

IN THE NAME OF GOD

SELECTIVE KINETIC SPECTROPHOTOMETRIC  
DETERMINATION OF COPPER AT THE NANOGRAMS PER  
MILILITER LEVELS  
&  
AUTOMATIC ATOMIC ABSORPTION TITRATION

BY

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**DEDICATED TO:**

**My Mother**

**&**

**The Fragrant Memory of My Father**

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## ABSTRACT

### SELECTIVE KINETIC SPECTROPHOTOMETRIC DETERMINATION OF COPPER AT THE NANOGRAMS PER MILLILITER LEVELS

&

### AUTOMATIC ATOMIC ABSORPTION SPECTROPHOTOMETRY

By

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In this thesis a sensitive and selective method is proposed for the determination of nanogram amounts of copper. The method is based on the catalytic effect of copper on the reduction of PonceauS by sodium sulfide in an alkaline media. The rate of the reaction is monitored spectrophotometrically at 560 nm. The method allows determination of copper concentrations in the range 10-450 ng mL<sup>-1</sup> with a relative standard deviation of about 2%. The proposed method, which is highly selective to copper, has been applied satisfactory to its determination in real samples.

Atomic Absorption Spectrophotometry (AAS) is extensively used in analytical laboratories for quantitative determination of many cations. Due to the success in direct determination and also due to

more complex systems, it is rarely used as the endpoint detection system in titrations. In this study, we used AAS as a detection system for precipitation titrations.

The present study demonstrates that AA can be used for location of the endpoint of many precipitation titration especially in turbid solutions or when suitable visual indicator is not available or not applicable and also the method is suitable for titration of dilute solutions. It needs further work to improve the precision of the method.

## TABLE OF CONTENTS

Content	Page
List of Tables.....	XI
List of Figures.....	XIII
<b>CHAPTER I: INTRODUCTION.....</b>	<b>1</b>
1.1. General Introduction.....	1
1.2. Introduction to Kinetic Methods.....	2
1.2.1. Advantages of Kinetic Methods.....	3
1.2.2. Limitations of Kinetic Methods.....	5
1.2.3. Classification of Kinetic Methods.....	6
1.2.4. Catalytic Rate Methods.....	6
1.2.5. Types of Catalytic Effects Used in Kinetic- Based Analytical Determinations.....	6
1.2.5.1. Homogeneous Catalysis.....	6
1.2.5.2. Heterogeneous Catalysis.....	8
1.2.6. Analytical Methodology for Catalyst Determination.....	8
1.2.7. Utilization of Modified Catalytic Rates.....	11
1.2.8. Different Methods of Data Processing.....	11

Content.....	Page
1.2.8.1. Direct Computation Methods.....	12
1.2.8.2. Curve Fitting Methods.....	16
1.3. Introduction to Automatic Atomic Absorption Titration.....	18
1.3.1. Titrimetry.....	19
1.3.2. Endpoint Detection in Titrimetric Analysis.....	21
<b>CHAPTER II: LITERATURE REVIEW.....</b>	<b>22</b>
2.1. Copper.....	27
2.2. Ponceau S.....	35
2.3. Atomic Absorption spectrometry.....	36
2.4. Objective of Present Works.....	38
2.4.1. Kinetic Spectrophotometric Determination of Copper.....	38
2.4.2. Automatic Atomic Absorption Titration.....	39
<b>CHAPTER III: EXPERIMENTAL.....</b>	<b>40</b>
3.1. Experimental Section for Copper Determination.....	40
3.1.1. Preparation of Reagents.....	40
3.1.2. Apparatus.....	41
3.1.3. Absorption Spectra.....	41
3.1.4. Recommended Procedure.....	42

<b>Content</b>	<b>Page</b>
3.2. Experimental Section of Atomic Absorption Titration..	43
3.2.1. Apparatus.....	43
3.2.1.1. The Delivery System.....	43
3.2.1.2. The Detection System.....	45
3.2.1.3. The Interface.....	45
3.2.1.4. The Filter.....	45
3.2.1.5. The Pump.....	45
3.2.1.6. The Valve.....	46
3.2.2. The Titration Control Software.....	46
3.2.3. Reagent and Materials.....	48
<b>CHAPTER VI: RESULTS AND DISCUSSION.....</b>	<b>50</b>
4.1. Results of Copper Determination.....	50
4.1.1. Optimization.....	50
4.1.1.1. Effect of Concentration of KOH.....	51
4.1.1.2. Effect of Sulfide Concentration.....	52
4.1.1.3. The Effect of Concentration of Ponceau S .....	53
4.1.1.4. Effect of Ionic Strength.....	55
4.1.1.5. Effect of Measuring Time.....	55
4.1.1.6. Effect of Ethylene diamine.....	58
4.1.1.7. Effect of Temperature.....	60



