FOREWORD

The Faculty of Chemical and Food Technology (FCHPT) is one of six faculties of the Slovak University of Technology. The history of the Faculty dates back to 1939, when Law No. 188 of 25 July 1939 allowed the establishment of a Chemical Engineering branch at the Slovak University of Technology. The specialisation profile of the Faculty has developed steadily in accordance with the needs of the community.

The Slovak higher education has its rich history. Our Faculty follows in the footsteps of its famous predecessor in the education of technical chemistry, i.e., the famous Mining Academy in Banská Štiavnica constituted by empress Maria Theresa in 1762. The establishment of the Dr. M. R. Štefánik College of Technology in 1937 and subsequently, that of the Slovak College of Technology in 1939 succeded in keeping the high standard of technical education in Slovakia.

Within the time of its existence, the Faculty has educated more than 16 700 graduates (more than 3 600 graduates in food engineering). The Faculty has trained nearly 1 300 graduates in postgraduate doctorate courses granting the title PhD in chemical and technical sciences. Thus, the Faculty has helped considerably to increase scientific knowledge in industry, education system, scientific and research institutes, and administrative services.

The Faculty occupies a very specific position within the Slovak Republic and relates to the whole spectrum of chemical, food, pharmaceutical and consumer industries, and ecology. At present, some 1600 students study at the Faculty and they are trained by qualified pedagogical and research staff. Out of the total number of 227 teachers, there are 31 full professors, 97 associate professors, 99 assistant professors. Out of 70 research workers, 2 hold the title DSc, 40 hold the title PhD. Both the teaching process and research activities are centred within 24 Departments and Central Laboratories.

The Faculty currently offers study in BSc courses, MSc courses, and PhD. The undergraduate form of study is organized at two levels: Bachelor-of-Science and Master-of-Science programmes. The first level BSc course for all students lasts three years, and is run in two branches: Chemical Technology and Food Technology. This first level of the study ends by a state examination and a project granting the student the title Bachelor of Science (BSc). The nominal span of the study in the BSc course is 3 years. The second level MSc course is run in 9 majors with several possible specializations over two years. The MSc course ends by a state examination and by defending a diploma thesis. The graduate obtains the title Master of Science (MSc). In addition to the natural-science basis, students of all branches study basic engineering subjects, e.g. Chemical Engineering, Processes Control, Basics of Chemical and Food Processing Technology, as well as subjects on Economy, Law and Ecology.

The highest form of university education is currently the doctorate study, which in the past was run as a form of preparation for scientific work. In 1997 the Ministry of Education of the Slovak Republic approved the right of the Faculty to train and to administer examinations in PhD Courses. The Faculty has conferred the title PhD in 16 branches of the doctoral study. (Chemical Physics, Inorganic Chemistry, Organic Chemistry, Analytical Chemistry, Physical Chemistry, Macromolecular Chemistry, Biochemistry, Microbiology, Inorganic Technology and Materials, Organic Technology and Technology of Fuels, Technology of Macromolecular Materials, Chemical Engineering and Control of Processes, Chemistry and Technology of Environment, Chemistry and Food Technology, Biotechnology, Applied Informatics).

The Faculty has a widely oriented programme, leading to the development of basic scientific fields in chemistry, chemical technology and food processing. This wide scientific orientation of Departments at the Faculty allows goal-oriented training of undergraduates and thereby their quicker transition to industry. There are several scientific schools at the Faculty which are successful at winning grants from domestic and international sources and at organising scientific meetings. The Faculty generally maintains an important international position. In addition to basic research, the Faculty participates in widely applied research for practice. The cooperation with many factories and companies allows for a swift application of research results in practice. At the same time the Faculty obtains considerable financial support.

The Faculty participates in issuing the specialized scientific journals: Chemical Papers, Fibres and Textile, Plastics and Rubber, Journal of Radioanalytical and Nuclear Chemistry, Biology, Folia Microbiologica, Vinič a Víno (Wineyard and Wine).

The scope and quality of the scientific activity keep the Faculty at a level, which is comparable with other top research and university centres in the world. This can be proved by the above mentioned number of grants, staff invitations to participate in conferences abroad, wide cooperation with foreign universities and institutions, and memberships in international organizations.

Any further details about the activities of the Faculty of Chemical Technology can be found in the Annual Report 2002.

February 2003

Prof. Dušan Bakoš, PhD, DSc
Dean

PRESIDIUM OF THE FACULTY

Dean: Prof. Vladimír Báleš, PhD, DSc

Vice-deans: Prof. Dušan Bakoš, PhD, DSc
Assoc. Prof. Pavel Kovařík, PhD
Prof. Ján Šajbidor, PhD, DSc
Assoc. Prof. Zdenek Židek, PhD

SCIENTIFIC COUNCIL

Chairman: Prof. Vladimír Báleš, PhD, DSc

Vice-chairman: Prof. Dušan Bakoš, PhD, DSc

Members:
Prof. Stanislav Biskupič, PhD, DSc
Prof. Dušan Bustin, PhD, DSc
Assoc. Prof. Gabriel Čík, PhD
Prof. Pavel Fellner, PhD, DSc
Prof. Ľubor Fišera, PhD, DSc
Prof. Milan Hronec, PhD, DSc
Assoc. Prof. Pavel Kovařík, PhD
Prof. Fedor Malík, PhD, DSc
Prof. Milan Melník, PhD, DSc
Prof. Ján Mikleš, PhD, DSc
Assoc. Prof. Štefan Schmidt, PhD
Assoc. Prof. Zdenek Židek, PhD
Assoc. Prof. Tomáš Bleha, PhD, DSc
Miroslav Havlík
Assoc. Prof. Karel Kadlec, PhD
Milan Kováč, PhD
Ján Líška
Prof. Anton Osvald, PhD
Jozef Šimúth, PhD, DSc

Honorary Members:
Milan Baláž
Tibor Doboly
Ondrej Gattnar, PhD
Jozef Kollár
Ján Maťaš
Prof. Stanislav Miertuš, PhD, DSc

ACADEMIC SENATE

Chairman: Assoc. Prof. Ján Dvoran, PhD.

Vice-chairmen: Assoc. Prof. Pavol Hudec, PhD
Andrea Baránková, student

Members:
Assoc. Prof. Ján Labuda, PhD, DSc
Prof. Marián Koman, PhD, DSc
Assoc. Prof. Jana Gabčová, PhD
Assoc. Prof. Soňa Jantová, PhD
Assoc. Prof. Anton Gatial, PhD
Assoc. Prof. Ivan Hudec, PhD
Vladimír Lukeš, PhD
Assoc. Prof. Milan Čertík, PhD
Assoc. Prof. Jozef Markoš, PhD
Prof. Eberhard Borsig, PhD, DSc
Miroslav Hutňan, PhD
Assoc. Prof. Jozef Augustín, PhD
Tibor Jakubík, PhD
Viliam Lendel, PhD
Assoc. Prof. Jozef Polonský, PhD
Vladimír Kovár, PhD
Assoc. Prof. Anna Kolesárová, PhD
Viera Jančovičová, PhD
Dušan Špirko, PhD
Assoc. Prof. Viktor Milata, PhD
Štefan Šutý, PhD
Zuzana Cvengrošová, PhD
Assoc. Prof. Mária Takácsová, PhD
Pavel Kusý, PhD – until september 2002
Jana Garajová – from october 2002
Ondrej Dolgoš, PhD-student
František Podzimek, student
Branislav Prosnan, student
Karol Calík, student
Peter Ditte, student
Pavol Lukáč, student
Michal Tkáč, student – until august 2002
Rastislav Spišák, student – until august 2002
Peter Blaňár * – from september 2002
Janka Šeligová * – from september 2002

(* student)

DEPARTMENT OF ANALYTICAL CHEMISTRY

Head of Department
Prof. Jozef Lehotay, PhD DSc

Telephone: ++421-2-52926043
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Full Professors :
Dušan Bustin, PhD, DSc; Ján Krupčík, PhD, DSc; Jozef Lehotay, PhD, DSc; Eva Matisová, PhD, DSc; Ján Mocák, PhD, DSc;

Associate Professors :
Ernest Beinrohr, PhD; Eva Brandšteterová, PhD; Miroslav Čakrt, PhD; Ján Labuda, DSc; Drahomír Oktavec, PhD; Miroslav Rievaj, PhD; Jozef Polonský, PhD; Viktor Vrábel, PhD;

Assistant Professors :
Eva Benická, PhD; Tatiana Buzinkaiová, PhD; Andrea Hercegová, PhD; Svetlana Hrouzková, PhD; Elena Korgová, PhD; Pavol Májek, PhD; Alena Manová, PhD; Pavol Tarapčík PhD; Mária Vaníčková, PhD;

Research Fellows :
Miriam Bučková, PhD; Adriana Ferancová, PhD; Katarína Hroboňová, PhD; Jarmila Laštincová, PhD; Jana Sádecká, PhD; Ivan Skačáni, PhD; Ivan Špánik, PhD; Peter Tomčík, PhD; Magdaléna Valachovičová;

PhD Students:
Branko Balla (in 31.9.2002); Eva Blahová; Jana Ďungelová; Peter Korytár; Petra Kotianová; Milena Dömötörová (since 1.10.2002); Gabriela Karasová (since 1.10.2002);

Technical staff :
Marta Benešová; Zuzana Cifrová (till 30.9.2002); Ľubica Zajacová (since 1.12.2002); Jana Otrubová; Juraj Žemlička

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching (research, too) Laboratories:

Laboratory of capillary gas chromatography
Laboratory of high performance liquid chromatography
Laboratory of capillary isotachophoresis
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 organic elemental analysis
Laboratory of fluorescence analysis
Laboratory of chemometry
Laboratory of bioanalytical chemistry

B. Research Laboratories:

Laboratory of organic synthesis

III. TEACHING

A. Undergraduate Study

4th semester (spring)		
Analytical Chemistry I.	(2-2 h)	Polonský,Vrábel
Laboratory Practice AC I.	(0-4 h)	Valachovičová
5th semester (autumn)		
Analytical Chemistry II.	(2-2 h)	Bustin, Čakrt, Polonský
Laboratory Practice AC II.	(0-4 h)	Korgová
Testing and Quality Control	(1-1 h)	Čakrt
6th semester (spring)		
Semestral Project	(0-4 h)	Rojkovičová
7th semester (autumn)		
Analytical 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)	Sádecká
Lab.Practice I.	(0-10 h)	Sádecká
Biosensors	(2-1 h)	Labuda
Computer evaluation of anal. measurement	(2-0 h)	Májek, Mocák
8th semester (spring)		
Electrochemistry and Electroanalytical 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)	Sádecká
Trace Analysis and Microanalysis Methods	(2-0 h)	Beinrohr
9th semester (autumn)		
Bioanalytical Chemistry	(2-1 h)	Labuda
Identification of Chemical Substances	(2-1 h)	Lehotay, Liptaj
Lab.Practice of Spezialisation	(0-10 h)	Sádecká
Automatisation of Analytical Chemistry	(2-0 h)	Rievaj
Nuclear Analytical Chemistry	(2-0 h)	Tarapčík
10th semester (spring)		
Laboratory of Diploma Work	(0-30 h)	Rojkovičová

IV. CURRENT RESEARCH PROJECTS

A. VEGA Projekt No 1/9128/02 Development and Application of Direct Injection Assays for HPLC Analysis of Some Drugs and Toxic Compounds in Biological Samples (Eva Brandšteterová).

The aim of the project was the development and the application of new assays with the possibility of direct injection of biological samples into the HPLC system. SPE (Solid Phase Extraction) precolumn was integrated directly into the HPLC system what improves validation parameter values and minimizes the personal contact with biofluids. Automated HPLC procedures for the analysis of chosen drugs, natural and toxic compounds were compared with applied electromigration methods.

B. VEGA Projekt No 1/9129/02 Elektroanalysis by means of in-elektrode coulometric titration and interdigitated array of microelectrodes. Optimization of stages of trace analysis (Dušan Bustin).

The project is oriented to the investigation of in-electrode coulometric titration in porous electrodes for calibrationless determination of trace concentrations of metels and some non-metals and to the application of elaborated procedures for automated process analysis. It also intends to contribute to employment of chronoamperometry with the segments of inter- digitated microelectrode arrays for the calibrationless analysis of electroactive species. Chronoamperograms are to be obtained under redox-cycling or isolated segment conditions. The multivarite statistical data analysis are to be used for authentification and classification of food products, environmental samples as well as for the software aided clinical diagnosis.

C. Grant GAV 1/9127/02 Development of optimum methods for analyses of enantiomers of biologically active chiral substances by high performance liquid, supercritical fluid and gas chromatography (Ján Krupčík).

This project intends to contribute to development of methods for the direct analysis of enantiomers of selected biologically active chiral compounds by high performance liquid (HPLC), supercritical fluid (SFC) and gas (HRGC) chromatography. Following subparts shall be studied in this project: (i) Computer assisted optimum methods shall be developed for direct separations of enantiomers of selected biologically active chiral compunds by HPLC, SFC and GC methods using commercially available modified cyclodextrins (GC) and macrocyclic antibiotics (SFC and HPLC). (ii) Two columns in series and two dimensional HRGC and or HPLC shall be applied for the separation of enantiomers in complex mixtures. (iii) Computer assisted deconvolution of the peak clusters obtained separating the racemic mixtures shall be applied to determine the enantiomerization barrier of the thermally labile enantiomers by dynamic HPLC, SFC and GC. (iv) Principal component analysis and cluster analysis shall be used to classify the enantioselectivity of modified α-, β- and γ-cyclodextrin used in HRGC.

D. VEGA Project No 1/9126/02 Large Volume Injection in Conventional and Fast Capillary Gas Chromatography (Eva Matisová).

The aim of the project is the development of the large volume sample injection methods in combination with conventional, fast capillary gas chromatography and GC-MS for trace analysis of volatile and semi-volatile organic compounds in multicomponent model and real environmental samples. A part of the project is connected with the development of comprehensive gas chromatography (GCxGC) and its combination with the large volume sample injection for the analysis of multicomponent samples of trace analytes. A part of the project is devoted to the application of the gained knowledge to the trace and ultra-trace analysis of multicomponent mixtures of organic compounds in environmental matrices including the sample pre-treatment for the large volume sample injection.

E. 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.

F. CEEPUS PL-110 02/03: "Development and improvement of modern analytical methods for monitoring the environmental pollution and introduction of the quality systems and accreditation to routine analytical laboratories" (Ján Mocák).

Educational project enabling the exchange of students and teachers among the following partner universities:(a) The University of Mining and Metallurgy, Cracow, Poland, (b) Karl-Frenzens-University, Graz, Austria, (c) The University of Maribor, Maribor , Slovenia, (d) The University of Pardubice, Pardubice, Czech Republic, (e) Slovak University of Technology, Bratislava, Slovakia (national coordinator: Jan Mocak). Project duration: academic year 2002/2003.

G. Aktion Oesterreich-Slowakei: "Chemometrical Classification of Food and Biologically Important Samples". Bilateral scientific project between (a) Technische Universitaet Graz, Austria, and (b) Slovak University of Technology, Bratislava, Slovakia (national coordinator: Jan Mocak.).

Project duration: 2 years, 2002-2003.

H. VEGA project 1/9253/02: Electrochemical DNA biosensors for the characterization of chemical interactions of the bound DNA, the determination of traces of compounds binding to DNA as well as activators and inhibitors of damage to DNA (Ján Labuda).

New biosensors with a DNA layer of controlled properties attached to screen-printed carbon electrodes have been prepared. Host-guest interactions for dsDNA and small molecules of selected chiral drugs and risk chemicals have been characterized using several voltammetric techniques. DNA structural changes and deep degradation as a consequence of chemical reactions of reactive oxygen radical species as well as DNA protection by selected antioxidants such as flavonoids were investigated. New analytical procedures for the simple and fast determination of trace amounts of chiral drugs were developed. The DNA biosensors were tested as simple and single-use sensors for the determination of DNA damage as well as the evaluation of antioxidative capacity of plant extracts of food industry interest.

I. Project 035/2001 (USA – SK) The HPLC Study of Enantioselective Separations Using Molecular Modelling and Artificial Neural Networks on Macrocyclic Antibiotic Chiral Selectors (Jozef Lehotay). The objective of this research project is to create a comprehensive method capable of the prediction and optimization of enantioselective separations achieved by the vancomycin chiral selector,VM-CS, in HPLC, CEC and CE. This will be accomplished by:1) development of QSERRs to describe the retention and enantioselective separations achieved in each chromatographic mode; 2) training ANN to select optimum format and conditions, i.e. to minimize k_1' and k_2' while optimizing k_2'/k_1', using the independent variables identified by the QSERR studies. A key element in the optimal use of CSs is an understanding of the chiral recognition mechanisms responsible for the observed enantioselective separations. Thus, a second objective is the use of the QSERRs and stopped-flow kinetic studies to construct descriptions of the chiral recognition mechanisms operating in each mode and to correlate these results with molecular modelling studies. The aim of these studies is a better understanding of the fundamental processes involved in chiral recognition.

V. COOPERATION

A. Cooperation in Slovakia

Department of Microelectronics Faculty of Electrical Engineering and Information Technology, Slovak University of Technology Bratislava
Department of Petroleum Technology, Department of Biotechnology and Environment, VURUP, Slovnaft a.s. Bratislava
Department of Plant Physiology, Faculty of Natural Sciences, Comenius University, Bratislava
Food Research Institute, Bratislava
Hospital for Tuberculosis and Respiratory Diseases, Department of Clinical Chemistry, Poprad
Hospital of the Ministry of Defence, Division of Clinical Laboratories, Bratislava
National Institute of Oncology, Bratislava
Pharmaceutical Faculty, Comenius University, Bratislava
Slovak Institute of Metrology, Bratislava

B. International Cooperation

Department of Analytical Chemistry, Chemical Technological Faculty, University, Pardubice, Czech Republic
Department of Analytical Chemistry, Palacky University, Olomouc, Czech Republic
Department of Chemistry, Gilman Hall, Iowa State University, Ames, Iowa, USA
-Chiral separation of optical active compounds by HPLC and HRGC
Department of Organic Chemistry, University of Gent, Gent, Belgium
-Chiral separations by HRGC
School of Chemistry, Monash University, Clayton, Victoria, Australia
Faculty of Material Engineering and Ceramics, The University of Mining and Metallurgy, Cracow, Poland
Nicholas Copernicus University, Toruň, Poland
Prof. Hans Puxbaum; Technical University Vienna, Institute of Analytical Chemistry, Vienna, Austria
-Utilisation of Capillary GC in Combination with Preconcentration Techniques for the Analysis of Organic Compounds in Aerosols

C. Membership in Domestic Organizations and Societies

Chairman of Scientific Group "Chromatography and Electrophoresis", Slovak Chemical Society, Slovak Academy of Sciences, Bratislava	(E. Brandšteterová)
Chemical Papers Editorial Board, Bratislava	(D. Bustin)
Membership in the Editorial Board of the Slovak scientific journal *L*aboratory Diagnosis, Bratislava	(J. Mocák)
Chairman of Analytical Chemistry Groupe	(J. Lehotay)
Vice-Chairman of Chemical Society	(J. Krupčík)

Member honoris causa of the Slovak Medical Society, Bratislava	(J. Mocák)

D. Membership in International Organisations and Societies

American Chemical Society, USA	(D. Bustin)
European Commision, Science, Research and Developments, Brussel, Belgium	(J. Lehotay)
Chemical Analysis Editorial Board, Warszawa, Poland	(J. Lehotay)
Sensors Editorial Board, Basel, Schwitzerland	(J. Labuda)
Delegate of Slovak Chemical Society at the Division of Analytical Chemistry of the Federation of European Chemical Societies	(J. Labuda)
IUPAC Fellow, Switzerland	(D. Bustin)
UICC (International Union Against Cancer), Geneva, Switzerland	(E. Brandšteterová)

E. Tempus Programme

F. International Scientific Programmes

1. Grant No. 002-98, Slovak – US Universities Co-operation. Mechanistic study of chiral recognition in HPLC and HRGC (J. Krupčík) .The main objective of the project is to study mechanistic aspects of chiral recognition in the direct separation of enantiomers by HPLC and HRGC. 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. Elaborated optimum separation system shall be used for two dimensional separation of optically active compounds in natural samples.
2. Project 035/2001 (USA – SK) The HPLC Study of Enantioselective Separations Using Molecular Modelling and Artificial Neural Networks on Macrocyclic Antibiotic Chiral Selectors (Jozef Lehotay). The objective of this research project is to create a comprehensive method capable of the prediction and optimization of enantioselective separations achieved by the vancomycin chiral selector,VM-CS, in HPLC, CEC and CE. This will be accomplished by:1) development of QSERRs to describe the retention and enantioselective separations achieved in each chromatographic mode; 2) training ANN to select optimum format and conditions, i.e. to minimize k_1' and k_2' while optimizing k_2'/k_1', using the independent variables identified by the QSERR studies. A key element in the optimal use of CSs is an understanding of the chiral recognition mechanisms responsible for the observed enantioselective separations. Thus, a second objective is the use of the QSERRs and stopped-flow kinetic studies to construct descriptions of the chiral recognition mechanisms operating in each mode and to correlate these results with molecular modelling studies. The aim of these studies is a better understanding of the fundamental processes involved in chiral recognition.
3. CEEPUS PL-110 02/03: "Development and improvement of modern analytical methods for monitoring the environmental pollution and introduction of the quality systems and accreditation to routine analytical laboratories" (Ján Mocák). Educational project enabling the exchange of students and teachers among the following partner universities:(a) The University of Mining and Metallurgy, Cracow, Poland, (b) Karl-Frenzens-University, Graz, Austria, (c) The University of Maribor, Maribor , Slovenia, (d) The University of Pardubice, Pardubice, Czech Republic, (e) Slovak University of Technology, Bratislava, Slovakia (national coordinator: Jan Mocak). Project duration: academic year 2002/2003.
4. Aktion Oesterreich-Slowakei: "Chemometrical Classification of Food and Biologically Important Samples". Bilateral scientific project between (a) Technische Universitaet Graz, Austria, and (b) Slovak University of Technology, Bratislava, Slovakia (national coordinator: Jan Mocak.). Project duration: 2 years, 2002-2003.
5. 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.

G. Visitors from Abroad

Prof. A. Manschreck	Department of Organic Chemistry, University of Regensburg, Germany, November 2002(1 day)
Mgr. R. Štepán	Faculty of Natural Science, Charles University, Prague, Czech Republic, Oktober 2002 (1 month)
Prof. A. Bobrowski	University of Mining and Metallurgy, Cracow, Poland, 22.2.-3.3.2002 (10 days)
Dipl. Ing. A. Krolicka	University of Mining and Metallurgy, Cracow, Poland, 18.2.-11.3.2002 (22 days)
Dr. M. Bartoš	University of Pardubice, Parbubice, Czech Republic, June 2002 (16 days)
Prof. V. Kriváň	University Ulm, Germany, Dezember 2002 (3 days)
Prof. J. Ševčík	Charles University, Prague, Czech Republik, September 2002 (2 days)
Mgr. O. Korbut	Fakulty of Mathematics and Natural Science University, Rostock, Germany, February 2002 (1 month)

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

B. Balla	University of Pardubice (CEEPUS), Pardubice, Czech Republic, April 8-28, 2002 (21 days)

B. Balla	ICCC 2002, Kyoto, Japan, October 17-29, 2002 (13 days)
B. Balla	University of Graz, Graz, Austria, November 18-22, 2002 (5 days)
E. Beinrohr	Charles University, Heyrovsky Memorial, Prag, Czech Republic, February 12, 2002 (1 day)
E. Beinrohr	International Conference in Organic Analysis, Luhačovice, Czech Republic, April 16-17, 2002 (2 days)
E. Beinrohr	Working Seminar, Brno, Czech Republic, May 28, 2002 (1day)
E. Benická	25th International Symposium on Capillary Chromatography, Riva del Garda, Italia, May 13-17, 2002 (5 days)
E. Blahová	54th Meeting of Chemical Societies, Brno, Czech Republic, June 30-July 4, 2002 (5 days)
E. Blahová	8th International Symposium on Separation Sciences, Toruň, Poland, September 8-12, 2002 (5 days)
E. Blahová	24th International Symposium on Chromatography, Leipzig, Germany, September 13-20, 2002 (8 days)
E. Blahová	Vitamins 2002, Pardubice, Czech Republic, September 3-5, 2002 (3days)
M.Bučková	Charles University, Prag, Czech Republic, February 11-12, 2002 (2 days)
M.Bučková	University of Rostock, Rostock,Germany, June 3 – December 31, 2002 (7 months)
T. Buzinkaiová	Advances in Chromatography and Electrophoresis, Olomouc, Czech Republic, June 24-27, 2002 (4 days)
J. Ďungelová	25th International Symposium on Capillary Chromatography, Riva del Garda, Italia, May 13-17, 2002 (5 days)
J. Ďungelová	8th International Symposium on Separation Sciences, Toruň, Poland, September 8-12, 2002 (5 days)
J. Ďungelová	24th International Symposium on Chromatography, Leipzig, Germany, September 13-20, 2002 (8 days)
A. Ferancová	Charles University, Prag, Czech Republic, February 11-12, 2002 (2 days)
P. Korytár	Netherlands Institute for Fisheries Research, IJmuiden, The Netherlands, January 1–December 31, 2002 (12 months)
P. Kotianová	Free University (Erasmus Programue), Amsterdam, Holand, March 4 – June 30, 2002 (4 months)
P. Kotianová	Technical University, Wien, Austria, September 11, 2002 (1 day)
P. Kotianová	24th International Symposium on Chromatography, Leipzig, Germany, September 13-20, 2002 (8 days)
P. Kotianová	Technical University, Wien, Austria, September 20, 2002 (1 day)
J. Krupčík	University of Gent, Gent, Belgium, April 3-5, 2002 (3 days)
J. Krupčík	European Comunity, Brusels, Belgium, May 14-18, 2002 (5 days)
J. Krupčík	4th Slovenian Symposium on Separation Techniques, Novo Mesto, Slovenia, October 2-4, 2002 (3 days)
J. Krupčík	International Symposium on Analytical Science, Stellenbosch, South Africa, December 2-12, 2002 (11 days)
J. Labuda	Charles University, Prag, Czech Republic, February 11-13, 2002 (3 days)
J. Labuda	Charles University, Prag, Czech Republic, March 18-22, 2002 (5 days)
J. Labuda	54th Meeting of Chemical Societies, Brno, Czech Republic, June 30–July 4, 2002 (5 days)
J. Labuda	Euroanalysis 12 Conference, Dortmund, Germany, September 6-14, 2002 (9 days)
J. Labuda	Elektrochemical Sensors, Matrafüred, Hungary, October 13-18, 2002 (6 days)
J. Labuda	Charles University, Prag, Czech Republic, November 3-6, 2002 (4 days)
J. Laštincová	54th Meeting of Chemical Societies, Brno, Czech Republic, June 30 – July 4, 2002 (5 days)
J. Laštincová	20th Conference of the International Humic Substances Society, Northeastern University, Boston, USA, July 22-26, 2002 (5 days)
J. Lehotay	Ministry of Enviroment Prague, Prag, Czech Republic, February 7-8, 2002 (2 days)
J. Lehotay	Ministry of Enviroment Prague, Prag, Czech Republic, February 13-16, 2002 (4 days)
J. Lehotay	University of Gent, Gent, Belgium, April 3-5, 2002 (3 days)
J. Lehotay	25th International Symposium on Capillary Chromatography, Riva del Garda, Italia, May 13-17, 2002 (5 days)
J. Lehotay	European Centre on Waste and Material Fllow, Tallinn, Latvia, June

	17-20, 2002 (4 days)
J. Lehotay	Farmaceutical Faculty, Charles University, Hradec Králové, Czech Republic, June 23-27, 2002 (5 days)
J. Lehotay	8th International Symposium on Separation Sciences, Toruň, Poland, September 8-13, 2002 (6 days)
J. Lehotay	International Symposium on Analytical Science, Stellenbosch, South Africa, December 2-12, 2002 (11 days)
P. Májek	25th International Symposium on Capillary Chromatography, Riva del Garda, Italia, May 13-17, 2002 (5 days)
E. Matisová	25th International Symposium on Capillary Chromatography, Riva del Garda, Italia, May 13-17, 2002 (5 days)
E. Matisová	4th European Pesticide Residues Workshop, Rome, Italia, May 23–June 1, 2002 (10 days)
E. Matisová	2nd[h] European Conference on Pesticides and Related Organic Micropollutants in the Environment, Corfu, Greece, September 24–October 1, 2002 (8 days)
J. Mocák	University of Pardubice (CEEPUS), Pardubice, Czech Republic, April 11-20, 2002 (10 days)
J. Mocák	ESEAC Conference, Krakow, Poland, June 9-15, 2002 (7 days)
J. Mocák	5th Chemometric, Brno, Czech Republic, September 1-5, 2002 (5 days)
T. Rojkovičová	25th International Symposium on Capillary Chromatography, Riva del Garda, Italia, May 13-17 2002 (5 days)
T. Rojkovičová	8th International Symposium on Separation Sciences, Toruň, Poland, September 8-12, 2002 (5 days)
T. Rojkovičová	24th International Symposium on Chromatography, Leipzig, Germany, September 13-20, 2002 (8 days)
I. Špánik	Department of Chemistry, Texas A&M University, College Station, USA, January 1 – December 31, 2002 (12 months)
P. Tomčík	Physical and Theoretical Chemistry Laboratory, Oxford University, England, September 17 – December 31, 2002 (3,5 mouths)

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)

Antoliková A.:	Kinetic Study of Decomposition of Some Phenylcarbamic Derivatives in Biological Environment by HPLC. (J. Lehotay)
Bednáriková A.:	Isotachophoretic determination of morphine in biological samples. (J. Sádecká)
Birasová H.:	Capillary gas chromatographic separation of enantiomers of lower boiling optical active organic compounds on cyclodextrin stationary phases. (J. Krupčík)
Büiová K.:	Possibilities of determination of As (III) by flow coulometry in environmental samples (J. Laštincová)
Čief E.:	Chemometrical calculation and processing of analytical signals. (J. Mocák)
Deáková E.:	Preparation of plant samples before HPLC analysis of biological active compounds. (E. Brandšteterová)
Dömötörová M.:	Fast Capillary Gas Chromatography and Its Utilisation in Pesticide Analysis. (E. Matisová)
Jakubková E.:	Determination of Drugs by DNA biosensor. (M. Vaníčková)
Karasová G.:	Isotachophoretic determination of pantothenic acid in foods. (J. Sádecká)
Kálnaiová Z.:	Optimization of gas chromatographic dual-column system for the analysis of natural compounds. (E. Benická)
Klottonová M.:	Electrochemical sensors using screen-printed carbon electrode assemblies modified with the beta-cyclodextrin for the determination of pollutants. (E. Korgová)
Krajčíková M.:	Developement of the voltammetric methods applying microelectronic structures. (P. Tomčík)
Lokša J.:	Potentiometric determination of sulfides and thiols. (M. Čakrt)
Marcinová-Humeníková S.:	In-Elektrode Coulometric Titration for determination of trace metals in the waters and in the samples of the ecological sphere of life. (A. Manová)
Marková M.:	Analysis of betaxolol hydrochloride in drugs and human fluids. (T. Buzinkaiová)
Nemcová R.:	Study of DNA damage and its inhibition. (M. Bučková)

Polková M.:	Spectral Study of the Dithiocarbamate Chelates of Co(III), Ni(II), Cu(II).(D. Oktavec)
Siváková Z.:	Determination of antioxidants using DNA biosensor. (J. Labuda)
Szokolová-Horváthová M.:	Separation of Some Enantiomers of Phenylcarbamic Derivatives by HPLC – Interation Study. (J. Lehotay)
Tóthová-Matúsová A.:	Crystal structure and biological activity of 1,4 – dihydropyridine derivative. (V. Vrábel)
Tóthová Z.:	Possibility of microelectrodes application in voltammetric analysis (M.Rievaj)
Varga P.:	In-electrode coulometric titrations. Determination of bases. (E. Beinrohr)

B. Dissertations (PhD)

Laštincová J.:	Trace analysis of biologicaly relevant elements in soil by atomic absorption methods, ICP-AES and flow coulometry. (E.Beinrohr)
Jurica Ľ.:	Determination of trace amounts of As by flow coulometry and electrochemical generation of hydrides coupled by the atomic absorption spectrometry. (E. Beinrohr)

C. Dissertations (DSc.)

D. Habilitation Theses

Benická E.:	Dual-column and enantioselective systems in capillary gas chromatography and their application in the analysis of environmental pollution.

VII. PUBLICATIONS

A. Journals (* registered in Current Contents)

[1]* Beinrohr E., Labhart W., Maugham E.V.: Heavy metal discharge from coal-fired power planys - How does this affect the environment and cost-effective production of electric power? Power Plant Chemistry 4, 693-696 (2002)

[2]* Blahová E., Brandšteterová E., Netriová J.: Symmetry Shield and XTerra reversed phase columns in HPLC determination of morphine and its metabolites. Microchim. Acta 140, p. 247 (2002)

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[23] Mocák J.: Spôsoby výpočtu kombinovanej štandardnej neistoty. Ways of the calculation of the combined standard uncertainty.(in Slovak). Ropa a uhlie 45, 47-51 (2002)
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B. Conferences (* international conferences)

[1]* Balla B., Mocák J., Farková M., Havel J.: The use of artificial neural networks for classification. Application to wine analysis. In: Proc. Chemometrics VI., M. Farkova (Ed.), Masaryk Univ., Brno 2002, ISBN 80-210-2918-8, p. P22
[2]* Balla B., Mocák J., Varmusová E., Pivovarniková D., Balla J.: Use of multivariate techniques approach to improve diagnostic prediction. In: Clin. Chem. Lab. Med. 40, 2002, p.243
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DEPARTMENT OF BIOCHEMICAL TECHNOLOGY

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II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Laboratory for the design of bioactive compounds
Laboratory for biotechnological production of organic acids and fine chemicals
Laboratory for study, isolation and transformation of microbial lipids
Laboratory of secondary metabolites
Laboratory of wine microbiology and oenology
Laboratory of bioengineering
Laboratory for solid-state fermentations
Laboratory of yeast biotechnology
Laboratory for microbial degradation of xenobiotics
Laboratory of brewing technology and ethanol production

III. TEACHING

A. Undergraduate Study

5th semester (autumn)		
Principles in Biotechnology	(2-0-0 h)	Šajbidor
Xenobiochemistry	(2-0-0 h)	Dercová
6th semester (spring)		
Terminal Work	(0-0-4 h)	Čertík, Dercová, Dömény, Malík, Rosenberg, Šmogrovičová, Šturdík, Šturdíková, Valach
7th semester (autumn)		
Enzymology and Enzyme Engineering	(2-0-0 h)	Augustín
Laboratory in Enzymology and Enzyme Engineering	(0-2-0 h)	Sláviková
Information Systems and Data Processing	(1-1-0 h)	Šmogrovičová, Dömény, Navrátil
Food Biotechnology	(2-0-1 h)	Malík, Slugeň
Bioanalytical Methods	(2-0-0 h)	Šajbidor
Laboratory in Bioanalytical Methods	(0-0-2 h)	Brygin, Čertík, Rebroš, Sláviková, Valach
Biosynthesis and Transformation of Metabolites	(2-0-0 h)	Rosenberg
Laboratory in Biosynthesis and Transformation of Metabolites	(0-0-1 h)	Rosenberg
Terminal Work	(0-0-5 h)	Čertík, Dercová, Dömény, Rosenberg, Šmogrovičová, Šturdík, Šturdíková
8th semester (spring)		
Bioanalytical Methods	(2-0-0 h)	Šajbidor

Laboratory in Bioanalytical Methods	(0-0-2 h)	Brygin, Čertík, Rebroš, Sláviková, Valach
Bioengineering	(0-2-0 h)	Slugeň
Pharmaceutical Biotechnologies	(2-0-0 h)	Šturdíková
Laboratory in Pharmaceutical Biotechnologies	(0-0-1 h)	Šturdíková
Molecular Biology and Genetics	(0-1-0 h)	Čertík
Technical Microbiology	(2-0-0 h)	Šturdík
Information Systems and Data Processing	(1-1-0 h)	Šmogrovičová, Dömény, Navrátil
Nutritional and Functional Properties of Food	(2-0-0 h)	Slugeň
Terminal Work	(0-0-5 h)	Čertík, Dercová, Dömény, Malík, Rosenberg, Šmogrovičová, Šturdík, Šturdíková
Special Praxis		

9th semester (autumn)

Ecochemical Biotechnologies	(2-0-0 h)	Dercová
Laboratory in Ecochemical Biotechnologies	(0-0-2 h)	Dercová
Malting and Brewing	(2-0-0 h)	Šmogrovičová
Laboratory in Malting and Brewing	(0-0-1 h)	Dömény, Šmogrovičová
Chemistry and Microbiology of Wine	(2-0-0 h)	Malík
Laboratory in Chemistry and Microbiology of Wine	(0-0-1 h)	Dömény, Vollek
Microbial Biomass and Distillery	(2-0-0 h)	Šmogrovičová, Augustín
Laboratory in Microbial Biomass and Distillery	(0-0-1 h)	Dömény, Šmogrovičová
Biochemical and Genetic Regulations	(2-0-0 h)	Šturdík
Laboratory in Biochemical and Genetic Regulations	(0-0-1 h)	Valach, Brygin
Genetic Manipulations	(2-2-0 h)	Čertík
Special Laboratory Excersises	(0-0-6 h)	Čertík, Dercová, Dömény, Krištofíková, Malík, Rosenberg, Sláviková, Šmogrovičová, Šturdík, Šturdíková, Valach

10th semester (spring)

Diploma Work

B. PhD Study

Biochemical Technology	(3 h)	Augustín

IV. CURRENT RESEARCH PROJECTS

A. Application of microorganisms in food industry and agriculture – biotechnological aspects. (Ján Šajbidor)

Osmotolerant *Saccharomyces cerevisiae* important for the production of Tokay type wines were characterised. Their metabolic activity in ethanol presence and high temperature was studied. Selected strains were immobilised on a new type of hydrogele and it was successfully tested in large-scale pilot experiments. *Alcaligenes xylosoxid* and *Pseudomonas stutzeri* useful bacteria for bioremediation technologies were tested. Valuable results were presented in papers deals with relationship between structure of xenobiotics and their biodegradability. Experiments with *Nocardia* species, the strain applicable in food industry as tartaric acid producer continued. Activity of fumarase in our producer *Dipodascus magnusii* - enzyme for malic acid production by fermentation of sugar medium - have been approximately ten times higher in comparison with earlier published data. We suppose application of this solution in industrial production of malic acid like as former mentioned result. New types of biosensors based on electrochemistry or microcalorimetry principles for monitoring of ethanol production from sucrose, glucose, lactose or biotransformation of glycerol to dihydroxyacetone was published in scientific journals. Individual part of our research is overproduction of secondary metabolites for food industry and pharmacy. New trends in fortification of cereals with essential fatty acids via solid-state fermentations (for human nutrition or animal feed) were published. Very interesting result were obtained during the study of lipogenesis regulation in filamentous fungi.

B. Immobilized technologies: Implementation of new immobilization techniques/technologies into microbial and plant fermentation and biotransformations and their industrial applications (Ernest Šturdík)

Possibility of using hydrogels (Ca-alginate, Ca-pectate, κ-karagenan) as well as using of some synthetic carriers (polyvinyl alcohol etc.) as materials for immobilization in biotechnology processes using whole yeast cells was successfully and systematically described within duration of project. Important proposition of this project is using of pectate as perspective material for immobilization, which is with his macromolecular and mechanical properties favored before the others members of ionotropic gels family. Progressive method of monitoring of biomass coupled in gels based on biolumminometric principle was developed for the quick and confident estimation of active biomass.
Constructions of biosensors using either electrochemical or microcalorimetric principle were innovated. Most of designed biosensors were tested in real biotechnological process. Biosensors for estimation of glycerol, dihydroxyaceton, whole sacharides

in lignocelluloses hydrolysate, lactose, triglycerides, urea, ethanol or fructose were this way developed. Mathematical model for estimation of kinetic of immobilized biocatalyzers by method of flow-injection calorimetri was raised and experimentally examined for the hydrolyzation of macromolecular substrate (maltodextrine) catalyzed by glucoamylase. By large-scale experiments was accomplished, that yeast's mananes a new glycolysation reagence, especially suitable for preparation of neoglycoenzymes with high afinity to lectines (mainly konvaline A) by simultaneous stabilization effect on temperature, storing and pH stability.

C. Biotechnological aspects of classical and alternative fermented beverages production (Daniela Šmogrovičová)

The aim of the project is an improvement of classical beverages fermentation productivity - beer (bottom fermented and special), production of different categories of wine (still, petillant, sparcling and wines "under veil") and production of fermented beverages with lowered content of alcohol but the traditional character and taste. An increase in gravity results in higher metabolic activity and increased ethanol production, but an effect of osmotic pressure and toxicity of produced ethanol affected yeast viability. Since immobilised cells show various modifications in physiology and metabolic activity, biochemical composition and morphology, as well, an application of immobilised yeast can improve their ability to ferment concentrated substrates in dependence on carrier and technique used for immobilisation and protect the yeast cells against osmotic and ethanolic stress. Immobilisation also influence yeast by metabolites co-production and consequently flavour and character of fermented beverage. Integration of up-to-date knowledge about yeast properties and metabolism should result into elucidation of ethanol tolerance mechanism, improvement of fermentation and production of alternative beverages.

V. COOPERATION

A. Cooperation in Slovakia:

VÚL Modra
Institute of Drug Research, Modra
Soil Science and Conservation Research Institute, Bratislava
Institute of Preventive and Clinical Medicine, Bratislava
Faculty of Pharmacy, Comenius University, Bratislava
Institute of Experimental Pharmacology, Slovak Academy of Science, Bratislava
Institute of Ecobiology, Slovak Academy of Science, Bratislava
Institute of Chemistry, Slovak Academy of Science, Bratislava
Institute of Experimental Endocrinology, Slovak Academy of Science, Bratislava
University Cyril and Metods, Trnava
Likospol, Bratislava
Allcop, Bratislava
Institute of Viticulture and Oenology, Bratislava
Brewery, S.t.e.i.n., Bratislava
Brewery, Codecon, Svätý Jur
Slovakofarma, Hlohovec
Biotika, Slovenská Ľupča
Topvar Brewery, Topoľčany
Biopo, Leopoldov
Research Institute of Rheumatic Diseases, Piešťany
Piešťany spa
Alfa Bio, Banská Bystrica
Department of Biochemistry, University of Veterinary Medicine, Košice

B. International Cooperation:

North Dakota State University, College of Pharmacy, Department of Pharmaceutical Sciences, Fargo, North Dakota, USA
- Subcellular pharmacokinetics; Prediction of the fate of xenobiotics in the environment

UFZ Centre for Environmental Research, Department of Chemical Ecotoxicology, Leipzig, Germany
- Degradation of pollutants in sediments

BCS Engineering, Brno, Czech Republic
–Bioconversion of maleinanhydride to organic acids

Mega a.s., Stráž pod Rálskem, Czech Republic
- Encapsulation of microorganisms to PVA Gel

Office International de la Vigne et du Vin, Paris, France
–Evaluation of wine

Agricultural University, Brno, Czech Republic
–Microbiology of wine fermentation

Wine Establishment, Znojmo - Šatov, Czech Republic
–Chemistry of red wine

Kyoto University, Department of Agricultural Chemistry, Kyoto, Japan
–Overproduction and regulation of microbial polyunsaturated fatty acids

National Institute of Advanced Science and Technology, Tsukuba, Japan
-Biochemistry and overproduction of microbial polyunsaturated fatty acids

Pure and Applied Biochemistry, University of Lund, Sweden
–Enzyme thermistor applications in analysis

Division of Biotechnology IFM, Linköpings Universitet Linköping, Sweden
-Development and application of biosensors

C. Membership in Domestic Organizations and Societies:

Slovak Society of Biotechnology, Bratislava (J. Augustín, K. Dercová, D. Slugeň)
Slovak Society for Biochemistry and Molecular Biology, Bratislava (J. Augustín)
Slovak Society for Agriculture, Forestry, Food and Veterinary Sciences, Bratislava (J. Šajbidor, D. Slugeň, M. Čertík)

D. Membership in International Organizations and Societies:

Editorial boards of the journal Kvasný průmysl, Prague, Czech Republic (F. Malík, D.Šmogrovičová)
ECE Governments on Science and Technology of The United Nations, Geneva, Switzerland (J. Augustín)
Member of the EBC Brewing Science Group, Zoeterwoude, The Netherlands (D.Šmogrovičová)
Czecho-Slovak Society of Microbiology, Bratislava (J.Augustín, K.Dercová, D.Haľama, D.Šmogrovičová, M.Šturdíková)
Editorial boards of journal Mitteilungen Klosterneuburg, Wien, Austria (F. Malík)
Member of the American Oil Chemist´s Society (M. Čertík)
Member of the European Federation of Biotechnology- Section Environmental on Biotechnology (K. Dercová)
SETAC-Society for environmental Toxicology and Chemistry (R.Tandlich)

E. CEEPUS PROGRAMME

Number H-0115, Green Network in Central Europe (Šmogrovičová D., Dömény Z.) Coordinator: Szent Istvan University, Buda Campus (University of Horticulture and Food Industry)
University of Agriculture, Foresty and Renewable Natural Resources, Vienna
Mendel University of Agriculture and Foresty, Brno
University of Agriculture in Wroczlaw
University of Agriculture in Nitra
Josip Juraj Strossmayer University of Osijek
Slovak University of Technology in Bratislava
University of Ljubljana

G. Visitors from Abroad:

Assoc.Prof.J.Čepička	University of Chemical Technology, Prague, Czech Republic, October 2002 (2 days)
Beáta Kondás	Szent.István University, Budapest, Hungary, June 2002 (1 monat)
Asist. od Prof. Gabriella Kisko	Szent. István University, Budapest, Hungary, June 2002 (1 monat)

H. Visits of Staff Members and PhD Students to Foreign Institutions:

M. Čertík	2nd Meeting on Life & Chemistry, Brno, Czech Republic, September 10-11, 2002 2 days
K. Dercová	12th International Biodeterioration and Biodegradation Symposium (Biosorption and Bioremediation III), Praha, Czech Republic, June 14-18, 2002 5 days
K. Dercová	2nd Meeting on Life & Chemistry, Brno, Czech Republic, September 10-11, 2002 2 days
K. Dercová	2nd PCB Workshop: Recent Advances in the Environmental Toxicology and Health Effects of PCBs, Brno, Czech Republic, June 7-10, 2002 4 days
Ľ. Krištofíková	Stráž pod Ralskem, Interim Review of the Project FD-K/078, Czech Republic,October 21-22, 2002 2 days
F. Malík	Vinalies Paris, France, February 10-16, 2002 7 days
F. Malík	Vino Ljubljana, Slovenia, March 22-26, 2002 5 days
F. Malík	Vinho Porto, Portugal, June 9-16, 2002 7 days
F. Malík	Mundus Vini, Mainz, Germany, September 2-7, 2002 5 days
F. Malík	Fair Skopje, Macedonia, September 27-30, 2002 4 days
F. Malík	Slovak Ambassy, Warsaw, Poland, October 18-21, 2002 4 days
F. Malík	Official visit, Cormons, Italia, October 26-27, 2002 2 days
F. Malík	Vinagora, Budapest, Hungary, November 20-26, 2002 7 days
M. Navrátil	Postdoc study, Linköping University, Division of Biotechnology, Sweden (1 year)
M. Rosenberg	Stráž pod Ralskem, Interim Review of the Project FD-K/078, Czech Republic, October 21-22, 2002 2 days
J. Šajbidor	1st FEMS Congress of European Microbiologist, Ljubljana, June 29-July 3, 2002 6 days
J. Šajbidor	University of Haagen, Germany, Visit at the University - Distance Education, March 13-15, 2002 3 days
D. Šmogrovičová	1st FEMS Congress of European Microbiologist, Ljubljana, June 29-July 3, 2002 6 days
J. Zigová	Lausanne EPFL, Technical University, Switzerland, 2002 (1 year)
I. Voštiar	Postdoc study, Linköping University, Division of Biotechnology, Sweden, (1 year)
R. Tandlich	Study state, North Dakota State University, North Dakota, USA, (1 year)
M. Valach	2nd Meeting on Life & Chemistry, p. 148. Brno, Czech Republik,

September 10-11, 2002 2 days

VI. THESES AND DISSERTATIONS

A. Graduate Thesis (MS Degree) for state examinations after five years of study (supervisors are written in brackets):

Brygin M.:	Continual fermentation of whey by imobilised yeasts. (Marián Navrátil)
Dudášová B.:	Breeding of yeasts for non-alcoholic beer production. (Zoltán Dömény)
Gallová K.:	Preparation and properties of immobilized cells Nocardia sp. in PVA gel. (Michal Rosenberg)
Koubeková A.:	Osmoregulation studies in yeasts. (Milan Čertík)
Kravcová A.:	Inhibitors of cathepsin B. Isolation of productive microorganisms, production and biological properties. (Mária Šturdíková)
Malatová K.:	Production of lactic acid by free and immobilized cells Bacillus coagulans. (Michal Rosenberg)
Maľová A.:	Toxicity and biodegradation of chlorinated phenols. (Katarína Dercová)
Masrnová S.:	Preparation of γ-linolenic acid by solid state fermentation of filamentous fungi. (Lucia Sláviková)
Matej M.:	The influence of storing condition on beer volatile compounds profile. (Daniela Šmogrovičová)
Mollek J.:	New reactors for beer production. (Daniela Šmogrovičová):
Opavská M.:	Production of bioactive and diterpenoid compounds by actinomyces isolated from natural sources. (Mária Šturdíková):
Pirčová B.:	Effect of nutrient compounds on the bosynthesis of cytotoxic metabolite by endophytic fungi. (Mária Šturdíková)
Pišteková P.:	Flavonoides as antioxidants and antiproteinase inhibitors. (Ernest Šturdík)
Rebroš M.:	Molecularbiological characteristics of Streptococcus agalactiae strains. (Andrej Godány)
Slúka J.:	Biotechnological production of flavonoides. (Ernest Šturdík)
Šimončíková P.:	Effect of γ-linolenic acid on lipid metabolism in high-fat diet induced insulinresistance. (Milan Čertík)

C. Dissertations (DSc)

Katarína Dercová, PhD.:	Biotechnological aspects of microbial degradation of polychlorinated biphenyls.
Milan Čertík, PhD.:	Regulation of microbial biosynthesis of polyunsaturated fatty acids.
Mária Šturdíková, PhD.:	Microbial production of bioactive secondary metabolites.

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1] Čertík M.: Aplikácia desaturázovo defektných fungálnych mutantov pri regulácii biosyntézy mikrobiálnych polynenasýtených mastných kyselín. Application of desaturase-defective fungal mutants for regulation of polyunsaturated fatty acid biosynthesis (in Slovak). Annual Bulletin of Slovak Society for Biochemistry and Molecular Biology 2001, 12-19, (2002)

[2] Čertík M.: Nihonshu - Japonské saké. Tradičná príprava. Nihonshu – Japanese sake. Traditional production (in Slovak). Vinič a Víno 2(1), 14-16, (2002)

[3] Čertík M.: Nihonshu - Japonské saké. Typy japonského saké. Nihonshu – Japanese sake. Types of Japanese saké (in Slovak). Vinič a Víno 2(5), 109-111, (2002)

[4]* Čertík M., Breierová E.: Adaptation responses of yeasts to environmental stress. Chem. Listy 96, 147, (2002)

[5]* Čertík M., Sláviková L., Masrnová S., Šajbidor J.: Bio-enrichment of agroindustrial materials with polyunsaturated fatty acids by solid state fermentations. Chem. Listy 96, 152-153. (2002)

[6]* Čertík M., Šajbidor J.: Regulation of microbial polyunsaturated fatty acid overproduction. Chem. Listy, 96, 111-113, (2002)

[7] Dercová K.: Degradačné schopnosti mikroorganizmov v bioremediačných technológiách I. Degradation ability of microorganisms in bioremediation technology I (in Slovak). Odpady 4/02, 23-24, (2002)

[8] Dercová K.: Degradačné schopnosti mikroorganizmov v bioremediačných technológiách II. . Degradation ability of microorganisms in bioremediation technology II (in Slovak). Odpady 5/02, 20 - 21, (2002)

[9] Dercová K.: Mikrobiálna degradácia PCB. Microbial degradation of PCBs. Čo sú to polychlórované bifenyly? What are polychlorinated biphenyls? (in Slovak). Odpady 7-8/02, 9-10, (2002)

[10]* Dercová K., Kyseľová Z., Tóthová L., Barančíková G.: Biodegradability and toxicity of chlorophenols. Chemické listy 96, 264-267, (2002)

[11] Dömény Z., Malík F., Šmogrovičová D., Migrová D.: Vplyv jablčno-mliečnej fermentácie na senzorický profil vína Influence of malolactic fermentation on wine senzocical compounds.Vinič a víno. 2 (6), príloha 1, (2002)

[12]* Dömény Z., Šmogrovičová D.: Properties of hydrogel materials used for entrapment of microbial cells in production of fermented beverages. Art. Cells Subst. Immob. Biotech. 30, 199-218, (2002)

[13] Furdíková K., Dömény Z., Krištofíková Ľ., Malík F.: Kvasinky slovenskej vinohradníckej oblasti. 2.časť- Technologické vlastnosti izolátov. Yeasts from slovak wine growing region. Part.2. Technological properties of isolates (in Slovak). Vinič a víno 2, No-1, (2002)
[14] Horváthová V., Šlajsová K., Šturdík E.: Možnosti využitia imobilizovanych biosystémov v etanolovej fermentácií. The possibilities of using of immobilized biosystems in the proccess of ethanol fermentation (in Slovak). Nova Biotechnol. 2, 93-108, (2002)
[15]* Hrčková M., Šturdík E., Zemanovič J.: Potravinárske využitie proteolytických enzýmov. Using of proteolytic enzymes in the food industry (in Slovak). Bull. Food Res. 41, 85-97, (2002)
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[17] Jedinák A., Maliar T., Šturdík E.: Štrukturálne aspekty vývoja nových inhibítorov serínových proteináz s využitím molekulového modelovania. Structural aspects of development of new ihibitors of serines proteinases by use of modeling molecules (in Slovak). Nova Biotechnol. 2, 13-24, (2002)
[18]* Klein J., Rosenberg M., Markoš J., Dolgoš O., Krošlák M., Krištofíková L.: Biotransformation of glucose to gluconic acid by Aspergillus niger-study of mass transfer in an airlift bioreactor. Biochemical Engineering Journal 10, 197-205, (2002)
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[20]* Kováčová S, Šturdík E.: Interactions between microoganisms and heavy metals including radionuclides. Biologia 57, 651-663, (2002)
[21]* Maliar T., Baláž Š., Tandlich R., Šturdík E: Viral proteinases - possible targets of antiviral drugs. Acta Virolog. 46, 131-140, (2002)
[22]* Maliar T., Jedinák A., Šturdík E.: Rational screening of polyphenolic compounds as perspective trypsin like enzyme inhibitors Chem. Listy 96, 126-131, (2002)
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[25] Malík F.: Moja vinica, moje víno. My vineyard, my wine (in Slovak). Vinič a víno 2, No-1, (2002)
[26] Malík F.: Horské vína Adelaide Hills. Mountain wines of Adelaide Hills (in Slovak). Vinič a víno 2, No-1, 12-13, (2002)
[27] Malík F.: Vône a chute Talianska. Smell and tastes of Italy (in Slovak). Vinič a víno 2, No-1, 13, (2002)
[28] Malík F.: Parížsky denník. Paris diary (in Slovak). Vinič a víno 2, No-2, 42-43, (2002)
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[30] Malík F.: Na skok v Risane. Leap in the Risano (in Slovak). Vinič a víno 2, No-3, 60-61, (2002)
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[32] Malík F.: Piatok štrnásteho. Friday, 14-th (in Slovak). Vinič a víno 2, No-4, 86-87, (2002)
[33] Malík F.: Tabak vo víne. Tobacco in wine (in Slovak). Vinič a víno 2, No-5, 108-109, (2002)
[34] Malík F.: Denník rýnsky. Rhine diary (in Slovak). Vinič a víno 2, No-5, 108-109, (2002)
[35] Malík F.: Vranec a tutun. Vranec and Tutun (in Slovak). Vinič a víno 2, No-6, 133-134, (2002)
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[41]* Sláviková L., Čertík M., Masrnová S., Škrinárová B., Šajbidor J.: Regulation of gamma-linolenic acid production by modulation of substrate C/N ratio during solid state fermentation. Chem. Listy 96, 179-181, (2002)
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B. Conferences (*international conferences)

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[2]* Breierová E., Čertík M., Strhanová K., Omelková J.: The study of adaptation characters of the carotenoid yeasts in environment of heavy metals. Proceedings of XXX. International Conference of Yeasts, Smolenice, 2002, 101

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[20]* Malík F.: Historical aspects and tradition of viticulture and oenology in Slovakia. Lecture of official opening. In: XXVIIth World Congress of vine and wine, Bratislava June 24. - 28. 2002

[21]* Malík F.: Australská vína. Australien wines. National wine saloon, Valtice, Czech Republic, April 4, 2002

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27. and February 2. - 3., 2002
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D. Patents

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DEPARTMENT OF BIOCHEMISTRY AND MICROBIOLOGY

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I. STAFF

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Technical Staff:
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II. TEACHING AND RESEARCH LABORATORIES

Laboratory of Animal Cell Cultures
Laboratory of Biochemistry of Cancer Cells
Laboratory of Fungal Biochemistry and Physiology
Laboratory of Immunochemistry
Laboratory of Microbiology

III. TEACHING

A. Undergraduate Study

1st semester (autumn)		
Biology	(2-0 h)	Jantová, Horáková, Mikulášová,
Laboratory Practices in Biology	(0-1 h)	Ditteová, Dudová, Kaiserová, Poturnajová
3rd semester (autumn)		
Microbiology I	(2-0 h)	Hudecová
Laboratory Practices in Microbiology I	(0-2 h)	Hudecová, Majtán*, Mikulášová, Ditteová, Dudová, Kaliňák,
4th semester (spring)		
Biochemistry I	(2-0 h)	Varečka
Laboratory Practices in Biochemistry I	(0-2 h)	Paulíková, Lakatoš, Kaiserová, Hudec,
5th semester (autumn)		
Principles of Human Nutrition	(2-0 h)	Miko
6th semester (spring)		
Laboratory Project	(0-4 h)	Miko, Horáková, Varečka, Hudecová, Jantová, Mikulášová, Majtán*, Dudová, Pokorný
7th semester (autumn)		
Biochemistry II	(2-0 h)	Varečka
Laboratory Practices in Biochemistry II	(0-2 h)	Paulíková, Kaiserová, Hudec, Hunová, Kaliňák,
Microbiology II	(2-0 h)	Mikulášová, Hudecová
Laboratory Practices in Microbiology II	(0-2 h)	Hudecová, Mikulášová, Dudová, Kaliňák,
Immunochemistry	(2-0 h)	Poláková*
Seminar in Immunochemistry	(0-1 h)	Poláková*
Laboratory Practice in Immunochemistry	(0-2 h)	Kaiserová, Hudec, Kaliňák,
Biosensors	(2-0 h)	Labuda*
Seminar in Biosensor	(0-1 h)	Labuda*
Biosensors Laboratory Practices	(0-2 h)	Labuda*
Laboratory Project I	(0-5 h)	Miko, Horáková, Varečka, Hudecová, Jantová, Mikulášová, Majtán*

8th semester (spring)		
Molecular Biology and Genetics	(2-0 h)	Mikulášová, Paulíková
Applied Microbiology	(2-0 h)	Hudecová, Majtán*
Bioenergetics	(2-0 h)	Miko
Laboratory Practices in Bioenergetics	(0-2 h)	Miko
Mechanisms of Action of Natural Compounds	(2-0 h)	Varečka
Mechanisms of Action of Natural Compounds-Laboratory Practices	(0-2 h)	Dudová, Pokorný
Laboratory Project II	(0-5 h)	Miko, Horáková, Varečka, Hudecová, Jantová, Mikulášová, Majtán*
9th semester (autumn)		
Genetic Manipulations	(2-0-2 h)	Čertík*
Clinical Biochemistry	(2-0 h)	Chandoga*
Clinical Biochemistry-Laboratory Practices	(0-2 h)	Chandoga*
Cell cultures	(2-0 h)	Jantová
Laboratory Practices of Cell cultures	(0-2 h)	Jantová
Laboratory Practices of the branch Biomedical Engineering, Biochemistry and Microbiology	(0-2 h)	Horáková, Hudecová, Jantová, Miko, Mikulášová, Varečka, Majtán*
Laboratory Project III	(0-5 h)	Miko, Horáková, Varečka, Hudecová, Jantová, Mikulášová, Majtán*
10th semester(spring)		
Master`s Thesis	(0-27 h)	Miko, Horáková, Varečka, Hudecová, Majtán*

B.PhD Study

Biochemistry	Miko, Varečka
Microbiology	Horáková, Hudecová

*-external teacher

VI. CURRENT RESEARCH PROJECTS

A. Cytotoxicity of novel xenobiotics and their mode of action (Milan Miko)

The primary aim of our group is the identification and evaluation of potential anti-cancer agents. The main results are as follows:

1. Fourteen substituted 4-anilinoquinazolines, seventeen plant extracts and four preservative compounds for cosmetics were tested for cytostatic, genotoxic, anticancer and antibacterial effects. The most active 4-anilinoquinazolines were substituted by chlorine or bromine group in the aromatic ring, in the pyrimidine ring by morpholine group and in the aniline skeleton by nitro group in position 4 or 2. Four anilinoquinazolines inhibited growth of tumor cell lines HeLa, B16 and L1210 and exhibited antiprotease effect on plasmine. Concentration 5.2 μmol/L of 6-bromo-2-(morpholin-1-yl)-4-anilinoquinazoline induced a significant increase of filamentous actin in the transformed HepG2 cells.A 35 % degradation of HeLa cells was found after 72 h treatment with 62.5 μg/mL of the extract isolated from *Stephanandra tanakae*. The 100 % lysis of HeLa cells was observed after 72 h treatment by 125 μg/mL concentration of the extract prepared from *Gymnocladus dioicus*. The extracts from *Ligustrum devayanum* and *Ligustrum vulgare* are specifically effective only with HeLa cells. On the other hand, the extract prepared from *Gymnocladus dioicus* is effective on the bacteria and on the HeLa cells too. Preservative Bronopol demonstrated the highest cytotoxic effect on the proliferation of V79 and VH10 fibroblast cell lines.

2. In the frame of mode of action of 8 novel isotiocyanate derivatives (ITCs) was found out, that two carcinoma cell lines (A2780, A431) appeared extremely sensitive to the majority of the tested ITCs (ID_{50} = 2.2-8.0 μmol/l). The tested ITCs modified the cell cycle of carcinoma cell lines (A2780, A2780/ADR, A431) and sarcoma cell lines (B-5GT, BP6-TU2), as well as leukemic cell line (JURKAT), mainly at 10 μmol/l and 5 μmol/l. The gradual inhibition of cell proliferation was observed, characterised by decreasing of percentage of cells in G_0/G_1 phase and accumulation of cells in S and G_2/M phases of the cell cycle. Four from the five tested ITC derivatives showed the ability of strong induction of apoptosis (34-27%) in A2780 carcinoma cells.

3. Four trisubstituted quinazoline derivatives exerted a significant effect on *E. coli, P. aeruginosa*, *S. aureus* and *B. subtilis* (IC_{50} < 100 mg/l) and influenced the specific growth rate. The results of primary screening for cytotoxicity of eighteen plant extracts showed that the extracts which have manifested 100% toxicity on HeLa cells come from the family Fabaceae, Rosaceae, Oleaceae and Staphyleaceae. The cytotoxically effective extracts represent three different types of cytotoxic effect – acute, delayed and combined effect. The effect of Cu tetraaza macrocyclic complex on the glutathione status was examined and the possible mechanism of this anticancer-membrane targeting drug was studied. In the frame of genotoxic effects of Cu(II) complexes of mephenamate, flufenamate, acetylsalicylate was found that these compounds statistically significantly decreased the number of revertants induced by 2-aminoanthracene and 2-aminofluorene. This antimutagenic activity is associated with the copper properties to participate in a number of different biological processes and its interaction with DNA. The genotoxic effects of lignin and selected degradation products of lignin were studied.

B. Biochemical processes underlying fungal differentiation and secondary metabolism (Ľudovít Varečka)

In the project devoted to study the transport processes in filamentous fungi several aspects of transport and physiology were

studied.

In *Trichoderma viride* the process of chloride transport was studied by means of ^{36}Cl radionuclide. It was found that chloride anions enter the vegetative mycelia in a saturatable, pH- and temperature-dependent manner with selectivity for chlorides and bromides. Further properties of transport suggest that chloride anions are transported by a specific and electrically silent transport protein. In *Penicillium simplicissimum* the process of citrate transport into the vegetative mycelia has been described and the conditions were found which led to the induction of novel citrate uptake system driven by protonmotive force. Its role in the citrate metabolism is being currently analysed.

In the project devoted to study the conidiation and physiology of filamentous fungi, the physiology of development and conidiation has been studied. It was found that the conidiation of *Trichoderma* observed in the dark is induced neither by starvation nor steric constraints and probably could be related to the genetical program of the organism. This notion could be supported by the isolation of mutants with delayed conidiation but normal growth characteristics. Further, the changes of the energy metabolism were studied in the submerged mycelia which revealed a strong dependence of various parameters (respiration, citrate production, etc.) on the developmental status which complement our previous data concerning the Ca^{2+} uptake or glutamate decarboxylase activity and suggest that there rate of metabolism is a function of developmental stage of mycelia.

V. COOPERATION

A. Cooperation in Slovakia

Institute of Chemistry, Slovak Academy of Sciences, Bratislava
Institute of Animal Physiology and Biochemistry, Slovak Academy of Sciences, Bratislava
Institute of Molecular Physiology, Slovak Academy of Sciences, Bratislava
Institute of Animal Biochemistry and Genetics, Slovak Academy of Sciences, Ivánka pri Dunaji
Cancer Research Institute, Slovak Academy of Sciences, Bratislava
Faculty of Pharmacy, Comenius University, Bratislava
Faculty of Natural Sciences, Comenius University, Bratislava
Institute of Preventive and Clinical Medicine, Bratislava
Institute of Virology, Slovak Academy of Sciences, Bratislava
Dairy Research Institute, Žilina
Department of Chemistry, Paedagogical Faculty, University, Trnava
Department of Medical Chemistry, Biochemistry and Clinical Biochemistry, Faculty of Medicine, Comenius University, Bratislava
Department of Molecular Biology, Faculty of Natural Sciences, Comenius University, Bratislava
Institute of Immunology, Faculty of Medicine, Comenius University, Bratislava

B. International Cooperation:

Laboratoire du Biomembranes et Messagers Cellulaires, Université Paris XI, Orsay, France (Dr. Francoise Giraud)
Laboratory of Cell Signalling, Nagoya University Bioscience Center, Nagoya, Japan (Prof. Dr. Shoshi Toriyama)
Institut für Mikrobiologie, Universität zu Innsbruck, Innsbruck, Austria (Prof. Dr. Wolfgang Burgstaller)
Botanisches Institut, Friedrich Wilhelms Universität, Bonn, Germany (Dr. Udo Hoelker)
ReaD VUFB, a.s. Prague, Czech Republic
Liverpool John Moores University, Liverpool, UK
-Electron microscopy of photo-induced conidiation and dimorphism in Fungi.
Université de Genéve, Genéve, Suisse
-Biochemistry and molecular biology of photo-induced conidiation in Fungi.
European Organisation on Research and Treatment of Cancer, Screening and Pharmacology Group, University of Tokushima, Japan
-Uncouplers of oxidative phosphorylation.
Institute of Food Research, Norwich, UK
-Rapid, specific detection of *Listeria monocytogenes* by antibody-based techniques and on-line sensor technology.
Institute of Chemical Technology, Prague, Czech Republic
- Rapid, specific detection of *Listeria monocytogenes* by antibody-based techniques and on-line sensor technology.
MILCOM a.s., Dairy Research Institute, Prague, Czech Republic
- Rapid, specific detection of *Listeria monocytogenes* by antibody-based techniques and on-line sensor technology.
Dublin City University, Dublin, Ireland
- Rapid, specific detection of *Listeria monocytogenes* by antibody-based techniques and on-line sensor technology.

