

DEPARTMENT OF ANALYTICAL CHEMISTRY

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Full Professors :

Dušan Bustín PhD. DSc.; Ján Krupčík, PhD. DSc, Jozef Lehotay, PhD. DSc., Ján Mocák, PhD. DSc.

Associate Professors :

Ernest Beinrohr, PhD; Eva Brandšteterová, PhD; Miroslav Čakrt, PhD; Ján Labuda, PhD; Eva Matisová, PhD.DSc., Drahomír Oktavec, PhD; Miroslav Rievaj, PhD, Jozef Polonský, PhD; Viktor Vrábek, PhD.

Assistant Professors :

Eva Benická, PhD, Tatiana Buzinkaiová, PhD; Andrea Hercegová, Elena Korgová, PhD; Jarmila Laštincová, Pavol Májek, PhD., Alena Manová, PhD., Pavol Tarapčík PhD, Mária Vaníčková, PhD.

Reader :

RNDr. Magdaléna Valachovičová

Research Fellows::

Miriám Bučková, PhD., Ján Dzurov, Katarína Hroboňová, PhD., Ľubomír Jurica (till 15.10.1999), Pavol Kubalec, PhD., Monika Medvedová (till 30.11.1999), Jana Sádecká, PhD; Ivan Skačáni, PhD; Ivan Špánik, Peter Tomčík, PhD

PhD Students:

Branko Balla (from 1.10.1999), Roman Biely (till 31.7.1999), Ľudmila Bovanová, Alica Čaniová, Adriana Ferancová, Peter Korytár, Peter Oswald

Technical staff :

Ladislav Bartalos, Danuša Bartalosoová, Marta Benešová, Zuzana Bobáková, Elena Bruteničová, Zuzana Cifrová, Malvína Čakrtová, Blanka Chynoradská, Magda Ondrejkočičová, Ing. Jana Otrubová (from 1.10.1999)

II. TEACHING AND RESEARCH LABORATORIES

Laboratory of capillary gas chromatography
Laboratory of high performance liquid chromatography
Laboratory of electroanalytical methods
Laboratory of molecular spectrometry
Clean laboratory for trace analysis with atomic spectrometry (AAS, OES-ICP)
Laboratory of organic elemental analysis
Laboratory of organic synthesis
Laboratory of fluorescence analysis
Laboratory of capillary isotachophoresis
Laboratory of electrochemical pre-concentration for atomic spectroscopy
Laboratory of chemometry
Laboratory of bioanalytical chemistry

III. TEACHING

A. Undergraduate Study

4th sSemester

Analytical Chemistry I. (2-2 h) Beinrohr, Labuda, Polonský, Vrábek
Laboratory Practice AC I. (0-4 h)

5th semester

Analytical Chemistry II. (2-2 h) Bustín, Čakrt, Lehotay, Polonský
Laboratory Practice AC II. (0-4 h)
Testing and Quality Control (1-1 h) Čakrt

6th semester

Analytical Chemometrics (2-2 h) Mocák
Analytical Chemometrics II. (0-2 h) Májek
Semestral Project

7th semester

Atomic Spectrometry (2-0 h) Beinrohr
Anal.Chem.of Complex Inorg. Mixtures (2-0 h) Oktavec
Anal.Chem. of Complex Org. and Biological Mixtures (2-0 h) Brandšteterová
Lab.Practice I. (0-10 h)
Biosensors (2-1 h) Labuda
Computer evaluation of anal. measurement (2-0 h) Májek, Mocák

8th semester

Electrochemistry and Electro-analytical Chemistry	(2-1 h)	Bustin
Techniques of Mixtures Separation	(2-2 h)	Matisová, Valigura
Analytical Separation of Compounds	(2-1 h)	Krupčík
Lab.Practice II	(0-6 h)	
Trace analysis and microanalysis Methods	(2-1 h)	Beinrohr, Čakrt

9th semester

Environmental Analytical Chemistry	(2-0 h)	Benická, Buzinkaiová
Identification of Chemical Substances	(2-1 h)	Lehotay, Liptaj
Bioanalytical Chemistry	(2-1 h)	Labuda, Mocák
Lab.Practice V.	(0-10 h)	
Computer evaluation of anal. measurement	(2-0 h)	Májek, Mocák

10th semester

Laboratory of Diploma Work	(0-30 h)	
Selected Subjects		
Identification of Analytical Methods	(2-2 h)	Lehotay, Liptaj
Nuclear Analytical Chemistry	(2-0 h)	Tarapčík
Identification Methods	(2-2 h)	Matisová

B. PhD. Study**8th semester**

Theoretical and Methodical Basis of Chemical Research	(2-0 h)	Bustin, Krupčík
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IV. CURRENT RESEARCH PROJECTS**A. New Electroanalytical and Spectroscopic Systems for Ultra-trace and Speciation Analysis with Special Emphasis to Environmental and Clinical Problems. Optimization of analytical procedures (D. Bustin)**

The project is devoted to the development of electroanalytical methods focussed mainly on trace analysis, speciation, selectivity improvement and determination of analytes in complex samples of clinical and environmental significance. Great effort is being made to analytical application of interdigitated microelectrode arrays in bipotentiostatic as well in galvanostatic-potentiostatic polarization mode. Emphasis is given to the elaboration of measurement techniques, providing highly reliable results; outline of standard procedures of the analytical measurement and data evaluation assuring compatibility with international systems, introduced mainly in the framework of EU.

B. Trace analysis of selected analytes in complex organic system by combination of preconcentration techniques and capillary gas chromatography (E. Matisová)

A part of the project is devoted to the miniaturisation in analytical chemistry – to the development of microextraction methods for the sample preparation, large volume injection in capillary GC. A part of the project is connected with the development of high speed GC and its combination with preconcentration techniques for the analysis of semivolatiles and thermolabile compounds.

C. The development of modern method for teaching analytical chemistry supported by PC (P. Tarapčík)

The main drawbacks of traditional teaching method of analytical chemistry are: low individual activity of students in classroom; unified work rhythm not considering individual abilities of students; low variability; high cost of modern laboratory method. There is possibility to overcome these drawbacks applying relatively individual work in front of PC. The main goals of this project are:

- to make simulating software for various analytical methods, mainly in the area of chemical equilibria in analytical chemistry,
- to make teaching procedures supported by simulating software, combining work methods in whole group by traditional method and in small groups (two-three students) with PC.
- to make templates for solving typical problems of analytical chemistry.

As the spreadsheet „EXCEL“ is widely used calculating product with high poverty of graphics, statistics..., the supporting software will be made on this basis as the EXCEL sheets, partly with macros in VBA language.

D. Development of selective methods for analysis of biologically active compounds by selected chromatographic and electroanalytical methods (J. Krupčík)

In the scope of this project following subjects shall be studied:

- Computer assisted optimization of chromatographic separation of mixtures of biologically active compounds in several columns coupled in series under multicolumn and multidimensional separation conditions.
- Modeling of gas-chromatographic separation and explanation of chiral recognition of enantiomers in gas chromatography on chiral columns using knowledge and data obtained by theoretical chemistry (semiempirical and “ab initio” methods) and by structure-retention data correlations for enantiomers of analyzed compounds.
- Computer assisted signal processing for deconvolution together with an increase of signal to noise ratio of weak signals which are not resolved experimentally. Elaborated algorithms shall be exploited for processing of signals in gas chromatography and electroanalytical methods. For the determination of uncertainties and evaluation of signal errors shall be implemented in elaborated algorithms, too.
- Analytical characterization and application of new types of chemical modifiers for electrodes, based on DNA, proteins and substances with the chiral properties.

E. Development and Application of Direct Injection Assays for HPLC Analysis of Some Drugs and Toxic Compounds in Biological Samples (E. Brandšteterová), Number of the project : 1/6102/99

The aim of the project is the development and application of new automated assays with the possibility of direct injection of biological samples into the HPLC system. New sorbents with restricted access for macromolecules and high retention and preconcentration ability for analyzed compounds (RAM) will be tested for the pre-separation step.

RAM precolumn with the recommended material will be integrated into the HPLC system what improves validation parameter values and minimized the personal contact with biofluids.

Developed assays using the most suitable sorbents will be applied in routine monitoring of chosen drugs, toxic compounds and related biogenic compounds in biological matrices.

F. KEGA 1998 – 2000, n. 141/97, Title of project: Using of new modern analytical methods in environment and pharmaceutical chemistry (D. Oktavec)

The aim of this project is:

- to develop methods for the determination of trace and ultra trace amounts of chosen toxic elements and compounds in the air, soils and waste products of industrial factories which would also allow to monitor their transition into the food chain of mammals,
- on the base of chromatographic methods to model conditions in biological materials and develop methods both for the determination of pharmaceutical drugs and their degradation products in biological systems as well as for the separation of enantiomers of pharmacologically active compounds,
- to study crystal and molecular structures of biologically active compounds by X-ray structure methods, which results are obliged as qualitative criteria for drugs.

