

ANNUAL REPORT 2005



Faculty of Chemical and Food Technology
Slovak University of Technology

Radlinského 9, 812 37 Bratislava

april 2006

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FOREWORD

The Faculty of Chemical and Food Technology (FCHPT) is one of seven 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 succeeded in keeping the high standard of technical education in Slovakia.

Within the time of its existence, the Faculty has educated more than 17 000 graduates (more than 3 700 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 1300 students study at the Faculty and they are trained by qualified pedagogical and research staff.

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, Wineyard and Wine, Nutrition and Health.

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.

March 2006

Prof. Dušan Bakoš, PhD, DSc
Dean

DEPARTMENT OF ANALYTICAL CHEMISTRY

Head of Department:
Prof. Jozef Lehotay, PhD, DSc

Telephone: ++421252926043
Fax: ++421252926043
E-mail: jozef.lehotay@stuba.sk

I. STAFF

Full Professors:

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

Associate Professors:

Ernest Beinrohr, PhD; Eva Benická, PhD; Miroslav Čakrt, PhD (till 31.8.2005); Katarína Hroboňová, PhD (since 1.4.2005); Drahomír Oktavec, PhD (till 31.5.2005); Miroslav Rievaj, PhD; Jana Sádecká, PhD; Viktor Vrábel, PhD;

Assistant Professors :

Tatiana Buzinkaiová, PhD; Andrea Hercegová, PhD; Pavol Májek, PhD; Alena Manová, PhD; Pavol Tarapčík, PhD; Mária Vaníčková, PhD (till 31.5.2005); Peter Tomčík, PhD (since 1.9.2005);

Research Fellows:

Adriana Ferancová, PhD; Milena Dömötörövá (since 1.11.2005); Svetlana Hrouzková, PhD; Tatiana Rojkovičová, PhD; Ivan Skačáni, PhD; Ivan Špánik, PhD;

PhD Students:

Zuzana Dovalovská (till 30.9.2005); Milena Dömötörövá (till 30.9.2005); Andrea Fedurcová; Júlia Galandová (since 1.10.2005); Stanislava Hlúbiková (since 1.10.2005); Pavlína Jenčušová (till 30.9.2005); Gabriela Karasová; Michal Kirchner; Dáša Kružlicová (since 1.10.2005); Miroslava Lachová (since 1.10.2005); Damián Meričko; Janka Mydlová; Renáta Ovádeková; Milan Střelec;

Technical staff:

Marta Benešová; Anna Chalupková; Ľubica Zajacová

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

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

B. Research laboratories:

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

III. TEACHING

A. Undergraduate Study:

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

IV. CURRENT RESEARCH PROJECTS

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

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

Project duration: from 01.01.2005 to 31.12.2007

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

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

Project duration: from 01.01.2005 to 31.12.2007

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

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

Project duration: from 01.01.2005 to 31.12.2007

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

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

Project duration: from 01.01.2005 to 31.12.2007

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

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

Project duration: from 01.02.2003 to 30.09.2006

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

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

Project duration: from 01.01.2005 to 31.12.2007

G. APVT Project 27-010304: Modification and verification of functionality of measuring system based on DNA/SPE biosensor for the evaluation of effect of lipid compounds on DNA (Adriana Ferancová).

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

Project duration: from 01.05.2005 to 15.12.2005

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

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

Project duration: from 01.01.2005 to 31.12.2007

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

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

Project duration: from 01.01.2005 to 31.12.2007

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.

Project duration: from 01.07.2002 to 31.12.2005

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

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

Project duration: from 01.04.2004 to 31.03.2007

V. CURRENT EDUCATION PROJECTS

A. CEEPUS Project No PL-0110 04/05: “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 enables 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.

Project duration: from 01.10.2004 to 30.09.2005

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

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

Project duration: from 01.01.2005 to 31.12.2006

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

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

Project duration: from 01.01.2005 to 31.12.2006

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

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

Project duration: from 01.01.2005 to 31.12.2006

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

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

Project duration: from 01.10.2004 to 30.09.2007

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

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

Project duration: from 01.06.2005 to 31.05.2006

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Faculty of Informatics and Information Technologies, Bratislava	Interdigitated array of microelectrodes	Řeháček V., research fellows, Ilkovičova 3, 841 04 Bratislava	01.01.1994-
Ministry of Agriculture, Bratislava	End user of the project	Hajaš M., Plant commodities department/plant protection products, Dobrovičova 12, 812 66 Bratislava	01.01.2004-30.09.2006
Novofruct, SK, s.r.o., Nové Zámky	Cooperation in the monitoring of pesticide residues in raw materials for baby food production and the fate of pesticides in the process of technology	Henteková M., Ing., technologist Novofruct, SK, s.r.o., Komárňanská cesta 13, 940 43 Nové Zámky	01.01.2004-
Pharmaceutical Faculty, Comenius University, Bratislava	Chiral Separation of some anaesthetics using HPLC method	Čižmárik Jozef, professor, Odbojárov 10, 832 32 Bratislava	01.01.1988-
Novácke chemické závody, a.s., Nováky	Organisation of two seminars: Trends in Analytical Chemistry. Statistical evaluation of analytical results and validation of analytical methods.	Beňo Ľuboš, RNDr., chief executive M. R. Štefánika 1, 972 71 Nováky	26.1.2005-14.2.2005
Hella Slovakia Signal-Ligluting, s.r.o., Bánovce nad Bebravou	Determination of Ni and CN purity	Gross Marián, Ing., product manager, Hrežďovská 1629/16, 957 04 Bánovce nad Bebravou	3.2.2005-3.3.2005
IBOK-Integríta a bezpečnosť oceľových konštrukcií, a.s., Bratislava	Analysis of solid salt from cooler	Magula Vladimír, productive director, Pionierska 15, 831 02 Bratislava	21.2.2005-30.3.2005
DUSLO, a.s., Šaľa	Determination of low amounts of fluoride in 5 samples of magnesium hydroxide	Gabarík Milan, RNDr., 927 03 Šaľa	1.3.2005-31.3.2005
SA/Invest, s.r.o., Bratislava	Determination of sulphide in waste water	Dávidek Marian, Ing., director, Plátenická 24, 821 09 Bratislava	20.6.2005-11.7.2005
Novácke chemické závody, a.s., Nováky	Determination of inorganic compounds in 5 samples of outdoor air	Borišek Igor, Ing., technical director, M. R. Štefánika 1, 972 71 Nováky	20.6.2005-27.6.2005
KAPPA ŠTÚROVO, a.s., Štúrovo	Determination of boiling solution using borate method	Dudášová Agnesa, Ing., technologist, Továrenská 1, 943 03 Štúrovo	20.5.2005-31.5.2005
VUCHT, a.s., Bratislava	Analysis of samples by HPLC method	Fedoršová Veronika, Ing., economic director, Nobelova 34, 836 03 Bratislava	13.6.2005-20.6.2005
Novácke chemické závody, a.s., Nováky	Analyses of samples from outdoor air by HPLC	Klačanský Ladislav, Ing., M. R. Štefánika 1, 972 71 Nováky	20.6.2005-27.6.2005
VUCHT, a.s., Bratislava	Determination of fluoride in DUHOR NPL/S product by spectrophotometric method	Stieranková J., Ing., Duslo, a.s., 927 03 Šaľa	15.12.2005-20.12.2005

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
UFZ Environmental Research Centre Leipzig, FRG	joint research	Wennrich Reiner, Dr., Head of the Section UFZ Leipzig-Halle, Permoserstr. 15, D-04318 Leipzig, Germany	01.01.2003-
Depart. Anal. Chemistry, Faculty of Natural Sciences, Charles University, Prague, Czech Republic	study stay of students	Barek Jiří, professor, Head of the Laboratory UNESCO Laboratory of Environmental Electrochemistry, Charles University, 128 43 Prague	01.01.2002-
Plant Protection Institute, Bulgaria	Cooperation in pesticide residues analysis	Balinova Anna, professor, Head of Toxicology, Department, PPI Kostinbrod 2230, Bulgaria	01.01.2004-
Department of Chemistry, Gilman Hall, Iowa State University, Ames, Iowa, USA	Chiral separation of optical active compounds by HPLC and HRGC	Armstrong Daniel Wain, professor, Department of Chemistry, Texas A&M University, College Station, TX 77842-3012 USA	01.01.1997-
Department of Organic Chemistry, University of Gent, Gent, Belgium	Chiral separations by HRGC	Sandra Pat, professor, Gent University, Department of Organic Chemistry 9000 Gent, Belgium	01.01.1996-
Nicholas Copernicus University, Toruń, Poland	Trace analysis in GC and HPLC development of new chemical bounded phases	Buszewski Boguslaw, professor, NCU, Faculty of Chemistry, Gagarin Street 7, 87-100 Toruń, Poland	01.01.1995-
Department of Building Materials, University of Mining and Metallurgy, Cracow, Poland	Electroanalytical chemistry and chemometrics, common CEEPUS projects (exchange of students and teachers)	Bobrowski Andrzej, professor, Al. Mickiewicza, PL-30-059 Cracow, Poland	01.09.2001 -
Department of Analytical Chemistry and Radiochemistry, Technical University, Graz, Austria	Food analysis Chemometrical Classification of Food and Biologically Important Samples	Lankmayr Ernst, professor, vice-head of Department, Techniker str. 4, A-8010 Graz, Austria	01.03.2002 -
Department of Chemistry, Faculty of Chemistry and Chemical Engineering, University of Maribor, Maribor, Slovenia	Cooperation in food analysis and environmental chemistry	Brodnjak-Vončina Darinka, professor, Smetanova 17, 2000 Maribor, Slovenia	01.01.2004-
Department of Analytical Chemistry, University of Pardubice, Pardubice, Czech Republic	joint project	Jandera Pavel, professor, Čsl. légií 565, 532 10 Pardubice, Czech Republic	01.01.2004-

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Bustin Dušan	Chemical Papers Editorial Board	member	01.01.1991-
Bustin Dušan	Scientific Council of FCHPT	member	01.02.1990-
Labuda Ján	Academy Senate of FCHPT	member	01.03.2002-
Labuda Ján	Analytical Group of SCHS	chairmann	01.01.2005-
Lehotay Jozef	Union of Slovak Scientific Society, Analytical Chemistry Groupe	chairmann	04.03.2001-

Lehotay Jozef	The Ministry of Education SR, Scientific Agency (VEGA)	chairmann	30.04.2002-
Lehotay Jozef	Commission for air/pollution (TNK 28)	member	01.01.1999-
Lehotay Jozef	Commission for waste management (TNK 31)	member	01.01.1999-
Lehotay Jozef	Scientific Council of FCHPT	member	01.02.2003-
Lehotay Jozef	Agency for support of science and technique Ministry of education	member of advisory board	10.09.2003-
Matisová Eva	EU Centre of Excellence in Environmental Health Research Institute of Preventive and Clinical Medicine, Bratislava	member of advisory board	01.01.2003-
Mocák Ján	Slovak Medical Society, Bratislava, Slovakia (honorary member)	member	01.10.1998 -
Mocák Ján	Scientific journal "Laboratorna diagnostika" (Laboratory Diagnostics), Bratislava, Slovakia	editor	01.09.1996-

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Beinrohr Ernest	Gessellschaft Deutcher Chemiker, Frankfurt, Germany	member	01.06.1990-
Bustin Dušan	IUPAC Fellowship, Switzerland	member	07.03.2002-
Krupčík Jozef	European Commission Science, Research and Developments, expert for the evaluation of proposals, Brussel, Belgium	other	01.01.1999- 31.12.2005
Labuda Ján	Division of Analytical Chemistry of the European Association for Chemical and Molecular Sciences, EuCheMS (Delegate of SCHS)	other	06.09.1999-
Labuda Ján	Sensors, Editorial Board of the journal, Basel, Schwitzerland	member	01.01.2001- 31.12.2005
Lehotay Jozef	European Commission Science, Research and Developments, expert for the evaluation of proposals, Brussel, Belgium	other	23.02.1999-
Lehotay Jozef	Chemical Analysis, Editorial Board of the journal, Warszawa, Poland	member	07.11.2001-

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Švancara, I.	University of Pardubice, Pardubice	Czech Republic	March 2005 (2 days)
Kotzian, P.	University of Pardubice, Pardubice	Czech Republic	June 2005 (21 days)
Lehotay, S. J.	USDA, Agricultural Research Service, Eastearn Regional Research Centre, Wyndmoor	USA	October 2005 (1 day)
Vítková, K.	University of Olomouc, Olomouc	Czech Republic	October- December 2005 (3 month)
Zapadlo, M.	University of Olomouc, Olomouc	Czech Republic	November 2005 (1 month)
Buszewski, B.	University of Torun, Torun	Poland	November 2005 (3 days)

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

Name	Organisation / Institution / Conference	State	Date / Duration
Beinrohr, E.	3rd National Conference on Actual Problems of Hygienic Laboratories, Pec pod Snežkou	Czech Republic	May 2005 (3 days)

Benická, E.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (4 days)
Benická, E.	Seminar Analysis of Organic Compounds, Komorní Lhotka	Czech Republic	October 2005 (3 days)
Dömötörövá, M.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (4 days)
Fedurcová, A.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (12 days)
Fedurcová, A.	CEEPUS Summer School, Pardubice	Czech Republic	September 2005 (12 days)
Ferancová, A.	Conference XXV. Modern Electrochemical Methods, Jetřichovice	Czech Republic	May 2005 (4 days)
Ferancová, A.	Conference Surface modification for chemical and biochemical sensing, Kazimierz Dolny	Poland	November 2005 (7 days)
Hercegová, A.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (4 days)
Hroboňová, K.	6th Balaton Symposium on High-Performance Separation Methods, Siofok	Hungary	September 2005 (4 days)
Hroboňová, K.	34th Conference Synthesis and Analysis of Drugs, Brno	Czech Republic	September 2005 (3 days)
Hrouzková, S.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (4 days)
Karasová, G.	Nicolas Copernicus University, Torun	Poland	May-July 2005 (3 month)
Karasová, G.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (4 days)
Kirchner, M.	4th International Symposium of Pesticides in Food and the Environment, Izmir	Turkey	September 2005 (7 days)
Kirchner, M.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (4 days)
Kirchner, M.	Seminar Analysis of Organic Compounds, Komorní Lhotka	Czech Republic	October 2005 (6 days)
Krupčık, J.	International Symposium Chiranal 2005, Olomouc	Czech Republic	February 2005 (5 days)
Krupčık, J.	Evaluation of Marie Curie Projects, Brussel	Belgium	February 2005 (4 days)
Krupčık, J.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (7 days)
Krupčık, J.	CEEPUS Summer School, Pardubice	Czech Republic	September 2005 (7 days)
Krupčık, J.	University of Torun, University of Wroclaw, Torun, Wroclaw	Poland	October 2005 (5 days)
Krupčık, J.	University of Gent, RIC Kortrijk, Gent, Kortrijk	Belgium	November 2005 (4 days)
Labuda, J.	Faculty of Natural Sciences, Charles University, Praha	Czech Republic	February 2005 (3 days)
Labuda, J.	Workshop CERA (EU) and SARC (Bratislava), Leipzig	Germany	April 2005 (4 days)
Labuda, J.	International Conference Analytical Chemistry and Chemical Analysis, Kiev	Ukraine	September 2005 (10 days)
Labuda, J.	International Conference Instrumental Methods of Analysis-Modern, Trends and Applications, Heraclion, Crete	Greece	October 2005 (8 days)
Labuda, J.	Special Seminar Laboratory, Praha	Czech Republic	October 2005 (3 day)
Labuda, J.	Ege University, Bornova-Izmir	Turkey	November 2005 (4 days)
Lehotay, J.	International Symposium Chiranal 2005, Olomouc	Czech Republic	February 2005 (5 days)
Lehotay, J.	Conference 22th Forum Analytik 2005, Wien	Austria	February 2005 (2 days)
Lehotay, J.	7th Polisch Conference on Analytical Chemistry, Torun	Poland	July 2005 (7 days)
Lehotay, J.	6th Balaton Symposium on High-Performance Separation Methods, Siofok	Hungary	September 2005 (4 days)

Lehotay, J.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (7 days)
Lehotay, J.	CEEPUS Summer School, Pardubice	Czech Republic	September 2005 (7 days)
Lehotay, J.	Summer School, Komorní Lhotka	Czech Republic	October 2005 (4 days)
Lehotay, J.	University of Wroclaw and University of Torun, Wroclaw, Torun	Poland	October 2005 (5 days)
Lehotay, J.	University of Gent, RIC Kortrijk, Gent, Kortrijk	Belgium	November 2005 (4 days)
Manová, A.	Conference XXV. Modern Electrochemical Methods, Jetřichovice	Czech Republic	May 2005 (4 days)
Manová, A.	International Conference Analytical Chemistry and Chemical Analysis, Kiev	Ukraine	September 2005 (10 days)
Matisová, E.	Conference 22th Forum Analytik 2005, Wien	Austria	February 2005 (2 days)
Matisová, E.	4th International Symposium of Pesticides in Food and the Environment, Izmir	Turkey	September 2005 (7 days)
Matisová, E.	Seminar Analysis of Organic Compounds, Komorní Lhotka	Czech Republic	October 2005 (2 days)
Meričko, D.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (12 days)
Meričko, D.	CEEPUS Summer School, Pardubice	Czech Republic	September 2005 (12 days)
Mocák, J.	Slovenian Chemical Society, VIII. ISIC, Maribor-Rogla	Slovenia	June 2005 (5 days)
Mocák, J.	University of Maribor, Maribor	Slovenia	June 2005 (6 days)
Mocák, J.	Karl-Franzens University Graz, University of Sarajevo, Conference YISAC 2005, Graz, Sarajevo	Austria, Bosnia and Herzegovina	July 2005 (12 days)
Mocák, J.	Slovenian Chemical Days, University of Maribor, Maribor	Slovenia	September 2005 (3 days)
Mydlová, J.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (12 days)
Mydlová, J.	CEEPUS Summer School, Pardubice	Czech Republic	September 2005 (12 days)
Ovádeková, R.	Conference XXV. Modern Electrochemical Methods, Jetřichovice	Czech Republic	May 2005 (4 days)
Ovádeková, R.	International Conference Instrumental Methods of Analysis-Modern, Trends and Applications, Heraclion, Crete	Greece	October 2005 (8 days)
Ovádeková, R.	10th Interdisciplinary Czech and Slovak Toxicological Conference, Olomouc	Czech Republic	September 2005 (3 days)
Rojkovičová, T.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (12 days)
Rojkovičová, T.	CEEPUS Summer School, Pardubice	Czech Republic	September 2005 (12 days)
Rojkovičová, T.	Indiana University, Bloomington	USA	November-December 2005 (2 month)
Špánik, I.	11th International Symposium of Separation Sciences, Pardubice	Czech Republic	September 2005 (4 days)
Špánik, I.	LECO INSTRUMENTE, Praha	Czech Republic	December 2005 (1 days)
Špánik, I.	Workshop, Lvov	Ukraine	December 2005 (5 days)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Doháňošová, J.	Application of Methods of Fast Gas Chromatography.	Benická, E.

Đurovec, I.	Analysis of Organic Compounds by Gas Chromatography with Advanced Signal Processing.	Benická, E.
Fraňo, L.	Chemometrical Processing and Modelling of Analytical Signals.	Mocák, J.
Jánošíková, Z.	Determination of Manganese in Water by Cathodic Stripping Voltammetry on Carbon Paste Electrode.	Tomčík, P.
Matušková, J.	Determination of Trace Concentrations of Contaminants in Waters by Flow-Through Coulometry.	Beinrohr, E.
Oravcová, A.	Analytical Methods for Brandy Authentication.	Špáňik, I.
Repaská, K.	The Analysis of Chiral Compounds by Gas Chromatography.	Špáňik, I.
Súkenníková, E.	Structure and Biological Activity of Indolizine, Diazepine and 1,4-Dihydropyridine.	Vrábel, V.
Takácsová, G.	Prospectives in Gas Chromatographic Analysis of Volatile Organic Compounds.	Benická, E.
Tóthová, J.	Application of Molecularly Imprinted Polymers in Analytical Chemistry.	Sádecká, J.
Tropp, M.	On-line Preconcentration and GF AAS Determination of Toxic Elements in Waters.	Manová, A.

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

Name	Title of Thesis	Supervisor
Báchor, M.	Fast GC-MS Analysis of Pesticide Residues.	Matisová, E.
Hlúbíková, S.	Determination of Selenium by the Flow-coulometry.	Manová, A.
Horváthová, G.	CGC Enantiomer Separation of Selected Volatile Organic Compounds Presented in Food Samples.	Špáňik, I.
Komanová, M.	HPLC Separation of Enantiomers of Some Organic Acids.	Hroboňová, K.
Kormaník, M.	Characterization and Classification of Biochemical and Food Data by the Methods of Multidimensional Data Analysis and Artificial Neural Networks.	Mocák, J.
Kružlicová, D.	Sample Preparation in Ultratrace Analysis of Selected Pesticide Residues in Real Samples.	Hercegová, A.
Kucko, D.	Application of Microelectrodes in Voltammetric Analysis.	Rievaj, M.
Lachová, M.	Preparation and Testing of New Selective Sorbents for Preconcentration of Some Compounds.	Lehotay, J.
Laurovičová, E.	Sequential Injection Analysis and In-electrode Coulometric Titrations for the Determination of Contaminants in Waters.	Beinrohr, E.
Madarasová, I.	DNA Biosensor as a Sensor of Chemical Toxicity.	Labuda, J.
Nováková, K.	Preparation and Use of DNA Biosensor for the Detection of Substances Binding to DNA.	Vaničková, M.
Ondrušová, E.	Application of Additives in CITP.	Sádecká, J.
Ruščáková, M.	DNA Biosensors for the Evaluation of Risk Compounds.	Ferancová, A.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Borošová, D.	Determination of As, Ni, Cr, Pb and Cd in hair samples by AAS and coulometry.	Beinrohr, E.
Korenková, E.	Large volume injection in conventional and fast GC with the utilisation of programme temperature vaporiser. Application in environmental analysis.	Matisová, E.

VIII. PUBLICATIONS

Article in journal

- [1] Banks, C., Kruusma, J., Moore, R., Tomčík, P., Davis, J., Peters, J., Komorski-Lovric, Š., Compton, R.G.: Manganese detection in marine sediments: anodic vs. cathodic stripping voltammetry. *Talanta*, vol. 65, pp. 423-429, 2005.
- [2] Beinrohr, E., Dzurov, J.: Titrácie trochu inak.... *CHEMagazin*, no. 6, vol. 2005, pp. 6, 2005.
- [3] Benická, E., Krupčík, J., Lehotay, J., Sandra, P., Armstrong, D.W.: Selectivity tuning in a HPLC multicomponent separation. *Journal of*

- Liquid Chromatography & Related Technologies*, no. 10, vol. 28, pp. 1453-1471, 2005.
- [4] Brudíková, K., Breza, M., Májek, P.: Conformational Influence on Deprotonation of bis(methoxycarbamido) amine Ligand. *Collection of Czechoslovak Chemical Communication*, vol. 70, pp. 313-325, 2005.
- [5] Čižmáriková, R., Hroboňová, K., Lehotay, J., Račanská, E., Bruchatá, K.: Preparation, pharmacological activity and Enantioseparation of [3-(cyclo pentyloxymethyl)-4-(2-hydroxy-3-isopropylaminopropoxy)phenyl]ethanone as potential β blocker. *Acta Fac. Pharm. Univ. Com.*, vol. 52, pp. 79-88, 2005.
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DEPARTMENT OF BIOCHEMICAL TECHNOLOGY

Head of Department:
Prof. Fedor Malík, PhD, DSc.

