

# DEPARTMENT OF ANALYTICAL CHEMISTRY

**Head of Department:**  
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## I. STAFF

### Full Professors:

Dušan Bustín, PhD, DSc; Ján Krupčík, PhD, DSc; Ján Labuda, PhD, DSc; Jozef Lehotay, PhD, DSc;  
Eva Matisová, PhD, DSc; Ján Mocák, PhD, DSc;

### Associate Professors:

Ernest Beinrohr, PhD; Eva Benická, PhD; Katarína Hroboňová, PhD; Miroslav Rievaj, PhD; Jana Sádecká, PhD;  
Peter Tomčík, PhD (since 10.7.2006); Viktor Vrábel, PhD;

### Assistant Professors :

Tatiana Buzinkaiová, PhD; Andrea Hercegová, PhD; Pavol Májek, PhD; Alena Manová, PhD; Pavol Tarapčík, PhD;

### Research Fellows:

Adriana Ferancová, PhD; Milena Dömötöröová (till 30.9.2006); Svetlana Hrouzková, PhD; Janka Mydlová (since 1.10.2006); Tatiana Rojkovičová, PhD; Ivan Skačáni, PhD; Ivan Špánik, PhD;

### PhD Students:

František Čacho (since 1.10.2006); Andrea Fedurcová (till 31.5.2006); Júlia Galandová; Stanislava Hlúbiková;  
Renáta Húšková (since 1.10.2006); Antónia Janáčková (since 1.10.2006); Michal Kirchner; Dáša Kružlicová;  
Miroslava Lachová; Damián Meričko; Janka Mydlová (till 30.9.2006); Renáta Ovádeková; Milan Střelec (till 30.6.2006); Darina Šimková (since 1.10.2006); Ľubomír Švorc (since 1.10.2006);

### Technical staff:

Marta Benešová; Anna Chalupková; Ľubica Zajacová

## II. TEACHING AND RESEARCH LABORATORIES

### A. Teaching laboratories:

Laboratory of capillary gas chromatography and MS  
Laboratory of high performance liquid chromatography  
Laboratory of capillary isotachopheresis  
Laboratory of electroanalytical methods  
Laboratory of molecular spectrometry  
Clean laboratory for trace analysis with atomic spectrometry (AAS, OES-ICP)  
Laboratory of electrochemical pre-concentration for atomic spectroscopy  
Laboratory of bioanalytical chemistry

### B. Research laboratories:

Laboratory of organic synthesis  
Laboratory of capillary gas chromatography  
Laboratory of high performance liquid chromatography  
Laboratory of capillary isotachopheresis  
Laboratory of electroanalytical methods  
Laboratory of molecular spectrometry  
Laboratory of atomic spectroscopy  
Laboratory of bioanalytical chemistry

## III. TEACHING

### A. Undergraduate Study:

|                         |                                     |         |         |
|-------------------------|-------------------------------------|---------|---------|
| <b>3. semester (Bc)</b> | Analytical Chemistry I (1100, 1200) | 2/0/0/0 | Benická |
|                         | Analytical Chemistry I (1600, 1720) | 1/0/0/0 | Labuda  |
|                         | Analytical Chemistry I (1710)       | 2/1/0/0 | Benická |

|                          |   |          |                    |
|--------------------------|---|----------|--------------------|
|                          | Laboratory Practice AC I (1100, 1200, 1710)           | 0/0/0/4  | Benická            |
|                          | Laboratory Practice AC I (1600, 1720)                 | 0/0/0/2  | Labuda             |
| <b>4. semester (Bc)</b>  | Analytical Chemistry I                                | 2/2/0/0  | Beinrohr, Vrábel   |
|                          | Laboratory Practice AC I                              | 0/0/0/4  | Hercegová          |
| <b>5. semester (Bc)</b>  | Analytical Chemistry II                               | 2/2/0/0  | Bustín, Rievaj     |
|                          | Laboratory Practice AC II                             | 0/0/0/4  | Manová             |
|                          | Testing and Quality Control                           | 1/1/0/0  | Špánik             |
| <b>6. semester (Bc)</b>  | Semester Project                                      | 0/0/0/4  | Sádecká            |
| <b>1. semester (MSc)</b> | Analytical Chemistry of Complex Inorganic Mixtures    | 2/0/0/0  | Hercegová          |
|                          | Anal. Chemistry of Complex Organic and Biol. Mixtures | 2/0/0/0  | Sádecká            |
|                          | Analytical Spectrometry                               | 2/0/0/0  | Beinrohr           |
|                          | Laboratory Practice I                                 | 0/0/0/10 | Sádecká            |
|                          | Computer Evaluation of Analytical Measurement         | 2/0/0/0  | Májek, Mocák       |
|                          | Biosensors  | 2/0/1/0  | Labuda             |
| <b>2. semester (MSc)</b> | Techniques of Mixtures Separation                     | 2/0/2/0  | Matisová, Valigura |
|                          | Laboratory Practice II                                | 0/0/0/6  | Sádecká            |
|                          | Electrochemistry and Electroanalytical Chemistry      | 2/0/1/0  | Bustín             |
|                          | Analytical Separation of Compounds                    | 2/0/1/0  | Krupčík            |
|                          | Trace Analysis and Microanalysis                      | 2/0/0/0  | Beinrohr           |
|                          | Automatisation of Analytical Chemistry                | 2/0/0/0  | Rievaj             |
| <b>3. semester (MSc)</b> | Bioanalytical Chemistry                               | 2/0/1/0  | Labuda, Mocák      |
|                          | Identification of Chemical Substances                 | 2/0/1/0  | Lehotay, Liptaj    |
|                          | Laboratory Practice of Specialisation                 | 0/0/0/10 | Sádecká            |
|                          | Automatisation of Analytical Chemistry                | 2/0/0/0  | Rievaj             |
|                          | Analytical Chemistry of Environment                   | 2/0/0/0  | Benická            |
|                          | Nuclear Analytical Chemistry                          | 2/0/0/0  | Tarapčík           |
|                          | Trace Analysis and Microanalysis                      | 2/0/0/0  | Beinrohr           |
| <b>4. semester (MSc)</b> | Laboratory of Diploma Work                            | 0/0/0/27 | Sádecká            |

