IN THE NAME OF GOD

SELECTIVE KINETIC SPECTROPHOTOMETRIC DETERMINATION OF COPPER AT THE NANOGRAMS PER MILLILITER 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

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AUTOMATIC ATOMIC ABSORPTION SPECTROPHOTOMETRY

By

Fatemeh Farjami

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^{-1} 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.

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