Telephone: +421252967085
Fax: +421252967085
E-mail: fedor_malik@stuba.sk

I. STAFF

Full Professors:

Fedor Malík, PhD, DSc; Ján Šajbidor, PhD, DSc.

Associate Professors:

Michal Rosenberg, PhD; Daniela Šmogrovičová, PhD; Katarína Dercová, PhD; Mária Šturdíková, PhD;
Milan Čertík, PhD.

Assistant Professors :

Helena Hronská, PhD; Lucia Sláviková

Research Fellows:

Ludmila Krištofiková; Martin Rebroš, Dušan Slugeň, PhD.

PhD Students:

Nina Borodovčáková; Silvia Firáková; Katarína Furdíková; Miroslav Gdovin; Marwan Kasha; Katarína Kundrčíková;
Michal Maruna; Zuzana Mlichová; Zuzana Sejáková; Radoslav Selecký; Marianna Skokanová; Martin Šulák

Technical staff:

Vlasta Sládková; Jaroslava Telgárska

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Bioanalytical Chemistry
Laboratory of Biotechnology
Laboratory of Fermentation Beverages
Laboratory of Pharmaceutical Biotechnology
Laboratory of Environmental Biotechnology
Laboratory of Lipid Biotechnology

B. Research laboratories:

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

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Seminar of the Study Program	0/1/0	Šmogrovičová
5. semester (Bc)	Principles in Biotechnology	2/0/0	Šajbidor
	Xenobiochemistry	2/0/0	Dercová
6. semester (Bc)	Terminal Work	0/0/4	Čertík, Dercová, Malík, Rebroš, Šmogrovičová, Valach, Šturdíková
1. semester (MSc)	Enzymology and Enzyme Engineering	2/0/0	Augustín
	Laboratory in Enzymology and Enzyme Engineering	0/2/0	Sláviková

	Information Systems and Data Processing	1/1/0	Šmogrovičová, Selecký, Firáková
	Food Biotechnology	2/0/1	Malík, Slugeň
1. semester (MSc)	Bioanalytical Methods	2/0/0	Šajbidor
	Laboratory in Bioanalytical Methods	0/0/2	Brygin, Čertík, Rebroš, Sláviková, Kundříková
	Biosynthesis and Transformation of Metabolites	2/0/0	Rosenberg
	Laboratory in Biosynth. and Transformat. of Metabolites	0/0/1	Rosenberg
1. semester (MSc)	Terminal Work	0/0/5	Čertík, Dercová, Křištofiková
2. semester (MSc)	Bioanalytical Methods	2/0/0	Šajbidor
	Laboratory in Bioanalytical Methods	0/0/2	Brygin, Čertík, Rebroš, Sláviková, Kundříková
	Bioengineering	0/2/0	Slugeň
	Pharmaceutical Biotechnologies	2/0/0	Šturdíková
2. semester (MSc)	Laboratory in Pharmaceutical Biotechnologies	0/0/1	Šturdíková, Firáková
	Molecular Biology and Genetics	2/0/0	Čertík
	Technical Microbiology	2/0/0	Šturdík
	Information Systems and Data Processing	1/1/0	Šmogrovičová, Selecký, Firáková
2. semester (MSc)	Nutritional and Functional Properties of Food	2/0/0	Slugeň
	Terminal Work Special Praxis	0/0/5	Čertík, Dercová, Rosenberg, Šajbidor, Šmogrovičová, Šturdíková, Malík
	Environmental Biotechnology	2/0/0	Dercová
3. semester (MSc)	Laboratory in Environmental Biotechnology	0/0/2	Dercová
	Malting and Brewing	2/0/0	Šmogrovičová
	Laboratory in Malting and Brewing	0/0/1	Šmogrovičová, Selecký
	Chemistry and Microbiology of Wine	2/0/0	Malík
3. semester (MSc)	Laboratory in Chemistry and Microbiology of Wine	0/0/1	Slugeň, Furdíková
	Microbial Biomass and Distillery	2/0/0	Šmogrovičová
	Laboratory in Microbial Biomass and Distillery	0/0/1	Šmogrovičová, Selecký
	Biochemical and Genetic Regulations	2/0/0	Šturdík, Valach
3. semester (MSc)	Laboratory in Biochemical and Genetic Regulations	0/0/1	Valach, Brygin
	Gene Manipulations	2/2/0	Čertík
	Special Laboratory Excercises	0/0/6	Čertík, Dercová, Šajbidor, Malík, Rosenberg, Šmogrovičová, Šturdíková, Valach
4. semester (MSc)	Diploma Work		Čertík, Dercová, Malík, Křištofiková, Rosenberg, Šmogrovičová, Slugeň, Šturdíková, Valach

IV. CURRENT RESEARCH PROJECTS

A. Government contract 364/2003 Nutrition and Health in education programs (Ján Šajbidor)

The main aim of this project is preparation of education programs for universities, high and grammar schools focused on food, nutrition and health. Special interest is oriented on e-learning, lifetime education courses for adults.

Project duration: from 01.01.2003 to 31.12.2006

B. VEGA Project No. 1/2390/05 Evaluation of agroindustrial materials using biotechnological means by application of microorganisms producing metabolites for food, agriculture, pharmacy and veterinary uses (Milan Čertík)

The project is based on physiological regulation of microbial production of essentials polyunsaturated and conjugated fatty acids, squalene and sterol derivatives, organic acids (lactic acid), polyols (erythritol), ethanol, pigments (carotenoids, azaphilonic metabolites, mitorubrinic acid), polyketide metabolites and pharmaceutical using agroindustrial sources. Observations gained from parameter studies and optimisation of fermentation process provide useful information about aimed regulation of biochemical processes in fermentation technologies a thus they will create basis for link between basic and applied research that will have uses in both domestic and international research in this field. The project will result in proposals of equipments for experimental transfer from laboratory scale to semi-industrial scale. Fermentation preparation of these metabolites will contribute to expanding of their application in food, medical, pharmaceutical and veterinary practices.

Project duration: from 01.01.2005 to 31.12.2007

C.VEGA project No.1/2391/05 Fermentation processes, bio-ethanol production, microorganisms, immobilisation systems, wine, beer (Daniela Šmogrovičová)

The aim of this project is to develop areas of biotechnology using fermentation processes with free and immobilized cells of microorganisms, for purpose of ethanol fermentation improvement in fermented beverages and bio-ethanol production. The focus will be on production of classical beverages fermentation productivity – traditionally fermented and special beer, different categories of wine and of fermented beverages with lowered content of alcohol and bio-ethanol production from renewable starch resources. Within the project possibility of "very high gravity" technologies – uses concentrated substrates – will be verified. 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 cell 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. Systematical introduction of immobilization principle with continualisation of the processes should be driven to their practical application. Integration of up-to-date knowledge about yeast and bacteria metabolism should result into improvement of fermentation and production of alternative beverages, as well as bio-ethanol.

Project duration: from 01.01.2005 to 31.12.2007

D. National project 2003 SP 27/028 0E 02/028 0E 02 Quality, safety and functionality of primary food resources (Milan Čertík)

The project is coordinated by Research Institute of Plant Production where some tasks of the project are carried out in our Faculty. Objectives of these tasks are focused on a) Enhancement of nutritional value of various types of cereals by polyunsaturated fatty acids, b) Evaluation and selection of primarily food resources and preparation of functional food with preventive-medical properties, c) Study of genotype dependence on lipid profile in oil seeds, d) Identification of essential fatty acids donors in cereals.

Project duration: from 22.10.2003 to 31.12.2005

E. National project of research and development 028 The use of domestic materials and resources – Phytosterols and fatty acid derivatives (Milan Čertík, Michal Rosenberg)

The aim of the project is focused on evaluation of co-products from rape seed oil and other industrial resources for technological preparation of phytosterols and fatty acid derivatives. The project is tended to optimization of isolation and purification processes for obtaining of phytosterols. The project will also solve the possible to prepare fatty acid derivatives for their use in food and pharmaceutical industry.

Project duration: from 01.07.2004 to 31.12.2006

F. APVT project (APVT-99-005002) Total treatment of Medicago sativa as the revivable energy source using standard and biotechnological methods, part: Biotechnological treatment of Medicago sativa (Michal Rosenberg)

The project is coordinated by LIKO a.s. Bratislava. The goal of this part of project is the evaluation of liquid parts of Medicago sativa (obtained by hydrolysis and pressing of plant) for biotechnological production of ethanol and lactic acid. The Bacillus coagulans and Saccharomyces cerevisiae were used as production strains.

Project duration: from 1.7.2005 to 31.12.2005

G. National project 2004 ŠP 26 028 0C 05 Complex evaluation of plant sources, part 1.4. Rare saccharides and complex valuation of beet slice (Michal Rosenberg)

The project is coordinated by Research Institute of Food. Verification of methods used for preparation of L-arabinose from beet slice is the main aim of the project. The other sugars obtained from this process will be used as energy source for yeast biomass preparation with high content of trehalose. Purification methods for sugar preparation will be verify.

Project duration: from 01.01.2005 to 31.12.2005

H. VEGA Project No 1/1309/04 Biotechnological application of microorganisms in biodegradation of persistent organic pollutants (POPs) for decontamination of polluted environment (soil, water); the effect of POPs as stress environmental factors acting on microbial cell (Katarína Dercová)

The project is focused on an investigation of a possibility to use catabolic ability of microorganisms to degrade persistent chlorinated hydrophobic organic pollutants in different environmental components (water, soil). Study of the effect of the xenobiotics on microbial cells will be included in the project because presence of these compounds markedly influences biodegradation ability, survival, and colonization of microorganisms at application in bioremediation technologies during decontamination of the environment.

The goals of the project are to study metabolic pathways of chloroaromatics, intermediate and endproducts, their toxicity; to isolate and identify particular microbial strains with the appropriate biodegradation ability; to investigate biodegradation of chlorophenols mainly pentachlorophenol (PCP) in liquid media and defined soil samples, in aerated and intact soil profiles; to determine the effect of chloroaromatics as potential stress factors on microbial cells (membrane fluidity) with the emphasis on content and composition of total lipids and fatty acids in the major lipid membrane structures. The attention will be focused on the immobilization of soil contaminants using the prepared organomineral complexes (zeolite with the bound humic acids) with the purpose to decrease their bioavailability and hence toxicity, subsequently to allow for their biodegradation by indigenous and bioaugmented microorganisms.

Project duration: from 01.01.2004 to 31.12.2006

I. International project No. Gr/Slov/FCHPT/05 Biotechnological production of bioactive lipids from agro-industrial byproducts. Project for bilateral scientific & technological cooperation between the Slovak Republic and the Hellenic Republic (Milan Čertík)

The project is aimed on physiological regulation of microbial overproduction of biologically active polyunsaturated fatty acids using agro-industrial sources and their application in food, medical, pharmaceutical and veterinary practices. The raw materials that will be used as carbon sources will be characteristic of agro-industrial activity in both Slovak Republic and Greece, providing an alternative and useful way of valorization of these materials. The conducted studies, hence, dealing with optimization of fermentation process will provide useful information about regulation of biochemical processes in fermentation technologies. The project also will result in proposals of equipments for experimental transfer from laboratory scale to semi-industrial scale and, thus, it will create basis for the link between basic and applied research in both Slovak Republic and Greece.

Project duration: from 01.01.2005 to 31.12.2006

V. CURRENT EDUCATION PROJECTS

A. CEEPUS H-158 Green Network in Central Europe (Daniela Šmogrovičová)

The network relies mainly on the institutional and personal contacts that were established in a previous CEEPUS network (H-0115). The main objective of this network was to emphasise and strengthen the ecological approach

in university education in the fields of horticulture and food science. Continuing this activity in a considerably renewed and extended frame, the present collaboration program focuses on three connecting components of the quality of life: the safety, quality and health aspects of horticultural and food production, landscape ecology and meliorization as well as management of ecological conflicts with the tools of landscape architecture.

Project duration: from 01.09.2002 to 31.08.2005

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
LIKO. Ltd. Bratislava	Biotechnological production of carotenogenic pigments	Martin Minárik, director, Miletičova 23, Bratislava	01.01.2003 -
Water Research Institute, Bratislava	Toxicity of chlorophenols	Tóthová Lívia, Nábr. arm. gen. L. Svobodu 5, 812 49 Bratislava	01.01.2000 - 31.12.2005
Soil Science and Conservation Research Institute	Sorption of pentachlorophenol on organomineral complex (zeolite and humic acids)	Barančíková Gabriela, Reimannova 1, 080 01 Prešov	01.01.2000 - 31.12.2005
Institute of Chemistry, Slovak Academy of Sciences, Bratislava	Development of biosensors	Gemeiner Peter, head of the research group, Dúbravská cesta 9, 842 38 Bratislava	01.01.2003 –
Institute of Chemistry, Slovak Academy of Sciences, Bratislava	Study of adaptation properties of yeasts under stress conditions	Breierová Emília, head of the Culture Collection of Yeasts, Dúbravská cesta 9, 842 38 Bratislava	01.09.2000 –
Institute of Chemistry, Slovak Academy of Sciences, Bratislava	Preparation and isolation of recombinant proteins	Šimuth Jozef, head of laboratory of gene engineering, Dúbravská cesta 9, 842 38 Bratislava	01.01.2003 –
Research Institute of Plant Production, Piešťany	Quality, safety and functionality of primary food resources	Mišťina Timotej, director, Bratislavská cesta 122, 921 68 Piešťany	22.10.2003 –
Research Institute of Food, Bratislava	Quality, safety and functionality of primary food resources	Kováč Milan, director, Priemyselná 4, 824 75 Bratislava	01.05.2003 –
LIKO, Ltd. Bratislava	Phytosterols and fatty acid derivatives	Martin Minárik, director, Miletičova 23, Bratislava	01.07.2004 – 31.12.2006
Institute of Animal Biochemistry and Genetics, Slovak Academy of Sciences	Lipid biosynthesis in yeasts	Ivan Hapala, director Moyzesova 61, 900 28 Ivanka pri Dunaji	01.01.2002 –
Institute of Animal Physiology, Slovak Academy of Sciences	Biosynthesis of conjugated linoleic acid by bacteria	Andrea Lauková, head of Research group. Šoltésovej 4-6, 040 01 Košice	01.01.2005 –
Institute of Animal Physiology, Slovak Academy of Sciences	Effect of microbial oils on rumen fermentation	Dušan Jalč, head of Research group, Šoltésovej 4-6, 040 01 Košice	01.01.2004 –

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Department of Pharmaceutical Sciences, North Dakota State University, Fargo, North Dakota, USA	Prediction of the fate of xenobiotics in the environment	Baláž Štefan, professor, Sudro Hall 108, Fargo, North Dakota, USA	01.01.1996
School of Biological Sciences, University of Portsmouth, UK	Passive samplers – monitoring of organic contaminants	Vrana Branislav, assistant professor, King Henry I. Street PO12DY, Portsmouth, Hampshire,	01.09.2003 – 01.09.2005

		UK	
Agricultural University of Athens, Athens, Greece	Biotechnological production of bioactive lipids from agro-industrial byproducts.	Seraphim Papanikolau, leader group, Department of Food Sciences and Technology, Athens, Greece	01.01.2005 – 31.12.2006
Mega a.s., Stráž pod Rálskem, Czech Republic	Encapsulation of microorganisms to PVA Gel	Novák Luboš, director, Pod Vinicí 83 471 27 Stráž pod Rálskem, Czech Republic	01.02.2004 - 19.12.2004
Office International de la Vigne et du Vin, Paris, France	Evaluation of wine	Dutruc-Rosset Georges, general director, 18, rue d'Aquesseau 75008 Paris, France	01.01.1983
Faculty of Chemistry, Technical University Brno, Czech Republic	Study of stress conditions on carotenogenic yeasts	Márová Ivana, vicedean, Purkyňova 118, 61200 Brno, Czech Republic	01.01.2003 -
National Center for Agricultural Utilization Research, ARS, USDA, Peoria, Illinois, USA	Biotransformation of oils to value-added compounds	Ching Hou, Group leader Peoria, Illinois, USA	25.09.2004 -
Catholic University of Louvain-la Neuve, Belgium	Biodegradation of polyaromatic hydrocarbons	Spiros Agathos, head of Department of Applied Chemistry and Bioindustries, Place Croix du Sud, 2/9-1348 Louvain, Belgium	01.02.2003 – 31.05.2006

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Čertík Milan	Slovak Society for Agriculture, Forestry, Food and Veterinary Sciences	member	01.01.2001 -
Dercová Katarína	Czecho-Slovak Society for Microbiology	Member	01.01.1987
Malík Fedor	Editorial boards of journal Vinič a víno.	presidentmember	01.01.2001 -
Slugeň Dušan	Slovak Society for Agriculture, Forestry, Food and Veterinary Sciences	Member	01.01.1987 -
Šajbidor Ján	Slovak Society for Agriculture, Forestry, Food and Veterinary Sciences	Member	01.01.1987 -
Šmogrovičová Daniela	Czecho-Slovak Society for Microbiology	Member	01.01.1979 -
Čertík Milan	Slovak Society for Biochemistry and Molecular Biology	Member	01.01.2005

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Čertík Milan	The American Oil Chemist's Society	Member	01.01.1994
Čertík Milan	The European Federation of Biotechnology	Member	24. 09.2003 -
Dercová Katarína	The European Federation of Biotechnology	Member	26.3.2002
Malík Fedor	Editorial boards of the journal Kvasný prům.	member of advisory	01.01.1985 -
Malík Fedor	Editorial boards of journal Mitteilungen Klosterneuburg, Wien	Member	01.01.2003 -
Šmogrovičová Daniela	European Brewing Convention Brewing Science Group	member	01.12.1998 -
Šmogrovičová Daniela	Editorial boards of the journal Kvasný prům.	member of advisory	01.01.1999 -

E. Visitors from Abroad

Name	Organisation or Institution	State	Date / Duration
Ching T. Hou; Sevim Erhan	National Center for Agricultural Utilization Research, ARS, USDA,	Illinois USA	September 2005 (3 days)

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

Name	Organisation / Institution / Conference	State	Date / Duration
Borodovčáková, N.	3rd Meeting of Chemistry & Life, Brno	Czech Republic	20.09.2005 – 22.09.2005
Čertík, M.	Graz University, Graz	Austria	25.02.2005
Čertík, M.	96th AOCS Annual Meeting & Expo, Salt Lake City,	Utah USA	30.04.2005 – 05.05.2005
Čertík, M.	3rd Meeting of Chemistry & Life, Brno	Czech Republic	20.09.2005 – 22.09.2005
Čertík, M.	Agricultural University of Athens, Athens	Greece	21.11.2005 – 27.11.2005
Čertík, M.	36th Annual Great Lakes Regional Meeting of the American Chemical Society, Peoria, Illinois	USA	17.10.2004-20.10.2004
Dercová, K.	13th International Biodeterioration and Biodegradation Symposium, Madrid	Spain	02.09.2005 – 08.09.2005
Dercová, K.	3rd European Bioremediation Conference, Chania, Crete	Greece	02.07.2005 – 08.07.2005
Dercová, K.	8th Conference on Bioremediation Technologies, Uherské Hradiště	Czech Republic	25.05.2005 – 26.05.2005
Dercová, K.	NATO Advanced Research Workshop „Assessment of Contaminated Sediments“		18.05.2005 – 21.05.2005
Křištofiková, L.	3rd Meeting of Chemistry & Life, Brno	Czech Republic	20.09.2005 – 22.09.2005
Kundříková, K.	3rd Meeting of Chemistry & Life, Brno	Czech Republic	20.09.2005 – 22.09.2005
Malík, F.	Vinovita Zagreb	Croatia	14.02.2005 – 18.02.2005
Malík, F.	10. Viniales Internationales Paris	France	24.02.2005 – 03.03.2005
Malík, F.	Concours Mondial Bruxelles	Belgium	30.03.2005 – 02.04.2005
Malík, F.	Vino Ljubljana	Slovenia	02.06.2005 – 06.06.2005
Malík, F.	Mundus Vini Neustadt a.d.W.,	Germany	03.09.2005 – 09.09.2005
Malík, F.	Svijet Graševine Kutjevo	Croatia	26.10.2005 – 29.10.2005
Mlichová, Z.	Tomasek days 2005. XIV. Conference of Young Microbiologists, Brno	Czech Republic	08.06.2005 – 10.06.2005
Mlichová, Z.	3rd Meeting of Chemistry & Life, Brno	Czech Republic	20.09.2005 – 22.09.2005
Rebroš, M.	Tomasek days 2005. XIV. Conference of Young Microbiologists, Brno	Czech Republic	08.06.2005 – 10.06.2005
Rosenberg, M.	Project meeting, business trip. Mega, a.s., Stráž pod Ralským	Czech Republic	
Rosenberg, M.	Business trip, BCS Engineering, a.s. Brno	Czech Republic	
Sejáková, Z.	Tomasek days 2005. XIV. Conference of Young Microbiologists, Brno	Czech Republic	08.06.2005 – 10.06.2005
Selecký, R.	CEEPUS Budapest, Corvinus University, Department of Brewing, Budapest	Hungary	15.03.2005 – 15.04.2005
Selecký, R.	21st Brewing and Malting days, Ústí nad Labem	Czech Republic	05.10.2005 – 07.10.2005
Selecký, R.	CEEPUS, Agricultural University, Faculty of Food Sciences, Wrocław	Poland	04.04.2005 – 15.04.2005
Sláviková, L.	3rd Meeting of Chemistry & Life, Brno	Czech Republic	20.09.2005 – 22.09.2005
Šajbidor, J.	ISEKI Food meeting, Faro	Portugal	25.05.2005 – 29.05.2005
Šajbidor, J.	26th World ISF Congress, Prag	Czech Republic	05.09.2005 – 28.05.2005
Šajbidor, J.	ISEKI Food Association, Porto	Portugal	23.11.2005 – 27.11.2005

Šmogrovičová, D.	CEEPUS, Agricultural University of Wrocław, Faculty of Food Science, Wrocław	Poland	04.04.2005 – 15.04.2005
Šmogrovičová, D.	21st Brewing and Malting days, Ústí nad Labem	Czech Republic	05.10.2005 – 07.10.2005
Šturdíková, M.	Bio Venture Academy, Budapest	Hungary	14.06.2005

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Adamechová, Z.	Biotechnological Production of Useful Metabolites by Solid State Fermentations	Čertík, M.
Adámková, I.	New Alternatives of Non-alcoholic and Special Beer Production	Šmogrovičová, D.
Baginová, Z.	Biodegradation of Chlorophenols in Metabolism and Cometabolism	Dercová, K.
Benešová, C.	Chlorophenols as Possible Environmental Factors at Bioremediation	Dercová, K.
Čechová, Z.	Use of Organomineral Complexes at Bioremediation of Contaminated Soil	Dercová, K.
Čertík, M.	Genetically Modified Organisms and Crops – Possibilities of their Applications	Čertík, M.
Eckertová, K.	Study of Genotype Dependence of Lipid Profile of Cereals and Oil Seeds	Čertík, M.
Gašparovičová, J.	Application Possibilities of Biosensors in Ethanol Fermentation Monitoring	Valach, M.
Hanusová, V.	Study of Adaptable Properties of Carotenogenic Yeasts under Stress Conditions	Čertík, M.
Havranová, K.	Effect of Elicitors on Production of Bioactive Metabolites of Filamentous Fungi from Magnolia sp.	Šturdíková, M.
Hildebrandová, M.	Tokay Region Yeasts Isolation	Malík, F.
Hlavínová, L.	Biotechnological Valuation of Agricultural Raw Materials	Rosenberg, M.
Jalčáková, M.	Preparation and Application Possibilities of Phytosterols in Pharmacy, Medicine and Food Industry	Čertík, M.
Ondrušová, Z.	Biological Activities of Ginkgo biloba	Firáková, S.
Sedlačková, B.	Immobilization of Industrial Enzymes to PVA Gel in Lentikats Form	Rosenberg, M.
Sojka, Š.	Production of Ethanol from Molasses by Yeasts Saccharomyces cerevisiae Immobilized into PVA Gel	Rosenberg, M.
Šebeňová, M.	Factors Influencing Selection of Brewer's Yeasts for VHC Fermentation	Šmogrovičová, D.
Špaňová, M.	Regulation of Triacylglycerol Biosynthesis in Yeasts	Čertík, M.
Terneni, M.	Influence of Beer Aging on its Stability	Šmogrovičová, D.
Trejos, J.	Optimization of the Cultivation Conditions in Actinomycete Strain Isolated from Taxus sp. For Production of Diterpene	Šturdíková, M.

