



Contribution ID: 996

Type: Verbal

DEVELOPMENT OF MODIFIED GRAPHENE BASED ELECTRODE FOR ANALYSIS OF URANIUM IN AQUEOUS SOLUTIONS

Friday, May 20, 2022 9:06 AM (18 minutes)

Presence of uranium in both natural and anthropogenic waters creates demand for the new ways of systematic monitoring of its concentration. New analytical electrode based on powdered graphene and modified with specifically designed zeolite sorbent and similar to well-known and widely used graphite paste electrode, [1], has been tested for the ability to analyze the uranium content in aqueous systems by differential pulse voltametry.

The main aim of the work is to assess development opportunities for analytical electrodes use at typical concentrations for mining sludge and lagoons formed after mining, as well as for adjacent natural waters, [2]. The electrode was therefore tested in concentration areas of ppm order and below (up to the order of ppb). Electrode shows pure response (Fig. 1) with linear calibration curve.

Electrochemical measurements with electrodes of this type can serve as fast, easy to use and relatively cheap alternative to commonly used methods requiring complicated and expensive instrumentation.

Acknowledgement: This work was supported by the Technology Agency of the Czech Republic under grant agreement No. TH04030285 "Innovative sorbents based on zeolite modified by ionic liquid for sorption and detection of uranium and heavy metals"

Primary authors: Dr SZATMÁRY, Lorant (ÚJV Řež, a.s.); Dr STRAKA, Martin (UJV Rez, a.s.); Mr ŠUHÁJEK, Michal (ÚJV Řež, a.s.); Dr ECORCHARD, Petra (Institute of Inorganic Chemistry of the Czech Academy of Sciences)

Presenter: Dr STRAKA, Martin (UJV Rez, a.s.)

Session Classification: Nuclear Analytical Methods

Track Classification: Nuclear Analytical Methods