# Abstrakt EN

The present diploma thesis deals with the electrochemical generation of volatile tellurium compounds in connection with atomic absorption spectrometry with the main goal to increase the response of the tellurium signals and thus expand the existing knowledge about this element. Tellurium is one of the heavier elements that forms less stable volatile compounds. The reason for choosing these elements was the fact that its concentration increases mainly in landfills where it is released into the environment, which can have an ecological impact and an impact on human health.

In the first step, two types of electrochemical cells were constructed - a thin-film flow electrochemical cell with and without an ion exchange membrane and an apparatus with a flow injection arrangement. The choice of cell types, cathode and anode material and apparatus design was chosen based on a literature research. Attention was paid to the optimization of reaction conditions for electrochemical generation of volatile tellurium compounds, which significantly affect the efficiency of generation using a heated quartz tube atomizer. The optimized parameters were electrolyte concentration, carrier gas volume flow rate, electrolyte volume flow rate and generation current.

In the second step, the effect of the temperature of the working solutions and the temperature of the phase separator on the analytical signal of the tellurium was investigated in order to increase it. Under optimal conditions, calibration dependences were measured and the basic analytical characteristics of the tellurium determination were determined. The basic analytical characteristics for both types of duties were also compared.

It was found that the temperature of working solutions and the phase separator have no significant effect on the increase of the tellurium analytical signal. Thin-layer flow electrochemical cell with ion exchange membrane has lower LOD (0.082 mg $l^{-1}$) and better sensitivity (0.090 l $mg^{-1}$) than thin-layer flow electrochemical cell without ion exchange membrane with LOD (0.312 mg $l^{-1}$) and sensitivity (0.029 1 $mg^{-1}$).



# Keywords

atomic absorption spectrometry, tellurium, electrochemical generation of volatile compounds, quartz atomizer