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

Name	Title of Thesis	Supervisor
Angelovičová, M.	Microbial production of γ -linolenic acid by solid state fermentation	Čertík, M.
Bielíková, S.	Breeding and Selection of Yeast for Special Beer Production	Šmogrovičová, D.
Czabany, T.	Study of lipid biosynthesis in yeasts	Čertík, M.
Galajdová, G.	Biotechnological Evaluation of Agricultural Substrates	Rosenberg, M.
Garajová, S.	Ethanol Stress in Saccharomyces cerevisiae	Šajbidor, J.
Gdovin, M.	Perspectives og Immobilization Systems in Ethanol Fermentation of Molasses	
Gerová, M.	Immobilization of Important Industrial Enzymes	Rosenberg, M.
Gracsová, M.	Production of biosurfactants	Čertík, M.
Maruna, M.	Metabolic Regulation of Cytotoxic Diterpene Biosynthesis of Actinomycetes Isolated from Taxus sp.	Šturdíková, M.

Nádaský, P.	Antioxidative Activity of Pilsner and Special Beers	Šmogrovičová, D.
Németh, R.	Effect of Conditions on Growth and Fermentation Properties of Brewer's Yest	Šmogrovičová, D.
Oláhová, M.	Alterations of adaptable properties of pigment-forming yeasts grown under stress conditions	Čertík, M.
Paluch, M.	Sacharification of Starch Substrates with Immobilized Enzymes	Rosenberg, M.
Santová, J.	Effect of Chlorophenols on the Membrane Lipids of Indigenous and Bioaugmented bacteria	Dercová, K.
Skokanová, M.	Toxicity, Sorption and Bioremediation of Chlorophenols	Dercová, K.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Jedinák, A.	Screening and Development of Secondary Metabolites as Inhibitors Urokinase with Perspective of Biotechnological Transformation	Šturdík, E.

VIII. PUBLICATIONS

Book

- [1] Malík, F.: *100 najlepších slovenských vín*, Albert Marenčin - Vydavateľstvo PT Bratislava, 2005.
- [2] Malík, F., et al.: *Vino Malých Karpát*, Albert Marenčin - Vydavateľstvo PT Bratislava, 2005.
- [3] Vitálová, Z., Slugeň, D.: *Zene es bor*, Méry ratio Šamorín, (Maďarské vydanie knihy Hudba a víno. SSFS 2003.), 2005.

Chapter or pages in book

- [1] Dercová, K., Kočan, A., Petřík, J.: *Problems of Persistent Organic Pollutants (POPs) in Slovakia: Environmental and Technical Aspects of PCBs Disposal, Monitoring and Remediation*. In: *Assessment of Contaminated Sediments*, Editor(s): D. Reible, S. Apitz, Chapter: Chapter 1. Apitz, S., Marcomini, A., Critto, A., Pippa, R., Agostini, P., Micheletti, C., Láncoz, T., Dercová, K., Kočan, A., Petřík, J., Hucko, P., Kušník P: *Approaches and Frameworks for Managing Contaminated Sediments - a European Perspective*. Kluwer Academic Publishers, NATO Science Series, (in press), vol. 21, pp. 1-84, 2005.
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- [3] Šajbidor, J.: *Handbook of Food Science, Technology, and Engineering*, Editor(s): Y.H. Hui, Chapter: Emulsions and Emulsifiers. CRC Press, pp. 941-946, 2005.
- [4] Šajbidor, J.: *Handbook of Food Science, Technology, and Engineering*, Editor(s): Y.H.Hui, Chapter: Fat Hydrogenation in Food Processing. CRC Press, pp. 1560-1565, 2005.

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- [1] Borodovčáková, N., Bilaničová, D., Mastihuba, V., Prónayová, N., Mastihubová, M., Čertík, M.: Enzymatic preparation of sugar-lipid conjugates.. *Chemické Listy*, vol. 99, pp. s270-s271, 2005.
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- [4] Čertík, M., Breierová, E., Juršíková, P.: Effect of cadmium on lipid composition of *Aureobasidium pullulans* grown under addition of extracellular polysaccharides.. *International Biodeterioration and Biodegradation*, vol. 55, pp. 195-202, 2005.
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DEPARTMENT OF BIOCHEMISTRY AND MICROBIOLOGY

Head of Department:

Prof. Ľudovít Varečka, DSc.

Telephone: 421259325514

Fax: 421252493198

E-mail: ludovit.varecka@stuba.sk

Full Professors:

Milan Miko, DSc.; Ľudovít Varečka, DSc.

Associate Professors:

Daniela Hudecová, PhD.; Soňa Jantová, PhD.; Mária Mikulášová, PhD.

Assistant Professors :

Helena Paulíková, PhD.; Martin Šimkovič, PhD.; Andrea Šovčíková, PhD.; Roman Hudec, Petra Olejníková

Research Fellows:

Boris Lakatoš, PhD.

PhD Students:

Martina Hunová, Michal Kaliňák; Silvia Letašiová, Peter Vargovič, Zuzana Ondrušová, Lucia Birošová, Marica Theiszová

Technical staff:

Eva Drobná-Secretary; Dagmar Adamíková; Eva Csenkeyová, Margita Kosárová; Ján Škvara; Eva Sameková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

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

B. 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:

3. semester (Bc)	Microbiology I	2/0/0	Hudecová
	Laboratory Practices in Microbiology I	0/0/2	Hudecová, Mikulášová, Olejníková
4. semester (Bc)	Biochemistry I	2/0/0	Varečka
	Laboratory Practices in Biochemistry I	0/0/2	Paulíková, Lakatoš, Šimkovič
5. semester (Bc)	Principles of Human Nutrition	2/0/0	Miko
6. semester (Bc)	Laboratory Project	0/0/4	Miko, Varečka, Hudecová, Jantová, Mikulášová, Paulíková
1. semester (MSc)	Biochemistry II	2/0/0	Varečka
	Laboratory Practices in Biochemistry II	0/0/2	Paulíková, Hunová, Vargovič, Šimkovič

	Microbiology II	2/0/0	Hudecová
	Laboratory Practices in Microbiology II	0/0/2	Mikulášová, Olejníková, Hudecová
1. semester (MSc)	Immunochemistry	2/1/2	Šovčíková
	Laboratory project I	0/0/5	Miko, Paulíková, Varečka, Hudecová, Jantová, Mikulášová
2. semester (MSc)	Molecular Biology and Genetics	2/1/0	Mikulášová, Paulíková
	Applied Microbiology	2/0/0	Hudecová
	Bioenergetics	2/0/2	Miko
	Mechanisms of Action of Natural Compounds	2/0/2	Varečka, Šimkovič, Lakatoš
2. semester (MSc)	Laboratory project II	0/0/5	Miko, Paulíková, Varečka, Hudecová, Jantová, Mikulášová
3. semester (MSc)	Clinical Biochemistry	2/0/0	Lakatoš
	Laboratory Practices in Clinical Biochemistry	0/0/2	Lakatoš, Šimkovič
	Cell Cultures	2/0/0	Jantová
	Laboratory Practices in Cell Cultures	0/0/2	Jantová, Letašiová
3. semester (MSc)	Laboratory project III	0/0/5	Miko, Varečka, Hudecová, Jantová, Mikulášová
	Lab. Practices of the branch Biomedical Engineering,...	0/0/2	Miko, Horáková, Varečka, Hudecová, Jantová, Mikulášová
4. semester (MSc)	Master's Thesis	0/0/27	Miko, Paulíková, Varečka, Hudecová, Jantová, Mikulášová

IV. CURRENT RESEARCH PROJECTS

A. VEGA Project No 1/1173/04 Cytotoxicity of novel xenobiotics and their mode of action (Soňa Jantová)

The overall aim of the project is to develop the new potential anticancer drug. Therefore the cytotoxic, genotoxic and antimicrobial properties of the chemical compounds of the different structure will be evaluated. Special attention will be focused to the mechanism of the action and the cytotoxic activity of chosen most active derivatives of oracine, organic ammonium salts, Cu⁺⁺ complexes, ITC and quinazolines; notably the interference on the biosynthesis of macromolecules, the interference with the cell cycle, their ability to induce apoptosis in different tumor cell lines as well as the influence actin cytoskeleton and the intracellular pH. The series of phenolic compounds and polyphenolic lignin derivatives will be investigated from the view point of their antimutagenic, antioxidative and adsorptive effect. The mechanism of these effects will be studied. Modulation of glutathion metabolism can provide a strategy for more efficacious sensitization of tumor cells to a standard anticancer drugs (doxorubicin) in chemotherapy and anticancer activity of new modulators of glutathione relative enzyme will be investigated.

Project duration: from 1. 1. 2004 to 31.12. 2006

B. VEGA Project No 1/0109/03 Transport processes in filamentous fungi and their adaptative mechanisms (Ludovít 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 ³⁶Cl 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.

Project duration: from 01.01.2003 to 31.12.2005

C. VEGA Project No 2/3188/23 Characterisation of basal transport of Ca²⁺ in non-excitabile cells (Ľudovít Varečka)

The main goal of the project is to prove or disprove the existence of the carrier in mediating the inward basal passive Ca²⁺ transport and to find out whether this process proceeds using an electrogenic or electroneutral mechanism. Further goals of the project is to find out information about factors which determine the magnitude of the basal Ca²⁺ influx, particularly, to find out whether it responds to the immediate conditions, or it is predetermined by (genetic) mechanisms.

Project duration: from 01.01.2003 to 31.12.2005

D. APVT Project No 20-003904 Biochemical and genetic aspects of senescence and cell death of filamentous fungi (Boris Lakatoš)

In this project the biochemical and genetic mechanisms of senescence of filamentous fungi will be studied in context with their physiological functions, in particular conidiation and intrahyphal differentiation, in respect of possible utilization of this process in biotechnology. In the project a unique and never before used complex of experimental models combined of wild strains and mutants defective in conidiation will be used in combination with different cultivation conditions. Their simultaneous analysis will enable to solve general aspects of senescence in filamentous fungi.

Project duration: from 01.01.2005 to 31.12.2007

E. Vega Project No 1/2335/05 The role of proton-motive force in the Ca²⁺ homeostasis in filamentous fungi (Martin Šimkovič)

Ca²⁺ homeostasis represents an integrating system of every living cell and plays a crucial role in the regulation of numerous functions on both cellular and organism levels. There is only scarce knowledge on the Ca²⁺ homeostasis in filamentous fungi, which are scattered among several fungal species. Recently, we described properties of partial reactions of Ca²⁺ homeostasis and their developmental changes in deuteromycete *Trichoderma viride*. We found that uncouplers stimulated both Ca²⁺ influx and efflux across the cytoplasmic membrane. This means that the electrochemical potential of H⁺ couples Ca²⁺ translocation across this membrane. This observation is important for the understanding of Ca²⁺ homeostasis and opens new views on the physiology of fungi and its intentional manipulation. This project is mainly devoted to the analysis of this phenomenon, to ascertaining its universality and/or specificity. A part of this project will be devoted to experiments, which could elucidate the role of Ca²⁺ in the signaling pathway triggering the light-induced conidiation in *Trichoderma viride*.

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Institute of Molecular Physiology and Genetics, SAS, Bratislava	Characterisation of basal Ca ²⁺ transport in non-excitabile cells (Joint grant)	Dr. Jozef Orlický, Senior Research Scientist, Vlárská 5, 833 34 Bratislava	01.01.1990 -
Cancer Research Institute, SAS, Bratislava	Cytotoxicity of Novel Xenobiotics and Their mode of Action	Dr. Darina Slameňová, Head of Group, Vlárská 7, 833 91 Bratislava	01.01.1991 -
Tissue Bank, Hospital Ružinov, Bratislava	Cultivation and growth of human and animal tissue cultures on new biomaterials	Dr. Jana Dragúňová, Ružinovská 6, 826 06 Bratislava	01.01.1998 -
Dept. of Chem. Theory of Drugs, Fac. of Pharmacy, Comenius University, Bratislava	Study of antimicrobial activity of newly synthesized copper complexes	Dr. Aladár Valent, Associate professor, Kalinčiakova 8, 832 32 Bratislava	01.01.1999 -

Institute of Chemistry, Faculty of Science, PJŠU, Košice	New coordinating compounds of zinc, their preparation, study of physico-chemical properties and their biological activity (Joint grant)	Prof. Katarína Gyoryová, Full Professor, Moyzesova 11, 040 01 Košice	01.10.2001 -
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B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Laboratoire du Biomembranes et Messagers Cellulaires, Orsay	Apoptosis in dexamethasone treated murine thymocytes	Dr. Françoise Giraud, Director of Research, BMC CNRS - UMR 8619, Bat.440 Université Paris XI, Orsay 914 05, France	01.01.2000 -
Institute of cellular and molecular botany, Friedrich Wilhelms Universität, Bonn	Characterisation of microorganisms indigenous to low-rank coal, study of solubilisation of lignite by these microorganisms	Dr. Udo Hoelker, Head of group, Kirschallee 1, 53 115 Bonn, Germany	01.01.2001 -
Institut für Mikrobiologie, Universität zu Innsbruck	Membrane transport of organic acids in filamentous fungi (Joint grant)	Dr. Wolfgang Burgstaller, Head of Group, Technikerstrasse 25, 6020 Innsbruck, Austria	01.01 2002 -
Institute of Food Research, Norwich	Rapid, specific detection of <i>Listeria monocytogenes</i> by antibody-based techniques and on-line sensor technology	Dr. Gary Wyatt, Senior Research Scientist, Norwich Research Park, Colnay, NR47UA - Norwich, Great Britain	01.01.1997 -
Institute of Chemical Technology, Prague	Rapid, specific detection of <i>Listeria monocytogenes</i> by antibody-based techniques and on-line sensor technology	prof. Pavel Rauch, Head of Department, Technická 5, 166 28 Prague, Czech Republic	01.01.1997 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Miko Milan	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	
Miko Milan	Editorial board of journal <i>Biológia</i>	member	
Miko Milan	Editorial board of journal <i>Acta fytotechnica et zootecnica</i>	member	
Miko Milan	Commission for evaluation of DrSc (DSc) thesis in Biochemistry	member	
Hudecová Daniela	Czecho-Slovak Society for Microbiology, Bratislava	member	01.01.1984 -
Hudecová Daniela	Scientific grant agency (VEGA)– Commission for cell and molecular biology , Bratislava-	member	30.04.2002 -
Hudecová Daniela	Commission for evaluation of PhD thesis in Microbiology	secretary	20.10.1997 -
Jantová Soňa	Slovak Medical Society, Bratislava	member	01.01.1980 -
Jantová Soňa	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	01.01.2002 -
Jantová Soňa	Scientific grant agency (VEGA)– Commission for cell and molecular biology	member	30.04.2002 -
Mikulášová Mária	Czecho-Slovak Society for Microbiology, Bratislava	member	01.07.1992 -
Mikulášová Mária	Czecho-Slovak Society for Biology, Brno	member	01.01.1993 -
Varečka Ľudovít	Editorial Board of journal <i>General Physiology and Biophysics (GPB)</i>	member	01.01.1993 -

Varečka Ľudovít	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member of advisory board	01.10.1996 -
Varečka Ľudovít	Scientific board of Institute of molecular physiology and genetics SAS, Bratislava	member	01.01.2001 -
Lakatoš Boris	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	01.01.2002 -
Andrea Šovčíková	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	01.01.2003 -
Martin Šimkovič	Slovak Society for Biochemistry and Molecular Biology, Bratislava	member	01.01.2002 -
Varečka Ľudovít	Commission for evaluation of DSc thesis in Biochemistry	member	01.10.2005 -
Birošová Lucia	Czecho-Slovak Society for Microbiology, Bratislava	member	01.01.2005 -

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

Name	Organisation / Institution / Conference	State	Date / Duration
Hudec, R.	XXIII. Xenobiotic Symposium, Valtice	Czech Republic	16. - 19. 5. 2005
Letašiová, S.	XXIII. Xenobiotic Symposium, Valtice	Czech Republic	16. - 19. 5. 2005
Miko, M.	XXIII. Xenobiotic Symposium, Valtice	Czech Republic	16. - 19. 5. 2005
Olejníková, P.	XXIII. Xenobiotic Symposium, Valtice	Czech Republic	16. - 19. 5. 2005
Ondrušová, Z.	XXIII. Xenobiotic Symposium, Valtice	Czech Republic	16. - 19. 5. 2005
Birošová, L.	10. Interdisciplinary Czech and Slovak Toxicological Conference, Olomouc	Czech Republic	14.-16. 9. 2005
Theiszová, M.	10. Interdisciplinary Czech and Slovak Toxicological Conference, Olomouc	Czech Republic	14.-16. 9. 2005
Varečka, Ľ.	15th meeting of European Association for Red Cell Research, Murten	Switzerland	21. - 25. 4. 2005

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Břidová, M.	Development of resistance against antibiotics in human population	Varečka, Ľ.
Brzá, E.	Potential antimutagenic effect of plant extracts	Mikulášová, M.
Fuzík, T.	Phototoxic and photochemical properties of berberine	Letašiová, S.
Gallová, E.	Toxicogenic micromycetes and mycotoxins in environment	Hudecová, D.
Ipóth, P.	Utilization of multiplex analysis of pre-assessment of SNP polymorphism	Sedlák, J.
Janikovicsová, M.	Antibacterial effect of new synthetic analogues of vasicine	Jantová, S.
Krupková, L.	New nicotin-Cu(II) complexes and their effects on selected microbes causing mycotic diseases	Hudecová, D.
Kunštek, M.	Fuel cells created by using of microorganisms	Varečka, Ľ.
Letko, M.	Mutual interaction of colonies of filamentous fungi in aerial culture and biochemical and genetic mechanisms	Varečka, Ľ.
Machilová, K.	Sensitivity of thymocytes on isothiocyanates	Paulíková, H.
Pekárová, A.	Procalcitonin – sensitive marker of bacterial infection	Pivovarníková, H.
Podlesná, J.	Effect of 9-isothiocyanate acridine on non-carcinoma cells	Paulíková, H.
Slováková, J.	Regulation of basal influx of Ca ²⁺ in human leukocytes	Lakatoš, B.
Uhliaríková, B.	Quantitative imunoprecipitations of anti-candida sp. antibodies in humans with candidosis	Varečka, Ľ.

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

Name	Title of Thesis	Supervisor
Bajdichová, M.	Effect of 9-isothiocyanate acridine on cell line K562	Paulíková, H.
Bartková, M.	Nature and reduction of DNA damage induced in human cells by an anti-HIV drug 3'-azido-2,3'-dideoxythymidine	Slameňová, D.
Ditte, P.	Aging-related biochemical changes in microscopic filamentous fungus <i>Trichoderma viride</i>	Šimkovič, M.
Gbelcová, H.	Prooxidative and antioxidative properties of natural and synthetic compounds	Ďuračková, Z.
Marejková, M.	Characterization of clinical strains <i>Salmonella enterica</i> serovar Kentucky isolated in SR	Majtán, V.
Melkusová, P.	Induction of InlB expression and effect of probiotic cultures on <i>Listeria monocytogenes</i> invasion in Caco-2 cells	Šovčíková, A.
Paulínyová, B.	Study of bioenergetic processes in Ehrlich carcinoma cells by pyridinedicarboxylates Cu(II) with biologically active ligands	Miko, M.
Počarovská, M.	Monitoring of glycation and oxidative stress markers in children with diabetes mellitus	Jakuš, V.
Poláková, V.	Cytotoxic and genotoxic effects of binary mixtures in vitro. Use of hepatal cell lines HepG2 and WB-334	Gábelová, A.
Potanková, V.	Effect of lyophilization conditions on fructosyltransferase production and viability of <i>Aureobasidium pullulans</i> cells	Polakovič, M.
Repický, A.	Cytotoxic and antiproliferative effect of new heterocyclic nitrogen compounds, induction of necrosis or apoptosis and changes in cell cycle	Jantová, S.
Samáková, I.	Characterization of filamentous fungi isolated from lignite	Hudecová, D.
Suchánová, M.	Antibacterial and genotoxic effects of natural compounds	Mikulášová, M.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Hudec, R.	Study of Ca ²⁺ influx in intact human erythrocytes and their membranes	Varečka Ľudovít

VIII. PUBLICATIONS

Book

- [1] Ondrejovičová, I., Izakovič, M., Bakošová, M., Jantová, S., Koreňová, A., Kovařík, P., Marcinčin, A., Ondrovičová, M., Prousek, J., Staško, A., Varečka, Ľ., Vasičkaninová, A.: *Chémia a život okolo nás*, Editor(s): Ondrejovičová I., Izakovič M., Vydavateľstvo STU, (108 strán), 2005.