#### IV. CURRENT RESEARCH PROJECTS

##### **A. VEGA Project No 1/2460/05 Thermodynamic study of enantiomer separations by HPLC, correlation studies using artificial neural networks, development of novel analytical methods for determination of biological relevant compounds (Jozef Lehotay).**

The set of chromatographic data – enantioselectivities, retention factors of many organic compounds was used as a training set and the final artificial neural networks was used for prediction and optimization of enantioselective separations. Kinetic and thermodynamic aspects of molecular chiral recognition, enthalpic and entropic evaluation of chiral separation were studied.

Project duration: from 01.01.2005 to 31.12.2007

##### **B. VEGA Project No 1/2464/05 Development, metrological and chemometric evaluation of electrochemical and spectrometric techniques of trace analysis with special emphasis to clinical, food and environmental problems (Dušan Bustín).**

Research study of new instrumental techniques and sensors for electroanalytical chemistry and spectrometry is concerned in the solution of practical problems of trace analysis including speciation of the analytical sample components, which exhibit e.g. a different toxicity, biological activity or oxidation-reduction properties. Chemometric characterisation, classification and assessment of clinical, biological, food and environmental samples is performed by using modern techniques of multivariate data analysis, artificial neural networks and similar algorithms. Attention is paid to elaboration and optimisation of electrochemical enrichment procedures for selected group of metals for atomic spectrometry, chemical speciation study for arsenic and selenium, investigation of coulometric titrations in thin layer systems for simple and rapid determination of electroactive species such as metals, some organic and inorganic substances.

Project duration: from 01.01.2005 to 31.12.2007

**C. VEGA Project No 1/2461/05 Development of new methods for fast chromatographic analysis of isomers and enantiomers of volatile organic compounds in multicolumn and multidimensional coupled systems hyphenated to mass spectrometry (Ján Krupčík).**

The project aims to the (i) development of the concise, systematic and optimized methods of evaluation of data of complex samples containing volatile compounds of similar properties, including chiral compounds, achieved by fast chromatographic techniques with universal or selective detection, including MS, via single- and more-dimensional separations; (ii) development of advanced prediction methods for determination of hyphenated systems properties and determination of chromatographic properties of enantiomers.

Project duration: from 01.01.2005 to 31.12.2007

**D. VEGA Project No 1/2463/05 Fast GC for (Ultra)Trace Analysis of Organic Compounds in Complex Samples (Eva Matisová).**

Project searches possibilities and limitations of fast capillary gas chromatography and its combination with mass spectrometry for (ultra)trace analysis of volatile and semivolatile organic compounds in multicomponent model and predominantly real environmental samples with the aim of fast separation, increase of resolution and sensitivity. A part of the project is devoted to the evaluation of factors influencing discrimination/degradation of analytes, broadening of chromatographic zone, focustion, peaks shape, quality of analytical signal, and their optimisation under the conditions of ultratrace analysis. A part of the project is directed to increasing sensitivity of fast GC, GC-MS in combination with effective isolation and preconcentration techniques and investigation of the influence of matrix effects on robustness and quality of analytical results.

Project duration: from 01.01.2005 to 31.12.2007

**E. VEGA Project 1/2462/05: Chemical toxicity sensors – investigation of selected environmental chemical risk factors using biosensors based on DNA and lipids (Ján Labuda).**

Detection of chemical association interactions and damage to deoxyribonucleic acid (DNA) and lipids serve for rapid and inexpensive screening of the chemicals toxicity. Within the project, chemical interactions of environmental carcinogens such as arsenic and tin compounds as well as selected aromatic and heterocyclic compounds, in particular their nitro-derivatives, with DNA and lipids immobilized on the surface of electrochemical signal transducers are investigated. Application of the electrochemical biosensors allows also *in vitro* generation and testing of potential metabolites and an investigation of mechanisms of risk species effects. This leads to the methodical development of new screening tools based on biosensors and bioelectronic chips. Possibilities of the biopolymers protection against a structural damage by environmental carcinogens using natural and synthetic antioxidants are studied too.

Project duration: from 01.01.2005 to 31.12.2007

**F. APVV Project 20-015904: New biomaterials and biosensors for clinical use (Ján Labuda).**

Preparation of new biomaterials based on biopolymers and bioinorganic materials for clinical application as well as biosensors based on deoxyribonucleic acid (DNA) and lipoproteins (LDL) for direct use in clinical medicine.

Project duration: from 01.01.2005 to 31.12.2007

**G. APVT Project 27-010304: Modification and optimalization of more sensitive measuring system of electrochemical DNA/SPE biosensor based on nanocarbon for the evaluation of effect of lipid compounds on DNA (Adriana Ferancová).**

The project aims at the study and evaluation of the activity of selected oxidation products of lipids on the DNA using new detection system based on carbon nanotubes modified DNA biosensor. Specific primary (hydroperoxides) and secondary lipid oxidation products can play an important role in the damage to DNA resulting in faster ageing process, neurodegeneraitve, carcinogenic or cardiovascular diseases.