V. COOPERATION

A. Cooperation in Slovakia:

Slovak Metrological Institute, Bratislava
Faculty of Pharmacy CU, Bratislava
Faculty of Medicine CU, Bratislava
Faculty of Natural Sciences, CU, Bratislava
National Institute of Oncology SR, Bratislava
Slovak Academy of Sciences, Bratislava
Food Research Institute, Bratislava
Institute of Veterinary Hygiene and Ecology, Trnava
Department of Analytical Chemistry, Comenius University Bratislava
Technical University, Košice

B. International Cooperation :

Technical University Vienna, Austria
- Cooperation in the field of utilization of carbon sorbents in trace analysis
University of Ulm, Germany
- Development of methods for trace analysis of organic pollutants in environment
Monash University, Melbourne, Australia
University of Mining and Metallurgy, Cracow, Poland
University of Ljubljana, Slovenja
University of Münster, Institute of Pharmaceutical Chemistry, Germany
Georgetown University Medical Centre, Washington, U.S.A.
- Stereo selective separation of cancer drugs by HPLC
Department of Oncology, University of California, San Diego, U. S. A.
Institute of Pharmacy, University of Liege, Belgium
Department of Analytical Chemistry, Palacky University, Czech Republic
Department of Analytical Chemistry, University of Leipzig, Germany
- Development chemical modified electrodes for detection in flow system
University of Dortmund, Germany
- Development of equipments for flow analysis
Sektion Analytik und Hochreinigung, Universität Ulm, Germany
Department of Organic Chemistry, Gent University, Gent, Belgium
- Chiral separation of optical active compounds by GC
Orleans University, Laboratory of Industrial Analytical Chemistry and Chemometry, Orleans, France
- Statistical evaluation of data obtained from gas chromatographic separations of multicomponent mixtures
Faculty of Chemistry, N. Copernicus University, Department of Environmental Chemistry, Toruń, Poland
University of Missouri – Rolla, Department of Chemistry, Rolla Missouri, U.S.A.

C. Membership in Domestic Organisations and Societies

Slovak Chemical Society, Chromatographic group	(E. Brandšteterová)
Slovak Research Technical Society	(E. Brandšteterová)
Slovak Chemical Society at Academy of Science, group of Anal. Chemistry	(J. Krupčík)
Slovak Society of Clinical Biochemistry	(J. Mocák)
KEGA at MESR	(J. Polonský)
Coordination Committee for Chemical Competition ZSA SS at MESR	(J. Polonský)

D. Membership in International Organisations and Societies

GDCH, Germany
International Union Against Cancer, Switzerland

(E. Beinrohr)
(E. Brandšteterová)

E. Tempus Programme :**F. International Scientific Programmes :**

a) Inco Copernicus Project Erbic 15CT960804, Biosensors for direct monitoring of pollutants in field (J. Labuda)

The biosensors based on the electrodes chemically modified with double stranded DNA and β -cyclodextrin have been investigated at the detection of selected groups of chemicals interacting with the biopolymers. We have continued in the development of the detection schemes of a deep DNA degradation.

Procedures the accumulation/voltammetric determination of electrochemically active compounds of phenothiazine and azepine types as well as catechin and acridine derivatives at the DNA surface and bulk-phase modified electrodes were optimized. To validate the assay, a fibre fluorimetric measurement based on an effect of the tested species on the long wavelength dye ToPro-3:nucleic acid complex was used.

Various laboratory prototypes of the disposable DNA modified screen-printed carbon electrodes have been prepared and tested as simple warning analytical devices for the determination of non-electroactive quinazoline derivatives representing model pollutant structures.

The probes with β -cyclodextrins have been prepared and interactions of azepine and phenothiazine type compounds with β -cyclodextrin were investigated by means of the polymer film-modified Au/quartz electrodes. Simultaneous cyclic voltammetry and electrochemical quartz-crystal microbalance experiments were done and the analytically important preconcentration effect of β -cyclodextrin was confirmed.

b) Slovak – US Universities Co-operation – Project, Mechanistic study of chiral recognition in HPLC and HRGC (J. Krupčík)

The main objective of the project is to study some mechanistic aspects of chiral recognition in the direct separation of enantiomers by HPLC and HRGC. The project consists of following parts:

- The influence of structure and polarity differences in substituents bonded to the asymmetric carbon atom in enantiomers, and selectivity of a chiral selector in HPLC and HRGC shall be studied in detail. Modified α -, β - and γ -cyclodextrins and macrocyclic antibiotics shall be used in gas and/or liquid chromatography as chiral selectors.
- The thermodynamic data characterizing overall and enantioselective interactions of the enantiomers with chiral selectors shall be collected to gain more insight into the mechanistic aspects of enantioseparation on modified cyclodextrins.
- A dependence of selectivity of a chiral column on the concentration of a chiral selector in polysiloxane solvent (a column coated with a mixed chiral phase and achiral phases) shall be compared with the overall selectivity of two columns coupled in series. In the column series, stationary phases in the individual chiral and achiral columns shall be identical with those used in column coated with the mixed chiral and polysiloxane phases.
- Reasons responsible for the temperature dependence of retention order shall be studied by the GC separation of enantiomers on modified α -, β - and γ -cyclodextrins.
- For mechanistic studies of enantiomers separated by chiral HPLC on macrocyclic antibiotics indirect detection techniques shall be introduced.

- Selectivity of two chiral columns coupled in series for the direct separation of enantiomers by HRGC and RP HPLC shall be tuned by the change of mobile phase flow rate in individual columns. Elaborated optimum separation system shall be used for two dimensional separation of optically active compounds in natural samples.

Slovak Principal Investigator: Prof.Ing.Ján Krupčík, DrSc., Department of Analytical Chemistry, CHTF STU in Bratislava, Slovak Republic

Main American Investigator: Prof.Daniel W. Armstrong, Department of Chemistry, University of Missouri-Rolla, Rolla Missouri, USA

c) NATO Project 621, Development of methods for determination and biodegradation explosive pollutants, (J. Lehotay)

The development of economical and effective analytical methods is of interest to eliminate undesirable contaminants from soil and groundwater. The determination of explosives in samples is in general carried out using high resolution gas chromatography and reversed phase high performance liquid chromatography. The main goal of this project is development of methods for ultratrace analysis of some nitroaromatic compounds in groundwater and soil gases by a combination of solid phase extraction and high performance liquid chromatography with diode array and electrochemical detection and high resolution gas chromatography with flame ionisation and mass spectrometric detectors.

d) PHARE Project Quality of Chemical Measurements and Chemical Metrology, (J.Mocák)

(# ETF/97/VET/0076) continued and was finished in 1999. It was devoted to the development of the study material for a future international Open and Distance Learning Study. The Project was focussed on the following topics: Quality in Chemical Laboratory, Metrology in Chemical Laboratory, Validation of Measurements, Interlaboratory Analytical Studies and their Evaluation, Evaluation Procedures and Uncertainties, and LIMS in Chemical Measurements, about which six books, two manuals and one interactive CD-ROM have been published. Four University working places (Bratislava, Wageningen, Ljubljana) and CHEMMEA, Ltd. (Bratislava, Slovakia, as the leading partner) participated on this Project. It was directed by the European Training Foundation (ETF), Torino and Prof. Ján Mocák, DSc., acted as the coordinator at the Faculty of Chemical Technology, STU in Bratislava. The ETF evaluated the Project as fully successful.

e) CEEPUS Programme PL-24 (J.Mocák), started in 1998 and continued in 1999. The aim of this project was an

international collaboration in Analytical Chemistry education and in organizing an international exchange of the regular University students, the PhD. students as well as their tutors. Universities in five countries participated at this Programme, namely the University of Mining and Metallurgy in Cracow (leading partner), the University of Graz, the University of Ljubljana, the University of Pardubice, and the Slovak University of Technology, Bratislava; the Slovak coordinator was Prof. Ján Mocák, DSc.