C. Membership in Domestic Organizations and Societes:

Slovak Society for Biochemistry and Molecular Biology, Bratislava	(M. Miko, Ľ. Varečka)
Slovak Medical Society, Bratislava	(S. Jantová)
Czecho-Slovak Society for Biochemistry, Bratislava	(S. Jantová)
Czecho-Slovak Society for Microbiology, Bratislava	(K. Horáková, D. Hudecová, M. Mikulášová)
Czecho-Slovak Society for Biology, Brno	(K. Horáková, S. Jantová, M. Mikulášová)
Oncological Society of the Slovak Medical Society, Bratislava	(K. Horáková)

D. Membership in International Organizations and Societes:

International Society for the Study of Xenobiotics, Bethesda, MD, U.S.A.	(M. Miko)
European Association for Cancer Research, Nottingham, U.K.	(M. Miko)
European Organisation on Research and Treatment of Cancer, Moerkapelle, Netherland.	(M. Miko)
European Tissue Culture Society	(K. Horáková)

EUROTOX-European Societies of Toxicology, Turku, Finland	(K. Horáková, S. Jantová, M. Mikulášová, A. Šovčíková)

H. Visits of Staff Members and PhD Students to Foreign Institutions

R. Pokorný	Friedrich Wilhelms Universität, Bonn, Germany (30 days)
B. Lakatoš	Université Paris Sud XI, Orsay, France (270 days)

VI THESES AND DISSERTATIONS

A. Graduate These (MS Degree) for state examinations after five years of study (supervisors are written in brackets external supervisers)

Baranová J.:	In vitro cytotoxicity and mode of action of copper complexes with different ligands. (M. Miko)
Berzeliová E.:	The modification of glutation metabolism of cells by isothiocyanates and flavonoids.(H. Pauliková)
Boďo J.:	ITC-induced apoptosis in multidrug resistence cell lines. (J. Sedlák)
Buláková K.:	Listeria species – the invasivity into mammalian cells in vitro and the imunofluorescent detection. (K. Horáková)
Capiková D.:	Changes in the synthesis of nitrite oxide and in the concentration of free radicals in the NO deficient and spontaneous hyperthensis: The influence of kaptopril. (O. Pecháňová)
Cibičková D.:	Antimicrobial activity of new copper-halogenosalicylate complexes with heterocyclic N-donor ligands. (D. Hudecová)
Ditteová P.:	Biological activity of new synthetised N-heterocyclic copper carboxylates. (B.Dudová)
Hunová M.:	Induction and characterization of extracellular proteases in Trichoderma viride. (Ľ. Varečka)
Janíčková S.:	Antitumor and antimicrobial activity of some quinazolines. (S. Jantová)
Javorková V.:	Functional properties of the renal (Na,K)-ATPase in various pathophysiological conditions. (N. Vrbjar)
Maceková D.:	Genotoxic and antibacterial effects of selected natural compounds. (M. Mikulášová)
Majerová B.:	Biological effects of lignin derivatives. (M. Mikulášová)
Majtán J.:	The characterisation of clinical isolates of Salmonella enterica serovar Typhimurium strains of different phage type. (V. Majtán)
Nezbedová P.:	The influence of salivary gland extracts from horse flies Hybomitra bimaculata and Tabanus bromius on activities of ATP-diphosphohydrolase in mycocardial sarcolemma. (N.Vrbjar)
Pastirčíková S.:	Biochemical characterisation of Trichoderma viride cultivation products on the complex substrates. (B. Dudová)
Pivovarová Z.:	The effect of suprainhibitory concentrations of selected antibiotics on the factors of virulence of Stenotrophomonas maltophilia. (V. Majtán)
Smoleňová E.:	Microbial treatment of lignit and characterisation of indigenous microbes of lignit. (Ľ. Varečka)
Šišáková E.:	The use of affinity chromatography for the isolation of proteins important in signalling pathways. (R. Pokorný)
Urban H.:	Biochemical changes induced by detergents in Trichoderma viride. (Ľ. Varečka)
Zavillová I.:	The effect of natural polyphenols on the activity of NO synthase and on the concentration of free radicals in NO deficient and spontaneous hyperthensis.(I. Bernátová)

B. Dissertations (PhD)

Lakatoš B.:	The properties of basal transport of Ca2+ in human red blood cells. (Ľ. Varečka)

D. Habillitation thesis

Mikulášová M.:	The use of bacterial tests for detection of genotoxicity.

VII PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Dovinová, I., Pauliková, H., Rauko, P., Hunaková, L., Hanušovská, E., Tibenská, E.: Main targets of tetraaza macrocyclic copper complex on L1210 murine leukemia cells. Toxicol In Vitro 16, 491-8, (2002)

[2]* Dudová, B., Hudecová, D., Pokorný, R., Mičková, M., Palicová, M., Segľa, P., Melník, M.: Copper complexes with bioactive ligands. Part II - Antifungal activity. Folia Microbiol. 47, 225-9, (2002).

[3]* Henselová, M., Hudecová, D.: Differences in the microflora of scarified and unscarified seeds of Karwinskia humboldtiana (Rhamnaceae). Folia Microbiol.46 (6), 543-548, (2001 – published in may 2002)

[4]* Košíková, B., Slameňová, D., Mikulášová, M.: Reduction of carcinogenesis by biobased lignin derivatives. Biomass and Bioenergy 23, 153-159, 2002
[5]* Lakatoš, B., Kaiserová, K., Šimkovič, M., Orlický, J., Knézl, V., Varečka, Ľ.: The effect of boromycin on the Ca2+ homeostasis. Mol. Cell. Biochem.231, 15-22, (2002).
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B. Conferences (*international conferences)

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[21] Hudecová, D., Kamenistá, A., Marčeková, Z., Varečka, Ľ.: Characterization of chloropromazine resistant mutants of Trichoderma viride. (in Slovak) In: Houby jako modelové organismy ve výzkumu a biotechnologii - II, Olomouc (ČR), 5.-6.9. 2002, (Pr)
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[28]* Poturnajová, M., Altanerová V., Altaner C.: Analysis of RET Gene Mutation Asociated with Multiple Endocrine Neoplasia Type 2A, Sporadic medullary Thyroid carcinoma and Pheochromocytoma. 9.th MEWPE (9th Middle European Workschop on Paediatric Endocrinology), Pieštany (SR), November 15-17 2002.

DEPARTMENT OF CERAMICS, GLASS AND CEMENT

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I. STAFF

Associate Professors:
Miroslav Jamnický, PhD, Ján Majling, PhD

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Jozef Kákoš, PhD; Vladimír Kovár, PhD; Martin T.Palou, PhD; Eva Smrčková, PhD;

Research Fellows:
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PhD Students:
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Technical Staff:
Ľudmila Illášová; Helena Jablonková; Pavol Krutý; Mária Pelíšková; Iveta Zezulová;

Emeritus Fellows:
Assoc. Prof. Jozef Laček, PhD; Zdenek Hrabě, PhD;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Teaching laboratory I
Teaching laboratory II

B. Research Laboratories:

Laboratory of ceramics
Laboratory of glass
Laboratory of inorganic binders
Laboratory of sol/gel
Laboratory of inorganic powders synthesis
Laboratory of thermal analysis
Laboratory of calorimetry
Scanning electron microscopy laboratory
X-ray diffractometer laboratory

III. TEACHING

A. Undergraduate Study

1. Introductory Courses

6th semester (spring)		
Materials technology	(2-0 h)	Majling
Bachelor's thesis	(0-4 h)	Kozánková, Palou, Rebroš, Smrčková, Svetík

2. Advanced Courses

7th semester (autumn)		
Inorganic chemistry III	(2-2 h)	Jamnický
Solid state physics	(2-0 h)	Lokaj, Smrčková
Raw materials and technical mineralogy	(2-1 h)	Svetík, Kozánková
Applied thermodynamics	(2-2 h)	Fellner, Pach
Specialised laboratory practices I	(10 h)	Kákoš, Kovár, Kozánková, Palou, Rebroš, Smrčková, Svetík
8th semester (spring)		
High temperature processes	(2-1 h)	Kovár
Applied heat technique	(2-1 h)	Kovár, Kákoš
Specialised laboratory practices II	(8 h)	Holková, Jamnický, Kákoš, Kovár, Kozánková, Lokaj, Palou, Smrčková
Factory praxis		Jamnický, Smrčková

9th semester (autumn)

Technology of spec. inorg. materials	(2-0 h)	Majling, Kákoš
Inorganic binders technology	(2-0 h)	Palou
Technology of ceramics	(2-0 h)	Smrčková, Majling
Technology of glass	(2-0 h)	Jamnický, Pach
Specialised laboratory practices III	(10 h)	Jamnický, Majling, Pach, Palou, Rebroš, Smrčková

10th semester (spring)

Master's thesis laboratory	(30 h)	Jamnický, Kákoš, Kovár, Lokaj, Majling, Pach, Palou

IV. CURRENT RESEARCH PROJECTS

A. Effect of seeding additives on the phase and microstructure envolvement during hydration of sulfoaluminate cements (Ján Majling)

Hydration reaction of model SAB cement has been studied taking into account three mineral phases (C_2S, C_4A_3S" and CS") in such a ratio, that the reaction process led to the formation of two crystallohydrates – ettringite and gehlenithydrate.
The system was seeded by synthetized ettringite in amount of 1, 3 and 5 wt. %. Comparing with unseeded system more crystallized ettringite was developed in seeded ones.
Gehlenitehydrate was not identified, because of the course of reaction.
Tobermorite like phase was observed, probably as an intermediate product.

B. Superionic conducting oxide glass and glass-crystal composite materials containing copper cations (Miroslav Jamnický)

Preparation of mixed-halide glasses in the system CuI - CuBr - Cu_2O - (P_2O_5 + MO_3) with the same structure of the oxide glass network, the same content of dopping salts (CuI + CuBr) but with the variable content of cuprous halides (the study of "mixed anion effect").
Determination of the structure of main structural units of glasses in the systems under study and characterisation of their thermal and electrical properties.
Determination of correlations among composition, structure of the oxide glass network and electrical properties of the glass prepared under study.

C. Design microstructure and properties of sol-gel materials by means of seeding and polymer additives (Ladislav Pach)

Thermodynamic and kinetic analysis of α-Al_2O_3 crystallisation of boehmite gels seeded with Fe_2O_3 (1-5 wt %) showed different crystallisation mechanism for crystalline seeds (α-Fe_2O_3) and $Fe(NO_3)_3$ solutions. The former is crystallographical and agree with literature, but for the second one we have proved a solution mechanism, characterised by direct transformation of γ-$(Al,Fe)_2O_3$ to α-$(Al,Fe)_2O_3$ without precipitation of α-Fe_2O_3. This seeding of boehmite gels enables us to prepare transparent α-Al_2O_3 ceramics at low temperatures (~1300 ^oC).
Polymeric organic additives (PVA, PEG, starches) to AlOOH-$Fe(NO_3)_3$ gels positively changed the mechanical properties of gels, but on the other side, they (e.g. 3 wt % of PVA) totally cancelled the high nucleation effect of $Fe(NO_3)_3$. The mechanism of that effect is rather steric-microstructural than chemical, polymers reduced the coordination number of colloidal boehmite particles (~5 nm) and significantly decreased potential sides (nucleation density) of homogeneous nucleation of α-Al_2O_3.
Described control of α-Al_2O_3 crystallisation in boehmite derived alumina gels revealed a new tool for preparation of dens (construction, cut and abrasive) and porous (ceramic membranes) α-Al_2O_3 ceramics.

V. COOPERATION

A. Cooperation in Slovakia:

Faculty of Electrical Engineering and Information Technology, Slovak University of Technology, Bratislava
Faculty of Mechanical Engineering, University of Žilina, Žilina
Faculty of Mechanical Engineering, Slovak University of Technology, Trnava
Institute of Inorganic Chemistry, Slovak Academy of Sciences, Bratislava
Institute of Construction and Architecture, Slovak Academy of Sciences, Bratislava
Cementáreň Turňa, a.s., Turňa nad Bodvou (Cement producer)
Považská cementáreň, a.s., Ladce (Cement producer)
Holcim, a.s., Rohožník (Cement producer)
Eurodom, s.r.o., Lučenec (Constructional system)
Novoker, a.s., Lučenec (Wall tiles producer)
CERAM Čáb, a.s., Nové Sady (Electroceramics producer)
TS, a.s., Bratislava (Technical glass work)
Johns Manville Skloplast, a.s., Trnava (Glass fibre plant)
SMZ, a.s., závod Jelšava (Magnesite clinker plant)
Izomat, a.s., Nová Baňa (Mineral fibre insulation materials producer)
Slovenské elektrárne, Výskumný ústav jadrových elektrární Trnava a.s. (Research institute of electric power stations)

B. International Cooperation:

Intercollege Materials Research Laboratory, The Pennsylvania State University, University Park, PA, USA

- Synthesis of Inorganic Materials
Department of Engineering Materials, The University of Sheffield, U. K.
- Novel Low Energy Cements Based on Belite

C. Membership in Domestic Organisations and Societies:

Slovak Silicate Society, Bratislava
Union of Glass Industry, Bratislava
Slovak Glass Society, Lednické Rovne
Crystallographic Society, Bratislava
Association of Science Technical Societies, Bratislava

D. Membership in International Organisations and Societies:

Silicate Society, Prague, Czech Republic	Z. Hrabě
American Ceramic Society, USA	L. Pach
The International Society for the Environmental and Technical Implications of Construction with Alternative Materials (ISCOWA), Nederland	J. Majling
Institute of Materials, U.K.	J. Majling

G. Visitors from Abroad:

Dr. M. Ermrich	Röntgenlabor Dr. Ermrich, Reinheim, Germany, January 2002 (2 days)
Ing. F. Simonis	TNO Industrial Technology and the Materials Technology Division of TNO Institute of Applied Physics, Eindhoven, Holland, April 2002 (1 day)
Prof. U. Kynasta	University of Applied Sciences, Steinfurt, Germany, September 2002 (1 day)

H. Visits of Staff Members and PhD Students to Foreign Institutions:

M. Palou	Kalorimetrický seminář 2002, Seč u Chrudimi, Czech Republic, May 27-31
M. Palou	Int. Symp. Non-Traditional Cement and Concrete, Brno Univ. Technol., Brno, Czech Republic, June 11-13
M. Palou, E. Smrčková	6th conf. Nové stavební hmoty a výrobky, VUSTAH Brno, Czech Republic, October 16-18
J. Majling	University of Technology, Sydney, Australia, Nov. 2002 (5 days)

VI. THESES AND DISSERTATIONS

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

Bodišová K.:	Boehmite gels modification. (L. Pach)
Drabíková M.:	Zirconia material corrosion by glass melt. (M. Jamnický)
Fabianová M.:	Preparation and sintering of fluorapatite. (J. Majling)
Holler M.:	Identification of glass inhomogenities in the lead glass and causes of their occurrence. (J. Lokaj)
Lendelová K.:	Opal structures for fotonic crystals. (J. Kákoš)
Lenko B.:	Preparation of yttrium aluminate by colloidal procedures. (J. Majling)
Magulová K.:	Selective dissolution of cement clinker phases. (E. Smrčková)
Pavláková J.:	Crystallization kinetics of boehmite gels. (L. Pach)
Piják I.:	Environmental effect on glassware corrosion. (M. Jamnický)
Šuhajová R.:	Influence of seed additives on the phase evolution and microstructure of SAB cements. (M. Palou)
Vargová S.:	Determination of reasons for nondesirable haze of transparent glaze. (V. Kovár)

B. Dissertations (PhD):

Sedláček J.:	Corrosion of refractory materials used in glass production. (M. Jamnický)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Lichvár P., Galusek D., Majling J., Liška M.: Measurement of optical transmittance – a novel method for determination on the glass transition temperature of transparent glasses. Ceramics-Silikáty 46 (2) 74-78 (2002)
[2]* Majling J., Šimon P., Khunová V.: Optical transmittance thermal analysis of the poly(ethylene terephthalate) foils. J. Therm. Anal. Cal. 67 () 201-206 (2002)
[3]* Pach L., Bača Ľ., Holková Z., Plewa J.: Crystallization and porosity evolution of AlOOH-Fe$(NO_3)_3$ gels. J. Porous Mat. 9 () 17-

24 (2002)

B. Conferences (*international conferences)

[1]* Bury P., Hockicko P., Jamnický M., Jamnický I.: Acoustic properties of ion conductive glasses in the system CuI-CuBr-Cu_2O-(P_2O_5+MoO_3). In: Proc. 32nd Int. Acoustical Conf. – EAA Symposium Acoustics Banská Štiavnica 2002, Banská Štiavnica, Sept. 10-12, 2002. Ed. Technická univerzita, Zvolen, pp. 67-70 (2002). ISBN 80-228-1159-9

[2]* Bury P., Hockicko P., Jamnický M., Jamnický I.: Study of mechanisms of ion transport in ion conducting glasses. In: Proc. 8th Int. Workshop on Applied Physics of Condensed Matter, June 19-21, 2002, Liptovký Mikuláš. Ed. Mudroň J., Müllerová J., Šutta P., Harmatha L., Vojenská akadémia, Liptovský Mikuláš, pp. 145-150 (2002). ISBN 80-8040-186-1

[3]* Holková Z., Pach L., Bača Ľ.: Influence of $Fe(NO_3)_3$ addition on the porosity of boehmite-derived Al_2O_3 ceramics. On: CD ROM 6th Int. Conf. Theoretical and experimental problems of materials engineering, Púchov, Sept. 5-7, 2001. Ed. FIT University of Trenčín, 7 pp. (2001)

[4]* Holková Z., Pach L., Majling J.: Effect of organic additives on optical properties of heat treated boehmite gels. On: CD ROM 5th conf. Solid State Chemistry 2002, Bratislava, July 7-12, 2002. Ed. ÚAnCh SAV Bratislava, 1 p. (2002)

[5]* Jamnický M., Sedláček J., Znášik P.: The structure and properties of cuprous ion conducting glasses. On: CD ROM 5th conf. Solid State Chemistry 2002, Bratislava, July 7-12, 2002. Ed. ÚAnCh SAV Bratislava, 1 p. (2002)

[6]* Kozánková J., Majling J., Chocholoušek J.: Additives effect on the microstructure of etched sodium borosilicate glasses. On: CD ROM 5th conf. Solid State Chemistry 2002, Bratislava, July 7-12, 2002. Ed. ÚAnCh SAV Bratislava, 1 p. (2002)

[7]* Kubičár Ľ., Boháč V., Vretenár V., Hrabě Z., Pach L., Kozánková J.: Anomálne hodnoty termofyzikálnych parametrov nerovnovážnych štruktúr vyšetrované impulznou metódou. Anomalous values of thermophysical parameters of the non-equilibrium structures investigated by the pulse method. In: Proc. Kalorimetrický seminář 2002, Seč u Chrudimi (Czech Republic), May 27-31, 2002. Ed. Taraba B., PřírF Ostravské univerzity, Ostrava, pp. 9-12 (2002). ISBN 80-7042-824-4

[8]* Lichvár P., Majling J., Galusek D., Liška M.: Determination of the glass transition temperature of CaO-Y_2O_3-Al_2O_3-SiO_2 glasses by measurement of optical transmittance. On: CD ROM 6th Int. Conf. Theoretical and experimental problems of materials engineering, Púchov, Sept. 5-7, 2001. Ed. FIT University of Trenčín, 7 pp. (2001)

[9]* Majling J.: Optical transmittance thermal analysis, a microstructure sensitive on-line method. On: CD ROM 5th conf. Solid State Chemistry 2002, Bratislava, July 7-12, 2002. Ed. ÚAnCh SAV Bratislava, 1 p. (2002)

[10]* Mojumdar S. C., Drábik M., Chocholoušek J., Kovár V., Majling J.: $NaPO_3$ glass crystallization as observed by light transmittance thermal analysis. In: Proc. 30th North American Thermal Analysis Society Conf., Pittsburgh (USA), Sept. 23-25, 2002. NATAS, Pittsburgh, pp. 239-244 (2002)

[11] Palou M., Jaklovský Š., Majling J.: Výroba PC s vysokým obsahom aktívneho belitu na báze vysokopecnej trosky z US Steel vo VHS a.s. Turňa. Production of PC with high content of active belite on the base of blast furnace slag from US Steel in VHS Turňa (in Slovak). In: Proc. conf. Cement 2002, Stará Lesná, Oct. 9-11, 2002. Ed. Cemdesign Trenčín, pp. F-F9 (2002)

[12]* Palou M. T., Majling J.: A procedure to calculate the raw mixtures composition of (sulfoaluminate) cements. In: Proc. Int. Symp. Non-Traditional Cement and Concrete, Brno (Czech Republic), June 11-13, 2002. Ed. Bílek V., Keršner Z., Brno Univer. Technol., pp.121-124 (2002). ISBN 80-214-2130-4

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C. Books and textbooks

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[2] Marcinčin A., Hudec I., Majling J.: Technológia materiálov. Technology of materials (in Slovak). STU Bratislava, 2002, 183 pp. ISBN 80-227-1798-3

D. Others

[1] Majling J.: Keramika v našom tele. Ceramics in our body (in Slovak). Quark 8 (5) 19-20 (2002)

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DEPARTMENT OF CHEMICAL AND BIOCHEMICAL ENGINEERING

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I. STAFF

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PhD students:
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Technical Staff:
Dobrovodská Mária; Herzán Ľubomír; Hinca Miloš; Luknár Karol; Ördögová Marta; Rizman Viliam;

TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories

Laboratory of Chemical Engineering
Laboratory of Unit Operations
Laboratory of Reaction Engineering
Laboratory of Membrane Processes
Laboratory of Chemical Engineering Thermodynamics
Membrane Processes and Membrane Reactors
Laboratory of Adsorption

B. Research Laboratories

Laboratory of Chemical Reaction Kinetics and Reaction Engineering
Laboratory of Hydrodynamics and Heat Transfer
Laboratory of Membrane Processes and Membrane Reactors
Laboratory of Adsorption and Phase Equilibria
Laboratory of Bioprocess Engineering

III. TEACHING

A. Undergraduate Study (Bachelor of Chemical Technology)

1. Introductory Courses

1st semester

Material Balances of Technological Processes	(2 h)	M.Šefčíková, P.Ačai, S.Bafrncová,M.Blažej, E.Besedová, I.Havalda, V.Illeová, M.Kiša, F.Malík, M.Polakovič, J.Šefčík, V.Štefuca, P.Timár, M.Vajda, M.Vandáková

5th semester

Chemical Engineering I		
Lectures	(2 h)	V. Báleš, Ľ.Jelemenský
Exercises	(3 h)	P.Ačai, S.Bafrncová, E.Graczová, I.Havalda, O.Mierka, J.Stopka, J.Šefčík, M.Šefčíková, P.Timár, M.Vajda

Chemical Engineering Laboratory I	(1h)	P.Ačai, M.Antošová, M.Bafrnec, S.Bafrncová,R.Kertesz, O.Mierka, J.Šefčík, M.Šefčíková,P.Timár,M.Vajda
Chemical Engineering Laboratory I	(1 h)	P.Ačai, M.Antošová, S.Bafrncová, D.Bobok, E.Graczová, G.Grznárová, I.Havalda,M.Juma,R.Kertesz,O.Mierka,. J.Longauer, J.Šefčík, M.Šefčíková, P.Timár, M.Vajda

6th semester

Chemical Engineering II		
Lectures	(2 h)	J.Dojčanský, V.Štefuca,
Exercises	(3 h)	P.Ačai, S.Bafrncová, E.Besedová,J.Dojčanský, E.Graczová, I.Havalda, O.Mierka, J.Stopka, V.Štefuca, J.Šefčík
Chemical Engineering Laboratory II.	(3 h)	P.Timár, P.Ačai, M.Antošová, M.Bafrnec,M.Blažej, E.Graczová, I.Havalda, R.Kertesz, M.Juma, B.Remiarová, M. Polakovič, J.Stopka, J.Šefčík
Engineering Thermodynamics		
Lectures	(2 h)	O.Mierka
Exercises	(2 h)	M.Šefčíková, P.Timár, O.Mierka
Technological Projects	(4 h)	M. Bafrnec, Ľ.Jelemenský, J.Markoš, A.Molnár, P.Timár, M.Vajda

B. Graduate Study (Master of Chemical Technology)

2. Advanced Courses

7th semester

Chemical Engineering Thermodynamics		
Lectures	(2h)	E.Graczová
Exercises	(2 h)	E.Grazcová,
Diffusional Separation Processes	(2 -2 h)	J.Dojčanský
Hydrodynamics and Heat Transfer		
Lectures	(2 h)	J.Stopka
Exercises	(2 h)	I.Havalda
Laboratory	(1 h)	J.Stopka
Mass Transfer Theory	(2-1 h)	D.Bobok
Computer Chemical Egineering Calculations	(3 h)	M.Juma, A.Molnár, S.Bafrncová
Mathematical Methods in Chemical Engineering	(4 h)	I.Havalda

Safety engineering

Chemical Engineering Thermodynamics		
Lectures	(2h)	E.Graczová
Exercises	(2 h)	R.Benčol
Hydrodynamics and Heat Transfer		
Lectures	(3 h)	J.Stopka
Exercises	(2 h)	I. Havalda
Laboratory	(1 h)	J.Stopka
Mass Transfer Theory	(2-1 h)	D.Bobok
Fire Engineering	(2 -2 h)	K.Balogh
Computer Chemical Egineering Calculations	(3 h)	M.Juma, A.Molnár, S.Bafrncová
Mathematical Methods in Chemical Engineering	(4 h)	I.Havalda

8th semester

Chemical Engineering		
Chemical Reaction Engineering I		
Lectures	(2 h)	J. Markoš
Exercises	(2 h)	M. Vajda
Laboratory of Chemical Reaction Engineering	(2 h)	J.Markoš
Safety Engineering	(2-2 h)	L.Jelemenský
Bioprocess Engineering I		
Lectures	(2 h)	V.Báleš
Exercises	(1 h)	M.Polakovič
Selected Unit Operations	(2 h)	D.Bobok, Š.Schlosser
Project of Equipment of Chem. and		

Food Technology	(3h)	J.Dojčanský, J.Longauer, M.Polakovič, J.Stopka, Š.Schlosser
Advanced Laboratory of Chemical Engineering I	(3 h)	J.Šefčík, D.Bobok, E.Graczová, M.Juma, B.Remiárová, J.Stopka, V.Štefuca, Š.Schlosser,
Safety Engineering		
Chemical Reaction Engineering I		
Lectures	(2 h)	J. Markoš
Exercises	(2 h)	M. Vajda
Explosion Prevention	(2-2h)	D.Skarba
Process Systems Engineering	(2 h)	J.Markoš
Laboratory of Process Systems Engineering	(2 h)	J.Markoš
Project of Equipment of Chem. and Food Technology	(3h)	J.Longauer

9th semester

Chemical Engineering		
Chemical Reaction Engineering II	(2-1 h)	J.Markoš
Process Systems Engineering	(1-2 h)	J.Markoš, M.Juma
Bioprocess Engineering II	(1-1 h)	V.Báleš
Project Design	(1-1 h)	O.Mierka
Solid Particles in Technology and Environment	(2 h)	P.Timár
Bioseparations	(0-2 h)	M. Polakovič
Cost Engineering of Industrial Enterprise	(2 h)	M.Bafrnec
Advanced Laboratory of Chemical Engineering II	(6 h)	M.Bafrnec, D.Bobok, J.Markoš, O.Mierka, M.Polakovič, J.Stopka, P.Timár, M.Vajda
Safety Engineering		
Safety Engineering II	(2-2 h)	L.Jelemenský
Laboratory of Process Plant Safety	(3 h)	L.Jelemenský, K.Holíková
Laboratory of Safety Engineering	(3 h)	E.Graczová, L.Jelemenský, J.Stopka
Electrical Safety for Chemical Process Plants	(1-1 h)	D.Perniš
Solid Particles in Technology and Environment	(2 h)	P.Timár
Cost Engineering of Industrial Projects	(2 h)	M.Bafrnec

7th semester

OrganicTechnology		
Chemical Engineering Thermodynamics		
Lectures	(2h)	E.Graczová
Process Control		
Chemical Engineering Thermodynamics		
Lectures	(2h)	E.Graczová
Petroleum Technology and Petrochemistry		
Chemical Engineering Thermodynamics		
Lectures	(2h)	E.Graczová

8th semester

Biochemical Engineering		
Lectures	(2 h)	M.Polakovič

9th semester

Safety Engineering	(2 h)	Ľ.Jelemenský
Biochemical Technology		

C. Postgraduate study

Chemical Engineering	
1st year:	3 students
2nd year:	2 students
3rd year:	2 student
Obligatory	
English	
Mathematics I.,II.	
Chemical Reactors Engineering	
Theory of Mass Transfer	
Hydrodynamics and Heat Transfer	
Optional	
Engineering Bioreactor	
System Engineering	

IV. CURRENT RESEARCH PROJECT

A. Engineering approaches to the investigation of properties of ligand-enzyme-carrier systems in biocatalysis and bioseparations (Milan Polakovič)

The project incorporates several different problems related to the heterogeneous liquid-solid systems employed in biotechnology. The main areas covered by the project include the optimisation of flow microcalorimetry using mathematical modelling for the analytical applications of the biocatalytic systems under study, investigation of enzyme systems with complex kinetics and characterisation of morphological and diffusional properties of carriers used in biocatalysis and biotransformation. The particular goals include the development of methodologies for the identification of mechanisms of enzyme inactivation using the integration of experimental techniques at the quantitative level; the development of chemical engineering data for the optimisation of the design of the fructooligosaccharide production process and for the improvement of biocatalyst properties; the formation of the kinetic equation of triacylglycerols hydrolysis by yeast lipase and its implementation for the description of fermentation production of lipase; modelling of kinetics of potato starch hydrolysis by glucoamylase; the determination of the degree of instability of casein micelles in relation to the degree of hydrolysis of kappa-casein using an experimental procedure of the separation of unstable aggregated micelles and investigation of kinetics of destabilisation of micelles via mathematical modelling of sequential processes; study of the kinetics of glycoprotein sorption at lectin ligands.

B. Immobilized biotechnologies: Implementation of new immobilization methods into microbial and plant fermentations and biotransformations, and their industrial applications (Vladimír Štefuca)

The aim of the project is a systematic development of immobilized biotechnologies. This can be achieved most probably in case of biotechnological processes where the state of the knowledge or the process optimization has reached maximum level and the further increase of the process effectiveness requires the development of new unconventional ways. This evolution should bring more extensive use of continuous processes. The increase of the processes in biotechnology will accelerate their introduction in the industrial use. The project outputs will be information about biochemistry, bioengineering and process parameters that will be used in practical application of investigated processes. The study is oriented toward implementation of immobilization techniques into following processes:

i) ethanol production by fermentation of starch hydrolysates,
ii) primary and secondary wort fermentation,
iii) butyric acid production by transformation of butanol,
iv) biotransformation/biodegradation of xenobiotics,
v) secondary metabolite production by plant fermentation.
vi) dextrose sirup production by maltodextrin hydrolysis.

C. Prediction and measurement of phase equilibria and kinetics of separation processes with the aim to obtain data for the modelling of reduction of emissions and separation of fluid mixtures (Daniel Bobok)

Experimental estimation of equilibrium and kinetic data of the adsorption of chlorinated hydrocarbons on activated carbon. Verification of equilibrium data according to physically substantiated equations of adsorption isotherms available in the literature. Estimation of the values of effective diffusion coefficients and identification of the transport mechanism of adsorptive in solid phase pores.

Evaluation of properties of mixed solvents using binary vapour-liquid equilibrium data and their application for prediction and/or correlation of liquid-liquid equilibria of extraction systems.

Development of a program for calculation of vapour pressures of polluting substances under conditions of running a wastewater treatment plant.

D. Integrated reaction-separation systems with membranes, mechanism and modelling of mass transport and interactions in them (Štefan Schlosser)

Study of phenomena related to the formation and modelling of integrated systems with liquid, polymeric and ceramic membranes for biochemical or chemical reactions simultaneously carried out with separations. These systems are applicable in biotechnologies and in biological treatment of wastewaters. The research will lead to a deeper understanding of kinetics of chemical or biochemical reactions, as well as mass transport in these systems, what will enable their modelling and application.

Development and testing of a new generation of solvents and liquid membranes based on ionic liquids, and classical formulation of liquid membranes for the transport of organic acids and metals. Utilisation of these solvents in pertraction and membrane based extraction, especially in hollow fiber contactors and their modelling.

Study of microfiltration through polymeric hollow fiber membranes in submerged modules and ceramic membranes with emphasis on deeper knowledge and modelling of interactions of permeants with membranes. These interactions will be followed particularly in model binary solutions.

E. Loss prevention and safety assessment by simulation of chemical processes (Ľudovít Jelemenský)

Continual development of chemical processes calls for the solution of the causes of ecological problems resulting from production as well as bad safety. From the all problems connected with the development of safe productions follows the below mentioned scientific goals of the project:

to develop a software for the prediction and simulation of possible accidents and operating problems in chemical processes, to develop a tool for the assessment of potential control of performance resulting from upsets, and to predict the polluting effects from toxic components arising from upsets and malfunctions.

F. Mathematical and experimental modelling of coal combustion with the aim of its maximal energetic utilization and decreasing of sulphur dioxide emissions (Jozef Markoš)

Experimental investigation and mathematical modelling of single coal particle combustion and coal combustion in industrial fluidised bed combustors. The study of the coal particle combustion will be oriented towards: (i) study of elementary processes in the particle

and its surroundings without and with the presence of additives for the elimination of sulphur dioxide emissions and determination of the optimal conditions which affect the maximal utilization of carbon and maximal elimination of sulphur dioxide emissions, (ii) investigation of the kinetics of coal combustion under the conditions of low oxygen concentrations. These conditions, which are common for industrial combustors, have a negative influence on emissions of carbon monoxide and decrease the effectiveness of the combustion process. The consequence is a high residual concentration of carbon in the ash.
The kinetic study will be performed in laboratory equipment developed at the Department of Chemical and Biochemical Engineering within the framework of the grant VEGA 1/4214/97.

G. Thermal diffusivities of orthogonal anisotropic materials (Milan Bafrnec)

Elaboration of a model of heat transfer in orthogonal anisotropic composite materials with a thick oriented structure. This model will be used for the development of a method for measuring thermal diffusivities of such materials. In addition, this method will enable the measurement of the difference in thermal diffusivities in various directions.
A suitable mathematical model describing the nonstationary heat transfer in composite materials with a thick fibre structure has been proposed. In the choice of parameters and the proper model of material structure the feasibility solution of the mathematical model was taken into account. Various samples of such composite materials were prepared and their measurement confirmed that there is a great difference between the thermal diffusivity in the direction perpendicular to the fibre layer and in the direction along the composite material fibres.
Models of industrial processes of tire vulcanisation were derived and solved.

H. Study of mass transfer and kinetics in airlift reactors (Vladimír Báleš)

The project deals with momentum and mass transfer phenomena and their superposition with the kinetics of biological processes in airlift reactors. One important result achieved during the solution of the project was the improvement of the method of measurement of circulation velocity of the liquid using a magnetic miniprobe. In addition, a methodology for the determination of oxygen mass transfer coefficient in the true fermentation medium was also developed. The goals for the next period include the study of oxygen transfer rate in unsteady fermentation conditions using the dynamic pressure method and the development of an unsteady mathematical model of a reactor incorporating the kinetics of oxygen mass transfer.

I. Complex processing of alfaalfa as a renewable energy source combining conventional and biotechnological processes (Vladimír Štefuca)

The project deals with the complex processing of alfaalfa phytomass as a renewable energy source combining conventional and biotechnological processes. The project goals are as follows: choice of suitable genotypes aimed at the content of investigated components, choice and optimisation of the processes of fractionation of solid and liquid portions of biomass and design of a hydrolysis process as the first step for further fermentation processes. The result of this project will be the design of technological schemes for complex processing of alfaalfa biomass.

V. COOPERATION

A. Cooperation in Slovakia

BIOTIKA a. s. Slovenská Ľupča.
Chemical Enterprise Duslo Šaľa
Chemical Enterprise Nováky
KAPPA Štúrovo, a. s. Štúrovo.
Likospol, s.r.o. Bratislava
Matador, a. s., Púchov
Považská cementáreň, a.s., Ladce, 2002.
Technical University in Košice, Faculty BERG, Dept. Mineralogy and Environ. Technol.
TOPVAR, a. s. Topoľčany.
VUM, Žiar nad Hronom

B. International Cooperation:

CIBA, Swiss
- synthesis of IRGANOX L67

Aston University, Birmingham, UK
- cooperation

Universidade do Minho, Braga, Portugal
- cooperation

University College London, United Kingdom
- cooperation

Universitate Babes – Bolyai, Cluj Napoca, Department of Chemical Engineering, RO
- cooperation

La Escuola de Ingenieria Quimica, Universidad Michoacana de San Nicolas de Hidalgo, Morelia, Mexico,
- teaching activities

Laboratoire de Biotechnologie Environmentale Lausanne, Switzerland
- joint project Eureka E 2497 – development of a bioreactor for the cultivation of bacteria for removal of toxic volatile organic compounds

Belair Bureau d'Etudes de l'Air, Lausanne, Switzerland
- joint project Eureka E 2497

SIA (Sociedade de Innovacao Ambiental LDA.), Porto, Portugal
- joint project Eureka E 2497

Ekološki Inženjering d.o.o., Poreč, Croatia
- joint project Eureka E 2497
Institut fuer Analytische Chemie, Universität Wien, Vienna, Austria
- joint project Eureka E 2497
East/European Centre, Universitaet Hohenheim, Germany
- joint project Leonardo da Vinci
Societatea Romana de Biotechnonologie si Bioenginerie, Romania
- joint project Leonardo da Vinci
Institut de Cercetari Chimice, Romania
- joint project Leonardo da Vinci
Pluri Consultants SRL, Romania
- joint project Leonardo da Vinci
Univ. de Stiinte Agricole si Medicina Veterinara din Bucuresti, Romania
- joint project Leonardo da Vinci
Fundatia Universitara CERA, Romania
- joint project Leonardo da Vinci
Natural Resorces Insitute – University of Greenwich, United Kingdom
- joint project Leonardo da Vinci
The European Process Safety Centre, UK
- joint project Process Industries Safety Management
Institution of Chemical Engineers, UK
- joint project Process Industries Safety Management
Technische Universität Berlin, Germany
- joint project Process Industries Safety Management
Snamprogretti, s. p.a., Italy
- joint project Process Industries Safety Management
Deutsche Exxon Chemical, GmbH, Germany
- joint project Process Industries Safety Management
Centrale Organisatie tno, NL
- joint project Process Industries Safety Management
Aventis Crop Science SA, France
- joint project Process Industries Safety Management
Totalfina, B
- joint project Process Industries Safety Management
Det Norske Veritas, ltd. UK
- joint project Process Industries Safety Management
Chinoin Chem. And Pharmaceutical Works Co., ltd., HU
- joint project Process Industries Safety Management
The Keil Centre, ltd., UK
- joint project Process Industries Safety Management
John Ormond Management Consultants, ltd., UK
- joint project Process Industries Safety Management
Solvay, B
- joint project Process Industries Safety Management
European Commission Joint Research Centre, Institute for Systems, Italy
- joint project Process Industries Safety Management
National Centre for Scientific Research, Demokritos, EL
- joint project Process Industries Safety Management
Institut Quimic de Sarria, E
- joint project Process Industries Safety Management
Borealis A/S, Sweden
- joint project Process Industries Safety Management
Instytut Chemii Przemyslowej, PL
- joint project Process Industries Safety Management
Technical Research Centre of Finland, FIN
- joint project Process Industries Safety Management
The Asssociated Octel Co. ltd, UK
- joint project Process Industries Safety Management
Hickson International, PLC, UK
- joint project Process Industries Safety Management
Huntsman ICI (Europe) BVBA, Belgium
- joint project Process Industries Safety Management
Pfizer Pharmaceutical Production Corp. IRL
- joint project Process Industries Safety Management
Health and Safety Executive, UK
- joint project Process Industries Safety Management
Cerestar UK LTDA Co. of Eridania Beghin-Say, UK
- joint project Process Industries Safety Management
Eutech Engineering Solutions, ltd., UK

- joint project Process Industries Safety Management
University of Technology Hamburg-Harburg, Germany
- joint project Process Industries Safety Management
Loughborough University, UK
- joint project Process Industries Safety Management
University of Birmingham. UK
- joint project Process Industries Safety Management

D. Membership in International Organisations and Societies:

Báleš Vladimír	member of the Executive Board, European Federation of Chemical Engineering
Báleš Vladimír	member of the American Chemical Society
Báleš Vladimír	member of the Working Party for Bioreactor Performance and Slovak delegate in the General Assembly, European Federation for Biotechnology
Markoš, Jozef	member of the Working Party „Chemical Reaction Engineering“, European Federation of Chemical Engineering,
Polakovič Milan	member of the Scientific Committee for the Section Applied Biocatalysis, European Federation for Biotechnology
Schlosser Štefan	member of the Working Party on Membranes EFCE, (ww.cs.cnr.it/IRMERC/WP_EFCE)
Schlosser Štefan	member of the committee of the European Membrane Society
Stopka Ján	Member of the Working Party for Education, European Federation of Chemical Engineering

E. International Scientific Programs:

1/EUREKA
EUREKA E12497. Environ Biomac : “Bioreactor for innovative mass bacteria culture“. (Milan Polakovič)
The objective of this project is to develop a new cultivation technique where the growth kinetics and the metabolic behaviour of the bacterial communities are under control. The microorganisms will be produced in order to perform a cost effective aerobic biodegradation of target xenobiotics and organic pollutants. In the year 2001, the project team has been successively formed and project objectives have been precised. The project team is formed by small-and-medium enterprises from Switzerland (project management), Portugal, and Croatia and by the universities from Switzerland, Austria, and Slovakia.
Responsible at SUT: Assoc. Prof. Milan Polakovič, PhD
Coordinator of the project: Prof. Paul Peringer, Ecole Polytechnique Federale de Lausanne (CH)
Partners: Belair Bureau d'Etudes de l'Air (CH), Sociedade de Innovacao Ambiental Lda. (P), Universität Wien (A), Ekoloski Inzenjering d.o.o. (CRO)
Duration of the project: 15.1.2001-15.11.2003

2/ Leonardo da Vinci
Leonardo da Vinci (Community Vocational Training Programme): “Eurocompetencies Transfer in Vocational Guidance for Young Specialists in Biosience Field”
Coordinator: University Polytehnica, Bucuresti, Romania
Partners: East/European Centre, Universitaet Hohenheim, Germany
Societatea Romana de Biotechnonologie si Bioenginerie, Romania
Institut de Cercetari Chimice, Romania
Pluri Consultants SRL, Romania
Univ. de Stiinte Agricole si Medicina Veterinara din Bucuresti, Romania
Fundatia Universitara CERA, Romania
Natural Resorces Insitute – University of Greenwich, United Kingdom
Coordinator for SUT: Prof. Vladimír Báleš, DSc.
Duration of the Project: 2001 – 2002

3/ EU Commission 5th Framework Programme, Competitive and Sustainable Growth Programme
“Process Industries Safety Management Thematic Network on Human Factors “
Contract No: G1RT-CT-2001-05029
There is a significant difference in the safety performance in the process industries, both between Member States and between manufacturing companies. Organisations, whether large multinationals or SME´s are heavily reliant on their staff to achieve high levels of health and safety performance. Good human factors practices can be applied to improve safety performance, and it is proposed to add to the existing European Thematic Network called PRISM to help raise awareness of, and share experience in, the application of human factors approaches.
Contact person: Simon Jones, European Process Safety Centre
Coordinator: Alford Lee, European Process Safety Centre
responsible at SUT Assoc. Prof. Dr. Ľudovít Jelemenský
partners:
The European Process Safety Centre, UK
Institution of Chemical Engineers, UK
Technische Universität Berlin, Germany

Snamprogretti, s. p.a., Italy
Deutsche Exxon Chemical, GmbH, Germany
Centrale Organisatie TNO, NL
Aventis Crop Science SA, France
Totalfina, B
Det Norske Veritas, ltd. UK
Chinoin Chem. And Pharmaceutical Works Co., ltd., HU
The Keil Centre, ltd., UK
John Ormond Management Consultants, ltd., UK
Solvay, Belgium
European Commission Joint Research Centre, Institute for Systems, Italy
National Centre for Scientific Research, Demokritos, EL
Institut Quimic de Sarria, E
Borealis A/S, Sweden
Instytut Chemii Przemyslowej, PL
Technical Research Centre of Finland, FIN
The Asssociated Octel Co. ltd, UK
Hickson International, PLC, UK
Huntsman ICI (Europe) BVBA, Belgium
Pfizer Pharmaceutical Production Corp. IRL
Health and Safety Executive, UK
Cerestar UK LTDA Co. of Eridania Beghin-Say, UK
Eutech Engineering Solutions, ltd., UK
University of Technology Hamburg-Harburg, Germany
Loughborough University, UK
University of Birmingham. UK
Duration of the Project: 2003-2004

F. Visitors from Abroad:

Prof. Kenneth Seddon	Queen's University in Belfast (UK) (1 day)
Doz. Dr. Kurt Pilchowski	Martin-Luther-Universität Halle-Wittenberg, Institut für Analytik und Umweltchemie Halle, Germany (1 day)
Prof. Jose Antonio Teixeria	Department of Biological Engineering, University of Minho, Braga, Portugal (1 week)
Prof. David Bogle	University College London, London, UK (4 days)

G. Visits of Staff Members and PhD Students to Foreign Institutions:

Antošová, E.	15th International Congress of Chemical and Process Engineering, Praha, Czech Republic, 25 – 29 August 2002 (5 days)
Báleš, V.	Research and Development in Biochemical Enginnering, ETDN seminar. Bad Homburg, Germany, Sept.20-23, 2002 – invited lecture (3 days)
Graczová, E.	15th International Congress of Chemical and Process Engineering, Praha, Czech Republic, 25 – 29 August 2002 (5 days)
Grznárová, G.	15th International Congress of Chemical and Process Engineering, Praha, Czech Republic, 25 – 29 August 2002 (5 days)
Illeová, V.	15th International Congress of Chemical and Process Engineering, Praha, Czech Republic, 25 – 29 August 2002 (5 days)
Jelemenský, Ľ.	University of Gent, Belgium, Faculteit Toegenpaste Wetenschappen, Chemische Proceskunde en Technische Chemie, Laboratorium voor Petrochemische Techniek, Prof. Dr. Ir. Guy B. Marin, December 2002 (3 days)
Jelemenský, Ľ.	ELSEDIMA ´02, Babes – Bolyai University, Cluj Napoca, Romania, November 2002 (4 days)
Jelemenský, Ľ.	Workshop: Optimising human performance, GROWTH Thematic Network Project G1RT-CT-2001-05029. Budapest, Hungaria, 27- 28 March 2002, (2 days)
Kertész, R.	Network Young Membrains, 4th Meeting. Toulouse, France, 6-7 July, 2002, (2 days)
Malík, F.	15th International Congress of Chemical and Process Engineering, Praha, Czech Republic, 25 – 29 August 2002, (5 days)
Markoš, J.	15th International Congress of Chemical and Process Engineering, Praha, Czech Republic, 25 – 29 August 2002, (5 days)
Markoš, J.	CCRE-17 – CEAC Trondheim, Norway, 12 - 15 June 2002 (4 days)
Markoš, J.	Department of Biological Engineering, University of Minho, Braga, Portugal (2 weeks)
Markoš, J.	ELSEDIMA ´ 02, Babes – Bolyai University, Cluj Napoca, Romania, November 2002 (4 days)
Molnár, A.	ELSEDIMA ´ 02, Babes – Bolyai University, Cluj Napoca,

	Romania, November 2002, 4 days
Molnár, A.	15th International Congress of Chemical and Process Engineering, Praha, Czech Republic, 25 – 29 August 2002, (5 days)
Polakovič, M.	Ninth Seminar on Inulin. Budapest, Hungary, 18-19 April, 2002 (2 days)
Polakovič, M.	2nd Czech-Swiss Symposium on Advanced Biotechnology. Praha, Czech Republic, November 7-9, 2002 (3 days)
Polakovič, M.	3rd International Conference on Protein Stabilization. Toulouse, France, April 21-24, 2002 (4 days)
Polakovič, M.	Laboratoire Environnement et Minéralurgie, UMR INPL et CNRS N° 7569, Nancy, France (3 months)
Polakovič, M.	Wroclaw Institute of Technology, Wroclaw, Poland (5 days)
Remiárová. B.	15th International Congress of Chemical and Process Engineering, Praha, Czech Republic, 25 – 29 August 2002, (5 days)
Schlosser, Š.	invited lecture at the CST workshop Lappeenranta (FIN), August 2002 (8 days)
Schlosser, Š.	Meeting of the EMS Council at CNRS in Paris and visit at INRA in Thiverval-Grignon (F), December 2002 (4 days)
Schlosser, Š., Kertész, R.	Congress ICOM 2002, TOULOUSE (F), July 2002 (7 days)
Schlosser, Š.:	Meeting of the EMS Council and Org. committee of ICOM at INSA in Toulouse, January 2002 (4 days)
Znad, H.	15th International Congress of Chemical and Process Engineering, 25 – 29 August 2002 (5 days)

VI. THESES AND DISSERTATIONS

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

Baloghová A.:	Safety assessment of coal storage – modelling of self-ignition of coal (Ľ. Jelemenský)
Benčo R.:	Liquid-liquid equilibrium of a multicomponent system containing the mixed solvent dimethylformamid-ethyleneglycol (E. Graczová)
Bilka R.:	Design calculations of multi-pass tubular heat exchangers
Bumbalová K:	Study of structural changes in brown coal and coke particles during combustion (B. Remiárová)
Dermíšek L.:	Transport processes during fermentation of gluconic acid (O. Dolgoš)
Dudášová B.	Estimation of the impact of toxic substances on population during industrial accidents (J. Markoš)
Harišová J.:	Calculation of individual and social risks in simulation of an accident (Ľ. Jelemenský)
Korbeľ M.:	Kinetic properties of immobilized esterases (V. Štefuca)
Krško M.:	Modelling of the dispersion of heavy gases in the atmosphere (J. Stopka)
Lincmajerová Z.:	Diffusion of ethanol vapours in activated carbon particles (E. Besedová)
Mierka O.:	An assembly of programs for CDF modelling of dispersion of substances in the atmosphere (J. Stopka)
Mitloehner J.:	Energy audit of a real chemical plant (O. Mierka)
Mošať A.:	CDF modelling of hemofilters considering convective and diffusive mass transfer (A. Friedl, M. Harasek)
Pšenka P.:	Modelling of adsorption of phenylalanine from water on activated carbon (M. Polakovič)
Schmidtová J.:	A novel support for yeast immobilization made of spent grains and its use in fermentation processes (Bránayik T.)
Szíjjarto A.:	High-cell density airlift bioreactors – hydrodynamic studies (J. Klein)
Vereš Š.:	Mathematical modelling and optimisation of the paper drying process using one-cylinder paper machine (P. Timár)

B. Dissertations (PhD):

C. Habilitation Theses (Assoc. Prof. degree)

Graczová E.:	Thermodynamic properties of two-phase multicomponent systems.
Stopka J.:	Transport processes in chemical - engineering applications

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1] Antošová, M.*, Polakovič, M., Slovinská, M., Madlová, A., Illeová, V., and Báleš, V. Effect of sucrose concentration and

cultivation time on batch production of fructosyltransferase by Aureobasidium pullulans CCY 27-1-1194. Chemical Papers, 56 (2002) 394-39.
[2] Besedová E., Bobok D., Isosteric Heat of Adsorption of Acetone and Ethanol on Activated Carbon, Petroleum and Coal, 4 (2002) 5-10.
[3] Görner, T.*, Villieras, F., Polakovič, M., de Donato, P., Garnier, C., and Bersillon, J. L., Inverse liquid chromatography investigation of adsorption on heterogeneous solid surfaces: phenylalanine on activated carbon. Langmuir, 18 (2002) 8546-8552.
[4] Kertész, R*., Schlosser, Š. and Teixidor, F., Pertraction of silver with octylphenylsulfide in a hollow fiber contactor, Desalination, 148 (2002) 263-5.
[5] Klein, J.*, Rosenberg, M., Markoš, J., Dolgoš, O., Krošlák, M., Krištofíková, Ľ., Biotransformation of glucose to gluconic acid by Aspergillus niger – Study of mass transfer in an airlift bioreactor, Biochemical Engineering Journal, 10 (2002.
[6] Kubišová, Ľ.*, Marták, J. and Schlosser, Š., Transport of 5-Methyl-2-Pyrazinecarboxylic Acid Through a Layered Bulk Liquid Membrane, Chemical Papers, 56 (2002) 418-425.
[7] Kubišová, Ľ.*, Sabolová, E., Schlosser, Š., Marták, J. and Kertész, R., Membrane Based Solvent Extraction and Stripping of a Heterocyclic Carboxylic Acid in Hollow Fiber Contactors, Desalination, 148 (2002) 205-11.
[8] Lisý, J.M., Graczová, E., Cvengroš J. Závislosť tlaku nasýtenej pary čistej kvapaliny od teploty. Temperature dependence of saturated vapour pressure of pure liquid. (in Slovak), RAU, |43 (2001).
[9] Malík, F.*, Štefuca, V., Acetylcholine Esterase - Dynamic Behaviour with Flow Calorimetry. Chemical Papers, 56 (2002) 406-411.
[10] Molnár, A*., Markoš, J., Jelemenský, Ľ., Accuracy of mathematical model with regard to safety analysis of chemical reactors, Chemical Papers, 56 (2002) 357-361.
[11] Polakovič, M.*, Bryjak, J., Modelling of the kinetics of thermal inactivation of glucoamylase from Aspergillus niger. Journal of Molecular Catalysis B: Enzymatic, 19-20 (2002) 443-450.
[12] Serrano-Sánchez A.M.*, Blas-Suárez F., Steltenpohl P., González-Marcos M.P., Gonzáles-Markos J.A., González-Velasco J.R., Promotion of Ru/ZrO2 catalysts by Platinum, Studies in Surface Science and Catalysis, 143 (2002) 555-563.
[13] Schlosser, Š.*, Sabolová, E., Three phase contactor with distributed U-shaped bundles of hollow fibres for pertraction, J. Membrane Sci., 210 (2002) 331-47.
[14] Smejkal, Q.*, Šoóš, M., Comparison of computer simulation of reactive distillation using ASPEN Plus and HYSYS software, Chemical Engineering & Processing, 41 (2002) 413-418.
[15] Šefčíková, M.*, Šefčík, J., Šefčík, J. Modification of Colloidal Stability of Casein Micelles by Enzymatic Hydrolysis. Chemical Papers, 56 (2002) 400-405.
[16] Šoóš, M.*, Graczová, E., Markoš, J., Molnár, A., Steltenpohl, P., Design and simulation of distillation column for dichloropropane separation from multicomponent mixture., Chemical Eng. and Processing, 42 (2003) 273-284.
[17] Šoóš, M., Markoš, J., Jelemenský, Ľ., Safety of chemical reactors, Petroleum and Coal, 43 (2002), 188 – 192.
[18] Šoóš, M.,* Rajniak, P., Percolation models of adsorption – desorption kinetics with hysteresis, Chemical Papers, 56 (2002) 62 – 69.
[19] Vajda, M*., Membrane-Based Extraction Joined with Membrane-Based Stripping in a Circulating Arrangement I. Modelling of Mass Transfer in a Hollow Fibre Contactor, Chemical Papers, 56 (2002) 288 - 94.

B. Conferences (*international conferences)

[1] Ačai, P.*, Štefuca, V., Case study of mass and heat transfer in a flow enzyme calorimeter. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, B10 (CD ROM), 11 pp. - lecture
[2] Antošová, M.*, Polakovič, M., Slovinská, M., Madlová, A., Illeová, V., Báleš, V., Study of the effect of sucrose concentration and cultivation time on the fructosyltransferase production by Aureobasidium pullulans. In: Proceedings of the15th International Congress of Chemical and Process Engineering CHISA 2002, August 25-29, 2002, Praha, Czech Republic. P1.154 (CD ROM), 12 pp. - poster
[3] Antošová, M., Polakovič, M., Slovinská, M., Madlová, A., Illeová, V., Báleš, V., Effect of sucrose concentration and cultivation time on the fructosyltransferase production by Aureobasidium pullulans. In: Ninth Seminar on Inulin. April 18-19, 2002, Budapest, Hungary. - poster
[4] Antošová, M*, Polakovič, M., Slovinská, M., Madlová, A., Illeová, V., Báleš, V., Study of fructosyltransferase production by Aureobasidium pullulans. In: Proceedings of the 2nd Czech-Swiss Symposium on Advanced Biotechnology. November 7-9, 2002. Praha, Czech Republic. - poster
[5] Bafrncová S.*, Havalda, I., Graczová E., Emissions of VOC during the collection of industrial wastewater. In: Proceedings of the 29th International Conference of Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, poster
[6] Bafrnec, M.*, Prekop, Š., Technology and Economy of Tire Curing. In: Proceedings of the Slovak Rubber Conference 2002, Púchov, May 22-23, 2002, SK, Interguma Púchov, Slovakia, 51, lecture
[7] Bafrnec M.*, Toman, J., Juma M., Reakčné teplo vulkanizácie a určenie stupňa zvulkanizovania. Reaction heat and determination of the vulcanisation degree. (In Slovak). In: Proceedings of the Slovak Rubber Conference 2002, Púchov, May 22-23, 2002, SK, Interguma Púchov, Slovakia, p.52 , lecture
[8] Báleš, V.*, Perspectives of Chemical Engineering. In: Proceedings of the 29th International Conference of Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, lecture
[9] Báleš, V.*, Research and development in biochemical engineering, ETDN seminar. Bad Homburg Sept.20-23, 2002 – invited lecture
[10] Benčo, R* , Graczová, E., Steltenpohl, P., L-L Equilibria for Partially Miscible Binary Systems Containing Benzene, Cylohexane, EG and DMF. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, poster
[11] Besedová, E*., Bobok, D., Adsorption of Ethanol on Activated Carbon. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, p.28, lecture

[12] Blažej, M.*, Cartland Glover, G., Generalis, S. C., Markoš, J., 2D computational fluid dynamics modelling of an airlift reactor with internal loop. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, lecture
[13] Bobok, D.*, Besedová, E., Diffusion of Ethanol Vapours in Activated Carbon Particles. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, P15, lecture
[14] Cichy, W.*, Schlosser, Š., Szymanowski, J., Separation of phenol from aqueous solutions with alkylamines and trialkylphosphine oxides in liquid membranes (in Polish). In: M. Bodzek and K. Konieczny (Ed.), Proc. Membrany i procesy membranowe w ochrorone srodowiska, Zezsyty naukowe Nr. 1536, 381-388, Zakopane (PL), June 5-8, 2002. PL ISSN 1427-9274, lecture
[15] Čík, G., Báleš, V., Trends in environmental engineering. In: Proceedings of ICS-UNIDO Workshop, January 14-16, 2002 – invited lecture
[16] Dolgoš, O*., Blažej, M., Hussein Z. , Dermíšek, L., Markoš, J., Study of gluconic acid production in mechanically stirred bioreactor. In: Proceedings of the 29th Conference of SSCHE, (CD ROM), May 2002, Tatranské Matliare, SK, ISBN 80-227-1690-1, lecture
[17] Graczová, E*., Steltenpohl, P., Bafrncová, S., Benčo, R., Prediction of Ternary Liquid – Liquid Equilibria for the Extraction Systems Containing DMF and EG from experimental binary data. In: Proceedings of the 29th International Conference of Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, cd version. ISBN 80-227-1690-, poster
[18] Graczová, E.*, Šooš, M., Steltenpohl, P., Markoš, J., Equilibrium Data for the Design of a Distillation Column for Separation of Dichlorpropane from a Multicomponent Mixture. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, cd version ISBN 80-227-1690- lecture
[19] Graczová, E.*, Liquid-Liquid Equilibrium for Four-Component Systems. In: Proceedings of the 15th International Congress of Chemical and Process Engineering, Praha, Czech Republic, 2002. cd version. ISBN 80-86059-33-2, poster
[20] Graczová, E.*, Šoóš, M., Steltenpohl, P., Markoš, J., Equilibrium data for design of a distillation column for separation of dichloropropane. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, ISBN 80-227-1690-1, lecture
[21] Grznárová, G.*, Polakovič, M., Ačai, P., Görner, T., Modelling of non-ideal injection in liquid chromatography. In: Proceedings of the 29th International Conference of Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, P335 (CD ROM), 16 pp. - poster
[22] Grznárová, G.*, Polakovič, M., Ačai, P., Görner, T., Modelling of non-ideal injection in liquid chromatography. In: Proceedings of the 15th International Congress of Chemical and Process Engineering CHISA 2002, August 25-29, 2002, Praha, Czech Republic. P5.143 (CD ROM), 16 pp. - poster
[23] Illeová, V.*, Polakovič, M., Štefuca, V., Ačai, P., Juma, M., Investigation of the Kinetics of Thermal Inactivation of Low-purity Urease. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, ISBN 80-227-1690-1, 46, 2002, lecture
[24] Illeová, V.*, Polakovič, M., Štefuca, V., Ačai, P., Juma, M., Kinetics of thermal inactivation of a low-purity urease. In: Proceedings of the 15th International Congress of Chemical and Process Engineering CHISA 2002, August 25-29, 2002, Praha, Czech Republic. P1.160 CD ROM), 12 pp. - lecture
[25] Illeová, V.*, Polakovič, M., Štefuca, V., Ačai, P., Juma, M. Kinetics of thermal inactivation of a low-purity urease. Biocatalyst stability: Different Levels of Observation. In: 3rd International Conference on Protein Stabilization. April 21-24, 2002, Toulouse, France. - poster
[26] Illeová, V., Polakovič, M., Štefuca, V., Ačai, P., Juma, M., Kinetics of thermal inactivation of a low-purity urease. XVIII. Biochemical meeting, 10. -13.9.2002, Vysoké Tatry, Stará Lesná. - poster
[27] Jelemenský, Ľ.*, Markoš, J., Safety engineering study program at the Slovak University of Technology in Bratislava. ELSEDIMA 2, Cluj Napoca, Romania, November 2002, lecture
[28] Jelemenský, Ľ., Stopka, J., Hodnotenie nebezpečia a rizík v chemickom priemysle. Safety and risk assessment in the chemical industry (in Slovak). In: 22nd Scientific Conference „Industrial toxicology ´ 02“, 15 – 17 May, 2002, Slovenská Ľupča, SR, lecture
[29] Jelemenský, Ľ.,* 50 Years of Chemical Engineering Education in Slovakia, 40 Years of the Department of Chemical and Biochemical Engineering. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering. Tatranské Matliare, Slovakia, 27-31 May 2002, Bratislava, Slovakia, ISBN 80-227-1690-1, Plenary lecture
[30] Juma, M*., Bafrnec, M., Heat Capacity of Elastomeric Composite Materials. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering. Tatranské Matliare, Slovakia, 27-31 May 2002, Bratislava, Slovakia, 16, 2002, ISBN 80-227-1690-1, lecture
[31] Juma, M. *, Bafrnec, M., Annus, J., Specific Heat Capacity of Rubber Composites. In: Proceedings of the Slovak Rubber Conference 2002, Púchov, May 22-23, 2002, SK, Interguma Púchov, Slovakia, 50, lecture
[32] Juma, M.*, Bafrnec, M., Brezan, J., Thermal Diffusivity of Thick Fibre-Elastomer Composites. Thermophysics 2002, Kočovce, Slovakia, October 24-25, 2002, lecture
[33] Kertész, R*. Hybrid Reaction Systems with Membranes. In: J. Schumacher, J. Hoppe, J. Meier, C. Koppe (Ed.), Proc. Network Young Membrains, 4th Meeting. Toulouse, 6-7 July, 2002, lecture
[34] Kertész, R. *, Schlosser, Š. and Teixidor, F., Pertraction of silver with octylphenylsulfide in a hollow fibre contactor. In: Proceedings ICOM 2002, full texts on CD ROM, 3 p., Toulouse (F), July 7-12, 2002, poster
[35] Kiša, M. *, Jelemenský, Ľ., Stopka, J., Short review of the models for the dense gas dispersion. In: Proceedings of the 29th Conference of SSCHE, (CD ROM), May 2002, Tatranské Matliare, SK, ISBN 80-227-1690-1, poster
[36] Kubišová, Ľ. *, Marták, J. Schlosser, Š., Transport of 5-Methyl-2-pyrazinecarboxylic Acid Through a Layered Bulk Liquid Membrane. In: 29th Int. conf. SSCHI, full text on CD ROM, 10 p., Tatranské Matliare (SK), May 27-31, 2002. ISBN 80-227-1690-1, lecture
[37] Kubišová, Ľ. *, Sabolová, E., Schlosser, Š., Marták, J. and Kertész, R., Membrane Based Solvent Extraction and Stripping of

a Heterocyclic Carboxylic Acid in Hollow Fibre Contactors. In: Proceedings ICOM 2002, full texts on CD ROM, 7 p., Toulouse (F), July 7-12, 2002, lecture

[38] Malík, F. *, Štefuca, V., Acetylcholine Esterase - Dynamic Behaviour with Flow Calorimetry. In: Proceedings of the 29th International Conference of Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, P333 (CD ROM), 11 pp. - poster

[39] Malík, F.*, Štefuca, V., Acetylcholine Esterase - Dynamic Behaviour with Flow Calorimetry. In: Proceedings of the 15th International Congress of Chemical and Process Engineering CHISA 2002, August 25-29, 2002, Praha, Czech Republic- poster

[40] Markoš, J.*, Remiarová, B., Žajdlík, R., Jelemenský, Ľ., Investigation of single coal particle combustion. CCRE-17 - CEAC, Trondheim, Norway, 12. - 15. June 2002, poster

[41] Marták, J., *Schlosser, Š. Kubišová, Ľ., Liquid -Liquid Equilibria of 5-Methyl-2-pyrazinecarboxylic Acid for Solvents with Trioctylamine. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, 17 p., ISBN 80-227-1690-1, poster

[42] Mierka, O.*, Timár, P., Jelemenský, Ľ., Possibilities of cost reduction in the production of electric energy by a steam turbine operating under real industrial conditions. In: Proceedings of the 29th International Conference of Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia. ISBN 80-227-1690-1, lecture

[43] Molnár, A. *, Markoš, J., Jelemenský, Ľ., Identification of multiple steady states: the first step in safety analysis of CSTR. In: Proceedings of the 15th International Congress CHISA 2002, (CD), August 25 – 29, 2002, Prague, Czech Republic, ISBN 80-86059-66-2, lecture

[44] Molnár, A. *, Markoš, J., Jelemenský, Ľ., Identification of multiple steady states: the first step in safety analysis of a continuous stirred tank reactor. In: Proceedings of the 29th Conference of SSCHE, (CD ROM), May 2002, Tatranské Matliare, SK, ISBN 80-227-1690-1, lecture

[45] Polakovič, M. *, Vrábel, P., Godó, Š., Báleš, V., Analysis of mechanism and kinetics of pH-inactivation of yeast invertase. Biocatalyst Stability: Different Levels of Observation. 3rd International Conference on Protein Stabilization. April 21-24, 2002, Toulouse, France. - poster

[46] Remiarová, B*., Markoš, J., Jelemenský, Ľ., Žajdlík, R., Bumbálová, K. , The porous structure of coal chars and its influence on combustion. In: Proceedings of the 29th Conference of SSCHE, (CD ROM), May 2002, Tatranské Matliare, SK, ISBN 80-227-1690-1, poster

[47] Remiarová, B. *, Markoš, J., Jelemenský, Ľ., Žajdlík, R., Bumbálová, K., The combustion process of coal chars and its influence on the development of porous structure. In: Proceedings of the 15th International Congress CHISA 2002, (CD), August 25 – 29, 2002, Prague, Czech Republic, ISBN 80-86059-66-2, poster

[48] Schlosser, Š. * and Kertész, R., Short-cut design of two phase hollow fibre contactors for membrane based solvent extraction and stripping. In: Proceedings of the 29th Int. conf. SSCHI, full text on CD ROM, 18 p., Tatranské Matliare (SK), May 27-31, 2002. ISBN 80-227-1690-1, lecture

[49] Schlosser, Š. *, Recovery of metals and organics from wastewaters by membrane contactors. CST workshop in separation technologies for mining and metallurgy, 16 p., Lappeenranta (FIN), Aug.5-6, 2002, invited lecture

[50] Stopka, J*. Mierka, O. Jr., CFD modelling of atmospheric dispersion within buildings. In: Proceedings of the 29th Conference of SSCHE, (CD ROM), May 2002, Tatranské Matliare, SK, ISBN 80-227-1690-1, poster

[51] Stopka, J. *, Mierka, O. Jr., Possibilities of CFD in numerical prediction of dispersion. In: Proceedings of the 29th Conference of SSCHE, (CD ROM), May 2002, Tatranské Matliare, SK, ISBN 80-227-1690-1, lecture

[52] Stopka, J. *, Parameters influencing critical flux of permeate. In: J. Markoš and V. Štefuca (Ed.), Proc. 29th Int. conf. SSCHE, full text of lecture on CD ROM, 1 p., Tatranské Matliare (SK), May 27-31, 2002. ISBN 80-227-1690-1. lecture

[53] Stopka, J., Jelemenský, Ľ., Matematické a chemickoinžinierske nástroje na modelovanie rôznych scenárov možných chemických havárií. Mathematical and chemical engineering tools for modelling various scenarios of feasible chemical disasters. (In Slovak). 22nd Scientific Conference „Industrial toxicology ´02“, 15 – 17 May, 2002, Slovenská Ľupča, SR, lecture

[54] Timár, P.*, Mierka, O., Optimization of pneumatic conveying with regard to energy consumption. Proc. 29th Int. conf. SSCHI, full text of lecture on CD ROM, 1 p., Tatranské Matliare (SK), May 27-31, 2002. ISBN 80-227-1690-1. lecture

[55] Šefčíková, M.*, Šefčík, J., Šefčík, J., Modification of casein micelles by enzymatic hydrolysis. In: Proceedings of the 29th International Conference of Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, GLS1(CD ROM), 9 pp. - lecture

[56] Šoóš, M.*, Graczová, E., Markoš, J., Molnár, A., Steltenpohl, P., Design and simulation of a distillation column for separation of dichloro-propane from a multicomponent mixture. In: Proceedings of the 29th Conference of SSCHE, (CD ROM), May 2002, Tatranské Matliare, SK, ISBN 80-227-1690-1, lecture

[57] Štefuca, V.*, Korbeľ, M., Malík, F., Immobilized carboxyl esterase kinetics by flow calorimetry. In: Proceedings of the 29th International Conference of the Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, P347 (CD ROM). - poster

[58] Vajda, M. *, Košúthová, A. and Schlosser, Š., Membrane-Based Extraction Joined with Membrane-Based Stripping in a Circulating Arrangement Extraction of Zinc. In: Proceedings of the 29th Int. conf. SSCHI, full text on CD ROM, 14 p., Tatranské Matliare (SK), May 27-31, 2002. ISBN 80-227-1690-1, lecture

[59] Vandáková, M., * Polakovič, M., Antošová, M., Illeová, V., Influence of PO43- and Mg2+ ions on fructosyltransferase production by Aureobasidium pullulans CCY 27-1-1194. In: Proceedings of the 29th International Conference of Slovak Society of Chemical Engineering, May 27-31, 2002, Tatranské Matliare, Slovakia, P338 (CD ROM). - poster

[60] Znad, H., Báleš, V.*, Growth and non-growth production of gluconic acid from glucose by Aspergillus niger. In: Proceedings of the 15th International Congress of Chemical and Process Engineering, (CD ROM), Prague, August, 2002 - poster

C. Books and Textbooks

[1] Bafrnec, M., Juma, M.: Stanovenie termodynamických a teplotransportných vlastností gumárenských zmesí a pogumovaných kordov. Determination of thermodynamic and thermal properties of rubber composites and rubbered cords. (In Slovak). Report ZoD 1/2002 for Matador a.s., Púchov (2002)

[2] Bafrnec, M., Juma, M.: Termodynamické a teplotransportné vlastnosti gumárenských zmesí. Thermodynamic and thermal properties of rubber composites. (In Slovak). Report ZoD 95/2002 for Matador a.s., Púchov (2002)

Báleš, V., Mierka, O., Timár, P., Stopka, J., Jelemenský, Ľ., Mošať, A., Mierka, O. jr: Technicko-ekonomická analýza hospodárnosti výroby energetických médií pre zabezpečenie výroby v podniku a riešenie chladenia prevádzky RP2. Technical and economic analysis of the production of energy necessary for the plant output, and solution of the cooling system in the RP2 plant. (In Slovak). Report ZOD č. 135/2002, BIOTIKA a. s. Slovenská Ľupča.

