Experiment (5)

Determination of Chloride ion by Mohr method

- Precipitation titration :is titration depend upon the combination of ions to form a simple precipitate.
- Mohr method is a method depend upon formation a colored precipitate for the determination of chloride ion.
- Chloride ion reacting with silver nitrate solution to form AgCl precipitate.

$$AgNO_3 + NaCl \leftrightharpoons AgCl + NaNO_3$$

- A small quantity of potassium chromate (K_2CrO_4) solution is added to serve as indicator. The first excess of titrant results in the formation of a red silver chromate precipitate which signal the end point.

$$2AgNO_3 + K_2CrO_4 \leftrightharpoons Ag_2CrO_4 + 2KNO_3$$

Procedure:

1. Clean the burette and fill it with silver nitrate (0.1 N).
2. Pipet l0 mL of chloride ion solution into 250 mL conical flask, add 5drops of potassium chromate.
3. Titrate chloride solution against silver nitrate until reaching the equivalent point (the point in which the number of moles of $AgNO_3$ equal to the number of moles of chloride ion).*Notice a white precipitate in the yellow solution.* After this point the excess of $AgNO_3$ will react with potassium chromate leading *to formation of red precipitate Ag_2CrO_4 (the end point)*.The difference between equivalent and end point is the volume of $AgNO_3$ reacted with the indicator.
4. Repeat the titration and calculate the average volume.
5. Calculate the normality.

$$N_{Cl^-} * V_{Cl^-} = N_{Ag^+} * V_{Ag^+}$$

$$concentration\ of\ [Cl^-]_{(ppm)} = N_{Cl^-} * eq.wt * 1000$$