G. Visitors from Abroad

Prof. J.A.C. Broekart
Prof. V. Krivan
Prof. B. Danielsson
Prof. D.P. Nikolettis

University Leipzig, Germany, March 1999 (4 days)
University of Ulm, Germany, April 1999
University Lund, Sweden, October 1999
University Ateny, Greece, February and November 1999

H. Visits of Staff Members and Postgraduate Students in Foreign Institutions

E. Beinrohr
E. Beinrohr
E. Beinrohr
E. Beinrohr
E. Beinrohr
E. Benická
E. Benická
E. Brandšteterová
E. Brandšteterová
E. Brandšteterová
M. Bučková
M. Bučková
D. Bustin
D. Bustin
M. Čakrt
J. Dzurov
J. Dzurov
A. Ferancová
K. Hroboňová
K. Hroboňová
K. Hroboňová
J. Krupčík
J. Krupčík
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J. Krupčík
J. Krupčík
J. Krupčík
J. Labuda
J. Labuda
J. Labuda
J. Labuda
J. Labuda
J. Labuda
J. Lehotay
J. Lehotay
J. Lehotay
J. Lehotay
J. Lehotay
J. Lehotay
J. Lehotay
E. Matisová
J. Mocák
J. Mocák
J. Mocák
J. Mocák
J. Mocák
J. Mocák
J. Mocák
P. Oswald

I. Špánik

I. Špánik
P. Tarapčík
P. Tomčík
M. Vaníčková

Ulm, Germany, Deutschland, February 1999, (2 days)
Ulm, Deutschland, March 1999, (5 days)
Veszpréti, Hungary, June 1999, (4 days), conference
Deutschland, September 1999, (5 days), conference
Czech Republic, September 1999, (2 days), seminary
Prag, Czech Republic, September 1999, (4 days), conference
Prag, Czech Republic, June 1999, (6 days), conference
Olomouc, Czech Republic, August 1999, (4 days), conference
Germany, March 1999, (5 days), conference
Olomouc, Czech Republic, September 1999, (4 days), conference
Kom.Lhotka, Czech Republic, October 1999, (4 days), conference
Czech Republic, September 1999, (5 days), conference
Italy, November 1999, (6 days)
Czech Republic, September 1999, (5 days), conference
U.S.A, Canada, October 1999, (11 days), conference
Pardubice, Czech Republic, July 1999, (1 day)
Malenovice, Czech Republic, April 1999, (2 days), conference
Kom. Lhotka, Czech Republic, April 1999, (4 days), conference
Poland, November – December 1999, (34 days)
Prag, Czech Republic, June 1999, (6 days), conference
Hradec Králové, Czech Republic, September 1999, (3 days), conference
Vienna, Austria, September 1999, (1 day), conference
Vienna, Austria, January 1999, (1day), seminary
Germany, March 1999, (5 days), conference
Prag, Czech Republic, June 1999, (6 days), conference
Olomouc, Czech Republic, August 1999, (4 days), conference
Washington, USA, August 1999, (17 days)
Olomouc, Czech Republic, November 1999, (1 days)
Greece, May 1999, (5 days)
Germany, September 1999, (6 days), conference
Czech Republic, September 1999, (5 days), conference
Czech Republic, October 1999, (4 days),
Italy, November 1999, (7 days)
Prag, Czech Republic, November 1999, (1 day)
Vienna, Austria, January 1999, (1 day), seminary
Germany, March 1999, (5 days), conference
Prag, Czech Republic, May 1999, (7 days), seminary
Prag, Czech Republic, June 1999, (7 days)
Washington, USA, August 1999, (17 days)
Czech Republic, November 1999, (4 days), conference
Suisse, December 1999, (4 days), conference
Kom. Lhotka, Czech Republic, October 1999, (4 days), conference
Poland, January 1999, (5 days)
Ljubljana, Slovenia, April 1999, (5 days)
Prag, Czech Republic, May 1999, (6 days)
Prag, Liberec, Czech Republic, July 1999, (4 days)
Budapest, Hungary, July 1999, (2 days)
Brno, Czech Republic, August – September 1999, (5 days)
Czech Republic, September 1999, (5 days), conference
Olomouc, Czech Republic, August - September 1999, (4 days),
conference
Olomouc, Czech Republic, August – September 1999, (4 days),
conference
Germany, November – December 1999, (32 days)
Paris, France, September – November 1999, (91 days)
Czech Republic, September 1999, (5 days), conference
Czech Republic, September 1999, (5 days), conference

VI. THESES AND DISSERTATIONS

A. Graduate Theses (MS Degree) for state examinations after five years of study in Analytical Chemistry (Supervisors are written in brackets)

Balla B.:	Classification of natural substances and food products by multivariate data analysis (J. Mocák)
Bernhauserová D.:	Determination of trace Selenium in environmental samples by flow coulometry (E. Beinrohr)
Hutárová M.:	Electrophoretic study of some hydroxyacids (J. Polonský)
Chudejová G.:	The possibilities of the monitoring of chosen cations in the human fluids by ITP (T. Buzinkaiová)
Jakubičková A.:	Derivatization of chiral compounds for their analysis by capillary gas chromatography (E. Benická)
Johanesová Z.:	HPLC analysis of Morphine and its metabolites (E. Brandšteterová)
Lefflerová H.:	High speed capillary gas chromatography and its utilization in trace analysis (E. Matisová)
Mečiar B.:	Determination of boron by fluorescence analysis (M. Čakrt)
Mikó R.:	The molecular separation with a chemically modified electrode (E. Korgová)
Orlická M.:	Analytical Application of a DNA Modified Electrode (M. Vaničková)
Ozábalová K.:	Electrochemical sensors with selective modifier (J. Labuda)
Vraniaková J.:	Combination of solid phase microextraction and capillary GC and its utilization in trace analysis (E. Matisová)
Wetzlerová P.:	Spectrometric determination of arsenic by chemical and electrochemical hydride generation (A. Manová)

B. Dissertations (PhD.):

Bučková M.:	Development of electrochemical sensors for clinical and environmental analysis (J. Labuda)
Kubalec P.:	Preseparation procedures of biological samples in HPLC analysis (E. Brandšteterová)
Tomčík P.:	Application of interdigitated microelectrode systems in Analytical Chemistry (D. Bustin)

VII. PUBLICATIONS

A. Journals (+ registered in Current Contents)

- (1)* Beinrohr E., Čakrt M., Dzurov J., Jurica L., Broekaert J.A.C.: Simultaneous calibrationless determination of Zn, Cd, Pb, and Cu by flow-through stripping chronopotentiometry *Electroanalysis* 16, 1-8 (1999)
- (2)* Bovanová L., Brandšteterová E., Čaniova A., Argalášová K., Lux A.: HPLC determination of peroxisomicine A1 in *Karwinskia* fruits: comparison of off-line solid phase extraction and columns-switching heart-cut sample preparation, *Die Pharmazie* 54, 941-942, (1999)
- (3)* Bovanová L., Brandšteterová E., Čaniova A., Argalášová K., Lux A.: High-performance liquid chromatography analysis of Peroxisomicine A₁ (T-514) in genus *Karwinskia*, *J. Chrom.* 732, 405-410, (1999)
- (4)* Brandšteterová E., Wainer I.W.: Achiral and chiral HPLC of verapamil and its metabolites in serum samples, *J. Chromatogr.* 732, 395-404 (1999)
- (5)* Brandšteterová E., Wainer I.W., Tracy T.: Achiral and chiral HPLC analysis of norverapamil and its metabolites in microsomal samples, *Neoplasma* 46, 207-211 (1999)
- (6)* Brandšteterová E., Ferencová A.: Stanovenie antiarytmík a ich metabolitov v klinických vzorkách kombináciou SPE-HPLC (in Slovak), *Chem. Listy* 93, 249-253 (1999)
- (7)* Breza M., Manová A.: On the structure of lead (II) complexes in aqueous solutions. II Tetranuclear clusters, *Polyhedron* 18, 2085-2090 (1999)
- (8)* Breza M., Manová A.: On the reliability of the structures of lead (II) hydroxo complexes obtained by MNDO method, *Collect. Czech. Chem. Commun.* 64, 1269-1273 (1999)
- (9) Buzinkaiová T., Polonský J.: Životné prostredie v Slovenskej republike (in Slovak), *Chémia - časopis pre ďalšie vzdelávanie učiteľov chémie* 11, 15-21 (1999).
- (10) Buzinkaiová T.: Ohrozenie ozónovej vrstvy (in Slovak), *Chémia - časopis pre ďalšie vzdelávanie učiteľov chémie* 12, 5-10 (1999)
- (11) Čižmárik J., Lehotay J., Bednáriková A., Hroboňová K.: Štúdium lokálnych anestetík CL. Modely závislosti lokálno-anestetickéj účinnosti bazických esterov alkoxy-substituovaných kyselín fenylylkarbamových na kapacitnom faktore k' (in Slovak), *Čes. a slov. farm.* 48, 6, 276-280 (1999)
- (12)* Hercegová A., Polonský J.: Determination of non-steroidal anti-inflammatory drugs in biological fluids, *Pharmazie* 54, 7, 479-486 (1999)
- (13)* Hevesi T., Krupčík J.: Determination of nitrophenols and nitroresols in gaseous samples, *Chem. Pap.* 53, 52-256, (1999)
- (14)* Hevesi T., Krupčík J.: Stanovenie etanolamínu v plynných vzorkách metódou kapilárnej plynovej chromatografie (in Slovak), *Chem. listy* 93, 261-264 (1999)
- (15)* Hoults J.R.S., Jackson B.R., Benická E., Patwel P.H., Hutt A.J.: Chromatographic Resolution-Chiroptical Characterization