[3] Jelemenský, Ľ., Markoš, J.: Identifikácia potenciálne možných nebezpečných situácií pomocou HAZOP analýzy a zostrojenie reprezentatívnych havarijných scenárov pre „Sklad kvapalného sírovodíka". Identification of potential risks by HAZOP analysis and simulation of accidents in the case of storage of liquid hydrogen sulphide. (In Slovak). Report ZoD č. 28/2002 for Duslo, a.s., Šaľa.

[4] Jelemenský, Ľ., Markoš, J.: Kategorizácia NCHZ, a.s. a predbežný odhad rizika v zmysle zákona č. 261/2002 Z.z. o prevencii závažných priemyselných haváriií. Classification of the chemical plant NChZ, Nováky and preliminary risk assessment in accordance with the law 261/2002 of the Collection of Laws on prevention in case of earnest industrial accidents. (In Slovak). Report ZoD č. 42/2002, NCHZ, a.s. Nováky, 2002.

[5] Jelemenský, Ľ., Stopka, J., Báleš, V., Mierka, O., Timár, P.: Zlepšenie prevádzkového stavu regeneračného kotla oproti súčasnosti z hľadiska jeho časového využitia o 20% oproti súčasnému stavu. Improvement of the performance of a regeneration boiler by 20 % in terms of its time efficiency in comparison with the contemporary state. (In Slovak). Report ZOD č. 29/2002, KAPPA Štúrovo, a. s. Štúrovo.

[6] Markoš, J., , Jelemnský, Ľ., Molnár, A.: Posúdenie možných havárií a ich dosahov pri skladovaní a spracovaní mäsokostnej múčky v PC Ladce. Risk assessment in the case of possible accidents and their impacts on storage and treatment of meat-bone flour in the cementation plant Ladce. (In Slovak). Report ZoD č. 122/2002 Považská cementáreň, a.s., Ladce, 2002.

[7] Markoš, J.: Consultancy service for the cementation plant Ladce. (In Slovak). Report ZoD 147/2002, Považská cementáreň, a.s., Ladce, 2002.

[8] Markoš, J.: Porozimetrické meranie vzoriek koksu. Measurement of coke samples porosity. (In Slovak). Report ZoD 167/2002 for ZSNP, a.s., plant VUM, Žiar nad Hronom, 2002.

[9] Mierka, O., Timár, P., Báleš, V., Jelemenský, Ľ., Stopka, J.: Zníženie mernej spotreby technologickej vody pri výrobe flutingu o 10 % (základ je priemer za rok 2001). Decrease of the specific consumption of water by 10 % in the fluting production in comparison with the average value in 2001. (in Slovak). Report ZOD č. 30/2002, KAPPA Štúrovo, a. s. Štúrovo.

[10] Štefuca, V.: Scale-up vybraných metód extrakcie a purifikácie astaxantínu v štvrťprevádzkovom meradle. Scale-up of chosen extraction methods and purification of astaxanthine in a pilot plant. (In Slovak). Report ZoD 149/2000. Likospol, s.r.o. Bratislava

[11] Timár, P., Mierka, O., Báleš, V.: Vypracovanie energetického auditu výroby pary a chladu v TOPVAR, a. s. Topoľčany. Elaboration of an energy audit for the production of steam and cooling water in the brewery TOPVAR, a. s. Topoľčany. (In Slovak). Report ZOD č. 4/2002, TOPVAR, a. s. Topoľčany.

[12] Schlosser, Š.: Spôsob separácie karboxylových kyselín z vodných a nevodných roztokov. Separation of carboxylic acids from aqueous and non-aqueous solutions. (In Slovak) Slovak patent 282775, 2002.

[13] Schlosser, Š., Marták, J. and Kotlán, J.: Spôsob separácie alkylderivátov diazabenzénkarboxylových kyselín z vodných a nevodných roztokov. Separation of carboxylic acids from aqueous and non-aqueous solutions. (In Slovak). Patent application PP 0742-2002, 2002.

[14] Markoš, J.: GL and GLS reactors: design, simulation, optimisation, 10 hours of lectures + 5 hours of consulting service Universidade do Minho, Braga, Portugal, ERASMUS/2001/14, March 2002

[15] Schlosser, Š.: Recovery of metals and organics from wastewaters by membrane contactors, invited lecture at University of Lappeenranta (FIN), CST workshop in separation technologies for mining and metallurgy, Aug. 5, 2002.

DEPARTMENT OF CHEMICAL PHYSICS

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Assistant Professors:
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Technical Staff:
Anton Adamko, Marián Babnič, Zdenka Halaburková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories :

Laboratory of Physics I. (Mechanics, Deformations, Fluids, Heat)
Laboratory of Physics II. (Electrical measurements, DC and AC circuits, Waves, Black body radiation)

B. Research Laboratories:

Laboratory of X-ray Diffraction
Laboratory of Electrical Properties of Conducting Polymers
Laboratory of Gamma Radiation Source

III. TEACHING

A. Undergraduate Study

1. Introductory Courses

1st semester (autumn)		
Seminar in Basic Physics	(0-2h)	Bušovský, Fedorko, Holá, Laurinc, Lukáč, Lukeš, Macková, Obert, Pálszegi, Tancer, Tokarčík, Žilinská
Physics I.	(2-2h)	Lukeš, Valach
2nd semester (spring)		
Physics I.	(2-2h)	Bušovský, Holá, Laurinc, Lukáč, Lukeš, Macková, Obert, Skákalová, Szöcs, Tokarčík, Žilinská
Physics Laboratory I.	(0-2h)	Annus, Bušovský, Griačová, Griač, Halúsková, Lukeš, Macková, Pálszegi, Tokarčík, Žilinská
3rd semester (autumn)		
Physics II.	(2-2h)	Bušovský, Fedorko, Holá, Laurinc, Macková, Tokarčík, Žilinská
Physics Laboratory II.	(0-2h)	Annus, Bušovský, Griačová, Lukeš, Macková, Pálszegi, Tokarčík, Žilinská

2. Advanced Courses

6st semester (spring)		
Semestral project	(0-4h)	Lukeš
8th semester (spring)		
Statistical Thermodynamics	(2-1h)	Laurinc, Lukeš

IV. CURRENT RESEARCH PROJECTS

A. Effect of gamma- and/or laser irradiation on the structure and critical temperature of copper-oxygen and fulleroid high-temperature superconductors as single crystals (Fedor Valach)

1. X-ray structure investigation of gamma- and/or laser irradiated single crystals of $La_xSr_{1-x}CuO_{2+\delta}$ and C_{60}
2. Evaluation of the correlations of structural parameters versus critical temperature for high-temperature superconductors
3. Bond-valence approach to the copper-copper and copper-oxygen bonding in binuclear copper(II) complexes
4. X-ray crystallographic investigation of the temperature induced copper-oxygen isomers as single crystals

B. Theoretical study of thermo- and photochromism of thiophene based polymers (Viliam Laurinc)

Common project with partners from the Dept. of Organic Chemistry, Slovak Academy of Sciences, and Institute of Chemistry at the Comenius University. The main goal of the project is the analysis of optical absorbtion and luminescence data obtained for variety of synthesised new thiophene oligomers and polymers. The quantitative trends of changes in optical properties are analysed by using the methods of quantum chemistry and theoretical simulations.

C. Optimalization of didactic methods in physics (Oľga Holá)

1. Formation of examination tests, use of microcomputer sets in the physical laboratory and introduction of interactive educational computer programmes
2. Pedagogical-psychological-sociological investigation of the motivation and social conditions of university students

V. COOPERATION

A. Cooperation in Slovakia:

Faculty of Electrical Engineering and Information Technology, Slovak University of Technology, Bratislava
Faculty of Mathematics and Physics, Commenius University, Bratislava
Faculty of Civil Engineering, Slovak University of Technology, Bratislava
Institute of Physics, Slovak Academy of Sciences, Bratislava
Institute of Polymers, Slovak Academy of Sciences, Bratislava
Institute of Inorganic Chemistry, Slovak Academy of Sciences, Bratislava
Faculty of Natural Science, Commenius University, Bratislava
VÚJE a.s., Trnava

B. International Cooperation:

Institut für Festkörperphysik, Universität Wien , Vienna, Austria
- Fullerene and conducting polymer research

Institut für Physikalische Chemie, Universität Wien, Vienna, Austria
- Electronic excitation transport in polymers

Department of Inorganic Chemistry, Charles University, Prague, Czech Republic
- Synthesis of Co complexes

Institute of Chemistry, University of Wroclaw, Wroclaw, Poland
- X-ray crystallographic research

Laboratorie de Cristallographie, Université de Genéve, Switzerland
- X-ray crystallographic research

Chemical Crystallography Laboratory, Oxford University, Oxford, UK
- X-ray crystallographic research at low temperatures, crystallographic statistics

Nuclear Research Institut, Řež u Prahy, Czech Republic
- Emanation thermal analysis

Aristotle University, Thessaloniki, Greece
- Natural sorbents - zeolites

Departement de Recherche Fondamentale sur la Matiere Condensee, Commissariat a l'Energie Atomique, Grenoble, France
- Conducting polymers

C. Membership in Domestic Organizations and Societies

Union of Slovak Mathematicians and Physicists, Bratislava	(V. Bušovský, P. Fedorko, O. Holá, V. Laurinc, S. Macková, T. Obert)
Slovak Physical Society, Bratislava	(V. Bušovský, P. Fedorko, O. Holá, V. Laurinc, S. Macková, T. Obert, F. Valach)
Slovak Chemical Society, Bratislava	(F. Valach)

D. Membership in International Organizations and Societies

International Society for Theoretical Chemical Physics, Erlangen, Germany	(V. Laurinc, F. Valach)
European Physical Society, Budapest, Hungary	(P. Fedorko, O. Holá, T. Obert, F. Valach)

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

P. Fedorko	Departement de Recherche Fondamentale sur la Matiere Condensee, Commissariat a l'Energie Atomique, Grenoble, France (3.12.2001-31.3.2002)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Lukeš V., Breza M., Laurinc V.: Structure dependence of optical properties of bridged bis-thienyls. I. Simple five-membered aromatic bridges. J. Mol. Struct. (THEOCHEM) 582, 213-224 (2002)

[2]* Lukeš V., Breza M., Biskupič S.: Structure and electronic properties of bithiophenes: I. Torsional dependence. J. Mol. Struct. (THEOCHEM) 618, 93-100 (2002)

[3]* Lukeš V., Breza M., Végh D., Hrdlovič P., Krajčovič J., Laurinc V.: Optical properties of 2,3-diaza-1,3-butadiene bridged oligothiophenes. A combined experimental and theoretical study. Synt. Met.129, 85-94 (2002)

[4]* Valach F., Saunders A., Cowley A., Watkin D.J.: Crystal structure of bis(2-chloro-6-fluorobenzoato) bis(pyridine)copper(II), $Cu(C_7H_3ClFO_2)_2(C_5NH_5)_2$. Z.Kristallogr. 217, 1-2 (2002)

[5]* Szöcs V., Pálszegi T., Tortschanoff A., Kauffmann H.F.: Electronic coupling and coherences in disordered polymers: Femtosecond 2D-photon echo correlation spectroscopy, signatures of an excitonic two-segmental site system: A theoretical study. J. Chem. Phys. 116, 8218-8231 (2002)

[6]* Kameníček J, Valach F, Kratochvíl B, Žák Z.: Syntheses and structure of Ni(III) complexes with 1-toluene-3,4-dithiole. Bond-valence approach to the oxidation state of the central atom. Pol. J. Chem. 76, 483-490 (2002)

[7] Lukeš V., Breza M.: On physical origin of noncovalent interactions in acetylene dimers. Petroleum and Coal, 44, 51-56 (2002)

[8] Földesová M., Dillinger P., Lukáč P., Šamajová E.: Radiotracer studies on adsorption and desorbtion of zinc ions and chemically treated zeolites. Petroleum and Coal 44, 57-63 (2002)

[9] Holý K., Chudý M., Šivo A., Richtáriková M., Böhm R., Polášková A., Holá O., Vojtyla P., Bosá I.: ^{222}Rn and $^{14}CO_2$ concentrations in the surface layer of the atmosphere. Isotope aided studies of atmospheric carbon dioxide and other greenhouse gases - Phase II. IAEA Vienna 2002, IAEA-TECDOC-1269, p. 59-68, ISSN 1011-4289

B. Conferences (*international conferences)

[1]* Holý K., Bosá I., Böhm R., Polášková A., Holá O.: Analysis of the daily ^{222}Rn sources in the surface layer of the atmosphere. III. Banskoštiavnické dni 2001. Zborník prednášok. ISK Senec. Okt. 2002. p. 105-117, ISBN 80-88682-56-8.

[2]* Valach F.: New developments in bond-valence sum model of coordination compounds. XIIIth Winter School on Coordination Chemistry, Karpacz, Poland, December 9-13, 2002, Book of Abstracts, p. 56-57

[3]* Végh Z., Végh D., Lukeš V., Pálszegi T.: A convenient synthetic approach for well defined thiophene oligomers by step-by-step synthesis from thienylketones. 9th Blue Danube Symposium on Heterocyclic Chemistry. Tatranská Lomnica, June 16-20, 2002, ed. K. Špirková ea. Publishing House of Slovak University of Technology, Bratislava, Slovakia, p. 218, ISBN 80-227-1705-3

[4]* Fedorko P., Djurado D., Trznadel M., Dufour B., Rannou P., Pron A., Travers J.P.: Insulator-metal transition in polyaniline induced by plasticizers. In: Int. Conference on Synthetic Metals, Shanghai, China, July 2002. Book of Abstracts, p. Oral 231

[5]* Fedorko P., Genoud D., Djurado D., Dufour B., Rannou P., Travers J.P.: Thermal vs irradiation ageing in polyaniline: new evidences for the inhomogeneous disorder model. In: Int. Conference on Synthetic Metals, Shanghai, China, July 2002. Book of Abstracts, p. Poster 192

[6]* Pépin Donat B., Viallat A., Blachot J.F., Fedorko P.: Outstanding properties of conjugated covalent gels: role of network topology on mechanical and transport properties. In: Int. Conference on Synthetic Metals, Shanghai, China, July 2002. Book of Abstracts, p. Poster 40.

C. Books and Textbooks

[1] Szöcs V., Pálszegi T., Lukeš V., Tortschanoff A., Kauffmann H.F.: Excitonic coupling in bichromic molecules: conformational information from 2D optical photon echo – a theoretical study. In: Femtochemistry and Femtobiology. Ultrafast Dynamics in Molecular Science. ed. A Douhal , World Scientific, 2002, pp. 81-89, ISBN 981-02-4866-0

[2] Bugár I., Chorváth D. jr., Pálszegi T., Mach P., Urban J., Szöcs V.: Femto- and picosecond fluorescence dynamics of merocyanine 540: experiments and modelling. In: Femtochemistry and femtobiology, Ultrafast dynamics in molecular science, ed. A Douhal, World Scientific, 2002, pp. 298-306, ISBN 981-02-4866-0

[3] Holá O., Bušovský L., Fedorko P., Laurinc V., Lukáč P., Lukeš V., Tokarčík M.: Fyzika II - Zbierka príkladov a úloh. STU Bratislava, 179 str., ISBN 80-227-1746-0

[4] Holá O., Veselský J., Baník I., Machovič Ľ., Macáková M., Tomčík P., Valková M., Minárik S., Labaš V.: Príručka k prijímacím skúškam z fyziky na STU v Bratislave. STU Bratislava, 68 str., 2.vyd., ISBN 80-227-1620-0

[5] Antalík J., Holá O., Kotočová A., Labuda J., Šefčík J.: Symboly a jednotky veličín v chémii. STU Bratislava, FCHPT 2002, 24 str.

[6] Holý K., Ondo-Eštok D., Holá O., Polášková A.: Analýza stavu monitorovania prírodnej rádioaktivity vo vodách a v pôdach. KJF FMFI UK Bratislava, december 2002, Expertíza pre Úrad jadrového dozoru, 60 str.

[7] Holý K., Chudý M, Šivo A., Sýkora I., Polášková A., Richtáriková M., Ondo-Eštok D., Kelemen R., Merešová J., Holá O., Hrvoľ J., Šulc M., Haško J.: Stanovenie predprevádzkových objemových aktivít rádionuklidov v prízemnej vrstve atmosféry v širšom okolí výstavby Cyklotrónového centra SR. KJF FMFI UK-135/02, Expertíza pre Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, 48 str.

E. Others:

[1] Laurinc V., Holá O.: Mechanika tekutín. Kapitola v internetovej učebnici fyziky v rámci Internet Distance Education Program (in Slovak). Internet Program IDEP, http://kf-lin.elf.stuba.sk/~ballo/e3/

DEPARTMENT OF CHEMICAL TECHNOLOGY OF WOOD, PULP AND PAPER

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PhD Students:
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II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Laboratory of Wood Chemistry
Laboratory of Pulping Technology
Laboratory of Structure and Properties of Paper
Laboratory of Chemical Treatment of Wood

B. Research Laboratories

Laboratory of Natural Polymers
Laboratory of Papermaking Fibres and Additives
Laboratory of Structure and Analysis of Wood
Laboratory of Thermoanalytical Methods

III. TEACHING

A. Undergraduate Study

6th semester (spring)		
Semestral Project	(0-4h)	members of department
Paper and Printing	(2-2 h)	Krkoška, Panák
7th semester (autumn)		
Physics of Polymers and Paper	(2-2 h)	Krištofič, Šutý, Cifra
Natural Polymers	(2-1 h)	Lužáková, Bakoš
Chemistry and Analysis of Wood	(2-0 h)	Katuščák, Vizárová
Pulping Technology	(3-1 h)	Vrška, Šutý
Laboratory	(0-8 h)	Vizárová
Environmental Management in Pulp and Paper Industry	(2-0 h)	Vizárová, Katuščák
8th semester (spring)		
Paper Technology I.	(3-0 h)	Krkoška, Šutý
Paper Machines	(2-2 h)	Čerňanský
Engineering of Pulp Production	(1-1 h)	Šutý, Vrška
Chemical Treatment of Wood I.	(3-0 h)	Šurina, Katuščák
Laboratory	(0-8 h)	Vrška, Šurina, Mišovec
Practical Training Course	3 weeks	
9th semester		
Chemical Treatment of Wood II.	(2-0 h)	Katuščák, Šurina
Paper Technology II.	(3-0 h)	Krkoška, Mišovec
Packaging Materials	(2-0 h)	Mišovec, Krkoška
Laboratory	(0-9 h)	Vrška, Šurina, Mišovec
Papermaking Aids	(2-0 h)	Lužáková, Vizárová

10th semester (spring)

Thesis	(0-27 h)	members of department

B. PhD Study

Technology of Polymeric Materials	(12 months)	Krkoška
Preparation of dissertation	(24 months)	

IV. CURRENT RESEARCH PROJECTS

A.Interactions of Non-process Components under Pulping Conditions (Vlasta Lužáková)

Wood extractives enter the process wood delignification and pulp bleaching liquors. They form more or less stable colloidal systems in pulp fibre suspensions according to complex conditions. They exist there as colloidal particles or aggregate into large particles, which deposit in the form of a pitch, either alone or together with fibres and additives, on technological equipment, cause disruption of pulp and paper production, but most of all, they reduce the efficiency of expensive bleaching chemicals and additives, deteriorate the final product quality and cause significant economic losses. The project is focused on interactions of lipophilic extractives with pulp fibres, process liquors and aids, mainly from viewpoint of their colloidal stability in such dispersions, their ability of pitch formation and pitch deposition on solid surfaces, in both model and technological systems, with the aim to enhace the efficiency of delignification and bleaching processes.
The interfacial distribution of the lipophilic wood extractives in a model pulp fibre suspension in the presence of surfactants and/or a mineral adsorbent was studied.

B. Thermal degradation of plant cell wall polysaccharides (Igor Šurina)

Thermal degradation of plant cell wall polysaccharides has been studied on wood materials as well as on polysaccharides and sucrose. Obtained results show that by chemical modification with inorganic salts in combination with acids the fire resistance of wood materials could be improved. Wood could be effectively modified with $Na_2S_2O_3$ or H_3BO_3 resulting in formation of additives insoluble in water, which remain precipitated in wood cell walls. Also starch derivatives with ion-exchanging groups were prepared, which resulted in dehydration as the primary degradation reaction. In the oxidative environment these derivatives undergo to gasification more easily than the starting material. Primary reaction of sucrose degradation is the splitting of glycosidic bond, although also anhydrosucroses are formed.

C. New methods of valorisation of wood with regard to finalisation and environment protection (Svetozár Katuščák)

Research and development of competitive technologies and products in the woodworking area. Analysis of the trends of research and production of wood composite panels and furniture. Laboratory preparation and testing of wood panels from PIR and PCR raw materials. Research of wood composites with environmental quality (EQ) close to natural wood. Study of the methods of quantifying of parameters characterising natural wood in regards to Interior Air Quality (IAQ). Proposal of the complex of characteristic parameters for quantifiying EQ and image of wood composites from recycling in comparison with natural massive wood.

D. The effect of hydrogen peroxide on lignocellulosic materials (Štefan Šutý).

The research was oriented on changes in pulp properties after two-stage oxygen delignification and ozone bleaching stage. We found out, that a two-stage oxygen delignification (70 % efficiency on Kappa number) and ozone bleaching stage with a small ozone charge is satisfied to reach a high brightness (90% MgO) after peroxide bleaching stage at the end of bleaching sequences.

E. Chemical reactions and physicochemical interactions of lignocellulosic fibres in pulp suspensions and papers (Katarína Vizárová)

The stability of lignocellulosic materials during their ageing, basic reactions leading to the degradation of those materials and the description of basic methods of neutralization resp. reinforcing of already corrupted archive fonds have been studied.
Also the degradation of components of wooden paper iniciated by light ageing was observed. The attention was focussed on degradation changes of lignin.
Also the interactions between fibers and polymers have been studied. Polymer in the form of latex (latex particles in water) in this system acted as a multifunctional retention aid.
From the mixture of synthetic polymer-natural fiber was after the deposition of polymer onto fiber surface succesfully formed sheet having composite properties of polymer and paper.

V. COOPERATION

A. Cooperation in Slovakia

North Slovakian Pulp and Paper Company, Ružomberok
Pulp and Paper Research Institute, Bratislava
State Forest Products Research Institute, Bratislava
Institute of Wood Ecology, Nitra
Technical University, Zvolen
Slovak National Archives, Bratislava
Institute of Chemistry of Slovak Academy of Sciences, Bratislava
Kappa Packaging, Štúrovo
Union of Pulp and Paper Industry of Slovak Republic, Banská Bystrica
Institute of Forest Ecology, Zvolen
Slovak National Library, Martin

B. International Cooperation

Department of Chemical Technology of Wood, Pulp and Paper, Technical University, Pardubice, Czech Republic
- Pulp and Paper Chemistry and Technology

Czech State Central Archives, Praha, Czech Republic
- Permanence and Durability of Paper

Leopold-Franzens University, Innsbruck, Austria
- Properties of Fibers from TMP

Institute of Papermaking and Paper Machines, Technical University of Lodz, Poland
- Cooperation in Pedagogical and Research Activities

University of Quebec - Trois Rivières, Canada
- Process of Explosion Pulp

Pulp and Paper Research Centre, McGill University, Montreal, Canada
- Filling of Paper

Agricultural University, Faculty of Wood Technology, Poznan, Poland
- Chemical Techn. of Wood and Plant Raw Materials

University of Provence, Marseille, France
- Combustion

French Institute of Papermaking and Graphics Industry, Grenoble, France
- Pulp and Paper Chemistry and Technology

Universidade da Beira Interior, Covilhã, Portugal
- Program Socrates

C. Membership in Domestic Organizations and Societies

Slovak Chemical Society, Bratislava	(P. Krkoška, I. Šurina, L. Šutý, R. Tiňo)
Slovak Society of Industrial Chemistry, Bratislava	(P. Krkoška, V. Lužáková, P. Mišovec, I. Šurina)
SK-Biom, Bratislava	(I. Šurina)
Union of Pulp and Paper Industry of Slovak Republic, Banská Bystrica	(P. Krkoška, Š. Šutý)

D. Membership in International Organization and Societies

TAPPI - Technical Association of the Pulp and Paper Industry, Atlanta, USA	(P. Krkoška)
Society of the Pulp and Paper Industry, Prague - Bratislava, Czech and Slovak Republics	(Š. Šutý,I. Šurina)

E. Tempus Program

F. International Scientific Programs

G. Visitors from Abroad

Prof. M. Milichovský	Technical University, Pardubice, Czech Republic, June 2002 (2 days)
Prof. R. Eichinger	Technische Universität Graz, Austria, April 2002 (2 days)
Prof. Paris	Ecolé Polytechnique Montreal, Canada, September 2002 (2 days)

H. VISITS OF STAFF MEMBERS AND PHD STUDENTS IN FOREIGN INSTITUTIONS

A. Barteková	Université Porto, Portugal, March 2002 (24 days)
A. Barteková	2nd International Conference on Polymer Modification, Degradation and Stabilisation MODEST 2002, Budapest, June 30 – July 4 2002, Hungary
S. Katuščák	Seminary on the Increasing wet strength. Mc Gill University, Montreal, July15-17, 2002, Canada
S. Katuščák	Meetings on the cooperation with the PAPRICAN,PointClaire Canada and Ecole Polytechnique, Montréal, Canada July 2002 (14 days)
S. Katuščák	BIOMAT partners meeting, November 4-5 2002, Belgie
G. Szeiffová	McGill University, Montreal, Canada, (1 year)
R. Tiňo	Paper, Print and Packagings. Čejkovice, Czech Republik, April 2002 (2 days)
Š. Šutý	The XIII. International conference PULP AND PAPER 2002, 30-31 May 2002, Brno

VI. THESES AND DISSERTATIONS

A. Undergraduate Theses (MSc Degree) for state examinations after three years of study (supervisors are written in brackets):

Almássyová P.:	Degradation of lignin in paper. (K. Vizárová)
Galbavá M.:	Interaction of PVAC particles with pulp fibers. (Š. Šutý)
Gavlas J.:	Description of papermaking properties of pulp fibres. (P. Krkoška)
Hačkóová D.:	Proposal and verification of methods for kinetic study of adhesive

	hardening for production of lined boards. (P. Mišovec)
Hájková H.:	Utilisation of recycled lignocellusic particles containing chemicals in particle boards production technology. (S. Katuščák)
Hladová M.:	Ozone – ecological and effective agent in bleaching process. (M. Vrška)
Hrehorová E.:	Compossite properties of paper boards made from pulp fibres and synthetic latexes. (R. Tiňo)
Jantošíková G.:	Preparing of the neutralisation reagents for deacidification of paper. (K. Vizárová)
Kasáková K.:	Deacidification of the acidic paper of documents in archives and libraries. (S. Katuščák)
Matajová M.:	Two – stage oxygen delignification of hardwood pulp. (M. Vrška)
Martinová L.:	Chemical protection of wood. (S. Katuščák)
Miháliková P.:	The effect of the technology parameters on environmental quality of particle boards. (S. Katuščák)
Orságová A.:	Evaulation of printability of glazed newsprint papers. (J. Gigac)
Šavrtková S.:	Investigation and comparison of physico-mechanical properties of pulps for production of white machine glazed packaging papers. (P. Mišovec)
Vričan M.:	Thermal dehydration od saccharose. (I. Šurina)

B. Dissertations (PhD)

Gigac J.:	The Structure of Paper

VII. PUBLICATIONS

A. Journals (*registered in Current Contents, CA and in ABIPST)

[1] Gigac J., Krkoška P.: Hodnotenie formácie a potlačiteľnosti papiera. Assessment of paper formation and printability. Papír a celulóza, 57, (12) 2002, 368-372

[2] Havlínová B., Brezová V., Belányi F., Szeiffová G.: Ktorý papier je vhodný na archiváciu dokumentov. Štúdium urýchleného starnutia papiera. Whitch paper is suitable for archival documents. Papír a celulóza,57, (11) 2002, 338-343

[3]* Katuščák S., Kučera L.J., Varga Š., Vrška M., Čeppan M., Šutý Š., Jablonský M.: New method of recognition of wood species. Increasing of the effectiveness of colorimetric recognition of Picea excelsa and Abies alba. Wood Research Vol.47 (1) 2002, 1-12.

[4] Tiňo R., Hrehorová E., Šutý Š.: Vplyv veľkosti častíc latexu na papierenské vlastnosti kompozitov vyrobených z buničinových vlákien a syntetických latexov.The influence of latex particle size on the composite properties made from pulp fibres and synthetic latexes. Papír a celulóza, 10, 2002, 299-301

B. Conferences (*international conferences)

[1]* Barteková A., Katuščák S., Šurina I.: Influence of wood products recycling on environmental quality improving. In. Proceedings TOP 2002 (Technique of Environment Protection), 22-23 May 2002, Častá-Papiernička, 2002, p. 253., ISBN 80-227-1692-8 .

[2]* Barteková A., Katuščák S., Grexa O., Vojta A.: Evaluation of volatile organic compounds emissions from recycled wood materials. 2nd International Conference on Polymer Modification, Degradation and Stabilisation MODEST 2002, Budapest, 30.06-04.07.2002, Hungary. ISBN 963 420 723 5.

[3]* Barteková A., Katuščák S.,Vojta A.: Production trends in wood composite materials made from wood waste. International Conference "ODPADY 2002", Spišská Nová Ves, 7-8.november 2002. ISBN 80-968214-2-3.

[4]* Barteková A., Katuščák S., Šurina I.: Method Evaluating Wood in Terms of VOC Emissions. In. Proceedings (CD) The XIII. International Conference Pulp and Paper 2002, 30-31 May 2002, Brno.

[5]* Šutý Š., Tiňo R., Vizárová K.: The effects of the manufacturing process on the smoothness and roughness of paper. The XIII. International Conference Pulp and Paper 2002, 30-31 May 2002 Brno.

[6]* Vričan M., Šimkovic I., Šurina I. Reactions of sucrose thermolysis. In. Proceedings 10th Bratislava Symposium on Saccharides, Smolenice, September 1-6, 2002

C. Books and Textbooks

[1] Katuscak S., Gfeller B.: Biocompatibility and Dwelling Ability. EL&T, Bratislava 2002, e-book, ISBN 80-88812-17-8, 52 strán, 153 181 znakov, 85 norm.strán, 5 AH (in English), EL&T, s. r. o., Bratislava, 2002.

[2] Katuscak S.: Environmentálna kvalita materiálov a výrobkov. EL&T, Bratislava 2002, e-book, ISBN 8-88812-18-6, 101 strán, 253 131 znakov, 140 norm.strán, 8 AH.

D. Patents

E. Others

[1] Katuščák S.: Evaluation of chemical composition of materials, chemical substances and emissions in the area of wood treatment. Research Report for State Forest Products Research Institute, Bratislava

[2] Lužáková V.: Application of Adsorbents and Dispersants in the Pulp and Paper Production. Research Report for SCP, a.s. Ružomberok

[3] Šurina I.: Characteritic of wheat stillages and sludges. Research Report for JANK Group, a.s.

[4] Šurina I.: Quality evaluation of wood briquettes. Research Report for Lupčianka, s.r.o.

[5] Šurina I.: Analysis of wood briquettes. Research Report for FTC, a.s.

[6] Vrška M.: Verification of parameters in ozone bleaching of hardwood pulp from SCP j.s.c. Research Report for SCP, a.s. Ružomberok

DEPARTMENT OF ENVIRONMENTAL SCIENCES

Head of the Department:
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I. STAFF

Full Professors:
Vasil Koprda, PhD, DSc, Juraj Tölgyessy, PhD, DSc

Associate Professors:
Marta Čerňáková, PhD; Gabriel Čik, PhD; Ján Derco, PhD; Pavel Dillinger, PhD; Miloslav Drtil, PhD; Margita Harangozó, PhD, DSc; Milan Piatrik, PhD; Josef Prousek, PhD;

Research Fellows:
Petra Bendová, Igor Bodík, PhD; Assoc.Prof. Agáta Fargašová, DSc; Mária Földesová; Miroslav Hutňan, PhD;

PhD Students:
Eva Gašpariková; Angelika Gulyasová; Marek Horňák; Milada Hubinová; Lucia Mitaľová; Andrea Pálinkášová-Bujnová;
external form: Alžbeta Ďurecová; Ladislav Halász; Ľubomír Gajdoš; Peter Chnapko; Angelika Kassai; Rastislav Kuffa; Ladislav Maro; Jana Marová; Alena Popovičová; Marek Rybár; Salima Shansab; Katarína Srdošová; Jana Želinská; Jana Vanečková-Plchová;

Technical Staff
Eleonóra Hornáčková, Marta Onderová

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Laboratory of Water Chemistry
Laboratory of Nuclear Analytical Chemistry

B. Research Laboratories:

Laboratory of Air Protection Technology
Laboratory of Microbiology and Ecotoxicology
Laboratory of Organic Chemistry
Laboratory of Radioecology
Laboratory of Water and Wastewater Engineering
Laboratory of Computer Modelling

III. TEACHING

A. Undergraduate Study

5th semester (autumn)		
Nuclear Chemistry and Technology I.	(1-1)	Koprda, Dillinger
6th semester (spring)		
Environmental Technology	(2-0)	Piatrik, Čík, Koprda
7th semester (autumn)		
Biology of Water, Soil and Air	(2-0)	Černáková
Atmospheric and Water Chemistry	(2-2)	Prousek, Bodík
Hydrology, Meteorology and Pedology	(1-1)	Fargašová, Čerňáková
Laboratory Practice I.	(0-8)	Harangozó, Bodík, Dillinger, Fargašová, Földesová, Čerňáková
Nuclear Chemistry and Technology II.	(2-0)	Koprda, Dillinger
8th semester (spring)		
Air Protection Technology	(2-0)	Čík, Prousek
Laboratory Practice II.	(0-8)	Derco, Dillinger, Čík
Radioecology	(2-0)	Harangozó, Dillinger
Wastewater Engineering	(2-2)	Derco, Drtil
9th semester (autumn)		
Branch - Technology of Environment		
Risk Properties of Substances	(2-0)	Prousek
Laboratory Practice III.	(0-10)	Drtil, Harangozó, Čík

Liquidation and Utilization of Solid Wastes	(2-0)	Piatrik, Koprda
Environmental Technological Project	(3-0)	Drtil, Derco
Environmental Impact Assessment	(2-0)	Koprda, Piatrik
Control of Environmental Pollution	(2-0)	Harangozó, Dillinger
Special Ecology and Ecotoxicology	(2-0)	Prousek
Processes and Technology of Water Treatment	(2-1)	Hutňan, Bodík
Air Protection Technology and Air Treatment	(3-0)	Čík, Prousek

10th semester (spring)

Diploma Work	(0-30)	all members of the staff

B. PhD Study

1. Environmental Chemistry and Technology

Air Pollution Control Engineering	Čík
Anaerobic Treatment of Organic Wastes	Hutňan
Anaerobic Wastewater Treatment Processes	Hutňan, Derco
Combination of Anaerobic-Aerobic Wastewater Treatment Processes	Bodík
Progressive Methods of Wastewater Treatment	Derco, Drtil
Progresive Technology for Water Treatment	Derco, Munka
Simulation of Biological Processes of Wastewater Treatment	Derco
Separation of Greenhouse Gases; Effects on Photosynthesis	Čík
Utilization of Ozone for Wastewater Treatment	Derco
Volatile Organic Compounds	Čík

2. Nuclear Chemistry and Radioecology

Penetration of Radionuclide across Skin Barriers	Koprda, Harangozó
Study of Metal Transport from Abiotic to Biotic Systems	Koprda, Lesný
The Use of Fenton Reaction to Wastewater Treatment	Koprda, Prousek
Analysis of RAW and Waste Management	Koprda

IV. CURRENT RESEARCH PROJECTS

A. Progressive Methods of Water, Wastewater and Activated Sludge Treatment (VEGA 1/7346/20) (Ján Derco)

1. Biological denitrification in a fluidised bed reactor (J. Derco)
Biological denitrification of synthetic underground water in a lab-scale fluidised bed reactor has been studied. The Richardson and Zaki correlation in combination with formulas for bed expansion parameters has been used to describe the hydrodynamic behaviour and bioparticles bed expansion of fluidised bed reactor. The relative deviations between experimental and calculated values of fluidised bed high were less than 10 %. Verified mathematical model offers realistic prediction of biofilm thickness and biomass concentration values in denitrification fluidised bed bioreactor. The differences between experimental and calculated values of nitrate (zero order kinetics) at the bioreactor effluent did not exceed 5 %. High volumetric loading, and hence short residence time, achieved in lab-scale indicate fluidised bed reactor as promising for biological nitrogen removal from underground water in the production of drinking water.

2. Municipal wastewater treatment in anaerobic and aerobic reactors at low temperature (I. Bodík, E. Gašpariková)
The influence of low temperature on anaerobic removal of domestic wastewater and continuously aerobic post-treatment was the topic of this study. The low temperature influence (5-25 ^{o}C) on the municipal wastewater treatment processes under anaerobic conditions has been studied. The reduction of the reactor volume and operational costs and determination of optimum combination of anaerobic and aerobic reactors for municipal wastewater treatment plants were the aim of research. The experiments using real wastewater with the pilot-scale reactor on the wastewater treatment plants in Bratislava were realised.

3. Toxicity, accumulation and interactions of metals in water and terrestrial organisms (A. Fargašová)
During the tests the attention was dedicated to the effects and bioaccumulation of metals and their reciprocal interactions for selected freshwater benthic and plankton organisms and some terrestrial plants. For determination of metal accumulation in alga cells and plant roots and cotyledones the analytical methods AAS and RXFA were used. The obtained results help to solve problems connected with metal removing from the environment and to establish the limit values for some metals.

4. Anaerobic waste and wastewater treatment processes and technologies (M. Hutňan, M. Drtil, M. Horňák)
Laboratory experiments with anaerobic treatment of selected organic wastes and materials have been realised. Experiments were carried out with wheat distillery slops and some agricultural products. Anaerobic treatment of the wheat distillery slops was studied from point of view their composition. High portion of carbohydrates and proteins in comparison with other types of the stillages (from molasses, fruits etc.) assumes different conditions of anaerobic degradation and different quality of sludge water. Organic loading rate of 11.6 kg/m^3.d at hydraulic retention time 9.25 d was achieved. Efficiency of COD removal was above 90 % and production of anaerobic excess sludge was 0.07-0.09 kg per kg COD. Biogas methane content was 63 % and methane yield was 0.254 m^3/kg COD of wheat stillage. Biogas production from corn and corn silage as alternative exploatation of agricultural production was studied. Production of biogas was 0.59 m^3 per kg of dry corn and 0.36 m^3 per kg of dry silage. Methane contents in biogas from both materials was about 55 %. Corn silage is more suitable for energy production than corn because of its higher production per ha of field. Based on this results expected energy production from silage is about 230 GJ/ha.

5. Study of the apoptosis effect of berberine on various cellular effects (M. Čerňáková)
The investigation was aimed at the effect of berberine on the murine herpetic virus which is similar to the human gamaherpetic virus EBV and therefore can be substituted in experiments. Testing was made by using VERO cells. Berberine is intercalated into DNA in the site of the GC bond. The herpetic virus contains as much as 86% of these bonds in DNA. The antiviral effect of berberine is very strong.

6.Fenton and Photo-Fenton Reaction (J. Prousek)
The zero-valent iron has been used in Fenton reaction for the treatment of coloured wastewaters. Thus, water solutions of direct dyes such as Ostazine Yellow H-5G (C.I. Reactive Yellow 3), Ostazine Blue H-P (C.I. Reactive Blue 13), and Ostazine Green H-3G (C.I. Reactive Green 8) were decolourized by the Fenton reaction using zero-valent waste iron (iron shavings) as a source of Fe^{2+} cations. In all experiments the colour was completely removed. The used method also led to a significant decrease in chemical oxygen demand in model wastewaters.

B. Syntheses directed towards novel structurally well defined π-conjugated heterocyclic compounds and their oligomers (Gabriel Čík, Milada Hubinová), part of the VEGA project No. 1/8909/01

The interactions of phenol and thiophene with Fe^{3+} ions have been studied in the presence of free water in ZSM-5 zeolite channels. The Fe-ZSM-5 was prepared by the ion-exchange of Fe^{3+} for Na^{+}. On the basis of the facts indicated in this work it is possible to maintain that the ion-exchange of Fe^{3+} for Na^{+} in ZSM-5 zeolite channels is accompanied by the formation of Fe_2O_3 and complex Fe-O-Fe particles (most probably $[HO\text{-}Fe^{3+}\text{-}O\text{-}Fe^{3+}\text{-}OH]^{2+}$) which are co-ordinatively unsaturated and can therefore enter into interactions with organic molecules (phenol, thiophene) at the room temperature also in the presence of free water. The interaction of Fe-ZSM-5 with phenol gives rise to the stabilized phenol cationradical. Phenol enters very efficiently into the co-ordination iron sphere in the presence of complexes insensitive to humidity. By the interaction of Fe-ZSM-5 with thiophene its oxidative oligomerization proceeds also during the generation of neutral forms of the oxidized paramagnetic polarons localized on thiophene oligomers. It is probable that the thiophene oligomers having the number of monomeric units n = 2-6 enter into the iron co-ordination sphere, what is documented by relatively small changes of the EPR spectra caused by humidity.

C. The study of separation and immobilisation of radionuclides from nuclear power cycle by natural adsorbers (Pavel Dillinger, Mária Földesová, Margita Harangozó, Oľga Holá, Peter Lukáč, Milan Piatrik)

The determination of sorption capacity of natural and chemically modified natural zeolites towards some cations was studied by static radioexchange and AAS methods. The sorption of Hg(II), Cs(I), Co(II) and Sr(II) was studied. Radionuclides Hg-203, Cs-137, Co-60 and Sr-90 were used as radiotracers. The dependence of structure, sorption capacity and the desorption of natural and chemically modified zeolites for individual cations and their chemical forms on pH, temperature and competitive cations (K, Cd, Ca, Cs, Co, Ce) were studied. All these parameters were studied on model water solutions labelled by radionuclides. The sorption of Hg from two chemical different solutions $HgCl_2$ and $Hg(NO_3)_2$ was studied. It was studied also the sorption of cations by new types of natural and chemically modified sorbents - zeolite, mordenite, alginite, diatomite, chemical modification was made with NaOH, Na_2CO_3, $NaHCO_3$ and NaCl. The sorption charakteristics of these materials were compared with synthetic zeolite - Zeolon. The liquid scintillation counting and gama spectroscopic method were used for the measurement of the radioactivity. We demonstrated that the sorption capacity of natural and chemically modified sorbents depends not only on these materials but also on the chemical properties of studied solutions (chemical spetiation) and pH. The results of our research were presented in journals and in scientific lectures.
Research activity was aimed to the comparison of the compositions of animal meals from the standpoint of selected heavy metals; the evalution of the suitability of these meals as constituents of other feeds for agricultural animals and evaluating the quality of production. There were obtained experimental results on the effects of heavy metals on the yield potential realisation of four wheat cultivars. Grain weight declined as the contend of Fe, Zn and Cu increased in the spike but its rise was recorded together with ascending content of Cd and Pb. These results are in contrast to many literary date. The heavy metals belong to risky factors of the environment and their effects on the yield forming process of wheat need to be tested with additional experiments.
Long-term monitoring of the $\Delta\ ^{14}C$ in the atmospheric near-ground CO_2 has been realized in Bratislava and Zlkovce. Since 1987 also the ^{222}Rn concentration in the surface layer of the atmosphere has been measured in Bratislava. These measurements provided an extensive set of the ^{222}Rn data characteristic for the inland environment with high level of atmospheric pollution. The seasonal and daily variations of the ^{222}Rn concentration were observed. The investigation of the relation between the monthly mean diurnal courses of the ^{222}Rn concentration and the atmospheric stability proved a high correlation between them. The ^{222}Rn data were used to interpret the anomalous $\Delta\ ^{14}C$ values in the surface layer of the atmosphere.
The use of wet oxydation catalysis in industry was studied. The derivates of difenylamine in waste waters were degradated by wet catalytic oxidation.

D. Penetration of Xenobiotics across Skin, (Vasil Koprda, Margita Harangozó, Zoltán Kassai, Andrea Pálinkásová, Petra Bendová), University part of the VEGA project No. 2/2049/22 (K.Bauerová, ÚEF SAV).

Evaluation of the speed of transdermal permeation of ionic species and effects of physico-chemical factors on this process was studied. Using some radionuclides of corrosion and fission products, namely ^{137}Cs, ^{60}Co, ^{90}Sr, ^{59}Fe and ^{147}Pm ions , the effect of valency and the concentration of ions on permeation velocity across the intact, stripped and splitted skin of biologic animal models were studied. Using radioactively labeled substances the effects of solvent type and structural type of chemical penetration enhancers, like Transcutol, on barrier function of skin was investigated. The permeation across the skin of new drugs (stobadine dipalmitate, acylderivatives of stobadine as prodrugs, onchomycotics terbinafine and some oxygen scavengers were studied. The new biological models of 5 and/or 9 days rat skin were studied and snake shed skin was standardized for the study of transdermal permeation. Effect of Cs^{+} and Co^{2+} concentration on their permeation rate through different skin models was evaluated. Some experimments were aimed to reveal the transdermal behaviour of radionuclide $^{60}Co^{2+}$ across the different artificial skin substitutes constructed in our University.

V. COOPERATION

A. Cooperation in Slovakia

ASIO-SK s.r.o., Bytča	(I. Bodík)
Association of Wastewater Treatment Experts in Slovak Republic, Bratislava	(I. Bodík, J. Derco, M. Drtil, A. Fargašová, E. Gašpariková, M. Horňák, M. Hutňan)
Biotika, a.s. Slovenská Ľupča	(J. Derco)
Cyclotron Center of the Slovak Republic, Bratislava	(M. Harangozó, V. Koprda)
Department of Analytical Chemistry, Faculty of Pharmacy, Comenius University, Bratislava	(M. Harangozó, A.Fargašová)
Department of Chemistry, Faculty of Natural Science, Matej Bel University , Banská Bystrica	(M. Harangozó)
Department of Microbiology, Comenius University, Bratislava	(M. Čerňáková)
Department of Nuclear Chemistry, Faculty of Natural Sciences, Comenius University, Bratislava	(P. Dillinger, M. Földesová, V. Koprda)
Department of Nuclear Physics, Faculty of Mathematic, Physic and Informatic, Comenius University, Bratislava	(P. Dillinger, M. Földesová)
Department of Pharmacognosy and Botany and Department of Pharmaceutical Analysis and Nuclear Pharmacy, Faculty of Pharmacy, Comenius University, Bratislava	(M. Čerňáková)
Department of Physics, Faculty of Electrical Engineering and Information Technology, Slovak University of Technology, Bratislava	(G. Čík)
Department of Plant Physiology, Faculty of Natural Sciences, Comenius University, Bratislava	(A. Fargašová)
Ekologické služby, s.r.o. Strážske	(J. Derco)
Faculty of Pharmacy, Comenius University in Bratislava	(V. Koprda)
Faculty of Natural Science, Department of Chemistry, Matej Bel University in Banská Bystrica	(P. Dillinger, M. Földesová, M. Harangozó, V. Koprda)
Felegi Eco-consulto, Bratislava	(I. Bodík)
Institute of Chemistry, Faculty of Natural Sciences, Comenius University, Bratislava	(A. Fargašová)
Institute of Experimental Phytopathology and Entomology of the Slovak Academy of Sciences, Ivanka pri Dunaji	(M. Harangozó)
Institute of Experimental Pharmacology, Slovak Academy of Sciences, Bratislava	(V. Koprda)
Institute of Virology of the Slovak Academy of Sciences, Bratislava	(M. Čerňáková)
JANK GROUP a.s., Skalica	(M. Hutňan, M. Onderová, M. Horňák)
Levické mliekarne, a.s. Levice	(J. Derco)
Physical Institute, Slovak Academy of Sciences, Bratislava	(V. Koprda).
ROSLO s.r.o., Bratislava	(V. Koprda, Z. Kassai, A. Palinkasová)
Research Institute of Nuclear Power Stations, Trnava Ltd.	(P. Dillinger., M. Földesová, V. Koprda)
STIFI, Štefan Stifner, Hurbanovo	(M. Hutňan, M. Onderová, M. Horňák)
ÚJD SR, Bratislava	(V. Koprda)
Water Research Institute, Bratislava	(I. Bodík, J. Derco, P. Dillinger, M. Drtil, M. Földesová, M. Harangozó, M. Hutňan, V. Koprda)

B. International Cooperation

ASIO s.r.o., Brno, Czech Republic,	
- Wastewater treatment processes	(I. Bodík)
Consiglio Nazionale delle Ricerche, Instituto di Chimica delle Macromolecole, Via E. Basini 15, 20133, Molecular materials and functional polymers (G. Čík)	
Department of Chemistry and Physics, University of Agriculture, Cracow, Poland,	
- Metal-metal interactions	(A. Fargašová)
Department of Chemistry, Yangon University, Yangon, Myanmar	
- Radiometric Flow Injection Analysis	(M. Harangozó)

Faculty of Chemistry, VUT Brno, Brno, Czech Republic,
Risk assessment of wood preservative compounds (A. Fargašová)
Wastewater treatment technology (J. Derco)
International Centre for Science and Technology ICS-UNIDO, Pure and Applied Chemistry, Triest, Italy
- Remediation Technologies Applications
School of Pharmacy, Dept. Pharm. Chem., King Edward VII. Ave, Cardiff, United Kingdom.
- Transcutaneous penetration of xenobiotics (V. Koprda).
Univ. Claude Bernard Lyon-1, ISPB, Dept. Galenic Pharm. , Lyon, France.
- Transcutaneous penetration of xenobiotics (V. Koprda)

C. Membership in Domestic Organizations and Societies

Association of Wastewater Treatment Experts in Slovak Republic, Bratislava (I. Bodík, J. Derco, M. Drtil, A. Fargašová, M.Hutňan)
Biotechnological Society, Bratislava, Slovak Republic (M. Čerňáková)
Czechoslovak Limnological Society, Prague-Bratislava, Czech Republic and Slovak Republic (M. Čerňáková)
Czechoslovak Microbiological Society, Prague-Bratislava, Czech Republic and Slovak Republic (M. Čerňáková)
Environmental Committee for Valuation and Identification of Products at the Ministry of the Environment SR (A. Fargašová)
Expert Group of State Office for Nuclear Safety (V. Koprda)
Slovak Chemical Society, Bratislava (G. Čík, J. Derco, P. Dillinger, A. Fargašová, M. Harangozó, V. Koprda, J. Prousek)
Slovak Medical Society , Bratislava (V. Koprda)
Slovak Nuclear Society , Bratislava (P. Dillinger, V. Koprda)
Slovak Pharmaceutical Society at SMS Bratislava (A. Fargašová, M. Harangozó, V. Koprda)
Slovak Society of Chemical Engineering, Bratislava (J. Derco, M. Hutňan)
Slovak Society of Industrial Chemistry, ZSVTS, Bratislava (I. Bodík, J. Derco, M. Drtil, P. Dillinger, A. Fargašová, M. Földesová, M. Hutňan)
Slovak Society of Limnology at SAS Bratislava (M. Čerňáková, A. Fargašová)
Society of Nuclear Medicine and Radiation Hygiene of SMS, Bratislava (V. Koprda)

D. Membership in International Organizations and Societies

Association of Wastewater Treatment Experts, Brno, Czech Republic (I. Bodík, J. Derco, M. Drtil, A. Fargašová, E. Gašpariková, M. Hutňan, M. Horňák)
Bulletin of Environmental Contamination and Toxicology, U.S.A. – Member of Editorial Board (A. Fargašová)
Czech Chemical Society, Prague, Czech Republic (V. Koprda, J. Prousek)
Czech Society of Chemical Engineering, Prague, Czech Republic (J. Derco, M. Hutňan)
International Water Association, London, UK (I. Bodík, J. Derco)
European Photochemistry Association, Mülheim, Germany (G. Čík, J. Prousek)
EUROTOX Madrid, Spain (A. Fargašová)
FECS Division on Chemistry and the Environment (V. Koprda)
Journal of Trace and Microprobe Techniques, U.S.A. – Member of International Group of Correspondents (A. Fargašová)
SECOTOX – International Society of Ecotoxicology and Environmental Safety, Munich, Germany (A. Fargašová)

E. TEMPUS Programme

3.TEMPUS Project Continuing Education in European Directives and Environmental Standards IB_JEP No 13123-98.
International coordinator :Anežka Moncmanová, SUT, Bratislava.
Participating Instutitutions: Technical University in Zvolen, Universita degli Studi, Bari, Italy, Vienna University of Technology, Vienna, Austria, ENEA, Casaccia-Roma, Italy, Nowatech Associates, Bari, Italy, ASIO, a.s. Nová Bytča, Associacion of Metallurgy,

Mining Industry and Geology SR, Bratislava. Duration: XII. 1998 – V. 2001.
Completing the teaching materials for postgraduate students.
Implementation till V.2002

F. International Scientific Programmes

1. COST Action 837 „Plant biotechnology for the removal of organic pollutants and toxic metals from wastewaters and contaminated sites“ (A. Fargašová)
Working Group 2 (WG2) – Toxic metals: screening and uptake studies
Working Group 4 (WG4) – Cultivation and utilization of plants
Coordinator: Dr. J. P. Schwitzguebel, Lausanne, Switzerland
Coordinators for Slovak Republic: Assoc Prof. A. Lux, Faculty of Natural Science, Comenius University, Bratislava; RNDr. D. Lišková, PhD., Institute of Chemistry SAS, Bratislava Partners: On the project participate 21 countries (the list of participants can be found on http://lbewww.epfl.ch/COST837)
Period: April 1998 to April 2002

G. Visitors from Abroad

Ditl P.	Faculty of Mechanical Engineering, Czech Technical University, Prague, Czech Republic, October, 2002 (1 day)
Dohányos M.	Institut of Chemical Technology, Prague, Czech Republic, March 2002 (1 day)
Matoušek J.	Research Centre for Environment and Ecotoxicology, Masaryk Univerzity, Brno, Czech Republic, October 2002 (1 day)
Miertuš S.	ICS-UNIDO, Trieste, Italy, November 2002 (1 day)

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

Bodík I.	University of Minnesota, Minneapolis, USA, September 2002 (7 days)
Derco J.	Workshop “Technologies and Processes for Sustainable Development and Pollution Reduction/Prevention”, Brno, Czech Republic, January, 14-16. 2002
Derco J.	Faculty of Chemistry, Brno University of Technology, July, 2002 (3 days)
Derco J.	2nd Meeting “Chemistry & Life“, Brno, Czech Republic, September 10 - 11, 2002
Derco J.	Universita´ degli Studi di Cagliari, Italy-Sardinia, Cagliari, September, 2002 (13 days)
Gašpariková E.	Conference “Sludges and Wastes“, Brno, Czech Republic, October 16.-17. 2001
Horňák M.	Conference “Sludges and Wastes“, Brno, Czech Republic, October 16.-17. 2001
Hutňan M.	Prague Institute of Chemical Technology, Prague, Czech Republic, June 2001, 2 days
Hutňan M.	Conference “Sludges and Wastes“, Brno, Czech Republic, October 16.-17. 2001
Čík G.	Workshop on „Technologies and Processes for Sustainable Development and Pollution/ Prevention“, Brno, Czech Republic, January 14-16, 2002.
Čík G.	International Centre for Science and High Technology, Trieste, Italy, April 2002 (4 days)
Čík G.	54. Meeting of Chemical Societies, Brno, Czech Republic, June 30-July 4, 2002
Hubinová M.	2nd Meeting of Chemistry and Life, Brno, September 10-11, 2002

VI. THESES AND DISSERTATIONS

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

Cibová M.:	Comparison of the compositions of animal meals from the standpoint of selected heavy metals. (M. Harangozó)
Držíková D.:	Potable water stability assessment. (M. Piatrik)
Gajdoš Ľ:	Ozonation of Organic Nitrogen Free Compounds. (J. Derco)
Kováčová M.:	The sorption of radioactive Sr with natural sorbents. (P. Dillinger)
Mitaľová L.:	Ozonation of Organic Nitrogen Containing Substances. (J. Derco)
Olšavová, L.:	Inhibitory effects of metals on terrestrial plants. (A. Fargašová)
Priesolová S.:	Utilization of iron in Fenton reaction. (J. Prousek)
Roth J.:	Anaerobic treatment of grain distillery slops (M. Hutňan)
Szigetiová Z.:	The sorption of radionuklide mixture with natural sorbents (M. Főldesová)
Tapia G.:	Practical experiences of anaerobic-aerobic combination of municipal

wastewater treatment (I. Bodík)

B. Dissertations (PhD)

Gulyásová A.: Utilisation of Ozone for Wastewater Treatment. (J. Derco)
Ďurecová A.: Atribute to determination of natural radioactivity in mineral waters in Middle-Slovakia Region (V. Koprda)

C. Dissertations (DrSc.)

Rajec P.: The separation methods for isolation and speciation of radionuclides (V. Koprda)

D. Habilitation Theses

Piatrik M.: The solution of problems with management of dangerous wastes in Slovak republic, Habilitation theses, FCHPT STU, Bratislava 2002

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Barančok D., Cirák J., Tomčík P., Gmucová K.,Čík G.: Voltcoulometric experiment on carbon ultramicroelectrodes coated with LB layers, Mat. Sci. Eng. C 22, 377-379 (2002)
[2]* Bodík I., Herdová B., Drtil M.: The use of upflow anaerobic filter and AnSBR for wastewater treatment at ambient temperature. Water Research 36 (4), pp. 1084-1088 (2002)
[3] Bodík I.: Alternatívne riešenia odkanalizovania a čistenia odpadových vôd. Alternative solutions in wastewater sewerage and treratment (in Slovak)| XXI. storočie 5(2), 28-31, (2002).
[4]* Bodík I., Kratochvil K., Herdová B., Tapia G., Gašpariková E.: Municipal wastewater treatment in the anaerobic-aerobic baffled filter reactor at ambient temperature. Water Science and Technology 46 (8), pp. 127-135 (2002)
[5] Bodík I.: Stav odvádzania a čistenia odpadových vôd v povodí Dunaja. Present status in the wastewater sewage and treatment in the DanubeRiver basin (in Slovak).Vodní hospodářství 52 (12), pp.347-350, (2002)
[6]* Čerňáková M., Košťálová D., Kettman V., Plodová M., Tóth J.: Potent antimicrobic activity of berberine, a constituent of Mahonia aquifolium. BMC Complementary and Alternative Medicine 2, 2 (2002)
[7]* Čerňáková M., Košťálová D.: Antimicrobial activity of berberine – a constituent of Mahonia aquifolium. Folia Microbiol. 47, 4, 375-378 (2002)
[8]* Čík G., Hubinová M., Šeršeň F, Brezová V.: Study of the influence of water on oxidative properties of Fe^{3+} in ZSM-5 zeolite channels, Collect. Czech. Chem. Commun. 67, 1743-1759 (2002)
[9]* Čík G., Šeršeň F., Dlháň L., Červeň I., Staško A., Végh D.: Study of magnetic properties of copolymer of 3-dodecylthiophene and 2,3-R,R-thieno[3,4-]pyrazine, Synth. Met. 130, 213-220 (2002)
[10]* Derco J., Gulyásová A., Horňák M.: Influence of Ozonation on Biodegradability of Refractory Organics in a Landfill Leachate. Chem. Papers 56 (1) 41- 44 (2002)
[11]* Derco J., Kovacs A.: Utilisation of Simulation Programs for Biological Wastewater Treatment Unit Design. Chem. Papers. 56 (2), 117-122 (2002)
[12]* Derco J., Kassai A.: Biological Denitrification in a Fluidised Bed Reactor. Chem. Listy, Symposia. 96, S260-S292 (2002)
[13] Derco J., Fargašová A.: Skúsenosti z riešenia prevádzkových problémov separácie aktivovaného kalu. Experience from Solution of Activated Sludge Separation Operational Problems (in Slovak). Vodohospodársky spravodajca 4, 8 - 10 (2002)
[14] Derco J.: AČE členom EWA. AČE – the member of EWA (in Slovak). Vodohospodársky spravodajca 9, 25 (2002).
[15] Derco J.: AČE členom EWA. AČE – the member of EWA (in Slovak). XXI. Storočie 3, 41 (2002).
[16]* Fargašová, A.: Structure-affected algicidal activity of triorganotin compounds. Bull. Environ. Contam. Toxicol. 69: 756-762 (2002)
[17] Földesová, M., Dillinger, P., Lukáč, P., Šamajová, E.: Radiotracer studies on adsorption and desorption of zinc ions on natural and chemically treated zeolites. Petroleum and Coal, Vol. 44, 1-2, p.57-63 (2002)
[18] Gulyásová A., Derco J.: Čistenie priesakovej vody zo skládky tuhého odpadu ozónom. Treatment of Solid Landfill leachate by ozone (in Slovak). Vodohospodársky spravodajca. 7-8, 19-20 (2002)
[19] Herdová B., Bodík I.: Súčasný stav odvádzania a čistenia komunálnych odpadových vôd na Slovensku. Present status of the municipal wastewater sewerage and treatment in the Slovakia (in Slovak). Stavba 5 (2), pp.44-45, 2002
[20] Jantová S., Čerňáková M., Košťálová D.: Účinok berberínu na proliferáciu nádorových bunkových línií. Effect of berberine on the proliferation of tumoral cell lines (in Slovak). Medical Journal, 9, 103 (2002)
[21] Krištín J., Koprda V.: Inhalable particles in the urban air of Bratislava and Košice, Slovakia. Meteorologický časopis/Meteorologic Journal (Sk/Eng), 5 (3) 23-30 (2002)
[22]* Prousek J., Priesolová S.: Praktické použití kovového železa ve Fentonově reakci na čištění barevných odpadních vod. Practical utilization of zero-valent iron in Fenton reaction for the treatment of coloured wastewaters (in Czech). Chem. Listy 96, 893-896 (2002)
[23] Vaverková Š., Čerňáková M.: Účinok antibakteriálnych látok produkovaných podzemkom Acorus calamus L. Action of antibacterial substances produced by the rhizome of Acorus calamus L. (in Slovak). Medical Journal, 8, 98 (2002)

B. Conferences (*international conferences)

[1] Bodík I., Kratochvíl K., Gašpariková E., Tapia G.: Prevádzkové skúsenosti s malými anaeróbno-aeróbnymi ČOV pre komunálne odpadové vody. Operation experiences with small anaerobic-aerobic treatment plants for municipal wastewater (in Slovak). In: Proceedings of 2nd Conference "Wastewater 2002", Tatranské Zruby, Slovakia, April 3.-5. 2002, pp. 61-67, ISBN 80-89088-00-7
[2] Bodík I., Kratochvíl K., Gašpariková E., Tapia G.: Dva roky prevádzky anaeróbno-aeróbneho modelu ČOV. Two years

operation of anaerobic-aerobic treatment plant model (in Slovak). In: Proceedings of 2nd Conference "Wastewater 2002", Tatranské Zruby, Slovakia, April 3.-5. 2002, pp. 234-240, ISBN 80-89088-00-7

[3] Bodík I.: Stav odvádzania a čistenia odpadových vôd v krajinách strednej a východnej Európy - v povodí Dunaja. Present status of sewerage and treatment of wastewater in CEE countries – in the Danube river basin (in Slovak). In: Proceedings of 2nd Conference "Wastewater 2002", Tatranské Zruby, Slovakia, April 3.-5. 2002, pp. 2-8, ISBN 80-89088-00-7

[4] Bodík I.: Súčasný stav v odkanalizovaní a čistení odpadových vôd na Slovensku. Present status of sewerage and wastewater treatment in the Slovak Republic (in Slovak). In. Proc. Symposium "Environment without borders – wastewaters and waste management", Bratislava, 23.-24.5.2002, pp.23-28

[5]* Bodík I.: Grundsätzliche Schwierigkeiten der gegewärtigen Abwasserableitung und -Reinigung in der SR. The basic problems in the sewerage and treatment of wastewater in the Slovak Republic (in Slovak). In.: Zborník Symposium "Umwelt Grenzlos - Abfallwirtschaft und Abwasser", Bratislava, 23.-24. Mai 2002, pp.21-26.