Project duration: from 01.07.2006 to 15.12.2006

**H. APVT Project 20-002904: Identification of suitable authentication markers and development of optimal analytical methods for their determination in selected food commodities (Ivan Špánik).**

The major objective of project is identification of potential authentication markers and development of suitable analytical methods and sample treatment procedures for their determination. The first part of project covers determination of qualitative and quantitative data about selected authentication markers (including enantiomeric composition of optically active compounds) in selected food commodities, mainly for those that are most frequently distributed in Slovakian market (juices, ketchup and honey). Obtained data will be summarized in authentication markers database, which will be tested on unknown samples of food commodities commonly distributed on Slovakian market. The second part of project is aimed on detailed mapping of chemical composition of food commodities that are included in Slovak Republic claim on Protected Denomination of Origin, Protected Geographical Indication or Traditional Speciality Guaranteed (mainly beverages) by available single-, multidimensional and hyphenated chromatographic systems.

Project duration: from 01.01.2005 to 31.12.2007

**CH. NATO Project No SFP 977983 Minimisation of Pesticide Residues in Processed Products and the Environment (Eva Matisová).**

The project refers to pesticide science and more specifically to pesticide chemistry, and analytical methodology of residues. Pesticide residues undergo significant changes in chemical structure and concentration during food processing. The research work in the project is planned to contribute to better understanding of the effects of food processing on pesticide residues. Perfection of the analytical methodologies for detection and determination of pesticide residues at extremely low concentrations allowed in baby foods will be one of the scientific contributions of the project. Existing methods will be modified or new methods will be developed, distinguished by sufficient precision and reliability of determination of residues at or below the concentration level of 0.01 mg/kg, required by the EU directives on baby food. The identification and assessment of the critical points in the food technology processes will be a contribution to food technology.

Project duration: from 01.02.2003 to 30.09.2006

**I. APVV Project -20-035205: Development of new HPLC and GC methods with specific selectivity on isomer analysis of some biologically active compounds (Jozef Lehotay).**

The main topics of the project are: the development of new chromatographic methods with specific selectivity for the separation of isomers and enantiomers of biologically active compounds with use of ionic liquids (in HRGC, and LC) and enantioselective stationary phases of new types (HPLC and HRGC); study of structure-chromatographic behavior relationships of biologically important compounds in this new types of chromatographic systems (and phases); theoretical studies of prediction methods for selected compounds behavior utilising advanced methods of modelling; study of separation mechanism and determination of important interactions for new types of phases, kinetic studies; the development of coupled separation techniques containing the parts with new type selectivity, and techniques of selective liquid-phase preseparation of samples with complex biological matrix.

Project duration: from 01.05.2006 to 30.04.2009

**J. EUREKA Project E!3109: Advanced Portable System for Explosive Agents Sampling, Detection and Analysis (Eva Matisová).**

Project relates to the science and technology. The contribution to the science and technology should be the miniaturisation of analytical instrumentation – the development of the portable analyser of the low mass for the detection of explosives in the air and other sources based on the modern technologies in sampling, separation and detection.

Project duration: from 01.04.2004 to 31.12.2006

#### **K. APVV Project-20-000705: Fast Gas Chromatography – Mass Spectrometry for environmental and food analysis of selected groups of organic pollutants (Eva Matisová).**

Project is devoted to development of fast and sensitive analytical methods for toxic compounds monitoring, particularly on ultra-trace concentration level. This follows the recent scientific requirements for the better understanding of pollutants effects, the increase of reliability of analytical results, what stimulates the establishment of legal directives to better control of pollution to protect the health of inhabitants. The aim is not to use the highly sophisticated and costly instrumentation but relatively robust techniques. The promising solution to reach the low LOQs, particularly in complicated matrices is the combination of converting a sample into a suitable form for measurement (utilising the fast and effective preparation methods) and subsequent analysis under the optimized fast GC-MS conditions. The parameters and robustness of the developed methods will be evaluated using chemometric approaches.

Project duration: from 01.05.2006 to 30.04.2009

#### **L. Applied Research Project, Ministry of Education of SR: Use of biosensors, biomaterials and biosignals in medicine (Ján Labuda).**

Integrated project of the Centre of biomedical engineering of the STU in Bratislava. Construction and standardization of electrochemical biosensor based on DNA. Preparation of hydrogel systems with programable diffusion properties for biomedical applications including drug delivery. Evaluation of biosignals of patients by using ICT.

Project duration: from 01/2006 to 12/2009

### **V. CURRENT EDUCATION PROJECTS**

#### **A. European Social Fund Project, Ministry of Education of SR No 13120200086: MediTech - innovation program of modern biomedical technologies (Ján Labuda).**

Aim of the project is a development of human sources within biomedical engineering in the region of Bratislava. The project covers activities of the Centre of biomedical engineering of the STU in Bratislava and it is devoted to students, young research workers and research workers.

Project duration: from 07/2006 to 02/2008

#### **B. Grant KEGA No 3/3071/05: Analytical chemistry - Electronic collection of the exercises (Pavol Tarapčík).**

The project is directed to creation of supporting means for teaching and learning calculation in analytical chemistry. The products will allow produce individual set of exercises with desired content and with individual data in each problem.

