



A simple and rapid on-line spectrophotometric determination of copper

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An on-line spectrophotometric method for the determination of copper has been developed. Cu(I) was complexed with 2, 9-dimethyl-1, 10-phenanthroline (Neocuproine) and the absorbance of Cu(I)-Neocuproine complex was then measured continuously at 456 nm. Cu(II) was off-line reduced to Cu(I) by ascorbic acid. The system was automatically controlled by the program. The parameters such as flow injection parameters, pH and reagent concentrations were optimized. Analytical performance of the system was investigated and the linear calibration curve was found in the range of 0.10 mg/L to 5.0 mg/L ($y = 1.641x + 0.074$, $r^2 = 0.994$). The limit of detection, LOD (3 sd/slope) of 0.10 mg/L and the relative standard deviation (RSD) within 5% (at 2.0 mg/L, $n=10$) were provided. Automation of the system enabled us to get the sample injection frequency up to 60 injections/hour. No major interferences such Fe^{2+} , Mg^{2+} and Zn^{2+} were observed. The developed method will be applied to the determination of copper in water samples.

Keywords: Copper; Neocuproine; On-line spectrophotometry