Lhakpa Sherpa 5/6/14

Chemistry 109/FEH

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Formal lab report 3

Title : Spectra and Beer’s Law

The main aim of this experiment is to determine lambda maxima for (CuNH3)42+, observe the change in intensity of color as solution become more concentrated and determining the molarity of (CuNH3)42+, solutions.spectrophotometer is used in this technique for a measurement of different concentrated solution to find absorbance value.at first This experiment is done by making sample of 10 ml of the stock 0.1 M CuSo4 , 5ml of 2.5 M NH3 and adding distilled water upto 50 ml in graduated cylinder and mixing them in beaker. wavelength is set to 420 nm at first to record absorbamce of (CuNH3)42+, and increase wavelength in difference of 10 nm till 650 nm with same sample and plot absorption spectrum of (CuNH3)42+, and determine its lambda maxima. second part of this experiment is done by beer's law plot. It shows increase in the absorbance with the increase in the concentration of (CuNH3)42+, .10 samples are made and measures absorbamce at 600 nm.varying amount of CuSo4 ( 1 to 10 ml) , 5ml 2.5 M NH3 and adding water upto 50 ml into graduated cylinder.  
At the end solutions (CuNH3)42+, of unknown molarity is measured at 600 nm and determine its molarity of unknown (CuNH3)42+, solution using Beer's law plot.

Introduction

Measurement of intensity and color can be done by using Spectrophotometry light or electromagnetic radiation can be classified in several ways. ultraviolet , visible, infra-red etc.From 400 nm to 750 wavelength are visible to eye. Componets of lights by their degrees of refraction according to wavelength when white light passes through prism is called spectrum. visible spectrum composed of rainbow colors. red to violet. each color has its own range and wavelength(nm).Measurement of absorbance at different wavelength start with 420 nm to 650 nm in intervAl of 10 is recorded.from this data ,absorption   
Spectrum of (CuNH3)42+, can be plotted and determine lambda maxima for cu(CuNH3)42+, beer law is also plotted using absorbance and concentration of (CuNH3)42+,.it show concentration is directly proportional to the absorbance.increase in the concentration with increase it's absorbance.calculation of el of (CuNH3)42+, can be done by using beer's law plot and its formula A=elc. this plot also helps to determine the molarity of unknown cu ( NH ) .

Procedure  
Spectrophotometer is used to measure absorbamce of the solutions.at first part   
At first 2 50 ml biuret is obtained from from stockroom.one filled with 2.5 M NH3 and the second one with 0.1 M cuso4. 10 ml of 0.1M copper sulfate and 5ml of 2.5 M NH3 and add water upto 50 ml in graduated sylinder. mix this sample in beaker and fill the cuvette with 3/4 of sample and place it on spectrophotometer .wavelength need to set at 420 nm at first and increase it with 10 intervals till 650 nm.absorption spectrum is plot at the end and determine lambda maxima for (CuNH3)42+,.second part of this lab is done by making 10 samples solutions with varying volume of copper sulfate from 1 to 10 ml with 5 ml 2.5 M NH3 and adding distilled water upto 50 ml in graduated cylinder.after this beers law is plot and calculate el for cu (CuNH3)42+, and it's molarity.