The formal solubility of silver chromate is substantially greater than that for the silver halides. In a Mohr titration, then, no silver chromate will be produced until essentially all of the halide has been precipitated. Through control of the chromate ion concentration, it is possible to retard the formation of silver chromate until the silver ion concentration acquires a value that corresponds to the theoretical equivalence-point region for the halide titration.

The reaction between the chloride ion and silver nitrate is accomplished according to the equation:

$$NaCl + AgNO_3 \rightarrow \underset{\text{white ppt.}}{AgCl\downarrow} + NaNO_3$$

When all of the chloride has been precipitated, the first excess drop from the $AgNO_3$ reacts with the indicator forming silver chromate as a brick-red precipitate, indicating the end point of the reaction.

$$2AgNO_3 + K_2CrO_4 \rightarrow \underset{\text{brick-red ppt.}}{Ag_2CrO_4\downarrow} + 2KNO_3$$

Procedure

Prepare 0.1N solution from $AgNO_3$ (16.98 g in 1 L), and full the buret with it. Transfer by a pipette 10 ml from the chloride solution in 250 ml conical flask and introduce 10 drops of K_2CrO_4 indicator. Titrate until the solution just changes from yellow to brick-red, and write down the volume of the $AgNO_3$ consumed.

no. of the $AgNO_3$ milliequivalents = no. of the Cl^- milliequivalents

$$N_1 \times V_1 = N_2 \times V_2$$

$$0.1 \times (\text{from buret}) = N_2 \times 10$$

N_2 = normality of Cl^-

The strength of Cl^- solution $= N_2 \times$ equivalent weight

$= N_2 \times 35.5$

If all NaCl is to be calculated = $N_2 \times 58.5$