[6]* Bodík I., Námer J.: Alternatívne riešenia odkanalizovania a čistenia odpadových vôd sídiel vidieckého typu. Alternative solutions for sewerage and wastewater treatment in the small rural settlements (in Slovak). In: Bodík (Ed.) Domestic wastewater treatment plants. Trenčín 13.6.2002, AČE SR, Bratislava, p.22-31, ISBN 80-89088-04-X.

[7]* Bodík I., Hutňan M., Drtil M.: Wastewater treatment in the post-communist European countries in the Danube river basin. The environment and sustainable development in the new Central Europe: Austria and its Neighbord. University of Minnesota, September 18-21, 2002. Internet conference paper: http://www.cas.umn.edu/conference%20papers/Bodik.doc

[8]* Čík G., Báleš V.: Trends in environmental engineering, In: Proceedings of ICS-UNIDO Worshop Technology and Processes for Sustainable Development, Brno, Czech Republic, 14-16 January 2002, p.43-54

[9]* Čík G., Cirák J.: Langmuir-Blodgett films of oligomeric thiophenes and their properties. In: Proceedings, 53. Zjazd chemických spoločností, June 30 – Jule 4, 2002, Brno, Czech Republic, p. 544, Chemické listy 96 (6) 349-584 (2002) ISSN 0009-2770.

[10]* Čík G., Hubinová M.: Properties of catalysts based on ZSM-5 zeolites doped with Fe3+ Ions. In: Proceedings, 2nd Meeting of Chemistry & Life, September 10-11 September, 2002, Brno, Czech Republic, p. S24-S28, Chemické listy – Symposia 96(S) s1 – s332 (2002) ISSN 0009 - 2770

[11] Derco J., Gulyásová A., Rajczyková E., Belica P., Dián M.: Matematické simulovanie dynamiky procesov ČOV v Žiari nad Hronom Mathematical Simulation of the WWTP dynamic process at the WWTP Žiar nad Hronom (in Slovak). 2. Konferencia s medzinárodnou účasťou Odpadové vody 2002, Tatranské Zruby, 3 - 5 apríl 2002, ISBN 80–89088-00-7, 90 – 97 (2002).

[12]* Derco J., Gulyásová A.: Removal of refractory organics from an industrial wastewater. Proceedings of the 29th International Conference of Slovak Society of Chemical Engineering on CD-ROM, May 27 - 31, Tatranské Matliare 2002, Slovakia, ISBN 80-227-1690-1.

[13]* Derco J., Gulyásová A.: Treatment of Persistent Organic Pollutants by Ozone. Proceedings of ICS-UNIDO Workshop on Technology and processes for sustainable development and pollution reduction/prevention. Edited by I. Masek and S. Miertus. January 14 - 16, Brno 2002, Czech Republic, ISBN 80-214-2151-7, 120-125 (2002).

[14]* Derco J., Kassai A.: Biological Denitrification in a Fluidised Bed Reactor. Chemistry & Life. Brno, September 10 - 11, 2002.

[15] Derco J., Gulyásová A., Rajczyková E., Belica P., Dian M.: Matematické simulovanie dynamiky procesov ČOV v Žiari nad Hronom. Mathematical Simulation of Process Dynamics at the WWTP in Žiar nad Hronom (in Slovak). 2. Konferencia s medzinárodnou účasťou Odpadové vody 2002, Tatranské Zruby, 3 - 5 apríl 2002, ISBN 80–89088-00-7, 90 – 97 (2002).

[16] Drtil M., Hutňan M., Vass D.: Overenie vybraných vlastností alginitu a možnosti jeho využitia v technológii vody. Use of alginite in water and wastewater treatment – possibilities and risks (in Slovak). In: Proceedings of 8. International Conference "TOP 2002", Častá Papiernička, Slovakia, May 22.-23. 2002, p. 113-121

[17]* Fargašová, A.: Metal toxicity to freshwater bentic organisms. In: Ambrožová, J. (Ed.): 18th Seminar on Topical Issues of Water Supply Biology. Vydavatelství VŠCHT Praha, Prague, Czech Republic, 6.-7. Febr. 2002, p. 164-170 (ISBN 80-7080-467-X)

[18]* Fargašová, A., Ondrejkovičová, I.: Ecotoxicological effects of Cd(II) complexers with heterocyclic N-donor ligand nicotinamide (nia) on alga Scenedesmus quadricauda. 54. Congr. Chem. Sci., Brno, Czech Republic, 30.6.-4.7. 2002, Chem. Listy, 96(6): 498

[19]* Fargašová, A.: Cd, Cu, Zn, Se and Pb effects on some physiological parameters (root growth, pigments production, accumulation) in plant Sinapis alba. 54. Congr. Chem. Sci., Brno, Czech Republic, 30.6.-4.7.2002, Chem. Listy, 96(6): 499

[20]* Fargašová, A., Svetková, K.: Selenium interactions according to Cd and Cu determinead through some physiological processes in plant Sinapis alba. The Central European Scientific Conference OCOpole'02. Jamrozowa Polana, Poland, October 17 – 19, 2002, p. 27 CD ROM Edition

[21]* Fargašová, A.: Metals (Cd, Cu, Zn, Al) and their binary combinations acute toxicity for Chironomus plumosus larvae. Book of Abstracts: SECOTOX 2002 7th Regional Meeting of the Central and Eastern European Section – Trends and Advances in Environmental Chemistry and Ecotoxicology. Masaryk University, Brno, Czech Republic, October 14-16, 2002, p. 159-162 (ISBN 80-210-2971-4)

[22]* Fargašová, A., Svetková, K.: Cd intaractions with Cu, Zn, Pb and Fe expressed through root prolongation and metal accumulation in mustard (Sinapis alba) seedlings. Book of Abstracts: SECOTOX 2002 7th Regional Meeting of the Central and Eastern European Section – Trends and Advances in Environmental Chemistry and Ecotoxicology. Masaryk University, Brno, Czech Republic, October 14-16, 2002, p. 111-114 (ISBN 80-210-2971-4)

[23]* Fargašová, A.: Využívanie ekotoxikologických testov na hodnotenie kvality životného prostredia. Exploitation of ecotoxicological tests for environment quality determination (in Slovak). Proc. 7th. Interdiscipl. Slovak-Czech Toxicol. Conf., Martin, Slovak Republic, 24.-25.6.2002, p. 17

[24] Gašparíková E., Bodík I.: Vplyv teploty na rozklad primárneho kalu. Temperature influence on the primary sludge decay (in Slovak). In: Proceedings of 2nd Conference "Wastewater 2002", Tatranské Zruby, Slovakia, April 3.-5. 2002, pp. 228-233, ISBN 80-89088-00-7

[25] Gulyásová A., Derco J.: Využitie ozónu na čistenie odpadových vôd. Utilisation of Ozone for Wastewater Treatment (in Slovak). 2. Konferencia s medzinárodnou účasťou Odpadové vody 2002, Tatranské Zruby, 3 - 5 apríl 2002, ISBN 80–89088-

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[33] Hutňan M., Horňák M., Stifner Š.: Energetické využitie poľnohospodárskych komodít. Exploatation of agricultural products for energy production (in Slovak). In: Proceedings of Conference "Wastes and Sludges 2002", Brno, Czech Republac, October 16.-17. 2002, p. 217-220
[34] Hyánek Ľ., Bodík I.: Špecifiká domových čistiarní odpadových vôd. Domestic wastewater treatment plant specifics (in Slovak). In: Bodík (Ed.) Domové čistiarne odpadových vôd. Trenčín 13.6.2002, AČE SR, Bratislava, p.8-21, ISBN 80-89088-04-X.
[35] Chmielewska E., Koprda V., Sirotiak M., Šutriepka M.: Uptake of arsenate and chromate from aqueous effluents ba surfactant-loaded clinoptilolite tuf, „Zeolite 02", 6th International Conf. On the Occurence, Properties and Utilisation of Natural Zeolites, Thessaloniki, Greece, 3-7 June 2002, Book of Abstracts, p.59-60 (Edit. P. Misaeyides) Thessaloniki, 2002
[36] Jantová S., Čerňáková M., Košťálová D.: Účinok berberínu na proliferáciu nádorových bunkových línií. Effect of berberine on the proliferation of tumoral cell lines (in Slovak). In: Proceedings of the 7th Interdisciplinary Slovak-Czech Toxicological Conference, Martin 24-25 June, 2002, poster
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[40]* Královič J., Králová V., Harangozó M.: Relationships between the grain yield of wheat cultivars and the content of some heavy metals. 4th International Scientific Conference „Foreign substances in the environment", September 12, 2002, Nitra, p. 105-110
[41] Maro L., Prousek J.: Využitie Fentonovej reakcie na čistenie farebných odpadových vôd. Utilization of Fenton reaction for coloured wastewaters treatment (in Slovak). Odpadové vody 2002, Tatranské Zruby, April 3.-5.2002, p. 168-172
[42]* Šeršeň F., Čík G., Havránek E., Sýkorová, M.: Utilization of a natural zeolite in cultivation of plants in soils contaminated with heavy metals (in Slovak).In: Proceedings, Industrial Toxikology 2002, 22. International Symposium, Slovanská Lupča, Slovak Republic, 15.-17. May 2002, p. 99-103

C. Books and Textbooks

Textbooks

[1] Fargašová, A.: Všeobecná ekológia. General Ecology (in Slovak). Chemický ústav Prírodovedeckej fakulty Univerzity Komenského, (Vydané v rámci programu HESP 61700, Higher Education Support Programme 61700, Spoločný program Nadácie otvorenej spoločnosti a vzdelávacej nadácie Jana Husa, grant č. 2001/15); CD ROM Edition, 210 pp. (2002)
[2] Koprda V.: Legislatíva jadrovej a radiačnej bezpečnosti. Legislation of nuclear and radiation safety (in Slovak), in the frame of implementation of Tempus IB JEP 13 123 Continuing Education European Directives and Environmental Standards, June 2002, 62 pages

D. Patents

[1] Bodík I., Herdová B., Kratochvíl K.: Spôsob čistenia komunálnych odpadových vôd. Municipal wastewater treatment method. SK patent No. 282499, 17.06.2002.
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DEPARTMENT OF FIBRES AND TEXTILE CHEMISTRY

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I. STAFF

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Associate Professors:
Michal Krištofič, PhD;

Assistant Professors:
Jaroslav Legéň, PhD; Anna Ujhelyiová, PhD;

Research Fellows:
Eva Bolhová; Ľubica Fleischmannová; Marcela Hricová; Anna Murárová, PhD; Elena Zemanová, PhD (6 months);

PhD Students:
Martina Jurenková; Natália Karabcová; Eva Körmendyová; Zita Mlynarčíková;

Technical Staff:
Daniela Dančová (9 months) ; Agnesa Chlebáková (2 months), Gabriel Kužel (9 months); Jarmila Nemčeková (2 months); Albína Pokorná; Edita Štábelová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Laboratory of Macromolecular Chemistry
Laboratory of Polymer Fibre and Fibrous Material Structure (DSC, TMA, Surface Properties)
Laboratory of Fibre Technology
Laboratory of Textile Chemistry, Bleaching, Dyeing and Finishing (Ahiba, Pretema, Multicolor)
Laboratory of Fibre and Textile Testing
Laboratory for fibre spinning, drawing and texturing, extruders 16 and 30 mm

B. Research Laboratories:

Laboratory for thermal and electrical properties of fibres and textiles (DTA DSC 7, TGA 7-Perkin Elmer, Derivatograph Q 1500 D, integral electrometer Polystat PS-1, Alambeta)
Laboratory for thermomechanical properties (TMA - 50 M and TA)
Laboratory for mechanical properties (Instron, model 1112)
Laboratory of rheological properties (Dynamic viscoelastomer model Rheo-200, capillary rheometer, extrusiometer GÖTTFERT ϕ 20mm
Laboratory for structural properties (Microscope Olympus model BHT, Xenotest, SALS)
Laboratory for exhaust dyeing process and its evaluation (Ahiba, Pretema,)
Laboratory for spinning of fibres (extruders, ø 16 mm and 30 mm respectively)

III. TEACHING

A. Undergraduate Study

5th Semester (autumn)		
Macromolecular Chemistry	(2-0 h)	Borsig
6th Semester (spring)		
Technology of Materials	(2-0 h)	Marcinčin
Bachelor Project	(0-0-4 h)	
7th Semester (autumn)		
a) compulsory subjects:		
Macromolecular Chemistry II	(2-1 h)	Borsig
Physics of Polymers and Paper	(2-2 h)	Krištofič
Fiber Sci. and Technology	(2-2 h)	Marcinčin, Legéň
Laboratory of Fiber Sci. and Technology	(0-0-8 h)	Krištofič, Karabcová
b) optional subjects:		
Special and Modified Fibres	(0-2 h)	Legéň, Marcinčin
Structure and Properties of Fibres	(1-1 h)	Krištofič, Ujhelyiová,
Modeling and Simulation of Technological Processes	(1-1 h)	Marcinčin, Rychlý,

8th Semester (spring)

a) compulsory subjects:

Colorants and Textile Auxiliaries	(2-0 h)	Murárová, Ujhelyiová
Technical Textiles	(2-0 h)	Krištofič, Borsig
Principles of Textile Engineering	(2-0 h)	Ujhelyiová, Murárová
Laboratory of Textile Engineering	(0-0-8 h)	Legéň, Mlynarčíková

b) optional subjects:

Physiology and Comfort of Clothing	(0-2 h)	Murárová, Hricová
Special Chemical Treatment of Textiles	(0-2 h)	Borsig, Hricová

9th Semester (autumn)

Textile Chemistry and Technology	(2-2 h)	Ujhelyiová, Bolhová
Technology of Polym. Films	(2-0 h)	Marcinčin, Krištofič
Laboratory of Textile Chemistry and Technology	(0-0-10 h)	Ujhelyiová, Bolhová
Fiber and Textile Testing	(2-0 h)	Legéň, Murárová

10th Semester (spring)

Diploma Thesis	(0-0-27 h)

B. PhD study:

a) subjects:

Physics of Polymers	Krištofič
Macromolecular Chemistry	Borsig
Technology of Polymeric Materials	Marcinčin
Organic Chemistry	
Physical Chemistry	

b) Seminars:

Study on the polish universities, M. Michalik, March, 20, 2002
Traditional composites and nanocomposites with matrix of polyolefine, Z. Mlynarčíková, May, 2nd, 2002
Modified polypropylene fibres dyeable by exhaust process, E. Bolhová, May, 17. 2002
Influence of fibre physical modification on the end-use and physiological properties, A. Murárová, PhD., May, 31st 2002
Chemical fibres modified by additives for new materials (in english) + Evaluation of dyed concentrates processability, Prof. A. Marcinčin, Nov. 11, 2002
Modification and processability of polyamides during preparation of fibres, N. Karabcová, Nov., 25, 2002

IV. CURRENT RESEARCH PROJECTS

A. Dispersion of organic pigments in synthetic polymers with particle size close to nano-scale (Anton Marcinčin)

The dependance between filterability of pigmented dispersions (in model liquides) and some rheological parameters of these dispersions were found. Insufficient processability of pigmented dispersions (i.e. insufficient filterability) is primarly the consequence of the particles agglomeration not of their dimensions.
Relationships between filterability and rheological properties were applied to the evaluation of antibacterial additives dispersity in the model compounds.
New literature references from the domain of chemical fibres pigmentation in mass were gathered.
On the base of these studies the new type of antibacterial additive for polyamide fibres was developped.

B. Nanocomposite fibres based on synthetic polymers (Anton Marcinčin)

The first task of this project was a study of literature references focused to the choice of inorganic and organic fillers and pigments for preparation of fibre-forming polymer nanodispersions. To accomplish this aim we started from the actual level and future trends in domains of nanoscience, nanotechnologies and development of multifunctional materials worldwide and in Slovakia as well. Main goals were:
- composite fibres filled by inorganic nanoparticles
- pigmented chemical fibres on the level of nanocolorants
- composite fibres based on binary and ternary polymer blends with character of nanocomposite fibres.

C. Polymer composite fibres (Eberhard Borsig)

The mechanism of polyethylene-PE crosslinking initiated with dicumyl peroxide-DCP in the presence of minority functional groups like double bonds of different kind has been studied. The minority double bonds are formed during the PE production, but also by the reaction of peroxide with PE. At the comparison of the crosslinking kinetics of the starting PE (i.e. PE with original minority double bonds) with the same kind of PE, but with removed double bonds, it was found that in the first phase of reaction the crosslinking was about 20% slower than in the original-unmodified PE. It has been observed that the rate of DCP decomposition is not controlled by first order kinetics but it consists of the spontaneous and induced decomposition. Syndiotactic polypropylene was melt compounded with organic layered silicates which enables generation of anisotropic nanoparticles by means of in situ exfoliation. The obtained polypropylene nanocomposite materials was spinned, and characterization of the fibers is under way.

V. COOPERATION

A. Cooperation in Slovakia

Research Institute for Man-Made Fibres, Svit
Research Institute of Textile Chemistry, Žilina
Polymer Institute, Slovak Academy of Sciences, Bratislava
Slovenský hodváb a.s.,Senica
Chemosvit a.s., Svit
Rhodia Industrial Yarn a.s., Humenné (Seminar: Structure, properties and processability of PA 66, Oct. 19.-20., 2002)
Nylstar a.s., Humenné
Merina a.s., Trenčín
Istrochem a.s., Bratislava
Slovena, Žilina

B. International Cooperation

Technical University, Lodž, Poland
-Cooperation in the CEEPUS project
Technical University, Liberec, Czech Republic
-Exchange of staff members and students in the CEEPUS network
University of Maribor, Faculty of Mechanical Engineering, Maribor, Slovenia
-Cooperation in the CEEPUS project, exchange of students
University of Zagreb, Faculty of Textile Technology, Croatia
-Cooperation in the CEEPUS project, Organization of International Textile, Clothing and Design Conference, Dubrovnik Croatia, Oct. 6.-9. 2002
Preparation of the World Textile Conference, 2nd AUTEX Conference: Textile Engineering at the dawn of a new millenium: an exciting challenge, Brugges, Belgium, July 1.-3., 2002

C. Membership in Domestic Organizations and Societies

VEGA Committee	(A. Marcinčin)
Council of Ministry of Education SR State Program: "Development of young employees and PhD. students personality"	(A. Marcinčin)
Managing Council of certification, VÚTCH Žilina	(A. Marcinčin)
Chairman of Common branch council for awarding of DSc in 14-05-9 Macromolecular Chemistry	(E. Borsig)
Charmain of Common branch council for awarding of PhD in 14-05-9 9 Macromolecular Chemistry	(E. Borsig)
Charmain of the Slovak Chemical Society Section "Polymers"	(E. Borsig)
Advisory Board SAV for Chemical sciences	(E. Borsig)
Editoral Board of journal Vlákna a textil (Fibres and Textiles)	(A. Marcinčin, M. Krištofič, A. Murárová, A. Ujhelyiová)
Slovak Society of Industrial Chemistry Board and its Executive Committe	(A. Murárová)
Charmain of Slovak Society of Industrial Chemistry Section "Chemical Fibres"	(A. Murárová)
Slovak Society of Industrial Chemistry	(A. Marcinčin, M. Krištofič, J. Legéň, M. Hricová, A. Ujhelyiová, E. Zemanová)
Executive Editor of scientific journal Vlákna a textil (Fibres and Textiles),	(M. Krištofič)
Co-editor of scientific journal Vlákna a textil (Fibres and Textiles)	(A. Murárová)
Slovak Chemical Society, section "Textile, fibres and film materials",Bratislava	(E. Borsig, M. Krištofič, A. Murárová, J. Legéň, A. Ujhelyiová, E. Zemanová)

D. Membership in International Organizations and Societies

Association of Universites for Textiles (AUTEX), Gent, Belgium	(A. Marcinčin)
Advisory Board of AUTEX Research Journal, Gent, Lodž, Belgium, Poland	(A. Marcinčin)
Central European Conferences Committee	(A. Marcinčin)
Scientific Council, Technical University of Liberec, Fac. of Textile, Czech Rep.	(A. Marcinčin)
General Assambly of National Representatives of European Polymer Federation, Eidhoven, Netherlands	(E. Borsig)
Editorial Board of Journal of Macromolecular Chemistry, Pure and Applied Chemistry, USA	(E. Borsig)
Editorial Board of Chemické listy (Chemical Letters), Prague, Czech Rep.	(E. Borsig)
Committee for Awarding of DSc for scientific branches 14-05-9 Macromolecular Chemistry and 28-03-9 Technology of Macromolecular Compounds Prague, Czech Rep.	(E. Borsig)

E. Tempus Programme

F. International Scientific Programmes

CEEPUS
SI-007 Development of the Smart Clothing
M. Krištofič, network is formed by:
Faculty of Mechanical Engineering, University of Maribor, Slovenia - coordinator
Faculty of Textile Technology, University of Zagreb, Croatia
Faculty of Textile, Technical University of Liberec, Czech Republic
Textile Faculty, Technical University of Lódž, Poland
Faculty of Mechanical Engineering, Technical University of Budapest, Hungary
Faculty of Mechanical Engineering, Technical College for Light Industry, Hungary
University of Hradec Králové, Czech Republik
January - December 2002

G. Visitors from Abroad

Nagy Veronika,	Budapest University of Technology and Economics (BUTE) Hungary, January 16 - February 8 2002 (CEEPUS), 24 days
Maciej Michalik,	Technical University of Lodž, March, 1 - 28, 2002 (CEEPUS), 29 days

H. Visits of Staff Members and PhD Students to Foreign Institutions

E. Borsig,	Albert-Ludwigs Universität Freiburg, March 2002, (Germany), 30 days
Visits of Students to Foreign Institutions:	
Stroková, A.	University of Maribor, Slovenia, (CEEPUS), April 2002, 1 month
Šalachová, K.	University of Maribor, Slovenia, (CEEPUS), April 2002, 1 month
Vojtušová, A.	TU Liberec, Czech Rep. (CEEPUS), April 2002, 1 month

VI. THESES AND DISSERTATIONS

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

Bc. Belicová A,:	Influence of cross section on the properties of blended fibres (Legéň J.)
Bc. Ďuríčeková T.:	Evaluation of blended PP/PET fibres dyeing process by disperse dyestuffs (Ujhelyiová A.)
Bc. Ďurišová M.:	Influence of molecular weight of PET on structure of PP/PET blend fibres (Marcinčin A.)
Bc. Fleischmannová Ľ.:	Preparation of PP nanocomposite fibres filled by inorganic nanofiller (Borsig E.)
Bc. Chromuľáková K.:	PA6, copolyamides and their blends for fibres with improved properties (Krištofič M.)
Bc. Jurenková M.:	Utilization of thermomechanical analysis for evaluation of PP/PET fibres (Zemanová E.)
Bc. Náčiniaková Z.:	Modified polypropylene fibres dyed by exhaust method (Krištofič M.)
Bc. Stroková A.:	Influence of oligomeric additives on pigment dispersion in PET fibres (Marcinčin A.)
Bc. Šalachová K.:	Physiological properties of textiles (Murárová A.)
Bc. Vojtušová A.:	Kinetics and fastness of dyeing of modified PP/PET fibres dyed by disperse dyestuffs (Ujhelyiová A.)

B. Dissertations (PhD)

C. Dissertations (DSc)

D. Habilitation Thesis

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Greco R., Iavarone M., Fiedlerová A., Borsig E.: Optical properties of polyethylene-styrene-co-methacrylate copolymers IPN-like networks: Effect of different methacrylate styrene co monomers on properties. Journal of Materials Science 37, 3389-3395 (2002)

[2]* Lazár M., Hrčková Ľ., Borsig E.: Polymerization of n-dodecyl methacrylate into high conversion. J. Macromol. Sci. – Pure Appl. Chem. A 39 (5) 365377 (2002

[3]* Marcinčin A.: Modification of Fiber-Forming Polymers by Additives, Progr. Polym. Sci. 27, 853-913 (2002)

[4]* Marcinčin A., Ujhelyiová A., Marcinčinová T.: Fibre-Forming Blend of Polyethylene and Polyethylene Terephtalate, Macromol. symp. 176, 65-72 (2001)

[5]* Rätzsch M., Arnold E., Borsig E., Bucka H., Reichelt N.: Radical reactions on polypropylene in the solid state. Progres in

Polymer Science 27 (7) 1195-1398 (2002)
[6] Krištofič M., Karabcová N.: Copolyamides containing ring elements, Vlákna a textil (Fibres and textiles) 9(3) 88-91 (2002)
[7] Marcinčin A., Ujhelyiová A., Zemanová E., Marcinčinová T.: Spracovateľnosť organických pigmentov pri pigmentácii syntetických vlákien v hmote, Procesing of organic pigments during pigmentation of synthetic fibres in mass (in Slovak) Vlákna a textil (Fibres and Textiles) 8(4) 267-272 (2001)
[8] Marcinčin A., Ujhelyiová A., Hricová M.: Processing of the organic pigment dispergion in polypropylene and polypropylene Fibres, Vlákna a textil (Fibres and Textiles) 9(1) 3-11 (2002)
[9] Murárová A., Jambrich M., Murárová Z.: Fyziológia odievania III. Komfort nosenia, Clothing Comfort (in Slovak) Vlákna a textill (Fibres and Textiles) 8(4) 279-283 (2001)
[10] Murárová A., Murárová Z.: Fyziológia odievania IV. Ekohumánne a fyziologické vlastnosti textílií, Ecohuman and Hygiene Properties of Textiles, (in Slovak) Vlákna a textil (Fibres and Textiles) 8(4) 284-286 (2001)
[11] Krištofič M., Murárová A., Karabcová N.: Polyamide 6-copolyamide blended fibres, Vlákna a textil (Fibres and Textiles) 9 (4) 130 - 134 (2002)
[12] Murárová A., Krištofič. M., Jambrich M.: The influence of PET fibres cross-section geometry on dyeing, Vlákna a textil (Fibres and Textiles) 9 (4) 135 - 141 (2002)

B. Conferences (*international conferences)

[1]* Hricová M., Marcinčin A.: Processing of the Antibacterial Additives for Synthetic Fibres. In: Proceedings of the 1st International Textile, Clothing and Design Conference, 71-75, Oct. 6.-9., 2002, Dubrovnik, Croatia, University of Zagreb,
[2]* Geraldes M., Hes L., Araújo M., Marcinčin A.: The Application of New High Performance Polypropylene Fibres in Functional Knit Structures. In: Proceedings of the 1st International Textile, Clothing and Design Conference, 59 - 64, Oct. 6. - 9. 2002, Dubrovník, Croatia,
[3]* Marcinčin A., Ujhelyiová A., Hricová M.: Chemical Fibres Modified by Additives for New Textile Materials. In: Proceedings of the 1st International Textile, Clothing and Design Conference, 82 - 88, Oct. 6. -9. 2002, Dubrovník, Croatia, 2002
[4]* Sfiligoj Smole M., Ujhelyiová A.: Influence of Thermal Treatment on Structure of Poly(ethylene Terephtalete) Fibres. In: Conference Program and Extended Abstract, Polymer Fibres 2002, July 10.-12. 2002, Manchester, UK, The Manchester Conference Centre, UMIST
[5]* Ujhelyiová A., Marcinčin A.: Morphology and Properties of Blend PP/PET Fibres. In: Proceedings of the 1st International Textile, Clothing and Design Conference, 127 - 129, Oct. 6.-9. 2002. Dubrovník, Croatia,
[6]* Borsig E., Pavlíková S., Thomann R., Reichert P., Mülhaupt R., Fiedlerová A., Marcinčin A., Ujhelyiová A.: Fibre Spinning from Poly(Propylene) Organoclay Nanokomposite. In: Internationale Fachtagung „Polymerwerkstoffe 2002, 332 - 335, Sept. 25.-27., Halle, Deutschland,
[7]* Borsig E.: Polypropylene Grafting as a Tool of New Material Preparation. In: International symposium "Makromolekules in 21st Century", Oct. 7.-9. 2002, Wien, Austria
[8]* Hrdlovič P., Danko M., Borsig E.: Spectral characteristics of complex polymer structures by free and linked fluorescence probes In: Internationale symposium "Macromolecules in 21st Century", 30, Oct. 7.-9., 2002 Wien, Austria
[9]* Krištofič M., Karabcová N.: Modification of PA6 fibres by ternary copolyamides.In: 6th Dresden Textile Conference 2002, p. 173, June 19.-20.. 2002, Dresden, SRN,
[10]* Marcinčin A., Šesták, J.: Pernament Antimicrobial Modification of Chemical Fibres. In: 6th Dresden Textile Conference 2002, p.136-138, June, 19.-20. 2002 Dresden, SRN,
[11]* Borsig E., Fiedlerová A., Greco R., Marcinčin A., Schulze V., Pionteck J.: Tansparent IPN-like system, its structure and properties. In: 7th European Symposium "Polymer Blends", D 16, May 27.- 29. 2002, Lyon-Villeurbanne France,
[12] Jambrich M., Hudák J., Jambrich P., Mokráňová B., Murárová A., Vojtko M., Revús M.: Vlastnosti textílií z PP vlákien pre aplikáciu riešenia EKO problémov. Properties of textiles from PP fibres for solution of EKO problems, (in Slovak) In: Chemprogress 2002, June, 20. 2002, p. 35-39, Púchov, SR

C. Books and Textbooks

D. Patents

[1] Kišš M., Ďuriš L., Marcinčin A.: Polyolefinické koncentráty modifikované nukleačnými činidlami. Polyolefine concentrates modified by nucleated compounds (inSlovak), PÚV 182 – 2002 úžitkový vzor 3409, October 2002

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

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I. STAFF

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Assistant Professors:
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Emeritus Fellows:
Ladislav Dodok, PhD; Fridrich Görner, PhD, DSc; Vladimír Palo, PhD; Ľudovít Kuniak, PhD; Jaroslav Zemanovič, PhD

II. TEACHING AND RESEARCH LABORATORIES

Laboratory of Sugar Technology
Laboratory of Starch Chemistry and Technology
Laboratory of Cereal Technology
Laboratory of Canned Products
Laboratory of Meat and Meat Products
Laboratory of Food Preservation
Laboratory of Milk Chemistry and Technology
Laboratory of Fat Chemistry and Technology
Laboratory of Cosmetology
Laboratory of Food Microbiology

III. TEACHING

A. Undergraduate Study

5th semester (autumn)		
Fundamentals of Food Technology	(2-0-0-0 h)	Karovičová
Fundamentals of Hygiene and Sanitation	(1-1-0-0 h)	Hojerová
6th semester (spring)		
Fats Chemistry and Oleochemistry	(1-1-0-0 h)	Schmidt, Sekretár
Packaging and Packaging Materials	(1-1-0-0-h)	Sekretár
Cosmetic and Household Chemistry	(1-1-0-0 h)	Hojerová
Semester Project	(0-0-0-4 h)	all members of the staff
7th semester (spring)		
Food Engineering	(2-0-1-0)	Schmidt
Chemistry and Technology of Saccharides	(2-0-2-0 h)	Burisová
Theory of Food Preservation	(3-0-1-0 h)	Greif
Dairy Technology I.	(2-0-0-0 h)	Greifová, Mastihuba
Laboratory Practice of Dairy Technology I.	(0-0-0-2)	Greifová, Mastihuba
Semester Project	(0-0-0-5)	all members of the staff
8th semester (spring)		
Cereal Chemistry and Technology	(4-0-1-0 h)	Dodok
Sugar Technology	(4-0-0-0 h)	Dandár
Food Chemistry II	(2-0-0 h)	Takácsová
Laboratory of the Specialization I.	(0-0-0-4 h)	
Preserved and Frozen Food Technology	(2-0-1-0 h)	Karovičová, Greif
Meat and Poultry Technology I.	(2-0-1-0 h)	Staruch

Raw Materials for Canning Industry	(2-0-0-0 h)	Karovičová, Staruch
Laboratory of the Specialization I.	(0-0-0-5 h)	Staruch, Greif, Karovičová
Fats, Detergents and Cosmetics	(4-0-0-0 h)	Schmidt, Sekretár
Laboratory Practice of Fats, Detergents and Cosmetics	(0-0-0-3 h)	Sekretár
Dairy Technology II.	(2-0-0-0 h)	Mastihuba, Greifová
Laboratory Practice of Dairy Technology II.	(0-0-0-3 h)	Mastihuba, Greifová
Microbiology of Milk, Fats and Cosmetics	(1-0-0-0 h)	Greifová, Valík
Semester Project	(0-0-0-5 h)	all members of the staff
Manufacturing Practice		
9th semester (autumn)		
Special Food Microbiology	(2-0 h)	Valík
Laboratory Practice Special Food Microbiology	(0-2 h)	Valík
Food Ecohygiene	(2-0 h)	Frank
Laboratory Practice Food Ecohygiene	(0-2 h)	Augustín
Special Dairy and Fat Technologies	(2-0 h)	Schmidt, Mastihuba
Laboratory exercise Special Dairy and Fat Technologies	(0-4 h)	Schmidt, Greifová, Sekretár, Mastihuba
Side effluents in Food Industry	(2-0 h)	Augustín
Laboratory Practice Side Effluents in Food Industry	(0-2 h)	Augustín
9th semester (autumn)		
Chemical Engineering Processes in Saccharide Technology	(2-0-0-0 h)	Dandár
Technology Optimising in Canning Industry	(1-0-1-0 h)	Greif
Laboratory of the Specialization II.	(0-0-0-4 h)	Staruch, Karovičová, Greif
Semester Project III.	(0-0-0-5)	all members of the staff
Chemistry and Technology of Cosmetics	(2-0-2-0 h)	Hojerová
Laboratory Practice of Microbiology of Milk, Fats and Cosmetics	(0-0-0-2 h)	Greifová
Laboratory of the Specialization II	(0-0-0-4 h)	
Electives:		
Optimising of Sugar Technology	(2-0-0-0 h)	Dandár
Laboratory of the Optimising of Sugar Technology	(0-0-0-2 h)	Dandár
Meat and Poultry Technology II.	(2-0-0-0 h)	Staruch
Laboratory of Meat and Poultry Technology II.	(0-0-0-2 h)	
By-products in Food Industry	(2-0-0-0 h)	Augustín
Laboratory of By-products in Food Industry	(0-0-0-2 h)	Augustín
PC Application in Food Industry	(2-0-0-0 h)	Sekretár
Laboratory of PC Application in Food Industry	(0-0-0-2 h)	Sekretár
10th semester (spring)		
Diploma Thesis	(0-0-0-27 h)	all members of the staff

IV. CURRENT RESEARCH PROJECTS

A. Development, optimising and control of new food products with the aim to increase the food quality using biological active substances and modern technologies (Alexander Dandár)

Research activity was focused on selection, analysis and utilization of antioxidants of natural sources namely of plant origin, applied in edible plant oil. Antioxidative activity of ethanol extracts from oil seeds /corn, amaranth, soy, rapeseed, and cultivated flax/ as well as from legumes /pea, lens, bean, chickpea, French bean/ was studied.

Positive antioxidant effects on lipid stability were established e.g. in the samples of heat-treated pork with lens. Antioxidative activity of ethanol extracts of some spices as green and black tee and coffee drinks. Volatile compounds of silica and the extracts from selected herbs and tees as well as its sensory properties were analysed too.

Chemical parameters of sensory properties of fermented natural juices /cabbage, celery and beetroot/ were evaluated. Effect of NaCl content and an initial pH value as well as the effect of bacteria on biogenic amines and organic acids production were observed in evaluated juice samples. Decrease of vitamins B in heat-treated confectionery samples within an optimazing of technology was studied. Soy flavonoids / genistein, daidzein and their glukozides / in term of their antioxidative properties were studied

The influence of polyphosphate content on sensory and physico-chemical properties in selected meat products was observed. Nutritive parameters as well as the additives, mainly amino acids composition were analysed. An effect of lactic acid addition applied on the surface of butcher`s meat with the aim to extend its shelf life was evaluated.

Different combination of emulsifiers, enzyme and stabilizers on shelf life of bread and rolls was analysed. The utilization of emulsifier in non-traditional production of rolls resulted in increasing of qualitative parameters including of shelf life extension.

Effect of sanitary terms and of storage on microbiological state of selected freezing and cheese products were evaluated. Influence of SUCAZUR preparation to eliminate microbial activity during saccharose extraction was analysed. The program to decrease an incrustation in evaporator during campaign was worked out.

B. Processes and factors having the influence on durability and safety of foods and on household chemistry (Štefan Schmidt)

Principles of predictive microbiology in the evaluation of hygienic safety of food were used. Mathematical modelling of growth of hygienically relevant microorganisms in model systems, in food and in emulsion systems was worked out.
Prediction of durability and dynamics of microbial deterioration of foods was studied. Investigation of creation and occurrence of biogenic amines as endogenous xenobiotics and indicators of microbial deterioration of foods as well as the analysis of possibilities for elimination of biogenic amines in foods was done.
Influence of biogenic elements, heavy metals and other biologically active substances on food quality with regard to properties of relevant raw materials, intermediates and final products were studied. Modification of food properties in fresh and preserved state was analysed.
Correlation of microbial and physical - chemical parameters of quality of bovine and caprine milks was worked out.
Influence of external and internal environmental determinants on micro flora and sensory properties during storage of durable cereal products was studied.
Isolation, modification, characterisation of plant antioxidants and their use for stabilisation of selected types of fats and oils were realized.
Antibacterial, antifungal and antiviral activities of isolates from frequent seasoning as well as employment of plant extractive substances in dairy products to stabilize their quality and durability were tested.
Enzymatic preparation of additives based on polysaccharide and saccharide-lipid structures and their rheological and functional properties were studied.
Fast and selective methods for determination of indicators of over processing and for evaluation of food quality factors and the verification of methods for evaluation of effectiveness and safety of stabilizers and other permitted substances for cosmetic products according to legislation of Slovak Republic and European Community were developed.

V. COOPERATION

A. Cooperation in Slovakia

Ministry of Agriculture of Slovak Republic, Bratislava
Institute of Food Research, Bratislava
Slovak Academy of Sciences, Bratislava
Považský cukor Co, Trenčianska Teplá
Slovebské cukrovary Co, Rimavská Sobota
Eastern Sugar Co, Dunajská Streda
Slovak Sugar Technology Association, Bratislava
OLD HEROLD Co, Trenčín
SLOVAMYL Ltd, Bratislava
Mäsozávod, Bratislava
Slovak Association for Cosmetology, Bratislava
ADIPO Ltd, Nitra
Central Laboratory Milex – Progres, Co, Bratislava
Dairy Plant, Levice
De Miclén, Co, Levice
Dimenzia, Ltd., Kežmarik
Institute of Dairy Research, Žilina
Institute of Human Nutrition, Bratislava
Institute of Preventive and Clinical Medicine, Bratislava
Milex, N.Mesto nad Váhom
National Institute of Public Health, Bratislava
Nuclear Powerplant, Jaslovské Bohunice
Palma – Henkel, Co, N.Mesto nad Váhom
Palma – Tumys, Bratislava
PHARMASUN, Bratislava
Rajo, Co, Bratislava
Ress, Ltd., Senica
Research Institute of Viticulture and Oenology, Bratislava
Q chem., Bratislava
PMD Union Co, Bratislava
Jedľa Ltd., Bratislava
Slovak University of Agriculture, Nitra
Bell NOVAMAN Co, Bratislava
Incheba Co, Bratislava
Public Sanitary Institute, Bratislava
Slovak Chemical Society, Bratislava
Czechoslovak Microbiology Society, Bratislava

B. International Cooperation:

Institute of Food Research, Prague, Czech Republic
College of Agriculture, Brno, Czech Republic

Škrobárny Co, Brno, Czech Republic
Institute of Chemical Technology, Prague, Czech Republic
Research Institute of Sugar Technology, Prague, Czech Republic
Institute of Food Research, Manchester, UK
Akademia Ekonomiczna, Wroclaw, Poland
Technical University, Berlin, Germany
Technical University, Lodž, Poland
Research Institute of Sugar Technology, Prague, Czech Republic
Akademia Rolnicza, Krakow, Poland
Zuckerforschungsinstitut Tulln, Austria
Aluso Ltd., Prague, Czech Republic
-Development of cosmetic products
BBSRC Institute of Food Research, Norwich, UK
-Development of improved control of food safety for industry
-Support for database of predictive microbiology
BRDC (Biotechnology Research and Development Corporation) Peoria, IL, USA
-Enzymatic modification of natural polymers
Dublin City University, Biomedical and Environmental Sensor Technology Centre, Dublin, Ireland
-Development of improved control of food safety for industry
Institute of Chemical Technology, Dep. of Dairy and Fat Technology, Prague, Czech Republic
-Education of Dairy and fat technology
-Natural antioxidants
Johnson Matthey, Prague, Czech Republic & Johnson Matthey, Royston, UK
-Toxicity and antimicrobial efficacy study of cosmetic preservatives
Gimex Ltd., Zlín, Czech Republic
-Toxicity and antimicrobial efficacy study of cosmetic preservatives
-Household chemistry
Milcom-Dairy Research Institute, Prague, Czech Republic
-Development of improved control of food safety for industry
Technical University Vienna, Dep. of Biotechnology, Austria
-Proteolytic Enzymes of *Brevibacterium linens*
Food and Agriculture Organization of the United Nations (FAO)
-Consultations on food microbiology
NCAUR (National Centre for Agricultural Utilization Research), ARS, USDA, Peoria, IL, USA
-Enzymatic modification of natural polymers

C. Membership in Domestic Organizations and Societes:

Slovak Society of Agricultural, Forestry, Food and Veterinary Sciences, Bratislava	(A. Dandár, L.Staruch, J.Augustín, V.Palo)
Slovak Academy of Agricultural Sciences, Bratislava	(A.Dandár, L.Dodok)
Slovak Academy of Technical Sciences, Bratislava	(A.Dandár)
Foundation “SLOVAK GOLD”, Bratislava	(L.Staruch, J.Hojerová)
Slovak Institute of Technical Normalization, Bratislava	(L.Dodok, L.Staruch)
The Union of Slovak Butchers, Bratislava	(L. Staruch)
Slovak National Commitee of International Commission for Uniform Methods of Sugar Analysis - ICUMSA	(A. Dandár)
Slovak Agricultural Academy, Nitra	(A. Dandár. L. Dodok, V.Palo)
Slovak National Committee of International Dairy Federation	(V.Palo)
Slovak Chemical Society	(A.Dandár, Š.Schmidt,M.Greifová, V.Mastihuba, V.Palo, Ľ.Kuniak, J.Zemanovič)
Member of Committee of the Slovak Chemical Society	(Š.Schmidt)
Incheba, Joint Stock Company – Technical Committee for Cosmetics	(J.Hojerová)
Member of Editorial Board of Bull. of Food Research	(Š.Schmidt)
Slovak Society of Cosmetology	(J.Hojerová, H.Kanďárová)
Commission for Technical Standards No 79 (Cosmetics) of Slovak Institute for Technical Standards	(J.Hojerová)

D. Membership in International Organizations and Societes

International Commission for Uniform Methods of Sugar Analysis - ICUMSA, Italy	(A. Dandár)
American Chemical Society	(A.Dandár)
Commission International Technique de Sucrerie - CITS, Brussels, Belgium	(A.Dandár)

Verein der Zuckerfabriken Östereichs, Vienna, Austria	(A. Dandár)
Stowarzysesnie Technikov Cukrownikow, Wroclaw, Poland	(A. Dandár)
WEPSA – World Poultry Scientific Association, Israel	(L.Staruch)
Federation of European Chemical Societies, Division of Food Chemistry	(Š.Schmidt)
Editotial board of European Journal of Lipid Science and Technoogy	(Š.Schmidt)
Czechoslovak Microbiology Society	(Augustín, M.Greifová)
Austrian Chemical Society, Austria	(J.Zemanovič)
The International Federation of Societies of Cosmetic Chemists, USA	(J.Hojerová, H.Kanďárová)
IFSCC Secretariat, Luton, England	(J.Hojerová)

E. Tempus Programme:

F. International Scientific Programmes:

1. SOCRATES/ERASMUS, a/ 55792-CP-1-98-FR-ERASMUS-ETN, /FOODNET-Food Studies in Europe
A.Dandár, V.Mastihuba – FCHPT STU, ENSIA, Massy Cedex, France

G. Visitors from Abroad:

Dr.B. Gaspar	Sydney Institute of Technology, Sydney, Australia, June 2002, 3 days
Dr.L. Karamonová	VŠCHT Praha, CZ, April 2002 (2 weeks)
Prof. Salah el-Samahy	Suez Canal University, Ismailia, Egypt, October 2002, one week
Assoc.Prof. R. Schick	Technical University Berlin, Berlin, Germany, March 2002 (5 days)

H. Visits of Staff Members and PhD Students to Foreign Institutions:

A.Dandár	Commission International Technique de Sucrerie - CITS, Brussels, Belgium, February, December 2002 (5 days)
A.Dandár	International Conference "Postep techniczny v przemysle cukrowniczym", Zakopane, Poland, June 2002 (3 days)
A.Dandár	International Conference of Sugar Technology, Luhačovice, Czech Republic, February 2002 (3 days)
A.Dandár	Zuckerforschunginstitut Tulln, Zuckerfabrik Tulln, Austria, October 2002 (2 days)
A.Dandár, A.Burisová	Xth International Starch Convention, Krakow, Poland, June 2002 (3 days)
A.Dandár, M.Kostičová	Zuckerfabrik Hohenau, Austria, February 2002 (1 day)
D.Lauková	Department of Diary and Fat Technology, Faculty of Food and Biochemical Technology, ICT Prague, Czech Republic , September, October 2002 (2 months)
D.Lauková, M. Greifová, G. Greif, V. Mastihuba	Seminar „Mléko a sýry", Praha, January 2002 (2 days)
H.Kanďárová	Conference „Cosmetic and Household Ingredients" Warsaw, Poland, November 2002 (3 days)
V.Mastihuba, M.Greifová, S.Sekretár	Department of Diary and Fat Technology, Faculty of Food and Biochemical Technology, ICT Prague, Czech Republic, May 2002 (7 days)

VI. THESES AND DISSERTATIONS

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

Ambrušová D.:	Influence of NaCl concentration on production of thyramine by selected types of *Enterococcus.* (G.Greif)
Bilaničová D.:	Enzyme modifications of lactose. (V.Mastihuba)
Božiková K.:	Development of biosensor for lactulose determination in milk. (V.:Mastihuba)
Brunčáková L.:	Stability of cosmetic products with selected UV filters. (J.Hojerová)
Danišová Z.:	Isolation and characterization of new *Trichoderma* type. (J.Augustín)
Dolníková M.:	The evaluation of the methods for microbiological activity analysis in sugar factory. (A.Dandár)
Dudášová M.:	Study of an effect of citrus jelly components on its properties. (A.Burisová)
Dulebová M.:	Durability of bakery products. (L.Dodok)
Gažová Z.:	Effect of model conditions on the growth of ineligible bacteria of milk products. (M.Greifová)

Géhryová A.:	Dynamics of changes of qualitative parameters of cocoa butter during deodorization. (Š.Schmidt)
Gondová L.:	The effect of additives on the fermentation. (L.Dodok)
Greňová K.:	Contribution to validity of automatic methods for milk analysis. (M.Greifová, M.Tomáška)
Halabuková V.:	The influence of additives on rheological properties of the dough and of the final product. (L.Dodok)
Hanzelová M.:	Effect of lycopene on oxidative stability of rapeseed and sunflower oils. (Š.Schmidt)
Hesová J.:	Effect of pH on the production of polygalacturonase produced by *Aureobasidium pullulans.* (J.Augustín)
Chalupka B.:	Properties and the application of lactic acid and lactates in food industry. (L.Staruch)
Jendrichovská S.:	Effect of experimental conditions on the growth and on production of amines. (G.Greif)
Jovankovičová V.:	The influence of addition of hemicellulose isolated from buckwheat hull on the quality of wheat dough. (A.Burisová)
Kleinová M.:	Effect of selected factors on the growth and production of biogene amines *Enterobacter cloacae*. (M.Greifová)
Kukurová K.:	Preparation and analysis of lactic fermented products. (Z.Kohajdová)
Masarovičová G.:	Effect of selected unit operations on the stability of plant oils.
Purgelová M.:	The quantification of selected antioxidants in cosmetic products. (J.Hojerová)
Ščuroková B.:	Degradative changes during microwave heating of lipids. (S:Sekretár)
Široká B.:	Analytical aspects of lysine decarboxylase. (V.Mastihuba)
Stadlerová K.:	Flow properties of starch after addition of hemicellulose fraction isolated from buckwheat hulls. (A.Burisová)
Udut V.:	Modeling of raw sugar factory in Rimavská Sobota. (D.Janíček)
Volanský P.:	Analysis of amino acids and polyphosphate content in selected meat products. (L.Staruch)

B. Dissertations (PhD):

Burisová A.:	Importance and utilization of pseudocereals in food industry. (L.Dodok)
Klvanová J.:	Influence of fatty acid from diet on lipid parameters in blood and breast milk of selected groups of population. (Š.Schmidt)
Schröder D.:	Entwicklung einer Modell-Zuckerfabrik für die Slowakei unter besonderer Berücksichtigung der Kraft-Wärme-Köppelung. (A.Dandár)

C. Dissertations (DSc):

D. Habilitation Theses:

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1] Burisová A., Hromádková Z., Ebringerová A., Dandár A., Dziváková E.: Vplyv rôznych hemicelulóz na vlastnosti zemiakového a kukuričného škrobu. Effect of different hemicellulose on properties of potato and corn starches (in Slovak). Zywnosc 4, 111-114 (2002)

[2] Burisová A., Hromádková Z., Ebringerová A., Dandár A., Stadlerová K.: Analýza tokových vlastností kukuričného škrobu po prídavku hemicelulóz, izolovaných zo šupiek pohánky. Flow properties study of cornstarch after addition of hemicellulose isolated from buckwheat hulls (in Slovak). Zywnosc 4, 106-110 (2002)

[3] Dandár A., Burisová A: Effect of steeping medium composition on the separation of corn products Zywnosc 4, 114 117 (2002)

[4] Dandár A., Dandár R., Kostičová M.: Badania nad wplywem inwertu na zabarwienie roztworów cukru w pracy cukrowni. Research into the influence of invert sugar on colour of sugar solutions in sugar factory's work (in Polish). Gazeta Cukrownicza 110, 338-342 (2002)

[5] Greif G., Greifová M., Karovičová J., Kohajdová Z., Staruch L.: Effect of NaCl and pH-values to growth and production of biogenic amines by some bacteria strains. Chemické listy 96, 118-121 (2002)

[6] Greifová M., Greif G., Lešková E. Vysoký hydrostatický tlak – nová technológia pre ochranu potravín. High hydrostatic pressure – a new technology in food protection (in Slovak). Mliekarstvo, 33(4), 28-32 (2002)

[7] Greifová M., Greif G., Karovičová J., Kohajdová Z., Lukáčová D., Šutaríková K.: Evaluation of microbiological and analytical quality of sheep cheese „bryndza". Chemické listy (Symposia), 96, 156-157 (2002)

[8] Hojerová J.: Čo smie niesť označenie prírodná kozmetika ? What can be marked as a natural cosmetics (in Slovak). Slovenský Výber VI, 12, 12-13 (2002)

[9] Hozová B., Kukurová I., Turicová R., Dodok L.: Senzorická kvalita skladovaných croissantov. Sensory quality of stored croissant-type bakery products(in Slovak). Czech J. Food Sci. 20, 105-112 (2002)

[10] Hozová B., Jančovičová J., Dodok L., Buchtová V., Staruch L.: Use of transglutaminase for improvement of quality of pastry produced by frozen – dough technology. Czech J. Food Sci. 20, 215-222 (2002)

[11] Kanďárová H., Hojerová J., Jantová S.: Bezpečnosť kozmetických prostriedkov - *in vitro* metódy. Safety of cosmetic products – *in vitro* methods (in Slovak). Derma 4, 23-25 (2002)
[12] Kanďárová H., Jantová S., Hojerová J.: Alternative methods for evaluation toxicity of the cosmetic ingredients (abstract). Bratislavské lekárske listy 103, 9 (2002)
[13] Karovičová J., Kohajdová Z., Greif G.:Použitie PCA, CA, FA na hodnotenie mliečne fermentovaných zeleninových džusov. Using of PCA, CA, FA for evaluation of the lactic acid fermented vegetable juices (in Slovak). Czech J. Food Sci. 20(4), 135-143 (2002)
[14] Karovičová J., Kohajdová Z., Greifová M., Greif G., Lukáčová D.: Vplyv NaCl na produkciu organických kyselín Enterococcus faecium. Effect of NaCl on the production of organic acids by *Enterococcus faecium* (inSlovak). Bull. PV 41(1), 69-79 (2002)
[15] Karovičová J., Kohajdová Z., Šimko,P., Polonský J., Lukáčová D.: Determination of biogenic amines during lactic acid fermentation of vegetables juices. Chemické listy, (Symposia) 96, 164-165 (2002)
[16] Karovičová J., Kohajová Z., Hybenová E.: Using of Multivariate Analysis for Evaluation of Lactic Acid Fermented cabbage juices. Chem. Pap. 56 (4), 267-274 (2002)
[17] Kohajdová Z., Karovičová J., Drdák M., Greif G., Škrovánková S., Lukáčová D., Kukurová K.: Evaluation of spontaneously fermented cabbage juices by principal component analysis. Chemické listy (Symposia) 96, 123-125 (2002)
[18] Lauková D., Valík Ľ., Göner F., Schmidt Š .: Termorezistencia vegetatívnych buniek kvasinky *Candida maltosa*. Thermoresistance of *Candida maltosa* vegetative cells (in Slovak). Bulletin potravinárskeho výskumu 41 (3), 169-178 (2002)
[19] Lauková D., Valík Ľ., Görner F., Schmidt Š .: Vplyv kyseliny mliečnej na rast kvasinky *Candida maltosa*. Effect of lactic acid on the growth of a yeast *Candida maltosa*(in Slovak). Bulletin potravinárskeho výskumu 41 (2), 131-143 (2002)
[20] Mastihuba V., Kremnicky L., Mastihubova M., Willett J.L., Cote G-L. A spectrophotometric assay for feruloyl esterases. Anal. Biochem. 309 (1), 96-101 (2002)
[21] Pipek P., Jeleníková J., Hlavačková R., Malý J., Staruch L. Hodnocení účinnosti tepelného opracovaní masných výrobků (I). The evaluation of efficiency of heat treated meat products (I) (in Czech). Maso 13(2), 30 –32 (2002)
[22] Pipek P., Jeleníková J., Hlavačková R., Malý J., Staruch L. Hodnocení účinnosti tepelného opracovaní masných výrobků (II). The evaluation of efficiency of heat treated meat products II (in Czech). Maso, 13(3), 27 –30 (2002)
[23] Staruch L., Chalupka B., Sirotná Z., Németh K., Greif G.: The effect of lactic acid concentration on the growth of MO on carcass surface. Chemické listy (Symposia) 96, 186-188 (2002)

B. Conferences (*international conferences)

[1]* Augustín J.: Biopolymers of the polysacharides as active compounds available in the cosmetic. In: Proceedings of the International Conference of Cosmetology, Piešťany, Slovak Republic, October 9.-11. 2002
[2] Augustín J.: Odpadové látky a vedľajšie produkty v poľnohospodársko-potravinárskom komplexe. Wastes and by-products in agriculture and food(in Slovak). In: Proceedings of the conference "Nutrition-Foodstuffs-Legislation", Detva, Slovak Republic, June 17.-19. 2002 (lecture)
[3] Buchtová V., Dodok L., Staruch L., Chomová Ľ.: Štúdium koncentrácia aminokyselín v novom a zelenom korení. Study of aminoacids concentration in pimento and in green pepper (in Slovak). In: Proceedings of the conference "Nutrition-Foodstuffs-Legislation", Detva, June 17.-19.2002, p.160 - 163
[4] Buchtová V., Staruch L., Dodok L., Chomová Ľ.: Štúdium koncentrácie aminokyselín v bielom a čiernom korení. Study of aminoacids concentration in white and black peppers (in Slovak). In: Proceedings of the 33rd Symposia „New Trends of Food Production and Evaluation", Skalský Dvůr, Czech Republic, May 27. - 29. 2002, p.194-195
[5] Burisová A.: Nové trendy pri výrobe čokoládových a nečokoládových cukroviniek. A new trends in production of chocolate and non-chocolate confectioneries (in Slovak). Seminar, IDC Sereď, Slovak Republic, November 18.-20. 2002(lecture)
[6]* Burisová, A., Hromádková, Z., Ebringerová, A., Dandár, A., Dziváková, E.: Effect of different hemicelulose on the properties of potato and corn starches. In: Proceedings of 10th International Starch Convention, Crakow, Poland, June 11.-14. 2002, p. 101
[7]* Burisová A., Hromádková Z., Ebringerová A., Dandár A., Stadlerová K.: Flow properties study of corn starch after addition of hemicellulose isolated from buckwheat hulls. In: Proceedings of 10th International Starch Convention, Crakow, Poland, June 11.-14. 2002, p. 100
[8] Burisová A., Jovankovičová V.,Hromádková Z., Ebringerová A.: Effect of buckwheat hull hemiceluloses on bread-making quality of wheat flour. In: Proceedings of 10th Symposium on Saccharides , Smolenice, Slovak Republic, September 1.-6. 2002, p. 67
[9]* Dandár A., Burisová A.: Effect of steeping medium composition on the separation of corn products. In: Proceedings of 10th International Starch Convention, Crakow, Poland, June 11.-14. 2002, p. 190
[10]* Dandár A., Dandár R., Kostičová M.: Štúdium vplyvu invertného cukru na farbu cukrovarníckych štiav. Effect of invert sugar on the colour of sugar juice (in Slovak). In: Proceedings of the conference "Postep techniczny v cukrównictwe", Warszawa, Poland, 2002, p. 12 (lecture)
[11] Dodok L.: Charakterizácia vybraných aditív v cereálnych technológiách. Characteristics of selected additives in cereal technologies (in Slovak). Seminar, IDC Sereď, Slovak Republic, November 18.-20. 2002 (lecture)
[12] Dodok L., Buchtová V., Hozová B., Staruch L., Šiška R.: Moderné trendy pri výrobe pečiva. Modern trends in rolls production (in Slovak). In: Proceedings of the 33rd Symposia „New Trends of Food Production and Evaluation", Skalský Dvůr, Czech Republic, May 27. - 29. 2002, p. 40
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[14]* Dolníková M., Dandár A., Kopecký J.: Skúsenosti s použitím biocídu SUCAZUR v cukrovare Trnava. Skills with biocide SUCAZUR in sugar factory Trnava (in Slovak). In: International Conference of Sugar Technology, Luhačovice, Czech Republic, February 2002(lecture)
[15]* Francisciová E., Hojerová J., Purgelová M.: Metóda stanovenia syntetických fenolických antioxidantov v kozmetických prostriedkoch. Determination of synthetic phenolic antioxidants in cosmetic products (in Slovak). In: Proceedings of International Conference of Cosmetology, Piešťany, Oct. 2002, p.89-92 (lecture)

[16] Golian J., Majtán M., Staruch L.: Obsah kadmia a olova vo vybraných druhoch údeného bravčového mäsa.Content of Cd and Pb in selected sorts of smoked pork (in Slovak). In: Proceedings of the conference "Nutrition-Foodstuffs-Legislation", Detva, Slovak Republic, June 17.-19. 2002, p. 243 - 246
[17] Golian J., Majtán M., Staruch L.: Obsah toxických prvkov - kadmia a olova v mäsových nátierkach. Content of Cd and Pb in meat spread (in Slovak). In: Proceedings of the conference "Nutrition-Foodstuffs-Legislation", Detva, Slovak Republic, June 17.-19. 2002, p. 151 - 153
[18] Golian, J., Pavelka, M., Staruch, L., Zeleňáková, L.: Zhodnotenie fyzikálno-chemických ukazovateľov salámy "Nitran" a "Bratislavská".Evaluation of physical and chemical parameters of "Nitran" and "Bratislavská" salami (in Slovak). In: Proceedings of conference "Nutrition and Foods for 3rd Millennium", Nitra, Slovak Republic, April 24. – 25. 2002, p. 109 – 112
[19]* Greif G., Greifová M., Karovičová J., Kohajdová Z., Staruch L.: Effect of NaCl and pH-values to growth and production of biogenic amines by some bacteria strains. In: 2nd Meeting of Chemistry & Life. Brno, Czech Republic, Sep. 10. – 11. 2002 (lecture)
[20]* Greifová M., Greif G., Karovičová J., Kohajdová Z., Lukáčová D., Šutaríková K.: Evaluation of microbiological and analytical quality of sheep cheese „bryndza". In: 2nd Meeting of Chemistry & Life, Brno, Czech Republic, Sep. 10-11, 2002 (poster)
[21] Jeleníková J., Pipek P., Staruch L.: Použitie niektorých postupov pre zjemňovanie mäsa. Using of some methods for meat refining (in Slovak). In: Proceedings of the conference "Nutrition-Foodstuffs-Legislation", Detva, Slovak Republic, June 17.-19. 2002, p.132 – 139
[22]* Kanďárová H., Hojerová J., Jantová S.: Bezpečnosť kozmetických prostriedkov - alternatívne metódy pre hodnotenie očnej a kožnej iritácie. Safety of cosmetic products – the alternative methods for evaluation of eye and skin irritations (in Slovak). In: Proc. Internat.Conference of Cosmetology, Piešťany, Oct. 2002, pp.73-75 (lecture)
[23] Kanďárová H., Jantová S., Hojerová J.: Alternatívne metódy hodnotenia toxicity kozmetických surovín. Alternative methods of toxicity evaluation of cosmetic raw materials (in Slovak). In: Proceedings of 7th Slovak – Czech Conference of Toxicology, Martin, Slovak Republic,June 2002, p.37 (lecture)
[24] Karamonová L., Fukal L., Rauch P., Greifová M., Brett G.,M., Wyatt G., M.: Specific detection of Listeria monocytogenes by means of enzyme immunoassay and dipstick technology. In: Proceedings of XVIII. Biochemical Meeting, Stará Lesná, Slovak Republic, September 10.-13. 2002, p. 388
[25]* Karovičová J., Kohajdová Z., Šimko P., Polonský J., Lukáčová D.: Determination of biogenic amines during lactic acid fermentation of vegetables juices. In: 2nd Meeting of Chemistry and Life, Brno, Czech Republic, September 10. - 11. 2002
[26]* Kohajdová Z., Karovičová J., Drdák M., Greif G., Škrovánková S., Lukáčová D., Kukurová K.: Evaluation of spontaneously fermented cabbage juices by princiapal component analysis. In: 2nd Meeting of Chemistry & Life, Brno, Czech Republic, September 10. – 11. 2002 (lecture)
[27] Kuniak Ľ., Sekretár S.: Pleuran - imunomodulačný beta-1,3-glukan z hlivy ustricovitej. Pleuran – imunomodulative beta-1,3-glucane from *Pleurotus ostreatus* (in Slovak). In: Proceedings of the Conference "Chemistry in 3rd Millennium", Bratislava, Slovak Republic, February 12.-13. 2002, p. 91-92
[28] Lauková D., Valík Ľ., Schmidt Š., Gorner F.: Effect of lactic acid and temperature on growth dynamics of Candida maltosa. In.: Proceedings of 30th Conference about yeasts, Smolenice, Slovak Republic, May 29.-31. 2002, p. 106
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C. Books and Textbooks

[1] Dandár A., Konôpka J.: Prof Ing. Dr.h.c. Miroslav Stolina, DrSc. - významná osobnosť slovenského lesníctva. Miroslav Stolina – well-known personality in Slovak forestry (in Slovak). Slovenská spoločnosť pri SAV, Bratislava, 99pp. (2002)

[2] Dodok L.: 1. Pšeničná múka, 2. Sladidlá, 3. Výroba oblátok. In: Kolektív: Cukrárska Technológia. Prompt, Bratislava, 2002, 240s.

