

## ANALYTICAL CHEMISTRY

### **Development of new green procedures for the analysis and synthesis of substances with a potential biological effect.**

supervisor: prof. Mgr. Vasil' Andruch, DrSc. (vasil.andruch@upjs.sk)

consultant: RNDr. Mária Vilková, PhD.

study form: full time

**Annotation:** Nowadays chemists are directing their attention to the development of procedures that would meet the requirements of the so-called green chemistry, as evidenced by the continuously increasing number of publications devoted to this issue. The topic is focused on exploring the possibilities of using new green reagents both for separation, analysis and organic synthesis of substances with potential biological effect. The task will also be to develop new sample pretreatment procedures as well as subsequent separation and detection of analytes using chromatographic and spectral methods.

### **Development of novel miniaturized and automated analytical methods.**

supervisor: prof. Mgr. Vasil' Andruch, DrSc. (vasil.andruch@upjs.sk)

consultant: RNDr. Jana Šandrejová, PhD.

study form: full time

**Annotation:** Analytical chemists draw their attention to miniaturization and automation of analytical procedures, as evidenced by continually increasing number of articles in this issue. The theme is focused on the design of new schemes, technical and technological solutions for miniaturization and automation of analytical procedures; design of new solutions to overcome disadvantages and limitations microextraction techniques; development of microextraction procedures using ultrasound and vortex, and the development of new optical / visual sensors.

### **Green organic solvents compatible with spectroanalytical detection techniques.**

supervisor: prof. Dr. Yaroslav Bazel, DrSc. (yaroslav.bazel@upjs.sk)

consultant: RNDr. Rastislav Serbin, PhD.

study form: full time

**Annotation:** Development and implementation of innovative environment-friendly systems and procedures compatible with multiple analytical detection techniques such as AAS, fluorescence, UV-Vis spectrometry. Development of new methods of determination of selected analytes in environmental samples, biological fluids, pharmaceuticals, new materials and others.

### **The application of polysaccharide and cyclofructan chiral selectors in the separation of enantiomers.**

supervisor: doc. RNDr. Tat'ána Gondová, CSc. (tatana.gondova@upjs.sk)

study form: full time

**Annotation:** The aim of this work is to develop new liquid chromatographic methods for analysis of biologically and pharmacologically important compounds in different matrices using various enantioselective sorbents.