Article in journal

- [1] Birošová, L., Mikulášová, M.: Development of ciprofloxacin resistance due to chromosomal mutations induced by 2-nitrofluorene. *Biomedical Papers*, no. 2, (Abstrakt vyšiel v *Biomedical Papers* zv. 149(Supplement 1), 2005, str. 89), vol. 149, pp. 401-403, 2005.
- [2] Birošová, L., Mikulášová, M., Chromá, M.: The effect of phenolic and polyphenolic compounds on the development of drug resistance. *Biomedical Papers*, no. 2, (Abstrakt vyšiel v *Biomedical Papers* zv. 149(Supplement 1), 2005, str. 88), vol. 149, pp. 405-407, 2005.
- [3] Birošová, L., Mikulášová, M., Vaverková, Š.: Antimutagenic effect of phenolic acids. *Biomedical Papers*, no. 2, (Abstrakt vyšiel v *Biomedical Papers* zv. 149(Supplement 1), 2005, str. 88), vol. 149, pp. 489-491, 2005.
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- [9] Letašiová, S., Jantová, S., Horváthová, M., Lakatoš, B.: The toxicity and apoptosis induced by berberine - potential anticancer drug. *Biologia*, no. Supplement 17, vol. 60, pp. 99-102, 2005.
- [10] Letašiová, S., Jantová, S., Múčková, M., Theiszová, M.: Antiproliferative activity of berberine in vitro and in vivo. *Biomedical Papers*, no. 2, (Abstrakt vyšiel v *Biomedical Papers* 149(Supplement 1), 2005, str. 55), vol. 149, pp. 461-463, 2005.
- [11] Mikulášová, M., Vaverková, Š., Birošová, L., Suchánová, M.: Genotoxic effects of the hydroxycinnamic acid derivatives - caffeic, chlorogenic and cichoric. *Biologia*, no. 3, vol. 60, pp. 275-9, 2005.
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DEPARTMENT OF CERAMICS, GLASS AND CEMENT

Head of Department:
Assoc. Prof. Miroslav Jamnický, PhD

Telephone: ++421252926048
Fax: ++421259325415
E-mail:miroslav.jamnický@stuba.sk

I. STAFF

Associate Professors:

Miroslav Jamnický, PhD; Martin T.Palou, PhD;

Assistant Professors :

Vladimír Kovár, PhD; Eva Smrčková, PhD;

Research Fellows:

Jozef Kákoš, PhD; Jana Kozánková; Štefan Svetík;

PhD Students:

Katarína Bodišová (till 30.9.2005); Martin Dovál; Jana Hrubá; Ľubomír Ježo (since 1.10.2005); Eva Kuzielová; Radovan Tóth;

Technical staff:

Ľudmila Illášová (till 30.9.2005); Pavol Krutý; Mária Pelíšková; Iveta Zezulová;

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:

6. semester (Bc)	Materials technology	2/0/0	Palou
	Bachelor's thesis	0/0/4	Palou, Smrčková
1. semester (MSc)	Inorganic chemistry III	2/2/0	Jamnický
	Solid state physics	2/0/0	Lokaj, Smrčková
	Raw materials and technical mineralogy	2/1/0	Svetík, Kozánková
	Specialised laboratory practices I	0/0/10	Kákoš, Kovár, Kozánková, Palou, Smrčková, Svetík
2. semester (MSc)	High temperature processes	2/1/0	Kovár
	Applied heat technique	2/1/0	Kovár
	Specialised laboratory practices II	0/0/8	Smrčková, Kovár, Jamnický, Kákoš
	Factory praxis	two weeks	Jamnický, Smrčková
3. semester (MSc)	Technology of spec. inorg. materials	2/0/0	Kákoš
	Inorganic binders technology	2/0/0	Palou
	Technology of ceramics	2/0/0	Smrčková
	Technology of glass	2/0/0	Jamnický

3. semester (MSc)	Specialised laboratory practices III	0/0/10	Dovář, Jamnický, Kozánková, Palou, Smrčková
4. semester (MSc)	Master's thesis laboratory	0/0/27	Kovár, Palou, Smrčková

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/0245/03 Effect of seeding additives on the phase and microstructure involvement during hydration of sulfoaluminate cements (Martin T. Palou)

The project has investigated the effect of seeding additives as homogeneous nucleating agents upon the phase and microstructure evolution during the hydration of sulfoaluminate cements. A special class of sulfoaluminate cement in the framework of $C_2AS-C_2S-C_4A_3\bar{S}-C\bar{S}-C$ has been studied. The model system $C_2AS-C_2S-C_4A_3\bar{S}-C\bar{S}-C$ of clinker phases was explored and classified into two quaternary phase associations: $C_2AS-C_2S-C_4A_3\bar{S}-C\bar{S}$, $C_2S-C_4A_3\bar{S}-C\bar{S}-C$, two singular points (ternary phase associations) $C_2S-C_4A_3\bar{S}-C\bar{S}-C$, $C_4A_3\bar{S}-C\bar{S}-C$ and a single point of gehlenite. According to the computational method, hydration in each leads to the formation of two crystallohydrates gehlenite hydrate and ettringite. The ratio of two crystallohydrates depends on mineralogical composition in individual phase associations. With regard to the low or latent hydraulic activity of C_2S and C_2AS respectively, the homogeneous seeding additives were prepared on the base of their hydrates from xerogels prepared via sol-gel method. The effect of seeding hydrates was not effective because of their crystal size and their low dissolution. Then, nano precursors of gehlenite and dicalcium silicate synthesized by sol-gel method were directly used in the model systems. The hydration reaction has led, in the normal condition to the formation of gehlenite hydrate and ettringite according to the predicted ratio. Also, kinetics of hydration reaction in $C_4A_3\bar{S}-H$ were investigated by using conduction calorimeter over the temperature range of 25 to 80 °C and at three different water/solid ratios 0,5; 0,7 a 1,0. Activation energy is influenced by water/solid ratio and hydration of given system is controlled by nucleation and three dimensional crystal growth. Also, kinetics and mechanism of $C_4A_3\bar{S}-C\bar{S}-H$ were investigated. The presence of anhydrite ($C\bar{S}$) retards the formation of ettringite.

Project duration: from 01.01.2003 to 31.12.2005

VEGA Project No 1/1380/04 Preparation of Al₂O₃ ceramics from nanosize particles (Vladimír Kovár)

Nano ceramics is at present the largest challenge in the ceramics research, because strength and hardness increase with decreasing grain size. On the other hand it is difficult to achieve nearly full density during sintering without growth of grains. From several sintering mechanisms, those that control the grain growth is necessary to suppress. For these purposes low sintering temperature (< 1250 °C) fast heating rate (200 – 300 °C) are positive. Experimental works are focused on these dominant requirements for sintering of α -alumina powder with mean particle size of 0,2 μ m. Colloidal methods are used for consolidation. Suspensions are stabilized; milled and green bodies are obtained by pressure filtration. Grain growth of α -Al₂O₃ crystals is studied in dependence of additives, heating rate, sintering time and temperature. Samples of transparent Al₂O₃ ceramics were prepared by following processes: pressure filtration, free air sintering at 1270 °C and finally by HIP at 1250 °C in argon atmosphere.

Project duration: from 01.01.2004 to 31.12.2006

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Slovak University of Technology, Faculty of Electrical Engineering and Information Technology, Bratislava	Effect of organic additives on crystallization of boehmite gels	Kadlečíková Magdaléna, researcher, Ilkovičova 3, 812 19 Bratislava	
Slovak University of Technology, Faculty of Mechanical Engineering, Trnava	Isostatic pressing of ceramic powders	Turňa Milan, professor, Paulínska 16, 917 24 Trnava	

University of Žilina, Faculty of Mechanical Engineering, Department of Physics, Žilina	Study of mixed cation effect in ion conductivity glasses using electrical conductivity spectra, study of transport mechanisms in fast i	Bury Peter, professor, 010 26 Žilina	
Slovak Academy of Sciences, Institute of Inorganic Chemistry, Bratislava	α -alumina ceramics prepared by colloidal processing	Šajgalík Pavol, director, Dúbravská cesta 9, 843 69 Bratislava	
Slovak Academy of Sciences, Institute of Construction and Architecture, Bratislava	The performances of blended cements based on sulfoaluminate belite and Portland cement	Janotka Ivan, researcher, Dúbravská cesta 9, 842 20 Bratislava	
Slovak Academy of Sciences, Institute of Informatics, Bratislava	Synthetic opals made by the Langmuir-Blodgett method	Bárdošová Mária, researcher, Dúbravská cesta 9, 842 37 Bratislava	
AVANT, a.s., Lučenec (Engineering, investment and design)	Utilization of local raw materials for construction materials production	Molnár Alexander, director, Vajanského 2, 984 01 Lučenec	
Ipeľské tehelne, a.s., Lučenec (Brick plant)	Mineralogical and thermoanalytical investigation of local raw materials for brick production	Dováľ Martin, director, M. Rázusa 29, 984 01 Lučenec	
Novoker, a.s., Lučenec (Wall Tiles Producer)	Causes of defect formation and their identification in wall tiles	Sarvaš Ladislav, 984 01 Lučenec-Vidiná	
PPC Insulators – Ceram Čab, a.s.	Properties of electroporcelain	Košalko Ivan, director, 951 24 Nové Sady	
Tondach, s. s r.o. Stupava	Properties of roof silicate tiles	Horváth Vincent, Železničná 53, 900 31 Stupava	
Johns Manville Skloplast, a.s., Trnava (Glass fibre producer)	Optimization of drainage ovens of glass melting agregate	Kalinay Andrej, Strojárska 1, 917 99 Trnava	
RONA, a.s., Lednické Rovne (Glass work)	Causes of defect formation and their identification in glassware	Šimurka Peter, director, Schreiberova, 020 61 Lednické Rovne	
Slovglass, a.s., Poltár (Crystal glass producer)	Review and process optimization in lead glass polishing and in neutralization station	Zán Ľubomír, director, 987 01 Poltár	
Technické sklo, a.s., Bratislava (Technical Glass Work)	Preparation of glass-ceramic materials by controlled processes of nucleation and crystallization	Chocholoušek Jozef, head of testing laboratory, Agátová, 844 03 Bratislava	
Východoslovenské stavebné hmoty, a.s., Turňa nad Bodvou (construction materials producer)	Milling ability of cement clinker and various additives	Jaklovský Štefan, director, 044 02 Turňa nad Bodvou	
Holcim, a.s., Rohožník (Cement Producer)	Effect of various gypsums on setting and hardening of cement	Hanzo Peter, director, 906 38 Rohožník	
Považská cementáreň, a.s., Ladce (Cement Producer)	Determination of P ₂ O ₅ content in Portland clinker fired with addition of meat-bone flour, determination of water soluble chromium in ce	Martauz Pavol, director, ul. J. Kráľa, 018 63 Ladce	
Beton Racio, s. s r.o., Trnava	Evaluation of water quality for concrete production	Halaša Igor, Skladová 2, 917 01 Trnava	
TSUS, a.s., Bratislava	Chemical and phase analysis of raw materials and products	Zajíček Milan, director, Studená 3, 826 34 Bratislava	
OLO, a.s. Bratislava,	Condition optimization for CaO hydration	Švábik Vladimír, Vlčie hrdlo 72, 821 07 Bratislava	
DATASYSTEM Laboratory, Bratislava	Thermal analysis evaluating optical transmittance, prospects and limitations	Kremničan Vladimír, director, Budovateľská 13, 821 08 Bratislava	

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Mount Allison University, Department of Chemistry, Sackville, Canada	Growth, morphology and thermoanalytical properties of fluoroapatite bio-glass-ceramics in lithium disilicate glasses	Mojumdar Subhash C., Sackville, NB, E4L 1G8, Canada	
University of Boumerdes, Faculty of Engineer Science, Department of Engineering Materials, Boumerdes	Silica fume treatment for improving durability of alkali resistant glass fibres in cement matrixes	Ayadi. Azzedine, professor, 350000 Boumerdes, Algeria	

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Department	Slovak Silicate Society, Bratislava	member	
Jamnický Miroslav	Slovak Glass Society, Lednické Rovne	member of advisory board	01.01.1997 -
Department	Union of Glass Industry, Bratislava	member	
Palou Martin	Slovak Institute for Standardization (technical commission No 40 Inorganic binders)	member	01.01.2000 -
Smrčková Eva	Slovak Institute for Standardization (technical commission No 56 Construction materials and testing)	member	01.01.2000 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Pach Ladislav	American Ceramic Society, USA	member	01.01.1994 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Havlica, J.	Technical university, Brno	Czech Republic	October 2005 (1 day)

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

Name	Organisation / Institution / Conference	State	Date / Duration
Bodišová, K., Dovál, M.	Inorganic nonmetal materials (seminary), Praha	Czech Republic	February 2005 (3 days)
Hrubá, J., Kuzielová, E.	IP seminary, Steinfurt	Germany	May 2005 (13 days)
Dovál, M., Palou, M.	International Czech and Slovak seminary on calorimetry, Svatka	Czech Republic	May 2005 (4 days)
Smrčková, E.	Ecology and new building materials and products, Telč	Czech Republik	May 2005 (3 days)
Palou, M.	Non traditional cement and concrete (2nd symposium), VUT Brno	Czech Republic	June 2005 (4 days)
Dovál, M.	25th Cement and Concrete Science & Mellor Lecture, London	United Kingdom	September 2005 (2 days)
Palou, M.	Meeting of CEN / TC 51 - Cement, Vilnius	Lithuania	October 2005 (4 days)
Dovál, M., Smrčková, E.	MALTOVINY – BINDING MATERIALS 2005 (conference), Brno	Czech Republic	December 2005 (1 day)

Tóth, R.	UNIDO International Centre for Science and High Technology, Trieste	Italy	one year
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VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Diko, R.	Effect of polycarboxylates and polycarboxylateteters on the reological properties of cement paste	Smrčková, E.
Vojtechovský, O.	Microstructure development in natrium-boro-silicate glasses with the TiO ₂ addition	Kozánková, J.

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

Name	Title of Thesis	Supervisor
Krajčová, L.	Preparation and properties of bioglass containing P2O5	Smrčková, E.
Múková, J.	Kinetic evaluation of the hydration of the main component of SAB cement	Kovár, V.
Pavůčková, M.	Effect of seeding additives on SAB cement hydration	Palou, M.
Zán, P.	Comparison of energy needs of melting furnaces for lead crystal glass production	Kovár, V.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Bodišová, K.	Preparation of corundum ceramics using colloidal methods	Pach, L.

VII. PUBLICATIONS

Book

[1] Kolektív autorov (medzi nimi Kovár V.; Majling J.), : Encyclopaedia Beliana : slovenská všeobecná encyklopédia. Štvrtý zväzok Eh – Gala, 698 strán, Encyklopedický ústav SAV, Bratislava, ((Kolektív cca 700 autorov, medzi nimi aj 2 z FCHPT STU)), 2005.

Article in journal

- [1] Bodišová, K., Pach, L., Kovár, V.: Sintering of transient Al₂O₃ phases in monolithic gels. *Ceramics-Silikáty*, no. 4, vol. 49, pp. 263-268, 2005.
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- [3] Dovál, M., Palou, M., Kovár, V.: Heat Evolution and Mechanism of Hydration of CaO-Al₂O₃-SO₃ System. *Ceramics-Silikáty*, no. 2, vol. 49, pp. 104-108, 2005.
- [4] Kovár, V., Bodišová, K., Kremničan, V., Majling, J.: Thermo-Optical study of NaPO₃ crystallization. *Journal of Thermal Analysis and Calorimetry*, vol. 79, pp. 727-730, 2005.
- [5] Kozánková, J., Mojumdar, S.C., Chocholoušek, J., Kákoš, J., Balog, M., Krajčová, L.: Study of glassy microporous filters in the sodium borosilicate glasses with appropriate carriers. *Journal of Thermal Analysis and Calorimetry*, vol. 81, pp. 191-196, 2005.
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Article in conference proceedings

- [1] Bodišová, K.: Príprava korundovej keramiky koloidnými metódami. In *Sb. abstraktů X. ročníku odborného semináře o výsledcích disertačních prací v postgraduálním studiu Anorganické nekovové materiály (procesy - technologie - vlastnosti)*, Praha (ČR), 9.-10. febr. 2005, Vydavatelství VŠCHT Praha, pp. 10, 2005.
- [2] Bodišová, K., Pach, L., Kovár, V.: Modelovanie kinetiky spekania prechodných fáz Al₂O₃. In *Zb. VI. seminára Príprava keramických*

- materiálov, Herľany, 13.-15. jún 2005*, HF TU Košice, pp. 100-103, 2005.
- [3] Černáková, L., Kováčik, D., Kozánková, J., Záhoranová, A., Černák, M., Ondrášková, M.: Grafting of poly-acrylic-acid onto polypropylene foils activated by surface barrier discharges in nitrogen. Editor(s): K. Hensel, Š. Matejčík, S.D. Skalný, N.J. Mason, In *Book of contributed papers 15th symposium on Applications of plasma processes, 3rd EU-Japan joint symposium on Plasma processing, Podbanské, Jan. 15-20, 2005*, Comenius University Press, Bratislava, pp. 141-142, 2005.
 - [4] Dovál, M.: Štúdium účinkov očkovacích prísad na vlastnosti hydratovaných spojiv. In *Sb. abstraktů X. ročníku odborného semináře o výsledcích disertačních prací v postgraduálním studiu Anorganické nekovové materiály (procesy - technologie - vlastnosti), Praha (ČR), 9.-10. febr. 2005*, Vydavatelství VŠCHT Praha, pp. 12, 2005.
 - [5] Dovál, M., Palou, M. T.: The effect of temperature upon the crystallization of nanoparticles of some clinker minerals. Editor(s): Horváth I., In *Book of abstracts International conf. on Advanced Materials, Micro- and Nanotechnology CAMIN 05, Smolenice, Apr. 27-29, 2005*, pp. 19-20, 2005.
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 - [8] Dovál, M., Palou, M., Kovár, V.: The kinetics of ettringite formation. Editor(s): M. Fridrichová, In *Proc. IVth conf. on science, research and applications in the field of binding materials Maltoviny 2005, Brno (Czech Republic), Dec. 15, 2005*, VUT Brno, pp. 31-37, 2005.
 - [9] Hockicko, P., Bury, P., Jurečka, S., Jamnický, M., Jamnický, I.: Analysis of conductivity spectra in ionic phosphate glasses. In *Proc. 11th int. workshop Applied physics of condensed matter, Malá Lučivná, June 15-17, 2005*, pp. 239-242, 2005.
 - [10] Hrubá, J., Kuzielová, E., Kozánková, J., Palou, M.: Influence of sintering temperature on microstructure of hydroxyapatite synthesized at different temperatures. In *Proc. VIth conf. Preparation of ceramic materials. Herľany, June 13-15, 2005*, HF TU Košice, pp. 16-17, 2005.
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DEPARTMENT OF CHEMICAL AND BIOCHEMICAL ENGINEERING

Head of Department:

Assoc. Prof. Ing. Ľudovít Jelemenský

Telephone: ++421-2-52496920

Fax: ++421-2-52496743

E-mail: ludovit.jelemensky@stuba.sk

Full Professors:

Vladimír Bálež, PhD, DSc

Associate Professors:

Daniel Bobok, PhD; Graciová Elena, PhD; Jelemenský Ľudovít, PhD; Markoš Jozef, PhD; Mierka Otto, PhD; Polakovič Milan, PhD; Stopka Ján, PhD; Štefuca Vladimír, PhD

Assistant Professors :

Ačai Pavel, PhD; Bafrnec Milan, PhD; Bafrncová Soňa, PhD; Havalda Ivan; Šefčík Jaroslav; Šefčíková Milica, PhD, Timár Pavel, PhD;

Research Fellows:

Antošová Monika, Besedová Eva, PhD; Hroncová Viera; Illeová Viera, PhD; Juma Mohammad, PhD; Kiša Michal; Marták Ján; Schlosser Štefan, PhD; Steltenpohl Pavol, PhD; Vandáková Marcela, PhD;

PhD Students:

Djuriš Martina; Gramblička M.; Holíková Kristína; Juraščik Martin; Koreňová Zuzana; Kotorá Marcel; Labovský Juraj; Lazor Michal; Mierka Oto; Platková Zdenka; Polata Halina; Šikula Ivan; Švandová Zuzanna; Tatárová Ivana, Wilinska Alina; Wrzosek Katarzyna;

Technical staff:

Dobrovodská Mária; Herzán Ľubomír; Hincá Miloš; Ördögová Marta; Rizman Viliam;

II. 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 Membrane Processes and Membrane Reactors
Laboratory of Adsorption and Bioprocess Engineering
Laboratory of Bioprocess Engineering

III. TEACHING

A. Undergraduate Study:

1.semester(Bc)	Material balances of technological processes	0/2/0	M.Šefčíková, P.Ačai, V.Illeová, M.Gramblička, M.Juraščik, Z.Koreňová, Z.Platková, V.Štefuca, Š.Schlosser, I.Tatárová, P.Timár
1. semester (Bc)	Computer Chemical Engineering Calculations	0/0/1	J.Labovský, M.Kotorá, I.Sikula
2.semester (Bc)	Introduction to Engineering Thermodynamics	0/3/0	M.Šefčíková
5. semester (Bc)	Chemical Engineering I Lectures	2/0/0	V.Báleš, L.Jelemenský, O.Mierka, J.Stopka

	Chemical Engineering I Exercises	0/3/0	J.Šefčík, P.Ačai, M.Bafrnec, O.Mierka, P.Steltenpohl, V.Štefuca, P.Timár
	Chemical Engineering I Laboratory	0/0/1	P.Timár, P.Ačai, M.Bafrnec, M.Juma, O.Mierka, Š.Schlosser, J.Šefčík
6. semester (Bc)	Chemical Engineering II Lectures	2/0/0	E.Graczová, M.Polakovič, V.Štefuca
	Chemical Engineering II Exercises	0/3/0	J.Šefčík, P.Ačai, M.Bafrnec, S.Bafrncová, E.Besedová, E.Graczová, I.Havalda, M.Juma, P.Steltenpohl
	Chemical Engineering II Laboratory	0/0/3	P.Timár, P.Ačai, M.Antošová, M.Bafrnec, S.Bafrncová, I.Havalda, V.Illeová, M.Juma, M.Juraščík, J.Šefčík, P.Steltenpohl
6. semester (Bc)	Engineering Thermodynam. Lectures Exercises	2/2/0	O.Mierka, P.Timár O.Mierka, M.Šefčíková, P.Timár
	Technological Project	0/0/4	E.Besedová, L.Jelemenský, V.Illeová, O.Mierka, M.Polakovič, J.Stopka, P.Timár
1. semester (MSc)	Chem. Eng. Thermodynam. Lectures Exercises	2/2/0	E.Graczová E.Graczová, M.Djuriš
	Diffusional Sep. Processes Lectures Exercises	2/2/0	M. Polakovič M.Juma
	Hydrodyn. and Heat Transfer, Lectures Exercises Laboratory .	2/2/2	J.Stopka J.Stopka M.Kiša
	Mass Transfer Theory	2/1/0	L.Jelemenský
1. semester (MSc)	Advanced Laboratory of Chemical Engineering	0/0/3	J.Šefčík, E.Graczová, M.Juma, J.Stopka, Š.Schlosser, P.Steltenpohl, V.Štefuca
	Computer Chemical Engineering Calculations	0/0/3	M.Juma, M.Lazorl
	Fire Engineering Lectures Exercises	2/2/0	L.Jelemenský Z.Švandová
2. semester (MSc)	Chem. React. Eng. I Lectures Exercises Laboratory	2/2/2	J.Markoš M.Gramblička J.Markoš
	Safety Engineering I	2/1/0	L.Jelemenský
	Bioprocess Engineering Lectures Laboratory I	2/0/1	V.Báleš, M.Polakovič
	Project of Equipment of Chemical and Food Technology (0/0/3	P.Timár, E.Graczová, L.Jelemenský, J.Markoš, O.Mierka, M.Polakovič, P.Steltenpohl, J.Stopka, V.Štefuca
2. semester (MSc)	Advanced Laboratory of Chemical Engineering I	0/0/3	J.Šefčík, E.Besedová, E.Graczová, M.Juma, J.Stopka, Š.Schlosser, V.Štefuca, P.Steltenpohl
	Selected Unit Operations	2/0/0	E..Besedová, Š.Schlosser
	Explosion Prevention Lectures Laboratory	2/0/2	L.Jelemenský J.Labovský
	Process Systems Engineering Lectures	2/0/2	

	Laboratory		J.Markoš, M.Juma
	Biochemical Engineering Lectures	2/0/1	M.Polakovič
	Basic Safety Engineering	2/1/0	L.Jelemenský
3.semester(MS)	Chemical Reaction Engineering II	2/0/1	J.Markoš
	Process Systems Eng. Lectures Laboratory	1/0/2	J.Markoš M.Juma
	Advanced Laboratory of Chemical Engineering IV	0/0/6	M.Juma, M.Juraščík, J.Markoš, O.Mierka, M.Polakovič, Š.Schlosser, P.Steltenpohl, J.Stopka, V.Štefuca
	Cost Engineering of Industrials	0/2/0	M.Bafrnec
3. semester (MSc)	Solid Particles in Technology and Environment	2/0/0	P.Timár
	Energetic Design Project	0/0/2	O.Mierka
	Membrane Processes	1/0/1	Š.Schlosser
	Safety Engineering I	2/1/0	L.Jelemenský
3. semester (MSc)	Lab. of Proc. Plant Safety	0/0/3	L.Jelemenský
	Laboratory of Safety Engineering	0/0/4	E.Graczová, L.Jelemenský,
	Reaction Engineering II	2/0/0	J.Markoš
	Safety Engineering II	2/0/0	L.Jelemenský
4. semester (MSc)	Diploma Work	0/0/27	E. Graczová, L.Jelemenský, M.Juma, M.Juraščík, J.Markoš, O.Mierka, P.Steltenpohl, Š.Schlosser, M.Polakovič, J.Stopka, V.Štefuca, P.Timár

IV. CURRENT RESEARCH PROJECTS

A. Institutional project 215/03 Modeling of nonstationary industrial production processes (Milan Bafrnec)

The aim of the project is the development of physical and mathematical models of industrial production processes, in which forming of materials, heat transfer and chemical reaction in solid phase occur. These processes are nonstationary and mainly proceed in equipment of rubber and plastic industries. For the achievement of the above mentioned goal, methods and computer programs for the solution of the models derived must be elaborated and further methods and apparatuses should be developed for the determination of quantities describing thermodynamic and heat-transfer properties of plastic materials, elastomers, and composite materials produced from them.