Project duration: from 01.01.2005 to 31.12.2006

#### **C. CEEPUS Project No PL-0130-05/06: Education in Separation Methods for Organic Environmental Analysis in XXI. Century (Ján Krupčík).**

The main objective of this project is to improve the quality of MSc and PhD education in Analytical Chemistry at the cooperating universities, with the emphasis on modern analytical separation methods. This will be accomplished by exchange both of graduated and PhD students as well as teachers between the University of Technology Graz, University of Pardubice, Nicolaus Copernicus University in Toruń, University of Łódź, University of Veszprém, Medical Academy in Gdańsk and the Slovak University of Technology in Bratislava. Special attention will be paid on the application of hyphenated techniques and on the fitting of the educational process to the needs and settings of the European Community.

Project duration: from 01.01.2005 to 30.09.2006

#### **D. Grant KEGA No 3/3072/05: A hypertext textbook of analytical chemistry (Pavel Májek).**

This form of textbook is intended as very flexible textbook of analytical chemistry useful for individualized study. It will be realized as product with controlled depth of information, which can be modified according different study plan.

Project duration: from 01.01.2005 to 31.12.2006

#### **E. Grant KEGA No 3/2238/04: The preparation of modern book on analytical separation methods (Jozef Lehotay).**

The aim of project is the preparation a new book "Encyclopedia of separation methods for students. The book involved new separation techniques specially in liquid and gas chromatography and electrophoreses.

Project duration: from 01.10.2004 to 30.09.2006

#### **F. Development project 2005: Innovation of the laboratory of biomaterials and laboratory of biomedical informatics of the Centre of Biomedical Engineering of STU (Ján Labuda).**

Innovation and building of unique laboratories at the Faculty of Chemical and Food Technology and Faculty of Electrical Engineering and Information Technology.

Project duration: from 01.06.2005 to 31.05.2006

## **VI. COOPERATION**

### **A. Cooperation in Slovakia**

| <b>Institution</b>   | <b>Type of cooperation</b>  | <b>Responsible person</b>   | <b>Duration</b>       |
|--|---|---|-----------------------|
| <b>Faculty of Informatics and Information Technologies, Bratislava</b> | Interdigitated array of microelectrodes   | Řeháček V., research fellows, Ilkovičova 3, 841 04 Bratislava                                       | 01.01.1994-           |
| <b>TU, Trenčín</b>   | Development of new measuring methods  | Liška M., prof. Ing. DrSc., TU Trenčín  | 01.07.2006-31.12.2007 |
| <b>Ministry of Agriculture, Bratislava</b>                             | End user of the project   | Hajaš M., Plant commodities department/plant protection products, Dobrovičova 12, 812 66 Bratislava | 01.01.2004-30.09.2006 |
| <b>Novofruct, SK, s.r.o., Nové Zámky</b>                               | Cooperation in the monitoring of pesticide residues in raw materials for baby food production and the fate of pesticides in the process of technology | Henteková M., Ing., technologist Novofruct, SK, s.r.o., Komárňanská cesta 13, 940 43 Nové Zámky     | 01.01.2004-           |
| <b>Pharmaceutical Faculty, Comenius University, Bratislava</b>         | Chiral Separation of some anaesthetics using HPLC method  | Čižmárik Jozef, professor, Odbojárov 10, 832 32 Bratislava  | 01.01.1988-           |
| <b>Novácke chemické závody, a.s., Nováky</b>                           | Determination of some chlorocarbohydrates in samples  | Borišek Igor, Ing., technical director, M. R. Štefánika 1, 972 71 Nováky                            | 10.1.2006-18.1.2006   |
| <b>Termotechna, a.s., Bratislava</b>                                   | Determination of chloride in some insulator   | Takáč Karol, Ing., director, Staviteľská 3, P.O.Box 64, 830 00 Bratislava                           | 15.3.2006-7.4.2006    |
| <b>VUCHT, a.s., Bratislava</b>   | Analysis of technical mancozeb samples and mancozeb Pestanal standard by HPLC   | Kukučka Ľubomír, Ing., director, Nobelova 34, 836 03 Bratislava                                     | 3.4.2006-11.4.2006    |

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|--|---|--|----------------------|
| <b>Novácke chemické závody, a.s., Nováky</b> | Organisation of one day seminar: Chosen analytical methods (capillary gas chromatography, spectral methods in analytical chemistry, trends in analytical chemistry) | Karkuš Marián, Judr. Ing., director, M. R. Štefánika 1, 972 71 Nováky        | 22.6.2006            |
| <b>ELEKTROKARBON, a.s., Topolčany</b>        | Determination of Elements Si, Fe, Mg and Al   | Tarina Vladimír, Ing., director of quality, Továrnícká 420, 855 22 Topolčany | 6.6.2006-1.7.2006    |
| <b>ISTRAN, s.r.o., Bratislava</b>            | Preparation and chemical analysis of Solutions  | Beinrohová Mária, Ing., Víglašská 12, 851 06 Bratislava                      | 5.12.2006-31.12.2006 |