- and preliminary Pharmacological Evaluation of the Enantiomers of Butibufen: A comparison with Ibuprofen, *J. Pharm. Pharmacol.* 51, 1201-1205 (1999)
- (16)* Kaniansky D., Šimuničová E., Olvecká E., Ferancová A.: Separations of enantiomers by preparative capillary isotachopheresis, *Electrophoresis* 20, 2786-2793 (1999)
- (17)* Hroboňová K., Hatřík Š., Lehotay J., Čižmárik J.: Study of local anesthetics. Part 146. Correlation between local anaesthesia, coded structural information and chromatographic properties for homologous series of alkoxy-substituted esters of phenylcarbamic acid using neural network, *Die Pharmazie* 54, 44-47 (1999)
- (18)* Hrouzková S., Straková M., Matisová E., Marcová M., Puxbaum H.: Carbon Sorbents as a Mean for Enrichment of Atmospheric Oxygenated VOCs with Subsequent HRGC Determination, *Int. J. Environ. Anal. Chem.* 74, 91-106 (1999)
- (19) Kohúteková V., Bobenic, Beinrohr E.: Súčasný trendy vo výrobe a hodnotení obalových pocínovaných plechov (in Slovak), *Hutnícke listy* 11, 16-22 (1999)
- (20)* Korytár P., Matisová E., Čellár P.: Amfetamíny a ich analýza kapilárnou GC a GC-MS (in Slovak), *Chemické Listy* 93, 554-562 (1999)
- (21)* Krupčík J., Oktavec D., Skačáni I., Daučík P.: Problems with the determination of petroleum hydrocarbons in environmental samples, *Crit. Rev. Anal. Chem.* 29, 279-280 (1999)
- (22)* Krupčík J., Oswald P., Špánik I., Benická E., Daučík P.: On the capillary gas chromatographic determination of petroleum hydrocarbons in environmental samples, *Crit. Rev. Anal. Chem.* 29, 281-282 (1999)
- (23) Krupčík J., Oswald P., Špánik I., Benická E., Daučík P.: O stanovení ropných uhlovodíkových frakcií v životnom prostredí kapilárnou plynovou chromatografiou (in Slovak), *Chemické listy* 93, 628-632 (1999)
- (24)* Kubalec P., Brandšteterová E.: Determination of propafenone and its main metabolite 5-hydroxypropafenone in human serum with direct injection into a column-switching chromatographic system *J. Chromatogr. B* 726, 211-218 (1999)
- (25)* Labuda J., Bučková M., Vaničková M., Mattusch J., Wennrich R.: Voltammetric detection of the DNA interaction with copper complex compounds and damage to DNA, *Electroanalysis* 11, 101-107 (1999)
- (26)* Laštincová J., Vanovčan J., Oktavec D., Kaderová E.: Multielemental determination of Cu, Zn, Mo, Mn, V in soils by ICP-AES method after microwave digestion, *Chem. Papers* 53, 288-294 (1999)
- (27)* Lehotay J., Hroboňová K., Hatřík Š.: Trace analysis of some organic compounds in environmental samples by HPLC, *Crit. Rev. Anal. Chem.* 29/2, 95-98 (1999)
- (28)* Lehotay J., Hroboňová K., Čižmárik J., Čelková: Separation of enantiomers of some 1,4-piperazine derivatives of aryloxyaminopropanols on a vancomycin chiral stationary phase, *Die Pharmazie* 54, 10, 743-745 (1999)
- (29)* Lehotay J., Halmo F., Oktavec D., Lacuška M.: Stanovenie 2-naftylamínu v odpadových plynoch metódou HPLC pomocou detektora s diódovým poľom a elektrochemickým detektorom (in Slovak), *Chem. Listy* 93, 138-141 (1999)
- (30)* Májecká M., Májek P., Mach P.: Theroetical Study of the Reactivity Properties of Two Forms of Stobadine, *Life Sciences* 65, 1875-1877 (1999)
- (31)* Matisová E., Sedláková J., Šimon P., Welsch Th.: Solid Phase Microextraction of Volatiles from Water using Open Cap Vials, *Chromatographia* 49, 513-519 (1999)
- (32)* Matisová E., Sedláková J., Slezáčková M., Welsch Th.: Solid-phase Microextraction of Volatile Polar Compounds in Water, *J. High. Resolut. Chromatogr.* 22, 109-115 (1999)
- (33)* Matisová E., Hrouzková S., Novák I., Berek D., Kozánková J.: Novel Porous Carbons and their Utilization in Trace Analysis, *Chem. Papers* 53, 40-48 (1999)
- (34)* Ondrejčovičová I., Mikloš D., Vrábel V.: Synthesis, properties and Structure of Triphenylarsine Oxide-iron (III) complexes with Br and NCS Ligands, *Coord. Chem. at the Turn of the Century* 4, 115-120 (1999)
- (35)* Rievaj M., Mocák J., Bustin D.: Application of the Interdigitated Array Microelectrodes in Trace Analysis of Se in Water Samples, *Chem. Anal.* 44, 1025-1032 (1999)
- (36)* Sádecká J., Polonský J.: Determination of ibuprofen in serum by capillary isotachopheresis, *Pharmazie* 54, 8, 627-628 (1999)
- (37)* Sádecká J., Hercegová A., Polonský J.: Determination of fenoprofen in serum by capillary isotachopheresis, *Journal of Chromatography B* 729, 11-17 (1999)
- (38)* Sádecká J., Hercegová A., Polonský J., Chilmonczyk Z.: Separation of some hydroxycarboxylic acids by capillary isotachopheresis in the presence of neutral cyclodextrins, *Analisis* 27, 373-380 (1999)
- (39)* Sádecká J., Polonský J.: Determination of inorganic ions in food and beverages by capillary isotachopheresis, *Journal of Chromatography A* 834, 401-417 (1999)
- (40) Slezáčková M., Matisová E., Sedláková J.: Aplikácia SPME v environmentálnej analýze. I. Prchavé organické látky (in Slovak), *Ropa a Uhlie* 1, 41, 26-32 (1999)
- (41) Slezáčková M., Matisová E., Sedláková J.: Aplikácia SPME v environmentálnej analýze. II. Semiprchavé organické látky (in Slovak), *Ropa a Uhlie* 2, 41, 17-21, (1999)
- (42)* Straková M., Matisová E., Šimon P.: On-line Combination of a Silicone-Tubing-Probe Measuring System with HRGC for the Analysis of VOCs from Water Samples, *Int. J. Environ. Anal. Chem.* 73, 59-69 (1999)
- (43)* Špánik I., Krupčík J., Schurig V.: Comparison of two methods for the gas chromatographic determination of thermodynamic parameters of enantioselectivity, *J. Chromatogr. A*, 843, 123-128 (1999) *J.R.S.Hout*
- (44)* Tomčík P., Bustin D., Tvarožek: Súbory mikroelektrod s interagujúcimi difúznymi vrstvami: voltampérometrické aplikácie (in Slovak), *Chem. Listy* 93, 678-682 (1999)
- (45)* Vrábel V., Oktavec D., Sivý J., Skačáni I.: Di-n-butylbis(2-phenylquinazoline-4-thiolato-N³,S)tin(IV), *Acta Cryst. C* 54, 1790-91 (1999)
- (46)* Vrábel V., Garaj J., Sivý J., Oktavec D.: Polymeric triamminetetakis(μ-cyano)-dicuprate(I)copper(II), *Acta Cryst. C* 55, 1381-1382 (1999)
- (47)* Vrábel V., Garaj J., Sivý J., Oktavec D.: Aquadiisothiocyanato(N,N,N',N'-tetra-methylethylendiamine-N,N') copper (II), *Acta Cryst. C* 55, 551 - 553 (1999)

