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Liquid-Liquid Extraction and Spectrophotometric Determination of Some Metal Ions with Imine (Schiff Base) Derivative as an Analytical Reagent

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Abstract: *The spectrophotometric method is coupled with solvent extraction technique and used for the determination of Cu(II) using N,N'bis(O-hydroxy acetophenone) ethylene diimine(HAPED) as an analytical reagent. This reagent is synthesized in the laboratory and characterized by NMR, IR, Mass and elemental analysis for its purity. The reagent form a light pink coloured stable complex with copper metal, which can be quantitatively extracted into chloroform at pH 3.6. This Cu(II)-HAPED complex in chloroform exhibit intense absorption peak at 405nm. The study of change of colour intensity of Cu(II)-HAPED complex with varying concentration of reagent showed that 2cm3 of 0.1% of reagent is sufficient for full colour development of 100ppm copper solution. The stoichiometric ratio of complex studied by Job's contionuous variation method, mole ratio and slope ratio method. The molar absorptivity and Sandell's sensitivity are also calculated. The molar absorptivity is 4012.73 L/mol/cm and Sandell sensitivity is 0.0158 µg/cm2. The newly developed method is then applied to various commercial samples successfully and observed to be competable with earlier known methods. Beer's law is obeyed in the range of 1 to 10 ppm of copper solution giving linear and reproducible graph.*

Keywords: Sandell's Sensitivity; Spectrophotometric determination, Imine reagent, Copper(II).

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