**Bioelectroanalytical Methods for High-Throughput Screening and Sensitive Determination of Environmental Pollutants**

Rapid *in situ* monitoring of detrimental organic xenobiotic compounds in both the living and working environment is one of the most important tasks of modern analytical chemistry. Electrochemical techniques, being connected with modern flow injection or batch injection sampling systems, become suitable tools for high-throughput screening of electrochemically active xenobiotics because they are inexpensive, sufficiently sensitive, and they present an independent alternative to so far prevalent spectrometric and separation assays. Additional added value is obtained by combining electrochemical techniques with biorecognition elements (DNA, enzymes, antigens/antibodies) and various signal-enhancing nanoparticles to provide highly sensitive and selective electrochemical biosensors for environmental toxicity screening.

The aim of the proposed post-doc project is the preparation, development, and subsequent testing of new electrochemical (bio)sensors for high-throughput screening and sensitive determination of selected environmental pollutants (chemical carcinogens, pesticides, drugs, etc.). Flow injection analysis (FIA) and/or batch injection analysis (BIA) are planned to provide fast sampling systems for electrochemical detection, where non-traditional electrode materials (e.g., silver amalgam, boron-doped diamond, micro-structured forms of carbon) will be used for construction of newly designed miniaturized detection cells. Special attention will be paid to increasing sensitivity and selectivity of the developed (bio)sensors using: (i) utilization of host–guest interactions between the analyte and the biorecognition element (DNA, enzyme, antigen/antibody), (ii) incorporation of various signal-enhancing nanomaterials (carbon-based nanostructures, metal nanoparticles) on the electrochemical transducer surface, and (iii) application of modern preliminary separation and preconcentration techniques (micro solid-phase extraction, single-drop micro-extraction, gas-diffusion micro-extraction, hollow-fiber extraction).

**Minimal salary:** Equivalent of 2000 EUR / month

**Profile of an ideal candidate:** Completed PhD or a fixed date of PhD defense  
Good knowledge of English (FCE equivalent or better)  
Strong background in analytical chemistry and electrochemistry (especially in application of electrochemical sensors and biosensors)

The applicant should provide the following documents before 1.8.2019 to the project supervisor and in copy to email foreign@natur.cuni.cz:

- Application Form
- Letter of Reference
- Detailed CV
- List of publications
- Copy of university diploma