B. Conferences (* International conferences)

- (1) Balla B., Mocák J., Petka J., Farkaš J., Sádecká J., Kováč M.: Klasifikácia a autentifikácia slovenských odrodových vín multivariačnou analýzou experimentálnych dát (in Slovak), Labkvalita '99 - 4th Symposium with international participation, Slov. lekárska spoločnosť, Š. Pleso, Slovakia, 1999, p. 18
- (2)* Beinrohr E.: Calibratoneless methods in trace analysis, Proc. 3rd Workshop The Status of Treaceability in Chemical Measurement, Bratislava, Slovakia, 1999, p. 2-6
- (3)* Beinrohr E., Jurica L., Manová A., SchermerS.: Electrochemical hydride generation for atomic spectroscopy, Determination of Se and As, Proc., 42. Magyar Spektrokém. Vándorgy, Veszprém, Hungary, 1999, p. 12-15
- (4)* Beinrohr E.: Continuous monitoring of heavy metals in waste waters, A new approach, Proc. 2nd Int. Conf. Environm. Engin., Veszprém, Hungary, 1999, p. 22-25
- (5) Beinrohr E., Jurica L., Manová A.: Stanovenie Cd, Pb a Cu vo vínach metódou prietokovej galvanostatickej rozpúšťacej coulometrie (in Slovak), Zborník prednášok Mikroelementy 98, Řež u Prahy, Czech Republic, 1998, p. 41-45
- (6)* Beinrohr E.: Bezobsluhové monitorovanie ťažkých kovov v odpadových vodách (in Slovak), Zborník príspevkov medzinárodnej konferencie TOP 99, Smolenice, Slovakia, 1999, p. 29-33
- (7) Beinrohr E., Jurica L., Dzurov J.: Stanovenie As v moči metódou prietokovej rozpúšťacej coulometrie (in Slovak), Zborník prednášok 31. semináře Mikroelementy 97, České Budějovice, Czech Republic, 1997, p. 19-23
- (8)* Beinrohr E.: Flow-through porous electrodes: Useful tools for trace analysis, speciation and titrations Book of abstracts Modern Electroanalytical Methods, Seč, Czech Republic, 1999, p. OR/5
- (9)* Beinrohr E., Jurica L., Dzurov J.: Determination of Se and As in biological materials by flow-through stripping coulometry, Book of abstracts "ELACH 4", Rostock-Warnemunde, Germany, 1999, p. 57-57
- (10)* Beinrohr E.: Využitie elektrochémie v atómovej sopektroskopii (in Slovak), Seminary Dni analytickej chémie, Donovaly, Slovakia, 1999
- (11)* Beinrohr E., Jurica L., Manová A., Schremer S.: Electrochemical hydride generation for atomic spectroscopy. Determination of Se and As, Proc., 42. Magyar Spektrokém. Vándorgy Veszprém, Hungary, 1999, p. 12-15
- (12)* Benická E., Jakubičková A., Krupčík J.: Derivatizácia chirálnych látok pre priamu enantioselektívnu analýzu enantiomérov plynovou chromatografiou (in Slovak), symposium Chiranal 99, PF UP Olomouc, Czech Republic, September 1999, p. 2
- (13)* Benická E., Jakubičková A.: Využitie derivatizácie v analýze látok plynovou chromatografiou (in Slovak), 13th International conference Chromatographic methods and human health, Piešťany, Slovakia, November 1999, p. 1
- (14)* Biely R., Čákr M.: Využitie chemilumiscencie peroxyoxalátov v stopovej analýze (in Slovak), Zborník príspevkov, 51. zjazd chemických spoločností, Nitra, Slovak Republic, September 1999, A-PO30.
- (15)* Bobrowski A., Kasprzyk G., Mocák J.: Theoretical and Experimental Resolution of Semi-Derivative Linear Scan Voltammetry, International Conference Modern Electroanalytical Methods - Book of Abstracts, Univ. Pardubice, Czech Republic, 1999, p. PO/5
- (16)* Bovanová L., Brandšteterová E., Kubalec P.: Stanovenie trimetoprimu v mlieku metódou HPLC s prepínaním kolón (in Slovak), 51. zjazd chemických spoločností Nitra, Slovakia, September 1999, II. zväzok, 2 p.
- (17)* Bovanová L., Blahová E., Brandšteterová E.: Use of column-switching in HPLC analysis of food samples, 13. Conference Chromatographic Methods and Human Health, Piešťany, Slovakia, November 1999, p. 84-85.
- (18)* Bovanová L., Čaniová A., Brandšteterová E.: Stanovenie peroxizomicínu A1 v rastlinnom materiále metódou HPLC s prepínaním kolón (in Slovak), Laboralim '99, Banská Bystrica, Slovakia, 1999, p.100-102
- (19)* Bovanová L., Čaniová A., Brandšteterová E.: HPLC determination of peroxizomicine A1 in Karwinskia fruits: comparison of off-line SPE and column-switching, InCom 99, Düsseldorf, Germany, March 1999
- (20)* Brandšteterová E., Kubalec P., Bovanová L., Čaniová A.: Nové trendy v úprave biologických vzoriek pred HPLC achirálnou a chirálnou HPLC analýzou (in Slovak), Chiranal'99, Olomouc, Czech Republic, September 1999, 2 p.
- (21)* Brandšteterová E., Bovanová L., Kubalec P., Čaniová A.: Nové trendy v úprave potravinových a rastlinných vzoriek pred HPLC analýzou (in Slovak), Laboralim '99, Banská Bystrica, Slovakia, 1999, p.12-17
- (22)* Brandšteterová E.: HPLC analýza liečiv a biologicky aktívnych látok v klinických a potravinových vzorkách, Analýza organických látok (in Slovak), Komorní Lhotka, Czech Republic, 1999, p. 157-170
- (23)* Brandšteterová E., Kubalec P., Bovanová L., Čaniová A.: Súčasný stav a nové trendy v úprave vzorky pred HPLC analýzou (in Slovak), 51. zjazd chemických spoločností, Nitra, Slovakia, September 1999, II. zväzok, 3 p.
- (24)* Brandšteterová E., Kubalec P., Bovanová L., Čaniová A.: Preseparation procedures for biological samples before HPLC analysis, 13. Conference Chromatographic Methods and Human Health, Piešťany, Slovakia, November 1999, p. 15-16
- (25)* Brandšteterová E., Kubalec P., Bovanová L.: Sample preparation in clinical, veterinary and food HPLC analysis prednáška, InCom'99, Düsseldorf, Germany, March 1999
- (26)* Bučková M., Ozábalová K., Labuda J.: Selectivity of ionex modified electrodes, Book of Abstracts, Modern Electroanalytical Methods, An International. Conference, Seč, Czech Republic, 1999, p. PO7.
- (27)* Bustin D., Tomčík P.: Determination of Dithiocarbamate with Electrogenerated Hypobromite by Titration in the Diffusion Layer of Interdigitated Array Microelectrode 37th IUPAC Congress Frontiers in Chemistry: Molecular Basis of the Life Sciemes, ELC - 2 - 004, Berlin, Germany, 1999, p. 893
- (28)* Bustin D., Rievaj M.: Application of IDA Microelectrodes in Ultra - Trace Determination of Analyts not Suitable for Stripping Voltammetry, 37th IUPAC Congress Frontiers in Chemistry Molecular Basis of the Life Sciences, APP - 1 - 017, Berlin, Germany, 1999, p. 290
- (29)* Bustin D., Rievaj M.: Polarographic Study of the Reactions of cis- and trans- Dicyanochromium (III) Complexes with Hg (II) Complexes with Hg (II) Modern Electroanalytical Mehods, International Conference, Seč, Czech Republic, 1999, Book of Abstracts PO/8
- (30)* Bustin D., Tomčík P., Rievaj M.: Interdigitated Microelectrode Array - a Sensor For Trace Electroanalysis, 45th International Conference on Analytical Sciences and Spectroscopy ICASS Vancouver, Canada, 1999, Book of Abstracts p. 103