Project duration: from 1.1.2003 to 31.12.2005

B. VEGA Project No 1/0063/03, Pollutants separation from fluid mixtures (Elena Graczová)

Measurement of adsorption equilibrium data of pollutants on carbon adsorbents. Investigation of the resistance against mass transfer in solid phase pores. Modeling of adsorption separation in a fixed bed of adsorbent. Experimental estimation of extraction properties of pure solvents, prediction and verification of properties of mixed solvents, particularly aimed at extraction of BTX aromatics. Modeling and calculation of emissions of volatile organic compounds released from waste-water treatment plants.

Project duration: from 01.01.2003 to 31.12.2005

C. APVT-20-000804 Modeling, simulation and safety analysis of reactive distillation units in chemical industry (Jozef Markoš)

The design of the reactive distillation unit requires detailed knowledge of the reaction kinetics and equilibria of all reactions, vapour - liquid equilibria, and, in the case of the heterogeneous catalysis, knowledge of transport phenomena in the catalyst particle as well. Through the mathematical model describing the unit properly, it is possible to predict the changes of performance parameters switching the unit from one steady state to another one, to find out how to avoid such situation and how to set the initial parameters for start-up of the unit in order to

reach the desired steady state, etc. The aim of the proposed project is to develop such model, to test it using the real data from literature, and to use it for safety analysis, mainly for multiple steady state identification, parametric sensitivity and response of the system to the changes of performance parameters.

Project duration: from 01.01.2005 to 31.12.2007

D. Grant VEGA 1/0066/03 Designing and optimisation of bubble column reactors (Vladimír Bálež)

The aim of the project is to study the use of mixed bubble column reactors (bubble columns, airlift reactors) for progressive food technologies. By monitoring fermentation process and transformation of glucose to gluconic acid at growth and non-growth conditions, the influence of biomass concentration on the hydrodynamic regime of the reactor and oxygen transfer through interfacial area will be studied. By developing a mathematical model for the non-steady state conditions involving reaction kinetics, gas hold up dynamics and oxygen transfer, the progress of bubble column reactors scale-up will be proposed.

Project duration: from 2003 to 2005

E. Grant VEGA 1/0064/03, Mechanism of coal particle combustion in low oxygen concentration atmosphere (Jozef Markoš)

Investigation of combustion of a single coal particle (which represents the smallest unit of an industrial combustor) under conditions of low oxygen concentration and high concentration of carbon dioxide. The microstructure properties of the combusted particle will be investigated and the influence of its change during combustion on the mechanism and kinetics of the process will be studied. A mathematical model of the combusted particle, involving all partial processes inside of the particle will be developed and compared with experimental data. Model parameters will be determined and optimal performance conditions will be proposed with the aim to minimize the emission of carbon monoxide.

Project duration: from 01.01.2003 to 31.12. 2005

F. VEGA 1/1377/04 Quantitative framework for safety analysis of chemical reactors (Ludovít Jelemenský)

The effectiveness of any method used to identify hazards in chemical processes such as chemical reactors affects both safety and economics. To achieve maximum safety at minimum cost, a conservative but realistic hazard analysis must be carried out. The aim of the project is to further develop the integrated hazard simulation program, which was developed by our research group during the previous project. The extension of the integrated program is proposed based on a detailed process model, which includes nonlinear dynamics and uncertainty. For prediction of possible accidents and operating problems attention will be focused on assessment of hazardous causes and effects of **multiple steady states and possible**.

Project duration: from 01.01.2004 to 31.12.2006

G. 6 FP NMP2-CT-2005-515831 VIRTUALIS - Virtual Reality and Human Factors Applications for Improving Safety (Ludovít Jelemenský)

The overall objective of the VIRTUALIS project is to reduce hazards in production plant and storage sites by addressing end-users' practical safety issues, such as training control room operators, designing proper alarm systems, training teams to cope with emergencies, assessing the impact of plant modifications on operators' reliability, helping managers to see the impact of their decisions on sharp-end operators' daily work, through the development of an innovative technology. The new technology will be achieved by merging Human Factors (HF) knowledge and Virtual Reality (VR) technologies. The innovative character of the VIRTUALIS technology will be mainly given by the new HF knowledge that will provide both solutions to cope with identified safety-critical issues and the "driving license" to profitably exploit VR technologies. The new HF knowledge will be produced ad hoc to cope with the specific safety case at hand based on the most advanced HF methodological concepts available.

Project duration: from 01.05.2005 to 31.04. 2009

H. Hybrid systems with membranes and solvents based on ionic liquids" Slovak Grant Agency project VEGA No. 1/2468/05, head Š. Schlosser.

Formation and modeling of reaction-separation systems with membranes for simultaneous chemical or biochemical reactions and separations and/or several separation processes. A better understanding of a new generation of solvents and liquid membranes based on ionic liquids used for separation and biochemical transformations. The aim will be creation of new reaction-separation hybrid systems and development of new analytical methods. Study of microfiltration through ceramic and polymeric membranes with different geometry aimed at modeling of mass transfer and interactions of solutes with the membrane. Investigation of the

possibilities of transfer of data obtained for various geometries of modules. Interactions will be studied mainly on model two-component suspensions.

Project duration: from 2005 to 2007

I. Study of the adsorption-membrane filtration (Amf) hybrid process for removal of boron from seawater“

International joint project No. MEDRC 04-AS-004 co-financed by MEDRC (www.medrc.org) coordinated by Ege University, Izmir, Turkey with participation of teams from the Slovak University of Technology (Š. Schlosser) and Technical University of Wroclaw and individual experts from other Universities.

Project duration: from 2005 to 2007

J. Project APVT-99-005002, Complex treatment of Alfalfa as a sustainable energy source by combination of conventional and biotechnological approaches (Vladimír Štefuca)

Technology proposal for isolation and purification of substances obtained by lucerne biomass fractionation - Isolation methods for products of lucerne juice fermentation - Production of biofuels, lactic acid and biogas - Alternative lucerne exploitation.

Project duration: from 01.09.2002 to 31.08.2005

K. Research contract of the Department of Agriculture, Food and Safety, subtopic 14b, Isolation and research of properties of bioactive compounds from Amaranthus and their using in human nutrition (Vladimír Štefuca)

The project aim is the developing of procedures of isolation of proteins and lipid compounds from green parts and the corn of Amaranthus. The final objective is to design technological solution for the production of compounds from Amaranthus that can be used in human nutrition as alternative sources of more conventional compounds.

Project duration: from 01.09. 2003 to 31.08.2006

L. Project VEGA 1/0065/2003, Kinetic and transport phenomena in enzyme technology (Milan Polakovič)

The project is aimed at the optimization of selected processes of enzyme technology when the investigation of these processes relies on the analysis of kinetic and transport phenomena, especially those of heat and mass transfer. There are three key thematic areas in this project: optimization of production of fructooligosaccharides, applications of flow calorimetry in the study of immobilized systems and the investigation of kinetics of enzyme reactions with macromolecular substrates.

Project duration: from 01.2003 to 12.2005

M. Project No. 30 of the programme Štefánik - Slovak-French Bilateral Cooperation in Science, Mechanisms of adsorption on heterogeneous surfaces. Applications to environmental problems. (Milan Polakovič)

The project elaborates experimental and theoretical approaches of the characterization of liquid-solid adsorption processes that are applied in two application areas. The first one is the selection of activated carbon adsorbents for the treatment of drinking water depending on the type and level of contamination. The second area is the surface modification of mine refuse by adsorption of humic acid molecules preventing the release of sulphides into free nature.

Project duration: from 01.01.2004 to 31.12.2005

N. Project FP6-SME-2003-1-508374, Ohmic heating for food processing (FOODPRO). (Milan Polakovič)

The aim of this CRAFT (scheme of FP6 focused on small and medium enterprises) project is to develop an alternative heating process through the use of ohmic heating, where the heat is generated through passing an electric current through the food heating it as a result of electric resistance. Thus overheating can be avoided and food with improved taste and nutritional content, and with maintained and in some cases improved microbial safety, may be produced. The role of STU in this project is to investigate the effects of ohmic heating on the

stability of food enzymes, the inactivation kinetics of individual enzymes in a broad temperature range and to carry out the comparative consumer study of food products obtained by conventional and ohmic heating.

Project duration: from 01.03.2004 to 28.02.2006

O. Project FP6-NMP3-CT-2004-500160, Advanced interactive materials by design (AIMs). (Milan Polakovič)

This integrated project AIMs is targeted at the design of a new class of interactive materials composed of functional elements (ligands) for use in the selective purification steps (*i.e.* chromatography, membrane separation, extraction) of pharmaceutical, chemical and bioindustries. A real breakthrough in the optimisation of production processes in these areas requires the integration of material sciences and process development. AIMs focuses on the production of monoclonal antibodies as an example process. The main objectives in terms of radical innovation in monoclonal antibodies production are an increase in capacity by a factor of 10 to 50 and a reduction of cost of goods by a factor of 10 to 100. The STU teams act in one of six subprojects of this integrated project dealing with the characterization of structural and process parameters of investigated materials and processes. The role of STU is to determine accessibility of different chromatographic adsorbents by size-exclusion techniques, the static adsorption capacity of proteins of interest as well as their dynamics of binding. Together with other partners, the correlations between structural and performance parameters are made which are communicated to the partners involved in the material and process design, respectively.

Project duration: from 01.04.2004 to 31.03.2008

P. Research contract of Department of Agriculture, Food and Safety, task VaV, Food quality and safety and functionality of primary food resources, subtask: Study of possibilities of enhancement of quality and safety of fish crude (Vladimír Štefuca)

The research subtask is aimed in testing the possibility of quality increase of fish crude by adding microalgae biomass (*Spirulina*). Conditions of microalgae cultivation in relation with the biomass productivity and composition are tested.

Project duration: from 2003 to 2005

Q. Project APVT-99-019604, Experimental study of gamma-decalactone production by microbial biotransformation (Vladimír Štefuca)

The basic aim of project is achievement of knowledge necessary for development of process of preparation of gamma-decalactone (GDL) - a bioaroma with high added value, by biotransformation from a natural precursor. In order to reach this objective, in the first part of project, it will be necessary to determine cultivation and biotransformation conditions for a chosen microorganism. Next key task of GDL preparation will be the isolation from culture medium connected with lactonisation of intermediate product and purification to final purity.

Project duration: from 01.01.2005 to 31.12. 2007

R. APVT projekt APVT-20-025704, Process development for biotechnological production of fructooligosaccharides (Milan Polakovič)

The growing demand for healthy food including non-synthetic additives forms a potential for significant enlargement of the existing production capacities of fructooligosaccharides, which belong to important prebiotics. The ambition of the project is to develop a technological process which could be implemented. The project elaborates all principal steps of the production process which are: aerobic cultivation of cells *Aureobasidium pullulans*, isolation and immobilization of enzyme fructosyltransferase, biocatalytic production of fructooligosaccharides, the adsorption separation of fructooligosaccharides.

Project duration: from 01.01.2005 to 31.12. 2007

S. Project No. 11 of the Slovak-Hungarian Bilateral Cooperation in Science, Enhancement of the stability of lipase enzymes in ionic liquids (Milan Polakovič)

The joint project focuses on the bioprocess engineering aspects connected with the application of enzymatic reactions in ionic liquids. The improved efficiency of biotransformations is envisaged by investigating the effect of water activity and thermal stability on the performance of lipase in hydrolytic and esterification reactions using ionic liquids as solvents. By screening of suitable enzyme sources and reaction media, it is expected to obtain chiral compounds of interest for the synthesis of fine chemicals and pharmaceuticals.

Project duration: from 01.01.2005 to 31.12. 2006

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Rubber Research Institute Matador a.s. Púchov	Vulcanization conditions influencing the quality and economy of tire production	Klabník Miroslav, director, Terézie Vansovej 1054/45, 02032 Púchov	continually
Slovnaft, Vlčie hrdlo, Bratislava, Slovakia	International project	Varga, P., Slovnaft, Vlčie hrdlo, Bratislava, Slovakia	Since 2001
Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	International project,	Mičíková, A., Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	continually
NCHZ, a.s.	International project, engineering contract ZoD	Goga, V., NCHZ, a.s., Nováky	Since 2004
Duslo, a.s.	Engineering Contract ZoD	Orihel, J., Duslo, a.s., Saľa	Since 2004
Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	Engineering contract ZoD	Mičíková, A., Slovnaft VURUP, a.s., Vlčie hrdlo, Bratislava, Slovakia	Since 2004
Liko Bratislava a.s.	Alfalfa phytomass exploitation	Minárik Martin, Ing., director, Wolkrova 4, Bratislava	2002 - 2005
Liko Bratislava a.s.	Amaranthus exploitation in human food	Minárik Martin, Ing., director, Wolkrova 4, Bratislava	Since 2003
Liko Bratislava a.s.	FOODPRO, FP6-project	Mráz Igor, Ing. PhD., researcher, Miletičova 23, Bratislava	Since 2003
Liko Bratislava a.s.	Production of fructooligosaccharides	Minárik Martin, Ing., director, Wolkrova 4, Bratislava	Since 2004
Tech. Univ. Košice	co-supervisor in PhD study	Schlosser, Š. STU, Bratislava	Since 2001
Institute of Chemistry of Slovak Academy of Sciences	Glycerol biosensor development	Gemeiner, Peter, DrSc., researcher, Institute of Chemistry SAS, Dúbravská cesta 9, Bratislava	Since 2003
Faculty of Mechanical Engineering STU	Heat exchanger for blood pasteurization	Ivan Morávek, researcher, Department of Production Systems, nam. Slobody 17, Bratislava	Since 2005

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
ICPF AV ČR	cooperation	Drahoš, Jiri, professor, ICPF AV ČR	continually
TU VŠB, Praha, CR	cooperation	Wichterle, Kamil, professor, TU VŠB, Praha, CR	continually
UCL London, UK	cooperation	Bogle, David, professor, UCL London, UK	continually
Polimi, Milano, I	cooperation	Colombo, Simone, professor, Polimi, Milano, I	continually
University of Minho, Braga, P	Scientific cooperation Erasmus programme	prof. Jose A. Teixeira Department of Biological Engineering, University of Minho, 4710-057 Braga, Portugal	Since 2001
VŠCHT Praha, ČR	scientific cooperation	prof. Miloš Marek, VŠCHT Praha, CR	continually
CIBA Spezialitätenchemie AG, Basel, Switzerland	engineering contract	Krajník Paul, Global Head of Engineering	Since 2001
Ege Univ., Izmir, Turkey	joint research project	Schlosser Štefan, STU Bratislava	2005-2007

Tech. Univ. Wroclaw, PL	joint research project	Schlosser Štefan, STU Bratislava	2005-2007
MEGA, ČR	advisor in research plans	Schlosser Štefan, STU Bratislava	2005
Cytec, Canada	support in our research	Schlosser Štefan, STU Bratislava	since 2004
Federal Agricultural Research Center	FP5 project	Vorlop Klaus, director, FAL Braunschweig, Germany	Since 2003
Institute National Polytechnique de Lorraine	cooperation in the study of adsorption for the water treatment	Görner Tatiana, Assoc. Prof., Laboratoire Environnement et Minéralurgie, CNRS UMR 7569, 15 avenue du Charmois BP 40, 54501 Vandoeuvre, France	Since 1999
Wroclaw Technical University	cooperation in the kinetics of starch enzyme action and enzyme inactivation kinetics	Bryjak Jolanta, Dr., researcher, Institute of Chemical Engineering ul. Norwida 4/6 50-373 Wroclaw, Poland	Since 1998
University of Strathclyde	collaboration in the application of laser light scattering in the investigation of enzyme inactivation	Šefčík, Ján, PhD., senior lecturer, Department of Chemical and Process Engineering, University of Strathclyde, Glasgow, Scotland	Since 2005
ETH Zürich	AIMs - FP6 project (leader of subproject)	Morbidei Massimo, Professor, Head of the Group, Institut für Chemie- und Bioingenieurwissenschaften, ETH Hönggerberg, CH-8093 Zürich, Switzerland	Since 2003
University of Minho	exchange of students within the Erasmus programme	Department of Biological Engineering, University of Minho, 4710-057 Braga, Portugal	Since 2001
University of Minho	FOODPRO, FP6-project	Vicente Antonio, Assis. Prof., Department of Biological Engineering, University of Minho, 4710-057 Braga, Portugal	Since 2003
C-Tech Innovation Ltd.	FOODPRO, FP6-project, project coordinator	Harrison Michael, senior research engineer, Capenhurst Technology Park, Capenhurst, Chester, CH1 6EH, United Kingdom	Since 2003
Blåtand AB	FOODPRO, FP6-project	Hagner Ulf, president, Blåtand AB, 86013 Stöde, Sweden	Since 2003
Quinta dos Moinhos Novos - Lacticínios, Lda	FOODPRO, FP6-project	Martins Paulo Jorge, managing director, 4830 Póvoa de Lanhoso, Portugal	Since 2003
SIK , The Swedish Institute for Food and Biotechnology	FOODPRO, FP6-project, consumer tests of food products	Lindbom Ingela, Dr., researcher, P.O. Box 5401, Gothenburg, SE-402 29 Sweden	Since 2003
Instituto de Investigaciones Marinas, C.S.I.C., Vigo	FOODPRO, FP6-project, modelling of ohmic heater	Banga Julio, Dr., team leader, Process Eng. Group, Inst. Invest. Marinas (CSIC), C/ Eduardo Caballero 6, 36208 Vigo, Spain	Since 2003
Nature's Best Ltd	FOODPRO, FP6-project	Paddy Callaghan, owner and director, Nature's Best Ltd., Dublin, Ireland	Since 2005

University of Dortmund	AIMs, FP6-project, project coordinator	Górak Andrzej, professor, chairman, Lehrstuhl für thermische Verfahrenstechnik, Emil-Figge-Straße 70, 44227, Dortmund, Germany	Since 2003
Bayer AG,	AIMs, FP6-project	Strube Jochen, Dr. Bayer Technology Services, Process Technology, 51368 Leverkusen, Germany	Since 2003
Merck KGaA	AIMs, FP6-project	Schulte Michael, Dr., Life Science & Analytics R&D Technical Support, Frankfurter Strasse 250, 64271 Darmstadt, Germany	Since 2003
University of Vienna	AIMs, FP6-project	Lindner Wolfgang, professor, Department of Analytical Chemistry, Waehringerstrasse 38, 1090 Wien, Austria	Since 2003
Prometics Biosciences Ltd	AIMs, FP6-project	Burton Steven James, Dr., 211 Cambridge Science Park, Milton Road, CB4 OZA Cambridge, United Kingdom	Since 2003
Centre National de la Recherche Scientifique	AIMs, FP6-project	Denoyel Renaud, Dr., researcher, Laboratoire Matériaux Divisés, Revêtements, Electrocéramiques (MADIREL), Centre de St Jérôme, 13397 Marseille, France	Since 2003
Sartorius AG	AIMs, FP6-project	Melzner Dieter, Dr., Weender Landstrasse 94-108, 37075 Göttingen, Germany	Since 2003

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Bafnec Milan	Scientific Board of the Rubber Research Institute	member	01.01.1997
Bafnec Milan	Slovak Society of Chemical Engineering	member	03.05.1995
Bobok Daniel	Slovak Society of Chemical Engineering	member	03.05.1995
Graczová Elena	Committee for Dissertations, Faculty of Chemical and Food Technology, Slovak University of Technology	member	Since 2005
Graczová Elena	Slovak Society of Chemical Engineering	member	03.05.1995
Bafnecová Soňa	Slovak Society of Chemical Engineering	member	03.05.1995
Besedová Eva	Slovak Society of Chemical Engineering	member	03.05.1995
Steltenpohl Pavol	Slovak Society of Chemical Engineering	member	03.05.1995
Ordogová Marta	Slovak Society of Chemical Engineering	member	03.05.1995
Herzán Ľubomír	Slovak Society of Chemical Engineering	member	03.05.1995
Bobok Daniel	Certificate Commission of STU Bratislava	member	15.03.2003
Timár Pavel	Slovak Society of Chemical Engineering	secretary	01.02.1995
Markoš Jozef	Slovak Society of Chemical Engineering (advisory board)	other	Since 2000

Markoš Jozef	Slovak Society of Chemical Engineering (advisory board)	other	Since 1999
Jelemenský Ľudovít	Slovak Society of Chemical Engineering (advisory board)	other	Since 1999
Stopka Ján	Slovak Society of Chemical Engineering (advisory board)	other	Since 2000
Vladimír Bálež	Slovak Society of Chemical Engineering - chairman	other	Since 2002
Milan Polakovič	Guest Editor of Chemical Papers	other	Since 1999
Milan Polakovič	Slovak Society of Chemical Engineering Executive Board	other	Since 2002
Milan Polakovič	Chemical Papers - editorial board	other	Since 1998
Milan Polakovič	Editor-in-Chief of Chemical Papers	other	Since 2005
Báleš Vladimír	Vlákná a textil - editorial board	other	Since 2003
Báleš Vladimír	Economy and Social Committee of Slovak Republic vice-president	other	Since 2005
Báleš Vladimír	Slovak Rector Conference - president	other	Since 2005
Steltenpohl Pavol	Chemical Papers journal, Assistant Editor-in-Chief	other	Since 2005
Steltenpohl Pavol	Chemical Papers journal, Vol. 59(6), guest editor	other	2005
Schlosser Štefan	Slovak Society of Chemical Engineering (council)	member	Since 1995
Štefuca Vladimír	Slovak Society of Chemical Engineering - member of advisory board	other	Since 2000

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Markoš Jozef	Working party "Chemical Reaction Engineering" of EFCE	member	Since 2001
Stopka Ján	Working party "Education" of EFCE	member	Since 2002
Jelemenský Ľudovít	Working party „Loss prevention and safety“ of EFCE	member	Since 2004
Báleš Vladimír	European Federation of Chemical Engineering (executive committee)	other	Since 2002
Gracsová Elena	Committee for Dissertations, Czech Technical University in Prague	member	Since 2005
Báleš Vladimír	Working Group on Bioreactor Performance of European Federation of Biotechnology	member	Since 1988
Báleš Vladimír	Executive Committee of European Federation of Chemical Engineering	member	Since 2002
Schlosser Štefan	Working party Membranes of EFCE (delegate)	member	since 1998
Schlosser Štefan	Int. Frontiers and Interfaces of Ion Exchange, Antalya (Turkey), Sci. committee	member	2005-2006
Schlosser Štefan	Member of the Scientific committee of the Congress CHISA in Prague, (www.chisa.cz)	member	Since 1984
Schlosser Štefan	European Membrane Society	member	2005-2006
Schlosser, Štefan	Euromembrane 2006, Taormina, I (scientific committee)	member	2005-2006
Schlosser Štefan	Ars Separatoria, Torun (PL), editorial board	member	Since 2004
Schlosser Štefan	Ars Separatoria, Torun (PL), sci. committee	member	2005-2006
Schlosser Štefan	PERMEA 2005, Sci. committee	member	2004-2005

