

Abstract

The aim of this bachelor's thesis is to study the possibilities of electrochemical generation of volatile forms of copper, nickel and zinc with atomic absorption spectrometry detection. The electrochemical generation of volatile compounds were set in continuous flow analysis. A laboratory made on-membrane electrolytic cell with platinum electrodes was used for all experiments. Optimization of different conditions for electrochemical generation for specified analytes was determined via empiric methods. Optimized parameters were as follows: flow rate of carrier gas and electrolyte and generation current. The calibrations under the optimal values for both copper and zinc were measured. Other extended measurements were performed with zinc. For example, the optimization of electrolyte concentration, the influence of the atomization temperature, reversing polarity of the electrodes, the flow rate of electrolyte, the influence of salts as electrolytes, influence of DDTC, Antifoam B and oxygen addition. Possibilities of determination of zinc compounds by electrochemical generation were investigated at the end.

Key words

Electrochemical generation, volatile compounds, atomic absorption spectrometry, non-membrane flow-through electrolytic cell, quartz tube atomizer, copper, nickel, zinc