- (31)* Bustin D., Tomčík P., Rievaj M.: Interdigitated Microelectrode Array Diffusion Layer Titrations with Electrogenerated Hypobromite, 45th International Conference on Analytical Sciences and Spectroscopy ICASS Vancouver, Canada, 1999, Book of Abstracts p. 233 - 234
- (32)* Bustin D., Tomčík P., Rievaj M.: Iodimetry in the Diffusion Layer of an Interdigitated Microelectrode Array, 45th International Conference on Analytical Sciences and Spectroscopy ICASS Vancouver, Canada, 1999, Book of Abstracts p. 234
- (33)* Čaniová A., Brandšteterová, E. Argalášová K., Lux A.: HPLC stanovenie Peroxizomicínu A1 v in vitro kultúrach rastlín rodu *Karwinskia* (in Slovak), 13. Conference Chromatographic Methods and Human Health, Piešťany, Slovensko, November 1999, p. 86-87.
- (34)* Ďuračková Z., Labuda J., Liptáková A., Weser U.: The tetraaza Schiff base macrocyclic copper(II) complex as a DNA modulator, Coordination Chemistry at the Turn of the Century, G. Ondrejovic and A. Sirota, Slovak Technical University Press Bratislava, Slovakia, 1999, pp. 315-320
- (35)* Ďuračková Z., Labuda J., Liptáková A., Wesser U.: The tetraaza Schiff base macrocyclic copper(II) complex as a DNA modulator, Conf. Coord. Chem. Bratislava-Smolenice, Slovakia, 1999, p. 99.
- (36)* Ferancová A., Korgová E., Miko R., Labuda J.: Stanovenie liečiv elektrochemickým senzorom modifikovaným cyklodextrínom (in Slovak), Zborník príspevkov 51. zjazdu chemických spoločností, Nitra, Slovakia, 1999, p. A-PO24
- (37)* Fourest B., Tarapčík P., Lagarde G., Kowal A., Illemassene M., Hubert S.: Use of Capillary Electrophoresis for Speciation Purposes Involving f-elements; Application to the systems $\text{Nd}^{3+}/\text{H}_2\text{PO}_4^-$ and $\text{UO}_2^{2+}/\text{IO}_3^-$. Workshop on Evaluation of Speciation Technology, Tokai-mura, Japan, November 1999, p. 23-24
- (38)* Hercegová A., Sádecká J., Polonský J.: Stanovenie fenoprofenu v sére kapilárnou izotachoforézou (in Slovak), XIII. International conference Chromatografické metódy a zdravie človeka, Zborník príspevkov, Piešťany, Slovakia, 1999, 75 - 76, ISSN 1335 - 5236
- (39)* Hercegová A., Sádecká J., Polonský J.: Izotachoforetické štúdium vybraných antireumatík (in Slovak), 51. zjazd chemických spoločností, Zborník príspevkov, Nitra, Slovakia, 1999, ISSN 80-227-1250-7
- (40) Hroboňová K., Lehotay J., Horváthová J.: Analýza nitroaromatických látok metódou HPLC s využitím on line predkoncentrácie (in Slovak), 51. zjazd chemických spoločností, Nitra, September 1999, Zborník príspevkov A-P06.
- (41) Hroboňová K., Lehotay J.: HPLC separácia enantiomérov potenciálnych β -blokátorov (in Slovak), 13th International Conference Chromatographic methods and human health, Piešťany, Slovakia, November 1999, Proceedings, p. 55-56
- (42) Hroboňová K., Lehotay J., Čižmárík J., Čelková H., Kušnírová-Čurlíková M.: HPLC enantioselektívna separácia 1,4-piperazino derivátov aryloxyaminopropanolu použitím vancomycínovej chirálnej stacionárnej fázy (in Slovak), 28. Conference Syntéza a analýza liečiv, Hradec Králové, Czech Republic, September 1999, Zborník, P41 p. 79
- (43) Hroboňová K., Lehotay J., Horváthová V.: Analýza nitroaromatických látok metódou HPLC s využitím on line predkoncentrácie (in Slovak), 51. zjazd chemických spoločností, Nitra, Slovakia, September 1999
- (44)* Hroboňová K., Lehotay J., Čižmárík J., Čelková H., Kušnírová-Čurlíková M.: HPLC enantioselektívna separácia 1,4-piperazino derivátov aryloxyaminopropanolu použitím vancomycínovej chirálnej stacionárnej fázy (in Slovak), 28. conference Syntéza a analýza liečiv, Hradec Králové, Czech Republic, September 1999
- (45)* Hroboňová K., Lehotay J.: HPLC separácia enantiomérov potenciálnych β -blokátorov (in Slovak), 13th International Conference Chromatographic methods and human health Piešťany, Slovakia, November 1999
- (46)* Karovičová J., Greifová M., Greif G., Polonský J., Kametová M.: Vplyv teploty na rast a produkciu organických kyselín kmeňmi rodu *enterococcus* (in Slovak), Laboralim 99, Zborník prednášok z XII. konferencie o analytických metódach v potravinárstve Banská Bystrica, Slovakia, p. 63-71, ISBN 80-227-1189-6, 1999
- (47) Kasprzyk G., Bobrowski A., Mocák J., Knap W.: Krytyczna ocena sposobow oszacowania granicy wykrywalnosci I oznaczalnosci w analizie sladow (in Poland), XVII Zjazd Naukowy Polskiego Towarzystwa Chemicznego. Pol. Tow. Chem., Rzeszow, Poland, p.S 8, K-6, 1999
- (48) Kasprzyk G., Bobrowski A., Mocák J.: Rozdzielczosc metody Woltamperometriycznej z liniowa zmiana potencjalu i zastosowaniem semi-rozniczkowania krzywych pradowo-napieciowych (in Poland), XVII Zjazd, Naukowy Polskiego Towarzystwa Chemicznego. Pol. Tow. Chem., Rzeszow, Poland, p.S 8, P-30, 1999
- (49) Kohúteková V., Beinrohr E., Dzurov J.: Príspevok k hodnoteniu koróznej odolnosti medzivrstvy FeSn2 pocínovaných obalových plechov skúškou ATC (in Slovak), Zborník prednášok "Hutní Analytika 99" Malenovice, Czech Republic, pp. 92-98, 1999
- (50)* Korenková E., Matisová E., Slobodník J.: Utilisation of Large Volume Injection Techniques and Fast Gas Chromatography/Mass Spectrometry in Analysis of Environmental Samples, 13th International Conference Chromatographic Methods and Human Health, Piešťany, Slovakia, p.36-37, 1999
- (51)* Korgová E., Buzinkaiová T.: Možnosti stanovenia imipramínu elektródou modifikovanou cyklodextrínom a kapilárnou izotachoforézou (in Slovak), Proceedings, 13th International Conference Chromatographic Methods and Human Health Piešťany, Slovakia, pp. 67-68, September 1999
- (52)* Korytár P., Matisová E., Lefflerová H.: On-Column Injection in Trace Analysis by fast Gas Chromatography, Abstract of Papers, 19th International Symposium Industrial Toxicology 99 Bratislava, Slovakia, p. 273-276, 1999
- (53) Korytár P., Matisová E.: Rýchla plynová chromatografia (in Slovak), 13th International Conference Chromatographic Methods and Human Health Piešťany, Slovakia, p. 51-52, September 1999
- (54) Korytár P., Matisová E., Lefflerová H.: Porovnanie split a on-column dávkovania v rýchlej plynovej chromatografii (in Slovak), 13th International Conference Chromatographic Methods and Human Health Piešťany, Slovakia, p. 53-54, 1999
- (55) Korytár P., Matisová E.: Aplikácia rýchlej plynovej chromatografie na analýzu uhľovodíkov (in Slovak), 51. zjazd chemických spoločností, Zborník príspevkov, Nitra, Slovakia, p.A-PO13, 1999
- (56)* Krupčík J., Oktavec D., Skačáni I., Daučík P.: Problems with the determination of petroleum hydrocarbons in environmental samples, Zborník zo seminára Central Europe-USA Workshop on Environmental Chemistry, Praha-Průhonice, Czech Republic, 2 p, June 1999