Polakovič Milan	Board of Section on Biochemical Engineering of European Federation of Biotechnology	member	Since 1999
Polakovič Milan	European Federation of Biotechnology, Section on Biochemical Engineering, Working Group on Biotransformations	chairman	Since 2004
Polakovič Milan	guest editor of Biocatalysis and Biotransformation	member	2004
Polakovič Milan	Scientific Committee of Section on Applied Biocatalysis of European Federation of Biotechnology	member	Since 1999

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
J.A.Teixeira	University of Minho, Braga	Portugal	13.09.2005/5 days
K. Wichterle	Technical University Ostrava, Ostrava	Czech Republic	14.12.2005/1 day
Nagy Endre	Veszprém University	Hungary	May/1 day
Bryjak Jolanta	Wroclaw Technical University, Institute of Chemical Engineering, Wroclaw	Poland	April-May / 1 month
Bryjak Jolanta	Wroclaw Technical University, Institute of Chemical Engineering, Wroclaw	Poland	December / 9 days
Görner Tatiana	Institute National Polytechnique de Lorraine, Laboratoire Environnement et Minéralurgie, CNRS UMR 7569, Vandoeuvre	France	May / 1 week
Sorrenti Estelle	Institute National Polytechnique de Lorraine, Laboratoire Environnement et Minéralurgie, CNRS UMR 7569, Vandoeuvre	France	May / 1 week
Gubicza László	Veszprém University, Institute of Chemical Engineering, Veszprém	Hungary	August / 6 days
Fráter Tamás	Veszprém University, Institute of Chemical Engineering, Veszprém	Hungary	October / 1 week
Fehér Erika	Veszprém University, Institute of Chemical Engineering, Veszprém	Hungary	October / 1 week
Cechowski Tomasz	Lodz Technical University, Institute of Process Engineering, Lodz	Poland	November / 2 days
Tokar Oldřich	IONTOSORB Ústí nad Labem	Czech Republic	October / 1 day

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

Name	Organisation / Institution / Conference	State	Date / Duration
Markoš, J.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Jelemenský, L.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Kiša, M.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Labovský, J.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Švandová, Z.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Juraščík, M.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Síkula, I.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Kotora, M.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Lazor, M.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Koreňová, Z.	Conference CHISA'05, Srní	CR	17-20.X.2005/4 days
Markoš, J.	Institute of Chemical Technology, Prague	CR	05.IV.2005/1 day
Markoš, J.	Technical University Dortmund	D	07-09.XII.2005/3days
Kotora, M.	Technical University Dortmund	D	07-09.XII.2005/3days
Juraščík, M.	12th European Congress on Biotechnology, Copenhagen,	DK	VIII.2005/3 days
Kiša, M.	ESMG Symposium 2005, Nurnberg	D	11-13.X.2005/3 days
Labovský, J.	ESMG Symposium 2005, Nurnberg	D	11-13.X.2005/3 days

Švandová, Z.	ESMG Symposium 2005, Nurnberg	D	11-13.X.2005/3 days
Jelemenský, L.	Politecnico di Milano	I	30.V.-01.VI.2005/3 days
Jelemenský, L.	University Paris 5	F	28-30.VI.2005/3 days
Jelemenský, L.	Fraunhofer Institute, Magdeburg	D	25-26.VIII.2005/3 days
Jelemenský, L.	Joint Research Centre, Ispra	I	13-14.IX.2005/3 days
Jelemenský, L.	EC Research Department, Brussels	B	09-10.XI.2005/3 days
Schlosser, Š.	COIL 2005, Salzburg	A	June/5 days
Schlosser, Š.	Tech. Univ. Wroclaw, Tech. Univ. Poznan	PL	May/4 days
Schlosser, Š.	Universitat Rovira i Virgili, Tarragona	E	July/5 days
Schlosser, Š.	PERMEA 2005, Polanica	PL	Sept./5 days
Schlosser, Š.	Zenon,	H	May/1 day
Marták, J.	PERMEA 2005, Polanica	PL	Sept./5 days
Onderková, M.	PERMEA 2005, Polanica	PL	Sept./5 days
Štefuca, V.	FAL, Braunschweig	D	March 2005 (3 days)
Štefuca, V.	Agrana, Tulln	A	July 2005 (6 days)
Štefuca, V.	University of Veszprém, Veszprém	H	October 2005 (5 days)
Illeová, V.	University of Veszprém, Veszprém	H	October 2005 (5 days)
Štefuca, V.	Dortmund/Symposium Gram to Ton Biocatalysis	D	October 2005 (2 days)
Polakovič, M.	Dortmund/Symposium Gram to Ton Biocatalysis	D	October 2005 (2 days)
Polakovič, M.	University of Cork, Departmen of Food Process Engineering / Project meeting	IRL	January / 4 days
Polakovi, M.	DECHEMA Frankfurt / Project meeting	D	March / 2 days
Polakovič, M.	Brussels / Seminar Strategic Research Agenda for Industrial Biotechnology	B	March / 5 days
Polakovič, M.	Warszawa / Project meeting	PL	July / 4 days
Polakovič, M.	Veszprém University, Institute of Chemical Engineering, Veszprém	H	July / 10 days
Polakovič, M.	12th European Congress on Biotechnology, Copenhagen	DK	August / 5 days
Vandáková, M.	12th European Congress on Biotechnology, Copenhagen	DK	August / 5 days
Gramblička, M.	12th European Congress on Biotechnology, Copenhagen	DK	August / 5 days
Wilinska, A.	12th European Congress on Biotechnology, Copenhagen	DK	August / 5 days
Wilinska, A.	Wroclaw Technical University, Institute of Chemical Engineering, Wroclaw	PL	July / 10 days
Polakovič, M.	SIK, Gothenburg / Project meeting	S	September / 5 days
Polakovič, M.	Brussels / Workshop Strategic Research Agenda for Industrial Biotechnology	B	September / 1 day Enzyme Reaction Engineering Conference, Dubrovnik
Polakovič, M.	Enzyme Reaction Engineering Conference, Dubrovnik	HR	September / 5 days
Illeová, V.	Enzyme Reaction Engineering Conference, Dubrovnik	HR	September / 5 days
Platková, Z.	Enzyme Reaction Engineering Conference, Dubrovnik	HR	September / 5 days
Polakovič, M.	University of Vienna, Department of Analytical Chemistry	A	October / 1 day
Gramblička, M.	University of Vienna, Department of Analytical Chemistry	A	October / 1 day
Gramblička, M.	ETH Zuerich, Department of Chemical and Biochemical Engineering	CH	November / 3 days
Tatárová, I.	ETH Zuerich, Department of Chemical and Biochemical Engineering	CH	November / 3 days
Polakovič, M.	ETH Zuerich, Department of Chemical and Biochemical Engineering	CH	November / 3 days
Ačai, P.	Institute National Polytechnique de Lorraine, Laboratoire Environnement et Minéralurgie, CNRS UMR 7569, Vandoeuvre	F	December / 14 days

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Csibriová, E.	Analysis of the performance of a triple-effect evaporator	P. Timár
Čeppan, M.	Calculation of isosteric adsorption heat	E. Besedová
Čierna, M.	Equilibrium characteristics of a zeolite adsorbent	E. Besedová
Habánek, J.	Economic analysis of chosen energetic media under real commercial conditions	O. Mierka
Hyravý, M.	Energy savings during hygienic paper drying on an one-cylinder paper-machine	P. Timár
Král, P.	Calculation of complex piping systems	J. Stopka
Marčeková, N.	pH inactivation of fructosyltransferase	V. Illeová
Pidičák, Š.	Modelling of release of liquified gas	Ľ. Jelemenský
Schuller, L.	Influence of viscosity on the characteristics of a centrifugal pump	P. Timár
Stanková, M.	Determination of isosteric heat for the system ethanol-activated carbon	E. Besedová
Tomčík, M.	Cost analysis for transport and cooling of gaseous CO ₂ , and heating of pulp	O. Mierka

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

Name	Title of Thesis	Supervisor
Barroso, J.	Study of hydrodynamics and mass transfer phenomena in an airlift reactor using enzymatic oxidation method.	J. Markoš
Cebula, M.	Energy audit in the mill-baking-pastry factory, Spišská Nová Ves	O. Mierka
Illes, P.	Energy audit of an enterprise	O. Mierka
Ivič, P.	Calculation of ternary contribution parameters and correlation of ternary equilibrium data.	E. Graczová
Klačko, M.	Study of the kinetics of immobilized glycerolkinase by flow calorimetry	M. Polakovič
Koreňová, Z.	Experimental investigation of the conditions of environmental friendly combustion of scrap tyres	M. Juma
Kotora, M.	Modelling of reactive distillation	J. Markoš
Lazor, M.	Design of a rectification column for separation of propylene-oxide from a reaction mixture	J. Markoš
Martauz, R.	Analysis of the performance of a kiln for combustion of alternative fuels	J. Stopka
Sikula, I.	Modelling of fermentation air-lift reactors	M. Juraščík
Ševčík, J.	Possibilities of application of surface active substances in hot-water pipings	J. Stopka
Škultéty, M.	Calculation of parameters of a rectification column for separation of aromatics from a mixture with saturated hydrocarbons	P. Steltenpohl
Tatárová, I.	Investigation of the porous structure of adsorbents for separation of monoclonal antibodies	M. Polakovič
Tvrdík, M.	Analysis of chosen dangerous substances released from tires during a fire	Ľ. Jelemenský
Vičková, S.	Perraction of organic acids through liquid membranes with ionic liquids	Š. Schlosser

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Illeová, V.	Investigation of the mechanism of enzyme inactivation by integration of experimental techniques	M. Polakovič
Vandáková, M.	Experimental optimisation of fructosyltransferase in a batch bioreactor	M. Polakovič
Holíková, K.	Experimental study of coal and rubber waste combustion	J. Markoš, Ľ. Jelemenský
Hussain T., Znad	Modelling and scale up of airlift bioreactor	V. Bálež

VIII. PUBLICATIONS

Book

[1] Graczová, E.: *Chemické inženýrstvo I (séria 12 prednášok)*, Internet FCH, VÚT Brno, 2005.

Article in journal

- [1] Besedová, E., Bobok, D.: Single-Component and Binary Adsorption Equilibrium of 1,2 dichloroethane and 1,2 dichloropropane on Activated Carbon. *Petroleum and Coal*, no. 2, vol. 47, pp. 47-54, 2005.
- [2] Bobok, D., Besedová, E.: Estimation of Effective Diffusion Coefficients from Breakthrough Curves. *Petroleum and Coal*, no. 2, vol. 47, pp. 65-70, 2005.
- [3] Cichy, W., Schlosser, Š., Szymanowski, J.: Extraction and pertraction of phenol through bulk liquid membranes. *J. Chem. Technol. Biotechnol.*, vol. 80, pp. 189-197, 2005.
- [4] Graczová, E., Steltenpohl, P., Bařncová, S.: Extractive Distillation: Prediction of the Vapour – Liquid Equilibrium Data of Multi-Component Systems. *Chemical Engineering Transactions*, vol. 7, pp. 339-344, 2005.
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- [11] Kertész, R., Schlosser, Š.: Design and simulation of two phase hollow fiber contactors for simultaneous membrane based solvent extraction and stripping of organic acids and bases. *Separ. Purif. Technol.*, vol. 41, pp. 275-287, 2005.
- [12] Kertész, R., Šimo, M., Schlosser, Š.: Membrane based solvent extraction and stripping of phenylalanine in HF contactors. *J. Membrane Sci.*, vol. 257, pp. 37-47, 2005.
- [13] Klein, J., Maia, J., Jurařčík, M., Vicente, A., Domingues, L., Teixeira, J.: Relationships between hydrodynamics and rheology of flocculating yeast suspensions in a high-cell-density airlift bioreactor. *Biotechnology and Bioengineering*, 2005.
- [14] Koreňová, Z., Juma, M., Holíková, K., Jelemenský, L., Markoš, J.: Experimental study of waste rubber pyrolysis and combustion. *Petroleum and Coal*, vol. 47, pp. 1-9, 2005.
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Article in conference proceedings

- [1] Ačai, P., Polakovič, M., Sorrenti, E., Görner, T., de Donato, P., Villieras, F.: Modelling of fixed-bed adsorption of humic acids on pyrite.. In *Book of Abstracts of the 32nd International Conference of SSChE*, 2005.
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DEPARTMENT OF CHEMICAL PHYSICS

Head of Department:
Assoc. Prof. Viliam Laurinc, PhD.

Telephone: ++421252963420
Fax: ++421252493198
E-mail: viliam.laurinc@stuba.sk

I. STAFF

Full Professors:

Fedor Valach, PhD., DSc.

Associate Professors:

Pavol Fedorko, PhD.; Oľga Holá, PhD.; Viliam Laurinc, PhD.; Vladimír Lukeš, PhD.

Assistant Professors :

Július Annus; Ladislav Bušovský; Tibor Pálszegi, PhD. (till 31.8.2005); Ľubomír Tancer; Miroslav Tokarčík, PhD.; Daniela Žilinská

Research Fellows:

Tibor Pálszegi, PhD. (since 1.9.2005)

PhD Students:

Michal Ilčin; Katarína Olejníková

Technical staff:

Anton Adamko; Zdenka Halaburková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Physics I.
Laboratory of Physics II.

B. Research laboratories:

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

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Seminar in Basic Physics	0/2/0	Bušovský, Fedorko, Holá, Ilčin, Laurinc, Lukeš, Tancer, Tokarčík, Žilinská
2. semester (Bc)	Physics I	2/2/0	Bušovský, Fedorko, Holá, Laurinc, Lukeš, Tokarčík, Valach, Žilinská
	Physics Laboratory I.	0/0/2	Annus, Bušovský, Olejníková, Pálszegi, Tancer, Tokarčík, Žilinská
3. semester (Bc)	Physics II.	2/2/0	Tokarčík, Valach
	Physics Laboratory II.	0/0/2	Annus, Pálszegi, Olejníková
1. semester (MSc)	Semestral project	0/0/4	Lukeš, Ilčin
	Modelling of the Molecular Properties	2/2/0	Laurinc, Lukeš
2. semester (MSc)	Statistical Thermodynamics	2/1/0	Laurinc, Lukeš

B. PhD Study:

	Biophysics I	2/0/0	Valach
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IV. CURRENT RESEARCH PROJECTS

A. VEGA Project No 1/0056/03 Interaction geometry of transition element atom with ligands in coordination compounds and metalloproteins (Fedor Valach)

A new bond valence sum model of interactions between the metal atom of d_n and f_n electron configurations and ligands in the crystal structures of coordination compounds and metalloproteins. Development of structural theory which enables the prediction of transition metal surrounding geometry within the range of metal oxidation states. Deriving the rules for the occupation of the crystal sites by the transition element atoms in the certain oxidation states of metalloproteins. Development of new refinement and validation procedure for the crystal structures of metalloproteins. Crystal structure refinement of *Urtica dioica* agglutinin isolectin I with Zn^{+2} ions. Prediction of murine monoclonal antibody 1696 complexation with transition metals.

Project duration: from 01.01.2003 to 31.12.2005

B. VEGA Project No 1/0055/03 Theoretical and experimental study of the electrical and optical properties of new pi-conjugated aromatic and heteroaromatic compounds as precursors for the preparation of oligomers and nanostructures (Viliam Laurinc)

Quantum-chemical study of the electronic structure and properties of benzenoid and heterocyclic compounds of furan, thiophene, pyrrole, imidazole and pyrazine derivatives with potential electro- and photoactive properties. Theoretical investigation of the basic relations between structure (conformations, effective conjugation length, effect of substituents) and microscopic quantities (dipole moments, polarizabilities, hyperpolarizabilities, HOMO-LUMO separation), and absorption and luminescence spectral characteristics. Measurements of the electrical conductivity of the prepared polymerised pi-conjugated structures. Study of the stability of the prepared compounds under gamma-irradiation (source ^{60}Co)

Project duration: from 01.01.2003 to 31.12.2005

C. VEGA Project No 1/2021/05 Physical properties of conducting polymers, conducting polymer nanocomposites and new conjugated systems (Pavol Fedorko)

The project deals with two representatives of the conducting polymers, doped polyaniline and doped substituted polythiophene gels, in which the effect of the structural disorder on the electrical properties is studied. In doped polyaniline, disorder is created by thermal and irradiation aging of the material and by adding plasticizers. This also gives information useful from the application point of view. In the frame of this part of the project, the metallic character of the conductivity of doped polyaniline is investigated more in detail. In substituted polythiophene gels, the conformational state of the polymer network and thus the degree of the structural disorder is varied by swelling in solvents and the dependence of the conductivity of the gel on its swelling ratio is studied. Preparation and properties of conducting polymer nanocomposites as materials enlarging the application potential of the conducting conjugated systems are also studied, using polypyrrole covered nanoparticles and carbon nanotubes as conducting fillers. Theoretical modeling and design of new aromatic and heteroaromatic conjugated systems with properties interesting from the point of view of applications in molecular electronics are also part of the project.

Project duration: from 01.01.2005 to 31.12.2007

D. VEGA Project No 1/1376/04 Nonlinear optical spectroscopy of molecules and systems with energy transfer (Tibor Palszegi)

The influence of the intermolecular electronic and vibrational coupling on the energy transfer between the electronic states of molecules and molecular systems is studied by theoretical methods of nonlinear optical spectroscopy (photon-echo, pump-probe, time-dependent fluorescence). The nonlinear optical signals are analysed to get information on the electronic coupling, vibrational coherence and inhomogeneous width of spectral lines. The 2D signal analysis is applied also for the identification of molecular conformations.

Project duration: from 1.1.2004 to 31.12.2006

E. APVT Project No. APVT-20-005004 Study of stabilisers in polymer matrices – relation between their structure and stabilising effects. (Vladimir Lukeš)

Project is oriented on finding suitable (environment-friendly and non-toxic) antioxidants and their concentration relations which are necessary for effective stabilization of polymers (e.g. polyisoprene, PVC, polyurethane, etc.).

The stability of polymers with selected additives is experimentally investigated (DSC, spectral measurements). The materials suitable for application in medicine and food industry are subjected to the gamma irradiation and the irradiation effect is investigated. As a part of our research, the dependence between effect and structure of used antioxidants is also studied.

Project duration: from 01.01.2005 to 31.12.2007

F. APVT Project No 20-029804 Functional supramolecular surface nanostructure based on cyclodextrins (Tibor Palszegi)

Project proposes an integration of theoretical and experimental research results with a focus on a functional surface nanostructure. Our proposal on the nanostructured surface is based on three main components, first a practical solid surface is a base, second an attachment film is prepared from chemically modified cyclodextrin molecules to form supramolecular complexes with guest molecules, and third two kinds of functional molecules are selected which provide a functionality as chemical sensor and magnetic memory unit.

Project duration: from 01.06.2005 to 31.05.2007

V. CURRENT EDUCATION PROJECTS

A. KEGA Project No 3/108003 Interactive Multimedial Project for Teaching of Physics at Technical Universities in Slovak Republic (Viliam Laurinc, Oľga Holá)

Development of teaching methods on physics lectures at technical university, particularly at the Faculty of Chemical and Food Technology of SUT.

Project duration: from 01.01.2003 to 31.12.2005

B. KEGA Project No 3/3062/05 Multimedia study programme for subject: Ionizing radiation and radiation protection (Oľga Holá)

Creation of a modern internet textbook in ionizing radiation and radiation protection. The output of project - the multimedia textbook - will be available to all students at our university's servers and other users will have CDs at their disposal. It is proposed to use this multimedia didactic means also in various forms of the distance e-learning. The distance e-learning form of education can solve also the problem with the acquisition of the professional qualifications for the work with ionizing radiation. This is the reason for usage of the mentioned textbook not only as the fundamental and unified textbook for the students of universities, but also as the study material for the civil servants responsible for radiation protection, for in-service workers and providers of the professional training.

Project duration: from 01.01.2005 to 31.12.2007

C. Institutional Project No. 302/03 The creation of new didactic methods in teaching of physics with applications in e-learning and distance learning (Oľga Holá)

The cooperation at the creation of the multimedia textbook of physics.

Project duration: from 01.01.2003 to 31.12.2005

D. Developing project of the Ministry of Education of the SR Project No 07703: Multimedia project of Physics education (Oľga Holá)

Development of appropriate multimedia didactic tools applicable in all teaching forms. Creation of selected video recordings of physical phenomena in common life as well as in laboratory. Implementation of our e-text book of physics into the educational process. Creation of the methodic and training materials for teaching-learning process.

Project duration: from 1.5.2005 to 30.5.2005

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Faculty of Electrical Engineering and Information Technology, SUT Bratislava	e-learning	Assoc.prof. P.Ballo, PhD	2000-
Faculty of Mathematics and Physics, Comenius University, Bratislava	Monitoring of Rn in atmosphere, water and soil	Assoc.prof. K. Holý, PhD	1990-
Faculty of Civil Engineering, SUT Bratislava	Didactic methods	Assoc.prof. J.Lukovičová, PhD	2000-
Institute of Polymers, Slovak Academy of Sciences, Bratislava	Optical measurements of polymers	Prof. P.Hrdlovič, DSc	2000-
Faculty of Natural Science, Comenius University, Bratislava	Simulations of linear and nonlinear optical signals	Dr. V.Szöcs, PhD	2000-
Faculty of Mathematics and Physics, Comenius University, Bratislava	e-learning	Mgr. K.Holá	2003-

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Institut für Organische Chemie, J.W.Goethe Universität, Frankfurt/M., Germany	X-ray crystallographic research	Prof. E.Egert	1988-
Institute of Molecular Genetics, Academy of Sciences, Prague, Czech Republic	Protein synthesis	Ing. J.Sedláček	2003-
Institut für Physikalische Chemie, Universität Wien, Vienna, Austria	Electronic excitation transport in polymers	Prof. H.F.Kauffmann	1997-
Institute of Chemistry, University of Wrocław, Wrocław, Poland	X-ray crystallographic research	Dr. R.Grobelny	1989-
Laboratoire de Cristallographie, Université de Genève, Switzerland	X-ray crystallographic research	Prof. A.F.Williams	2001-
Chemical Crystallography Laboratory, Oxford University, Oxford, UK	X-ray crystallographic research at low temperatures, crystallographic statistics	Prof. C.K.Prout	1999-
Commissariat a l'Energie Atomique, Grenoble, France	Conducting polymers	Dr. J.P.Travers	1999-
Max-Planck Institut für Festkörperphysik, Stuttgart, Germany	Carbon nanotubes	Dr. S.Roth	2000-
Institute of Physical and Theoretical Chemistry, TU Graz, Austria	Spectral properties of organic molecules	Assoc. Prof. A.-M.Kelterer	2005-

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Holá Olga	Union of Slovak Mathematicians and Physicists, Bratislava	member	1970
Laurinc Viliam	Union of Slovak Mathematicians and Physicists, Bratislava	member	1975
Bušovský Ladislav	Union of Slovak Mathematicians and Physicists, Bratislava	member	1975
Fedorko Pavol	Union of Slovak Mathematicians and Physicists, Bratislava	member	1977
Holá Olga	Slovak Physical Society, Bratislava	member	1993
Laurinc Viliam	Slovak Physical Society, Bratislava	member	1993
Valach Fedor	Slovak Physical Society, Bratislava	member	1993
Bušovský Ladislav	Slovak Physical Society, Bratislava	member	1993
Fedorko Pavol	Slovak Physical Society, Bratislava	member	1993
Valach Fedor	Slovak Chemical Society, Bratislava	member	1970

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Valach Fedor	International Society for Theoretical Chemical Physics, Erlangen, Germany	member	1990
Laurinc Viliam	International Society for Theoretical Chemical Physics, Erlangen, Germany	member	1990
Fedorko Pavol	European Physical Society	member	1994
Valach Fedor	European Physical Society	member	1994
Holá Olga	European Physical Society	member	1994

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Kelterer A.-M.	Institute of Physical and Theoretical Chemistry, TU Graz	Austria	Aug. 2005 (2 days)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Head of board
Marcel Červenka	Theoretical study of optical properties of planarised p-oligophenylenes	Lukeš V.
Martin Matis	The study of optical properties and the synthesis of molecules based on thiophene-fluorene chromophores	Lukeš V.
Mária Valičková	The synthesis of substances based on thiophene-anthracene chromophore and the study of their optical properties	Ilčin M.