### B. International Cooperation

| <b>Institution</b>  | <b>Type of cooperation</b>  | <b>Responsible person</b>  | <b>Duration</b>       |
|---|---|--|-----------------------|
| <b>UFZ Environmental Research Centre Leipzig, FRG</b>   | joint research  | Wennrich Reiner, Dr., Head of the Section UFZ Leipzig-Halle, Permoserstr. 15, D-04318 Leipzig, Germany                               | 01.01.2003-           |
| <b>Depart. Anal. Chemistry, Faculty of Natural Sciences, Charles University, Prague, Czech Republic</b> | study stay of students  | Barek Jiří, professor, Head of the Laboratory UNESCO Laboratory of Environmental Electrochemistry, Charles University, 128 43 Prague | 01.01.2002-           |
| <b>University Osijek, Croatia</b>   | joint research  | Šeruga M., professor, University Osijek, Croatia   | 01.10.2006-           |
| <b>Faculty of Science, Masaryque University, Brno, Czech Republic</b>                                   | Methods for sensor validation   | Trnková Libuše, Assoc. Prof. RNDr. CSc., Department of Theoretical and Physical Chemistry, Kotlářská 2, 611 37 Brno, Czech Republic  | 01.01.2006-           |
| <b>Plant Protection Institute, Bulgaria</b>   | Cooperation in pesticide residues analysis  | Balinova Anna, professor, Head of Toxicology, Department, PPI Kostinbrod 2230, Bulgaria  | 01.01.2004-31.12.2006 |
| <b>Department of Chemistry and Biochemistry, University of Texas, Arlington TX, USA</b>                 | Chiral separation of optical active compounds by HPLC and HRGC                        | Armstrong Daniel Wain, professor, Department of Chemistry and Biochemistry, University of Texas, Arlington TX, 76019 USA             | 01.01.1997-           |
| <b>Department of Organic Chemistry, University of Gent, Gent, Belgium</b>                               | Chiral separations by HRGC  | Sandra Pat, professor, Gent University, Department of Organic Chemistry 9000 Gent, Belgium   | 01.01.1996-           |
| <b>Nicholas Copernicus University, Toruń, Poland</b>  | Trace analysis in GC and HPLC development of new chemical bounded phases              | Buszewski Boguslaw, professor, NCU, Faculty of Chemistry, Gagarin Street 7, 87-100 Toruń, Poland                                     | 01.01.1995-           |
| <b>Department of Building Materials, University of Mining and Metallurgy, Cracow, Poland</b>            | Electroanalytical chemistry and chemometrics  | Bobrowski Andrzej, professor, Al. Mickiewicza, PL-30-059 Cracow, Poland  | 01.09.2001 -          |
| <b>Institute of Analytical Chemistry and Radiochemistry, Technical University, Graz, Austria</b>        | Food analysis Chemometrical Classification of Food and Biologically Important Samples | Lankmayr Ernst, professor, vice-head of Institute, Techniker str. 4, A-8010 Graz, Austria  | 01.03.2002 -          |

|   |  |  |             |
|---|--|--|-------------|
| <b>Department of Chemistry, Faculty of Chemistry and Chemical Engineering, University of Maribor, Maribor, Slovenia</b> | Cooperation in food analysis and environmental chemistry | Brodnjak-Vončina Darinka, professor, Smetanova 17, 2000 Maribor, Slovenia  | 01.01.2004- |
| <b>Department of Analytical Chemistry, University of Pardubice, Pardubice, Czech Republic</b>                           | joint project  | Jandera Pavel, professor, Čsl. légií 565, 532 10 Pardubice, Czech Republic | 01.01.2004- |

### C. Membership in Domestic Organizations and Societies

| Name                 | Organisation or Society  | Position                 | Valid date      |
|----------------------|--|--------------------------|-----------------|
| <b>Bustin Dušan</b>  | Scientific Council of FCHPT  | member                   | 01.02.1990-     |
| <b>Labuda Ján</b>    | Academy Senate of FCHPT  | member                   | 01.03.2002-     |
| <b>Labuda Ján</b>    | Analytical Chemistry Group of SCHS   | chairmann                | 01.01.2005-     |
| <b>Labuda Ján</b>    | Editorial Board of the journal Chemical Papers   | member                   | 01.02.2006-     |
| <b>Lehotay Jozef</b> | Union of Slovak Scientific Societies, Analytical Chemistry Groupe  | chairmann                | 04.03.2001-     |
| <b>Lehotay Jozef</b> | The Ministry of Education SR, Scientific Agency (VEGA)   | chairmann                | 30.04.2002-     |
| <b>Lehotay Jozef</b> | Commission for Air/Pollution (TNK 28)  | member                   | 01.01.1999-     |
| <b>Lehotay Jozef</b> | Commission for Waste Management (TNK 31)   | member                   | 01.01.1999-     |
| <b>Lehotay Jozef</b> | Scientific Council of FCHPT  | member                   | 01.02.2003-     |
| <b>Lehotay Jozef</b> | Agency for Support of Science and Technique Ministry of Education  | member of advisory board | 10.09.2003-     |
| <b>Matisová Eva</b>  | EU Centre of Excellence in Environmental Health Research Institute of Preventive and Clinical Medicine, Bratislava | member of advisory board | 01.01.2003-     |
| <b>Mocák Ján</b>     | Slovak Medical Society, Bratislava, Slovakia   | honorary member          | 01.10.1998<br>- |
| <b>Mocák Ján</b>     | Scientific journal "Laboratorna diagnostika" (Laboratory Diagnostics), Bratislava, Slovakia                        | editor                   | 01.09.1996-     |