- (57)* Krupčík J., Oswald P., Špánik I., Benická E., Daučík P.: On the capillary gas chromatographic determination of petroleum hydrocarbons in environmental samples, Special Section, Ed. John Malin, Workshop on Environmental Chemistry Abstract, Praha-Průhonice, Czech Republic, June 1999, Crit. Rev. Anal. Chem 29, 92-93, 1999
- (58)* Krupčík J., Oswald P., Benická E., Špánik I., Májek P., Sandra P.: Capillary gas chromatographic separation of isomers and enantiomers on modified cyclodextrins, Zborník z medzinárodného sympózia Chiranal 99, Prírodovedecká fakulta UP, Olomouc, Czech Republic, 2 p, September 1999
- (59)* Krupčík J., Špánik I., Oswald P., Benická E., Welsch T., Sandra P.: Selectivity tuning in chiral chromatography, Zborník zo sympózia Chiranal 99, PF UP, Olomouc, Czech Republic, 2 p., September 1999
- (60)* Krupčík J., Oswald P., Benická E., Špánik I., Májek P., Sandra P.: Capillary gas chromatographic separation of isomers and enantiomers on modified cyclodextrins, Chiranal 99, Olomouc, Czech Republic, 2 p., September 1999
- (61)* Krupčík J.: Dvojmerná kapilárna plynová chromatografia opticky aktívnych zlúčenín (in Slovak), Zborník z XII. konferencie Laboralim '99, Banská Bystrica, Slovakia, February 1999
- (62)* Krupčík J., Špánik I., Oswald P., Benická E., Skačáni I., Májek P., Sandra P.: Separation of positional isomers and enantiomers by GC on modified cyclodextrin capillary columns, symposium In Com 99 Düsseldorf, Germany, March 1999
- (63) Krupčík J.: Súčasný stav a perspektívy kapilárnej plynovej chromatografie (in Slovak), 1. seminár Chromatografické metódy-nové trendy a ich aplikácie v analytickej praxi, PF UPJŠ Košice, Slovakia, May 1999
- (64) Krupčík J.: Súčasný stav a perspektívy kapilárnej plynovej chromatografie (in Slovak), VII. letná škola plynovej chromatografie, CHTF STU Bratislava, Slovakia, June 1999
- (65) Krupčík J.: Inštrumentácia v plynovej chromatografii (in Slovak), VII. letná škola plynovej chromatografie, CHTF STU Bratislava, Slovakia, June 1999
- (66) Krupčík J.: Chirálna separácia plynovou chromatografiou (in Slovak), VII. letná škola plynovej chromatografie, CHTF STU Bratislava, Slovakia, June 1999
- (67) Krupčík J.: Analýza ropných látok v životnom prostredí (in Slovak), Semináry TermoQuest, hotel Poppy, Piešťany, Slovakia, October 1999
- (68)* Kubalec P., Brandšteterová E., Bovanová L.: Stanovenie itraconazolu v ľudskom sére, porovnanie off-line a on-line predseparačných úprav vzorky (in Slovak), 51. zjazd chemických spoločností Nitra, Slovakia, II. zväzok, 2 p., September 1999
- (69)* Kubalec P., Brandšteterová E.: Comparison of restricted access media precolumn and standard C18 precolumn in direct sample analysis, 13. conference Chromatographic Methods and Human Health Piešťany, Slovakia, p. 80-81, November 1999
- (70)* Kubalec P., Brandšteterová E.: Comparison of three types of restricted access media precolumns in direct sample analysis, 13. conference Chromatographic Methods and Human Health Piešťany, Slovakia, p. 82-83, November 1999
- (71)* Kubalec P., Brandšteterová E.: The use of restricted access media precolumns in the determination of itraconazole in serum samples, In Com 99 Düsseldorf, Germany, March 1999
- (72)* Labuda J., Bučková M., Vaníčková M., Tarapčík P., Ďuračková Z.: Metal - DNA interactions and their biochemical and bioanalytical consequences, Coordination Chemistry at the Turn of the Century, G. Ondrejovic and A. Sirota, Slovak Technical University Press Bratislava, Slovakia, pp. 377-382, 1999
- (73)* Labuda J., Bučková M., Vaníčková M., Tarapčík P., Ďuračková Z.: Metal - DNA interactions and their biochemical and bioanalytical consequences, Proc. 17th Conf. Coord. Chem. Bratislava-Smolence, Slovakia, p. 102, 1999
- (74)* Labuda J., Vaníčková M., Bučková M.: Some applications of DNA modified electrodes, Tagungsband ELACH 4, Rostock-Warnemuende, Germany, p. 43, 1999
- (75)* Labuda J., Vaníčková M., Bučková M.: Detection of risk chemicals at DNA bioprobes, Book of Abstracts, Modern Electroanalytical Methods, An International Conference Seč, Czech Republic, p. OR 10, 1999
- (76)* Labuda J., Bučková M., Vaníčková M., Surugiu I., Danielsson B.: Laboratory prototypes of DNA-modified screen printed and other electrodes and their applications, Newsletters INCO-COPERNICUS IC15-CT96-0804 5th Workshop Manufacturing of Laboratory prototypes Otrokovice, Czech Republic, 1 p., 1999
- (77)* Laštincová J.: Stanovenie vybraných prvkov v pôde po mikrovlnnom rozklade (in Slovak), Semináry Dni analytickej chémie Donovaly, Slovakia, 1999
- (78)* Lehotay J., Hroboňová K., Hatrík Š.: Trace Analysis of Some organic Compounds in Environmental Samples by HPLC, American Chemical Society, Central European Workshop on Environmental Chemistry Praha - Průhonice, Czech Republic, Proc. Monday, p. 14-44, June 1999
- (79)* Lehotay J., Hroboňová K.: Trace analysis some toxic compounds by HPLC, 19th International Symposium Industrial Toxicology 99 Bratislava, Slovakia, Proc. p. 109-113, June 1999
- (80)* Lehotay J.: Súčasný stav a trendy vývoja HPLC v stopovej analýze (in Slovak), XII. konferencie Laboralim 99 Banská Bystrica, Slovakia, Zborník konferencie p. 6-11, February 1999
- (81) Lehotay J., Hroboňová K.: Separácia zmesi enantiomérov niektorých α -aminokyselín metódou HPLC (in Slovak), 51. zjazd chemických spoločností Nitra, Slovakia, Zborník príspevkov A-P4, September 1999
- (82)* Lehotay J., Hroboňová K.: Chirálna separácia v HPLC (in Slovak), 13th International Conference Chromatographic methods and human health, Proceedings, Piešťany, Slovakia, p. 9-10, November 1999
- (83) Lehotay J., Hroboňová K.: HPLC Trace Analysis of Some Organic Pollutants, International Symposium on Instrumentalized Analytical Chemistry and Computer Technology In Com 99 Dusseldorf, Germany, March 1999
- (84) Lehotay J.: Trendy v HPLC (in Slovak), 1. seminár Chromatografické metódy - nové trendy a ich aplikácie v analytickej praxi Košice, Slovakia, May 1999
- (85) Lehotay J., Čížmárik J.: Najnovšie separačné techniky v analýze liečiv (in Slovak), Symposium Syntéza a analýza liečiv a látok ovplyvňujúcich životné prostredie, Incheba Bratislava, Slovakia, 1999
- (86) Lehotay J., Hroboňová K., Hatrík Š.: Trace Analysis of Some organic Compounds in Environmental Samples by HPLC, American Chemical Society, Central European Workshop on Environmental Chemistry Praha - Průhonice, Czech Republic, June 1999

- (87)* Lehotay J., Hroboňová K.: Trace analysis some toxic compounds by HPLC, 19th International Symposium Industrial Toxicology 99 Bratislava, Slovakia, June 1999
- (88)* Lehotay J.: Súčasný stav a trendy vývoja HPLC v stopovej analýze (in Slovak), XII. International conference Laboralim 99 Banská Bystrica, Slovakia, February 1999
- (89) Lehotay J., Hroboňová K.: Separácia zmesí enantiomérov niektorých α -aminokyselín metódou HPLC (in Slovak), 51. zjazd chemických spoločností Nitra, Slovakia, September 1999.
- (90) Lehotay J., Hroboňová K.: Chirálné separácie v HPLC (in Slovak), 13th International Conference Chromatographic methods and human health, Piešťany Slovakia, November 1999
- (91)* Liptáková A., Ďuračková Z., Labuda J.: Effect of some antioxidants on the nuclease-like activity of some Cu(II) complex, In: Proc. 17th Conf. Coord. Chem. Bratislava-Smolence, Slovakia, p. 114, 1999
- (92) Manová A., Beinrohr E., Jurica L.: Elektrochemické generovania arzénu pre AAS (in Slovak), Zborník príspevkov 51. Zjazdu Chemických spoločností Nitra, Slovakia, p. A-P11, 1999
- (93)* Matisová E.: Utilization of HRGC in Combination with Preconcentration and/or preseparation Techniques in Enviromental Analysis, Abstract of Papers, 19th International Symposium Industrial Toxicology 99 Bratislava, Slovakia, p. 54-60, 1999
- (94)* Matisová E., Korytár P.: Rýchla plynová chromatografia a jej využitie v analýze organických látok (in Slovak), 13th International Conference Chromatographic Methods and Human Health Piešťany, Slovakia, p. 11-12, 1999
- (95) Matisová E.: Bezrozpúšťadlové obohacovacie techniky v kombinácii s HRGC, Analýza organických látok (in Slovak), 2 THETA Komorní Lhotka, Czech Republic, p. 31-44, 1999
- (96) Matisová E.: Príprava vzorky (in Slovak), Letná škola plynovej chromatografie CHTF STU, Bratislava, Slovakia, 1999
- (97) Matisová E.: Separačné a predkoncentračné techniky (in Slovak), Letná škola plynovej chromatografie CHTF STU Bratislava, Slovakia, 1999
- (98) Matisová E., Straková M., Sedláková J.: Súčasný trendy v analýze organických látok vo vodnej matici s využitím HRGC a jej kombinácie s predkoncentračnými technikami, Analýza organických látok v životnom prostredí (in Czech), Komorní Lhotka, Czech Republic, Zborník prednášok 2 THETA, p.18-21, 1999
- (99) Matisová E.: Kombinácia predkoncentračných techník a kapilárnej plynovej chromatografie (HRGC) a ich využitie v environmentálnej analýze (in Slovak), XV. Symposium Syntéza analýza liečiv a látok ovplyvňujúcich životné prostredie, SFS, Incheba Bratislava, Slovakia, 1999
- (100) Matisová E., Straková M., Šimon P.: Využitie membránových procesov v stopovej analýze prchavých organických látok (in Slovak), 51. zjazd chemických spoločností Nitra, Slovakia, Zborník príspevkov, p.A-P5, 1999
- (101) Medveďová M., Matisová E.: Využitie SPME v kombinácii s kapilárnou GC na stanovenie semiprchavých látok (in Slovak), 13th International Conference Chromatographic Methods and Human Health Piešťany, Slovakia, p. 114-115, 1999
- (102)* Medveďová M., Matisová E.: Mikroextrakcia tuhou fázou (SPME) semiprchavých organických látok (in Slovak), 13th International Conference Chromatographic Methods and Human Health Piešťany, Slovakia, p.116-117, 1999
- (103) Medveďová M., Matisová E., Šimon P., Vraniaková J.: Solids – Phase Mikroextraction of Volatile Compounds Using Open Caps Vials, Abstract of Papers, 19th International Symposium Industrial Toxicology 99 Bratislava, Slovakia, p.265-268, 1999
- (104) Mocák J., Bustín D.: Differintegration as an Electroanalytical Technology Modern Electroanalytical Methods, International Conference Seč, Czech Republic, Book of Abstracts LE 11 ISBN 80-7194 –212 X, 1999
- (105) Mocák J., Phillips G.O., Balla B.: Multivariable Analysis of Natural Products and Food Products, Chemometrics V International Chemometrics Conference Czech Chem. Soc., Brno, Czech Republic, pp. I5/1-I5/3, 1999
- (106) Mocák J.: Quality of Chemical Measurements and Chemical Metrology, PHARE Seminar Building Open and Distance Learning Networks, European Training Foundation Budapest, Hungary, 7 p., 1999
- (107) Mocák J.: Neistoty v lineárnej a nelineárnej kalibrácii - odvodenie a výpočet, Systém kvality merania, neistoty a chemická metrológia (in Slovak), Zborník referátov, Chemmea Bratislava, Slovakia, p. 23-32, 1999
- (108) Mocák J.: Určenie neistoty v lineárnej a nelineárnej kalibrácii (in Slovak), 1. Workshop Nejistoty měření a chemická metrologie, Sborník referátů, Chemmea Bohemia Brno, Czech Republic, p. 8 – 15, 1999
- (109)* Mocák J., Bustín D.: Differintegration as an Electroanalytical Technology, International Conference Modern Electroanalytical Methods, Book of Abstracts, University Pardubice, Czech Republic, p. LE/11, 1999
- (110)* Mocák J., Kasprzyk G., Knap W., Bobrowski A.: Verification of Various Methods of Defining Detection and Quantification Limits in Trace Analysis, International Conference Modern Electroanalytical Methods - Book of Abstracts, University Pardubice, Czech Republic, p. PO/24, 1999
- (111)* Netriová J., Johannesová Z., Brandšterová E., Skačáni I.: Stanovenia hladín morfinu a jeho metabolitov HPLC metódou u onkologických pacientov (in Slovak), 13. conference Chromatographic Methods and Human Health Piešťany, Slovakia, p. 63-64, November 1999
- (112)* Oktavec D., Lehotay J., Kaderová E.: Možnosti použitia molekulovej a atómovej spektrometrie pri stanovení niektorých látok ovplyvňujúcich životné prostredie (in Slovak), 51. zjazd chemických spoločností Nitra, Slovakia, Zborník príspevkov A-P9, September 1999
- (113) Oktavec D., Lehotay J., Kaderová E.: Možnosti použitia molekulovej a atómovej spektrometrie pri stanovení niektorých látok ovplyvňujúcich životné prostredie (in Slovak), 51. zjazd chemických spoločností Nitra, Slovakia, Coord. Chem. At the Turn of the Century 1999, Vol.4, 115 – 120, September 1999
- (114)* Ondrejkošová I., Mikloš D., Vrabel V.: Iron (III) Triphenylarsine Oxide Complexes with Br and NCS Ligands, Proceedings Seventeenth Conference on Coordination Chemistry, Smolenice, Slovakia, PP. 99, p.115, June 1999
- (115)* Oswald P., Bajdichová M., Krupčík J., Špánik I.: Determination of enantiomerization barriers by chiral gas chromatography, Zborník zo sympózia Chíranal 99, PF UP Olomouc, Czech Republic, 2 p., September 1999
- (116)* Oswald P., Krupčík J., Špánik I., Benická E., Daučík P.: On the capillary gas chromatographic determination of petroleum hydrocarbons in environmental samples, Proceedings from 39th International Petroleum Conference, Slovnaft Research Institute of Petroleum and Hydrocarbon Gases Bratislava, Slovakia, E.15, 2 p., September 1999
- (117)* Oswald P., Bajdichová M., Krupčík J., Špánik I.: The use of deconvolution method for the determination of enantiomerization barriers in chiral gas chromatography, 13th International conference Chromatographic methods and human health Piešťany, Slovakia, p. 2, November 1999