VIII. PUBLICATIONS

Article in journal

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Article in conference proceedings

- [1] Bulko, M., Holý, K., Polášková, A., Holá, O., Šimon, J.: Volume activity of ²²²Rn in the atmosphere of the nearby localities with the different orography. In *VII. Banskštiavnické dni 2005. Proceedings of Conference*, (v tlači), 2005.
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Unpublished

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DEPARTMENT OF CHEMICAL TECHNOLOGY OF WOOD, PULP AND PAPER

Head of Department:
Assoc. Prof. Svetozár Katuščák, PhD

Telephone: +421 2 52496359
Fax: +421 2 52493198
E-mail: svetozar.katuscak@stuba.sk

I. STAFF

Associate Professors:
Svetozár Katuščák, PhD; Pavol Krkoška, PhD

Assistant Professors :
Štefan Šutý, PhD; Katarína Vizárová, PhD

Research Fellows:
Igor Šurina, PhD; Milan Vrška, PhD; Radovan Tiňo; Martin Polovka, PhD.

PhD Students:
Michal Jablonský; Gabriela Szeiffová, Martina Cedzová, Soňa Fignedyová, Attila Sztítás, Eva Gemzická

Technical staff:
Valeria Töröková, Pavol Vančo, Zuzana Žaškovská

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

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

B. Research laboratories:

Laboratory of Natural Polymers
Laboratory of Papermaking Fibres and Additives
Laboratory of Structure and Analysis of Wood
GC-MS Laboratory
Laboratory of physical properties of lignocellulosics and biomaterials
Laboratory of conservation and restoration of printing documents
Laboratory of plasma treatment of wood

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Pulp and Paper	2/0	Vrška, Šutý
6. semester (Bc)	Semestral Project	0/4	members of department
	Paper and Printing	2/2	Šutý, Panák
1. semester (MSc)	Physics of Polymers and Paper	2/2	Šutý, Chodák
	Natural Polymers	2/1	Bakoš, Vizárová, Šurina
	Chemistry and Analysis of Wood	2	Vizárová, Katuščák
	Pulping Technology	3/1	Vrška, Šutý
	Laboratory I.	8	Vizárová, Tiňo, Šurina
	Environmental Management in Pulp and Paper Industry	2	Vizárová, Katuščák
2. semester (MSc)	Paper Machines	2/2	Čerňanský
	Engineering of Pulp Production	1/1	Vrška, Šutý
	Paper Technology I.	3/0	Šutý, Krkoška
	Chemical Treatment of Wood I.	3/0	Šurina, Katuščák
	Laboratory II.	8	Šurina, Vrška
	Practical Training Course	3 weeks	
3. semester (MSc)	Chemical Treatment of Wood II.	2/0	Katuščák, Šurina
	Paper Technology II.	3/0	Šutý, Krkoška
	Packaging Materials	2/0	Tiňo

	Papermaking aids	2/0	Vizárová
	Laboratory III.	9	Vrška, Šurina, Šutý
4. semester (MSc)	Thesis	30	members of department

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/0061/03 Study of the oxidation in chemical processing of wood through new methods of separation and analysis (Svetozár Katuščák).

The general method for electroforetic fractionation of ionogenic compounds originating from degradation of wood materials was developed. The applicable conditions for monitoring of anionic compounds created by oxidative reactions influence on cellulose and methods comparing the efficiency of modification process were established too. The combination of HPLC, GPC and IEC methods in determination of degradation products of cellulose in oxidative processes was verified. RP-HPLC method with DAD and fluorimetric detection using widerange pore octadecyl silikagel and RP-HPLC method for evaluation of sample preparation in liquide phase in different extraction and bleaching processes were used. The ability of acetic acid in protection of cellulose chains in ozone oxidative process was found. The selectivity of delignification increases without continuous decrease of cellulose polymerisation degree. The study of basic process parameters on influence of additives by ozone in oxidation of lignocellulosics was done. Presence of additives improved the efficiency of the lignin removal in respectively: magnesium ethoxide > D-mannitol > ammonium molybdate > cationic potato starch > salicylic acid.

Project duration: from 01. 01. 2003 to 31. 12. 2005

VEGA Project No 2/3161/23 Methodology of preparation of new cyclodextrin derivatives with ion-exchanging groups (Igor Šurina).

New derivatives of β -cyclodextrin were prepared by selective synthesis based on subsequent amination and quaternization of 6-toluensulfonylated intermediates. By selective amination of mono-toluensufonyl derivative with prepared quaternizing agent containing primary amino-group, 6-deoxy-6-amino-trimethylamoniumhydroxypropyl chloride of cyclomaltoheptaose was prepared. Water-soluble compounds were prepared by carboxymethylation and quaternization into position 6- and 2-. Also insoluble mixed derivatives containing quaternary as well as carboxymethyl group were prepared. All the compounds were prepared with the goal to study their properties.

Project duration: from 01. 01. 2003 to 31. 12. 2005

APVT Project No 99-007302 Coated ink jet papers (Štefan Šutý).

The project is realized in cooperation with Pulp and Paper Research Institute in Bratislava. Project research is focused on coated ink jet papers, which as a new generation of paper industry specialties with excellent properties are characterised by high added value. The impact of the physicochemical and structural properties on the interaction between ink and coating are studied. Laboratory research of surface finish and coating of base paper will be done by means of laboratory size press, coater and supercalender. The methods on the coating base paper properties evaluation, coating composition and its components as well as ink jet paper quality will be worked out.

Project duration: from 01. 07. 2002 to 30. 06. 2005

Project of ME SR No 2003 SP 260280C03 Production of new pulp and paper products from wood of lower quality - Effect of fibrous web structure and fibre properties on transfer and qualitative parameters of paper (Štefan Šutý).

The project is realized in cooperation with Pulp and Paper Research Institute in Bratislava. The research in this project is focused on the description of transfer and quality parameters of the paper and board using the physical and mechanical characterization of fibres and structural elements of fibre web. The transfer parameters are initial strength and dewatering of wet paper web. The structure of fibre web will be described by anisotropy of paper, orientation of the fibres, internal strength of the paper, its porosity, distribution of the pores and formations of the paper. The covalence and bending stiffness together with structural components will be used for the prediction of tensile parameters of the materials for corrugated boards. It is being assumed using of research results in development of graphic papers with high ratio of hardwood pulp, magazine papers e.t.c.

Project duration: from 01. 07. 2003 to 31. 12. 2005

Project of ME SR No 2003 č. 661/2003 Preservation, Stabilization and Conservation of Traditional Information Supports in the Slovak Republic (Svetozár Katuščák)

This project covers program of saving, stabilization and conservation of traditional holders of information (books, archival documents etc.). Big portion of cultural heritage stored in historical books and archival documents is endangered with destructive impacts of abiotic and biotic factors. This can cause irretrievable loss of cultural heritage of Slovak Republic. Solving of this problem is divided into two time steps. First includes years 2003 - 2005 and its subject covers basic research. Except of this, second step will also include applied research and development.

Project duration: from 01.10. 2003 to 31.12. 2008

APVT Project No. APVT-20-034202: The deterioration of historical manuscripts and documents related to transitional elements in writing inks (Michal Čeppan)

In overall there are 13.1 mil. pieces of threatened documents and manuscripts destined for preservation in the Slovak Republic. Hand written documents (letters, letter sets, drawings, book pages etc.) often contain transitional elements (mainly copper and iron) in their inks which cause and promote destruction and degradation processes of supporting lignocelluloses materials. This project is focused on investigation of ageing process reactions and kinetics by modern optical and spectral methods. Gathered knowledge should contribute to material and method selection positively affecting the durability and capacity of historical documents and manuscripts preservation in feasible economical and ecological conditions

Project duration: from 01.01.2004 to 31.12.2006

APVT Project No. APVT-20-033004: Study of influences of electrical plasma generated at atmospheric pressure onto surface of massive wooden materials (Svetozár Katuščák)

Main goal of the project is to study effect of electrical plasma treatment of the wood surface using inovative nowadays generated plasma source. Application topic is to study inovative environmentally and economically advantageous use of plasma for surface treatment procedures in woodprocessing and furniture industry.

Project duration: from 01.01.2005 to 31.12.2007

Analysis of process parameters and their influence on press clothing on PM18 (Štefan Šutý)

The aim of this project was to analyse the influences of process parameters on felt lifetime on PM 18. As a main tool for process data analysis was used the multiple regression. The recourses for data analysis of process parameters were taken the downloaded data from the PIMS system and from Feltview measurements. The effects of process parameters were considered under approximately constant technological conditions. The analysis of non-process variables includes the parameters of both new and worn felts.

Project duration: from 01.01.2005 to 30.06.2005

V. CURRENT EDUCATION PROJECTS

The department realized an educational course "Training Program" for employees of MONDI BUSINESS PAPER SCP a.s. Special sections of the course included advance knowledge in pulp and paper chemical technology with some focus on production programme of the company. The course also included basics in chemistry, mathematics, physics, pulping and papermaking, engineering, regulation and control of the paper machines. The course covered the basic of problemsolving in pulp and paper production.

Project duration: from 01. 01. 2005 to 31. 12. 2005

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
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MONDI BP SCP a.s. Ružomberok	Process and nonprocess elements in kraft pulp processes. Optimization of oxygen delignification stage.	Jaroslav Sýkora, manager, Bystrická cesta 13, 034 17 Ružomberok	01. 06. 2005 - 31. 12. 2005
MONDI BP SCP a.s. Ružomberok	Specialized education	Jakubík Peter, manager, Bystrická cesta 13, 034 17 Ružomberok	01. 01. 2005 - 31. 12. 2005
Faculty of Natural Science, Comenius University, Bratislava	Determination of by-products of oxidation processes	Kaniansky Dušan, Prof., Mlynská dolina, 842 15 Bratislava	01.01.2003 - 31. 12. 2005
Faculty of Natural Science, Comenius University, Bratislava	Study of influences of electrical plasma onto wood surface	Černak Miro, Prof., Mlynská dolina, 842 15 Bratislava	01.01.2005 -
MONDI BUSINESS PAPER SCP a.s. Ružomberok	The analysis of process parameters and their influence on life time of press clothing on PM 18	Frantz Aigner manager BU PM18, Bystrická cesta 13, 034 17 Ružomberok	01. 01. 2005 - 30. 06. 2005
Institute of Chemistry of Slovak Academy of Sciences, Bratislava	GC - MS analysis of derivatives of cyclodextrin	Šimkovic Ivan, Dúbravská cesta 9, 845 38 Bratislava	01. 01. 2003 - 31. 12. 2005
Slovak National Library, Martin	Preservation of archived books and documents	Bukovský Vladimír, manager, SNK Martin	5.5.2002-
Pulp and Paper Research Institute, Bratislava	Coated ink-jet papers	Boháček Štefan, president of board, VÚPC Bratislava, Lamačská 3	1.7.2002 - 2005
Slovak National Archives, Bratislava	Preservation of archived books and documents, education.	Hanus Jozef, manager, SNA Bratislava	permanently
Pulp and Paper Research Institute, Bratislava	Surface modification of LC materials and evaluation of VOC emissions	Boháček Štefan, president of board, VÚPC Bratislava, Lamačská 3	01.01.2003-
Pulp and Paper Research Institute, Bratislava	Preservation of archived books and documents, education.	Boháček Štefan, president of board, VÚPC Bratislava, Lamačská 3	01.01.2005-
Technical University, Zvolen	Education	Sedliačik Ján, TU Zvolen	permanently

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Dept. of Chem. Technology of Wood, Pulp and Paper, Technical University, Pardubice, Czech Republic	Education	Milichovský Miloslav, Prof. TU Pardubice	permanently
Library of Congress, Washington, D.C.	Research	Ch. J. Shahani, Chief of Preservation Research & Testing Division	2004-2006
French Institute of Papermaking and Graphics Industry, Grenoble, France	Education and Research	Roux, J. C., professor, Ecole Française de Papeterie et des Industries Graphiques, Grenoble, France	permanently

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Vrška Milan	Slovak Chemical Society	member	01.01.1980 -
Vrška Milan	SNAS -accreditation group - for laboratory of PPRI Bratislava	member	23.09.2002 -
Vrška Milan	SUTN -Technical normalization committee - TC 19 - pulp, paper, board	member	26.05.2003 -
Vrška Milan	IASPM – International Association of Scientific Papermakers (USA)	member	1995 -
Katuščák Svetozár	SUTN -Technical normalization committee - TC 72 - environmental management	member	permanently
Krkoška Pavel	Slovak Chemical Society	member	1979 -

Katuščák Svetozár	Wood Research, editorial board	member	permanently
Katuščák Svetozár	Chemical Papers, editorial board	member	2005 -
Šutý Štefan	Slovenská spoločnosť priemyselnej chémie	member	2002 -
Polovka Martin	Slovak Chemical Society	member	2002 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Katuščák Svetozár	European Panel Federation	member	20. 12. 2004
Katuščák Svetozár	TAPPI	member	01. 01. 2005
Šutý Štefan	Association of the pulp and paper industry, Czech republic (member of EUCEPA)	member	01. 01. 2000 -
Šurina Igor	Association of the pulp and paper industry, Czech republic (member of EUCEPA)	member	01. 01. 1998 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Milichovský, M.	University Pardubice	Czech Republic	June 2004 (1 day)

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

Name	Organisation / Institution / Conference	State	Date / Duration
Jablonský, M.	3rd Intern. Student's Seminar. Chemistry and Technology of Wood, Pulp and Paper, Brno	Czech Republic	May 2005 (2 days)
Cedzová, M.	3rd Intern. Student's Seminar. Chemistry and Technology of Wood, Pulp and Paper, Brno	Czech Republic	May 2005 (2 days)
Cedzová, M.	International Conf. of Papermaking Students	Poland	October 2005 (8 days)
Katuščák, S.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Šutý, Š.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Vizárová, K.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Vrška, M.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Šurina, I.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Polovka, M.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Tiňo, R.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Jablonský, M.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Cedzová, M.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Figedyová, S.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Szítás, A.	Third Meeting on Chemistry & Life, Brno	Czech Republic	September 2005 (3 days)
Katuščák, S.	Toronto, Ottawa - University	Canada	November 2005 (8 days)
Tiňo, R.	Heidelberg - students excursion	Germany	April 2005 (4 days)
Jablonský, M.	Third Meeting on Chemistry & Life, Brno	Germany	April 2005 (4 days)

Cedzová, M.	Third Meeting on Chemistry & Life, Brno	Germany	April 2005 (4 days)
Figedyová, S.	Third Meeting on Chemistry & Life, Brno	Germany	April 2005 (4 days)
Polovka, M.	Research stage, Dresden	Germany	Oct.-Dec. 2005 (3 m)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Gállová, I.	Patent research for the area of preservation of historical books focused on facilities.	Cedzová, M.
Geguššová A.	The study of biopolymers nanoparticles for packaging	Vrška, M.
Havrilová, L.	Separation methods and characterisation of natural products	Katuščák, S.
Holúbková, S.	Stabilisation and strengthening of historical supports of informations	Vizárová, K.
Jurčo, J.	Methods of measurements of optical properties	Katuščák, S.
Kazíková, J.	Patent research of equipments used for protection of historical books	Vizárová, K.
Mikulášik, R.	The study of nanoparticles preparation	Vrška, M.
Petriláková, K.	Ultrasound measurements of paper optical properties	Šutý, Š.
Rapošová, Ľ.	Surface properties of papers	Šutý, Š.

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

Name	Title of Thesis	Supervisor
Bieliková, L.	Study of element distribution in lignocelulosics materials in development of multifunctional modification compounds	Katuščák, S. / Cedzová M.
Čaracký, L.	Processes and equipments for protection of historical books and documents	Tiňo, R.
Čulaková, Ľ.	Multifunction systems for modification of archival documents	Vizárová, K. / Hanus, J.
Kirschnerová, S.	Multifunction systems and methods for modification of books	Vizárová, K. / Hanus, J.
Kozáková, L.	Nanoparticles and their using in paper industry	Vrška, M. / Tiňo R.
Kuruc, Š.	Analysis of proces parameters and their influence on lifetime on press clothing on PM 18	Šutý, Š.
Novotná, Z.	Ultrasound measurements of paper elastic properties	Šutý, Š.
Osudská, Z.	Inkjet papers – coatings properties and quality of printing	Šutý, Š.
Paučinová, A.	The study of oxidation processes in bleaching of pulp in presence of additives	Vrška, M. / Jablonský, M.
Repová, M.	Controlled process of the production of model aged test paper in the sealed reactor	Tiňo R.

VIII. PUBLICATIONS

Article in journal

- [1] Barteková, A., Katuščák, S., Šurina, I., Vrška, M.: Proposal of Native Wood as a Natural Comparative Standard for the Interpretation of VOC Measurements. *Chemické Listy*, no. (S), vol. 99, pp. 395-397, 2005.
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- [3] Černáková, L., Vizárová, K., Šutý, Š., Tiňo, R., Cedzová, M., Vrška, M., Katuščák, S.: Activation of interactions of polysaccharide modifiers with lignocelulosics. *Chemické Listy*, no. (S), vol. 99, pp. 391-394, 2005.
- [4] Figedyová, S., Šurina, I., Katuščák, S., Vrška, M.: Determination of the volatile organic compounds in paints and varnishes. *Chemické Listy*, no. (S), (Determination of the volatile organic compounds in paints and varnishes), vol. 99, pp. 136-137, 2005.
- [5] Floch, L., Šurina, I., Šovčíková, A.: Preparation of isothiocyanates modulating cell cycle and introduction of Apoptosis in different types of cancer cell. *ChemZi*, no. 1, vol. 1, pp. 209, 2005.
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Article in conference proceedings

- [1] Fikar, M., Čírka, L., Hirmajer, T., Katuščák, S., Tiňo, R.: Information system for the project KNIHA.SK. In *15th Int. Conference Process Control 2005*, pp. 218-1 az 218-3, 2005.
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- [9] Vizárová, K., Reháková, M., Cedzová, M., Šutý, Š.: Vplyv svetelnej predhistorie na stálosť a trvanlivosť novodobých papierov. In *Zborník príspevkov. XII. Seminár restaurátoru a historiku, Praha 2003*, pp. 330-341, 2005.
- [10] Vrška, M., Holeš, M., Mikulášik, R., Katuščák, S.: Štúdium prípravy nanovlákién z LCM na dezintegračných zariadeniach celpap priemyslu. Editor(s): TU vo Zvolene, In *VI. International Symposium, TU Zvolen*, pp. 18, 2005.

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- [1] Rácová, J., Suhaj, M., Polovka, M., Brezová, V., Kováč, M.: EPR and antioxidant activity study of gamma-irradiated oregano (*Origanum Vulgare* L.). In *Book of Abstracts from 2nd International Symposium on recent Advances in Food Analysis. International Association of Environmental Chemistry, Institute of Chemical Technology, Prague*, s. 75., 2. 4. 11.2005, 2005.

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- [1] Tiňo, R.: Vlastnosti zdieľanej špecializovanej knižnice pre výskum a skúšanie látok.. (Odvzdanie špecializovanej digitálnej knižnice pre oblasť záchranu tradičných nosičov kultúrneho a vedeckého dedičstva jej používateľom. SNK Martin, 25.október 2005), 2005.

DEPARTMENT OF ENVIRONMENTAL ENGINEERING

Head of Department:
Doc. Ing. Gabriel Čík, PhD.

Telephone: +421252495243
Fax: +421252495243
E-mail: gabriel.cik@stuba.sk

I. STAFF

Full Professors:

Vasil Koprda, PhD, DSc.; Milan Piatrik, PhD

Associate Professors:

Gabriel Čík, PhD; Ján Derco, PhD; Miloslav Drtil, PhD; Margita Harangozó, PhD; Josef Prousek, PhD

Research Fellows:

Igor Bodík, PhD; Mária Földesová; Miroslav Hutňan, PhD

PhD Students:

Lucia Mitařová; Lucia Dančová ; Andrej Kalina. Zuzana Jakubčová (since 1.10.2005); Tímea Petheőová (since 1.10.2005); Katarína Svetková; Soňa Priesolová; Peter Chnapko; Angelika Kassai; Ladislav Maro; Marek Rybár; Jana Vanečková-Přichová; Monika Karacsoniová; Ľubomír Gajdoš; Juraj Farkas , Silvia Weigeltořá

Technical staff:

Eleonóra Hornáčková; Marta Onderová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Water Chemistry
Laboratory of Nuclear Analytical Chemistry
Laboratory of Water Technology

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:

1. semester (Bc)			
2. semester (Bc)			
5. semester (Bc)	Nuclear Chemistry and Technology	1/1/0	Koprda
6. semester (Bc)	Environmental Technology	2/0/0	Piatrik, Čík, Koprda
1. semester (MSc)	Biology of Water, Air and Soil	2/0/0	Frank
	Atmospheric and Water Chemistry	2/2/0	Prousek, Bodík
	Hydrology, Meteorology and Pedology	2/0/0	Frank
	Nuclear Chemistry and Technology	2/0/0	Koprda
	Laboratory Practice I.	0/0/8	Bodík, Földesová, Harangozó,
2. semester (MSc)	Air Protection Technology	2/0/0	Čík
	Radioecology	2/0/0	Harangozó,
	Wastewater Engineering	2/2/0	Derco, Drtil
	Laboratory Practice II.	0/0/8	Derco, Földesová, Čík
3. semester (MSc)	Risk Properties of Substances	2/0/0	Prousek,
	Elimination and Utilization of Wastes	2/0/0	Piatrik, Koprda
	Environmental Technological Project	2/1/0	Drtil, Derco
	Environmental Impact Assessment	2/0/0	Piatrik, Koprda

	Laboratory Practice III.	0/0/10	Drtil, Harangozó, Čík
	Control of Environmental Pollution	2/0/0	Harangozó
	Special Ecology and Ecotoxicology	2/0/0	Proušek
	Processes and Technology of Water Treatment	2/1/0	Hutňan, Bodík
	Air Protection Technology and Air Treatment	2/1/0	Čík
4. semester (MSc)	Diploma Work	0/0/30	all members of the staff

IV. CURRENT RESEARCH PROJECTS

A. Part of the VEGA project No. 1/1379/04 Syntheses directed towards novel heterocyclic compounds with optoelectronic properties, specific biological activity and apoptosis (Gabriel Čík)

The effect of structural changes in regiorandom poly(3-dodecylthiophene) (PDDT) on interactions of polarons was studied. It was found that changes in side-chains and in the entire polymeric system, expressed by the glass transition temperature, affected the system's magnetic properties. Structural changes observed in the range of $T = 100-300\text{ K}$ are dominated by processes dissipating magnetic energy. At low temperatures energy dissipating processes were not observed, rather magnetic properties were determined by transitions of polarons to bipolarons.

