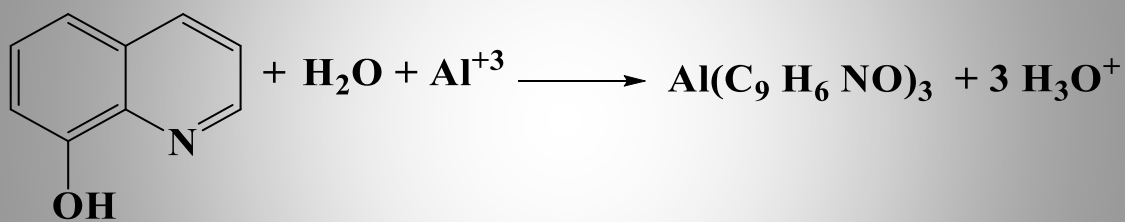


Experiment No.7

Determination of Aluminum as Oxinate

Introduction

The 8-hydroxyquinoline is considered an organic precipitated reagent for various metallic ions, that can be converting from selective reagent to specific reagent by controlling on an experimental conditions such as pH or temperature, the aluminum possibly precipitating from solution content magnesium by using 8-hydroxyquinoline as specific reagent, the aluminum will be precipitate as complex chelating with three molecules of oxine at pH (4-5), this technique can be consider a gravimetric method to determining the aluminum, this method producing a complex chelating precipitating in this media because of it has a poor solubility. The precipitate is crystalline, can be easily filtered and readily dried between (150 - 120°C).



Materials

1. Oxine solution: dissolve (14.5)g of oxine in (75)ml of acetic acid then complete the volume to 1 liter or (2% of oxine dissolved (2N) of acetic acid).
2. Ammonium acetate solution (2%).
3. Aluminum sulphate.

Procedure

1. Dissolve aluminum salt (0.2g) with 50mL of distilled water then heat the solution to (70-80C°).
2. Add gradually with stirring (5mL) solution of oxine (8-hydroxyquinoline) until appearance precipitate.
3. Then slowly add a 2% solution of ammonium acetate until a precipitate forms.
4. Heat the solution until boiling then add (13mL) of ammonium acetate gradually (complete precipitation must be add and heat for (15 min).
5. It should be faintly yellow at this stage, indicating that oxine is present in slight excess.
6. Filter precipitate then wash the precipitate used **cold distilled water**.
7. Dry filter paper at (120-150C°) for (10min), and then weigh filter paper with precipitate.

Calculation

$$\text{Al}\% = \frac{\text{Wt Al}}{\text{Wt. of Sample}} \times 100$$

$$\text{Wt Al} = \text{G. F} \times \text{Wt Al}(\text{C}_9\text{H}_6\text{ON})_3$$

$$\text{G. F} = \frac{\text{A. Wt (Al}^{+3}\text{)}}{\text{M. wt Al}(\text{C}_9\text{H}_6\text{OH})_3}$$

Discussion

1. What is the purpose of the ammonium acetate in the experiment?
2. Draw the structure of the aluminum complex of oxine and what is the structure (8-hydroxyquinoline)?
3. What are the characteristics of compounds of oxine?
4. What is the effect of PH on oxine?
5. The effect of continuous stirring with heating on the composition of the precipitation?