- (118)* Peťka J., Mocák J., Farkaš P., Balla B., Sádecká J., Kováč M.: Utilisation of multivariate statistical methods for authentication of Slovak varietal wines, Proceedings of the Euro Food Chem. X - Functional Foods, Vol. 3 (Editors R., Lásztity, W. Pfannhauser). FECS Food Chemistry Division, Budapest, Hungary, pp. 956 – 964, 1999
- (119)* Peťka J., Mocák J., Farkaš P., Sádecká J., Kováč M.: Využitie multivariačných štatistických metód pri autentifikácii odrodových vín (in Slovak), Laboralim 99. Zborník prednášok z XII. konferencie o analyt. metódach v potravinárstve Banská Bystrica, Slovakia, pp. 195-20, ISBN 80-227-1189-6, 1999
- (120)* Polonský J.: Využitie elektromigračných metód pri analýze potravín (in Slovak), Laboralim 99, Zborník prednášok z XII. medzinárodnej konferencie o analytických metódach v potravinárstve Banská Bystrica, Slovakia, 24-28, ISBN 80-227-1189-6, 1999
- (121)* Rievaj M., Bustin D., Zinato E.: Electrochemical Study of the Structure of the Structure of Reaction Products of cis- and trans- dicyanochromium (III) complexes with Hg (II) Coordination chemistry at the Turn of the Century, Monograph Series of the International Conferences on Coordination Chemistry Bratislava, Slovakia, vol. 4 p.171-176, ISSN 1335-308 X, ISBN 80-227-1225-6, 1999
- (122) Rievaj M., Bustin D.: Využitie IDA mikroelektrod na stanovenie stopových obsahov látok nevhodných re stripping analýzu (in Slovak), Zborník príspevkov 51. Zjazdu chemických spoločností Nitra, Slovakia, ISBN 80-227-1250-7, A - PO 28, 2 p., 1999
- (123)* Rievaj M., Bustin D., Zinato E.: Electrochemical Study of the Structure of Reaction Products of cis- and trans-dicyanochromium (III) Complexes with Hg (II) Proceedings of the XVII Conference on Coordination Chemistry Smolenice, Slovakia, p.52, 1999
- (124)* Slezáčková M., Matisová E.: The Application of SPME in Environmental Analysis, 39th International Petroleum Conference VÚRUP Bratislava, Slovakia, p.E14-1 – E14-14, 1999
- (125)* Sokol J., Matisová E., Nagy J., Cabada R.: Determination of Oxytetracycline Residues in Honey. Abstract of Papers, 19th International Symposium Industrial Toxicology 99 Bratislava, Slovakia, p. 132-134, 1999
- (126)* Špánik I., Oswald P., Krupčík J.: Mechanistic aspects of enantiomer separation on cyclodextrin stationary phases by gas chromatography, Zborník zo sympózia CHIRANAL 99, PF UP, Olomouc, Czech Republic, 1 p., September 1999
- (127)* Tarapčík P., Labuda J., Fourest B., Pätoprstý V.: The measurement uncertainties by simulating approach - simple method for solving problem of distribution law in chemical measurements, Proceedings, 3rd workshop "The Status of Traceability in Chemical Measurement" Bratislava, Slovakia, pp.113-114, 1999
- (128)* Tomčík P., Bustin D.: Interdigitated Array Diffusion Layer Titration of Dithiocarbamates with Electrogenerated Hypobromite Modern Electroanalytical Methods International Conference Seč, Czech Republic, Book of Abstracts PO/79 (ISBN 80 - 7 - 7194 - 212X), 1999
- (129)* Vaníčková M., Bučková M., Orlická M., Labuda J.: Analysis with DNA modified carbon paste electrodes, Book of Abstracts, Modern Electroanalytical Methods, An Internatl. Conference Seč, Czech Republic, p. PO 82, 1999
- (130)* Vrábel V., Garaj J., Sivý J., Oktavec D.: Crystal Structure of aquadiisothiocyanato (N,N,N',N'- tetramethyletylendiamine -N,N') Copper (II), Seventeenth Conference on Coordination Chemistry Smolenice, Slovakia, June 1999
- (131)* Vrábel V., Oktavec D., Sivý J., Marchalín Š.: Crystal structure and biological activity of 1,4-dihydropyridine derivatives, Structura, Hodonín u Kunštátu, Czech Republic, June 1999

C. Books and Textbooks

- (1) Čakrt M.: Encyclopaedia Beliana, Prvý zväzok, A- Belk, Encyklopedický ústav SAV, Bratislava, Slovakia (1999)
- (2) Mocák J.: Evaluation Procedures and Uncertainties, Open and Distance Learning Study "Quality of Chemical Measurements and Chemical Metrology", European Training Foundation, Torino 1999, 128 pages.
Kordik, D., Mocak, J.: Manual of the Open and Distance Learning Study, Open and Distance Learning Study "Quality of Chemical Measurements and Chemical Metrology", European Training Foundation, Torino 1999, 36 pages (1999)