### D. Membership in International Organisations and Societies

| Name                   | Organisation or Society  | Position       | Valid date  |
|------------------------|--|----------------|-------------|
| <b>Beinrohr Ernest</b> | Gessellschaft Deutcher Chemiker, Frankfurt, Germany  | member         | 01.06.1990- |
| <b>Bustin Dušan</b>    | IUPAC Fellowship, Switzerland  | member         | 07.03.2002- |
| <b>Labuda Ján</b>      | Division of Analytical Chemistry of the European Association for Chemical and Molecular Sciences, EuCheMS (Delegate of SCHS) | other          | 06.09.1999- |
| <b>Labuda Ján</b>      | Analytical Chemistry Division of International Union of Pure and Applied Chemistry, IUPAC                                    | titular member | 01.01.2006- |
| <b>Lehotay Jozef</b>   | European Commission Science, Research and Developments, expert for the evaluation of proposals, Brussel, Belgium             | other          | 23.02.1999- |
| <b>Lehotay Jozef</b>   | Chemical Analysis, Editorial Board of the journal, Warszawa, Poland  | member         | 07.11.2001- |

### E. Visitors from abroad

| Name              | Organisation or Institution | State   | Date / Duration         |
|-------------------|-----------------------------|---------|-------------------------|
| <b>Kriváň, V.</b> | University of Ulm, Ulm      | Germany | January 2006<br>(1 day) |



|                      |   |                |                              |
|----------------------|---|----------------|------------------------------|
| <b>Buszewski, B.</b> | University of Torun, Torun                                      | Poland         | March 2006<br>(3 days)       |
| <b>Carl, N.</b>      | University od Ljubjana, Ljubjana                                | Slovenia       | March-May 2006<br>(3 months) |
| <b>Diopan, V.</b>    | Mendel University of Agriculture and Forestry, Brno             | Czech Republic | October 2006<br>(4 days)     |
| <b>Bláhová, P.</b>   | Mendel University of Agriculture and Forestry, Brno             | Czech Republic | October 2006<br>(4 days)     |
| <b>Waisser, K.</b>   | Faculty of Natural Sciences, Charles University, Hradec Králové | Czech Republic | November 2006<br>(4 days)    |

#### F. Visits of Staff Members and Postgraduate Students in Foreign Institutions

| <b>Name</b>           | <b>Organisation / Institution / Conference</b>  | <b>State</b>   | <b>Date / Duration</b>              |
|-----------------------|---|----------------|-------------------------------------|
| <b>Beinrohr, E.</b>   | Conference ICP and AAS Spectrometrie, Electroanalytical Methods, Žermanice, Ostrava               | Czech Republic | June 2006<br>(1 day)                |
| <b>Beinrohr, E.</b>   | Universita of Osijek, Osijek  | Croatia        | August-September 2006 (4 days)      |
| <b>Beinrohr, E.</b>   | International Conference Electroanalytical Chemie ELACH 7, Meinsberg                              | Germany        | September 2006 (4 days)             |
| <b>Benická, E.</b>    | 12th International Symposium of Separation Sciences, Lipica                                       | Slovenia       | September 2006 (5 days)             |
| <b>Ferancová, A.</b>  | Conference XXVI. Modern Electroanalytical Methods, Jetřichovice                                   | Czech Republic | May 2006<br>(4 days)                |
| <b>Ferancová, A.</b>  | 3rd Central European Conference Chemistry Towards Biology, Krakow                                 | Poland         | September 2006 (5 days)             |
| <b>Galandová, J.</b>  | Conference XXVI. Modern Electroanalytical Methods, Jetřichovice                                   | Czech Republic | May 2006<br>(4 days)                |
| <b>Galandová, J.</b>  | 3rd Central European Conference Chemistry Towards Biology, Krakow                                 | Poland         | September 2006 (5 days)             |
| <b>Galandová, J.</b>  | Masaryque University, Brno  | Czech Republic | October-December 2006<br>(3 months) |
| <b>Hercegová, A.</b>  | Symposium European Pesticide Residue Workshop 2006, Corfu   | Greece         | May 2006<br>(8 days)                |
| <b>Hercegová, A.</b>  | 26th International Symposium on Chromatography, Copenhagen  | Denmark        | August 2006<br>(5 days)             |
| <b>Hroboňová, K.</b>  | 35th Synthesis and Analysis of Drugs, Velké Karlovice   | Czech Republic | September 2006 (4 days)             |
| <b>Hroboňová, K.</b>  | 12th International Symposium of Separation Sciences, Lipica                                       | Slovenia       | September 2006 (5 days)             |
| <b>Janáčová, A.</b>   | Institute for Marine Resources and Ecosystem Studies, Ijmuiden                                    | Netherlands    | November-December 2006 (49 days)    |
| <b>Kirchner, M.</b>   | 29th International Symposium of Capillary Chromatography, Riva del Garda                          | Italy          | May-June 2006<br>(6 days)           |
| <b>Kirchner, M.</b>   | US Department of Agriculture Eastern Regional Research Center Wyndmoor, Philadelphia-Wyndmoor     | USA            | June-December 2006<br>(190 days)    |
| <b>Krupčık, J.</b>    | 29th International Symposium of Capillary Chromatography, Riva del Garda                          | Italy          | May-June 2006<br>(6 days)           |
| <b>Krupčık, J.</b>    | University of Gent, Gent  | Belgium        | November 2006 (4 days)              |
| <b>Kružlicová, D.</b> | 13th Young Investigators Seminar on Analytical Chemistry YISAC 2006, University of Zagreb, Zagreb | Croatia        | July 2006 (5 days)                  |
| <b>Labuda, J.</b>     | Annual Meeting ACD/IUPAC, Rome  | Italy          | March 2006<br>(4 days)              |

