A visible spectrophotometric method for copper(II) analysis by using diethyldithiocarbamate ligand

Aurairuk Lobthaisong, Sasithorn Muncharoen*
Department of Chemistry, Faculty of Science, Burapha University, Bangsaen, Chonburi 20131, Thailand
*E-mail: muncharoen@go.buu.ac.th

Abstract: Determination of copper(II) ion based on complex formation with diethyldithiocarbamate ligand (DDTC) using a visible spectrophotometric method was developed in this work. The absorbance was measured at 450 nm as λ.max. The experimental conditions such as reaction time, concentration of DDTC and solution pH were optimized. Additional, interference effects were studied. The results illustrated that Beer’s law was observed in the copper(II) concentration range of 0.2-6.0 mg L⁻¹. The detection and quantitation limits were 6.23 x 10⁻⁴ and 2.37 x 10⁻³ mg·L⁻¹, respectively. Furthermore, the developed method was applied to determine copper(II) in laboratory waste waters which gave the reliable results.

Keywords: Copper; UV-Visible spectrometry; Laboratory wastewater; Diethyldithiocarbamate