

Abstract

The aim of this work was to reduce transport losses during the determination of Cd by using electrochemical generation of volatile compounds connected to AAS. Firstly, optimum experimental conditions were found for analytical determination of Cd using electrochemical generation of its volatile form.

The second part of this work was focused on avoiding of cadmium condensation on cold inner walls of inlet tube of the quartz atomizer. The two successful devices connecting directly the separator of gas from the liquid phase and the quartz atomizer were constructed. Thus, the transporting way for volatile form of Cd was made as short as possible. Better results were achieved using the device which contains sintered glass in the bottom part of the gas-liquid separator for further inlet of carrier gas (Ar). Further reducing of transport losses of the volatile form of Cd was achieved using a heating of the inlet tube of the atomizer on 310°C.

Thanks to these two improvements of the apparatus ca three times higher sensitivity was reached using the technique of electrochemical generation of volatile form of Cd and AAS detection. Also corresponding depression of the limit of detection ($0,064 \mu\text{g}\cdot\text{cm}^{-3}$) was got.

Keywords:

Determination of Cd, atomic absorption spectrometry, elektrochemical generation of volatile compounds, quartz atomizer, reducing of transport losses in the gaseous phase