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| <b>Labuda, J.</b>   | Budapest University of Technology and Economy, Budapest  | Hungary            | February 2006<br>(1 day)         |
| <b>Labuda, J.</b>   | Faculty of Natural Sciences, Charles University, Praha   | Czech Republic     | April 2006<br>(3 days)           |
| <b>Labuda, J.</b>   | International Congress on Analytical Sciences ICAS 2006, Moskva  | Russian Federation | June-July 2006<br>(8 days)       |
| <b>Labuda, J.</b>   | Mendel University of Agriculture and Forestry, Brno  | Czech Republic     | May 2006<br>(1 day)              |
| <b>Labuda, J.</b>   | 58. Meeting of Czech and Slovak Chemical Association, Ústí nad Labem   | Czech Republic     | September 2006 (4 days)          |
| <b>Labuda, J.</b>   | 5th Conference Aegean Analytical Chemistry Days, Thessaloniki  | Greece             | October 2006<br>(5 days)         |
| <b>Labuda, J.</b>   | Faculty of Natural Sciences, Charles University, Praha   | Czech Republic     | September 2006 (2 days)          |
| <b>Labuda, J.</b>   | Faculty of Natural Sciences, Charles University, Praha   | Czech Republic     | September 2006 (2 days)          |
| <b>Labuda, J.</b>   | Faculty of Natural Sciences, Charles University, Praha   | Czech Republic     | October-November 2006 (2 days)   |
| <b>Lehotay, J.</b>  | Institute of Chemical Drugs, Pharmaceutical Faculty, Brno  | Czech Republic     | February 2006 (1 day)            |
| <b>Lehotay, J.</b>  | 19th Scientific Congress of the Austrian Pharmaceutical Society, Innsbruck   | Austria            | April 2006<br>(3 days)           |
| <b>Lehotay, J.</b>  | 29th International Symposium of Capillary Chromatography, Riva del Garda   | Italy              | May-June 2006<br>(6 days)        |
| <b>Lehotay, J.</b>  | Pharmaceutical Faculty of Charles University, Hradec Králové   | Czech Republic     | June 2006<br>(5 days)            |
| <b>Lehotay, J.</b>  | Medical University of Gdansk, Bialystok  | Poland             | September 2006 (9 days)          |
| <b>Lehotay, J.</b>  | 12th International Symposium of Separation Sciences, Lipica  | Slovenia           | September 2006 (5 days)          |
| <b>Lehotay, J.</b>  | Pharmaceutical Faculty of Charles University, Hradec Králové   | Czech Republic     | October 2006 (5 days)            |
| <b>Lehotay, J.</b>  | University of Gent, Gent   | Belgium            | November 2006 (4 days)           |
| <b>Lachová, M.</b>  | Agricultural University of Wroclaw, Wroclaw  | Poland             | January-March 2006<br>(3 months) |
| <b>Lachová, M.</b>  | Medical University of Gdansk, Bialystok  | Poland             | September 2006 (9 days)          |
| <b>Lachová, M.</b>  | 12th International Symposium of Separation Sciences, Lipica  | Slovenia           | September 2006 (5 days)          |
| <b>Májek, P.</b>    | 29th International Symposium of Capillary Chromatography, Riva del Garda   | Italy              | May-June 2006<br>(6 days)        |
| <b>Manová, A.</b>   | 5th Conference Aegean Analytical Chemistry Days, Thessaloniki  | Greece             | October 2006<br>(5 days)         |
| <b>Matisová, E.</b> | Seminar Comprehensive GC x GC, Amsterdam   | Netherlands        | March 2006<br>(3 days)           |
| <b>Matisová, E.</b> | Symposium European Pesticide Residue Workshop 2006, 29th International Symposium of Capillary Chromatography, Corfu, Riva del Garda                                | Greece, Italy      | May-June 2006<br>(14 days)       |
| <b>Matisová, E.</b> | 4th European Conference on Pesticides and Related Organic Micropollutants in the Environment and 10th Symposium on Chemistry an Fate of Modern Pesticides, Almeria | Spain              | November-December 2006 (8 days)  |
| <b>Meričko, D.</b>  | 29th International Symposium of Capillary Chromatography, Riva del Garda   | Italy              | May-June 2006<br>(6 days)        |
| <b>Meričko, D.</b>  | Medical University of Gdansk, Bialystok  | Poland             | September 2006 (9 days)          |
| <b>Mocák, J.</b>    | 13th Young Investigators Seminar on Analytical Chemistry YISAC 2006, University of Zagreb, Zagreb  | Croatia            | July 2006<br>(5 days)            |
| <b>Mydlová, J.</b>  | 9th International Symposium on Hyphenated Techniques in Chromatography and Hyphenated Chromatographic Analyzers (HTC-9), York                                      | United Kingdom     | February 2006<br>(4 days)        |
| <b>Mydlová, J.</b>  | 29th International Symposium of Capillary Chromatography, Riva del Garda   | Italy              | May-June 2006<br>(6 days)        |

