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Synthesis Of An Analytical Reagent, its Spectroscopic Characterization And Studies Of Its Complexation Behaviour with Cu(II) Metal Ion And Its Applications

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ABSTRACT

Cu(II) was determined spectrophotometrically after precipitation with 2, 4 dihydroxy-5-iodo[2'-methyl] propiophenone oxime (DHIMPO) at room temperature at pH 5.0 in chloroform at 430nm. Beer's law was obeyed up to 8.13 ppm of Cu(II). Molar absorptivity and Sandell's sensitivity were found to be 7.03 x 10^2 lit $mol^{-1}cm^{-1}$ & 0.0903 µg/cm^2 respectively. Composition of chelate was determined using Job's method of continuous variation and Yoe and Jones mole ratio method which was found to be 1:2 (M:L). The stability constant determined spectrophotometrically was found to be 1.714 x 10^8. Gibb's free energy change for complex formation reaction was also calculated and found to be -11.30 k cal mol^{-1}. From TGA, the energy of activation was calculated using Broido method and found to be 35.85 k cal mol^{-1}. The reagent has been satisfactorily applied for the determination of copper in drain micro etch solution.

Keywords: Spectroscopic determination, Propiophenone oxime, DHIMPO.