

## ANALYTICAL CHEMISTRY

### **Research of the analytical techniques suitable for dynamic online control.**

supervisor: prof. Dr. Yaroslav Bazel, DrSc.

study form: full time

Annotation: The use of experimental and theoretical methods of optimization of the analytical signal. In situ monitoring during dynamic processes with the use of contemporary instrumental methods including optical probes, SIA and sensors. Development of novel kinetic, catalytic, spectrophotometric methods for selected analytes determination.

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

supervisor: prof. Mgr. Vasil' Andruch, DrSc.

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 modern extraction techniques and high performance liquid chromatography (HPLC) to analyze of bioactive substances at a low concentration level.**

supervisor: doc. RNDr. Katarina Reiffová, PhD.

study form: full time

Annotation: Development and optimization of extraction method for pre-treatment of complex sample, optimization of chromatographic conditions for analysis of selected group of bioactive substances by liquid chromatography method. Validation of the method.

### **Determination of Tobacco-specific nitrosamines (TSNAs) in urine by ultra-performance liquid chromatography-tandem mass spectrometry (UPLC-MS/MS).**

supervisor: doc. RNDr. Katarina Reiffová, PhD.

study form: external

Annotation: Development and optimization of chromatographic conditions for quantification of TSNAs in urine by UPLC-MS/MS method, optimization of MS/MS parameters, matrix effect, validation of the method.