[3] Dodok L. (rec): Příhoda,J., Pekařská technologie. Praha, Podnikatelský svaz pekařů a cukrářů v ČR 2002. s.300.

[4] Dodok L. (rec): Kolektív, Technológia pekárskej výroby. Bratislava,Prompt 2002. s.280.

[5] Horáková K., Mastihuba V. (ed.) INCO Copernicus News, Issue 4, January 2002, STU Press, Bratislava. 12p (2002)

[6] Janitor A., Dandár A.: Bulletin Slovenskej spoločnosti pre poľnohospodárske, lesnícke, potravinárske a veterinárne vedy pri SAV v Bratislave. Bulletin of Slovak Society of Agricultural, Forestry, Food and Veterinary Sciences (in Slovak). Slovenská spoločnosť pri SAV, Bratislava, 29pp. (2002)

E. Other activities

[1] Mastihuba V., Bilaničová D. ZoD 170/02, Q-Chem

[2] Mastihuba,V.: INCO Copernicus PL 979012 „Rapid, specific detection of Listeria monocytogenes by antibody-based techniques and on-line sensor technology; development of improved control of food safety for industry and the consumer". http://listeriainco.tripod.com/

[3] Sekretár S., Kuniak Ľ., Horváthová A.: Výroba 1,3-beta glukánu. ZoD 130/02. Pleuran.s.r.o. Bratislava 2002

[4] Sekretár S., Kuniak Ľ., Horváthová A.: Výroba 1,3-beta glukánu. ZoD 184/02. Pleuran.s.r.o. Bratislava 2002

[5] Sekretár S., Kuniak Ľ., Horváthová A.: Výroba 1,3-beta glukánu. ZoD 36/02. Pleuran.s.r.o. Bratislava 2002

[6] Sekretár S., Schmidt Š., Niklová I.: Prírodné antioxidanty pre jedlé tuky a oleje. Natural antioxidants for edible lipids and oils (in Slovak). In: Proceedings of the Conference Chemistry in 3rd Millennium, Bratislava, Slovak Republic, February 12.-13. 2002, p 93-96

[7] Sekretár, S., Kuniak, Ľ.: Výroba 1,3-beta glukánu. ZoD 200/02. NISSIMA Handelsges, Viedeň 2002

[8] Staruch L. ZoD 137/02. Cementáreň Ladce

[9] Staruch L. ZoD 177/02. KuK Slovakia, a.s.

[10] Staruch L.: Kurz HACCP v zariadeniach spoločného stravovania. Course of HACCP in canteens. Bratislava, FCHPT, Slovak Republic, October 17. - 18. 2002

[11] Staruch L.: Výskyt a charakteristika BSE. Occurencce and characteristics of BSE (in Slovak), Ladce, Slovak Republic, September 2002 (lecture)

DEPARTMENT OF GRAPHIC ARTS TECHNOLOGY AND APPLIED PHOTOCHEMISTRY

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Research Fellows:
Alžbeta Blažková, PhD (till 15.6.2002); Zuzana Jakubíková; Juraj Kindernay; Milena Reháková, PhD

PhD Students:
František Belányi; Erika Hrehorová (from 1.10.2002); Ivana Lörinczová

Technical Staff:
Mária Bardúnová; Alena Dušeková (till 30.9.2002); Martin Kovalčík

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories

Laboratory of Printing Technology
Laboratory of Photochemistry and Photography
Laboratory of Optical Spectroscopy and Photometry
Laboratory of Thin Films and Plasma Technology
Laboratory of Rheology

III. TEACHING

A. Undergraduate Study

6th Semester (spring)		
Paper and Print, Graphic Arts	(2-2 h)	Krkoška, Panák
Term Project	(0-4 h)	Blažková, Čeppan, Dvonka, Havlínová, Jančovičová, Mikula, Panák, Reháková
7th Semester (autumn)		
Colloids Systems and Interfaces	(2-1 h)	Bakoš, Reháková
Polymer and Paper Physics	(0-2 h)	Jančovičová
Photochemistry and Photography I.	(2-1 h)	Čeppan, Reháková
Surface and Thin Film Technology	(2-0 h)	Mikula
Advanced Laboratory Course I.	(0-9 h)	Havlínová, Jančovičová, Mikula, Reháková
Typography and Text Processing	(0-2 h)	Dvonka
8th Semester (spring)		
Photochemistry and Photography II.	(2-0 h)	Čeppan
Printing Technology I.	(2-0 h)	Panák
Advanced Laboratory Course II.	(0-7 h)	Čeppan, Dvonka, Havlínová, Jančovičová, Lörinczová
Planning for Printing Production	(0-2 h)	Panák, Dvonka
9th Semester (autumn)		
Printing Technology II.	(2-0 h)	Panák
Repronic	(1-3 h)	Mikula, Dvonka
Advanced Laboratory Course III.	(0-10 h)	Čeppan, Dvonka, Havlínová, Jakubíková, Jančovičová, Mikula, Panák, Reháková

IV CURRENT RESEARCH PROJECTS

A. Properties of Materials, Constituents and Structures of Printed Images on Polymeric Substrates (Michal Čeppan)

Development and implementation of the methods of imaging photometry and image analysis of printed images structures on polymeric substrates. Development of method for accelerated light ageing of paper, printing inks, and prints using metal-halogen and fluorescent lamps. Construction of laboratory system for accelerated light ageing using metal-halogen and fluorescent lamps, its basic characterization and calibration. Evaluation of methods and mechanisms of printing inks conservation against ageing and attaining new knowledge about relation between various types of paper and inks during ageing of graphic structures on polymeric substrates. Study of influence of fountain solution composition and amount of emulsified fountain solution on rheological properties of offset printing inks. Explaining the influence of printing inks on the emulsions printing ink – fountain solution.

B. Preparation and modification of thin surface layer properties of image-generating structures and their substrates (Milan Mikula)

New type of atmospheric surface discharge treatment of polymer foil substrates considering printability, metalization, lamination, adhesion, mechanical and optical properties of this system in comparison with still-in-use barrier discharge ("corona"). New polymers and copolymers preparation by means of photoinitiated polymerization in thin layers with wanted physical and chemical properties. New information about photochemical reactions of selected photopolymer systems. Photochemical modification of water-soluble based polymers layers, changing their hydrophilic, optical and permeation properties with reference to the imaging technology.

C. Study of selected problems of colour printing on flexible packagings (Michal Čeppan)

Adhesive laminating of flexible packaging materials changes gloss and overall appearance of the printed structures. Existence of thin metallic layer and primer interface cause significant and frequently unexpected and not easily predictable colour shifts of prints. The goal of project was to map in the terms of colour difference overall color changes of rotogravure prints on flexible packaging material caused by adhesive laminating by alumina foil. Determination and interpretation of dot gain effects along the technology flexographic printing process.

D. Study of optical, structural and electric properties of amorphous (a-Si:H, a-SiGe:H) Semiconductors after their interactions with plasma particles and/or ion beams (Emil Pinčík, Milan Mikula)

Experimental and theoretical study. Optical absorption properties of semiconductor layers with different defects in bandgap. Thin dielectric blocking layers of SiO_2, Si_3N_4 and interfaces, their properties towards the effective solar cell production on the base of amorphous silicon.

E. The study and the assessment of the colour stability of printing paper packings (Milena Reháková, Michal Čeppan)

This research-applicative project solves some problems in the colour packing printing technology. Coming to the point those are: the study of the optical properties of selected folding paperboard, the following of effect of the selected paperboards whiteness to the colour of full-colour offset prints, the determination of the total colour difference of prints before and after the varnishing – following of effect of varnishing to the colour shift and the assessment of production printing stability in selected printing machines.

F. Cost effective encapsulation systems (Milan Mikula)

Development of new, material saving, energy saving, automated and cost effective encapsulation systems and processes for thin film solar cells. Structural analyses of multilayer system based on polymer foil substrate and inorganic and polymeric layers. The quality of interfaces and their role in adhesion and long term stability of the system. The study of the barrier properties against the permeation of oxygen and water vapour, the permeation mechanism water through inorganic and organic barrier layers. Ageing of the barrier properties. Detailed physical and chemical analyses of the high barrier layer system.
This project is supported by 5 Framework Program of European Commission.

V. COOPERATION

A. Cooperation in Slovakia

Chemosvit, Svit
Concordia Printing House, Bratislava
Printing House BB, Banská Bystrica

B. International Cooperation

Printing House Model Opava, Czech Republic
Colour rendition in printing on paperboard packagings
Technical University Brno, Faculty of Chemistry, Czech Republic
- Photochemical properties of light sensitive layers
Université de Haute Alsace, Mulhouse, France
- Highspeed UV-curing reaction of waterbased UV-curable clearcoats
Fraunhofer Institute Process Engineering and Packaging (IVV), Freising, Germany and Fraunhofer Institute for Silicate Research, Wurzburg, Germany
- Cooperation within the research project of 5 framework program of EC, development and investigation of water and gas barrier layers deposited on flexible foils as PET, PP

C. Membership in Domestic Organizations and Societies

Slovak Union for Industrial Chemistry, Bratislava (M. Čeppan, B. Havlínová, M. Mikula, J. Panák, V. Dvonka, J. Fedák,

V. Jančovičová, J. Kindernay, M. Reháková, I. Lörinczová)

D. Membership in International Organizations and Societies

European Photochemistry Association	(M. Čeppan)
International Society of Imaging Science and Technology, Springfield, USA	(M. Čeppan)
Graphic Arts Technical Foundation, Sewickley, USA	(M. Čeppan)

F. International Scientific Programmes

1. 5th Framework of EC
NAS-HIPROLOCO ENK5-CT-2000-00325 High productivity and low cost for the encapsulation of thin film solar cell
Responsible at STU: Milan Mikula
Coordination institution: Isovolta, Wiener Neudorf, Austria
Partners: Fraunhofer Institute Process Engineering and Packaging, Freising, Germany and Fraunhofer Institute for Silicate Research, Wurzburg, Germany and 5 other partners from EU)
Duration of the project: September 2002 – September 2004

G. Visitors from abroad

Prof. Ľubomír Lapčík	Brno University of Technology, Czech Republic, June 2002 (2 days)
Prof. Marie Kaplanová	University of Pardubice, Czech Republic, June 2002 (2 days)
Assoc. Prof. Michal Veselý	Brno University of Technology, Czech Republic, June 2002 (2 days)

H. Visits of Staff Members and PhD Students to Foreign Institutions

B. Havlínová	State Central Archives in Prague, Czech Republic, March 2002 (4 days)
M. Čeppan, M. Reháková	Model Obaly Opava, Czech Republic, March 2002 (1 day)
M. Čeppan	University of Pardubice, Czech Republic, April 2002 (2 days)
M. Čeppan	Brno University of Technology, Czech Republic, May 2002 (1 day)
M. Čeppan	University of Pardubice, Czech Republic, June 2002 (2 days)
M. Čeppan	Brno University of Technology, Czech Republic, June 2002 (3 days)
I. Lörinczová	Université de Haute Alsace, Mulhouse, France, September-December 2002 (4 months)
M. Čeppan, M. Mikula, B. Havlínová, V. Jančovičová	2nd Meeting of Chemistry & Life, Brno University of Technology, Czech Republic, September 2002 (2 days)
M. Čeppan, M. Reháková	Model Obaly Opava, Czech Republic, October 2002 (1 day)
M. Čeppan, M. Mikula	Alcan, Neuhausen, Switzerland, October 2002 (2 days)
V. Jančovičová	X-Rite, Pardubice, Czech Republic, October 2002 (1 day)
M. Čeppan	Seminár Fototechnika, Rožňov pod Radhoštem, Czech Republic, October 2002 (3 days)

VI. THESES AND DISSERTATIONS

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

Ciglanová K.:	Study of rheological properties of newsprint offset inks (J. Panák)
Csomorová M.:	Study of accelerated ageing of printed paper substrate (B. Havlínová)
Fábry J.:	Preparation of photochemically active derivatives of watersoluble polymers (V. Jančovičová)
Hodulíková M.:	Study of colour stability of printed paper packings (M. Reháková)
Hudáková Ľ.:	Study of screen tone value transfer on polymer foils in flexography (M. Mikula)
Chúťková M.:	Photochemical modication of polymeric layers (V. Jančovičová)
Ľach T.:	Study of colour shift of laminated printed flexible foils (M. Čeppan)
Macová A.:	Study of surface properties of discharge treated polypropylene foils for purposes in press (M. Mikula)
Macháčková L.:	Preparation of thinlayered surface films by photoiniciated polymerization (A. Blažková)
Michlíková S.:	Damping in lithography (J. Panák)
Račková K.:	Study of accelerated light ageing of printed matter (M. Reháková)
Smetanová L.:	Print gradation and formation of ICC profile of gravure printing machine (M. Čeppan, Ľ. Šebela)
Valentín M.:	Spectral and colourimetric modeling of colour reproduction in press (M. Čeppan)
Vrbičanová M.:	Study of recording dye stability on paper support during unnatural ageing (B. Havlínová)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Belányi F., Havlínová B., Brezová V., Mináriková J.: The stability of printing inks on paper upon ageing. Chem. Listy, Symposia 96, S57-59 (2002)

[2] Blažková, A., Burda, V., Jančovičová, V., Lörinczová, I., Reháková, M.: Štúdium fotopolymerizačných reakcií zmesí akrylátových monomérov a oligomérov. Study of photopolymeric reactions of acrylate monomers and oligomers mixtures (in Slovak). Ropa, uhlie, plyn a petrochémia 44, 20-24 (2002)

[3]* Čeppan M., Fedák J., Dvonka V., Belányi F., Veselý M.: Principal component reconstruction of spectra sets of color prints. Chem. Listy, Symposia 96, S19-24 (2002)

[4] Čeppan, M., Kosorín, M., Mikula, M., Pitoňák, M.: Roznica barw nadrukow opakowan gietkich. Printing colour difference in flexible packaging (in Polish) . Opakowanie 47, 4-7 (2002)

[5]* Hanus J., Mináriková J., Havlínová B.: Evaluation of records permanence produced by several types of printers. Chem. Listy, Symposia 96, S71-74 (2002)

[6] Hanus, J., Mináriková, J., Havlínová, B.: Vyhodnotenie stálosti čierno-bielych záznamov ihličkových, inkjetových a laserových tlačiarní. Stability evaluation of black and white records printed on matrix, ink-jet and laser printers (in Slovak). Slovenská archivistika 37, 132-148 (2002)

[7]* Havlínová B., Babiaková D., Brezová V., Ďurovič M., Novotná M., Belányi F.: The stability of offset inks on paper upon ageing. Dyes and Pigments 54, 173-188 (2002)

[8] Havlínová, B., Brezová, V., Belányi, F., Szeiffová, G.: Ktorý papier je vhodný na archiváciu dokumentov? Štúdium urýchleného starnutia papiera. Which paper is suitable for document archiving? Study on accelerated ageing of paper (in Slovak). Papír a celulóza 57, 338-342 (2002)

[9]* Havlínová B., Brezová V., Horňáková Ľ., Mináriková J., Čeppan M.: Investigations of paper ageing - a search for archive paper. J. Mat. Sci. 37, 303-308 (2002)

[10]* Jančovičová V., Brezová V., Ciganek M., Halabicová M.: Photodecomposition of diaryliodonium salt upon 325 nm illumination investigated by spectral methods. Chem. Listy, Symposia 96, S74-76 (2002)

[11]* Jančovičová V., Blažková B., Lörinczová I., Jakubíková Z.: Photoinitiated polymerization of a vinyl ether monomer. Chem. Listy, Symposia 96, S34-37 (2002)

[12]* Kindernay J., Blažková A., Rudá J., Jančovičová V. Jakubíková Z.: Effect of UV light source intensity and spectral distribution on the photopolymerisation reactions of a multifunctional acrylated monomer. J. Photochem. Photobiol. A: Chem. 151, 229-236 (2002)

[13]* Kopáni M., Mikula M., Jergel M., Falcony C., Ortega L., Pinčík E.: About an influence of Ar ion beam of very low energy on a-Si:H properties. Vacuum 67, 149-153 (2002)

[14]* Mikula M., Čeppan M., Kindernay J.: Multiangle colorimetry and gloss of printed papers. Chem. Listy, Symposia 96, S47-49 (2002)

[15]* Zmeškal O., Nežádal M., Buchníček M., Čeppan M.: Fractal analysis of printed structures. J. Imag. Sci. Technol. 46, 453-456 (2002)

B. Conferences (*international conferences)

[1]* Buc D.*, Kwok D., T., K., Mikula M., Shum P., W., Lo K.,C., Fu R., K., Y., Ho H., P., Li I., K., Z., Chu P., K., Helmersson U.: Properties of reactive magnetron sputtered ruthenium oxide thin films before and after plasma immersion ion implantation of nitrogen. In: Proceedings of 12th International Conference on Thin Films, Bratislava, Slovakia, September 15-20. 2002, p. 139-140

[2] Jakuczevicz S., Panák J.: Elektrografická personalizácia ofsetových tlačovín. Electrographic personalization of offset printed matter (in Slovak). In: Lecture Book Printing forum, Bratislava, Slovakia, October 3. 2002, p. 3-11

[3]* Mikula M.*, Jakubíková Z., Zahoranová A.: Surface and adhesion changes of barrier discharge treated polypropylene in air and nitrogen. In: Proceedings of the 3th International Conference on Solid State Surfaces and Interfaces, Smolenice, Slovakia, November 19.-21. 2002, p. 90-91

C. Books and Textbooks

[1] Panák J., Čeppan M., Dvonka V., Karpinský Ľ., Kordoš P., Mikula M., Jakucewicz S.: Poligrafia, procesy i technika. Graphic arts, processes and technics (in Polish). COBRPP, Warszawa. 278 pp. (2002)

DEPARTMENT OF INFORMATION ENGINEERING AND PROCESS CONTROL

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Associate Professors:
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Assistant Professors:
Ľuboš Čirka; Mária Karšaiová, PhD; Magdaléna Ondrovičová; Anna Vasičkaninová; Anna Zemanovičová, PhD;

PhD students:
Anton Andrášik; Ľubomír Šperka;

Technical staff:
Lukáš Dermíšek; Eva Fuseková; František Jelenčiak; Andrea Kalmárová; Stanislav Vagač;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Laboratory of Process Control
Laboratory of Measuring Instruments and Techniques
Laboratory of Gas Analysis
Computer Laboratory

B. Research Laboratories:

Laboratory of Chemical Reactor Analysis and Control
Laboratory of Biochemical Process Analysis and Control
Laboratory of Distillation Column Analysis and Control
Laboratory of Modelling and Simulation
Laboratory of Computer Aided Design (Siemens – SIMATIC S-7 300)

III. TEACHING

A. Undergraduate Study

2nd semester (spring)		
Informatics	(1-2 h)	Jelenčiak, Ondrovičová, Šperka, Vasičkaninová
5th semester (autumn)		
Computer Based Data Processing	(0-2 h)	Čirka, Karšaiová, Ondrovičová, Vasičkaninová
6th semester (spring)		
Automatic Control Fundamentals	(2-0 h)	Bakošová, Fikar
Laboratory Exercises of Automatic Control Fundamentals	(0-2 h)	Andrášik, Bakošová, Danko, Fikar, Karšaiová, Mészáros, Ondrovičová, Vasičkaninová
Bachelor projects	(0-4 h)	Bakošová, Danko, Mikleš, Ondrovičová, Zemanovičová
7th semester (autumn)		
Process Control	(1-2 h)	Mészáros
Process Dynamics	(2-0 h)	Bakošová
Operating Systems	(1-1 h)	Fikar
Control Devices and Systems	(2-1 h)	Danko
Computer Programs	(1-2 h)	Fikar
Laboratory Projects	(0-8 h)	Bakošová, Čirka, Fikar, Karšaiová
8th semester (spring)		
Optimisation	(2-1 h)	Dvoran
Control Theory I	(2-2 h)	Čirka, Mikleš
Laboratory Exercises of Control Theory I	(0-2 h)	Mikleš
Experimental Identification	(2-0 h)	Fikar, Mikleš
Laboratory Project II	(0-6 h)	Čirka, Danko, Dvoran, Mészáros

Modelling and Control of Polymerisation Processes	(2-2 h)	Dvoran
Process Dynamics	(2-0 h)	Bakošová
Laboratory Exercises of Process Dynamics	(0-1 h)	Bakošová

9th semester (autumn)

Control Theory II	(2-0 h)	Mészáros
Laboratory Exercises of Control Theory II	(0-2 h)	Mészáros
Intelligent Control Systems	(2-0 h)	Dvoran
Semestral Project	(0-10 h)	Dvoran, Karšaiová, Mészáros, Mikleš, Ondrovičová
CAD Systems	(2-0 h)	Karšaiová
Industrial Applications of Process Control	(2-0 h)	Mikleš
Control of Technological Processes	(1-2 h)	Bakošová, Vasičkaninová

10th semester (spring)

Diploma Theses		Bakošová, Dvoran, Mészáros, Mikleš, Ondrovičová

B. PhD Study

Topics in Control Theory	(2 h)	Mikleš
Software and Hardware of Control Systems	(2 h)	Danko
Intelligent Control Systems	(2 h)	Dvoran
Modelling and Simulation of Processes	(2 h)	Mészáros

IV. CURRENT RESEARCH PROJECTS

A. Development of advanced control methods for chemical reactors, distillation columns and other plants in chemical and food technology (Ján Mikleš)

The main goals of the project can be formulated in the following items:

- To derive mathematical models of chemical and biochemical processes: an exothermic reactor for decomposition of H_2O_2, a tray distillation column and a stuffed distillation column for separation of binary mixtures, a warm-air drying chamber, a biochemical reactor.
- To develop methods and algorithms for system identification: closed-loop identification, identification based on artificial neural network, identification of physical system parameters from measured data.
- To investigate modern optimisation methods and algorithms for nonlinear high-order systems, especially for distillation columns and biochemical reactors.
- To investigate robust stabilisation and robust feedback control of multivariable systems.
- To develop adaptive control methods and adaptive control algorithms for systems of the chemical and food technology.
- To include principles of artificial intelligence (expert systems, fuzzy control, neuro-fuzzy control, artificial neural networks) into control structures for chemical processes.
-To investigate the predictive control method and to create control algorithms based on the Youla-Kučera parameterization for solving unconstrained or constrained control problems.
- To verify all theoretical results on laboratory models chemical processes.
- To transform theoretical and experimental results into industrial conditions and to demonstrate benefits and advantages of advanced process control in chemical and food industry.

The most important results of the project are following:

- control vector parameterization method-based optimal control algorithm for an industrial depropanizer,
- closed-loop identification method using the Youla-Kučera parameterization,
- LQ deterministic control algorithm with the Youla-Kučera parameterization of controller,
- robust static output feedback controller using linear matrix inequalities approach for control of chemical reactors,
- decentralized adaptive control algorithm for control of MIMO systems based on external model of the controlled system and principles of decomposition and decentralization,
- identification toolbox IDTOOL for MATLAB/Simulink which can be used for teaching and research purposes and for real-time control.

B. Adaptive and intelligent control strategies for processes of chemical/biochemical technology (Alojz Mészáros)

The main goals of the project can be listed as follows:

- Design of a new predictive, intelligent control strategy on basis of ANN, (the PID-ANN-P algorithm), and its simulation for linear and non-linear systems.
- Design of a new robust, intelligent control strategy on basis of ANN (the PID-ANN-R algorithm), and its simulation for linear and non-linear systems; without as well as in presence of noise and disturbances; without as well as with constraints on control.
- Testing the PID-ANN-R procedure on non-linear models of chemical processes.
- Design of adaptive λ-tracking control and its verification for non-linear SISO and MIMO systems.
- Implementation of control algorithms introduced using ANN (the PID-ANN, PID-ANN-P and PID-ANN-R algorithms) to computer control of laboratory fermenter LF-3; testing performance for real physical circumstances
- Implementation of control algorithms derived on basis of λ-tracking policy to direct computer control of laboratory distillation column.
- Computer control of laboratory distillation column using adaptive predictive approaches involving low order concentration

gradient models.
- Selection of the most „successive“ algorithm from the methods proposed and its transformation into software module, suitable for industrial control application.

Original results obtained in the frame of the project are:
- adaptive intelligent PID controller using artificial neural networks (PID-ANN algorithm),
- robust intelligent controller using artificial neural networks (PID-ANN-R algorithm),
- continuous-time and discrete-time adaptive lambda-tracker for control of SISO or MIMO nonlinear chemical processes,
- ANN-based control system for data acquisition and control of a laboratory fermenter.

V. COOPERATION

A. Cooperation in Slovakia

Department of Automatic Control Systems, Faculty of Electrical Engineering and Information Technology, Slovak University of Technology, Bratislava
Department of Automation and Control, Faculty of Electrical Engineering and Information Technology, Slovak University of Technology, Bratislava
Department of Automation and Measurement, Faculty of Mechanical Engineering, Slovak University of Technology, Bratislava
Institute of Informatics, Slovak Academy of Sciences, Bratislava
Department of Cybernetics and Artificial Intelligence, Faculty of Electrical Engineering and Informatics, Technical University of Košice, Košice
Department of Management and Control Engineering, BERG Faculty, Technical University of Košice, Košice
Siemens, Inc., Bratislava
ProCS, Ltd., Šaľa

B. International Cooperation

Department of Process Control and Computer Techniques, Faculty of Chemical Technology, University of Pardubice, Pardubice, Czech Republic
- Control system design
- Modelling and control of distillation columns

Department of Computing and Control Engineering, Institute of Chemical Technology, Prague, Czech Republic
- Control of biochemical reactor

Department of Control Theory, Institute of Information Technologies, Tomas Bata University, Zlín, Czech Republic
- Adaptive control
- Robust control
- Decentralized control

Institute of Information Theory and Automation of the Academy of Sciences of the Czech Republic, Prague, Czech Republic
- Adaptive control
- Predictive control

Trnka Laboratory for Automatic Control, Faculty of Electrical Engineering, Czech Technical University, Prague, Czech Republic
- Adaptive control
- Predictive control

LSGC-CNRS, Ecole Nationale Superieure des Industries Chimiques (ENSIC), Nancy, France
- Dynamic optimisation of distillation columns
- Waste-water treatment plants

Ecole Nationale Superieure des Ingenieurs de Genie Chimique-Chemin de la Loge (ENSIGC), Toulouse, France
- Neural networks
- Predictive control

Ruhr University, Bochum, Germany
- Closed-loop identification
- Predictive control

Technical University of Budapest, Budapest, Hungary
- Modelling of chemical processes

Technical University of Vienna, Vienna, Austria
- Optimisation of combustion processes

University of Porto, Porto, Portugal
- Neural networks

C. Membership in Domestic Organisations and Societies

Slovak Society of Cybernetics and Informatics, Bratislava	(A. Mészáros, J. Mikleš)
Slovak Society of Chemical Engineering, Bratislava	(M. Bakošová, J. Danko, J. Dvoran, M. Fikar, M. Karšaiová, A. Mészáros, J. Mikleš, M. Ondrovičová, A. Zemanovičová)
Slovak Union of Industrial Chemistry, Science-Technical Society, Bratislava	(M. Bakošová, J. Danko, J. Dvoran, M. Fikar, M. Karšaiová, A. Mészáros, J. Mikleš, M. Ondrovičová, A. Vasičkaninová, A. Zemanovičová)

D. Membership in International Organisations and Societies

International Federation of Automatic Control,

Laxenburg, Austria	(J. Mikleš)
European Federation of Biotechnology, Frankfurt, Germany	(A. Mészáros)
The New York Academy of Sciences, New York, USA	(A. Mészáros)

E. International Scientific Programmes

1. LEONARDO
   No. RO/00/B/F/PP141028, Eurocompetencies Transfer in Vocational Guidance for Young Specialists in Bioscience Field
   Coordinator at the FCFT STU: V. Báleš
   Coordinator of the project: University Politehnica, Bucharest, Romania;
   Participants: Ost European Centrum, University Hohenheim, Germany; Romanian Society of Biotechnology and Bioengineering, Bucharest, Romania; Research Institute for Chemistry, Bucharest, Romania; University Politehnica, Bucharest, Romania; Pluri Consultants SRL, Bucharest, Romania; University of Agronomic Sciences and Veterinary Medicine, Bucharest, Romania; CERA Foundation, Bucharest, Romania; Department of Chemical and Biochemical Engineering, Faculty of Chemical and Food Technology, Slovak University of Technology, Bratislava, Slovakia; Department of Information Engineering and Process Control, Faculty of Chemical and Food Technology, Slovak University of Technology, Bratislava, Slovakia; Natural Resources Institute, University of Greenwich, Greenwich, Great Britain;
   Period: November 2000 – November 2003
2. Project of Slovak – Czech Scientific Cooperation
   No. 112/189 Moderné metódy riadenia procesov chemických a potravinárskych technológií (Advanced Control Methods for Processes of Chemical and Food Technologies)
   Coordinator at the FCFT STU: J. Mikleš
   Participants: Department of Information Engineering and Process Control, Faculty of Chemical and Food Technology, Bratislava, Slovakia; Department of Process Control and Computer Techniques, University of Pardubice, Pardubice, Czech Republic
   Period: January 2002 – December 2003

F. Visitors from Abroad

F. Dušek	University of Pardubice, Pardubice, Czech Republic, June 2002 (2 days)
D. Honc	University of Pardubice, Pardubice, Czech Republic, June 2002 (2 days)
J. Kotyk	University of Pardubice, Pardubice, Czech Republic, June 2002 (2 days)
J. Macháček	University of Pardubice, Pardubice, Czech Republic, June 2002 (2 days)
Prof. V. Kučera	Czech Technical University, Prague, Czech Republic, June 2002 (1 day)
Prof. I. Taufer	University of Pardubice, Pardubice, Czech Republic, June 2002 (2 days)
Prof. I. Taufer	University of Pardubice, Pardubice, Czech Republic, November 2002 (4 days)

G. Visits of Staff Members and PhD Students to Foreign Institutions

A. Andrášik	University of Porto, Porto, Portugal, September-November 2002 (3 months)
M. Bakošová	University of Pardubice, Pardubice, Czech Republic, February 2002 (1 day)
M. Bakošová	University of Pardubice, Pardubice, Czech Republic, April 2002 (1 day)
M. Bakošová	Scientific - Technical Conference Process Control 2002, Kouty nad Desnou, Czech Republic, June 9-12, 2002
M. Bakošová	Tomas Bata University, Zlín, Czech Republic, June 2002 (1 day)
M. Bakošová	International Congress of Chemical and Process Engineering CHISA 2002, Prague, Czech Republic, August 25-29, 2002
Ľ. Čirka	Scientific - Technical Conference Process Control 2002, Kouty nad Desnou, Czech Republic, June 9-12, 2002
Ľ. Čirka	Czech Technical University, Prague, Czech Republic, September 2002 (12 days)
J. Dvoran	University of Pardubice, Pardubice, Czech Republic, November 2002 (2 days)
M. Fikar	LSGC/ENSIC Nancy, France, January-February 2002 (2 months)
M. Fikar	Scientific - Technical Conference Process Control 2002, Kouty nad Desnou, Czech Republic, June 9-12, 2002
M. Fikar	IFAC World Congress, Barcelona, Spain, July 21-26, 2002
M. Fikar	University of Pardubice, Pardubice, Czech Republic, November 2002 (2 days)
M. Karšaiová	Scientific - Technical Conference Process Control 2002, Kouty nad Desnou, Czech Republic, June 9-12, 2002

A. Mészáros	Tomas Bata University, Zlín, Czech Republic, January 2002 (1 day)
A. Mészáros	Asian Control Conference, Singapore, Malaysia, September 25-27, 2002
A. Mészáros	University of Veszprem, Veszprem, Hungary, June 2002 (2 days)
A. Mészáros	University of Greenwich, Greenwich, Great Britain, October 2002 (5 days)
J. Mikleš	Conference on Industrial Applications of Complex Control and Processing, Düsseldorf, Germany, May 16-19, 2002
J. Mikleš	Scientific - Technical Conference Process Control 2002, Kouty nad Desnou, Czech Republic, June 9-12, 2002
J. Mikleš	IFAC World Congress, Barcelona, Spain, July 21-26, 2002
M. Ondrovičová	Scientific - Technical Conference Process Control 2002, Kouty nad Desnou, Czech Republic, June 9-12, 2002
Ľ. Šperka	Scientific - Technical Conference Process Control 2002, Kouty nad Desnou, Czech Republic, June 9-12, 2002
A. Zemanovičová	Technical University of Vienna, Vienna, Austria, March 2002 (1 day)

VI. THESES AND DISSERTATIONS

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

Budošová M.:	Analysis of possibilities for implementation of evolutionary algorithms. (J. Dvoran)
Fulajtár J.:	Optimal processing conditions of tray distillation columns. (J. Mikleš)
Jančich J.:	Optimal control of a chemical reactor. (J. Mikleš)
Kamenická T.:	Mathematical model and identification of a continuous-time stirred tank reactor. (J. Mikleš)
Korbašová K.:	Mathematical model of an equipment for glass melting. (J. Dvoran)
Nagy J.:	Control design of a laboratory distillation column using control system SIMATIC. (M. Ondrovičová)
Nagy L.:	Control system design for a small brewery. (A. Mészáros)
Potančoková A.:	Neuro-fuzzy control design for a chemical reactor. (J. Dvoran)
Svetíková M.:	Design of GUI for laboratory plant LTR 7000. (M. Fikar)
Veliká J.:	Adaptive lambda-tracking of a continuous-time stirred tank reactor for methanol synthesis. (M. Bakošová)

B. Dissertations (PhD.)

Kožka Š.:	Iterative identification of a system in the closed-loop. (J. Mikleš)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1] Bachmann G., Hofbauer H., Zemanovičová A., Vasičkaninová A.: Determination of the calorific value of heterogeneous materials in a multi-kilogram capacity calorimeter. Petroleum and Coal 43 (3-4), 193-195 (2002).

[2] Bakošová M., Ondrovičová M., Karšaiová M.: Decentralized Adaptive Control of Distillation Columns. Selected Topics in Modelling and Control 3, 132-137 (2002).

[3] Bakošová M., Ondrovičová M., Karšaiová M.: Použitie metódy adaptívneho lambda-sledovania pre riadenie chemických reaktorov. Application of adaptive lambda-tracking method for control of chemical reactors (in Slovak). AT&P Journal 9 (4), 77-79 (2002).

[4]* Čirka Ľ., Mikleš J., Fikar M.: A deterministic LQ tracking problem: Parameterization of the controller. Kybernetika 38 (4), 469-478 (2002).

[5] Čirka Ľ., Fikar M., Mikleš J.: A deterministic LQ tracking problem: Parameterization of the controller and the plant. Journal of Electrical Engineering 53 (5-6), 126-131 (2002).

[6] Čirka Ľ., Mikleš J., Fikar M.: A deterministic LQ tracking problem: Parameterization of the controller. Selected Topics in Modelling and Control 3, 33-37 (2002).

[7] Čirka Ľ., Fikar M., Mikleš J.: A deterministic LQ tracking problem: Parameterization of the controller and the plant. Selected Topics in Modelling and Control 3, 38-44 (2002).

[8] Čirka Ľ., Mikleš J., Fikar M., Jančich J.: Využitie YK parametrizácie v adaptívnom LQ riadení laboratórneho chemického reaktora. Application of YK parameterization in adaptive LQ control of a laboratory chemical reactor (in Slovak). AT&P Journal 9 (11), 82-83 (2002).

[9]* Fikar M., Unbehauen H.: Youla-Kučera design of decoupled control systems. Int. J. Control 75 (3), 213-218 (2002).

[10] Fikar M.: Informačné technológie pre vzdelávanie. Information technologies for education (in Slovak). AT&P Journal 9 (11), 5 (2002).

[11] Halldorsson U., Fikar M., Unbehauen H.: Multirate approach to nonlinear predictive control. Selected Topics in Modelling and Control 3, 22-25 (2002).

[12] Hofbauer H., Bachmann G., Zemanovičová A.: Určenie výhrevnosti a emisných charakteristík pri spaľovaní heterogénnych odpadových látok. Determination of the calorific value and emission characteristics at combustion of heterogeneous waste materials (in Slovak). AT&P Journal 9 (4), 82-83 (2002).

[13] Kvasnica M., Fikar M., Mikleš J.: Robust control of a CSTR via static output feedback: An LMI approach. Selected Topics in Modelling and Control 3, 11-15 (2002).
[14] Kvasnica M., Fikar M.: Solving LMI problems using LMI control toolbox. Selected Topics in Modelling and Control 3, 16-21 (2002).
[15] Mészáros A., Andrášik A.: Robust and adaptive control in terms of neural networks. Selected Topics in Modelling and Control 3, 113-118 (2002).
[16] Mészáros A., Andrášik A., Illeová V., Šperka Ľ.: Identifikácia a riadenie pH s použitím neurónových sietí. Identification and pH control using neural networks (in Slovak). AT&P Journal 9 (4), 80-81 (2002).
[17] Mikleš J.: Pre úspešnosť riadenia je mimoriadne dôležitá pripravenosť výroby na riadenie. Production awareness for control is extremely important for successful control (in Slovak). AT&P Journal 9 (4), 5 (2002).
[18] Ondrovičová M., Bakošová M., Karšaiová M., Nagy J.: Vizualizácia laboratórnej rektifikačnej kolóny pomocou riadiaceho systému SIMATIC. Visualisation of a laboratory distillation column using control system SIMATIC (in Slovak). AT&P Journal 9 (11), 77-79 (2002).
[19] Šperka Ľ., Mészáros A., Andrášik A.: Vplyv adaptačného zosilnenia na robustné neurónové riadenie. Impact of adaptation gain on robust neural network-based control. (in Slovak). AT&P Journal 9 (4), 84-86 (2002).

B. Conferences (*international conferences)

[1]* Andrášik A., Mészáros A., Šperka Ľ. : Control of pH process using neural networks. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R241b (2002).
[2]* Bakošová M., Karšaiová M., Ondrovičová M.: Adaptive lambda–tracking using variable sampling rate. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R052 (2002).
[3]* Bakošová M., Ondrovičová M., Karšaiová M.: Decentralized adaptive control of MIMO systems: application to distillation columns. In: Proc. 15th Int. Congress of Chemical and Process Engineering CHISA 2002. Prague (Czech Republic), Aug. 25-29, 2002. Magicware Ltd., Prague, CD ROM 0428(G1.2) (2002).
[4]* Bakošová M., Mészáros A., Ondrovičová M.: PC control of a laboratory distillation column. In: Proc. 29th Int. Conf. SSCHE. Tatranské Matliare (Slovakia), May 27-31, 2002. SSCHE Bratislava, CD ROM P132 (2002).
[5]* Čirka Ľ., Mikleš J., Fikar M., Jančich J.: Youla-Kučera parameterization in adaptive LQ control of a laboratory reactor. In: CD ROM Int. Conf. Cybernetics and Informatics. Trebišov (Slovakia), Sept. 4–6, 2002. SSKI Bratislava, CD ROM (2002).
[6]* Danko J., Veselý V., Ondrovičová M. : Robust controller design to warm-air drying chamber control. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R135 (2002).
[7]* Fikar M., Chachuat B., Latifi M. A.: Optimal control design for an alternating activated sludge process. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R244 (2002).
[8]* Fikar M., Unbehauen H., Mikleš J.: Relations between stable predictive control and pole placement. In: Proc. 15th Triennial World Congress. Barcelona (Spain), July 21-26, 2002. IFAC, CD ROM 1104(T-Fr-M18) (2002).
[9]* Halldorsson U., Fikar M., Unbehauen H.: Multirate nonlinear predictive control. In: Proc. American Control Conf. 2002. Anchorage (USA), May 8-10, 2002. AACC, CD ROM 743(FM06-5), pp. 4191-4196 (2002).
[10]* Karšaiová M., Ondrovičová M., Bakošová M.: Identification and control of multilayer structure using MATLAB. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R109 (2002).
[11]* Mészáros A., Andrášik A., Bakošová M., Šperka Ľ: Control of pH in laboratory fermenter using neural networks. In: Proc. 29th Int. Conf. SSCHE. Tatranské Matliare (Slovakia), May 27-31, 2002. SSCHE Bratislava, CD ROM P133 (2002).
[12]* Mészáros A., Andrášik A., Šperka Ľ.: Identification and computer control of a fermenter using neural networks. In: Proc. 4th Asian Control Conf. Singapore (Malaysia), Sept. 25-27, 2002. ASCC, pp. 220-225 (2002).
[13]* Mészáros A., Andrášik A., Šperka Ľ. : Influence of the adaptation gain on robust neural control. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R241a (2002).
[14]* Mikleš J., Čirka Ľ., Fikar M.: Adaptive LQ control of a CSTR via YK parameterization of the controller and the plant model. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R115 (2002).
[15]* Ondrovičová M., Bakošová M., Karšaiová M., Nagy J.: Visualisation of a distillation column by control system SIMATIC 300. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R111 (2002).
[16]* Vasičkaninová A., Hofbauer H., Bachmann G., Zemanovičová A.: Fuzzy model of a multi-kilogram capacity calorimeter. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R050 (2002).
[17]* Zemanovičová A., Bachmann G., Hofbauer H., Danko J., Vasičkaninová A.: Control of experimental calorimeter. In: Proc. 5th Scientific-Technical Conf. Process Control 2002. Kouty nad Desnou (Czech Republic), June 9-12, 2002. University of Pardubice, CD ROM R224 (2002).

C. Technical Reports

[1] Fikar M., Latifi M. A.: User's guide for FORTRAN dynamic optimisation code DYNO. Technical Report mf0201. LSGC CNRS, Nancy (France), STU Bratislava (Slovakia), 45 p. (2002).

DEPARTMENT OF INORGANIC CHEMISTRY

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I. STAFF

Full Professors:
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Associate Professors:
Michal Dunaj-Jurčo, PhD; Mária Hvastijová, PhD, DSc; Marian Koman, PhD, DSc; Adela Kotočová, PhD; Anna Mašlejová, PhD; Ján Sýkora, PhD; Dušan Valigura, PhD;

Assistant Professors:
Mário Izakovič, PhD; Vladimír Jorík, PhD; Ľubov Macášková, PhD; Ján Moncoľ, PhD; Blažena Papánková, PhD; Anton Sirota, PhD; Miroslav Tatarko, PhD;

Research Fellows:
Ľubor Dlháň, PhD; Dušan Mikloš, PhD; Milan Růžička;

PhD Students:
Radovan Herchel; Adriana Kissová; Marcela Múdra; Petra Stachová; Jozef Švorec

Technical Staff:
Viera Blažová; Andrea Bočová; Marta Danková; Valéria Habudová; Leonard Kováč; Silvia Markusová; Marta Polláková; Marta Sprušanská; Klára Valúchová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Laboratories of Practical Exercises

B. Research Laboratories:

Laboratory of Electrochemistry
Laboratory of Photochemistry
Laboratory of Magnetochemistry
Laboratory of Thermal Processing
Laboratory of Spectroscopy
Laboratory of X-ray Analysis
Laboratory of Powder Diffraction

III. TEACHING

A. Undergraduate Study

1st Semester (autumn)		
Inorganic Chemistry I	(3-2 h)	Boča, Kotočová, Melník, Šima, Valigura
Inorganic Chemistry I (Laboratory)	(3 h)	Dlháň, Dunaj-Jurčo, Hvastijová, Izakovič, Jorík, Macášková, Mašlejová, Mikloš, Moncoľ, Múdra, Ondrejkovičová, Papánková, Růžička, Segľa, Sirota, Švorec, Tatarko
2nd Semester (spring)		
Inorganic Chemistry II	(2-2 h)	Hvastijová, Koman, Melník, Ondrejovič
Inorganic Chemistry II (Laboratory)		Dháň, Izakovič, Jorík, Macášková, Mašlejová, Mikloš, Ondrejkovičová, Papánková, Růžička, Segľa, Sirota, Tatarko
7th Semester (autumn)		
Chemical Bond and Chemical Structure	(2-0 h)	R. Boča
Chemistry of Coordination and Organometallic Compounds	(2-0 h)	Ondrejovič
Inorganic Photochemistry	(2-0 h)	Šima
Inorganic Syntheses	(2-0 h)	Valigura
Laboratory Practice in the Major I	(0-10 h)	R. Boča, Kotočová, Ondrejkovičová, Ondrejovič, Růžička, Segľa, Valigura

8th Semester (spring)

Bioinorganic Chemistry	(2-1 h)	Melník
Crystallochemistry	(2-0 h)	Mikloš
Indirect Methods of Research		
Structural Studies of Inorganic Compounds	(2-2 h)	Mašlejová
Inorganic Materials	(2-0 h)	Koman
Laboratory of Speciality	(6 h)	
Laboratory Practice in the Major II	(0-6 h)	Jorík, Mašlejová, Mikloš
Reaction Mechanisms of Inorganic Compounds	(2-0 h)	Šima
Spectral Methods of Control		
Technological Processes	(2-2 h)	Segľa
Technics of a Mixture Separation	(2-2 h)	Valigura

9th Semester (autumn)

Bioinorganic Chemistry	(2-1 h)	Melník
Catalysis	(2-0 h)	Ondrejkovičová
Chemistry of Coordination and Organometallic Compounds	(2 h)	Ondrejovič
Inorganic Materials	(2-1 h)	Koman
Laboratory of Speciality	(10 h)	Mikloš, Koman, Mašlejová, Ondrejkovičová, Růžička, Šima, Valigura, Papánková
Inorganic Biopharmacs	(2 h)	Melník

B. PhD Study

1st Semester

Structure of Inorganic Substances	(30 h)	R. Boča, Ondrejovič
Recent Coordination Chemistry*	(30 h)	supervisors

2nd Semester

Reaction Mechanisms of Inorganic Compounds	(30 h)	Šima
Recent Coordination Chemistry*	(30 h)	supervisors

* Studied and controlled individually in correspondence with the doctoral thesis.

IV. CURRENT RESEARCH PROJECTS

A. Preparation and study of novel non-steroid coordination antiflogistics and antituberculotics (Milan Melník)

Synthesis of novel coordination compounds disposing properties of coordination chemotherapeutics which can be applied in human and veterinary medicine represents one of the most perspective fields of bioinorganic chemistry. The synthesis and study of novel nonsteroid coordination antiflogistics and antituberculotics are consistent with these properties. Thus, a search for new types of chemotherapeutics is a great challenge for bioinorganic chemistry. The biocomplexes of copper and iron with various ligands, namely with derivatives of nicotine, salicylic and propionic acids as well as with fenamates are the object of our study in connection with the search for coordination antiflogistics. The biocomplexes of copper and magnesium with other group of ligands, namely derivatives of 4-oxoquinolinate are considered to have properties of the potential antituberculotics are also the object of our study.
A specific theoretical and experimental procedure characterising the construction of coordination polymers was elaborated. Crystal structure determination of some copper and nickel complexes contributed to the optimisation of favourable conditions for reactions of ligands forming new compounds in the coordination sphere.
The basic factors influencing the relation between the wavelength of irradiation and the photoredox efficiency of iron complexes were formulated. It was found that by photolysis of copper complexes generated hydroxyl radical in solutions participates in photodegradation of some pollutants. The results can be applied to improve ecology.

B. Induced transformations in coordination compounds (Roman Boča)

New mononuclear, binuclear, and polynuclear complexes of transition metals have been synthesized that contain predominantly heterocyclic-type ligands; their magnetic properties have been investigated and interpreted.
In a dimeric complex of Cu(II) a rather strong antiferromagnetic interaction has been detected that is mediated only through a system of hydrogen bonds.
Temperature-induced spin crossover in two mononuclear Fe(II) complexes, occurring above the room temperature, has been investigated in detail by using a set of experimental techniques: the magnetic susceptibility measurements, variable-temperature X-ray powder diffraction, and the differential scanning calorimetry. The cooperativeness in the solid state has been quantified and discussed in terms of a pi-stacking of the aromatic rings.
A series of new trinuclear Cu(II) complexes, liked by the pyrazolato ligands, has been subjected to structural and magnetic investigations. Magnetic properties of the thiocyanato-imidazole-nickel(II) and cobalt(II) complexes have been investigated in detail form the point of view of the ordering phenomena.
A tridentate N-,S-heterocycle based ligand gave a number of metal complexes with Mn(II), Fe(II), Fe(III), Co(II), and Ni(II) central atoms. Their basic magnetic properties were scanned and interpreted in terms of the orbital magnetic contributions. The Fe(II) complexes exhibit a spin crossover that is markedly influenced by the solvent molecules embodied in the crystal lattice.
A principal contribution to the theory of mononuclear anisotropic paramagnets has been achieved by modifying and extending the theory of Koenig and Kremer that operate in a complete dn-space.

C. Picking up of talented students and their motivation in new conditions of social development with respect to the needs of the Faculty of Chemical and Food Technology of the Slovak Technical University (Anton Sirota)

A special questionnaire has been elaborated for research of students' motivation in their choice to study chemistry and their valuation of the study organization and level at the Faculty of Chemical and Food Technology in Bratislava.
In December 2002 the questionnaire has been applied to a sample of 150 students and their responses have been evaluated. The results of the research are supposed to be published in an appropriate journal.
Two members of the research group are in leading functions (chairman and vice-chairman) in the club Socrates. The club includes such activities that are in favour of talented students of the Faculty. New criteria have been applied to those students who want to become members of the club.
The members of the research team organized a special seminar for secondary school teachers in August 2002 with the aim to enhanced the quality of chemistry teaching at the schools. In the framework of the seminar the members of the research team presented three lectures.
Some members of the research team prepared special teaching texts and held lectures for students of the Summer School in Chemistry organized for talented secondary school students in July 2002. Moreover, several of them were involved into special training of the students who represented Slovakia at the 34th International Chemistry Olympiad in Groningen (The Netherlands) and were successful (1 silver and 3 bronze medals).
In the last year the members of the research team published 20 reviewed papers (in Slovak) in journals. Besides that 6 papers were published in the Proceedings of International Conferences and 5 lectures were presented at the international conferences on didactics of chemistry. Moreover, a text book on nomenclature of inorganic compounds were published by two members of the research team.

V. COOPERATION

A. Cooperation in Slovakia:

Department of Physical Chemistry, Slovak Technical University, Bratislava
Department of Organic Chemistry, Slovak Technical University, Bratislava
Department of Chemical Physics, Slovak Technical University, Bratislava
Department of Inorganic Technology, Slovak Technical University, Bratislava
Department of Microbiology, Biochemistry and Biology, Slovak Technical University, Bratislava
Department of Ceramics, Glass and Cement, Slovak Technical University, Bratislava
Institute of Medical Chemistry, Medical Faculty, Komensky University, Bratislava
Institute of Inorganic Chemistry, Slovak Academy of Science, Bratislava
Institute of Rheumatic Diseases, Piešťany
Department of Inorganic Chemistry, Faculty of Science UPJŠ, Košice

B. International Cooperation:

Technical University, Vienna, Austria
- Magnetic properties in solids and solutions

York University, Toronto, Canada
- X-ray analysis of transitions and non-transitions metal atoms

University of Helsinki, Finland
- X-ray analysis of solid compounds

University of Joensuu, Finland
- X-ray analysis of copper(II) compounds

Martin-Luther University, Halle/Saale, Germany
- Structure and physical properties of transition metal complexis with non-linear pseudohalides

Technical University, Darmstadt, Germany
- New magnetic materials

University of Wroclaw, Poland
- Magnetic and X-ray analysis

C. Membership in Domestic Organizations and Societies:

Slovak Chemical Society
Czech and Slovak Society for Crystal Growth
Czech and Slovak Crystallographic Association
Regional Committee of Czech and Slovak Crystallographers
Crystallographic Society
EPA Slovakia National Group

D. Membership in International Organizations and Societies:

Czech and Slovak Crystallographic Association, Prague, Czech Republic	(V. Jorík, M. Koman, D. Mikloš)
Member of European Crystallographic Committee, EEC	(M. Koman)
American Chemical Society, USA	(M.Melník)
European Photochemistry Association, Switzerland	(M. Izakovič, M. Tatarko)

Finland Chemical Society	(M.Melník)
Member of MGMC Editorial Board, Brusel	(M.Melník)
International Information Center of International Chemistry Olympiads	(A.Sirota)

E. Tempus Programme:

F. International Scientific Programmes:

Scientific & Technological Cooperation Between Germany (TU Darmstadt) and Slovakia (STU Bratislava): New magnetic materials - R. Boča, H. Fuess
Scientific Cooperation Between Germany (MLU Halle) and Slovakia (STU Bratislava): Untersuchungen zur Struktur und Reaktivität von Übergangsmetallkomplexen nichtlinearer Pseudohalogenide - M. Hvastijová, L. Jäger
Scientific Cooperation Between Poland (Wroclaw University) and Slovakia (STU Bratislava) ESF Project: Molecular Magnets.- R. Boča, M. Verdaguer, M. Melník, J. Mrozinski

G. Visitors from Abroad:

M. Kojima	Okayama University, Okayama, Japan, June 2002 (1 day)
M. Nakamura	Toho University, Tokyo, Japan, June 2002 (1 day)
H. Fuess	Technical University, Darmstadt, Germany, July 2002 (5 days)
Y. Fukuda	Ochanomuzi University, Tokyo, Japan, September 2002 (2 days)
Y. Fukuda	Ochanomuzi University, Tokyo, Japan, October 2002 (1 day)
L. Jäger	Martin-Luther University, Halle/Saale, Germany, November 2002 (4 days)
Y. Fukuda	Ochanomuzi University, Tokyo, Japan, December 2002 (1 day)

H. Visits of Staff Members and PhD Students to Foreign Institutions:

V. Joríik	Institute of Macromolecular Chemistry, Prague, Czech Republic, January 2002 (1 day)
M. Koman	University of Wroclaw, Wroclaw, Poland, January 2002 (7 days)
M. Ružička	Institute of Physics, Czech Academy of Sciences, Prague, Czech Republic, March 2002 (2 days)
M. Melník	16 universities, Japan April–May 2002 (30 days)
R. Boča	Technical University, Darmstadt, Germany, May 2002 (23 days)
D. Mikloš	University of Wroclaw, Wroclaw, Poland, June 2002 (7 days)
M. Tatarko	Technical University, Darmstadt, Germany, July 2002 (16 days)
A. Sirota	University of Groningen, Netherland, July 2002 (10 days)
A. Mašlejová	Technical University, Darmstadt, Germany, July 2002 (14 days)
B. Papánková	Technical University, Darmstadt, Germany, July 2002 (14 days)
R. Boča	Technical University, Darmstadt, Germany, July 2002 (14 days)
M. Melník	York University, Ontario, Canada, July–September 2002 (60 days)
Ľ. Dlháň	Technical University, Darmstadt, Germany, August 2002 (23 days)
M. Koman	Institute of Chemical Technology, Prague, Czech Republic, October 2002 (1 day)
R. Boča	University of Valencia, Valencia, Spain, October 2002 (7 days)
R. Boča	Johannes Guttenberg University, Mainz, Germany, August 2002 (11 days)
A. Sirota	Association of Greek Chemists, University of Athens, Athens, Greece, December 2002 (4 days)

VI. THESES AND DISSERTATIONS

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

Herchel R.	Magnetism of many-nuclear complexes (R. Boča)
Chnápková V.	Preparation and properties of acetato Co(II) complexes with N-ligands (B. Papánková)
Lebrušková K.	Nitro- and aminosalicylato Cu(II) cmplexes with some bioactive N-ligands (D. Valgura)
Martiška L.	Preparation and properties of halogensalicylates of Cu(II) complexes with some heterocyclic N-ligands (D. Valigura)
Stachová P.	Nitro- and aminobenzoato Cu(II) complexes with some bioactive N-ligands (M. Melník)

B. Dissertations (PhD):

Moncoľ J.:	Preparation and structure of halogencarboxylatocopper(II) complexes with biologically active derivatives of pyridine (M. Koman)
Dlháň Ľ.:	Magnetic properties of mononuclear complexes of transition metals. (R. Boča)

D. Habilitation Theses:

Ondrejkovičová I.: Triphenylphosphineoxide and triphenyloarsineoxide complexes of iron, their catalytic properties and antimicrobial activity.

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Angaridis P. A., Baran P., Boča R., Cervantes-Lee F., Haase W., Mezei G., Raptis R. G., Werner R.: Synthesis and structural characterization of trinuclear Cu(II)-pyrazolato complexes containing μ_3-OH, μ_3-O andμ_3-Cl ligands. Magnetic susceptibility study of $[PPN]_2[(\mu_3\text{-}O)Cu_3(\mu\text{-}pz)_3Cl_3]$. Inorg. Chem. 41, 2219-2228 (2002)

[2]* Baran P., Boča R., Breza M., Elias H., Fuess H., Jorík V., Klement R., Svoboda I.: The coordination chemistry of pyridine N-oxides: 1. The spectroscopic, structural and magnetic properties of copper(II) complexes of the novel ONO ligand Hpoxap. Polyhedron 21, 1561-1571 (2002)

[3]* Boča M., Boča R., Kickelbick G., Linert W., Svoboda I., Fuess H.: Novel complexes of 2,6-bis(benzthiazol-2-yl)pyridine. Inorg. Chim. Acta 338, 36 – 50 (2002)

[4]* Boča R., Linert W.: Is there a need for new models of the spin crossover? Monatshefte für Chemie/Chemical Monthly, 1 – 18 (2002)

[5]* Čík G., Šeršeň F., Dlháň Ľ., Červeň I., Staško. A., Végh D.: Study of magnetic properties of copolymer of 3-dodecylthiophene and 2,3-R,R-thieno[3,4-b]pyrazine. Synthetic Metals 130, 213-220 (2002)

[6] Dudová B., Hudecová D., Pokorný R., Mičková M., Palicová M., Segľa P., Melník M.: Copper complexes with bioactive ligands. Part II: Antifungal activity. Folia Microbiol. 47, 225-229 (2002)

[7]* Fargašová A., Ondrejkovičová I.: Ecotoxicological effects of Cd(II) complexes with heterocyclic N-donor ligand nocotinamide (NIA). Chem. Listy 96, 498 (2002)

[8] Hnát I., Sirota A.: Osmóza a osmotický tlak v chemických úlohách. Osmosis and osmotic pressure in chemical tasks (in Slovak). Chemické rozhľady 1, 69 – 75 (2002)

[9]* Izakovič M., Šípoš R., Valigura D., Šima J.: Štúdium rovnováh komplexov Fe(III) s kyselinou azidokojovou a bromokojovou. Study of equilibria of Fe(III) complexes with azidokojic and bromokojic acid (in Slovak). Chem. Listy 96, 355 (2002)

[10]* Koman M., Melník M., Glowiak T.: Crystal and molecular structure of bis{2,6-bis(hydroxymethyl)pyridine-O,O,N}{μ-bis(2-hydroxymethylpyridyl)methanolate-O,N}dicopper(II)di propionate. First example of non-coordinate propionate anions. Cryst. Res. Technol. 37, 199-124 (2002).

[11]* Koman M., Melník M., Moncoľ M.: Structural study of copper(II) carboxylates with some derivates of pyridine. Chem. Listy 96, 354 (2002)

[12]* Králová K., Masarovičová E., Štroffeková O., Ondrejkovičová I.: Effect of Cd and Zn compounds with biologically active ligands on growth of maize and metal accumulation in the plant organs. Chem. Listy 96, 514-515 (2002)

[13]* Mikloš D., Palicová M., Segľa P., Melník M., Korabik M., Glowiak T., Mrozinski J.: Crystal structures and magnetic behavior of dimeric copper(II) 2-methylnicotinate adducts with dimethylformamide and dimethylsulfoxide. Z. Anorg. Allg. Chem. 628, 2862-2868 (2002)

[14]* Mikloš D., Segľa P., Jašková J., Koman M., Glowiak T.: Formation of N-hydroxyalkylpyridine-2-carboxoamidines in the coordination sphere of copper(II). Chem. Listy 96, 375 (2002)

[15]* Mojumdar S. C., Ondrejkovičová I., Neviďanská L., Melník M.: Thermoanalytical and IR spectral investigation of Fe(III) complexes with nicotinamide. J Anal. Appl. Pyrol. 64, 59-69 (2002)

[16]* Moncoľ J., Palicová M., Segľa P., Koman M., Melník M., Valko M., Glowiak T.: Structure and spectral study of copper(II) pyridinecarboxylates: crystal and molecular structure of trans-diaqua-bis(N,N-diethylnicotinamide-N)bis(2-chloronicotinate-O)copper(II). Polyhedron 21, 365-370 (2002)

[17]* Múdra M., Melník M.: Syntéza, štruktúra a vlastnosti meďnatých komplexov s 2-pyridylkarbinolom. Synthesis, structure and properties of Co(II) complexes with 2-pyridylcarbinol (in Slovak). Chem. Listy 96, 355 (2002)

[18]* Ondrejkovičová I., Melník M., Hudecová D.: Preparation characterization and antimicrobial effects of iron nicotinamide complexes. Chem. Listy 96, 353 (2002)

[19]* Ondrejovič G., Kotočová A., Valigura D.: Spectrochemical and Electrochemical Properties of Distorted Pentacoordinate $[Cu(chel)_2X]Y$ Complexes. Chem. Pap. 56, 168-173 (2002)

[20]* Papánková B., Vrbová M., Boča R., Šimon P., Falk K., Miehe G., Fuess H.: DSC Monitoring of the Spincrossover in Fe(II) Complexes. J. Therm. Anal. Cal. 67, 721-731 (2002)

[21]* Segľa P., Charišová M., Koman M., Melník M.: Spectroscopic study of copper(II) pyridinecarboxylates. Chem. Listy 96, 352 (2002)

[22] Sirota A.: Organické zlúčeniny v úlohách chemickej olympiády z anorganickej a analytickej chémie (I). Organic compounds in tasks of chemistry olympiads from inorganic and analytical chemistry (I) (in Slovak). Chemické rozhľady 3, 3 – 8 (2002)

[23] Sirota A.: Organické zlúčeniny v úlohách chemickej olympiády z anorganickej a analytickej chémie (II). Riešenie a hodnotenie úloh. Organic compounds in tasks of chemistry olympiads from inorganic and analytical chemistry (II). Solutions and evaluations of tasks (in Slovak). Chemické rozhľady 4, 3 – 7 (2002)

[24] Sirota A.: Riešenie a hodnotenie úloh z anorganickej chémie. Solutions and evaluations of tasks from inorganic chemistry (in Slovak). Chemické rozhľady 1, 23 – 29 (2002)

[25] Sirota A.: Úlohy z anorganickej chémie. Tasks from inorganic chemistry (in Slovak). Chemické rozhľady 1, 5 – 9 (2002)

[26] Sirota A.: Vplyv chemickej olympiády na nové trendy vo vyučovaní chémie. Influence of chemistry olympiad on new trends in chemistry teaching (in Slovak). Chemické rozhľady 3, 34 – 45 (2002)

[27]* Šima J., Brezová V.: Photochemistry of Iodo Iron(III) Complexes. Coord. Chem. Rev. 229, 27-35 (2002)

[28]* Šima J.: Photochemistry of iodo complexes with redox active central atoms. Chem. Listy 96, 354 (2002)

[29] Súkeník M., Šima J.: Electromagnetic Influence on Gravitational Mass – Theory, Experiments, and Mechanism of the Solar Corona Heating. Spacetime and Substance 3, 118-121 (2002)

[30] Súkeník M., Šima J.: Neutron Stars Properties Viewed by the ENU Model. Spacetime and Substance 3, 35-37 (2002)
[31] Súkeník M., Šima J.: The Hydrogen Atom – A Common Point of Particle Physics, Cosmology, and Chemistry. Spacetime and Substance 3, 31-34 (2002)
[32]* Valent A., Melník M., Hudecová D., Dudová B., Kivekäs R., Sundberg M. R.: Copper(II) salicylideneglycinate complexes as potential antimicrobial agents. Inorg. Chim. Acta 340, 15-20 (2002)
[33]* Żurowska B., Mroziński J., Julve M., Lloret F., Mašlejová A., Sawka-Dobrowolska W.: Structural, Spectral and Magnetic Properties of End-to End Di-μ-thiocyanato-Bridged Polymeric Complexes of Ni(II) and Co(II). X-ray Crystal Structure of Di-μ-thiocyanatobis(imidazole)nickel(II). Inorg. Chem. 41, 1771 – 1777 (2002)

B. Conferences (*international conferences)

[1]* Boča M., Boča R.: Effect of Crystal Solvent on Magnetic Properties of Complexes. The 5th Conference on Solid State Chemistry, Bratislava, Slovakia, July 7.-12. 2002
[2]* Boča R.: A tuning of the spin crossover in Fe(II) complexes. The 5th Conference on Solid State Chemistry, Bratislava, Slovakia, July 7-12, 2002
[3]* Boča R.: Advances in Fitting the Experimental Data on the Spin Crossover Compounds. VIIIth International Conf. on Molecule-based Magnets, Valencia, Spain, October 5.-10. 2002, p. C17
[4]* Dlháň Ľ., Gembický M., Herchel R., Boča R., Renz F.: A field induced high-spin molecule: {Fe(II)-Fe(III)$_6$} cluster. In: The 5th Conference on Solid State Chemistry, Bratislava, Slovakia, July 7.-12. 2002
[5]* Dlháň Ľ., Gembický M., Herchel R., Boča R., Renz F.: High spin molecule: {Fe(II)-Fe(III)$_6$} cyano cluster. In: Zborník z konferencie "Rozvoj materiálových ved ve výzkumu a výuce". Proceedings – Development of aterial sciences in research and education, Ostravice, Czech Republic, September 10.-12. 2002, p. 19-20
[6]* Herchel R.; Gembický M.; Boča R.; Renz F. Magnetic properties of a tetranuclear {Cr(III)-Fe(III)$_3$} cluster. In: The 5th Conference on Solid State Chemistry, Bratislava, Slovakia, July 7.-12. 2002
[7]* Jorík V., Králik M.: Aktuálne výsledky charakterizácie heterogénnych katalyzátorov práškovou difrakciou. Actual results of characterisation of heterogeneous catalysators using powder diffraction (in Slovak), Liptovský Mikuláš, Slovak Republic, September 18.-20. 2002
[8]* Jorík, V., Kavečanský, V.: Stratégia Rietveldovského spresnenia. Strategy of Rietveld refinement (in Slovak) In: Jesenná škola Rietveldovej metódy. Autumn School of Rietveld Method, Liptovský Hrádok, Slovak Republic, September 2002
[9]* Koman M., Melník M., Glowiak T., Moncoľ J.: The structural types selected of copper(II) carboxylates. In: XIIIth Winter School on Coordination Chemistry, Karpacz, Poland, December 9.-13. 2002, p. 33
[10]* Koman M., Melník M.: New coordination compounds of copper(II) carboxylates with tridentate chelating ligands. Development of Materials Science in Research and Education. In: Abstract of the 12th Joint Seminar, Ostravice, Czech Republic, September 10.-12. 2002, p. 41
[11]* Koman M.: Využitie röntgenového žiarenia na identifikáciu kryštalických látok. Utilisation of X-ray radiation for identification of crystalline substances (in Slovak). In: Škola růstu krystalů (School of Crystal Growth), Ostravice, Czech Republic, September 9.-10. 2002, p. 41-46
[12]* Králová K., Masarovičová E., Štroffeková O., Ondrejkovičová I.: Effect of cadmium compounds on growth and metal accumulation in zea mays L. in the presence of 2-hydroxypropyl-β-cyclodextrin. In: SECOTOX 2002 – Book of Abstracts, 7th Regional Meating of the Central and Eastern European Section, Brno, Czech Republic, October 14.-16. 2002, p. 179-183
[13]* Mašlejová A., Gembický M., Svoboda I., Boča R., Magnetic anisotropy in nickel(II) complexes. In: The 5th Conference on Solid State Chemistry, Bratislava, Slovakia, July 7.-12. 2002
[14]* Melník M.: The future of Non-Steroidal Anti-Inflamatory Agends are Copper Compounds? In: XIIIth Winter School on Coordination Chemistry, Karpacz, Poland, December 9.-13. 2002, p. 40-41
[15]* Mikloš D., Segľa P., Melník M., Glowiak T.: Structure of biologicaly interesting nicotinato copper(II) complexes. Development of Materials Science in Research and Education. In: Abstract of the 12th Joint Seminar, Ostravice, Czech Republic, September 10.-12. 2002, p. 31-32
[16]* Mojumdar S. C., Miklovič J., Krutošíková A., Jóna E., Mitasová B., Valigura D.: Preparation, Thermoanalytical and Spectral Properties of Ni(II) Complexes with Furopyridines. In: Proceedings of the 30th North American Thermal Analysis Society, Pittsburg, USA, September 23.-25. 2002, p. 551-556
[17]* Papánková B., Šimon P., Boča R.: Fitting the heat capacity for spin crossover systems. In: The 5th Conference on Solid State Chemistry, Bratislava, Slovakia, July 7.-12. 2002
[18]* Růžička M.: Materiály používané při pěstovaní krystalů. Materials used by growing of crystals (in Slovak). In: Škola růstu krystalů (School of Crystal Growth), Ostravice, Czech Republic, September 9.-10. 2002, p. 34-40
[19]* Růžička M.: Study of crystal growth of anhydrous sulfates $M^{2+}SO_4$ (M^{2+} = Cd, Zn). Development of materials science in research and education. In: Abstract of the 12th Joint Seminar, Ostravice, Czech Republic, September 10.-12. 2002
[20]* Segľa P., Mikloš D., Koman M., Melník M., Dudová B., Hudecová D., Glowiak T.: Spectral properties and crystal structure of biologically interesing pyridinecarboxylato copper(II) complexes. In: XIIIth Winter School on Coordination Chemistry, Karpacz, Poland, December 9.-13. 2002
[21]* Stachová P., Valigura D., Melník M., Koman M., Glowiak, T.: Nitrobenzoatocopper(II) complexes with ronicol and nicotinamide. In: XIIIth Winter School on Coordination Chemistry, Karpacz, Poland, December 9.-13. 2002, p. 91
[22]* Valent A., Kohútová M., Melník M., Hudecová D.: Meďnaté komplexy Schiffových zásad ako biologicky aktívne látky. Co(II) complexes of Schiff bases as biologically active substances (in Slovak). In: XXXI. konferencia "Syntéza a analýza liečiv". XXXI Conference "Synthesis and Analysis of Drugs", Bratislava, Slovak Republic, September 11.-13. 2002
[23]* Valigura D., Martiška L., Lebrušková K, Hudecová D., Cibíčková D., Melník M.: Structure and properties of some salicylatocopper(II) complexes with nicotinamide. In: XIIIth Winter School on Coordination Chemistry, Karpacz, Poland, December 9.-13. 2002, p. 58

C. Books and Textbooks

[1] Holloway, C. E., Melník, M.: Germanium heterometallic compounds: Classification and analysis of crystallographic and structural data. MGMC 25, 2002, p. 331-410.

