Abstract

This thesis deals with the development of a method suitable for determination Te(IV) by UV-photochemical generation of volatile compounds (UV-PVG) in liquid samples. Atomic absorption spectrometry (AAS) and atomic fluorescent spectrometry (AFS) were used as detection methods.

The basis of the apparatus for UV-PVG was a mercury lamp wrapped by PTFE capillary. Firstly, the experimental parameters were optimized for both methods. The optimized parameters were the type, concentration, pH and flow rate of the reaction medium, the length of the PTFE reaction coil, carrier gas flow rate (argon), supportive gas flow rate (hydrogen) and atomization temperature. The figures of merit with both detection methods were determined and compared after the method was optimized. Detection limits achieved for these two detection methods were 6,0 μg dm^{-3} for AFS and 1,50 μg dm^{-3} for AAS. Performed interference study confirmed a significant effect of many cations of transition metals and hydride forming elements on tellurium determination. The influence of nitric acid in the sample was studied separately.

The suitability of the method for tellurium determination was confirmed by using a spiked certified reference material.