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| <b>Ovádeková, R.</b>   | Conference XXVI. Modern Electroanalytical Methods, Jetřichovice                            | Czech Republic     | May 2006 (4 days)                |
| <b>Ovádeková, R.</b>   | 58. Meeting of Czech and Slovak Chemical Association, Ústř nad Labem                       | Czech Republic     | September 2006 (5 days)          |
| <b>Ovádeková, R.</b>   | Univerzita Degli Studi di Firenze, Firenze   | Italy              | September 2006 (16 days)         |
| <b>Rojkovičová, T.</b> | Indiana University, Bloomington  | USA                | January-October 2006 (10 months) |
| <b>Špánik, I.</b>      | University of Palacky, Olomouc   | Czech Republic     | January 2006 (3 days)            |
| <b>Špánik, I.</b>      | International Congress on Analytical Sciences ICAS 2006, Moskva                            | Russian Federation | June 2006 (7 days)               |
| <b>Špánik, I.</b>      | Workshop Soil and Water monitoring within the pollution reduction of Danube River, Beograd | Serbia             | October 2006 (5 days)            |
| <b>Špánik, I.</b>      | LECO INSTRUMENTE, Praha  | Czech Republic     | October 2006 (1 day)             |
| <b>Střelec, M.</b>     | X. International Conference Hydrogeochemia '06, Sosnowiec                                  | Poland             | June 2006 (2 days)               |

## VII. THESES AND DISSERTATIONS

### A. Graduate Theses (Bc Degree) for state examinations after three years of study

| Name                     | Title of Thesis  | Supervisor    |
|--------------------------|--|---------------|
| <b>Andraščíková, M.</b>  | Utilization of Fast Gas Chromatography in Analysis of Food Samples.  | Hercegová, A. |
| <b>Beníková, K.</b>      | The Role of Nanotechnology in the Development of DNA Biosensors.   | Ferancová, A. |
| <b>Cifrová, S.</b>       | Thin Layer Coulometric Titration for Speciation Analysis of Trace Metal in Environmental Samples.                                      | Beinrohr, E.  |
| <b>Horváth, M.</b>       | Matrix Effects and their Elimination in Pesticide Residues Analysis in Food.   | Matisová, E.  |
| <b>Hudec, R.</b>         | Determination of Trace Concentrations of Toxic Species by Flow Trough Coulometry and Chronopotentiometry.                              | Beinrohr, E.  |
| <b>Janičkovičová, J.</b> | Possibilities of Application of Microelectrodes in Electrochemical Analysis.   | Rievaj, M.    |
| <b>Klibíková, V.</b>     | Criteria of Using Approximative Relations in Calculations of Simple Protolytic Equilibria of Weak Bases and Hydrolysed Salts in Water. | Tomčík, P.    |
| <b>Nosářová, L.</b>      | The Volatile Compounds in Dairy Products and their Utilisation for Authentication Purposes.  | Špánik, I.    |
| <b>Ondreková, S.</b>     | Utilization of Modern Approaches of Computer Data Elaboration in GC-MS Analysis of Pesticide Residues.                                 | Matisová, E.  |
| <b>Pokorná, L.</b>       | Fast Gas Chromatographic Enantioselective Separation of Organic Compounds.   | Benická, E.   |

### B. Graduate Theses (MS Degree) for state examinations after five years of study

| Name                  | Title of Thesis  | Supervisor    |
|-----------------------|--|---------------|
| <b>Benisková, Z.</b>  | Optimisation and Application of Fast Gas Chromatography.                               | Benická, E.   |
| <b>Čacho, F.</b>      | On-line Preconcentration and GF AAS Determination of Toxic Elements in Waters.         | Manová, A.    |
| <b>Gardlíková, P.</b> | Application of Fluorescence Spectrometry for the Characterization of Complex Mixtures. | Sádecká, J.   |
| <b>Gyöngyiová, A.</b> | Determination of Volatile Compounds in Slovakian Brandies and Wine Distillates.        | Špánik, I.    |
| <b>Hanková, Z.</b>    | Thin Layer Coulometric Titrations for Determination of Some Toxic Species in Waters.   | Beinrohr, E.  |
| <b>Húšková, R.</b>    | Utilisation of Fast GC for Pesticide Residues Analysis.                                | Matisová, E.  |
| <b>Kujovský, M.</b>   | Electrochemical Preconcentration of Metals for Atomic Spectrometry.                    | Beinrohr, E.  |
| <b>Šimková, D.</b>    | Analysis of Organic Acids by High Performance Liquid Chromatographic Method.           | Hroboňová, K. |
| <b>Švorc, Ľ.</b>      | The Crystal Structure and Biological Activity of 1,4 - Dihydropyridine Derivates.      | Vrábel, V.    |

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|--------------------|---|-------------|
| <b>Vančová, M.</b> | Study of Interconversion of Stereochemically Unstable Chiral Drugs by HPLC. | Lehotay, J. |
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### C. Dissertations (PhD)

| <b>Name</b>           | <b>Title of Thesis</b>   | <b>Supervisor</b> |
|-----------------------|--|-------------------|
| <b>Dömötöróvá, M.</b> | Fast GC in (ultra)trace analysis of semivolatile compounds. Utilisation in analysis of pesticides.               | Matisová, E.      |
| <b>Karasová, G.</b>   | New possibilities of preparation of samples for HPLC analysis of biologically active compounds in plant samples. | Lehotay, J.       |
| <b>Nétriová, J.</b>   | HPLC determination of morphine and its metabolites in clinic samples.  | Lehotay, J.       |
| <b>Oswald, P.</b>     | The use of separation methods for determination of interconversion energy barrier of enantiomers.                | Krupčík, J.       |

### E. Habilitation Theses

| <b>Name</b>       | <b>Title of Thesis</b>   | <b>Supervisor</b> |
|-------------------|--|-------------------|
| <b>Tomčík, P.</b> | Analytical utilisation of dynamic electrochemistry on microelectronic and carbon structures. | Bustin, D.        |

## VIII. PUBLICATIONS