[2] Holloway C. E., Melník M.: Structural aspects of platinum coordination compounds. Part I: Monomeric Pt(0), Pt(I) and Pt(II)A4 derivatives. Rev Inorg.Chem., 22, 2002, p. 163-284
[3] Holloway, C. E., Melník, M., Germanium organometallic compounds: Classification and analysis of crystallographic and structural data. MGMC25, 2002, p. 185-266

DEPARTMENT OF INORGANIC TECHNOLOGY

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I. STAFF

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PhD Student:
Marta Baníková; Zuzana Gáliková;

Technical Staff :
Viliam Cauner; Eva Dekanová; František Kollár;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Molten Salt Chemistry Laboratories
Laboratories of Chemical Inorganic Syntheses and Industrial Inorganic Chemistry

B. Research Laboratories:

Molten Salt Chemistry and Electrochemistry Laboratories
Technical Electrochemistry Laboratories
Electroplating, Special Coatings and Corrosion Laboratories

III. TEACHING

A. Undergraduate Study

1. Introductory courses

3rd semester (autumn)		
Fundamental Principles of Inorganic Technology	(2-2 h)	Gabčová, Valtýni
5th semester (autumn)		
Corrosion and Material Surface Treatment	(2-0 h)	Chovancová
Laboratories of Corrosion	(0-2 h)	Adamčík, Zemanová

2. Advanced courses

7th semester (autumn)		
Phase Equilibria	(2-1 h)	Gabčová
Applied Thermodynamics	(2-2 h)	Fellner, Danielik
Corrosion and Material Protection	(2-2 h)	Chovancová, Zemanová
Laboratories I.	(0-4 h)	Adamčík, Gabčová, Híveš, Chovancová, Žúžiová
8th semester (spring)		
Chemical Reaction Engineering	(2-2 h)	Valtýni, Híveš
Applied Electrochemistry	(2-1 h)	Híveš, Fellner
Laboratories II.	(0-8 h)	Danielik, Gabčová, Híveš, Chovancová, Žúžiová
9th semester (autumn)		
Fertilizers	(2-0 h)	Žúžiová, Gabčová
Electrochemical Engineering	(2-0 h)	Híveš, Fellner
Elements of System Engineering	(1-1 h)	Valtýni, Danielik
Laboratories III.	(0-10 h)	Danielik, Fellner, Gabčová, Híveš, Chovancová, Valtýni, Zemanová, Žúžiová

IV. CURRENT RESEARCH PROJECTS

A. Thermodynamics and kinetics of the chemical and electrochemical reactions in the electrolyte and at the phase boundary aluminium/melt. (VEGA 1/9426/02)

Solubility of aluminium in the molten system NaF - AlF_3 (0 - 50 mole % AlF_3) in the temperature range of 700 - 1050 °C was determinated.
The reduction of SO_4^{2-} in the molten system containing dissolved aluminium using the electrochemical method was investigated.
The dissolved metal by the chemical analysis (determination of hydrogen evolved in the reaction of quenched melt with hydrochlorid acid) and by the electrochemical methods was determinated.
The electrochemical reactions of SO_4^{2-} and S^{2-} species in the cryolite melts was investigated.

B. Preparation and Properties of Composite and Alloy Layers on Metal Substrates (VEGA 9425/02)

The ways of the anodic aluminium sealing were compared (hydrothermal sealing, cold impregnation, method sol-gel and sealing by the PTFE dipping) by the corrosion tests and EIS measurements in the wide frequency range.
Improvement of the stability of the selective conversion layer has been achieved by covering of the selective conversion layer with a thin oxide layer using the sol-gel method.
The anticorrosion properties of chromate layers on the zinc coatings were estimated. The used passivation solution has a great advantage, as it contains chromium only in the form Cr(III) ions.
The Ni/W alloy coatings were prepared by the electrochemical co-deposition from the aqueous electrolytes. The identification and properties of the reached coatings were measured.
Corrosion of the steel materials for the underground structures were investigated in the model soil electrolytes. Cathodic polarization curves were measured in the same electrolytes from which the transitive potentials were obtained.

V. COOPERATION

A. Cooperation in Slovakia

Institute of Inorganic Chemistry Slovak Academy of Science, Bratislava
Department of Electrotechnology, Faculty of Electrical Engineering and Information, Slovak University of Technology in Bratislava, Bratislava
Department of Chemical Machines and Equipment, Faculty of Mechanical Engineering, Slovak University of Technology in Bratislava, Bratislava

B. International Cooperation

Norwegian University of Science and Technology, Trondheim, Norway
- low melting electrolytes in aluminium electrolysis
- inert anodes in aluminium electrolysis
- behavior of sulfur and sulfur compounds in aluminium electrolysis
- contents of impurities in polarized aluminium in contact with cryolite-based melts

Technische Hochschule Darmstadt, Darmstadt, Germany
- ceramic composite material Al_2O_3 - SiC

C. Membership in Domestic Organizations and Societies

Union of Slovak Scientific and Technological Societies	Fellner, Híveš, Gabčová, Chovancová, Valtýni, Žúžiová
Slovak Chemical Society	Fellner, Híveš, Gabčová, Chovancová, Valtýni, Žúžiová, Danielik, Zemanová
Slovak Society for Surface Treatment and Technology	Fellner, Chovancová
Slovak Cleaner Production Center	Chovancová

D. Membership in International Organizations and Societies

International Society of Electrochemistry	Híveš
EFCE Electrochemical Engineering	Fellner

E. Tempus Programs

1. SOCRATES Programme: Higher Education (ERASMUS)
Student mobility, cooperation with Fachhochschule Münster, Germany.
Four Students worked in the laboratories of Material Science for three moths.

F. International Scientific Programs

G. Visitors from Abroad

Prof. J. Thonstad	NTNU, Trondheim, Norway, Jule 2002 (1 week)
Dr. W. Hansal	Kompetenzzentrum für Angewandte Elektrochemie, Wiener Neustadt, Austria, October 2002 (1 day)
S. Fraboulet-Jussila	Environmental Consulting, Soil abd Water Ltd., Finland, November 2002 (1 day)

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

P. Fellner	NTNU Trondheim, Norway, October 2002 (1 week)
P. Fellner	VŠCHT, Prague,
P Fellner	MU, Brno, Czech Republic, July 2002 (1 day)
P. Fellner	Kompetenzzentrum für Angewandte Elektrochemie, Wiener Neustadt, Austria, November 2002 (1 day)
J. Híveš	NTNU Trondheim, Norway, July 2002 (2 month)
J. Híveš	NTNU Trondheim, Norway, October 2002 (1 week)
J. Híveš	Kompetenzzentrum für Angewandte Elektrochemie, Wiener Neustadt, Austria, November 2002 (1 day)
M. Zemanová	Kompetenzzentrum für Angewandte Elektrochemie, Wiener Neustadt, Austria, November 2002 (2 days)
M. Zemanová	Technische Hochschule Darmstadt, Darmstadt, Germany, February 2002 (1 month)
Z. Gáliková	Kompetenzzentrum für Angewandte Elektrochemie, Wiener Neustadt, Austria, November 2002 (1 day)

VI. THESES AND DISSERTATIONS

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

Zuzana Balogová	Enthalpy Analysis of Molten Salts in Binary Systems. (I. Nerád)
Štefan Číž	Electrochemical Study of the System NaF - AlF_3 - Na_2SO_4. (J. Híveš)
Zuzana Gáliková	Content of Sulphur in Cryolite-based Melts. (J. Gabčová)
Erika Hamranová	Preparation of Dense Oxide Ceramics. (Ľ. Bača)
Martina Kotercová	Preparation of Conversion and Composite Coatings. (M. Zemanová)
Andrea Larišová	Cold Sealing of Anodically Oxided Coatings Based on Co(II) Salts. (M. Chovancová)
Janka Mihalovičová	Temperature Dependence of Magnetic Susceptibility of Cu(II) Complexes. (R. Bača)
Zuzana Samelová	Preparation of Sulphur Containing Granulated NP Fertilizers. (J. Papp)
Andrea Savková	Preparation of Monocrystals of waterfree Sulfates $M^{2+}SO_4$ (M = Cd, Zn). (M. Růžička)
Tomáš Šimko	Aluminium Removal from Anodic Oxidation Electrolytes on Ionex. (J. Valtýni)
Patricia Štefanidesová	Phase Equilibria in the System KF - K_2NbF_7 - Nb_2O_5. (M. Chrenková)
Michal Tkáč	Deposition of Ni-W Alloy Coatings from Aqueous Electrolytes. (M. Chovancová)
Michaela Vnuková	Preparation of Diffusion Coatings on Steel. (V. Danielik)

B. Dissertations (PhD):

C. Dissertations (DSc):

D. Habilitation Theses:

Ján Híveš, PhD:	Electrochemical Processes in Aluminium Electrolysis.

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Chrenková M., Danielik V., Daněk V.: Phase Diagram of the System KF-K_2MoO_4-SiO_2. Calphad 25 (3), 435 - 444 (2001)

[2]* Zemanová M., Nemčeková K., Chovancová M.: Corrosion Properties of Teflon Sealed anodized Aluminium. Materials Engineering 8 (4), 43 - 48 (2001)

[3]* Kisza A., Kazmierczak J., Thonstad J., Híveš J.: Influence of CaF_2 and AlF_3 on the kinetics and mechanism of the Al electrode reaction in cryolite melts with various alumina contens. Journal of Applied Electrochemistry 32, 305 - 310 (2002)

[4] Chovancová M., Zemanová M., Híveš J., Fellner P., Grmanová I.: Korózia oceľových materiálov v modelových pôdnych elektrolytoch. Corrosion of Steel Materials in Model Soil Electrolytes (in Slovak). Koroze a ochrana materiálu, 46 (1), 8 - 11 (2002)

[5]* Zemanová M., Lecomte E., Šajgalík P., Riedel R.: Polysilazane derived micro/nano Si_3N_4/SiC composites. Journal of the European Society, 22, 2963 -2968 (2002)

[6] Chovancová M., Zemanová M.: Kombinované utesňovanie anodicky oxidovaných povlakov hliníka. Combined Sealing of Anodically Oxided Aluminium Coatings (in Slovak). Acta Mechanika Slovaca 6, 81 – 86 (2002)

B. Conferences (*international conferences)

[1] Fellner P., Chovancová M., Zemanová M.: Korózia selektívnych konverzných vrstiev pre slnečné kolektory. Corrosion of Selective Conversion Layers for Solar Collectors (in Slovak). In: Proceedings of 17. medzinárodná konferencia Korózia v energetike, Košice 19. - 20. marec 2002, s. 125 – 128 (2002)

[2]* Fellner P., Baníková M., Híveš J., Korenko M.: Reactions of Sulfur Compounds at Electrowinning of Aluminium. In: Proceedings of V. International Conference Metallurgy, Refraktories and Enviroment, High Tatras, 13. - 17. May 2002, p. 67 – 71 (2002)
[3] Chovancová M., Zemanová M.: Kombinované utesňovanie anodicky oxidovaných povlakov hliníka. Combined Sealing of Anodically Oxided Aluminium Coatings (in Slovak). In: Proceedings of Interkor 2002, Košice 22. - 23. 5. 2002, (2002)
[4] Zemanová M., Chovancová M.: Kombinované utesňovanie anodicky oxidovaných povlakov hliníka. Combined Sealing of Anodically Oxided Aluminium Coatings (in Slovak). In: Proceedings of 44. medzinárodná galvanická konferencia, Bratislava 25. - 26. jún 2002, s. 121 – 129 (2002)
[5] Baníková M., Híveš J.: Kompozitné povlaky Ni – Si. Ni-Si Composite Coatings (in Slovak). In: Proceedings of 44. medzinárodná galvanická konferencia, Bratislava 25. - 26. jún 2002, s. 130 – 136 (2002)
[6] Danielik V., Gabčová J.: Fázové diagramy sústav MF - AlF_3 (M = Li, Na, K). Phase Diagrams of the Systems MF – AlF_3 (M = Li, Na, K) (in Slovak). In: Proceedings of 54. zjazd chemických spoločností, Brno 30. 6. - 4. 7. 2002, s. 534 (2002)
[7] Zemanová M., Chovancová M.: Kombinované utesňovanie anodicky oxidovaného hliníka. Combined Sealing of Anodically Oxided Aluminium Coatings (in Slovak). In: Proceedings of 54. zjazd chemických spoločností, Brno 30. 6. - 4. 7. 2002, s. 360 (2002)
[8]* Fellner P., Korenko M., Híveš J.: Cathodic overvoltage and the contents of sodium in molten aluminium during molten salt electrolysis In: Proceedings of Electrochemistry in Mlecular and Microscopic Dimensions, Düsseldorf, Germany 15 - 20 September 2002, p. 237 (2002)
[9]* Híveš J., Lorentsen A., Thonstad J.: Cermet anode under electrochemical impedance spectroscopy study. In: Proceedings of Electrochemistry in Molecular and Microscopic Dimensions, Düsseldorf, Germany 15 - 20 September 2002, p. 258 (2002)
[10]* Kisza A., Kazmierczak J, Híveš J., Meisner B., Thonstad J.: The Double Layer Capacitance of the Aluminium Electrode in Cryolite Melts. In: Proceedings of The International Jomar Thonstad Symposium, Trondheim, Norway, October 16 - 18. 2002, p. 133 - 141 (2002)
[11]* Híveš J., Fellner P., Ambrová M., Korenko M.: Reactions of Sulphur Compounds in Cryolite-Based Melts In: Proceedings of The International Jomar Thonstad Symposium, Trondheim, Norway, October 16 - 18. 2002, p. 153 - 159 (2002)
[12]* Fellner P., Korenko M., Danielik V.: Comments on the Solubility and Activity of Sodium in Molten Aluminium. In: Proceedings of The International Jomar Thonstad Symposium, Trondheim, Norway, October 16 - 18. 2002, p. 199 - 206 (2002)
[13] Benová M., Zemanová M.: Náhrada Cr^{6+} v automobilovom priemysle. Supplement of Cr(VI) ions in Car Industry (in Slovak). In: Proceedings of AKI 2002 - Koroze a protikorozní ochrana kovů, Praha 22. - 24. 10. 2002, s. 5 (2002)
[14] Jurišová J., Zemanová M.: Korózna odolnosť utesnených anodicky oxidovaných povlakov v atmosférických podmienkach. Corrosion Resistance of Sealed Anodically Oxided Coatings at Outdoor Atmospheric Exposure (in Slovak). In: Proceedings of AKI 2002 - Koroze a protikorozní ochrana kovů, Praha 22. - 24. 10. 2002, s. 14 (2002)
[15] Híveš J., Chovancová M., Fellner P.: Katódové polarizačné krivky potrubných materiálov. Cathodic Polarization Curves of Pipeline Materials (in Slovak). In: Proceedings of Povrchové inžinierstvo 2002, Košice, október 2002, s. 61 - 66 (2002)
[16] Chovancová M.: Technológia povrchových úprav a protikorózna ochrana. Technology of Surface Treatment and Anticorrosion Protection (in Slovak). In: Živá burza konštrukcií a technológií, Bratislava 25. - 26. 4. 2002 (2002)

C. Books and Textbooks

[1] Chovancová M., Fellner P., Špirk E.: Základy korózie a povrchovej úpravy kovových materiálov. Fundamentals of Corrosion and Surface Treatment of Metals (in Slovak). Vydavateľstvo STU v Bratislave, s. 269 (2002) ISBN 80-227-1688-X

DEPARTMENT OF LANGUAGES

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Technical Staff:
Katarína Vépyová;

II. TEACHING AND RESEARCH LABORATORIES

English language classroom
German language classroom
Computer-operated Data Video Projector Room

III. TEACHING

A. Undergraduate Study

The English language (professional for chemists) represents a compulsory subject for each student of this faculty. In special cases, if a student has a better knowledge of a different world language, he may ask the dean to be given permission to take up one of the following languages: German, French, Spanish, Russian or Italian. A prerequisite of the latter case is the intermediate level in the chosen language. The programme is taught in two semesters in the first year of the study and ended with a 4-credit exam. The objective of the language study is not to teach the general language, but the language for specific – prospective professional purposes. It means the participants will be able to use the language in the study of their specialist area literature, to further develop all the language skills actively with the aim of mastering extensive reading and listening to texts, academic writing, poster and conference skills, etc. In the final exam students are expected to prepare a poster, present and support it with arguments in a discussion. The long-term aim is to finally enable all faculty graduates to present - at least - the essential part of their thesis in the state exams also in a foreign language.
In case of a student who does not speak any of the above languages, he may take up an elementary course in English first and then study the compulsory technical language in the second, or possibly the third year of the study.
The students who have chosen a different language than English in the first year, will have to pursue English in three more terms after passing the exam in their first foreign language.
Foreign students have an extra 2-term course of the Slovak language.
Besides the above - mentioned compulsory courses there is a wide range of recommended subjects offered, such as English conversation, preparatory courses for beginners, remedial courses of various levels, German, Russian and so on, according to the interest of students in the current year; these are also available to SUT employees.

1st semester (autumn)		
Technical English I.	(0-2 h)	Harmanová,Horáková, Karvašová, Kozlík, Oreská, Polóniová, Štefanovičová
Technical German I.	(0-2 h)	Kuželová
English language I.	(0-2 h)	Harmanová,Horáková, Karvašová, Kozlík, Oreská, Polóniová, Štefanovičová
Slovak language I. (for foreign students)	(0-4 h)	Kuželová, Oreská
2nd semester (spring)		
Technical English II.	(0-2 h)	Harmanová,Horáková, Karvašová, Kozlík, Oreská, Polóniová, Štefanovičová
Technical German II.	(0-2 h)	Kuželová
English language II.	(0-2 h)	Harmanová,Horáková, Karvašová, Kozlík, Oreská, Polóniová, Štefanovičová
Slovak language II. (for foreign students)	(0-4 h)	Kuželová, Oreská
3rd – 6th semester*		
Technical English I.	(0-2 h)	Harmanová,Horáková, Karvašová, Kozlík, Oreská, Polóniová, Štefanovičová
Technical English II.	(0-2 h)	Harmanová,Horáková, Karvašová, Kozlík, Oreská, Polóniová, Štefanovičová
English language I.	(0-2 h)	Harmanová,Horáková, Karvašová, Kozlík, Oreská, Polóniová, Štefanovičová
English language II.	(0-2 h)	Harmanová,Horáková, Karvašová, Kozlík,

Oreská, Polóniová, Štefanovičová

* for students who started the language course with the German language or as the beginners in English

B. PhD Study

Postgraduate students are offered optional seminars for technical English (2-4 hours per week) in which they are taught academic skills, such as presentation techniques, writing reports, abstracts, summaries, solving case studies, etc. Postgraduates are obliged to pass an examination in which they defend their scientific work results, prove their communication, discussion and other academic skills in English. The subject is taught by Oreská, Polóniová, Štefanovičová and Horáková.

IV. CURRENT RESEARCH PROJECTS

A. "Aspects of Teaching a Foreign Language for Specific Purposes at the University of Technology" -

C-304/20 (Milan Kozlík)

The objective of the 2000–2002 project was to develop high quality course programmes tailored to the needs of our students.
Current results are:
- the new textbook "English for Chemists" has been designed, and since September 2001 it has been piloted in the Technical English classes
- a relevant dictionary of used technical terms in the form of a glossary in the textbook
- enlarging the department´s material bank
- devising new, more challenging tasks for the newly acquired materials
- test design
- devising tests to the new textbook
- introduction of "Effective Presentation" and "Socializing" video programmes into teaching successful poster presentations for undergraduate and postgraduate students
- presenting more challenging topics from science and technology in the annual faculty competition "Student Research Activities"
- further continual teaching staff development in methodology and informatics.

B. Development of a Specific Syllabus for Distant Learning (Veronika Polóniová)

The objectives are:
- adaptation of the undergraduate programme tailored to the special needs and possibilities of distant learners
- adaptation of the innovated teaching material for the on-line study of the language
- designing new forms of entry, current and final tests assessment of the developed material
- setting up a system of homework assignment to distant learners, its checking and feedback

V. COOPERATION

A. Cooperation in Slovakia:

(1) Language departments within the Slovak University of Technology, Bratislava, and those of the Technical University, Košice:
- joint project of preparing syllabuses for language state exam courses administered by SUT language departments and Language Centres which will - besides the general language- introduce also the area of scientific English;
(2) Cooperation with IASTE: oral interviews with applicants for mobility abroad (A. Oreská)
(3) Language section of the annual " Students´ Scientific and Research Activity" (ŠVOČ) competition – cooperation with specialist departments (16 May 2002- 17 participants)
(4) Slovak Association of Translators and Interpreters – organization of a workshop on : " Computer Processing of Translation" – 23 May 2002, 15 participants (V. Polóniová)

B. International Cooperation:

CASAJC – Slovak and Czech Association of Language Centres in Higher Education (V. Polóniová)

C. Membership in Domestic Organizations and Societies:

Slovak Association of Translators and Interpreters, Bratislava (V. Polóniová)

D. Membership in International Organizations and Societies:

British Council - Resource Centre, Bratislava (M. Horáková)
CERCLES/CASAJC – European Confederation of Language Centres in Higher Education (V. Polóniová)

E. International Scientific Programmes:

European Portfolio: A Language Passport to Unify Language Testing in Higher Education within the European Union
Project promoter: Cercles/ CASAJC (V. Polóniová – team member)

DEPARTMENT OF MANAGEMENT

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Assistant Lecturers:
Martin Jozefček, Jana Kajanová, Monika Zatrochová, Martina Kuperová, Martina Svítková, Jana Plchová

Technical Staff:
Martin Mikloš, Lýdia Hadrbulcová, Katarína Macušková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories

Laboratory of Computerized Technique

III. TEACHING

A. Undergraduate Study

1st semester		
Economics	(2-0 h)	Majerník
2nd semester		
Fundamentals of Environmental Philosophy	(2-0 h)	Špirko
5th semester		
Fundamentals of Management of Chemical and Food-Processing Enterprises	(2-2 h)	Šostroneková
Marketing	(2-2 h)	Ďurkovičová
6th semester		
Introduction to Law	(2-0 h)	György
Semester Project	(0-4 h)	Ďurkovičová, Šostroneková
Accounting	(2-2 h)	Šostroneková, Kajanová
7th semester		
Theory of a Firm	(2-2 h)	Herzka
Operations Research	(3-2 h)	Kuperová
Strategic Management	(3-2 h)	Jozefček
Calculations and Prices	(2-2 h)	Plchová
8th semester		
Capital Market and Corporation Finances	(2-0 h)	Baran
Marketing	(2-0 h)	Ďurkovičová
Decision-Making in Business	(2-3 h)	Svítková
Human Resource Management	(2-2 h)	Herzka
Production Management	(2-3 h)	Kuperová
9th semester		
Financial Management	(3-2 h)	Šostroneková
Analysis of Business Economics	(3-2 h)	Baran
Logistics	(2-2 h)	Jozefček
Fundamentals of Mercantile and Financial Law	(2-0 h)	György
International Marketing	(2-2 h)	Ďurkovičová
Year's Project	(0-4 h)	Ďurkovičová, Šostroneková

IV. CURRENT RESEARCH PROJECTS

A. Capital structure and the strategy of enterprises of the chemical and food- processing industry in the economic competition (Marta Šostroneková).

Project participants: Martin Jozefček, Jana Kajanová, Martina Kuperová, Martin Mikloš, Martina Svítková
The success of functioning of each market economy and the revival of economics are influenced, to a great extent, by functioning of the bank system.
From the viewpoint of acceleration of the transformation process, which has been experienced by the Slovak Republic since 1990, the most important tasks of our commercial banks include the provision of credit finances to entrepreneurial subjects. The credits destined especially for the private sector should contribute to promotion and development of the business environment and consequently to an increase of the competition ability as well as to an efficiency of the economics as a whole.
The unstable business environment and unsuitable portfolio structure compel banks to be very careful in their credit orientation to the economic sphere. The high risk of credit transactions and the negative experience of financial institutions gained in the last period - when the provision of credit finances was not very often preceded by thorough analyses- contributed to the changed approaches of banks in making decisions about the provision of credits to entrepreneurial subjects. In an effort to eliminate the credit risk and get rid of the possible losses some banks create and practically introduce new, more rigorous and comprehensive evaluation systems of the credit competence of potential clients.
The number of enterprises capable of financing their needs from own sources has been constantly decreasing. In the unfavourable financial situation the only possible solution is obtaining the bank credit. The more demanding criteria of evaluation applied by financial institutions will then reflect in the changed approach of entrepreneurs to the preparation of applications for a credit and its enclosures. However, the present reality is such that banks grant financial means only in the case if they are persuaded about the comeback, adherence to usefulness, sufficient guarantee, and effectiveness of the credit transaction.
The research work presents a problem of the enterprise financing and defines the credit importance in the structure of the enterprise financial sources. It describes credits provided by a commercial bank and also credit programmes for development of the small and medium enterprising. The credit process is recorded and viewed from two aspects, namely from the aspect of the entrepreneur and from the aspect of the bank.
The work incorporates an employment of the rating system in the commercial bank which is based on the evaluation of the quantitative indices, but also on the qualitative evaluation of individual enterprise components as well as on decisions about granting the credit.

B. Solutions of contemporary secular and religious environmental conceptions. Legal aspects of the fight against negative phenomena in the society. Profile of a graduate from the Faculty of Chemical and Food Technology from the aspect of integration into the European Union (Dušan Špirko).

Scientific objectives of the third stage of works in 2002 were as follows:
Analysis of the solutions of contemporary secular environmental conceptions;
Analysis of the solutions of contemporary Christian environmental conceptions;
Analysis of questions of the implementation of EU legislation in the sphere of the economic competition of subjects of the chemical and food-processing industry in the Slovak Republic;
Analysis of the position and further development of the small and medium enterprising from the standpoint of the creation of favourable conditions in the Slovak Republic;
Analysis of the relationship of EU to Central-European countries in the sphere of the chemical industry.
As regards the points 1 and 2, some conceptual principles of the sustainable development
were established. The basic requirement of the conception is to ensure and satisfy the needs of the present-day generations without jeopardizing and restricting the possibilities of future generations. There are two fundamental approaches: the green or environmental economy and the ecological economy. The environmental economy ranges within limits of the neo-classical economic theory and its aim is to uphold environmental objectives by traditional economic instruments (by the method of ecological accounting designed for the storage and estimation of limits of wastes in the environment, by the ecological tax policy, etc.). The ecological economy rejects approaches of the traditional economy and strives to enforce a new paradigm. It points to the failure of the market and criticises its insufficiency mainly due to the fact that it did not create necessary and efficient instruments for the valuation of natural sources and utility properties of the biosphere and ecosystems; since the above-mentioned sources were used as free goods, without the market value, they were excessively exploited and destroyed.
The post-modern conceptions of the deep ecology, Gaia-hypothesis, environmental ethics and ecofeminism were analyzed. Great attention was paid to principles of the Christian environmentalism, whether it was Roman Catholic or Protestant, and especially to the Skolimowski principle of the respect to life and to the conception of the undisturbed development.
As for the points 3, 4 and 5, main attention was concentrated on legal aspects of the fight against negative phenomena in the society. The matter in question was the obligation of the state to work out and implement the strategy of the society´s economic and social development, which presupposes the ability to distinguish negative phenomena and contradictions of the society and on the basis of these facts to determine the main trends and methods for their overcoming and prevention. The wide-ranging changes, which have been proceeding mainly through the transformation of our economics, imply remarkable changes also in our legal system. From this point of view it is necessary to approximate our legal system to that in the advanced European countries. In this sense, the question of the profile of a graduate from the Faculty of Chemical and Food Technology was in the forefront of interest especially from the aspect of his legal conscience and the integration of the Slovak Republic into the European Union.

V. COOPERATION

A. Cooperation in Slovakia

Economic University, Bratislava – Department of Marketing
Technical University, Zvolen – Department of Business Economics

University of Transport and Communication, Žilina – Faculty of Management
Technical University, Košice
Philosophical Institute of the Slovak Academy of Sciences

B. International Cooperation

Technical University, Vienna, Austria
University of Chemistry and Technology, Prague, Czech Republic
Economic University, Prague, Czech Republic
Masaryk University, Brno, Czech Republic
Technical University, Ostrava, Czech Republic
University of Pardubice, Czech Republic
Technical University, Darmstadt, FRG
Visitors from Abroad
September 12: Dr. Iveta Merlinová, Milano, Italy; October 31: Prof. Eduard Stehlík, PhD., Economic University, Prague, Czech Republic

C. Visitors from Abroad

October 24: Dr. Iveta Merlinová, Milano, Italy
October 11: Assoc. Prof. Ivan Gross, PhD. University of Chemistry and Technology, Prague, Czech Republic
October 31: Prof. Eduard Stehlík, PhD., Economic University, Prague, Czech Republic
November 8: Assoc.Prof. Hana Lošťáková, PhD., University of Pardubice

VI. THESES AND DISSERTATIONS

A. Graduate Theses (MS Degree)

Brozmanová M.:	Statement of costs and yields in Slovnaft, Inc. (J. Kajanová)
Drobňáková L.:	Strategic Management in Slovnaft, Inc. (M. Jozefček)
Ďurišíková N.	Process of forming the employee's personal career (P. Herzka)
Guzma R.:	Marketing management in Matador, Inc. (M. Jozefček)
Korytárová Z.:	Role of the financial controlling in regulating the firm´s policy (D. Baran)
Lančarič D.:	Bill of exchange and its application in Slovnaft, Inc. (Š. György)
Matiová M.:	Communication of a firm with the public directed to the firm´s interior, at a local level, with the public service and media (D. Špirko)
Murgaš M.:	Analysis of the product penetration into the foreign market (M. Ďurkovičová)
Ružbacká V.:	Financial analysis in ZSNP Foundry, Inc. (M. ostroneková)
Slabejová N.:	Search for a choice of employees through the personal and counselling society (P. Herzka)
Smrigová X.:	Analysis of factual costs and the possibility of their reduction (M. Šostroneková)
Szombathová A.:	Marketing and electronic business (A. Ďurkovičová)
Straková I.:	Principles of marketing planning and their application in the firm Polygraf Print, Ltd. (D. Špirko)
Sučanská D.:	Statement of costs and yields in the firm's practice (J. Kajanová)
Škubák J.:	System of the material interest of employees in Istrochem, Inc. (P. Herzka)
Štrauchová S.:	Application of the monetary market products in commercial banks in Slovakia (D. Baran)
Tkáčová D.:	Intraplant cost and yield accounting in Slovnaft, Inc. (M. Šostroneková)
Závodská P.:	Logistics of the purchase in Jungheinrich, Ltd. (M. Jozefček)
Zelková Z.:	Marketing strategy in Palma-Tumys, Inc. (A. Ďurkovičová)
Zuziková K.:	Marketing planning (A. Ďurkovičová)
Žilová M.:	Application of the internal controlling in the firm´s practice (D. Baran)

B. Habilitation Theses

Baran D.:	Application of methods of controlling in the firm´s sphere, 138 pp.
Herzka P.:	Contribution to improvement of the efficiency of human resource management in entrepreneurial subjects, 141 pp.
Špirko D.:	Fundamentals of environmental philosophy, 148 pp.

VII. PUBLICATIONS

A. Journals

[1] Baran D.: Controlling pohľadávok v podnikovej praxi. Controlling of debts in the firm´s practice (in Slovak). Ekonomika a spoločnosť 2, 57-69 (2002)
[2] Baran D.: Riadenie a controlling. Management and controlling (in Slovak). Marketing a komunikace 3, 12-13 (2002), ISSN 1211-5622

[3] Ivanička K., Herzka P., Zatrochová M.: Knowledge, experience and trends in contractual savings for housing (CSH) in the Slovak Republic, Slovak Journal of Civil Engineering, 10, 2, 25-35 (2002), ISSN 1210-3896
[4] Ivanička K., Zatrochová M.: Obchodné strediská – nové lákadlá zábavy a oddychu. Shopping centres – new attractions of entertainment and relaxation (in Slovak). ASB – architektúra, stavebníctvo, bývanie 8, 6, 12-15 (2001), ISSN 1210-3896
[5] Špirko D.: Obrana bratislavského predmostia vo francúzsko-rakúskej vojne roku 1809. Defence of the Bratislava bridgehead in the French-Austrian war (in Slovak). Vojenská história 6, 1, 3-28 (2002), ISSN 1335-3314

B. Conferences with Proceedings (*international conferences)

[1] Baran D.*: Finančný controlling v praxi. Financial controlling in practice (in Slovak). In: Proceedings of the International Conference. Economic University – Czech Managerial Association in Prague, Czech Republic, 20 March 2002, p. 15-28, ISBN 80-86596-03-6
[2] Baran D.*:Controlling zásob ako súčasť controllingu pracovného kapitálu. Controlling of stocks as part of the controlling of working capital (in Slovak). In: Proceedings of the International Scientific Conference of the Faculty of Economics, Transport and Communications of the University of Žilina, 16 April 2002, p. 14-20, ISBN 80-7080-491-2
[3] Baran D.: Rozvoj malého a stredného podnikania vo vzťahu k podporným programom. Development of the small and medium enterprising in relation to supporting programmes (in Slovak). In: Proceedings of the Scientific Conference on "Business Environment in the Slovak Republic – Present State and Prospects". Faculty of Business Management of the Economic University in Bratislava, 16-17 May at Senec, p. 5-8, ISBN 80-225-1572-8
[4] Baran D.*: Uplatnenie úrokových derivátov v podmienkach slovenského peňažného trhu. Application of interest derivatives in conditions of the Slovak monetary market (in Slovak). In: Proceedings of the International Scientific Conference on "Management of the 21-st Century – Theories and Practices in the Chemical and Food-Processing Industry" (in Slovak). University of Chemistry and Technology in Prague, Czech Republic, 3-4 September 2002, p. 20-23, ISBN 80-7080-491-2
[5] Baran D.*: Vývoj trhu prenájmov nebytových priestorov v Bratislave. Development of the lease market of non-residential spaces in Bratislava (in Slovak). In. Proceedings of the International Scientific Conference. Faculty of Civil Engineering of the Slovak University of Technology in Bratislava, 12 September 2002, p. 97-100, ISBN 80-227-1737-1
[6] Baran D.*: Problems of the application of controlling in the firm´s practice oriented to small- and medium-size enterprises. In: Proceedings of the International Scientific Conference on "Economic Theory and Practice – Today and Tomorrow. Economic Faculty of Matej Bel University, Banská Bystrica, 7-8 February 2002, p. 1-3, ISBN 80-8055-597-4
[7] Baran D.*: Possibilities of solving the problem of debts in the sphere of a firm. In: Proceedings of the International Scientific Conference on "Up-to-Date Approaches to the Managerial Work in Enterprises". Material and Technical Faculty of the Slovak University of Technology in Bratislava, Trnava, 4-5 April 2002, p. 5-8, ISBN 80-227-1706-1
[8] Baran D.*: Risk factors of the development of small and medium firms. In: Proceedings of the International Conference on Small and Medium Enterprising in the Slovak Republic on the Threshold of the European Union. National Agency for the Development of Small and Medium Enterprises, Bratislava, 25-26 April 2002, p. 25-29, ISBN 80-88357-17-6
[9] Baran D.*: Educational and research experience gained in economic subjects at technical universities from the aspect of the Faculty of Chemical and Food Technology, Slovak University of Technology in Bratislava. In: Proceedings of the 2nd International Scientific Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, 12-13 September 2002, p. 19-22, ISBN 80-227-1774-6
[10] Baran D.*: Vplyv fixných nákladov na ekonomické výsledky podniku. Influence of fixed costs on the firm´s economic results (in Slovak). In: Proceedings of the 2nd International Scientific Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, 12-13 September 2002, p. 61-65, ISBN 80-227-1774-6
[11] Baran D.*: Management system and controlling. In: Proceedings of the International Scientific Conference on "Globalization and its Impact on Transforming Economics – Positives and Negatives". Faculty of Economics, Transport and Communications of the University of Žilina, 8-9 October 2002, Rajecké Teplice, p. 9-14, ISBN 80-8070-005-2
[12] Baran D.*: Evaluation of results in the sector of the small- and medium-sized business in the Slovak Republic up to 2001. In: Proceedings of the 10th International Scientific Conference "CO-MAT-TECH 2000". Material and Technological Faculty of the Slovak University of Technology in Bratislava, Trnava, 24-25 October 2002, p. 11-16, ISBN 80-227-1768-1
[13] Baran D.*: Kommunikatsiya samoupravleniya s obshchestvennost´yu i marketingom. Communication of the self-government with public and marketing (in Russian). In: Proceedings of the International Scientific Conference on "Marketing and Logistics in the Management System". National University of the Lithuanian Polytechnic Institution of Lvov, 7-9 November 2002, Lvov, Ukraine, p. 7-12
[14] Baran D.*: Praktické využitie kalkulácií s variabilnými nákladmi v rozhodovacích procesoch. Practical utilization of calculations with variable costs in decision-making processes (in Slovak). In: Proceedings of the 2nd International Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Bratislava, Slovak Univrsity of Technology 2002, p. 61-65, ISBN 80-229-1774-6
[15] Ďurkovičová A.*: Tvorba marketingovej stratégie podniku. Formation of the firm´s marketing strategy (in Slovak). In: Proceedings of the International Scientific Conference on „Up-to-Date Approaches to the Managerial Work in Enterprises". Material and Technological Faculty of the Slovak University of Technology, Trnava, April 2002, p. 46-48, ISBN 80-227-1706-1
[16] Ďurkovičová A.*: Marketing a e-commerce. Marketing and e-commerce (in Slovak). In: Proceedings of the International Conference on „Management in the 21st Century". Chemical and Technological University in Prague, Czech Republic, September 2002, p. 48-51, ISBN 80-7080-491-2
[17] Ďurkovičová A.*: Globalizácia – najvyššia forma internacionalizácie v oblasti ropného priemyslu. Globalization – the highest form of internationalization in the field of the petroleum industry (in Slovak). In: Proceedings of the 2nd International Scientific Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, 12-13 September 2002, p. 66-69, ISBN 80-227-1774-6
[18] György Š.: Niektoré právne aspekty boja proti negatívnym prejavom v spoločnosti. Some legal aspects of the fight against negative phenomena of the society (in Slovak). In: Proceedings of the National Scientific Seminar on „Methodological

Questions of the Analysis in the Role of the Theory and Social Practice in the Slovak Republic in 2001. Ekonóm, Bratislava, 12 June 2001, p. 214-216, ISBN 80-225-1533-7
[19] György Š.*: K profilu absolventa FCHPT z hľadiska integrácie SR do Európskej únie. Profile of a graduate from the Faculty of Chemical and Food Technology from the aspect of integration of the Slovak Republic into the European Union (in Slovak). In: Proceedings of the 2nd International Scientific Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, 12-13 September 2002, p. 32-33, ISBN 80-227-1774-6
[20] Herzka P.*: Aspekty budovania kariéry. Aspects of building the career (in Slovak). In: Proceedings of the 2nd International Scientific Conference on "Education of Managers for Chemical and Food-Processing Technology, Enterprises". Faculty of Chemical and Food Technology of the Slovak University of 12-13 September 2002, p. 70-73, ISBN 80-227- 1774-6
[21] Herzka P.*: Vybrané problémy personálneho manažmentu v hospodárskej praxi SR. Selected problems of the human resource management in the economic practice of the Slovak Republic (in Slovak). In: Proceedings of the International Conference on "Up-to-Date Approaches to the Managerial Work in Enterprises. Material and Technological Faculty of the Slovak University of Technology, Trnava, April 2002, p. 59-63, ISBN 80-227-1706-1
[22] Jozefček M.*: Podcenený marketing v malých a stredných podnikoch. Underestimated marketing in small and medium-size enterprises (in Slovak). In: Proceedings of the International Conference on "Small and Medium Enterprising in the Slovak Republic on the Threshold of the European Union". Syndicate of Entrepreneurs in Slovakia, Bratislava, April 2002, p. 96-98, ISBN 80-88357-17-6
[23] Jozefček M.*: Marketingová stratégia na internete. Marketing strategy on the internet (in Slovak). In. Proceedings of the 4th Scientific Conference on the "Present Situation and Perspectives. Bratislava, 15-16 May 2002. Ekonóm, p. 52-53, ISBN 80-225-1572-8
[24] Jozefček M.*: Prepojenie strategického manažmentu a etiky pri výchove manažéra. Interconnection of the strategic management and ethics in the managerial education (in Slovak). In: Proceedings of the 2nd International Scientific Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, 12-13 September 2002, p. 39-40
[25] Kajanová J.*: Význam účtovníctva v podnikovej praxi. Significance of accounting in the firm´s practice (in Slovak). In: Proceedings of the International Scientific Conference on Up-to-Date Approaches to the Managerial Work in Enterprises. Material and Technological Faculty of the Slovak University of Technology, Trnava, April 2002, p. 108-110, ISBN 80-227-1706-1
[26] Kuperová M.*: Profil absolventa z aspektu jeho formovania na Katedre mnažmentu FCHPT STU v Bratislave. Graduate´s profile from the aspect of his formation at the Department of Management at the Faculty of Chemical and Food Technology of the Slovak University of Technology in Bratislava (in Slovak). In: Proceedings of the 2nd International Scientific Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, 12-13 September 2002, 44-46, ISBN 80-227-1706-1
[27] Majerník M.*: Využitie finančnej analýzy v rozhodovacom procese manažéra. Exploitation of the financial analysis in the manager´s decision-making process (in Slovak). In: Proceedings of the 2nd International Scientific Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, 12-13 September 2002, p. 82-83, ISBN 80-227-1774-6
[28] Plchová J.*: Úloha ekologickej ekonómie pri formovaní profilu absolventa katedry. Role of the economic ecology in the formation of a graduate of the Department of Management (in Slovak). In: Proceedings of the 2nd International Scientific Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, 12-13 September 2002, p. 50-53, ISBN 80-227-1774-6
[29] Svítková M.*: Viaczdrojové financovanie chemických podnikov v Slovenskej republike v prípravnej fáze vstupu do Európskej Únie. Multi-source financing of chemical enterprises in the Slovak Republic in the preparatory phase of the entry into the European Union (in Slovak). In: Proceedings of the 2nd International Conference on "Education of Managers for Chemical and Food-Processing Enterprises. Faculty of Chemical and Food Technology of the Slovak University of Technology in Bratislava, 12-13 September 2002, p. 94-96, ISBN 80-227-1774-6
[30] Šostroneková M.*: Účtovníctvo – informačná báza podniku. Accounting – enterprise information base (in Slovak). In: Proceedings of the International Scientific Conference on "Up-to-Date Approaches to the Managerial Work in Enterprises ". Material and Technological Faculty, Trnava, April 2002, p. 176-179, ISBN 80-227-1706-1
[31] Šostroneková M.*: Podnikateľské prostredie v podmienkach legislatívnych zmien na Slovensku. Business environment in conditions of the legislative changes in Slovakia (in Slovak). In. Proceedings of the International Conference on "Management of the 21st Century – Theories and Practices in the Chemical and Food-Processing Industry. Institute of Economics and Management of the Chemical and Food-Processing Industry, Chemical and Technological University in Prague, Czech Republic, p. 206-201, ISBN 80-7080-491-2
[32] Šostroneková M.*: História Katedry manažmentu na Fakulte chemickej a potravinárskej technológie STU v Bratislave a jej poslanie a pôsobenie vo výchove manažéra v súčasnosti. History of the Department of Management at the Faculty of Chemical and Food Technology of the Slovak University of Technology in Bratislava and its role and influence on managerial education in the present time (in Slovak). In: Proceedings of the 2nd International Conference on "Education of Managers for Chemical and Food-Processing Enterprises. Faculty of Chemical and Food Technology, Bratislava, 12-13 September 2002, p.13-15, ISBN 80-227-1774-6
[33] Špirko D.: K filozoficko-environmentálnej analýze techniky ako subsystému kultúry. Philosophical and environmental analysis of the technique as a subsystem of the culture (in Slovak). In: Proceedings of the National Scientific Seminar on "Methodological Questions of the Analysis in the Role of the Theory and Social Practice". Ekonóm, Bratislava, 12 June 2001, p. 46-51, ISBN 80-225-1533-7
[34] Špirko D.*: K východiskám environmentálne zodpovednejšej humanizačnej stratégie. Solutions of the environmentally more responsible humanization strategy (in Slovak). In: Proceedings of the International Conference on "Man, Culture, Values". IRIS Bratislava 2002, p. 235-240, ISBN 80-89074-07-3
[35] Špirko D.*: "Homo consumens" a prevrátené tabuľky hodnôt. "Homo consumens" and the reversed tables of values (in

Slovak). In: Proceedings of the International Scientific Conference. Matej Bel University, Faculty of Humanities, Banská Bystrica 2002, p. 196-202, ISBN 80-8055-585-0

[36] Špirko D.*: Je etika v ekonomike niečo "navyše"? Is ethics in the economics something additional? (in Slovak). In: Proceedings of the 2nd International Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, Bratislava, 12-13 September 2002, p. 100-104, ISBN 80-227-1774-6

[37] Špirko D.*- Mikloš M.*: Zodpovednosť inžiniera. Engineer´s responsibility (in Slovak). In: Proceedings of the 2nd International Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, Bratislava, 12-13 September 2002, p. 53 – 56, ISBN 80-227-1774-6

[38] Velický P.*, Škreňo V.: Sociálno-filozofické východiská ekonomických teórií. Social-philosophical aspects of economic theories (in Slovak). In: Proceedings of the Scientific Seminar on "Methodological Questions of the Analysis from the Aspect of the Theory and Social Practice in the Slovak Republic". Bratislava 12 June 2001, Ekonóm, p. 34-41, ISBN 80-225-1533-7

[39] Zatrochová M.: Rozvoj a problémy obchodných nehnuteľností na Slovensku. Development and problems of the commercial real estates in Slovakia (in Slovak). In: Proceedings of the MendelNet Conference in Brno. Mendel University of Agriculture and Forestry, Brno 2001, p. 242-246, ISBN 80-7302-024-6

[40] Zatrochová M.*: Marketingový manažment a vymedzenie jeho funkcií v pedagogickom procese. Marketing management and the determination of its functions in the pedagogical process (in Slovak). In: Proceedings of the 2nd International Conference on "Education of Managers for Chemical and Food-Processing Enterprises". Faculty of Chemical and Food Technology of the Slovak University of Technology, Bratislava, 12-13 September 2002, p. 57 – 59, ISBN 80-227-1774-6

C. Conferences and posters without Proceedings

[1] Špirko D.: Moderná kultúra a príroda. Modern culture and nature (in Slovak). Lecture at the Philosophical Institute of the Slovak Academy of Sciences, Bratislava, 25 November 2002

D. Books and Textbooks

[1] Baran D.: Aplikácia controllingu v podnikovej praxi. Application of controlling in the firm´s practice (in Slovak). Publishing House of the Slovak University of Technology, Bratislava, 135 pp. (2002), ISBN 80-227-1666-9

[2] Baran D.: Základy kapitálového trhu. Fundamentals of the capital market (in Slovak). Publishing House of the Slovak University of Technology, Bratislava, 75 pp. (2002), ISBN 80-227-1775-4

DEPARTMENT OF MATHEMATICS

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I. STAFF

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Associate Professors:
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Assistant Professors:
Jozef Antoni, PhD; Július Bánki, PhD; Štefan Boor, MSc; Ivan Garaj, PhD; Viera Grusková, PhD; Eva Hainzlová, MSc; Vladimír Haluška, PhD; Ľubomíra Horanská, PhD; Milan Jasem, PhD; Eva Rovderová, PhD; Soňa Sladká, MSc

PhD. students:
Peter Sarkoci, Ing.

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Laboratory equipped by personal computers for the Basics of Computer Science

III. TEACHING

A. Undergraduate study

1st semester (autumn)		
Calculus I.	(3-3 h)	Baláž, Grusková, Jasem, Kolesárová, Kvasnička, Šabo
Basic of Computer Science	(1-2 h)	Antoni, Bánki, Hainzlová, Pospíchal
External bachelor study Calculus I.	(2-2 h)	Kvasnička
2nd semester (spring)		
Calculus II.	(4-4 h)	Baláž, Grusková, Jasem, Kolesárová, Kvasnička, Šabo
5th semester (autumn)		
Calculus III.	(2-2 h)	Antoni, Garaj, Varga
7th semester (autumn)		
Discrete mathematics	(2-1 h)	Kolesárová
Programming and algorithms	(2-1 h)	Pospíchal
Numerical mathematics	(2-1 h)	Šabo
Computer architecture	(2-1 h)	Antoni
Laboratory of specialization	(2-1 h)	Boor, Sarkoci

B. PhD Study

2nd Semester (spring)		
Optimisation Methods and Advanced Mathematical Statistics	(2 h)	Kvasnička, Varga

C. Extracurricular lectures

Evolutionary Algorithms	(2-0 h)	Kvasnička, Pospíchal (see web address http://math.chtf.stuba.sk/evol/prednaska.htm, this lecture is presented for computer-science students of Faculty of Mathematics and Physics, Comenius University)
Evolutionary Algorithms	(2-4 h)	Kvasnička (see web address http://math.chtf.stuba.sk/evol/prednaskaSTU.htm, this lecture is presented for computer-science students, study program Artificial Intelligence, FEI STU)
Introduction to Cognitive Sciences	(2-0)	Kvasnička, Pospíchal (see web address http://math.chtf.stuba.sk/kog_vedy.htm, this lecture is presented for students of Comenius University)

IV. CURRENT RESEARCH PROJECTS

A. Artificial neural networks (Vladimír Kvasnička).

The core of the project is the study of artificial neural networks, which are able to accept directly a structural information represented by acyclic rooted graphs. Such a generalization of neural networks is very important not only for chemical application of neural networks, where structural formulas are used as an input of molecules, but also for computer science in general, where the processing of a structural information belongs to its basic problems. An architecture of a neural network will be divided into two parts. In the first part the structural formula will be directly numerically processed, and the output will serve as an input for a standard neural network. The adaptation process, which optimizes the parameters of the neural network to achieve such an output of the neural network, that would be as close as possible to the required output, is applied to both parts of the neural network. The method will be tested for various classes of molecular properties and structural formulas. Our further activities are concentrated on an application of recurrent neutral networks as cognitive devices for multi agent simulation calculations of an emergence of coordinated communication between agents. It was demonstrated, that if an analogue of Dawkins' memes is used, then a coordinated communication spontaneously emerges. On the other hand, if Dawkins' memes are ignored, then an emergence of coordinated communication between agents does not emerge.

B. Evolutionary algorithms (Jiří Pospíchal)

This project is concentrated on a development of various evolutionary optimisation algorithms (genetic algorithms, simulated annealing, evolution strategies and tabu search) and their applications for solution of combinatorial NP-complete problems, graph theory problems and for adaptation of neural networks, as well as for optimisation of highly multimodal and deceptive functions. Theoretical study of fuzzy systems and implementation of a learning procedure of fuzzy neural networks by evolutionary algorithms. Artificial life studies are performed by making use of evolutionary algorithms as simulators of Darwinian evolution. An emergence of cooperation and altruism in multiagent systems is simulated. Artificial chemistry, typogenetics, models of evolution of autoreplicatory molecules and simulations of origin of life, Darwinian evolution on molecular level.

C. Theory of Fuzzy Systems (Kolesárová and Michal Šabo).

The main goals of this project are the modeling of vagueness and the inference process from imprecise or vague premises. These topics are very important for knowledge-based systems, especially for fuzzy expert systems and the aggregation of vague data. In the area of approximate reasoning there are studied various types of inference rules dealing with the problem of deduction of conclusions in an imprecise setting. Namely, a compositional rule of inference based on various types of triangular norms (or other approximate operators) is studied. The methods which effectively simplify the computational complexity of an inference process are investigated. Since the aggregation of input data into a single output is a background of many theoretical and practical problems, we study various types of aggregation operators that can be successfully used in many valued logic, in the theory of approximate reasoning and decision making. Main attention is paid to the aggregation operators based on triangular norms to the construction methods of new aggregations operators and to the conditional aggregation of data.

D. Estimations of unknown parameters in statistical models of direct and indirect measurements (by Štefan Varga)

Our specific field of interest has been estimations and predictions in regression models. Special regression models are models with unknown variance and covariance components called mixed regression models. Estimability and different types of estimations of these components and their applications are topics of our publishing activities.

E. Periodic weekly seminar on Fuzzy sets and fuzzy logic (Michal Šabo)

Organised for staff of Department of Mathematics and students of our Faculty.

V. COOPERATION

A. Cooperation in Slovakia:

Department of Mathematics and Descriptive Geometry, Faculty of Civil Engineering, Slovak Technical University, Bratislava
Department of Computer Science and Engineering, Faculty of Electrical Engineering and Information Technology, Slovak Technical University, Bratislava
Institute of Informatics, Faculty of Mathematics, Physics, and Informatics, Comenius University, Bratislava
Department of Cybernetics and Artificial Intelligence, Faculty of Electrical Engineering and Information Technology, Technical University of Košice

B. International Cooperation:

Department of Mathematics, University of Bayreuth
- mathematical chemistry
Institute of Mathematics, Johannes Kepler University, LINZ, AUSTRIA
- fuzzy logic
Computer Chemistry Laboratory, Masaryk University, Brno, Czech Republic
- computational chemistry
Department of Organic Chemistry, University of Pardubice, Czech Republic
- computational chemistry
Faculty of Informatics, Masaryk University, Brno, Czech Republic
- computational chemistry
Dept. of Computer Science, University of Alcala, Spain
- fuzzy logic
Department of Mathematical Methods and Models for Applied Sciences, University of Rome "La Sapienza", Italy

- fuzzy logic

C. Membership in Domestic Organisations and Societies

Slovak Academic Society (V. Kvasnička)
Slovak Artificial Intelligence Society (V. Kvasnička, J. Pospíchal)
Slovak Mathematical Society, Slovak Society of Mathematicians and Physicists
(J. Antoni, V. Baláž, I. Fabrici, M. Jasem, A. Kolesárová, V. Kvasnička, J. Pospíchal, E. Rovderová, M. Šabo, Š. Varga)
Slovak Computer Science Society (V. Kvasnička, J. Pospíchal)
Slovak Statistical and Demographical Society (I. Garaj)

D. Membership in International Organisations and Societies

The EURO Working Group on Fuzzy Sets (A. Kolesárová, J. Pospíchal)
Memberships in editorial boards:
MATCH Communications in Mathematical Chemistry (V. Kvasnička)
Neural Network World (V. Kvasnička)
Croatica Chimica Acta (V. Kvasnička)
Tatra Mountains Math. Publ. (A. Kolesárová)

G. Visitors from Abroad

H. Visits of Staff Members to Foreign Institutions

A. Kolesárová, 23rd Linz Seminar on Fuzzy Set Theory, Linz , Austria, February 5-9, 2002
A. Kolesárová, Center for Machine Perception, ČVUT, Praha, CEEPUS SK-42, June 2002
J. Pospíchal, Conference Mendel ´2002, Brno, Czech Republic, June 5-7, 2002
V. Kvasnička, J. Pospíchal, 2. Czecho-slovak workshop on cognition and artificial life, Mílovy, ČR, 13-16.5, 2002
A. Kolesárová, M. Šabo, P. Sarkoci, Š. Varga, Tarski Meeting COST 274, Prague, Czech Republic, November 2002
V. Kvasnička, Memes in science and philosophy? Workshop organized by FÚ AV ČR, Prague, vila Lanna, 5.-6.11.2002
V. Kvasnička, Evolutionary innovation. Workshop organized by Center for Theoretical Study, Prague, vila Lanna, 27.-31.5.2002

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1] Baláž,V., Šalát,T.: Zeros of continuous functions and the structure of two function spaces. Math. Slovaca 52, 397-408 (2002).
[2] Baláž V., Červeňanský J., Kostyrko P., Šalát T.: *I* - convergence and *I* - continuity of real functions. Acta Mathematica 5, 56-62 (2002).
[3] Duchoň, M., Kolesárová, A.: Fourier transforms of vector valued measures on a certain compact semigroup. Tatra Mountains Math. Publ. 24, 89-103 (2002).
[4] Garaj, I.: Preberacie plány exponenciálneho rozdelenia. Sampling plans of exponencial distributions (in Slovak). FORUM METRICUM SLOVACUM 5, 5-10 (2002), (published in February 2002).
[5] Katuščák, S., Kucera, L., J., Varga, Š.: New method of recognition of wood species. Increasing of the effectivness of colorimetric recognition of picea excelsa and abies alba. Drevársky výskum 47, 1–12 (2002).
[6]* Kolesárová A., Muel E., Mordelová J.: Construction of kernel aggregation operators from marginal values. Int. Jour. of Uncertainty, Fuzziness and Knowledge-Based Systems 10 (2002) 37-50.
[7] Kolesárová A.: Moebius fitting aggregation operators. Kybernetika 38, 259-273 (2002).
[8]* Kvasnička V., Pospíchal J.: Artificial Chemistry and Molecular Darwinian Evolution in silico
Collection of Czechoslovak Chemical Communications 67, (2002) 139-177.
[9] Pospíchal J., Kvasnička V.: Multistage decision-making using simulated annealing applied to a fuzzy automaton. Applied Soft Computing 2 (2F), 140-151 (2002).
[10] Sarkoci P., Šabo M.: Information Boudedness Principle in Fuzzy Inference Process. KYBERNETIKA 38, 327-338 (2002).

B. Conferences (*international conferences)

[1]* Baláž,V.: Remark on the structure of two function spaces by applying notion of zeros and fixed points Aplimat 2002, p. 61-68
[2]* Garaj, I*., Janiga, I.: Dvojstranné tolerančné činitele normálneho rozdelenia s koeficientom spoľahlivosti 99,99 percent. Two-sided tolerance coefficients of normal distribution with a reliability coefficient 99.99 percent (in Slovak), 11. International workshop COMPUTATIONAL STATISTICS, pp. 28-30, 5.-6. 12. 2002 Bratislava
[3]* Garaj, I*., Janiga, I.: Exaktný výpočet dvojstranných tolerančných činiteľov normálneho rozdelenia. Exact computation of two-sided tollerance coefficients of normal distribution (in Slovak). Quantitative Methods in Economy and Business – Methodology and Practice in the New Millenium, 8th Int. Conf., pp. 430-433, 18.-20. 9. 2002, Bratislava.
[4]* Janiga, I*.,Garaj, I.: Exaktný výpočet tolerančných činiteľov dvojstranného tolerančného intervalu pre výber z normálneho rozdelenia s neznámymi parametrami. Exact computation of tollerance coefficients of two-sided tollerance interval for sample from normal distribution with unknown parameters (in Slovak). 11. International workshop COMPUTATIONAL STATISTICS, pp. 28-30, 5.-6. 12. 2002 Bratislava
[5]* Kolesárová, A*., Muel, E.: Kernel aggregation operators and their boundary functions. In: The 6th Int. Conf. FSTA 2002, Abstracts, p.80. (Pr)
[6]* Kolesárová, A*.: On extensions of crisp utilities in MCDM. In: Tarski Meeting of the Cost 274, Book of abstracts.
[7]* Kvasnička, V.: Artificial chemistry – a new metaphor for evolutionary algorithms. In: R. Roy, M. Köppen, S. Ovaska, T. Furuhashi (eds.): Soft Computing and Industry . Recent Applications. Springer Verlag, Berlin, 2002, pp. 665-674.
[8]* Kvasnička, V.: Artificial Chemistry, Replicators, and Molecular Darwinian Evolution In Silico. Plenary lecture at 2nd Euro-International Symposium on Computational Intelligence, Book of abstracts, Košice 2002
[9]* Kvasnička, V.: Memetika "in Silico". Memy ve vědě a filozofii? Memetics "in Silico". Memes in science and philosophy?

Workshop organized by FÚ AV ČR vila Lanna, 5.-6.11.2002, Book of Abstracts.
[10]* Kvasnička, V.: Molecular Darwinian evolution in silico. Evolutionary innovation. Center for Theoretical Study, Prague, vila Lanna, 27.-31.5.2002, Book of Abstracts
[11]* Kvasnička, V.: Molekulárna darwinovská evolúcia in silico. Molecular Darwinian evolution in silico (in Slovak). In: J. Kelemen, V. Kvasnička (eds): Cognition and Artificial Life II. FPF SU Publishing, Opava, 2002, pp. 95-118.
[12]* Mesiar, R*., Kolesárová, A.: On some analytical properties of aggregation operators. In: Proc. 23rd Linz Seminar on Fuzzy Set Theory: Analytical Methods and Fuzzy Sets, February., 5-9, 2002, pp. 45-47.
[13]* Muel, E.*, Mordelová, J., Kolesárová, A.: Binary kernel aggregation operators. In: XI Actas Congreso Espanol Sobre Technologías y Lógica Fuzzy, Estylf§ 2002, Universidad de León, del 17 al 20 de septiembre de 2002, pp. 151-155.
[14]* Pospíchal, J.: Evolution of unconscious cooperation in proportional discrete-time harvesting Poster at 2nd Euro-International Symposium on Computational Intelligence, Košice 2002, electronic supplement, on CD ROM
[15]* Pospíchal, J. Evolúcia kooperácie v drevorubačskej dileme. Evolution of cooperation in lumberjacks dilemma (in Slovak). In: J. Kelemen, V. Kvasnička (eds): Cognition and Artificial Life II. FPF SU Publishing, Opava, 2002, pp. 199-214.
[16]* Pospíchal, J.: Evolution of cooperation in lumberjacks' dilemma. In proceedings R. Matoušek, P. Ošmera: MENDEL 2002, 8th International Conference on Soft Computing, VUT Brno Press, 2002, ISBN 80-214-2135-5, pp. 45-50.
[17]* Pospíchal, J., Kvasnička, V. Multistage Decision Making for a Fuzzy Automaton by Simulated Annealing. In: R. Roy, M. Köppen, S. Ovaska, T. Furuhashi (eds.): Soft Computing and Industry . Recent Applications. Springer Verlag, Berlin, 2002, pp. 833-846.
[18]* Sarkoci, P.: In-line Relevancy Transformation Operators Proc. of The Sixth Int. Conf. FSTA 2002, pp. 112-113
[19]* Šabo, M. Sarkoci, P.: Relevancy Transformation Operators and Information Boundedness Principle. Book of Abstracts, Tarski Meeting COST 274, Prague November 2002
[20]* Šabo, M.: Function with Moderate Growth. Proc. of The Second Seminar Fuzzy Sers and Quantum Structures, Bratislava 2002, pp. 31-34
[21]* Šabo, M.: On Some Properties of Binary Operations Used In Fuzzy Modeling Inference Process. Proc. of The Sixth Int. Conf. FSTA 2002, pp. 121-123
[22]* Šabo, M.: Requirements on Many Valued Connectives. Proc. of 1-th Inter. Conf. Aplimat 2002, pp. 387-389
[23]* Varga, Š.: On arithmetic in fuzzy regression models. Proceedings of 27st Scientific Colloqium VŠTEZ, Hejnice 2002, 182 – 187.
[24]* Varga, Š.: On robust estimations in fuzzy regression models. Proceedings of 1st Scientific Colloqium APLIMAT, Bratislava 2002, pp. 415 – 419.

