TDC Part III
Practical (Lab Work)

Department of Chemistry

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TOPIC:- SYNTHESIS AND ANALYSIS

Nickel dimethylglyoxime

Objective

To prepare nickel dimethylglyoxime.

Requirements

Apparatus: Electronic weighing machine, beaker 500 mL, beaker 250 mL, Bunsen burner, desiccator, filtration apparatus, conical flask, funnel, glass rod, pair of tongs, tripod stand, wash bottle, watch glass, water bath, wire guaze, sintered glass crucible (G-3).

Chemicals required: Nickel ammonium sulphate 9 g

1 %alcoholic DMG

solution Ammonical

solution

Reagent preparation

Preparation of nickel ammonium sulphate solution: This solution is prepared by dissolving 9 g of nickel ammonium sulphate in distilled water and few mL of dil. hydrochloric acid in 500 mL measuring flask.

Preparation of 1% alcoholic DMG solution-This solution is prepared by dissolving 0.5 g of HDMG in 50 mL of distilled

water.

Preparation of 1:1 ammonical solution-This can be prepared by dissolving 25 mL of liquor ammonia with 25 mL of distilled water.

Theory

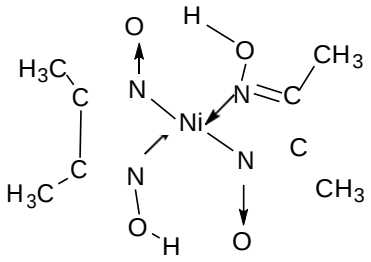
Nickel dimethylglyoxime [$Ni(DMG)_2$] complex obtained by the reaction of nickel ammonium sulphate with 1 %alcoholic dimethylglyoxime in ammonical medium,

$$NiSO_4\ (NH_4)_2SO_4.6H_2O \rightarrow NiSO_4 + (NH_4)_2SO_4 + 6H_2O$$

$$NiSO_4 + 2HDMG + 2NH_4OH \rightarrow \underset{ppt}{[Ni(DMG)_2]} + (NH_4)_2SO_4 + 2H_2O$$

Procedure

Prepared 1% alcoholic DMG solution is added in prepared nickel ammonium sulphate solution. Now add ammonia solution slowly with constant stirring until the smell of ammonia come out, a scarlet red precipitate of DMG is formed. The precipitate is digested on a water bath for about half an hour. The solution is filtered in a previously washed dried and weighted sintered glass crucible (G-3). Now dry it at 120°C in an electric oven. This precipitate is cooled in a desiccator and weighted.



Structure of nickel dimethylglyoxime complex

Result

The yield of nickel dimethylglyoxime is ..... g.