Al-Mustansiriyah University

College of Science/Department of Chemistry

Analytical Chemistry Lab.

Second Year

Seven Lecture Exp.5 /II Semester

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Experiment (5)

Calibration of hydrochloric acid using anion exchanger

The theoretical part

The anion exchanger contains the hydroxyl groups which have negative charge where ion exchange occurs between (OH^-) group and ions that have negative charge found in the solution or sample (mobile phase)

When a sodium chloride or potassium chloride solution or sample is transferred to an OH^-Form anion exchanger, the exchange between chloride ions and hydroxyl ions will be as follows:

The solution that flow from the column is NaOH and by the calibration of the base (NaOH) with the hydrochloric acid (HCl) we can know the concentration of the used acid.

Materials

1. **NaOH Sodium Hydroxide (3M).**
2. **AgNO3 Silver nitrate (0.1 M) indicator activation.**
3. **Sample NaCl Sodium Chloride (0.1g).**
4. **Phenol Naphthaline indicator for base solution.**
5. **HCl Hydrochloric acid in burette.**

Procedure

1. **Activation the ion exchanger column by using the (2 drop) NaOH (3M)**
2. **Wash the column several times with distilled water and then check it by silver nitrate detector, and we continue to wash the column until it becomes neutral.**
3. **Carefully weigh (0.1g) from the sample (NaCl)**
4. **Dissolve the salt in a small amount of distilled water and then transfer to the ion exchange column**
5. **Collect the solution from the bottom of the column in to a conical flask.**
6. **Collect the first batch of the water from the column and check it by adding a drop of the phenol naphthalene indicator when the appearance of pink - purple add another batch of distilled water to the column and also check it by use the indicator and repeat this process until the disappearance of pink - violet.**
7. **Transfer the collected solution to the conical flask and calibrate it with the hydrochloric acid in the burette.**

Calculation

1- calculation concentration of HCl, let it the size of the down out of a burette = **10 ml**

No. of Meq.of NaCl = No. of Meq. of HCl

2- **Calculate POH and PH?**

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Discussion Questions

1- You have a resin How do you know that it is cationic or anionic?
2- Why we calibrate the elution solution collected from anionic column with hydrochloric acid?
3- What is use ph.ph indicator in experiment anion exchange?