

ANALYTICAL CHEMISTRY

Development of novel miniaturized and automated analytical methods.

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

study form: full time

Annotation: In recent years we can see that analytical chemists are showing a greater-than-ever interest in miniaturisation and automation of the analytical methods. This is evidenced by the steadily growing number of publications devoted to this subject. The project is aimed to design of new schemes, technical and technological solutions for miniaturization and automation of analytical procedures; to propose the solutions enabling to overcome the disadvantages and drawbacks of microextraction techniques, the development of microextraction procedures with the use of ultrasound and vortex and the development of novel optical/visual sensors.

The use of environmentally friendly solvents to improve the characteristics of spectral analytical methods.

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

study form: full time

Annotation: Introducing new systems and innovative analytical techniques, expanding the use of environmentally friendly micro-extraction techniques, in particular using switchable solvents, linking them to analytical detection techniques such as AAS, fluorescence and UV-Vis spectrometry. Using experimental and theoretical methods of optimizing the analytical signal. Development of novel methods for selected analytes determination.

The use of micro-extraction techniques and high performance liquid chromatography (HPLC) in the analysis of bioactive substances at a low concentration level.

supervisor: doc. RNDr. Katarína Reiffová, PhD. (katarina.reiffova@upjs.sk)

study form: full time

Annotation: The present trend in analytical chemistry in the field of pre-treatment of complex samples is targeted on the development of new micro-extraction methods using analytical systems with a low volume of analytical reagents. The main aim of the proposed topic will be the development of a new two-step analytical method suitable for effective preconcentration and subsequent determination of the selected group of bioactive substances at a low concentration level.