Content	Page
4.1.2. Calibration Graphs.....	61
4.1.2.1. Calibration Graphs Obtained by Fixed time Method.....	61
4.1.2.2. Calibration Graphs Obtained by Slope Method.....	62
4.1.3. Precision and Accuracy and Limit of Detection...	66
4.1.3.1. Fixed Time Method.....	66
4.1.3.2. Slope Method.....	67
4.1.4. Interference Study.....	67
4.1.5. Application.....	67
4.1.6. Modification of the Method for Determination of Higher Concentrations of the Copper.....	71
4.1.7. Kinetic Parameters.....	74
4.1.7.1. Determination of the Order of Reaction.....	74
4.1.7.2. Determination of Activation Energy.....	80
4.2. Discussion.....	83
4.2.1. The Method Used for Rate Determination of Copper.....	83
4.2.2. Absorption Spectra.....	83
4.2.3. Optimization of Conditions.....	84

<b>Content</b>	<b>Page</b>
4.2.4. Calibration Curve.....	87
4.2.5. Effect of Diverse Ions.....	88
4.2.6. Activation Energy.....	89
4.2.7. Suggestions for Further Works.....	89
4.3. Results and Discussion of Atomic Absorption Titration.....	90
4.4. Conclusion.....	93
<b>REFERENCES.....</b>	<b>94</b>
<b>ABSTRACT AND TITLE PAGE IN PERSION</b>	

## List of Tables

Table.....	Page
4.1. Effect of concentration of KOH on the reaction rate.....	51
4.2. Effect of concentration of sulfide on the reaction rate.....	53
4.3. Effect of concentration of Ponceau S on the reaction rate....	54
4.4. Effect of concentration of $\text{KNO}_3$ on the reaction rate.....	56
4.5. Effect of measuring time on the reaction rate.....	57
4.6. Effect of concentration of ethylene diamine on the reaction rate.....	59
4.7. Effect of temperature on the reaction rate.....	61
4.8 Calibration data obtained by Fixed time method.....	62
4.9. Calibration data obtained by slope method.....	65
4.10. Results obtained by Fixed time method for reproducibility and accuracy.....	66
4.11. Results of reproducibility and accuracy obtained by slope method.....	67
4.12. Tolerance ratios of various ions in the determination of $100 \text{ ngml}^{-1} \text{ Cu}^{2+}$ .....	68

Table.....	Page
4.13. Analysis of real samples by the proposed method.....	70
4.14. Effect of concentration of sulfide on the reaction rate of $1\mu\text{g ml}^{-1}$ of copper .....	72
4.15. Calibration data obtained by Fixed time method for concentration of 0.02 M sulfide.....	73
4.16. The data for calculation of the order of the reaction with respect to sulfide.....	75
4.17. The data for calculation the order of reaction with respect to Ponceau S.....	76
4.18. The data for calculation of the order of reaction with respect to $\text{OH}^-$ .....	77
4.19. The data for calculation the order of reaction with respect to ethylene diamine.....	78
4.20. The data for calculation of the order of reaction with respect to copper.....	79
4.21. The experimental and calculated data for plotting the Arrhenius plot of uncatalyzed reaction.....	81
4.22. The experimental and calculated data for plotting the Arrhenius plot of catalyzed reaction.....	81

Table.....	Page
4.23. The accuracy of the titration of 25 $\mu\text{gml}^{-1}$ $\text{Ag}^+$ solution with 0.002 M iodide solution.....	90

## List of Figures

Figure.....	Page
3.1. Repetitive scan of the reaction mixture during a typical kinetic run.....	43
3.2. Schematic diagram of the titration system.....	44
4.1. Effect of concentration of KOH on the reaction rate.....	51
4.2. Effect of concentration of sulfide on the reaction rate.....	52
4.3. Effect of concentration of Ponceau S on the reaction rate..	54
4.4. Effect of ionic strength on the reaction rate.....	55
4.5. Effect of measuring time on the reaction rate.....	57
4.6. Effect of concentration of ethylene diamine.....	58
4.7. Absorbance versus time curve.....	59
4.8. Effect of temperature on the reaction rate.....	60
4.9. Calibration graph obtained by Fixed time method.....	63
4.10. Calibration graph obtained by slope method.....	64
4.11. Effect of the concentration of sulfide on the reaction rate of $1\mu\text{gml}^{-1}$ copper and blank.....	72
4.12. Calibration curve obtained by Fixed time method	

Figure.....	Page
for concentration of 0.02M sulfide.....	73
4.13. The log-log plot for calculation of the order of reaction with respect to sulfide.....	75
4.14. The log-log plot for calculation of the order of reaction with respect to Ponceau S.....	76
4.15. The log-log plot for calculation of the order of reaction with respect to hydroxide ion.....	77
4.16. The log-log plot for calculation of the order of reaction with respect to ethylene diamine.....	78
4.17. The log-log plot for calculation of the order of reaction with respect to copper .....	79
4.18. The Arrhenius plot for catalyzed and uncatlyzed reaction	82
4.19. Titration curve of 25 $\mu\text{gml}^{-1}$ $\text{Ag}^+$ with 0.002 M iodide.....	90