C. Books and Textbooks

[1] Calvo T., Kolesárová A., Komorníková M., Mesiar, R.: Aggregation Operators: Basic Concepts, Issues and Properties. In: Aggregation operators. New Trend and Applications. T. Calvo, G. Mayor, R. Mesiar, eds. Physica Verlag, Heidelberg New York, 2002, pp. 3-104.
[2] Garaj, I., Janiga, I.: Dvojstranné tolerančné medze pre neznámu strednú hodnotu a rozptyl normálneho rozdelenia Two-sided tolerance bounds for unknown mean and variance of normal distribution (in Slovak). STU Publishing, Bratislava, 2002, pp. 1-147.
[3] Kelemen, J., Kvasnička, V. (editors): Cognition and Artificial life II. FPF SU Press, Opava, 2002.
[4] Kolesárová, A., Kováčová M., Záhonová V.: Matematika II. Mathematics II (in Slovak). STU Publishing, Bratislava, 2002.
[5] Kvasnička, V., Pospíchal, J.: Connectionism and modelling of cognitive processes. In Rybár, J., Beňušková, Ľ., Kvasnička, V. (editors): Kognitívne vedy. Cognitive Science (in Slovak). Kalligram, Bratislava, 2002, pp. 257-339.
[6] Kvasnička, V., Pospíchal, J.: Guest editors of a special issue of Neural Network World journal
[7] Kvasnička, V., Pospíchal, J.: Chapter 18: Evolutionary Study of Interethnic Cooperation In: F. Schweitzer (ed.): Modeling Complexity in Economic and Social Systems.Singapore: World Scientific, Singapore, 2002, pp. 293-322.
[8] Sinčák, P., Vaščák, J., Kvasnička, V., Pospíchal, J. (eds.): Intelligent Technologies - Theory and Applications. New Trends in Intelligent Technologies. IOS Press, Amsterdam, 2002.

Conferences co-organized by the department:
Cognition and Artificial Life II (KOGNÍCIA A UMELÝ ŽIVOT II), 13.-16. 5. 2002, Mílovy, ČR (see web homepage http://math.chtf.stuba.sk/smolenice/index_III.htm).
2nd Euro-International Symposium on Computational Intelligence, TU Košice, 16-19.6. 2002
The third seminar Fuzzy sets and quantum structures, Vyhne, 31.5.-2.6.2002.

DEPARTMENT OF NUTRITION AND FOOD ASSESSMENT

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I. STAFF

Associate Professors:
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Assistant Professors:
Eva Hybenová, PhD; Mária Kováčová, PhD; Vlasta Kuklišová, MSc.; Soňa Škrovánková, MSc.;

Research Fellows:
Bernadette Hozová, PhD; Viola Buchtová,MSc.; Anna Stahelová, MSc.

PhD Students:
Silvia Grochalová, MSc.; Iveta Kukurová, MSc; Kitti Németh, MSc.

Technical Staff:
Žofia Fórová; Edita Kovačičová; Eva Vosátková;

II. TEACHING AND RESEARCH LABORATORIES

Laboratory of Food Microbiology and Hygiene
Laboratory of Food Analysis and Assessment

III. TEACHING

A. Undergraduate Study

5th semester (autumn)		
Food Chemistry I.	(2 h)	Takácsová
6th semester (spring)		
Food Analysis	(2 h)	Kováčová
Laboratory of Food Analysis	(4 h)	Kováčová
Semestral Project	(0-4 h)	All Department Staff
7th semester (autumn)		
Food Microbiology	(2 h)	Valík
Laboratory of Food Microbiology	(2 h)	Valík, Hozová, Frank, Kuklišová
Food Additives and Contaminants	(2-0 h)	Hybenová
Laboratory Practice Food Additives and Contaminants	(0-2 h)	Hybenová
Physiology and Pathophysiology of Human Nutrition	(2-2 h)	Bukovský
Semestral Project I.	(0-5 h)	All Department Staff
8th semester (spring)		
Food Hygiene	(2-1 h)	Valík
Food Chemistry II.	(2 h)	Takácsová
Laboratory of Food Chemistry	(1 h)	Takácsová
Food Analysis II.	(2 h)	Prachar
Laboratory of Food Analysis II	(4 h)	Prachar
Food Toxicology	(2 h)	Piecková
Semestral Project II.	(0-5 h)	All Department Staff
Laboratory Practices	(0-4 h)	All Department Staff
9th semester (autumn)		
Food Additives and Contaminants	(2-0 h)	Hybenová
Laboratory Practice Food Additives and Contaminants	(0-2 h)	Hybenová
Food Ecohygiene	(2-0 h)	Frank
Food Assessment	(2-2 h)	Škrovánková
Laboratory Practices II.	(0-4 h)	All Department Staff
Semestral Project III.	(0-5 h)	All Department Staff
10th semester (spring)		
Diploma Project	(0-27 h)	All Department staff

IV. CURRENT RESEARCH PROJECTS

A. Development, optimising and control of new food products with the aim to increase the food quality using biological active substances and modern technologies (Alexander Dandár)

Research activity was focused on selection, analysis and utilization of antioxidants of natural sources namely of plant origin, applied in edible plant oil. Antioxidative activity of ethanol extracts from oil seeds /corn, amaranth, soy, rapeseed, and cultivated flax/ as well as from legumes /pea, lens, bean, chickpea, French bean/ was studied.
Positive antioxidant effects on lipid stability were established e.g. in the samples of heat-treated pork with lens. Antioxidative activity of ethanol extracts of some spices as green and black tee and coffee drinks. Volatile compounds of silica and the extracts from selected herbs and tees as well as its sensory properties were analysed too.
Chemical parameters of sensory properties of fermented natural juices /cabbage, celery and beetroot/ were evaluated. Effect of NaCl content and an initial pH value as well as the effect of bacteria on biogenic amines and organic acids production were observed in evaluated juice samples. Decrease of vitamins B in heat-treated confectionery samples within an optimazing of technology was studied. Soy flavonoids / genistein, daidzein and their glukozides / in term of their antioxidative properties were studied.
The influence of polyphosphate content on sensory and physico-chemical properties in selected meat products was observed. Nutritive parameters as well as the additives, mainly amino acids composition were analysed. An effect of lactic acid addition applied on the surface of butcher`s meat with the aim to extend its shelf life was evaluated.

B. Processes and factors having the influence on durability and safety of foods and on household chemistry (Štefan Schmidt)

Principles of predictive microbiology in the evaluation of hygienic safety of food were used. Mathematical modelling of growth of hygienically relevant microorganisms in model systems, in food and in emulsion systems was worked out.
Prediction of durability and dynamics of microbial deterioration of foods was studied.
Influence of external and internal environmental determinants on micro flora and sensory properties during storage of durable cereal products was studied.

V. COOPERATION

A. Cooperation in Slovakia

Agrifood , accredited testing laboratory s.r.o., Prievidza
Soft Cake Bakery, Inc., Senica
Institute of Preventive and Clinical Medicine, Bratislava
Rajo, S.A., Bratislava

B. International Cooperation

BBSRC Institute of Food Research, Norwich, Great Britain
- Support for database of predictive microbiology.

C. Membership in Domestic Organizations and Societies

Expert of the Slovak National Accreditation Service – Technical Commission TVA-L4	(B. Hozová)
Member of Committee of the Food Section SCHS	(E. Hybenová, Ľ. Valík)
Slovak Chemical Society	(V. Frank, B. Hozová)
Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences, Bratislava	(E. Hybenová)

D. Membership in International Organizations and Societies:

Czechoslovak Society for Microbiology	(B. Hozová, V. Frank, Ľ. Valík)
Expert of Certikom, Ltd. (Deutsche Akkreditierungssystem)	(B. Hozová)

F. International Scientific Programmes:

G. Visitors from Abroad:

Dr. Ralf Mayr	Research Center for Milk and Food of the Technical University of Munich in Weihenstephan, Germany, November 2002 (3 days)
Prof. Martin Busse	Research Center for Milk and Food of the Technical University of Munich in Weihenstephan, Germany, November 2002 (3 days)
H.	Visits of Staff Members and PhD Students to Foreign Institutions:
Ľ. Valík	University of Chemical Technology, Prague, CZ, January 2002 (2 days)
Ľ. Valík	Institute of Food Research, Norwich, UK, August 2002 (12 days)

H. Visits of Staff Members and PhD Students to Foreign Institutions:

Ľ. Valík	University of Chemical Technology, Prague, CZ, January 2002 (2 days)
Ľ. Valík	Institute of Food Research, Norwich, UK, August 2002 (12 days)

VI. THESES AND DISSERTATIONS

A. Graduate Theses (MS Degree) for state examinations after 5 years of study (supervisors are written in brackets)

Benko M.:	Study of amino acids concentration in selected meat products (V. Buchtová)
Ďalogová Z.:	Determination of vitamin B12 and folic acid in food products (E. Hybenová)
Fodorová M.:	Isolation and utilization of soy flavonoids (M. Kováčová)
Galdunová L.:	Study of sensory properties of selected herb tea (S. Škrovánková)
Hrončeková J.:	The effect of plant material on lipid stability (A. Mikulajová)
Jančovičová J.:	Application of selected additives for improvement of the cereal products quality. (B. Hozová)
Jelušová M.:	Study of amino acids composition in mixture of spices (V. Buchtová)
Košíková M.:	Antioxidative effect of legumes (A. Mikulajová)
Kravec J.:	Antioxidative effect of some condiments (M. Takácsová)
Leskovská L.:	Growth dynamics of *Bacillus cereus* in UHT cream. (Ľ. Valík)
Martinická L.:	Microbiological quality of pasteurised milk. (Ľ. Valík)
Regecová M.:	Determination of pyridoxin and thiamin in food products (E. Hybenová)
Sova M.:	Antioxidative effect of some agricultural products (M. Takácsová)
Škvareková Z.:	Microbiological quality of selected milk products. (V. Frank)
Žemličková Z.:	Effect of flavonoids on the stability of natural colorants (M. Kováčová)

B. Dissertations (PhD.):

Kukurová I.:	Interactions of antibiotics in milk in the determination of detection limits. (B. Hozová)
Lauková D.:	Stability of food emulsions. (Ľ. Valík)
Kitti Németh:	Influence of natural substances on the lipid stability. (M. Takácsová)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Karovičová J., Kohajdová Z., Hybenová E.: Using of multivariate analysis for evaluation of lactic acid fermented cabbage juices. Chem. Pap. 56, 267-274, (2002)

[2]* Hozová B., Turicová R., Lenkeyová I.: Microbiological and sensory quality of stored croissant-type bakery products depending on external (sorbic acid) and internal (dough, aw value) conditions. Nahrung/Food 46, 144-150 (2002)

[3]* Sláviková L., Čertík M, Masrnová S., Škrinárová B., Valík Ľ., Šajbidor J.: Effect of moisture and water activity on □-linolenic acid production in solid state fermentation. Chem. Listy 96, S181-S182, (2002)

[4]* Valentová H., Škrovánková S., Panovská Z., Pokorný J.: Time-intensity studies of astringent taste. Food Chem. 78, 29-37 (2002)

[5] Hozová B., Lenkeyová I., Turicová R., Dodok L.: Sensory quality of stored croissant-type bakery products. Czech J. Food Sci. 20, 105-112 (2002)

[6] Hozová B., Jančovičová J., Dodok L., Buchtová V., Staruch L.: Use of transglutaminase for improvement of the quality of pastry produced by frozen-dough technology. Czech J. Food Sci. 20, 215-222 (2002)

[7] Kukurová I., Hozová B.: Porovnanie citlivosti metód STN 57 0531 z roku 1995 a STN 57 0531 z roku 2001 na stanovenie prítomnosti rezíduí inhibičných látok v mlieku. Comparison of sensitivity of STN 57 0531 methods from the year 1995 and STN 57 0531 methods from the year 2001 for detection of inhibitory compounds present in milk (in Slovak). Mliekarstvo 33, 42-45 (2002)

[8] Karovičová J., Kohajdová Z., Hybenová E., Greif G., Lukáčová D.: Hodnotenie zeleninových štiav fermentovaných baktériami mliečneho kysnutia. Evaluation of vegetable juices fermented with lactic acid bacteria. (in Slovak). Bulletin potravinárskeho výskumu, 40, 285-299, (2001)

[9] Lauková D., Valík Ľ., Görner F., Schmidt Š.: Effect of lactic acid on the growth of a yeast Candida maltosa. Bulletin of Food Research 41, 131-143, (2002).

[10] Valík Ľ., Görner F., Hozová B.: Yeast counts in croissants in relation to dynamics of water activity. Bulletin of Food Research 41, 123-130, (2002).

[11] Lauková D., Valík Ľ., Görner F., Schmidt Š.: Heat-resistance of vegetative cells of the yeast Candida maltosa. Bulletin of Food Research 41, 169-178, (2002).

[12] Valík Ľ., Jarossová M., Görner F.: Use of bioluminiscent analytical method in dairy plants. Dairying 33, 32-34, (2002).

[13] Görner, F., Valík, Ľ.: Preference of fermented dairy products of yogurth type. Nutrition and health 47, 11-14, (2002).

[14] Görner F., Valík Ľ.: Microbiological and technological questions of sheep`s fresh cheese and Bryndza cheese production. Dairying 33, 16-17, (2002).

[15] Valík Ľ., Rychtárik M.: HACCP. Bulltein of the Slovak Association of Hotels and Restaurants, 9, 4-5 (2002).

B. Conferences (*international conferences)

[1]* Kukurová I., Hozová B.: Porovnanie citlivosti dvoch modifikácií difúznej metódy na stanovenie rezíduí antimikrobiálnych látok v mlieku. Comparison of two modifications of the diffusion method for determination of antimicrobials in milk (in Slovak). In: Proceedings of the 4th International Conference, Brno, Czech Republic, 2002, p. 129-132, ISBN 80-7305-434-5

[2]* Kukurová I., Hozová B.: Možnosti dosiahnutia synergických účinkov pri kombinácii antibiotík v mlieku. Possibilities for

achieving synergistic effects in the combination of antibiotics in milk (in Slovak). In: Proceedings of the 54th Congress of Chemical Societies, Brno, Czech Republic, June 30-July 4, 2002, p. 492, ISSN 0009-2770

[3]* Dodok L., Buchtová V., Hozová B., Staruch L., Šiška R.: Moderné trendy pri výrobe pečiva. Modern trends in the production of pastry (in Slovak). In: Proceedings of the 33rd Symposium on new trends of production and evaluation of foods. Skalský Dvur, Czech Republic, May 27-29, 2002, p. 280-282, ISBN 80-902671-5-7

[4]* Sláviková L., Čertík M, Masrnová S., Škrinárová B., Valík Ľ., Šajbidor J.: Effect of moisture and water activity on □-linolenic acid production in solid state fermentation. In: Proceedings of 2nd Meeting of Chemistry & Life, Brno, Czech Republic, September 10.-11. 2002, p. S181-S182.

[5]* Lauková D, Valík Ľ., Schmidt Š., Görner F.: Teplotná odolnosť vegetatívnych buniek Candida maltosa. Heat resistance of vegetative cells of Candida maltosa (in Slovak). In: Zborník z vedeckej konferencie s medzinárodnou účasťou „Výživa a potraviny pre tretie tisícročie, Nitra, April 24.-25. 2002, p. 86-88. ISBN 80-8069-015-4

[6]* Čertík M, Sláviková L., Masrnová S., Škrinárová B., Valík Ľ., Šajbidor J.: Fyziologická regulácia tvorby polynenasýtených mastných kyselín v procese polosuchých kultivácií húb. Physiological regulation of the polyunsaturated fatty acids in the solid state fermentation processes (in Slovak). In: Zborník z vedeckej konferencie s medzinárodnou účasťou „Výživa a potraviny pre tretie tisícročie, Nitra, April 24.-25. 2002, p. 150-152. ISBN 80-8069-015-4

[7] Hybenová E., Ďalogová Z., Jelínek J.: Vitamín B12 vo fortifikovaných cukríkoch. Vitamin B12 in fortified candy mass (in Slovak). In: Výživa - potraviny – legislatíva, Detva, June 17.-19. 2002, p. 164-168

[8] Hybenová E., Regecová M., Jelínek J.: Pyridoxín vo fortifikovaných cukríkoch. Pyridoxin in fortified candy mass (in Slovak). In: Výživa - potraviny – legislatíva, Detva, June 17.-19. 2002, p. 169-172

[9] Hybenová E., Ďalogová Z., Jelínek J.: Kyselina listová vo fortifikovaných cukríkoch. Folic acid in fortified candy mass (in Slovak). In: Výživa - potraviny – legislatíva, Detva, June 17.-19. 2002, p. 173-177

[10] Valík Ľ., Görner F., Lauková D.: Hodnotenie hygienickej bezchybnosti a validácia predikcie trvanlivosti pasterizovaného mlieka z hľadiska B. cereus. Safety assessment and validation of the shelf-life prediction of pasteurized milk from the B. cereus point of view (in Slovak). In: Celostátní přehlídky sýrů 2002. Výsledky přehlídek a sborník přednášek semináře Mléko a sýry 2002. Ed.: Štětina a kol., Česká společnost chemická, Praha, January 23. 2002, p.71-75. ISBN 80-86238-21-0; EAN 978-80-86238-21

[11] Lauková D., Valík Ľ., Schmidt Š., Görner F.: Teplotná inaktivácia vegetatívnych buniek Candida maltosa. Heat inactivation of Candida maltosa vegetative cells (in Slovak) In: Celostátní přehlídky sýrů 2002. Výsledky přehlídek a sborník přednášek semináře Mléko a sýry 2002. Ed.: Štětina a kol., Česká společnost chemická, Praha, January 23. 2002, p.143-147. ISBN 80-86238-21-0; EAN 978-80-86238-21

[12] Valík Ľ., Görner F.: Mikrobiologická kontrola výroby jogurtov. Microbiological examination of yogurth production (in Slovak). In: Mikrobiologie potravin a její příspěvek ke zdraví a moderní technologii, Sborník přednášek ze semináře, Ed.: Muzikář a Bartl, Československá společnost mikrobiologická, Komise potravinářské mikrobiologie, Třešť, May 13.-15. 2002, p.92-97

[13] Lauková D., Valík Ľ., Görner F.: Termorezistencia kvasinky Candida maltosa. Heat resistance of the yeast Candida maltosa (in Slovak). In: Mikrobiologie potravin a její příspěvek ke zdraví a moderní technologii, sborník přednášek ze semináře, Ed.: Muzikář a Bartl, Československá společnost mikrobiologická, Komise potravinářské mikrobiologie, Třešť, May 13.-15. 2002, p.98-102

[14] Valík Ľ., Görner F.: K trvanlivosti a hygienickej bezchybnosti pasterizovaného mlieka. On shelf-life and safety of pasteurized milk (in Slovak). In: Zborník z konferencie Životné podmienky a zdravie, Štrbské pleso, September 11.-13. 2002 (in print)

[15] Lauková D., Valík Ľ., Görner F.: Vplyv teploty na dynamiku rastu Bacillus cereus v mlieku a smotane. Effect of temperature on growth dznamics of Bacillus cereus in milk and cream (in Slovak). In: Zborník z konferencie Životné podmienky a zdravie, Štrbské pleso, September 11.-13. 2002 (in print)

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[17] Valík Ľ.: Čo nové v HACCP. What is new in HACCP (in Slovak). Jesenné stretnutie hotelierov, Štrbské Pleso, October 8. 2002

[18] Valík Ľ.: Predikcia v mikrobiológii požívatín. Prediction in food microbiology (in Slovak). Hygiena a sanitácia v potravinárskom priemysle. Výskumný ústav potravinársky, Bratislava, December 4. 2002

DEPARTMENT OF ORGANIC CHEMISTRY

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I. STAFF

Full Professors:
Prof. Ľubor Fišera, PhD, DSc; Prof. Tibor Gracza, PhD, DSc.; Prof. Michal Uher, PhD, DrSc;

Associate Professors:
Dušan Berkeš, PhD; Ľubomír Floch, PhD; Štefan Marchalín, PhD; Viktor Milata, PhD; František Považanec, PhD; Štefan Stankovský, PhD; Katarína Špirková, PhD; Ladislav Štibrányi, PhD;

Assistant Professors:
Mária Bobošíková, PhD; Eva Jedlovská, PhD; Anna Koreňová, PhD; Angelika Lásiková PhD; Vladimír Ondruš, PhD; Peter Šafař, PhD; Jarmila Štetinová, PhD;

Research Fellows:
Matej Babjak; Iva Blanáriková-Hlobilová PhD; Miloslava Dandárová, PhD; Katarína Kadlečíková; Daniel Végh, PhD, DrSc; Peter Zálupský, PhD; Jozefína Žúžiová, PhD;

PhD Students:
Katarína Cvopová; Petra Černuchová; Branislav Dugovič; Róbert Fischer; Mária Gardiánová; Mohamed Mahmoud Hassan; Katarína Hrnčáriková; Pavol Jakubec; Peter Kapitán; Andrej Kolarovič; Róbert Mandúch;

Technical Staff:
Eva Kaisová; Jana Lehká; Lila Livařová; Mária Nemcová; Antón Pavlíček; Mária Somorovská; Stanislav Tomek; Iva Viskupičová; Andrea Volentičová; Kveta Wiesingerová;

II. TEACHING AND RESEARCH LABORATORIES

Laboratory practice:
Basic Skills in Organic Chemistry Laboratory I, II.
Organic Synthesis Laboratory Projects I, II.
Research laboratories:
Laboratory of Organic Synthesis
Laboratory of Chiral Cycloaddition Reactions
Laboratory of Heterocyclic Chemistry
Laboratory of Stereoselective Synthesis
Laboratory of Applied Organic Synthesis
Laboratory of Natural Compounds
Laboratory of Nuclear Magnetic Resonance Spectroscopy
Laboratory of IR and UV Spectroscopy
Laboratory of Gas Chromatography

III. TEACHING

A. Undergradute Study

3rd semester		
Organic Chemistry	(2-2h)	Marchalín, Gracza
Organic Chemistry Laboratory	(0-4h)	all teachers and research workers
4th semester		
Organic Chemistry	(2-2h)	Fišera, Považanec
Organic Chemistry Laboratory	(0-5h)	all teachers and research workers
5th semester		
Chemical Information	(1-1h)	Uher
6th semester		
Semestral Project	(0-4h)	Berkeš, Fišera, Gracza, Koreňová, Považanec, Stankovský, Šafař, Štibrányi, Špirková, Végh
7th semester		
Organometallic Compounds	(1-1h)	Gracza
Mechanisms of Organic Reactions I	(3-1h)	Fišera
Bioorganic Chemistry	(2-0h)	Uher
Laboratory Project I	(0-10h)	Koreňová, Šafař

Organic Chemistry III	(1-1h)	Považanec
8th semester		
Organic Synthesis	(2-1h)	Floch
Asymmetric Synthesis	(2-1h)	Gracza
Stereochemistry	(0-2h)	Štibrányi
Spectroscopic Methods in the Control of Technological Processes	(2-2h)	Milata, Segľa
Laboratory Project II	(0-6h)	Šafař, Štibrányi
Training at Industrial Production Floor 1	14 days	Fišera, Gracza, Jedlovská, Marchalín, Považanec, Špirková
9th semester		
Mechanisms of Organic Reactions II	(1-1h)	Marchalín
Applied Organic Synthesis	(1-1h)	Považanec
Chemistry of Heterocyclic Compounds	(2-0h)	Stankovský
Physical Organic Chemistry I	(0-2h)	Milata
Chemistry of Natural Compounds	(2-0h)	Berkeš
Laboratory Project	(0-10h)	Fišera, Gracza, Jedlovská, Marchalín, Považanec, Špirková
10th semester		
Diploma Seminar	(0-3h)	Považanec
Diploma Thesis Project	(0-27h)	Fišera, Gracza, Považanec, Šafař, Štibrányi, Végh

IV. CURRENT RESEARCH PROJECTS

A. Nonproteinogenic conformationally restricted heteroanalogs of α-aminoacids (Dušan BERKEŠ)

The project aims at finding effective and synthetically straightforward procedures leading to enantiomerically pure amino acids, dipeptides and their derivatives, such as heteroanalogues. Next, to transform the above into target structures, namely oxoamino-, hydroxyamino- or diamino acids, substituted dipeptides in addition to saturated enantiomerically pure heterocycles derived from them. Such target compounds are either novel structures, or substructures found in isolated natural compounds, bioactive peptides or important enzyme inhibitors. A new, general approach to optically active aminoacid derivatives has been developed, using conjugated addition of chiral amino derivatives on electron-deficient unsaturated carboxylic acids followed by crystallization-induced asymmetric transformations (CIAT) of primary adducts as key steps in a efficient methodology of asymmetric transformation leading to pure enantiomers. Capitalizing on knowledge from previous stages of research elaborate the possibility to extend the usability of the tandem "conjugated addition and CIAT" on further types of electron-deficient unsaturated carboxylic acids.

B. Stereoselective cycloadditions of heterocyclic compounds (Ľubor FIŠERA)

The primary aim of Prof. Fišera´s research is devoted to the search of the stereoselective and regioselective cycloaddition reactions of chiral or achiral 1,3-dipoles to achiral or chiral alkenes and heterocyclic compounds possessing an endo- or exocyclic C=C double bond with the subsequent transformations of so prepared adducts to the bioactive iminopolyols, β-amino acids, lactones, lactames as well as to the new heterocyclic compounds, hardly accesible by another way and which can have a potential biological activity (pharmaca, agrochemicals).
In the past several years, considerable success has been achieved in this group in the utilization of heterocyclic compounds as dipolarophile components in the 1,3-dipolar cycloaddition (some 60 papers published in this field). The last papers have been devoted to the stereo- and regioselectivity of nitrile oxide and nitrone cycloadditions to heterocyclic derivatives having exo- and endocyclic C=C double bond. The syntheses of chiral dipoles and dipolarophiles from the natural materials such as sugars, α-aminoacids are included. Finally, the utilization of so prepared adducts as the synthetic equivalents by means of photochemical and reductive transformations are used for the synthesis of products of diverse biological activities.

C. Synthesis, reactions and biological activity of 2H-2-pyranones and 2H-1-benzopyran-2-ones. (Ľubomír FLOCH)

The title α-pyrones have found applications in medicine and as agrochemicals. The research project aims at preparation of designed α-pyrones in order to build them into more complex molecules with expected pesticidal and antiproliferation activity. Novel sulfonyl-α-pyrones built in sulfonylureas have been synthesized, the target molecules having molecular formula α-pyrone (or benzopyrone)-SO_2-NH-CO-NH-heterocycle. The testing of biological activity is carried out in cooperation with the Deparment of Microbiology, Biochemistry, and Biology (Prof. K. Horáková).

D. Stereoselective reactions in natural product synthesis (Tibor GRACZA)

The study of stereoselective reactions and their applications for the syntheses of naturally occuring compounds, or optically pure building blocks, represents the principal research area of Dr. Gracza´s group. A new, general approach to optically active anhydroalditols have been developed, using the stereocontrolled palladium(II)-catalyzed oxycarbonylation of enitols as a key step. This strategy have been applied in the total syntheses of some cytotoxic natural dihydroxystyryl lactones like (+)-goniofufurone and its 7-epimer, as well as their enantiomers. Extension of Pd(II)-promoted bicyclization to optically pure unsaturated aminopolyols offered a very potent way to polyhydroxylated saturated nitrogen heterocycles, many of which are glycosidase inhibitors (related to deoxynojiromycin, DMDP, castanospermine, swainsonine).

E. Stereoselective synthesis of indolizines and indolizidines (Štefan MARCHALÍN)

Stereoselective synthesis of indolizines and indolizidines is the main interest of Marchalins group. 4-Arylsubstituted 1,4-dihydropyridines are well-known compounds used in the treatment of hypertension and other circulatory disorders. Because of potent calcium channel blocking activity of 4-aryl-1,4-dihydropyridine derivatives such as nifedipine, manidipine, benidipine, and nilvadipine are now in clinical use due the their calcium antagonist effect. In the area of 1,4-dihydropyridines are investigated the reactions of 4-aryl-2-formyl-1,4-dihydropyridines. The simple and new methods of preparation of substituted 3-aminoindolizines were discovered. Further research is oriented to heteroindolizidines. The phenanthroindolizidine alkaloids, i.e., tylophorine and antofine, exhibit a wide range of biological properties including antitumor activity. Our approach to alkaloid synthesis using *N*-heteroarylmethyl-5-oxoprolines as building blocks allowed us to prepare chiral and racemic hetero[*f*]indolizi-dines, closely related compounds of tylophorine. The new enantiopure (*S*)-thieno- and furo[*f*]indolizidines were synthesized in four steps from easily available (*S*)-*N*-thienyl(furyl-methyl-5-oxoprolines.

F. Synthesis and spectral properties of fused heterocycles (Viktor MILATA)

In last years rich experience in the synthesis of substituted push -pull ethylenes, which are remarkable for their significantly polarised multiple bond, has been collected. Reactions of various types (hetero)arylamines (substituted anilines, aminobenzimidazoles, aminobenzotriazoles, aminoselenadiazoles,quinoxalines etc.) with activated alkoxyethylenes (alkoxymethylene derivatives of propanedinitrile, dialkylpropanedioates, 2,4-pentanedione, alkyl 3-oxobutanoates, 3-oxobutanenitrile or alkyl cyanoacetates), structure of products and their synthetic utilisation in thermal cyclisation (Gould – Jacobs reaction) - which produce the nalidixic acid type quinolones, imidazoquinolones, triazoloquinolones, selenadiazoloquinolines, pyrazinoquinolones were studied. Also research on trisubstituted triazines, dihydropyridines, glutaric acid derivatives and reactions of 1-hydroxymethylbenzotriazole, 1-hydroxymethylbenzimidazole is being carried out.

G. Synthesis of analogues natural products (František POVAŽANEC)

The principal research area of Dr. Považanec concerns the study of preparation and reactions of heterocyclic compounds, the emphasis being on polycyclic heterocyclic compounds with built-in 1,4-diazepine skeleton. Dr. Považanec is interested mainly in the cyclization and cyclocondensation reactions, which are expected to furnish polycyclic heterocycles possessing bioactivity.
Recently, chiral substrates aroused his interest in that they allow one to prepare polycyclic heterocycles carrying one or more chiral centres. The presence and appropriate configuration of chiral centres has been recognized as pivotal factor in influencing the range of bioactivity of the diazepine-type substrates.

H. Imidoyl chlorides and imidoyisothiocyanates in the synthesis of new condensed ring´s systems (Štefan STANKOVSKÝ)

In series of quinazoline compounds was found a new synthetic method on the basis of imidoyl or amidinoyl isothiocyanates that enables to avoid the complicated processes starting from anthranilic acid. The obtained quinazoline-4-thiones were used for the synthesis of fused 1,2,4-triazolo-, dihydroimidazolo-, trihydropyrimido, and tetrazolo-quinazolines. Quinazoline fused benzotriazepines and benzotetrazepines were prepared by the suitable functionalization of quinazoline skeleton.

I. Synthesis of fused quinazoline derivatives (Katarína ŠPIRKOVÁ)

The research activity of Dr. Špirková concentrates on condensed quinazolines, aiming at preparation of tricyclic, potentially bioactive structures, such as 1,2,4-triazolo[4,3-c] quinazolines, 2*H*-imidazo- and 2,3-dihydropyrimido[1,2-c]quinazolines. The annelation of further rings takes place across the thione bond of 3*H*-quinazoline-4-thiones by cyclisation and cyclocondensation reactions.
The quinazolines are also the cornerstone of research into synthesis and properties of structural analogues of folic acid. The target molecules are both classical and non-classical antifolates, based on the 3*H*-quinazoline-4-thione skeleton.

J. Synthesis of nitrogen, phosphorous heterocycles (Ladislav ŠTIBRÁNYI)

Synthesis of 5- and 6-membered nitrogen heterocycles. Preparation and study of substituted triazacyclotriphosphazenes carrying nitrogen, sulphur, or oxygen-containing heteroaromatic ligands. Study of nucleophilic reactions on the hexachlorotriazacyclotriphosphazene with ligands capable of metal-complexing. Computer modelling of structure and reactivity. Preparation of derivatives substituted by 1,3-dithiane and their transformation into carbonyl derivatives.

K. Transformation of γ-pyranone derivatives to the analogues of naturally occuring bioactive compounds (Michal UHER)

Project is geared at the preparation of the derivatives with possible biological activity with the perspective to use in pharmacology, cosmetics, agriculture and food industry. γ-Pyranone derivative 5-hydroxy-2-hydroxymethyl-4H-pyran-4-one (kojic acid) serves as main substrate for the transformation multifunctional. Its manufacture by fermentation is patented in Slovakia. Its decomposition leads to non-toxic products that can enter the circulation of biogenic elements in the nature.

L. Synthesis of oligomers and polymers, based on novel five-membered heterocycles, aiming at study and utilization of their conductivity and opto-electronic propperties (Daniel VÉGH)

Basic research in the field of novel five-membered heterocycles their oligomers and polymers. Search for simple, high-yield synthetic routes leading to heterocycles the oligomers of which will serve as model for polyheterocycles. The latter are expected to possess electric, opto-electric and electroluminescent properties, qualifying such materials as optical storage media, antistatic coatings, and electronic membranes for microelectronics. Also, they can be used in designing electrochemical energy sources, for instance as polymeric electrolytes, novel batteries, as well as in optical sensors and biosensors for monitoring the environment. We intend to design such novel compounds, capitalizing on the relationships between structure and physical properties, solubility, polymer workability. Based on theoretical consideration and calculated predictions we synthesized novel 2,3-substituted thieno[3,4]pyrazine and new pentacyclic dipyrido [3,2-a, 2´,3´-c]-thieno-[3,4]azine derivatives, systems with lowest bandgap (0,7 eV). In order to study the effect of the substituent on the chemical and physical properties (also electrical conductivity) twelve new 3-(3-thienyl)glutaric acid derivatives were prepared by easy, novel one step procedure in multigram quantities. Homo or hetero

oligo- and polymerization of derivatives were achieved by chemical and electrochemical polymerisation.

V. COOPERATION

A. Cooperation in Slovakia

Slovakofarma, Hlohovec
Synkola, Bratislava
Duslo, Šaľa
Slovak Academy of Sciences, Bratislava
Institute of Chemical Technology, Bratislava
Institute of Food Research, Bratislava
Tau-Chem, Bratislava
Chemko, Strážske
Institute of Drugs Research, Modra
Tatra Trade, Prievidza
Institute of Preventive Medicines, Bratislava
National Center of Onkology, Bratislava
Georganics, Bratislava
Q-Chem, Bratislava

B. International Cooperation:

Inst. für Organische Chemie TU Vienna, Austria
-The synthesis of heterocyclic compounds, organization of Blue Danube Symposium on Heterocyclic Chemistry.
Inst. für Organische Chemie Univ. Stuttgart, Germany
-Stereoselective dipolar cycloaddition and oxycarbonylation reactions
Inst. für Organische Chemie Univ. Berlin, Germany
-Stereoselective reactions of chiral nitrones
Inst. de Chimie Moleculaire d´Orsay, France
- Resau formation recherche.
Institute de Chimie Moleculaire, Orsay, Univ. Paris-Sud, France
-NMR study of chiral compounds and cooperation in exchange of students.
URCOM, Univ. Le Havre, France
-The synthesis of condensed heterocyclic compounds.
Inst. für Festkörperphysik der Univ. Vienna, Austria
-New materials for microelectronics.
Cambridge University, Cambridge, Great Britain
-The synthesis of natural polytetramic compounds.
Institute of Organic Chemistry, Univ. Debrecen, Hungary
-The synthesis of heterocyclic compounds.
Institute of Organic Chemistry, TU Wroclaw, Poland
-The synthesis of heterocyclic compounds.
Institute of Organic Chemistry, U Warsaw, Poland
-The synthesis of heterocyclic compounds.
Institute of Organic Chemistry, AU Krakow, Poland
-The synthesis of heterocyclic compounds.
UNED, Madrid, Spain
-The synthesis of heterocyclic compounds, NMR spectroscopy.
Univerzita, Pardubice
-The synthesis of heterocyclic compounds.

C. Membership in Domestic Organizations and Societies

Slovak Chemical Society (Scientific Committee Member Prof. M. Uher, Scientific Committee Member Dr. V. Milata, Head of Group of Organic Chemistry Prof. Ľ. Fišera and 30 Members)

D. Membership in International Organizations and Societies

American Chemical Society (Prof. Ľ. Fišera)
German Chemical Society (Prof. Ľ. Fišera, Dr. T. Gracza)
Czech Chemical Society (Prof. Ľ. Fišera, Dr. T. Gracza, Dr. Š. Marchalín, Dr. V. Milata)

E. TEMPUS Programme

F. International Scientific Programmes

Prof. V. Jäger	Univ. Stuttgart, Germany, March, 2002 (2 days)
Dr. S. Bilfinger	Byk Gulden, Konstanz, Germany, March, 2002 (2 days)
Dr. S. V. Kelkar	Pune, India, April, 2002 (2 days)
Prof. A. Fürstner	Max Planck, Mülheim, Germany, May 2002 (1 day)
V. Jamier	IUT Orsay, Univ. Paris-Sud, France, May-June 2002 (60 days)
N. Mistreta	IUT Orsay, Univ. Paris-Sud, France, May-June 2002 (60 days)

E. Servais	IUT Orsay, Univ. Paris-Sud, France, May-June 2002 (60 days)
B. Venuat	IUT Orsay, Univ. Paris-Sud, France, May-June 2002 (60 days)
Prof. D. P. Curran	Univ. Pittsburgh, USA, October 2002 (1 day)
Dr. C. Hametner	T. Univ. Vienna, Austria, December 2002 (2 days)
Dr. H. Thiele	Brucker, Bremen, Germany, December 2002 (1 day)

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

P. Černuchová	Univ. Paris-Sud, Orsay, France, 180 days
B. Dugovič	Bayer, Leverkusen, Germany 180 days
Ľ. Fišera	Univ. Vienna, Austria, 4 days, Luxor, Egypt, 5 days, Munich, Stuttgart, Berlin, Germany, 5 days
T. Gracza	Obergurgl, Austria, 4 days, Prague, Czech Republic, 2 days
K. Kadlečíková	Univ. Le Havre, France, 120 days
Š. Marchalín	Univ. Le Havre, France, 60 days
V. Milata	Univ. Vienna, Austria, 10 days, Univ. Paris-Sud, Orsay, France, 30 days
V. Ondruš	Univ Stuttgart, Germany, 300 days
M. Uher	Univ. Krakow, Poland, 5 days
D. Végh	Univ. Vienna, Austria, 2 days, Univ. Györ, 15 days, Hungary, Univ. Mosonmagyaróvár, 3 days, Hungary

VI. THESES AND DISSERTATIONS

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

Franko Slavomír:	Dehydroarenes in the Synthesis of the γ-Carbolines (F. Považanec)
Farkaš Pavol:	The Conjugate Addition of N-Nucleophiles in Synthesis of α-Amino Acids. Preparation and reactions of derivatives of amino-(1-oxoindan-2-yl)-acetic acid (P. Šafář)
Kopaničáková Zuzana:	The Preparation and 1,3-Dipolar Cycloadditions of Chiral Nitrones Derived from α-Amino Acids (Ľ. Fišera)
Lukáčiová Andrea:	Preparation and Reactions of six-Membered Nitrogen Heterocycles with Organometallic Compounds (L. Štibrányi)
Novotný Michal:	Syntheses of Copper Complexing Organic Ligands for the Preparation of New Materials Having Opto-electronic Properties (D. Végh)
Šardzík Róbert:	Palladium(II)-Catalysed Cross-coupling Reactions with Neighbouring Group Participation. (T. Gracza)

B. Dissertations (PhD):

Blanáriková Iva:	Chiral Cycloadditions of Nitrones and their Utilization in the Synthesis (Ľ. Fišera)
Szemesová Janka:	N-Acyliminium Chemistry in the Synthesis of Heterocycles (Š. Marchalín)
Saloň Jozef:	Utilization of 3-Alkoxyprop-2-enoic Acid Derivatives in the Synthesis (V. Milata)

C. Dissertations (DrSc.):

Marchalín Štefan:	Generally stereocontrolled syntheses of substituted indolizines: New syntheses of di-, tetra-, hexa- and octahydroindolizines.

VII. PUBLICATIONS

A. Journals (* registered in Current Contents)

[1]* Babjak M., Kapitán P., Gracza T.: The first total synthesis of goniothalesdiol. Tetrahedron Lett. 43, 6983-6985 (2002)

[2]* Čík G., Šeršeň F., Dlháň L., Červeň I., Végh D.: Study of magnetic properties of copolymer of 3-dodecylthiophene and 2,3-R,R-thieno [3,4-b] pyrazine. Synth. Met. 130, 213-220 (2002)

[3]* Fischer R., Drucková A., Fišera L., Hametner, C.: Preparation and 1,3-dipolar cycloaddition of chiral nitrones derived from D-xylose with vinyl acetate. ARKIVOC viii, 80-90 (2002)

[4]* Fischer R., Drucková A., Fišera L., Rybár A., Hametner C., Cyranski M. K.: New chiral nitrones in the synthesis of modified nucleosides. Synlett, 1113-1117 (2002)

[5]* Kettmann V., Lokaj J., Milata V., Saloň J., Hassan M. M. M.: 1-Methyl-1H-imidazo[4,5-f]quinolin-6-ium chloride monohydrate. Acta Cryst. Sect. C.-Cryst. Struct. Commun. 58, 0365-0366 (2002)

[6]* Lokaj J., Kettmann V., Štetinová J., Kottaš P.: The crystal and molecular structure of 2-(benzothiazoly-2-yl)-3-[2-ethoxycarbonyl-1-(ethoxycarbonylmethyl)pyrrol-4-yl]propenenitrile. Chem. Pap. 56, 127 (2002)

[7]* Marchalín Š., Chudík M., Cvopová K., Kožíšek J., Leško J., Daich A.: Conformationally constrained 1,4-DHPs. A convenient route to bis-1,4-DHPs as a novel class of nitrogen compounds. Tetrahedron 58, 5747-5754 (2002)

[8]* Lukeš V., Breza M., Végh D., Hrdlovič P., Krajčovič J., Laurinc V.: Optical properties of 2,3-diaza-1,3-butadiene bridged oligothiophenes. A combined experimental and theoretical study. Synth.Met. 129, 85-94 (2002)

[9]* Novotný L., Abdel-Hamid M., Hamza H., Rauko P, Uher M., Brtko J.: Stability of the new antileukemic 4-pyranone derivative, BTMP, Using HPLC and LC-MS analyses. Pharmazie, 57, 252-255 (2002)
[10]* Pigeon P., Sikoraiová J., Marchalín Š., Decroix B.: Intramolecular addition of a hydroxyl to a N-acyliminium system. Application to the synthesis of isoindolo[2,1-a][3,1]-benzoxazine and soindolo[1,2-c][2,4]benzoxazepine derivatives. Heterocycles 56, 129-138 (2002)
[11]* Sikoraiová J., Chihab-Eddine A., Marchalín Š., Daich A.: Diastereoselective access to chiral nonracemic [1,3]oxazolo[2,3a]-isoindolo-5-ones ring system via O-cationic cyclization. J. Heterocycl. Chem. 39, 383-390 (2002)
[12]* Sikoraiová J., Marchalín Š., Daich A., Decroix B.: Acid-mediated intramolecular cationic cyclization using an oxygen atom as internal nucleophile: Synthesis of substituted oxazolo-, oxazino- and oxazepinoisoindolinones. Tetrahedron Lett. 43, 4747-4751 (2002)

B. Conferences (*international conferences)

[1]* Babjak M.*, Kapitán P.*, Gracza, T.: Total synthesis of (+)-Goniothalesdiol and (+)-7-epi-Goniothalesdiol. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 1 (2002), ISBN 80-227-1705-3
[2]* Berkeš D.*, Gardianová M., Považanec F.: Crystallization.induced asymmetric transformations (CIAT) in the synthesis of α-amino acids. Synthesis of nitrobenzoylalanines - potent inhibitors of kynurenine-3-hydroxylase. In: XXVIth Conference of Organic Chemists, Stará Lesná, September 1-5, Bratislava 2002
[3]* Berkeš D.*, Kolarovič A., Považanec F.: Crystallization-induced asymmetric transformations. Applications to the synthesis of homophenylalanine derivatives. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 28 (2002), ISBN 80-227-1705-3
[4]* Blanáriková I.*, Kopaničáková Z., Fišera L., Hametner C., Cyranski M. K.: Stereoselectivity of 1,3-dipolar cycloadditions of amino acid – derived nitrones. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 76 (2002), ISBN 80-227-1705-3
[5]* Bobošíková M.*, Ramsden C. A., Krutošíková A.: Formation of pyrimidine derivatives by cyclisation of substituted guanidines. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 77 (2002), ISBN 80-227-1705-3
[6]* Cvopová K.*, Marchalín Š., Daich A.: Novel syntheses of densely functionalized indolizines from 2-formyl-1,4-dihydropyridine systems. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 78 (2002), ISBN 80-227-1705-3
[7]* Cvopová K., Marchalín Š.*, Daich,A.: Novel syntheses of densely functionalized indolizines from 2-formyl-1,4-dihydropyridine systems. In: XXVIth Conference of Organic Chemists, Stará Lesná, September 1-5, Bratislava 2002
[8]* Černuchová P.*, Milata V., Vo-Tanh G., Loupy A.: Solvent-free synthesis of aminoethylenic derivatives from activated alkoxymethylenes. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 79 (2002), ISBN 80-227-1705-3
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[12]* Gracza T.*: Stereocontrolled palladium(II)-catalyzed oxycarbonylation of unsaturated polyols and aminopolyols. In: 6th Panonian International Symposium on Catalysis, p. 32, September 11-14, 2002, Obergurgl Otztal, Tirol, Austria
[13]* Gracza T.* : Asymmetric reactions in synthesis of chiral compounds. In: Chirální technologie v syntéze a analýze léčiv, p. 21-25, VÚFB a.s. Praha, ISBN 80-238-9306-8
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[19]* Jedlovská E*., Fischer R., Solčányiová E.: Total change of regioselectivity in 1,3-dipolar cycloadditions of mesityl nitrile oxide to some disubstituted enones under catalysis of Lewis acids. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 86 (2002), ISBN 80-227-1705-3
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[26]* Sabatié A., Floch L., Végh D., Loupy A.: Synthesis of aromatic and heteroaromatic annelated [1,4]diazepines. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 82 (2002), ISBN 80-227-1705-3
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[28]* Špirková K.*, Bučko M., Stankovský Š.: A novel approach to benzotriazocines. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 91 (2002), ISBN 80-227-1705-3
[29]* Štetinová J.*, Kada R., Leško J., Solčániová E.: Benzothiazolyl cyanoacetamides and their transformations. In: 9th Blue Danube Symposium on Heterocyclic Chemistry, Tatranská Lomnica, June 16-20, 2002. Edited by Špirková K., Fišera L. and Babjak M. p. 92 (2002), ISBN 80-227-1705-3
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DEPARTMENT OF ORGANIC TECHNOLOGY

Head of Department:
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I. STAFF

Full Professors:
Milan Hronec, PhD, DSc;

Associate Professors:
Alexander Kaszonyi, PhD; Milan Králik, PhD; Dušan Mravec, PhD; Ján Vojtko, PhD;

Research Fellows:
Zuzana Cvengrošová, PhD; Magdaléna Štolcová, PhD; Katarina Fulajtárová; Dana Gašparovičová; Blažej Horváth;

PhD students:
Michal Báhidský; Jana Horniaková; Erik Juhás; Vieroslav Krátky; Zuzana Vallušová;

Technical Staff:
Eva Šuleková; Jozef Tánczos; Ľudmila Tvarožková;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories:

Technological laboratory I, 2, 3, 4
Computer seminar room

B. Research Laboratories:

Laboratory of catalytic processes
Laboratory of reactor technique
Laboratory of spectroscopic methods
Laboratory of separation (chromatographic) methods

III. TEACHING

A. Undergraduate study

1. Introductory courses

4th semester (spring)		
Organic Technology and Petrochemistry	(3-1 h)	Hronec, Králik, Kaszonyi
6th semester (spring)		
Fine Chemicals	(2-2 h)	Mravec
Semestral Project I	(0-4 h)	Cvengrošová, Hronec, Kaszonyi, Králik, Mravec, Štolcová

2. Advanced Courses

7th semester (autumn)		
Chemical-Engineering Thermodynamics	(0-2 h)	Vojtko
Catalysis	(2-0 h)	Hronec
Engineering Calculations on a Computer	(1-2 h)	Kaszonyi
Processes of Organic Technology	(2-1 h)	Králik
Laboratory Practise I.	(0-8)	Báhidský, Horváth, Cvengrošová, Gašparovičová, Juhás, Kaszonyi, Mravec, Štolcová
8th semester (spring)		
Kinetics and Reactors	(0-2 h)	Kaszonyi
Process Design	(2-1 h)	Hronec, Králik
Technology of monomers and polymers	(2-0)	Vojtko
Special Organic Products	(2-0 h)	Mravec
Analysis of Complex Organic Systems	(0-2 h)	Štolcová, Cvengrošová
Laboratory Practise II.	(0-7 h)	Cvengrošová, Hronec, Kaszonyi, Králik, Mravec, Štolcová
9th semester (autumn)		
Coating materials	(2-0)	Kramár,

Manufacturing of Pharmaceuticals	(2-1 h)	Mravec
Laboratory Practise III.	(0-14 h)	Cvengrošová, Gašparovičová, Hronec, Kaszonyi, Mravec, Štolcová,
10th semester (spring)		
Seminar to Master's Theses	(0-3 h)	Cvengrošová, Hronec, Kaszonyi, Králik, Vojtko, Štolcová

B. Postgraduate study

Catalysis	(2-0)	Hronec

IV. CURRENT RESEARCH PROJECTS

A. Ecofriendly options for the production of nitrogen compounds and their precursors (Milan Hronec)

New catalysts were synthesized and tested in oxidation and hydrogenation processes. Direct hydroxylation of benzene to phenol, partial oxidation of methane to formaldehyde, hydrogenation of aromatic nitro compounds, oxidation of cyclohexylamine and synthesis of pyridine were main reactions. Catalytic behaviour was correlated with physico-chemical properties of the studied catalysts.

Microporous organic materials

Evaluation of stability of metal catalysts supported on functional resins in the hydrogenation reaction systems. The developed catalysts were tested in the hydrogenation of olefins, substituted nitro aromatics and in the reduction of nitrates in water.

B. Research on the basis of collaboration between Department of Organic Technology and ENSC-CNRS (UMR 5618), Montpellier, France (Dušan Mravec)

1. The study of toluene tert-butylation over large pore zeolites.
2. Computational analysis of molecular dimensions and diffusion parameters of the isopropyl- and tert-butylbiphenyl and isopropyl- and tert-butyltoluene isomers within H-MOR and H-BEA zeolite framework.

V. COOPERATION

A. Cooperation in Slovakia:

Detox, Banská Bystrica
DUSLO, a. s. Šaľa
NCHZ, a. s. Nováky
Slovnaft-VURUP, Bratislava

B. International Cooperation:

ENSCM, Montpellier, France:
- zeolite catalysts
- physico-chemical characterisation of solid catalysts

Universita di Padova, Italy:
- polymer supported catalysts, characterisation

Italian National Centre of Research, Padova - Legnaro, Italy:
- preparation of organic supports for catalysts

Czech Academy of Science, Prague:
- characterisation of polymeric materials as supports for catalysts

C. Membership in Domestic Organisations and Societies:

Editorial Board of Journal: Petroleum and Coal,	(M. Hronec, M. Králik)
Editorial Board of Journal: Fibers and Textile	(M. Hronec)
SCHS (Slovak chemical Society)	(Hronec, Kaszonyi, Králik, Mravec)
SSPCH (Slovak Society for Industrial Chemistry), Chairman of the Catalysis Society	(M. Hronec)
SAIV (Slovak Academy of Engineering Sciences), vice chairman	(M. Hronec)
GAT pre petrochemickú, organickú a anorganickú chémiu (grant committee for petrochemistry, organic and inorganic chemistry)	(M. Králik)

D. Membership in International Organisation and Societies:

National representative of the European Federation of Catalysis Societies (EFCATS)	(M. Hronec, http://www.efcats.org/)
Member of the European Academy of Sciences and Arts	(M. Hronec)

F. International Scientific Programmes

1. Project No. 33S6: Charakterisieren und Testen von Katalysatoren (M.Hronec):
a) Institut fur Physikalische und Theoretische Chemie, TU Wien
Department of Organic Technology, Slovak University of Technology, Bratislava
2. Optimisation of the catalytic properties of synthetic organic matrices through chromatographic and spectrometric analysis ("at

hoc" project without an official registration number, financed individually by participants involved) period of co-operation: January 1997-December 2002 (M. Králik):
Department of Inorganic, Metallorganic and Analytical Chemistry, University of Padova, Italy
Department of Physical Chemistry, University of Padova, Italy
Italian National Centre of Research, Padova - Legnaro, Italy
Czech Academy of Science, Prague
Department of Organic Technology, Slovak University of Technology, Bratislava

G. Visitors from Abroad

Prof. B. Corain	University of Padova, March 20 – 24, scientific collaboration
Prof. L. Červený	VSCHT Prague, June 6, state exams
Prof. B. Corain	University of Padova, July 29 - August 1, scientific collaboration

H. Visitits of Staff Members and PhD Students to Foreign Institutes:

M. Králik	University of Padova, Italy, January 2002 (8 days), collaboration on the project
B. Horváth	IRC-CNRS Lyon, France, March 2002 (183 days)
M. Hronec	VŠCHT Prague, Czech Republic, May 2002 (2 days)
M. Králik	TU Wien, Austria, May 2002 (1 day), bilateral project
M. Hronec	VŠCHT Prague, Czech Republic, June 2002 (3 days)
J. Vojtko	Brno, Czech Republic Jun - July 2002 (5 days), 54th conference of CzSCHS
M. Hronec, M. Králik,	VŠCHT Prague, Czech Republic, July 2002 (3 days)
M. Hronec	Tokyo Japan, July 2002 (8 days), 4th conference TOCAT
M. Kralik	Prague, Czech Republic, August 2002 (5 days), CHISA
D. Mravec	Montpellier, France, September 2002 (15 days), bilateral French-Slovak project
M. Hronec, A.Kaszonyi, M. Králik, D. Gašparovičová, M. Štolcová, M. Báhidský, B. Horváth, E Juhás	Ötztal, Austria, September 2002 (4 days), 6th Pannonian symposium on catalysis
D. Mravec, J. Vojtko	Milovy Czech Republic, September 2002 (3 days), conference APROCHEM2002
M. Báhidský, E. Juhás	Veszprém, Hungary, September 2002 (5 days), School on catalysis EFCAT
M. Hronec	VŠCHT Prague, Czech Republic, September - October 2002 (2 days)
M. Hronec	Lisabon, Portugal, October 2002 (3 days), EFCAT meeting
M. Hronec	VŠCHT Prague, Czech Republic, October 2002 (1 day)
M. Hronec, A.Kaszonyi, M. Štolcová, M. Báhidský, E Juhás	Prague, Czech Republic, November 2002 (2 days), 34th Symposium on catalysis
M. Hronec	VŠCHT Prague, Czech Republic, December 2002 (1 day)

VI. THESES AND DISSERTATIONS

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

Celder F.:	Oxidácia cyklohexylamínu v parnej fáze. Gas phase oxidation of cyclohexylamine. (A. Kaszonyi)
Daniš M.:	Syntéza karbazolu z difenylamínu. Synthesis of carbazole from diphenylamine. (Z. Cvengrošová)
Ferko M.:	Metylácia bifenylu trimetylbenzénmi na zeolitoch. Methylation of biphenyl with trimethylbenzenes over zeolites (D. Mravec)
Fujasová K.:	Charakterizácia vlastností a aktivity pentakyanoželaznatanového katalyzátora. Characterization of properties and activity of pentacyanoferrate catalyst (M. Štolcová)
Mihály P.:	Parciálna oxidácia metánu na fosfátových katalyzátoroch. Partial oxidation of methane over phosphate catalysts. (M. Štolcová)
Ostrolucká K.:	Hydroxylácia aromátov v plynnej fáze. Hydroxylation of aromatic compounds in vapor phase. (M. Hronec)
Rudolfová A.:	Vplyv acidobázických vlastností nosiča na aktivitu Pd - Cu katalyzátorov v kvapalnej redukcii dusičnanov. Influence of acid-base properties of support on activity of Pd – Cu catalysts in the reduction of nitrates in liquid phase. (M. Králik)
Štibraná M.:	Syntéza pyridínu kondenzačnou reakciou karbonylových zlúčenín, alkoholov a NH_3. Synthesis of pyridine by condensation of carbonyls, alcohols and NH_3. (Z. Cvengrošová)
Vallušová Z.:	Katalytická redukcia substituovaných nitrobenzénov na kovových katalyzátoroch, nanesených na bázických nosičoch. Catalytic

reduction of substituted nitro benzenes over metal catalysts supported on basic supports. (M. Králik)

Zavadan P.: Terc-butylácia toluénu na zeolitoch v kvapalnej fáze. Tert-butylation of toluene over zeolites in the liquid phase (D. Mravec)

B. Dissertation (PhD)

Horniaková J.: Acid- catalyzed reactions over zeolite catalysts (D. Mravec)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Krátky, V., Králik, M., Mečárová, M., Štolcová, M., Zalibera, Ľ., Hronec, M.: Effect of catalyst and substituents on the hydrogenation of chlorbenzenes. Appl. Catal. A: General 235, 225 - 231 (2002)

[2]* Horniaková, J., Mravec, D., Joffre, J., Moreau, P.: Selective alkylation of biphenyl over H-MOR and H-BEA zeolites: Analysis of experimental results by computational modelling. J. Mol. Catal. A: Chemical 185, 249 - 257 (2002)

[3]* Biffis, A., Ricoveri, R., Campestrini, S., Králik, M., Jeřábek, K., Corain, B.: Highly chemoselective hydrogenation of 2-ethylanthraquinone to 2-ethylanthrahydroquinone catalyzed by palladium metal dispersed inside highly lipophilic functional resins. Chem. Eur. J., No 3, 2962 - 2967 (2002)

[4]* Biffis A., Králik M.: Macromolecule - palladium complexes as catalysts for the synthesis of hydrogen peroxide. Chem. Pap. 56 (3), 178 - 181 (2002)

[5]* Macho, V., Králik, M., Micka, M., Komora, L., Sroková, I.: A tough noncombustible material prepared by grafting of poly(2-ethylhexyl acrylate) with vinyl chloride. J. Appl. Polymer Sci., 83, 2355 - 2362 (2002)

[6]* Vojtko, J.: Spôsob dopravy a tvorba skleníkových plynov. (Transport and formation of greenhouse gases) (in Slovak) Chem. Listy 96, 507 (2002)

[7] Cvengroš J., Cvengrošová Z., Hóka C.: Conversion of Acyl Glycerols to Methyl Esters by TLC Method. Petroleum and Coal 44, 1 - 2, 67 - 71 (2002)

B. Conferences (*international conferences)

[1]* Horváth, B., Hronec, M.: Gas-phase epoxidation of propylene. 6th Pannonian International Symposium On Catalysis Obergurgl, Ötzal, Tirol, Austria Sept. 11 - 14, 2002, p. 130 - 131

[2]* Gašparovičová, D., Králik, M., Kinger, G., Vinek, H.: Bimetallic catalysts for the reduction of nitrates in aqueous solutions. 6th Pannonian Int. Symposium on Catalysis, Obergurgl, Austria, Sept. 11 - 14, 2002, p. 100 - 101

[3]* Králik, M., Gašparovičová, D., Rudolfová, A.: Water phase removal of nitrates over palladium-copper catalysts supported on cationic resins. 6th Pannonian Int. Symposium on Catalysis, Obergurgl, Austria, Sept. 11 - 14, 2002, p. 112 - 113

[4]* Králik, M., Corain, B.: Metal catalysts supported on functional resins: recent results. 6th Pannonian International Symposium on Catalysis Obergurgl, Ötzal, Tirol, Austria Sept. 11 - 14, 2002, p. 62 - 63

[5]* Michalica, P., Štibraná, M., Cvengrošová, Z., Kaszonyi, A., Hronec, M.: Pyridine from ethanol, formaldehyde and ammonia. 6th Pannonian International Symposium on Catalysis Obergurgl, Ötzal, Tirol, Austria Sept. 11 - 14, 2002, p. 98 - 99

[6]* Mačák, I., Uhlár, J, Horváth, R., Králik, M*.: Metal catalysts on basic supports. 6th Pannonian International Symposium on Catalysis Obergurgl, Ötzal, Tirol, Austria Sept. 11 - 14, 2002, p. 148 - 149

[7]* Krátky, M., Králik, M., Vallušová, Z., Hronec, M.: Hydrogenation of chloronitrobenzenes over palladium and platinum catalysts supported on functional resins. 6th Pannonian International Symposium on Catalysis Obergurgl, Ötzal, Tirol, Austria Sept. 11 - 14, 2002, p. 168 - 169

[8]* Bahidsky, M., Hronec, M.: Gas phase hydroxylation of aromatics with in situ generated N2O over copper modified phosphate catalyst. 6th Pannonian International Symposium on Catalysis Obergurgl, Ötzal, Tirol, Austria Sept. 11 - 14, 2002, p. 60 - 61

[9]* Štolcova, M., Juhás, E., Hronec, M.: Partial oxidation of methane over bimetallic phosphates. 6th Pannonian International Symposium on Catalysis Obergurgl, Ötzal, Tirol, Austria Sept. 11 - 14, 2002, p. 120 - 121

[10]* Kaszonyi A., Cvengrošová Z., Hronec M.: Oxidation of Cyclohexylamine over Tungsten Containing Polyoxometalates. 6th Pannonian International Symposium on Catalysis Obergurgl, Ötzal, Tirol, Austria Sept. 11 - 14, 2002, p. 42 - 43

[11]* Cvengroš J., Cvengrošová Z., Cvengroš M.: Opotrebované jedlé oleje a tuky a ich využitie vo výrobe metylesterov vyšších mastných kyselín. (Used edible oils and lipids, their utilization in the manufacturing of methylesters of higher fatty acids) (in Slovak) TOP 2002, Technique of Environmental Protection Focused of Waste Treatment, Častá - Papiernička, 22. - 23. 5. 2002, p. 93 - 98

[12]* Hronec, M.: Catalytic oxidation in the manufacture of specialty chemicals. XXXIV. Symposium on Catalysis, Prague, 4. - 5. November 2002, p. 6 - 7

[13]* Štolcová, M., Hronec, M.: Selective oxidation of methane with O_2 and N_2O over Fe-Ca phosphates. XXXIV. Symposium on Catalysis, Prague, 4. - 5. November 2002, p. 8 - 9,

[14]* Bahidsky, M., Hronec, M.: Gas phase hydroxylation of benzene with oxygen over Cu-phosphate catalyst. XXXIV. Symposium on Catalysis, Prague, November 4 - 5, 2002, p. 32 -33

[15]* Juhás, E., Štolcová, M., Hronec, M.: Direct oxidation of methane to formaldehyde over silica supported iron catalysts. XXXIV. Symposium on Catalysis, Prague, November 4 - 5, 2002, p. 47 - 48

[16]* Kaszonyi A., Cvengrošová Z., Hronec M. : Oxidation of Cyclohexylamine over Heterogeneous catalysts. XXXIV. Symposium on Catalysis, Prague, November 4 - 5, 2002, p. 10 - 11

[17]* Mravec, D.: Alkylácia aromatických uhľovodíkov na zeolitových katalyzátoroch. (Alkylation of aromatic hydrocarbons over zeolite catalysts) (in Slovak) APROCHEM 2002, Mílovy, CZ, 23. - 29. 9. 2002, p.136 - 140, ISBN 80-02-01501-0

[18]* Vojtko, J.: Príprava aromatických karbonylových zlúčenín termickou dekarboxyláciou príslušných organických kyselín (Preparation of aromatic carbonyl compounds by thermic decarboxylation of appropriate organic acids) (in Slovak) APROCHEM 2002, Mílovy CZ, 23. - 29. 9. 2002, p.145 - 148, ISBN 80-02-01501-0

[19] Vojtko, J.: Doprava v mestách a skleníkový efekt. (Transport in town and greenhouse effect) (in Slovak) (XXXIII.

Medzinárodná konferencia katedier KOKA 2002, Račkova dolina, 19. - 20. 9. 2002, p. 202 - 207
[20] Kaszonyi A., Hronec M.: Stanovenie V^{5+} a V^{4+} v polyoxometalátoch. (Determination of V^{5+} and V^{4+} in polyoxometalates) (in Slovak) IX. konferencia: Súčasný stav a perspektívy analytickej chémie v praxi FCHPT STU Bratislava, 3. - 5. 9. 2002, p. 102 - 105
[21] Kaszonyi A., Hronec M.: Určovanie ekvivalentného bodu potenciometrickej titrácie pomocou modifikovanej Boltzmanovej funkcie. (Determination of equivalence point of potentiometric titration by modified Boltzman function) (in Slovak) IX. konferencia: Súčasný stav a perspektívy analytickej chémie v praxi FCHPT STU Bratislava, 3. - 5. 9. 2002, p. 106 - 108
[22] Štolcová, M., Hronec, M.: Analýza komplexov železa. (Analysis of iron complexes) (in Slovak) IX. Súčasný stav a perspektívy analytickej chémie v praxi, 3. - 5. 9. 2002, Bratislava, P-30, p. 124 - 126,
[23] Mravec, D.: Zeolity ako ekologicky vhodné katalyzátory. (Zeolites as ecofriendly catalysts) (in Slovak) CHEMPROGRES 2002, TU Púchov 20. 6. 2002, p. 22 - 23,
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[25]* Báhidský, M., Horváth, B., Hronec, M.: Gas-phase hydroxylation of benzene to phenol with in situ generated oxidizing agent. 4th Tokyo conference on advanced catalytic science and technology, Tokyo, Japan, July 14 - 19, 2002, p. 229
[26]* Gomory, J., Králik M.: Kinetics of hydrogenation of pseudoionone to hexahydropseudoionone. CHISA 2002, 15th Congress Chemical and Process Engineering, Prague, Czech Republic, 25 - 29 August 2002, p. 20
[27]* Králik, M.: A comparison of ecological impacts of methyl tert.butyl ether and ethyl tert.butyl ether used as components of reformulated gasolines. CHISA 2002, 15th Congress Chemical and Process Engineering, Prague, Czech Republic, 25 - 29 August 2002, p. 38
[28] Báhidský, M., Hronec, M.: Direct hydroxylation of benzene over copper modified calcium phosphates. 2nd Efcats School On Catalysis Tihany, Hungary September 25 - 29, 2002, p. 36
[29] Juhás, E., Štolcová, M., Hronec, M.: Partial oxidation of methane over silica supported iron catalysts. 2nd Efcats School On Catalysis Tihany, Hungary September 25 - 29, 2002, p. 74
[30] Králik, M.: Inorganic and resin - supported metal catalysts in the liquid phase: interactions of the supporting framework with the reaction environment and catalytic activity. Padova, 24. 2. 2002 - invited lecture
[31] Králik, M.: Characterisation of rigid and elastic materials for liquid phase catalysis: differences in morphology and interactions with the liquid medium. Venice, 25. 2. 2002 -invited lecture
[32] Králik, M.: Recent results of the characterization of supported metal catalysts. Technische Universität Wien, 23. 5. 2002, invited lecture
[33] Štolcová, M.: RP HPLC analýza bázických látok. (RP HPLC analysis of basic compounds) (in Slovak) Nové trendy v chromatografii a v spektrálnych metódach, Mlynky, Slovenský raj 22. - 24. 5. 2002- invited lecture

D. Patents

[1] Králik, M., Kučera, M., Hronec, M., Macho, V.: Spôsob parciálnej hydrogenácie aromátov a/alebo ich parciálnej hydrogenácie s hydratáciou.(Method of partial hydrogenation of aromatics and/or their partial hydrogenation with hydratation) (in Slovak) SK 282654 (6. 11. 2002)
[2] Kaszonyi A.: Leptacie činidlo na sklo. (Etching agent for glass) (in Slovak) SK UV 3410 (12. 11. 2002)
[3] Kaszonyi A.: Leptacie činidlo na sklo na báze organických zlúčenín. (Etching agent for glass on the basis of organic compounds) (in Slovak) SK UV 3411 (13. 11. 2002)

DEPARTMENT OF PETROLEUM TECHNOLOGY AND PETROCHEMISTRY

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Technical Staff:
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II. TEACHING AND RESEARCH LABORATORIES

Laboratory of Catalysts Characterization
Laboratory of High Pressure Reactors
Laboratory of Gas and Liquid Chromatography
Laboratory of Chemistry and Analysis of Fuels
Laboratory of Pyrolysis
Laboratory of Rheology of Lubricants
Laboratory of Infra-Red Spectroscopy
Laboratory of Natural Gas Conversion
Wiped-film Molecular Evaporator

III. TEACHING

A. Undergraduate study

4th Semester (spring)		
Organic Technology and Petrochemistry	(3-1 h)	Bajus, Smiešková, Liptáková
7th Semester (autumn)		
Catalysis	(0-1 h)	Hudec
Analysis of Petroleum Products	(2-0h)	Daučík
Technology of Crude Oil	(3-0 h)	Židek, Smiešková
Combustion Processes	(1-2 h)	Smiešková
Refinery and Petrochemical Plants	(1-2 h)	Daučík
Laboratory exercise 1	(0-8 h)	Daučík, Liptáková
8th Semester (spring)		
Alternative Fuels	(2-0 h)	Bajus
Catalytic and Thermal Processes in Crude Oil Treatment	(3-0 h)	Židek
Tribology	(2-0 h)	Hájeková, Daučík
Kinetic and Reactors	(0-2 h)	Hudec
Laboratory exercise II	(0-8 h)	Hudec
9th Semester (autumn)		
Petrochemistry	(3-0 h)	Bajus
Gas Industry	(2-0)	Hudec
Laboratory exercise III	(0-10 h)	Hudec

B. PhD study

Technology of Cruide Oil	(3 h)	Židek
Petrochemistry	(3 h)	Bajus
Catalytic and Thermal Processes in Crude Oil Treatment	(3 h)	Židek

IV. CURRENT RESEARCH PROJECTS

A. Thermal and catalytic conversions of hydrocarbons from crude oil and natural gas to reformulated fuels and petrochemicals. (Martin Bajus)

The subject of the scientific project is the study of kinetics and mechanism of catalytic and thermal conversions of hydrocarbons from crude oil, natural gas and polymers with the orientation on copyrolysis of primary naphtha with polyethylene, polypropylene, polystyrene, polyvinyl chloride to desired petrochemicals.
During the first period of the project we studied:
solubility of polymers)PE, PP, PVC, PST, PET) in aromatic diluent (xylenes) and in primary naphta
pyrolysis of individual polymers (PE, PP, PVC, PST, PET) in batch reactor
thermal decomposition of PE, PP and PS in the system PYRO-GC-MS
copyrolysis of primary naphtha with polyethylene, polypropylene, polystyrene, polyvinyl chloride in flow tubular reactor

B. The modern trends in petroleum treatment and in petrochemistry. (Pavol Hudec)

The study of physical, physico-chemical and catalytic processes leading to the conversion of petroleum fractions, individual hydrocarbons or natural gas to prepare components of modern and perspective reformulated fuels corresponding to the strict ecologic and economic requirements. Examined topics join to the production of motor fuels in refinery-petrochemical complex Slovnaft on the base of hydrocracking of heavy residues. Solved is influence of the composition on light and oxidizing stability and low-temperature properties of motor fuels. In work, the possibilities of the improving the quality of the products by the modification of classical hydrorefining catalyst by modified Y-type zeolites and by mesoporous molecular sieves of M41S type, and the modification of fluid catalytic cracking catalyst by ZSM-5 zeolite additives will be studied, in direct connection with the composition of industrial feeds in these processes.

