CHM112 PROTOCOL-15th March 2016

Estimation of Nickel(II), using dimethylglyoxime

(Gravimetric analysis)

Nickel dimethyl glyoximate, the complex formed between Ni(II) and dimethylglyoxime is soluble in hot water, mineral acids and in solution containing more than 50 % ethanol by volume, but it is insoluble in dilute ammonia. So, faintly acidic or hot nickel salt solution on treatment with slight excess of ethanolic solution of dimethyl glyoxime and then rendering the mixture faintly alkaline with NH4OH, precipitates rose-red colored Nickel dimethyl glyoximate

quantitatively.

Precipitation from hot and weakly acidic solutions gives more easily filterable precipitate. When a large excess of precipitant is used, some of the precipitate may dissolve in the alcohol present and so only a slight excess of the reagent should be added.



Reagents provided

Nickel (II) solution, 1% ethanolic solution of dimethyl glyoxime, ammonia solution

Procedure

**Determination of weight of crucible**

1. Take a crucible and heat it at 110°C in a hot air oven for 15 minutes.
2. Remove the crucible and cool in a dessicator for 10 minutes with dry gloved hands.
3. Then, weigh it on the balance and note its weight.

**Precipitation of Nickel dimethyl glyoximate**

1. Pipette out 20mL of the Ni(II) solution in a beaker.
2. Heat the beaker at 80°C on a water bath / hot plate and add 20mL of 1% ethanolic solution of dimethyl glyoxime followed by adding dilute ammonia solution until the smell of ammonia persists.
3. Then, heat the beaker on the water bath for 30 minutes. When the precipitate has settled down, add a drop of dimethyl glyoxime to test for complete precipitation.
4. Allow the beaker to cool and then filter through a crucible.
5. Wash the precipitate properly with cold water.
6. Dry the precipitate in the oven at 110°C for 45 minutes.
7. Cool it in the dessicator for 20 minutes.

Observation and calculations

Calculate the amount of Ni present.