

## Sensitive Determination of Copper(II) by Square Wave Anodic Stripping Voltammetry with Tetracarbonylmolybdenum(0) Multiwalled Carbon Nanotube Paste Electrode

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**Abstract :** A highly selective and sensitive carbon paste electrode modified with multiwall carbon nanotubes and 2,6-diacetylpyridine-di-(1R)-(-)-fenchone diazine tetracarbonylmolybdenum(0) complex was used for determination of trace amounts of Cu(II) using square wave anodic stripping voltammetry (SWASV). The influences of experimental variables on the proposed electrode such as pH, supporting electrolyte, preconcentration potential and time, and square wave parameters were investigated. Under optimal conditions, the proposed electrode showed a linear relationship with concentration in the range of  $1.0 \times 10^{-10}$  to  $1.0 \times 10^{-6}$  M Cu(II) with a limit of detection  $8.0 \times 10^{-11}$  M. The relative standard deviation ( $n = 5$ ) for a solution containing  $1.0 \times 10^{-6}$  M of Cu(II) was 0.036. The presence of various cations (in 10 and 100-folds concentration) did not interfere. Electrochemical impedance spectroscopy (EIS) showed that the charge transfer at the electrode-solution interface was favourable. The proposed electrode was applied for the determination of Cu(II) in several water samples. Results agreed very well with those obtained by inductively coupled plasma-optical emission spectrometry. The modified electrode was then proposed as an alternative for determination of Cu(II).

**Keywords :** chemically modified electrode, Cu(II), square wave anodic stripping voltammetry, tetracarbonylmolybdenum(0)

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