V. COOPERATION

A. Cooperation in Slovakia

Department of Nuclear Physics and Technology, Faculty of Electrical Engineering, Bratislava
EKOIL, j.s.co, Bratislava
Institute of Chemistry, Faculty of Natural Sciences, Commenius University, Bratislava
NAFTA, Gbely, j.s.co.
PETROCHEMA Dubová, j.s.co.
SLOVNAFT, j.s.co., Bratislava
SLOVNAFT-VURUP, Bratislava
SPP (Slovak Gas Industry), Bratislava
TRANSPETROL, j. s. co., Bratislava
VOLKSWAGEN, j.s.co., Bratislava

B. International cooperation

Institute of Physico-Chemistry and Electrochemistry, Academy of Sciences, Prague, Czech Republic
-Evaluation of zeolites by infra-red spectroscopy
-Determination of adsorption properties of ZSM-5 zeolites
Spolana, j.s.co., Neratovice, Czech Republic
- utilization of alfa-olefins

C. Membership in Domestic Organizations and Societes

Slovak Society of Industrial Chemistry, Bratislava	(E. Hájeková, M. Bajus, P. Dauèík, P. Hudec, B. Liptáková, A. Smiešková, Z. Židek)
Slovak Society of Chemical Engineering, Bratislava	(P. Hudec, A. Smiešková, Z. Židek)
Slovak Zeolite Association	(P. Hudec - chairman, A. Smiešková, Šabo, Z. Židek)

G. Visitors from Abroad

Prof. L. Zanzotto	University of Calgary, Calgary, Canada, Mai 2002 (10 days)
H.	Visits of Staff Members and Ph.D. Students in Foreign Institution
Ľ. Šabo	Institute of Physico-Chemistry and Electrochemistry, Academy of Sciences, Prague, Czech Republic (whole year 2002)

VI. THESES AND DISSERTATIONS

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

Javorková S.:	Influence of additives on the low temperature properties of diesel fuels. (J. Ambro)
Ladický M.:	Isomerization of C-4 fraction. (M. Bajus)
Michalovičová L.:	Trasformation of fatty acid methylesthers. (M. Bajus)
Miškove M.:	Rheological and utility properties of lubricant fats. (P. Daučík)
Nociar A:	Alkylation of aromatic hydrocarbons by linear alpha-olefins. (P. Hudec)
Pavlovičová M.:	Evaluation of zeolites acidity by IR spectroscopy. (P. Hudec)

Petrášová A.:	Solid lubricants in total loss lubrication. (P. Daučík)
Špirková I.:	Copyrolysis of polyethylene with primary naphtha. (E.Hájeková)
Vízner V.:	Ionic exchange of Zn into ZSM-5 in the solid phase. Influence of particle characteristics. (A. Smiešková)
Vlček V.:	Study of polymer materials by Pyro/GC-MS. (J. Ilkovič)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1] Bajus M.: Hydrocarbon Technologies for the Future, Current Trends in Oil and Petrochemical Industry. Petroleum and Coal 44 (3-4),112-119 (2002)

[2] Bajus M.: Alternatívne palivá. Alternative fuels. (in Slovak) Energia 4 (1), 42-47 (2002)

[3] Hudec P., Smiešková A., Židek Z., Schneider P., Šolcová O.: Determination of Microporous Structure of Zeolites by t-plot Method - State of the Art. Studies in Surface Science and Catalysis 142, 1584-1594 (2002), ISBN 0-444-51174-1

[4] Hudec P., Smiešková A., Židek Z., Daučík P., Jakubík T., Ambro J., Šabo Ľ.: Influence if Nitrogen Compounds on Color Degradation of Motor Fuels. Petroleum and Coal 43 (3-4), 173-176 (2001), printed in Mai 2002

[5] Hudec P.: Benzín aj z ťažkej ropy. Gasoline from heavy cruide oil. (in Slovak) Quark 1, 16-18 (2002)

[6] Nociar A., Hudec P., Smiešková A., Jakubík T., Židek Z.: Alkylation of Benzene by Long-Chain Linear alfa-Olefins over Zeolite Catalysts. Petroleum and Coal 44 (1-2), 87-91 (2002)

[7] Okuliar J., Daučík P., Šimon P.: Termogravometria a jej využitie na štúdium materiálov. Thermogravimetry and its use in study of materials. (in Slovak) Ropa, uhlie plyn a petrochémia, 44 (1), 39-42 (2002)

[8] Smiešková A., Rojasová E., Hudec P., Šabo Ľ., Židek Z.: Influence of the amount and the type of Zn species in ZSM-5 on the aromatisation of n-hexane. Studies in Surface Science and Catalysis 142, 855-862 (2002), ISBN 0-444-51174-1

[9] Svitaň R., Bajus M.: Membránové procesy so separáciou plynov. Membranous processes with gases separation. (in Slovak) Ropa , uhlie, plyn a petrochémia 43 (3-4), 37-38 (2001)

[10] Svitaň R., Bajus M.: Kompaktné membrány. Compact membranes. (in Slovak) Ropa , uhlie, plyn a petrochémia 44 (1), 36-38 (2002)

[11] Svitaň R., Ilkovič J., Biskupičová E., Hájeková E., Bajus M.: Oxidative Coupling of Methane. Petroleum and Coal 44 (1-2), 64-66 (2002)

[12] Šabo Ľ., Hudec P., Smiešková A., Balážová K., Židek Z.: Mesoporous Materials as Support for Nickel Hydrogenation Catalysts, Petroleum and Coal 43 (3-4), 157-160 (2001), printed in Mai 2002

B. Conferences (*international conferences)

[1]* Ambro J., Daučík P., Okuliar J., Židek Z.: Effect of phase transformation on density and viscosity of middle distillates, Motor Fuels 2002, International symposium,Vyhne, June 17-20, 2002, Slovak Republic, MF-2137, 8 pages, ISBN 80-968011-3-9

[2]* Daučík P.: Metódy hodnotenia opotrebovaných olejov. Evaluation methods of used oils. (in Slovak) Technika ochrany prostredia TOP2002, medzinárodná konferencia, 22.-23.máj 2002, Častá-Papiernička, str.151-156

[3]* Hájeková E., Bajus M., Hóka Cs., Biskupičová E.: Parametre kvality a chromatografická analýza MERO pri použití ako paliva. Quality parameters and chromatographic analysis of MERO at usage as a fuel. Proceedings from Motor Fuels 2002, International Symposium, June 17-20, 2002, Vyhne, SR, 1-12, Pr, ISBN 80-968011-3-9

[4]* Hudec P., Smiešková A., Židek Z., Dauèík P., Jakubík T., Ambro J.: Hydrorefining of middle distillates from heavy residues hydrocracking. 6th Pannonian International Symposium on Catalysis, Obergurgl, Austria, Sept. 11-14, 2002, p.84-85 (Pr)

[5]* Hudec P., Nociar A., Jakubík T., Smiešková A., Židek Z.: Alkylation of aromatics with linear alfa-olefins C_{16}-C_{24}. 6th Pannonian International Symposium on Catalysis, Obergurgl, Austria, Sept. 11-14, 2002, p. 140-141

[6]* Hudec P., Smiešková A., Židek Z., Jesenák K., Jentys A.: Evaluation of Sorption Characteristics of Different Mesoporous Silica Materials, Symposium on micro- and mesoporous materials, CHISA 2002, 25-29 August 2002, Prague, Czech Republic, Summaries 2, p.5-6, ISBN 80-86059-33-2

[7]* Ilkovič J., Bajus M., Vlček V.: Štúdium polymérnych materiálov pomocou analytickej pyrolýzy. Study of polymeric materials by analytical pyrolysis. (in Slovak) Zborník prednášok z 11. konferencie "Chemické technológie, petrochémia, polyméry, ropa, plyn, palivá" APROCHEM 2002, 23-25.9. 2002 Milovy, ÈR, Po.

[8]* Ilkovič J., Bajus M., Vlèek V.: A Study of Polymer Materials by Analytical Pyrolysis, 15th International Symposium on Analytical and Applied Pyrolysis, Leoben, Austria, September 17th to 20th 2002

[9]* Maďar I., Cvengroš J., Daučík P.: Regenerácia opotrebovaných minerálnych olejov procesom BLOWDEC a ich úprava v molekulovej odparke. Regeneration of used mineral oils by BLOWDEC process and their treatment in molecular evaporator. (in Slovak) Technika ochrany prostredia TOP2002, medzinárodná konferencia, 22.-23.máj 2002, Èastá-Papiernička, str.71-76

[10]* Okuliar J., Ambro J., Daučík P., Hudec P., Židek Z.: Thermal analysis application for distillation curve determination. Motor Fuels 2002, International symposium,Vyhne, June 17-20, 2002, Slovak Republic, MF-2136, 8 pages, ISBN 80-968011-3-9

[11]* Smiešková A., Rojasová E., Šabo Ľ., Sobalík Z.: Effect of Zn incorporation into ZSM-5 zeolites on their acidity and n-hexane aromatization activity. 6th Pannonian International Symposium on Catalysis, Obergurgl, Austria, Sept. 11-14, 2002, p.114-115

[12]* Smiešková A., Rojasová E., Hudec P., Šabo Ľ., Židek Z.: Comparison of cyclohexane and n-hexane aromatization on ZSM-5 type catalysis. 6th Pannonian International Symposium on Catalysis, Obergurgl, Austria, Sept. 11-14, 2002, p.136-137

C. Books and Textbooks

[1] Bajus M.: Organická technológia a petrochémia. Uhľovodíkové technológie. Organic technology and petrochemistry. Hydrocarbon technologies. (in Slovak) Publishing house of STU, 178 pp., 2002; ISBN 80-227-1642-1

[2] Bajus M.: Organic technology and petrochemistry. Hydrocarbon technologies. Elektronical CD textbooks, DIVYD Publisher,

2002; DI-016

D. Patents

[1] Macho V., Bakoš D., Bajus M., Čičmanec P., Boroška F., Zaťko Ľ., Komora L.: Ekologicky vhodné palivo a spôsob jeho výroby. Ecological fuel and way of its preparation. (in Slovak) Patent SR 282 533 (2002)

E. Others

[1] Bajus M.: Pred prahom bolesti; ďalší rast cien benzínu a nafty je viac ako pravdepodobný. Increase of gasoline and diesel fuel prices is more than probable. (in Slovak) STOP 32, č.9, 12-13 (2002)

[2] Bajus M.: Propagácia knižnej a odbornej literatúry na FCHPT STU. Information about special textbooks at the FCHPT STU. (in Slovak) Relácia „Ekonomika Slovenska“, Telecast „Slovak economics“. STV-2, September 2002

[3] Bajus M.: Názorové fórum o ekonomike Slovenska v r.2002. Opinion forum about Slovak economics. (in Slovak) č.46/2002, Relácia „Ekonomika Slovenska“, Telecast „Slovak economics“. Vystúpenie v ST. STV-2

[4] Bajus M.: Oponentský posudok na PROJEKT č. LN00B142. Technical expertise on the project no. LN00B142. (in Czech) Výskumné centrum pro komplexní zpracování ropy (VCKZR), Ministerstva školství, mládeže a telovýchovy České republiky, riešeného na VŠCHT Praha

[5] Bajus M.: Oponentský posudok na návrh konceptu knihy „Chemistry and Technology of Petroleum Processing“. Review on proposal of book concept „Chemistry and Technology of Petroleum Processing“. BLACKWELL PUBLISHING, Ltd, Osney Mead, OXFORD, UK

[6] Bajus M.: Review of a Grant Proposal 203/03/1562 GAČR „Clean fuel gas from fluidized bed gasification of biomass and waste plastics“, 2.9.2002.

[7] Bajus M.: Review of a Grant Proposal 104/03/0974 GAČR „Diagnostics of engine and cutting oils“, May 2002

DEPARTMENT OF PHYSICAL CHEMISTRY

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II. TEACHING AND RESEARCH LABORATORIES

A. Teaching Laboratories

Laboratory for the Basic Course of Physical Chemistry
Laboratory for the Advanced Course of Physical Chemistry
Laboratory of Electronics
Laboratory of UV-VIS and IR Spectroscopy

B. Research Laboratories

Laboratory of Differential Scanning Calorimetry
Laboratory of EPR Spectroscopy
Laboratory of Material Study and Light Scattering
Laboratory of Molecular Distillation

C. Special Measuring Instruments

Electron Paramagnetic Resonance Spectrometer BRUKER ER 200D-SRC
Differential Scanning Calorimeter DSC-7 Perkin-Elmer with an accessory for dynamic DSC

III. TEACHING

A. Undergraduate study

1. Introductory courses

3rd semester (winter)

Physical Chemistry I.	(3-2 h)	S. Biskupič, A. Gatial
Physical Chemistry II.	(3-2 h)	J. Antalík
Laboratory Practice in Physical Chemistry I.	(0-3 h)	J. Reguli

4th semester (summer)

Physical Chemistry II.	(3-2 h)	S. Biskupič, P. Kovařík, A. Gatial
Laboratory Practice in Physical Chemistry II.	(0-3 h)	J. Reguli

2. Advanced courses

5th semester (winter)

Physical Fundamentals of Spectroscopic Methods	(2-2 h)	A. Staško, V. Brezová

6th semester (summer)		
Biophysical Chemistry I	(2-2 h)	M. Valko
7th semester (winter)		
Chemical Physics I.	(2-1 h)	M. Breza
Thermodynamics	(2-1 h)	P. Šimon
Kinetics and Catalysis	(2-1 h)	P. Kovařík
Colloid Chemistry	(2-0 h)	J. Antalík
Statistical Treatment and Evaluation of Experimental Data	(2-0 h)	M. Breza
Group Theory and Symmetry	(2-0 h)	M. Breza, V. Kvasnička
Special Laboratory Practice I	(0-8 h)	P. Rapta
8th semester (summer)		
Chemical Physics II.	(2-1 h)	S. Biskupič
Solid State Physics	(2-0 h)	M. Breza
Biophysical Chemistry II	(2-0 h)	M. Valko
Special Laboratory Practice II.	(0-6 h)	P. Rapta
Traineeship		
Excursion		
9th semester (winter)		
Molecular Spectroscopy	(2-1 h)	A. Staško
Chemical Physics III.	(2-0 h)	A. Gatial
Physical Chemistry of Macromolecules	(2-0 h)	T. Bleha
Special Laboratory Practice III.	(0-10 h)	P. Rapta

IV. CURRENT RESEARCH PROJECTS

A. Structure and Reactivity in Chemical and Biological Systems (Andrej Staško)

Research project is focused on the investigation of structure and reactivity of radical intermediates and metal complexes in the chemical, electrochemical, photochemical, and biological systems with the predominant application of spectroscopic methods (EPR, UV/VIS/NIR spectroscopy) and electrochemical techniques (voltammetry). The investigation is oriented especially on the synthesis and physicochemical characterization of new organic materials for LEDs (Light Emitting Devices) systems, and on the study of magnetic, redox and spectroscopic properties of metal complexes. The primary radical intermediates of the photoinduced electron transfer in heterogeneous titanium dioxide systems, as well as reactive species produced upon the photoexcitation of drugs are investigated. Additionally, the attention is paid to research of antioxidant properties of foods and beverages (tea, wine, beer) with the main aim to select foods with the positive health effect. Concerning the experimental methods, the systematical development of combined spectroelectro-chemical and spectrophotochemical techniques continued, as well as further analysis of experimental error sources in quantitative EPR spectroscopy is performed.

B. Development and Application of Computational Methods to the Study of Structure, Dynamics and Properties of Molecular Systems (Stanislav Biskupič)

1. The method for evaluation of intermolecular interactions in van der Waals complexes containing single open-shell system has been elaborated. The developed theoretical treatment has been successfully applied to intermolecular interactions in the systems of F_2-H, HF-H, H_2-Li, CN-Ne and CO-Li.
2. The study of kinetics and dynamics of chemical reactions based on potential energy surface using classical as well as quantum-chemical treatments has been applied to the reactions:

a) $H + F_2 \rightarrow$ products
b) $O(^1D) + HCl \leftrightarrow ClO + H$
c) $O(^1D) + HCl \leftrightarrow Cl + OH$
d) $S_1 \rightarrow S_0$ internal conversion of HNCO
e) Ozone dissociation

3. The study of fine effects of molecular structure has been oriented to bonding in planar phosphazene rings, optical properties of oligothiophenes, structure and bonding in Pb(II) complexes in aqueous solutions and group-theoretical analysis of tetranuclear Jahn-Teller systems.
4. The study vibrational spectra of selected organic molecules and their interpretation based on ab initio calculations.
5. High-level ab initio studies have been performed on N_4 energy hypersurface, its singlet excited state, ground and 1st excited state in D_{2h} symmetry that are important from the energetical point of view. The reaction of $N+N_3 \rightarrow N_4$ has been investigated, too.
6. Based on three-dimensional cyclic cluster INDO treatment, the physico-chemical properties of selected fluorinated carbon polymers have been investigated.
7. The preferential ortho-addition of phenoxyl radicals to nitroso spin-traps has been explained using ab initio MP2 treatment.

C. MATERIALS – physico-chemical methods of their study (Peter Šimon)

The method for the evaluation of kinetic parameters of induction periods has been elaborated. The method enables to estimate the length of nonisothermal induction periods in the processes such as rubber curing, oxidation in condensed phase, freezing of undercooled liquids etc. The method is expected to be applied in the quality management and risk assessment in technological processes.
Degradation and stabilisation of PVC is studied both experimentally and theoretically. The attention is paid to the non-hazardous stabiliser mixtures based on tocoferyl acetate.

The processes occurring in foods and food packaging are modelled with the aim of hazard assessment in critical control points.
A method for the parameter evaluation in implicit and nonlinear models without the necessity of using any linearisation is suggested.

D. Separation in Molecular Evaporator (Ján Cvengroš)

The research project is focused on the theory of molecular distillation, the development of the short-path evaporators with wiped film and on the applications of molecular distillation. The main results in 2002 are as follows:
1. Further development of the mathematical model of the molecular distillation comprising all till now known factors, which influence the process. The model allows evaluating the influence both process and constructing parameters on the output and separation, to render the information about the unmeasurable parameters, to simulate different situations in the evaporator and to optimise the process. Good agreement was achieved by comparison between experimental and model results.
2. The attention was paid to modelling of the influence of the residence time of a liquid in the molecular evaporator on the process of molecular distillation. In the model the liquid flows at the evaporation surface in the form of a laminar film. The force applied on flowing film alters the residence time of a liquid in the molecular evaporator. The increasing force decreases the residence time and slightly increases the evaporation output. The dependence of a residence time on temperature shows, for the constant value of acceleration, the minimum defined by the contradictory influence of viscosity and thickness of the film on its flow rate.
3. Some interesting applications of molecular evaporators were developed (regeneration of used mineral oils, purification of some medicaments, preparation of neutral methyl esters of vegetable oils and others).

E. Electron Structure And Properties Of Materials In Solid Phase (Jozef Kožíšek)

The ambition of the solved project is the integrated study of the selected systems in solid state with possible applications in understanding the mechanisms of enzymatic reactions in biological systems. In the experimental area the present possibilities of measurements on the synchrotron equipments in the Europe (Hamburg, Grenoble) are utilized, as well as our collaboration with TU-Darmstadt. The composition of investigators of this project was selected in such way that involves both theoretical (quantum-mechanical) as well as available experimental methods (X-ray analysis, EPR spectroscopy, DSC measurements). So it will be possible to produce the complex results including many aspects of the studied systems. We focus our attention on the study of electronic structure and properties of the model systems of blue proteins. For this purpose we have synthesized monocrystals of the compounds [Cu(bite)(BF_4)] and [Cu(bite)(BF_4)$_2$] which very well reproduce the active centre of these interesting biological catalysers. The electron density of compounds with various characteristic types of coordination sphere are studied experimentally and results will be correlated with physico-chemical properties of these and similar compounds. These measurements will be correlated also with ab-initio quantum-chemical calculations in solid state.
Another object of experimental study is the electron density of stereospecific catalyzers on the base of Ni complexes with Schiff bases, which are reaction centers for the assymetric synthesis of various aminoacids and their analogs.

F. The Role of Trace Metals and Light in Camptothecin – Serum Albumin Interactions (NMR and EPR Studies) (Marián Valko)

The anticancer drug camptothecin (CPT) is a plant alkaloid that has recently gained approval for clinical trials as a treatment of gastric, rectum, and bladder tumors. The drug exists in two forms, a lactone form which is biologically active and a carboxylate form which is not. It has been shown that in the presence of human serum albumin (HSA) the drug converts to the biologically inactive form and therefore the liposomal stabilization of the lactone form of the drug is of primary importance. In this connection the high resolution NMR study is planned to elucidate the stabilization of the lactone form of the drug and the nature of the binding mode with HSA. It is generally believed that camptothecin activity occurs through a free radical mechanism. We also believe, that the role of trace metals is in particular important. Our preliminary results show that upon irradiation (365 nm light) copper(II)-CPT complex generates free radicals which may cause DNA damage to cancer cells. The aim of the proposed project is to further investigate a radical mechanism of the action of the drug.

G. Non-formal Education in Chemistry (Ján Reguli)

The aim of this project is to prepare supporting educational materials to help chemistry teachers in basic and secondary schools. The first of them – the coloured periodic table „Origin of the Names of Chemical Elements“ (approved by the Ministry of Education) with accompanying booklet (28 pp.) was distributed among teachers at methodical seminars. In 2002 a new study of students misconceptions concerning basic concepts in physical chemistry has begun.

V. COOPERATION

A. Cooperation in Slovakia

Department of Histology, Faculty of Medicine, Comenius University, Bratislava,
Faculty of Natural Sciences, Comenius University, Bratislava,
Institute of Inorganic Chemistry, Slovak Academy of Sciences, Bratislava,
Department of Chemistry, Faculty of Industrial Technologies Púchov, University of Trenčín,
Institute of Experimental Pharmacology, Slovak Academy of Sciences, Bratislava,
Department of Chemistry, Faculty of Education, University of Trnava, Trnava,
Research Institute of Chemical Technology, Bratislava,
DUSLO Šaľa,
VULM Modra,
EKOIL Biodiesel Bratislava,
DETOX Banská Bystrica,
Q-CHEM Bratislava,
LikoSpol Bratislava,
BEL/Novaman, Bratislava,

DAMT-MDT Martin,
IBM Slovakia, Ltd., Bratislava.

B. International Cooperation

University of Poznan, Poland,
IFW Dresden e. V., Dresden, Germany: Novel EPR techniques, intermediates in electrochemical reactions,
Institut für Makromol. Chemie, TU München, Germany: Material for light diodes,
University of Technology, Sydney, Australia (Dr. A. Ray, Dr. P. Thomas): Processes with induction period,
VSCHT, Institute of Polymers, Czech Republic (Dr. Z. Vymazal): Nonisothermal degradation of PVC,
Faculty of Chemistry, Technical University, Brno, Czech Republic: Modelling of microbial growth,
LUKAS Research, Prague, Czech Republic (Dr. R. Lukáš, Dr. L. Kalvoda): Development of fibreoptic distributed sensors for ammonia,
TCT Rožnov, Czech Republic: Silicone oils,
CIBA Späzialitetenchemie GmbH, Grenzach, Germany, Dr. Krajnik: Purification of products on molecular evaporator,
SPOFA Praha, Czech Republic: Castor oil,
Department of Instrumental and Analytical Science, UMIST, Manchester, UK (Dr. Kvasnik): Development of fibreoptic distributed sensors for ammonia,
Department of Chemistry, University of Manchester, Manchester, United Kingdom, Dr F. Mabbs: Multiple-frequency EPR measurements,
School of Pharmacy and Chemistry, John Moores University, Liverpool, UK, Dr. Harry Morris: EPR spectroscopy,
Multifrequency EPR Center, Chemistry Department, University of Manchester, Manchester, UK, Dr. Eric McInness: EPR spectroscopy,
Chemistry Program, Roosevelt University, Chicago, USA, Assoc. Prof. Joshua Telser: EPR spectroscopy,
NMR Center, Bremen University, Bremen, FRG, Prof. Dieter Leibfritz: NMR spectroscopy,
Materialwissenschaft, TU Darmstadt, Germany, Prof. Hartmut Fuess: Crystal structure analysis, data collection,
State University of New York, Buffalo, USA, Prof. Philip Coppens: Charge density distribution,
Technologic Institute of Morelia, Mexico, Dr. Jesús García Díaz: Crystal structure analysis,
Institut fûr Analytische Chemie, TU Dresden, Germany, Department of Chemistry, University of Oslo, Norway: Measurement, interpretation and theoretical calculation of vibrational IR and Raman spectra of some organic molecules,
Royal Institute of Technology, Stockholm, Sweden: Molecular dynamics of N_4,
Max-Planck-Institut für Strömungforschung, Göttingen, Germany: Photodissociation of HNCO,
State University of New York, Buffalo, USA: DFT calculations of blue proteins model compounds,
Brno University of Technology, Brno, Czech Republic: Ab initio calculations of coordination compounds.

C. Membership in Domestic Organisations and Societies

Slovak Chemical Society	
Slovak Society of Chemical Engineers	(J. Cvengroš)
Slovak Vacuum Society	(J. Cvengroš)
Slovak Commission for the Chemistry Olympiad	(J. Reguli)
Slovak Group for Thermal Analysis and Calorimetry	(P. Šimon)

D. Membership in International Organisations and Societies

International Society for Theoretical Chemical Physics, Germany	(S. Biskupič)
International ESR Society, USA	(S. Biskupič)
American Oil Chemist's Society, USA	(J. Cvengroš)
American Chemical Society, USA	(A. Staško)
International Union of Crystallography	(J. Kožíšek)
European Crystallographic Committee	(J. Kožíšek)
Journal of Thermal Analysis and Calorimetry – regional editor	(P. Šimon)
International Confederation for Thermal Analysis and Calorimetry	(P. Šimon)

F. International Scientific Programmes

1. National Science Foundation, NSF CHE96155: Charge Density Analysis of Transition Metal Complexes by Accurate X-Ray Diffractions Methods, 1999-2003 (Jozef Kožíšek and Prof. Philip Coppens, SUNY Buffalo, USA).
2. Agreement of Governments of Slovak Republic and Czech Republic on Scientific and Technical Co-operation, Project No. 139/2002, Dept. Phys. Chemistry FCHFT STU Bratislava (S. Biskupič) – Dept. Phys. Appl. Chem. FCH BTU Brno (L. Omelka), 2002-2003.

G. Visitors from abroad

Dr. Margit Kovács	University Veszprém , Hungary, 1 month.
Dr. Frank Kvasnik	DIAS UMIST, Manchester, UK, 3 days
Dr. H. Morris	John Moores University, Liverpool, UK, 5.8.2002- 21.8.2002
Prof. J. Telser	Roosevelt University, Chicago, USA, 13.7.-16.7.2002
Dr. K. Brudíková	Brno Technical University, Brno, Czech Republic, June-November 2002 (20 days)
Prof. J. Komenda	Masaryk University, Brno, Czech Republic, June 2002 (2 days)
Prof. L. Omelka	Brno Technical University, Brno, Czech Republic, June 2002 (10

	days)
Prof. O. Nuyken	Technical University, München, Germany, October 2002 (1 day)
Dr. Jesús García Díaz	Technologic Institute of Morelia (Mexiko), (3 weeks)

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

S. Biskupič	1st Central European Symposium on Theoretical Chemistry, Zwettl, Austria, October 2002 (3 days)
M. Breza	1st Central European Symposium on Theoretical Chemistry, Zwettl, Austria,October 2002 (3 days)
M. Breza	Conference on Electron Density: Measurement, Calculation, Application. Wurzburg (Germany), October 2002 (3 days)
V. Brezová	Institute of Theoretical and Physical Chemistry, University Veszprém (Hungary) (10 days)
D. Dvoranová	Institute of Theoretical and Physical Chemistry, University Veszprém (Hungary) (30 days)
M. Fronc	XIXth IUCr Congress, Geneva 2002, Switzerland, 7 days.
M. Fronc	DESY – Hamburg, Germany, September, 2 days.
M. Fronc	Würzburg, Germany, October, 3 days.
E. Klein	Rice University, Houston, USA (3 months)
R. Klement	Institut Charles Sadron, Strasbourg, France (12 months)
J. Kožíšek	IBEROMET VII Conference, Cancún 2002, Mexico, 5 days.
J. Kožíšek	XIXth IUCr Congress, Geneva 2002, Switzerland, 7 days.
J. Kožíšek	DESY – Hamburg, Germany, June, August, September, 8 + 5 + 2 days.
J. Kožíšek	TU-Darmstadt, Germany, December, 5 days.
J. Kožíšek	Würzburg, Germany, October, 3 days.
M. Mazúr	ESR Seminar, UMCH AV CR Praha, 29.5.-31.5.2002, 3 days.
J. Okuliar	Krakow, Poland (5 days) – Polish chemists' congress
P. Rapta	IFW Dresden, Germany (3 months)
J. Reguli	XII. Conference on Chemical Education, University Hradec Králové, Czech Rep., (3 days)
P. Šimon	DIAS UMIST, Manchester, UK (5 days) – conference EUROPT(R)ODE-6
P. Skubák	DESY – Hamburg, Germany, June, September, 8 + 2 days.
P. Skubák	Würzburg, Germany, October, 3 days.
P. Šimon	University of Sydney, Australia (1 month)
P. Šimon	Barcelona, Spain, 7 days – conference ESTAC-8

VI. THESES AND DISSERTATIONS

A. Graduate Theses (MS degree) for state examinations after five years of study (supervisors are written in brackets)

Fedorek R.:	Conductivity and Peierls distorsion in polymers. (P. Pelikán)
Fratričová M.:	Study of oxidation stability of mineral oils (P. Šimon)
Matejková M.:	NMR line shapes treatment by deconvolution with standard line. (T. Liptaj)
Mičušík M.:	Redox processes of hydrocarbon oligomeric structures with extended π-systems (In situ EPR and UV-Vis-electrochemical study). (P. Rapta)
Rázga F.:	Study of solutions of strong electrolytes by means of the measurement of time dependence of the charging current on Hg drop electrode. (J. Polakovič)
Sarkoci P.:	Optimisation of the molecular energy surface parameters by means of evolution algorithms. (V. Kvasnička)
Skubák P.:	Crystal and molecular structure of 2-substituted 1,4-dihydropyridines. (J. Kožíšek)
Slamová D.:	Spectroscopic study of monomeric and dimeric copper complexes. (M. Valko)
Spišák R.:	The influence of additives on the thermal decomposition rate of stabilized PVC. (E. Klein)
Tarábek P.:	EPR study of photoinduced reactions in titanium dioxide suspensions. (V. Brezová)

C. Dissertations (DSc)

V. Brezová:	Radical Intermediates of Photochemical Processes.

D. Habilitation Thesis

J. Reguli:	Non-formal Education in the Field of Physical Chemistry (Faculty of Education, Trnava University)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Baláž P., Valko M., Boldižárová E., Briančin J.: Properties and reactivity of Mn-doped ZnS nanoparticles. Materials Letters 57, 188-191 (2002).

[2]* Baran P., Boča R., Breza M., Elias H., Fuess H., Jorík V., Klement R., Svoboda I.:The spectroscopic and structural properties of copper(II) complexes of the novel tridentate (ONO) pyridine N-oxide ligand Hpoxap. Polyhedron 21, 1561 – 1571 (2002).

[3]* Belányi F., Havlínová B., Brezová V., Mináriková J.: The stability of printing inks on paper upon ageing. Chemické listy Symposia 96, S57-S59 (2002).

[4]* Bírová A., Pavlovičová A., Cvengroš J.: Lubricating Oils Based On Chemically Modified Vegetable Oils. J. Synthetic Lubrication 18, 291-299 (2002).

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[9]* Brezová V., Polovka M., Staško A.: The influence of additives on beer stability investigated by EPR spectroscopy. Spectrochim. Acta Part A 58, 1279-1291 (2002).

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[15]* Dunsch L., Rapta P., Schulte N., Schlüter A. D.: Structural dependence of redox-induced dimerisation as studied by in situ ESR/UV-Vis-NIR spectroelectrochemistry: The fluorantheno-pyracylene oligomers. Angew. Chem. Int. Ed. 41 2082-2086 (2002); Angew. Chem. 114 2187-2190 (2002).

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B. Conferences (*international conferences)

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[21]* Kožíšek J. & Fuess H.: Charge Density Studies in 3d-complexes, Iberomet VII, Cancún 2002, p.1010, Mexico. (2 pages)
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[23]* Kožíšek J., Breza M. & Fuess H.: Charge Density Studies of 3d-complexes, Electron Density: Measurement, Calculation, Application, p.17, Würzburg October 8-10 2002, Germany. (1 page)
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Secondary School Students Misconceptions Concerning Situations from Everyday Life (in Slovak). *Aktuální otázky výuky chemie XII. Mezinárodní konference o výuce chemie.* UHK Hradec Králové 10.-12. 9. 2002, str. 325-328. Vyd. Gaudeamus 2002. ISBN 80-7041-437-5.

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E. Other Publications

[1] Reguli J.: Fyzikálna chémia. Letná škola chemikov, kat. B. Physical Chemistry for the Summer School of Chemistry (in Slovak). IUVENTA, Bratislava, 2002, 20 str.

[2] Reguli J.: Fyzikálna chémia. Letná škola chemikov, kat. C. Physical Chemistry for the Summer School of Chemistry (in Slovak). IUVENTA, Bratislava, 2002, 22 str.

DEPARTMENT OF PHYSICAL EDUCATION

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Technical Staff:
Gabriela Boršányiová

II. TEACHING AND RESEARCH LABORATORIES:

Gym 14x21 m – ground /volleybal, basketball, football/
Two Body Building rooms 15x5 m and 10x5 m

III. TEACHING:

Aerobic	(2 h)	D. Sochorová
Kalanethics	(2 h)	D. Sochorová
Harmonic gymnastics	(2 h)	D. Sochorová
Healing gymnastic	(2 h)	D. Sochorová
Athletic sport	(2 h)	V. Lendel, Ľ. Benko
Basketball	(2 h)	P. Bartok
Football	(2 h)	P. Bartok
Handball	(2 h)	M. Bobrík
Body building	(6 h)	M. Bobrík, P. Bartok, V. Lendel, Ľ. Benko, J. Moravcová
Swimming	(2 h)	J. Fehér, Ľ. Benko
Canoeing and kayak	(4 h)	M. Bobrík
Volleyball	(2 h)	J. Moravcová
Winter sports camp /skiing/		M. Bobrík, J. Fehér
Summer sports camp		M. Bobrík, J. Fehér

IV. RESEARCH PROJECT:

A. State of Physical and Motor Development of Undergraduates of CHTF STU in Bratislava.

V. COOPERATION IN SLOVAKIA:

Faculty Physical Education and Sport of the Comenius University, Bratislava; Research Institute of Physical Culture, Bratislava; Institute of History, Slovak Academy of Sciences, Bratislava.

VI. PUBLICATIONS:

A. Journals

[1] Bobrík, M.: German physicaleducational organisations and associations in Bratislava, their beginning and development in the years 1918 – 1928. In: Proceedigns of the Municipal museum in Bratislava, volume XVI, 2002, p. 105-126. ISBN 80-968639-3-2, ISSN 0524-2428.
[2] Bobrík, M.: Fifty years of departments of physical education at universities in Slovakia. Telesná výchova a šport 12, 2002, 3, p. 2-5. ISSN 1335-2245.

B. Conferences (*international conferences)

[1] Bobrík, M.*: Der Einfluss der politischen Parteien auf die Tätigkeit der deutschen Turn - und Sportorganisationen des DTV in der Slowakei in den Jahren 1918 – 1938. [The Influence of political Parties in the activity of german physical and Sportsorganisations of the DTV in Slovakia in the years 1918 – 1938.] International Congress ISPHES Budapest 14.-16. july 1999. Budapest 2002, Hungary p. 58 – 62.
[2] Bobrík, M.*: The history of departments of Physical Education at Universities in Slovak Republic contemporary state and its problems, UK Praha 2002, International scientific Congress, p. 15-22. In: Half of the century of physical education at Universities. UK Praha 2002, International scientific Congres, p. 15-22. ISBN 80-246-0558-9.
[3] Bobrík, M., Lendel, V.*: Problems of physical education at STU in Bratislava through the view of last ten years. In: Half of the

century of physical education at Universities, UK Praha 2002, International scientific Congress, p. 50-58. ISBN 80-246-0558-9.
[4] Bobrík, M.: The history of departments of physical education at Universities of Slovak Republic. In: 50 years of departments and instituts of physical education and sport at Universities. Proceedings of abstracts from scientific congres Bratislava 2002, p. 24-29. ISBN 80-227-1689-8.
[5] Bobrík, M.: 50 years of departments of physical education at universities in Slovakia (or we don´t known how to learn from history). Spektrum STU, volume VIII., sch.year 2002, p. 18-19 (First part). Spektrum STU October – November sch. Year 2002/2003, p. 23-24 (continue).
[6] Bobrík, M.: Fifty years of departments of physical education at universities in Slovakia which we can´t transfer to contemporary state. In: 50 years of universities physical education and sport at Slovakia. Proceedings of publications from scientific conference with a international participation, september 2002, Bratislava, p. 5-11. ISBN 80-223-1774-8.
[7] Lendel, V., Benko, Ľ.: Analysis of the success of trials in high jump in the case of the Slovak representative in athletics Ľ. Benko in the years 1999-2002. In: Problems of contemporary athletics. Proceedings of publications from scientific conference, Bratislava 2002, p. 79-85. ISBN 80-89075-12-6.

C. Books and Textbooks

[1] Bobrík, M.: Die Deutschen in der Slowakei und die slowakische Frage im und nach dem Ersten Weltkrieg (1916-1919), s. 131-139. [The Germans in Slovakia and the slovak Question in and after the First World War (1916-1919), p. 131-139.] In: Mommsen, H., Kováč, D., Malíř, J., Marková, M.: Der erste Weltkrieg und die Beziehungen zwischen Tschechen, Slowaken und Deutschen. [The First Worl War and the Relations between Czechs, Slovaks and the Germans]. Klartext Verlag, Essen 2001, ISBN 3-88474-951-X.

DEPARTMENT OF PLASTICS AND RUBBER

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Assistant Professor:
Pavol Alexy, PhD.

Senior Research Fellow:
Viera Khunová, PhD

Research Fellow:
Ľudmila Černáková, PhD

PhD Students:
Michal Jaššo, Miroslav Kršiak, Henrich Krump, Lenka Kukolíková, Barbora Šimková, Petra Volfová,

Technical Staff:
Mária Dočolomanská, Viera Godályová, Mária Pekarovičová, Anna Tatarková

II. TEACHING AND RESEARCH LABORATORIES

Laboratory of Polymer Synthesis
Laboratory of Polymer Solutions
Laboratory of Polymer Modification
Laboratory of Thermal Analysis
Laboratory of Polymer Rheology
Laboratory of Electron Microscopy
Laboratory of Polymer Processing and Estimation of its Mechanical and Physical Properties
Laboratory of Biomaterials

III. TEACHING

A. Bacalarate Study

5th semester (autumn)

Macromolecular Chemistry	(2-0 h)	Chrástová
Corrosion and Material Surface Treatment	(2-2 h)	Chovancová, Špirk

6th semester (spring)

Technology of Materials	(2-0 h)	Hudec, Marcinčin, Majling
Technological Project	(0-4 h)	

B. Graduate Study

7th semester

Polymer Physics	(2-2 h)	Krištofič, Šutý
Colloids and Interfaces	(2-1 h)	Bakoš, Reháková
Laboratory from Macromolecular Chemistry	(0-8 h)	Černáková, Volfová, Kukolíková
Macromolecular Chemistry II	(2-1 h)	Chrástová
Production and Processing of Plastics	(3-0 h)	Hudec
Production and Processing of Rubber	(3-2 h)	Kyselá

8th semester

Additives for Plastics	(2-0 h)	Hudec
Biotechnological Polymers	(2-0 h)	Bakoš
Methods of Polymer Characterisation	(2-0 h)	Černáková
Design of Experiments	(1-1 h)	Alexy
Laboratory from Production of Polymers	(0-8 h)	Alexy, Kyselá, Krump, Kršiak
Production, Properties and Processing of Plastic	(2-0 h)	Hudec (for students of Faculty of Architecture)

9th semester

Polymer Processing	(3-1 h)	Špirk

Polymer Blends and Composites	(2-0 h)	Khunová
Polymer Recycling and Waste Disposal	(2-0 h)	Hudec, Khunová, Špirk
Polymer Testing	(0-2 h)	Alexy
Laboratory from Processing of Polymers	(0-10h)	Alexy, Hudec, Kršiak, Krump

10th semester
Diploma thesis

IV. CURRENT RESEARCH PROJECTS

A. Study of Synthesis of Crosslinked Polymers and their Properties (Viera Chrástová)

The project deals with synthesis of functionalized poly(styrene)/poly(butyl acrylate) dispersions with core-shell morphology of latex particles. The functional monomers especially N-methylol acrylamide and N-izobutoxy methylacrylamide are used at the course of two step emulsion polymerization for introduction of reactive groups into polymer chains. The influence of crosslinking reactions on colloidal characteristics of such modified dispersions and mechanical properties of their film are studied with the aim to obtain dispersion with application properties suitable for the formulation of ecological paints.
The crosslinking of unsaturated elastomers in the presence of amine-free accelerators is investigated, too. These accelarators do not form carcinogenic N- nitrosamines. The study is predominantly concerned with the research of the ageing-resistant behaviour of the natural rubber vulcanizates cured in the presence dialkyldithiophosphates or their combinations with thiazoles. The eventual ageing resistance was evaluated on the base of the changes of the primary properties of cured materials and on the changes of the arrangement of the network.

B. Biodegradable Polymer Blends and Composite Materials (Ivan Hudec)

The project is aimed on the investigation of polymer blends and composite materilas utilising biodegradable polymers and particulate fillers. The main research and experimental effort is focused on chemical and physical modification of thermoplastic, elastomeric and crosslinked multy-phase polymer materials by influence of their morphological structure and interphase interactions on polymer/polymer and polymer/filler interface. The selection of the polymer matrix and modification methods is oriented on the new achievements enable reveal connection in between composition, structure and properties of studied multiphase polymer blends and composites.

C. The Definitive Biosynthetic Skin Substitute (Dušan Bakoš)

The scientific aims of the project are in developing the biosynthetic skin substitute, which is definitely incorporated in body. The study results from the basic properties of biopolymers of extracellular matrix, collagen and hyaluronic acid. The developed membranes with excellent biological and mechanical properties are chemically modified to synchronise biodegradation and wound healing. The membranes can be widely applied in different fields of medicine. The project is supported in the frame of the Transplantation Program granted by Health Ministry of SR in co-operation with the Burn and Reconstruction Surgery Department and the Central Tissue Bank of the Hospital Ružinov in Bratislava.

D. New Generation of Inks for Rotogravure Printing (Viera Khunová)

The project is focused on wide-ranging research aimed onto environmental solution of developing new generation of solvent free hot melt inks (HMI) for rotogravure printing. The significance of formulated HMI based on thermoplastis polymers and waxes when compared to current toluene based inks is that they neither produce liquid nor volatile waste to pollute the environment. In addition printability analysis of developed HMI showed very good reflective density, excellent print gloss, very low mottling of HMI and superior rub resistance. The project is supported by NATO science program, the collaborative partner is the Western Michigan University, MI, USA.

V. COOPERATION

A. Cooperation in Slovakia:

Rubber Research Institute, Matador, a s. Púchov
Matador, a.s. Púchov
SELEKT, a.s. Bučany
Research Institute of Processing and Application of Plastics, a. s. Nitra
Polymer Institute, Slovak Academy of Sciences, Bratislava
Research Institute of Chemical Technology, a. s. Bratislava
Vegum, a.s. Dolné Vestenice
Plastika, a.s. Nitra
Slovnaft, a.s., Bratislava
NCHZ, a.s., Nováky
Orthopedical Clinic, School of Medicine, Comenius University, Bratislava
Burn Department and Tissue Bank, Ružinov Hospital, Bratislava
Institute of Medical Biology, Faculty of Medicine, UK, Bratislava
Chemolak, a.s. Smolenice

B. International Cooperation:

Martin Luther University of Halle-Wittenberg, Institute of Materials Science, Merseburg, Germany
- Modification of Polymers and Polymer Processing
Technical University of Szczecin, Institute of Material Engineering, Szczecin, Poland
- Chemical and Physical Modification of Polymers

Western Michigan University, Kalamazoo, USA
- The development of new generation of hot-melt inks for rotogravure printing
The Manchester Metropolitan University, Faculty of Science and Engineering, Manchester, U. K.
- Reactive Processing of Particulate Polymer Composites
Institute of Macromoleculare Chemistry, Academy of Science of the Czech Republic, Prague, CR
- Reactively Processed High Performance Nano-structured Polymer Composites
University of Minho, Department of Polymer Engineering, Guimaräes, Portugal
- Development of biomaterials, polymer processing
University of Pisa, Department of chemistry and Industrial Chemistry, Pisa, Italy
- Biodegradable Plastics
Clinica Puerta de Hierro, Cirugia Experimental, Madrid, Spain
- Chemical Modification and Biocompatibility, Testing of Collagen Membranes
International Clinic for Neo-Organs, Roma, Italy
- Biomaterials development

C. Membership in International Organisations and Societies:

European Biomaterial Society, Italy	(D. Bakoš)

G. Visitors from Abroad:

S. Illisch , E. Days	Martin Luther University of Halle - Wittenberg, Institute of Materials Science, Merseburg, Germany, May 2002, (5 days)

H. Visits of Staff Members and Postgraduate Students to Foreign Institutions:

P. Alexy, D. Bakoš	Conference PPS-18, Polymer Processing Society, Eighteenth Annual Meeting, Guimaraes, Portugal, June 2002 (5 days)
D. Bakoš	COM 2002, Conf. of Met. Soc. Canada, August 2002, (5 days) University of Toronto, Invited visit, Canada, August 2002 (8 days) University of Twente, Project Quality Assessment STU, May 2002, Netherlands (6 days) 17th European Conference on Biomaterials, Barcelona, Spain, September 2002 (5days) University Complutense, Madrid, Spain, Invited lecture, September 2002 (5 days)
L. Cernakova	54.Conference of Chemical Society, June 2002, (5 days), Brno, Czech Republic
V. Khunová	Western Michigan University, NATO project, Michigan, USA, June 2002, (30 days) Conference Recycling of Plastics, Velke Losiny, Czech Republic, September 2002, (4 days) Conference Fibre Composites, CVUT, Praha, Czech Republic, December 2002, (3 days)
H. Krump	Conference of Plasma Treatment, Mol-VITO, Belgium (3 days) Martin Luther University of Halle - Wittenberg, Institute of Materials Science, Merseburg, Germany, May-July 2002, (90 days)
H. Krump, M. Kršiak	Euromat 2002, Lausanne , Switzerland, September 2002, (7 days)
P Alexy, I. Hudec, E. Špirk, D. Bakoš	Martin Luther University of Halle - Wittenberg, Institute of Materials Science, Merseburg, Germany, September 2002, (5 days)
Hudec, H. Krump, M. Krsiak	Faculty of Chemical Technology, Prague, Czech Republic, July 2002, (5 days)

VI. THESES AND DISSERTATIONS

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

Bošková K.:	Properties of poly(styrene)/poly(butylacrylate) dispersions modified with acrylamide derivatives (Ľ. Černáková)
Halmová Z..:	Functionalized poly(styrene)/poly(butylacrylate) dispersions with core-shell structure of particles (V. Chrástová)
Jamnická L..:	The study of transport properties of the complex membrane based on biopolymers (D. Bakoš)
Jaššo M.:	Low temperature plasma surface treatment of reinforced materials usedi for rubber products (I. Hudec)
Karnas R.:	Modification of rubber mixtures with fillers combination (E. Špirk)
Kolláriková G.:	Influence of phosphoric and thiazole accelerators combination on the sulfur curing of natural rubber (G. Kyselá)
Kramárová Z.:	Use of collagen hydrolysate in polymer mixtures (P. Alexy)
Kukučková S.:	Polymer matrix for controlled release of industrial fertilizers (I. Lacík)
Mišiak R.:	The study of enzymatic degradation of the complex membrane based on biopolymers (D. Bakoš)

Orihelová M.:	Preparation of nanostructured polymer composites in melt (V.Khunová)
Šestáková E.:	High filled composite materials with magnetic fillers (I. Hudec)
Šimková B.:	Study of degradation and stabilisation of polyvinylalcohol (P. Alexy)
Šuhajda B.:	Processing properties of rubber mixtures (E. Špirk)
Šustek J.:	Evaluation of properties of chemically modified izoprene rubber (K. Kosár)
Urbanovská M.:	Study of the crosslinking structure in the network of phosphoric-sulfur vulcanizates of natural rubber (G. Kyselá)

B. Dissertations (PhD)

Kršiak M.:	Utilisation of collagen hydrolysate in polymer blends (D. Bakoš)
Jaššo M.:	Influence of plasma treatment on properties of reinforced materials for tire construction (I. Hudec)
Kukolikova L.:	Biomaterials based on polyelectrolyte complexes focused on chitosan and glycosamino-glycanes (D. Bakoš)
Krump H.:	Surface treatment of reinforcing materials for tire construction (I. Hudec)
Šimková B.:	The study of processing properties of polyvinylalcohol blends (D. Bakoš)
Volfová P.:	The effect of synthesis and formulation additives on the properties of polymerstyrene-acrylate dispersion (V. Chrástová)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Alexy, P., Káchová, D., Kršiak, M., Bakoš, D., Šimková, B.: Poly(vinyl alcohol) stabilisation in thermoplastic processing, Polymer Degradation and Stability, 78 (3), 413-(2002)

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B. Conferences (*international conferences)

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[3]* Alexy P., Ceccanti A., Chiellini E., Cinelli P., Ilieva V.I., Fluid composition and blow molding films based on poly(vinylalcohol) and collagen hydrolyzate, 7th world conference on biodegradable polymers and plastics, Pisa, Italy, June 4-8, 2002, p. 91
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[7]* Černáková Ľ., Chrástová V., Volfová P.: Synthesis and properties of crosslinked poly(styrene)/poly(butyl acrylate) dispersions containing acrylamides, (in Slovak), Polymery 2002, Česko-slovenská konferencia, 16.- 17 September, 2002, Praha, CZ, ISBN 80-85009 44-5
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[12]* Chrástová V., Černáková Ľ., Volfová P.: Seed emulsion polymerisation of styrene with butylacrylate in the presence of acrylic acic (in Slovak), Zborník 54. Zjazd CHS, 549, 30. June-4. July 2002, Brno, CZ, ISSN 0009-2770
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[23]* Krump H., Dayss E., Leps G., Hudec I., Jaššo M., Šimor M.: Surface modification of polyesters cords by plasma treatment, In: Polymerwerkstoffe 2002 – International conference, Halle, Germany, September 25-27, 2002, p.189-191
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[25]* Kyselá G., Bielik I. Thrmooxidative degradation of phosphorus – sulphuric vulcanizates of natural rubber (in Slovak), Proceedings of the 14 th International Rubber Conference 2002, Púchov, May 22. - 23. 2002, p 48. Cd - Papers, Plenary Papers, Vulcanization, ISBN 80-968099-7-0
[26]* Lacik I., Alexy P., Simkova B., Spitalsky Z., Chodak I., Size exclusion chromatography of polyvinylalcohols and polyhydroxybutyrate, 7th world conference on biodegradable polymers and plastics, Pisa, Italy, June 4-8, 2002, p. 104,
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[31]* Šimor M., Krump H. , Ráheľ J., Hudec I., Černák M.: Atmospheric-pressure plasma activation of polyester cord threads. Atmospheric Pressure Plasmas in Surface Treatment Applications - International Workshop, Mol, Belgium, February 22, 2002
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C. Chapters in books

[1] Bakos D., Koller J.: Membranes and Hydrogels in Reconstructive Surgery. In. Polymer Based Systems on Tissue Engineering, Replacement and Regeneration. Edited by R. L. Reis and D. Cohn. NATO Science Series, II. Mathematics, Physics and Chemistry – Vol. 86, Kluwer Ac. Pub. 2002, ISBN 1-4020-1000-1, pp. 55-68
[2] Bakos D., Precnerova L., Vojtassak J., Blasko M., Danisovic L.: New Biomaterials Based on Modified Citin and Complex of Chitosan. In. Advanced Materials for Biomedical Applications. Editor D. Mantovani. MetSoc Canada, August 2002, 399 pages, hardcover, ISBN: 1-894475-25-9, pp. 145-156

D. Patents

[1] Bakoš D., Koller J., Vaniš M., Von Versen R., Mönig H.J., Macho V.: The resorbable biocompatible hybrid material and the process of its preparation. Pat. SR, č. 282967, (October 30, 2002), Slovak Republic

CENTRAL LABORATORIES

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Štefan Holotík, PhD; Tibor Jakubík, PhD;

PhD Student:
Svatava Kašparová;

Technical Staff:
Vladimír Dobiš; Svatava Kašparová; Mária Mravcová; Eva Pappová; Naďa Prónayová; Walter Weis

II. TEACHING AND RESEARCH LABORATORIES

B. Research Laboratory

Laboratory of NMR Spectroscopy (NMR)
Laboratory of Mass Spectrometry (MS)
Laboratory of X-Ray Microanalysis

IV. CURRENT RESEARCH PROJECTS

A. Development of NMR techniques for the structure determination of modular molecules (Tibor Liptaj)

The main goals of the project are:

a/ development of the NMR techniques which provide long-range structural information on the studied molecules. These methods relay on measurement and interpretation of residual dipolar coupling constants which appear in high resolution spectra because of partial orientation of molecules.

The main results are:

a/ development of the methods for the precise determination of the value of coupling constants

b/ determination of the dipolar $^{1}J(C\text{-}H)$ coupling constants in the model oligosaccharide.

Direct participation on other projects:

NMR laboratory cooperates mainly with:

Department of organic chemistry
Department of organic technology
Department of petroleum technology and petrochemistry
Department of physical chemistry
Department of anorganic chemistry
Department of analytical chemistry
Department of biochemical technology
Department of biochemistry and microbiology
Department of plastics and rubber

MS Laboratory cooperates mainly with:

Department of organic chemistry
Department of organic technology
Department of petroleum technology and petrochemistry
Department of analytical chemistry
Department of biochemistry and microbiology

Laboratory of Microanalysis cooperates with:

Department of organic chemistry
Department of ceramics, glass and cement

V. COOPERATION

A. Cooperation in Slovakia

Faculty of Medicine, Jesenius University, Martin
Institute of Preventive and Clinical Medicine, Bratislava
Pharmacobiochemical Laboratory, Medical Faculty, Comenius University, Bratislava

Derer Hospital, Bratislava
Drug Research Institute, Modra
Slovak Academy of Sciences, Institute of Inorganic Chemistry, Bratislava
Slovak Academy of Sciences, Chemical Institute, Bratislava
Viticultural and Enological Research Institute, Šenkvice
Comenius University, Faculty of Natural Sciences, Bratislava
Comenius University, Faculty of Pharmacy, Bratislava
Science and Conservation Research Institute Bratislava
Research Istitute of Animal Production, Nitra
Chemical Factory, Nováky
Slovnaft, Bratislava
Duslo, Šaľa
Slovakofarma, Hlohovec
Glass Factory, Nemšová
Ceramics Factory, Čáb
Technical Glass Factory, Bratislava

B. International Cooperation:

The University of Edinburgh, Chemistry Department, The King´s Buildings, Edinburg, England
- Development of NMR techniques for structure determination of multi-modular proteins

Université Blaise Pascal, Department of Organic and Bioorganic Chemistry, Clermont-Ferrand, France
- The NMR study of the celular metabolism of the Fibrobacter succinagenes using C-13 labolled substrate

Universita di Bari, Facolta di Medicina Veterinaria, Instituto di Clinica Chirurgica, Italy
- Study of the ischemia and reperrfusion on the metabolic map of rabbit CNS.

Department of Fine Organic Chemistry, ECPM/ University L. Pasteur, Strasburg, France
- NMR characterization of chiral compounds

C. Membership in Domestic Organizations and Society:

Slovak Spectroscopic Society, Bratislava	(T.Liptaj)
Slovak Chemical Society, Bratislava	(T.Liptaj)

G. Visitors from Abroad:

Pham Tran Nghia	The University of Edinburgh, England, March 2002 (16 days)

H. Visits of Staff Members and PhD Students to Foreign Institutions:

Liptaj T.:	Université Blaise Pascal, Department of Organic and Bioorganic Chemistry, Clermont-Ferrand, France, January – February 2002 (52 days)
Liptaj T.:	The University of Edinburg , England, March 2002 (8 days)
Kašparová S.:	European Society for Magnetic Resonance in Medicine and Biology – 19th Meeting Cannes, France, August 18-26, 2002
Liptaj T.:	4th Central European NMR Symposium and Bruker NMR User Meeting for Central Europe, Budapest, Hungary, September 1-3, 2002
Liptaj T.:	Seminar on the Occasion of „Inauguration of a New NMR Facility at the Institute of Organic Chemistry and Biochemistry“, Czech Academy of Sciences, Prague, Czech Republic, October 23, 2002
Liptaj T.:	Seminar on the Occasion of „Inaguration of the New NMR Laboratory in the Institute of Chemical Process Fundamentals“, Prague, Czech Republic, November 4, 2002

VI. THESES AND DISSERTATIONS

B. Dissertations(PhD)

Pham T.N.:	NMR Study of Biological systems. Methods for the Determination of residual Dipolar Coupling Constants in Saccharides. (T.Liptaj)

VII. PUBLICATIONS

A. Journals (*registered in Current Contents)

[1]* Kettmann V., Lokaj J., Milata V., Saloň V., Hasan Mohamed M.M.: Structure of 1-methyl-1H imidazo[4,5-f]quinolin-6-ium chloride monohydrate. Acta Crystallogr. C58, 0365-0366 (2002)

[2]* Lokaj J., Kettmann V., Štetinová J., Kottaš P.: The crystal and molecular structure of 2-(benzothiazol -2-yl) -3-[2-ethoxycarbonyl -1-(ethoxycarbonylmethyl) pyrrol-4-yl] propenenitrile. Chem.Papers 56(2), 127-131 (2002)

[3] Lombardi V., Liptaj T., Wechselberger R.W., van Nuland N., Majer E., Budinska J., Vostol V., Troncone A.: Quantification of ^{1}H NMR blood serum lipoprotein spectra in stroke and in Alzheimer´s disease. A preliminary comparative study. Neurochimija 19(4), 258-263 (2002)

[4]* Nociar A., Hudec P., Smiešková A., Jakubík T., Žídek Z.: Alkylation of benzene by long chain linear alpha-olefins over zeolite catalysts. Petroleum and Coal 44(1-2), 87-91 (2002)

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[6]* Pham T.N., Liptaj T., Bromek K., Uhrín D.: Measurement of small one bond proton-carbon residual dipolar coupling constants in partially oriented ^{13}C natural abundance oligosaccharide samples: Analysis of heteronuclear J_{CH} modulated spectra with the BIRD inversion pulse. J..Magn.Reson. 157, 200-209 (2002)
[7] Remko M., Liptaj T., Podhorová K., Matejková V., Sedlárová E.: ^{13}C NMR study of antimicrobial compounds based on formaldehyde. Acta Facult.Pharm.Univ. Comenianae 49, 85-91 (2002), ISBN 80-223-1771-3.
[8]* Solladié-Cavalo A., Liptaj T., Schmitt M., Solgadi A.: Iso-propyl phenylacetate: formation of a single enolate with tBuP4 as base. Tetrahedron Letters 43, 415-418 (2002)
[9]* Světlík J., Liptaj T.: Novel heterocycles containing the pyrazole unit. J.Chem.soc., Perkin Trans. 1, 1260-1265 (2002)

B. Conferences (*international conferences)

[1]* Bartošová B., Lácová M., Gaplovský A., Chovancová J., Prónayová N., Šimunek P., Loos D.: The atypical condensation of 4-oxo-4*H*-benzopyran-3-carbaldehydes with derivatives coumarin-3-acetic- and coumarin-4-acetic acids by microwave irradiation and classical methods. In: 6th International Electronic Conference on Synthetic Organic Chemistry (ECSOC-6), September 1-30, 2002
[2]* Bystrický P., Uhrín D., Liptaj T.: One- and two-bond heteronuclear NMR scalar and dipolar coupling constants of hyaluronan tetrasaccharide. In: Book of Abstracts of the 10th Symposium on Saccharides, Smolenice, September 1-6, 2002, p.60
[3]* Imrich J., Klika D.K., Prónayová N., Alfoldi J., Liptaj T., Bernát J., Kristian P., Pihlaja K., Vilková M., Balentová E.: NMR properties of new spirocyclic and heterocyclic acridine derivatives. In: Book of Abstracts of the 17th NMR Valtice, Czech republic, Avril 8-10, 2002
[4] Jakubík T.: Využitie GC-MS v analytickej praxi. Exploitation of GC-MS in analytical praxis. In: Book of Abstracts of the 9th Conference „Present State and Perspectives of Analytical Chemistry in the Praxis“, Bratislava, Slovak Republic, September 3-5, 2002
[5]* Kašparová S., Sumbalová Z., Bystrický P., Kucharská J., Liptaj T., Mlynárik V., Gvozdjáková A.: Rate constant of creatine kinase reaction and neuroprotective effect of antioxidants in animal model of huntington´s disease in vivo saturation transfer ^{31}P MRS study. In: ESMRMB 2002. 19th Annual Meeting of the European Society for Magnetic Resonance in Medicine and Biology. Cannes, France, August 22-25, 2002.
[6]* Kašparová S., Sumbalová Z., Kucharská J., Bystrický P., Mlynárik V., Gvozdjáková A.: Effect of coenzyme Q10 on energy metabolism in aged rats with huntington´s disease. In: Book of Abstracts from the 22nd European Section Meeting of the International Society for Heart Research, Satellite Meeting Stará Lesná, Slovak republic, June 29 - July 2, 2002
[7]* Sedláček J., Jamnický M., Lokaj J.: Microstructural analysis and properties of fused cast zirconia refractories corroded in lead glass. In: 5th International Conferences Solid State Chemistry, Bratislava, Slovak republic, July 2002
[8]* Sumbalová Z., Kašparová S., Bystrický P., Kucharská J., Mlynárik V., Gvozdjáková A.: Effect of coenzyme Q10 and vitamine E on brain and skelet muscle energy metabolism in animal model of huntington´s disease. Third Conference of the International Coenzyme Q10 Association, London, United Kingdom, November 22-24, 2002.

FACULTY ADMINISTRATION SERVICES

1. DEAN`S OFFICE

Registrar of Faculty
Žúbor Vladimír, PhD

Secretary
Ledecká Anna

Economic Department
Rečlová Aurélia, Kluvancová Soňa, Gézeová Agnesa, Rajnáková Jarmila, Levická Gabriela, Tanczerová Mária, Košťanová Alžbeta, Kúdelová Mária, Čaplová Alena

Pedagogical Department
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Office of Scientific Research
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Kršáková Viera, Pustaiová Lýdia, Steinerová Zita, Macušková Jarmila, Kajanová Kamila, Kapucová Klára

Office of Foreign Cooperation
Burešová Valéria

Industrial Liaison Office
Dzivák Jozef

Department of Safety Labour Protection and Fire Safety
Hodálová Jolana

2. MAINTENANCE DEPARTMENT

Performance Manager: Sabol Vladimír

3. COMPUTER CENTRE

Supervisor: Zahradník Tibor

4. LIBRARY

Supervisor: Garajová Jana

5. CAFETERIA

Supervisor: Kuchariková Agáta