The relations between the fluorescence and structural properties of PDDT were studied by steady-state and time-resolved techniques. The comparison of the time resolved results of two pure PDDT samples with different ratio of region-regularity revealed that the irregularities cause conformational defects in the polymer backbone. On the basis of performed measurements and data processing methods, the ratios of the electron-donated thiophene units that are built into the PDDT chain were estimated in the case of copolymer samples. The fluorescence technique proves to be an available tool, alongside NMR spectroscopy, for yielding structural information about polymer materials.

A new type of alternating regular copolymer of thiophene oligomer with polyethylene oxide was synthesized. The product was characterized by NMR, UV-VIS and fluorescence spectra, X-ray diffraction and DSC measurements.

Project duration: from 01.01.2004 to 31.12.2006

B. Project in cooperation with the Ministry of Environment of the Slovak Republic, Remediation technologies of PCB (No. 148/2003/6.2) and Technologies for lowering of PCB concentration (No. 161/2003/6.2) (Gabriel Čík)

Study of remediation technologies of PCB

Project duration: from 01.12.2003 to 15.06.2005

C. Institutional Project No. 155/03 The separation and Isolation of metals and radionuclides from environmental components with the aid of natural and chemically treated sorbents (Vasil Koprda, Mária Földesová, Margita Harangozó)

The activity of Ra - 226 in ground water and in soft mineral water was determined. The determination was realised after precipitation $\text{Ba}(\text{Ra})\text{SO}_4$ with two techniques: with scintillation counter tube NA 6201 II and liquid scintillation spectrometry with the aid of TRI-CARB 2900TR. Optimal condition for the determination are: - scintillation cocktail UltimaGold, - ratio scintillation cocktail:water 10ml: 10ml, - efficiency of measurement is 32 %. The highest values of Ra - 226 in mineral and table waters were in natural mineral water Čerinska and curative mineral water Vincentka. The lowest value of Ra - 226 was in the mineral water Mitická and Korytnica. The determination of sorption coefficient, distribution coefficient, sorption capacity and per cent of sorption of natural and chemically modified zeolites towards Pm and U were studied by static radioexchange method. The radioactivity was measured by liquid scintillation counting method (LSC). It was studied the possibility to compensate special silica gel which is used as a sorbent in the standard spectrophotometric detection of concentration of uranium with some kind of zeolites. The influence of pH, temperature and synergic effect of temperature and chemical treatment on the structure of selected zeolites were studied by IR spectroscopy and DTA and TG methods. The leachability of loaded zeolites in different solutions was studied as well.

Project duration: from 01.01.2003 to 31.12.2005

D. VEGA Project No. 1/1382/04 Advanced methods for water, wastewater, sludge and organic wastes treatment (Ján Derco)

The aim of the project is the research and evaluation of progressive methods of water treatment, wastewater treatment, sludge treatment and disposal, organic wastes treatment and water quality control. Research has been focused on selected physical-chemical and biological processes. The availability of ozonation for the removal and an enhancement of biodegradability of hardly biodegradable or resistant compounds contained in selected industrial wastewaters were investigated. Experimental investigations of the possibilities of utilisation of anaerobic-aerobic treatment processes for treatment of municipal wastewaters under low temperature conditions were finalised.

Project duration: from 01.01.2004 to 31.12.2006

E. Bilateral Slovak – Czech Cooperation Project No. 103: Utilisation of membrane and oxidation processes for water and wastewater treatment (Ján Derco)

Kinetics of controlled ozonation of synthetic wastewater containing biologically recalcitrant 2-mercaptobenzothiazole was studied. Methodology of evaluation of biodegradability of ozonation intermediates and products based on respirometric measurements was elaborated. The cooperation of both involved research teams in the field of utilisation of ozone for surplus biological sludge production was settled..

Project duration: from 01.01.2004 to 31.12.2005

F. Bilateral Slovak – Czech Cooperation Project No.: 042: Biological wastewater, sludge and organic material treatment (Miloslav Drtil)

The aim of the project is the research and exchange of information on progressive methods of water treatment, wastewater treatment, sludge treatment and disposal, organic wastes treatment and water quality control. Specific attention is given to nutrients removal from wastewater, anaerobic biogas production from organic materials, comparison of mesophylic and thermophylic anaerobic processes.

Project duration: from 01.01.2004 to 31.12.2005

V. CURRENT EDUCATION PROJECTS

A. Project. No 2032040 Norwegian Competencies Transfer into New Curricula of Environmental Engineering Education at the Slovak University of Technology in Bratislava, Slovak-Norwegian bilateral cooperation. (Gabriel Čík)

The main objective of the project is to take advantage of Norwegian long time experience in the field of Environmental Engineering curricula. Effort will be focused on utilization of this through partnership assistance in the process of introduction of the above subject into curricula of the 3-degree university education (bachelor, engineer and PhD) at the Faculty of Chemical and Food Technology of the Slovak University of Technology in Bratislava.

Project duration: from 01.07.2003 to 30.06.2006

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Novácke chemické závody a.s.	Solving of Selected problems of wastewater treatment in NCHZ Novaky	Beňo, L. director	11.3.2005
INA s.r.o. Skalica	Determination of cause of suspended solids creation in industrial wastewater of INA Skalica and design of technology for problem elimination	Hubinová M., kontakt persona	6.10.2005

STIFI Zelená háj, Hurbanovo	Start-up and trial operation of biogas station	Štifner, Š. contact persona	20.10.2005
Slovak Office of Standards, Metrol. and Test., Cyclotron Center of the SR, Bratislava	Applied radiation chemistry, production of positron radiopharmaceuticals	Ružička J., vicedirector; Kassai Z., Dept.of positron emitters, Štefanovičova 3, 810 05 Bratislava	01.02.2000 -
ASIO-SK s.r.o.	Anaerobic-aerobic wastewater treatment	Kratochvíl,K., director, Malobyčianska ul., Bytča	01.01.1997 -
FELLEGI Int.	Anaerobic treatment processes	Fellegi,J., director, Na Hrebienku 38, Bratislava	01.03.2003 -
Slovak distilleries and liquories, Leopoldov	Evaluation of ethanol and acetic acid properties from point of view of possible effect to quality of ground and underground water	Miklovič,S., Slovenské liehovary a líkérky a.s., Trnavská cesta, 920 41 Leopoldov	02.04.2004 - 16.04.2004
North-Slovak waterworks, Žilina	Possibility of odour elimination from sewerage in Sučany town	Kundrík, M., director, SVS a.s., Bôrická cesta 107, 010 10 Žilina	01.07.2004 - 31.7.2004
Ecological servis, ltd. Strážske	Study of WWTP operation from point of view of emission reduction	Kovaľ,E., director, Ekologické služby s.r.o., Priemyselná 720, 072 22 Strážske	17.09.2004 - 31.10.2005
Institute of Experimental Phytopathology and Entomology of the SAC	Radioecology	J.Kráľovič, Ľ.Weismann, Slovak Academy of Science, Ivánka pri Dunaji	01.01.2002 -
Dep. of Chemistry, Matej Bel Univ., Banská Bystrica	Education studies in Environmental chemistry	Tólgýessy,J., Ružička,J., Cejpek,K., Matej Bel University, 974 01 Banská Bystrica	01.01.2001 -
Department of Analytical Chemistry, Faculty of Pharmacy, Comenius University	Environmental analytical chemistry	Havránek, Mlynská dolina, 824 15 Bratislava	01.01.2003 -
Podtatranská vodárenská spoločnosť a.s., Poprad	Evaluation of wastewater treatment plant Spišská Nová Ves and proposal of reconstruction	Svrbický Vladimír, director, Hraničná 662/17, 058 01 Poprad	01.10.2004 - 31.12.2005
Ministry of Environment SR, Department of Environmental Impact Assessment – EIA	Preparation of Register of Wastes, Preparation of Judgements about Wastes	Ing. V. Húsková, Head of Department	05.01.2004 – 20.12. 2005
Department of Ekology Faculty of Natural Sciences University of Mathias Bel. B. Bystrica	Education studies in environmental Sciences	PaedrDr. S. Vincíková, PhD., Head of Department	03.01.2004 – 20.12. 2005
CHEMZA a.s.	Applied Research Project	Ing. Michal Bočko, Chemza a.s., Priemyselná 720, 072 22 Strážske	1. 07. 2004 – 30. 09. 2005
REMAS Servis s.r.o.	Applied Research Project	Ing. Milan Gál, REMAS Servis s.r.o., Sekurisova 16, 841 02 Bratislava	11.10. 2004 -
Slovenská paroplynová spoločnosť a.s.	Applied Research Project	Ing. Ivan Krajčír, SPS a.s., Bystrická cesta 13, 034 17 Ružomberok	25. 06. 2004 –
Slovak Office of Standards, Metrol. and Test., Cyclotron Center of the SR, Bratislava	Applied radiation chemistry, production of positron radiopharmaceuticals and seed irradiation with gamma rays	Ružička J., vicedirector; Kassai Z., Dept.of positron emitters, Štefanovičova 3, 810 05 Bratislava	01.02.2000 -
Dep. of Nuclear Chemistry, Faculty of Natural Sci., Com. Univ., Bratislava	Education, Lecturing, Dep. of Nuclear Chemistry, Faculty of Natural Sci., Com. Univ., Bratislava	Mátel Ľubomír, head of depart., Mlynská dolina, 824 15 Bratislava	01.01.1992 -
Dep. of Chemistry, Matej Bel Univ., Banská Bystrica	Education studies in Environmental chemistry	Tomeček Otto, research worker,974 01 Banská Bystrica	01.01.2001 -

Water Research Institute, Bratislava	LSC measurements of radionuclides	Vršková Marta, head of dep., Nabr. L. Svobodu 5, 812 49 Bratislava	01.01.1996 -
Chemical Institute of Faculty of Natural Sciences of Comenius University, Bratislava	Analysis of dust particles	Krištín J., head of Dept. of Physical Methods, Mlynská dolina , 842 15 Bratislava	01.05.2002 -
Comenius University, Faculty of Pharmacy, Dpt. of Galenic Pharmacy, Bratislava	Penetration of Terbinafine across the skin	Duckova K., vicedean, ul.Odbojárov 10, 832 32 Bratislava	01.04.2002 -
Matej Bell University, Faculty of Natural Sciences, Dpt. of Environmental Chemistry	Cold electron radiation sterilisation	Tolgyessy J., Prof.emeritus, Tajovského 40, 97401 Banská Bystrica	01.06.2001 -
Institute of Experimental Pharmacology of Slovak Academy of Sciences, Bratislava	Transdermal penetration, animal skin models	Bauerová K., department head, Dúbravská cesta 9, 842 16 Bratislava	01.02.1998 - 31.12.2005
Research Institute of Nuclear Power Stations, Trnava, Ltd., Dept. of RWPT	Nuclear wastes likvidation	Chnapko P., doctoral study, Okružná 5, 918 64 Trnava	01.08.2002 -
Nuclear Regulatory Authority of the Slovak Republic	Nuclear and radiation safety - Advisory Committee of the director	Žiakova M., director, Bajkalská 27, 820 07 Bratislava	01.05.1999 -
Pharmacobiochemical Lab., School of Medicine, Comenius Univ., Bratislava	Transdermal transportation of coenzyme Q10	Gvozdjakova M., department head, Kucharska J., Hlboká 2, 811 04 Bratislava	01.05.2003 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
ASIO, s.r.o., Brno, Czech Republic	Anaerobic and aerobic wastewater treatment, domestic wastewater	Plotěný, K., director, ASIO s.r.o, Tuřanka, Brno, Czech Republic	01.01.1997 -
GRANIT Technologies S.A. Lausanne, Swiss	Anaerobic and aerobic wastewater treatment, sludge stabilisation	Doppenberg, F., technical director, Lausanne, Swiss	01.12.2004 -
Cellulosa 2000, Crotone, Italy	Anaerobic and aerobic wastewater treatment, sludge stabilisation	Scichitano J., technical director, Crotone, Italy	01.01.2005 -
Institute of Chemical Technology, Prague, Czech Republic	Water and wastewater treatment, sludge treatment, nutrients removal, biogas production	Jeníček, P., department head, VŠCHT, Technická 6, Prague, Czech Republic	01.01.2004 - 31.12.2005
ISMAL-CNR Milano	FP6-2002-NMP-1, Proposal: No STPR 001495 OSSO	Alberto Bolognesi, ISMAC-CNR Milano, Italy	01.06.2003 -
Faculty of Chemistry, Brno, Czech Republic	Lectures on Wastewater Engineering	Prof. Ing. Jaroslav Fiala, CSc., Faculty of Chemistry TU Brno, Purkyňova 118, 612 Brno, Czech Republic	16. 02.2005- 30.06.2005
ART.BIO.FERM. s.r.o., Moravské Bránice, Czech Republic	Anaerobic treatment of wheat stillage	Krčmař, S., director, Moravské Bránice 59, 664 64 Dolní Kounice	15.05.2004 - 15.6.2004
Department of Chemistry, Yangon University, Yangon, Myanmar	Radiometric Flow Injection Analysis	Mynt U, head of department, Yangon University, Yangon, Myanmar	01.01.1990 -
Medway Sciences Univ. of Greenwich	Transdermal penetration of pharmacologically active substances across skin	Hadgraft J.-head of Skin research, Central Ave., Chatham Maritime, Kent ME4 4TB, UK	01.02.1995 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Bodík Igor	Association of Wastewater Treatment Experts of the Slovak Republic	member of advisory board	13.05.1999 -
Bodík Igor	Global Water Partnership Slovakia	member of advisory board	20.04.2005 -
Čík Gabriel	Slovak Chemical Society	member	01.01.1991
Drtíl Miloslav	Association of Wastewater Treatment Experts of the Slovak Republic	president	13.05.1999 -
Derco Ján	Association of Wastewater Treatment Experts of the Slovak Republic	member of advisory board	13.05.1999 -
Derco Ján	Slovak Society of Chemical Engineering	member	29.09.1995 -
Derco Ján	Slovak Chemical Society	member	01.05.1997 -
Derco Ján	Common Field Committee -28-95-9 Chemistry and Technology of Environment	member	18.12.1997 -
Derco Ján	Common Field Committee - 36-05-9 Sanitary-technical buildings	member	02.12.2003 -
Harangozó Margita	Slovak Chemical Society, Bratislava	member	15.2.1986
Harangozó Margita	Slovak Pharmaceutical Society, Bratislava	member	28.10.1994
Hutňan Miroslav	Slovak Society of Chemical Engineering	member of advisory board	30.04.1995 -
Hutňan Miroslav	Association of Wastewater Treatment Experts of the Slovak Republic	member	13.05.1999 -
Koprda Vasil	Slovak Nuclear Society (SNUS Acad. Board)	president	01.01.2000 -
Koprda Vasil	Slovak Chemical Society, Bratislava	member	01.01.1965 -
Koprda Vasil	Slovak Medical Society, Pharm.Soc	member	01.01.1977 -
Prousek Josef	Slovak Chemical Society	member	01.01.1979 -
Piatrík Milan	Faculty of Natural Sciences University of Mathias Bel in Banská Bystrica	Science Council member	03.01.2004 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Bodík Igor	International Water Association	member	01.01.1990 -
Bodík Igor	Journal Vodní hospodářství - Water management	other	01.01.2004 -
Derco Ján	International Water Association	member	01.01.1994 -
Derco Ján	Association of Wastewater Treatment Experts in Czech Republic	member	01.05.1997 -
Derco Ján	Journal of Polish Environmental Study	other	01.04.1995 -
Derco Ján	Council of European Water Association	member	15.07.2002 -
Derco Ján	Common Field Committee - Chemistry and Technology of Environment Protection - Faculty of Chemistry TU, Brno	member	01.02.2003 -
Čík Gabriel	European Photochemical Association, Mulheim, Germany	member	01.01.1992
Drtíl Miloslav	Association of Wastewater Treatment Experts of the Czech republic	member of advisory board	01.01.1994 -
Prousek Josef	Czech Chemical Society	member	01.05.1979 -
Prousek Josef	European Photochemical Association	member	01.01.1986 -
Piatrík Milan	Czech Science Foundation – GACR, Prague	member	03.01.2004 -
Koprda Vasil	FECS Division for Chemistry and Environment - delegate for Slovakia	member of advisory board	01.04.2002 -
Hutňan Miroslav	Association of Wastewater Treatment Experts in Czech Republic	member	01.05.1997 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Doppenberg, F.	GRANIT Lousanne	Switzerland	January 2005 (5 days)
Cavvarreta, M.	Crotone, Celulosa 2000	Italy	January 2005 (5 days)
Scicchitano, G.	Crotone, Celulosa 2000	Italy	January 2005 (5 days)
Rolin, E.	GRANIT Lousanne	Switzerland	January 2005 (5 days)
Eaves, J.	GRANIT Lousanne	Switzerland	January 2005 (5 days)
Zábranská, J.	Institute of Chemical Technology, Prague	Czech Republic	October 2005 (2 days)
Dohányos, M.	Institute of Chemical Technology, Prague	Czech Republic	October 2005 (2 days)

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

Name	Organisation / Institution / Conference	State	Date / Duration
Bodík, I.	Excursion in Cellulosa 2000 Crotone	Italy	February 2005 (5 days)
Bodík, I.	Study stay in Cellulosa 2000 Crotone	Italy	April 2005 (5 days)
Bodík, I.	Advisory board Vodní hospodářství	Czech Republic	June 2005 (1 day)
Bodík, I.	Conference Global Water Partnership	Hungary	June 2005 (2 days)
Bodík, I.	Conference VUT Brno	Czech Republic	November 2005 (1 day)
Derco, J.	State Examination	Czech Republic	June 2005 (2 days)
Derco, J.	Conference Chemistry and Life	Czech Republic	September 2005 (3 days)
Drtil, M.	Wastewater Treatments Plants	Czech Republic	July 2005 (2 days)
Drtil, M.	Cities Waters Conference	Czech Republic	November 2005 (2 days)
Drtil, M.	Conference Wastewaters Treatments Plants	Czech Republic	July 2005 (3 days)
Hutňan, M.	Institute of Chemistry and Technology Prag	Czech Republic	June 2005 (3 days)
Hutňan, M.	Excursion of Biogas Station, Sante Makt Martin	Austria	June 2005 (3 days)
Hutňan, M.	Seminar Wien	Austria	June 2005 (1 day)
Hutňan, M.	International Conference Anaerobic Digestion, Klatovy	Czech Republic	September 2005 (3 days)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Címerová, V.	1,1,2,2-tetrachlorethane degradation by Fenton reaction and measure of toxicity changes	Prousek, J.
Císarová, L.	Utilisation of ozone for removal of biologically resistant pollutants from wastewater	Derco, J.
Černochová, L.	Possibilities for degreasing of surplus activated sludge production at WWTP	Derco, J.
Dančová, K.	Influence of calcination on structure and sorption properties of zeolites	Földesová, M.
Dobříková, I.	Zero-valent iron utilization in Fenton and Fenton-like reactions for the chlorinated pollutants degradation	Prousek, J.
Dubníčková, M.	Measurement of Total alpha and beta activity of Radone and Radium in Thermal waters	Földesová, M.

Galbová, K.	Selecteds problems of wastewater treatment plants WWTP with nutrients removal	Drtil, M.
Havlíková, Z.	Content of nitrogen anot pharphorus in sludge water and selected problems of nitrogen analysis	Drtil, M.
Mackulák, T.	Persistent organic pollutants in environment	Čík, G.
Majerčíková, L.	The use of zeolites at the sorption of uranium	Földesová, M.
Nováková, E.	The sequence of environmental management system application according STN EN ISO 14001 in industrial company	Priatrik, M.
Pupáková, S.	Evaluation of Sanitation of underground water at the site of aerial pablum spot	Derco, J.
Sabolová, D.	Penetration of biologicaly active substance across the animals skin models	Koprda, V.
Stasová, M.	Permeation of ions across the artificial skin membranss	Koprda, V.
Špalková, V.	Influence of disinfecting agents on small WWTP performance	Bodík, I.
Žiláková, L.	Characteristic of microorganism in activated sludge and loading of activation	Drtil, M.

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

Name	Title of Thesis	Supervisor
Cséfalyová, P.	Anaerobic treatment of centrifuged wheat stillage	Hutňan, M.
Čerí, L.	Evolution of biological Nitrogen and Phosphorus removal at municipal WWTP	Drtil, M.
Glosová, M.	Use of electrochemical methods in wastewater treatment	Hutňan, M.
Gonosová, L.	Degradation of halogenated water pollutants by Fentin-like reactions	Prousek, J.
Jakubčová, Z.	Determination of Lead-210 in mineral waters with the aid liquid scintilation spectrometry	Harangozó, M.
Kapusta, Š.	Preparation of automatic respiration system for activated sludge paremeters determination	Bodík, I.
Kalinčíková, P.	The influence of competitive ions on the sorption of radionuclides with natural and modified ionexchangers	Földesová, M.
Kovarovičová, L.	Degradation of selected water pollutants by Fenton reaction of toxicity change measurement	Prousek, J.
Lukáčová, L.	Transformation of surplus activated sludge by ozone	Derco, J.
Michalíková, M.	Parameters and quality of sludge water at WWTP with nutrients removal	Drtil, M.
Petheöová, T.	Preparation and properties of photoactylst for degradation of persistent organic pollutants and microorganism	Čík, G.
Sebestyénová, M.	Study of biologically degradable organic carbon estimation in water	Priatrik, M.

VIII. PUBLICATIONS

Chapter or pages in book

- [1] Kassai, Z., Vršková, M., Harangozó, M., Czafiková, R.: *Stanovenie celkovej objemovej aktivity alfa a beta v podzemných, povrchových a minerálnych vodách a objemovej aktivity U-nat vo vybraných minerálnych vodách*, Editor(s): UMB Banská Bystrica, Chapter: Zborník prednášok. Banskštiavnické dni 6.-8.10.2004, pp. 130-136, 2005.
- [2] Tolgyessy, J., Harangozó, M.: *Encyclopedia of Analytical Sciences, Second Ed.*, Editor(s): Elsevier, London, Chapter: Radiochemical Methods/Netural and Artificial Radioactivity. Elsevier, London, no. 00517, pp. 8-15, 2005.
- [3] Tolgyessy, J., Harangozó, M.: *Encyclopedia of Analytical Sciences, Second Ed.*, Editor(s): Worsfold P., (UK), Townshend A., (UK), Poole C. (USA), Chapter: Radiochemical Methods/Food and Environmental Applications. Elsevier, London, no. 00526, pp. 79-86, 2005.
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- [5] Tolgyessy, J., Harangozó, M.: *Encyclopedia of Analytical Sciences, Second. Ed.*, Editor(s): Worsfold, P. (UK), Townshend, A. (UK), Poole C., (USA), Chapter: Radiochemical Methods/Radionuclide Monitoring. Elsevier, London, no. 00518, pp. 16-24, 2005.

Article in journal

- [1] Bodík, I., Gašparíková, E., Dančová, L.: Vplyv vybraných dezinfekčných prostriedkov na domovú čistiareň I.. *internetový časopis TZB-info*, (Vydané dňa 17.10.2005 na <http://voda.tzb-info.cz/t.py?t=2&i=2789>), 2005.
- [2] Bodík, I., Gašparíková, E., Dančová, L.: Vplyv vybraných dezinfekčných prostriedkov na domovú čistiareň II.. *Internetový časopis TZB-info*, (Vydané dňa 24.10.2005 na <http://voda.tzb-info.cz/t.py?t=2&i=2803>), 2005.

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- [4] Čík, G., Végh, Z., Šeršeň, F., Krištín, J., Lakatoš, B., Fejdi, P.: Copolymer of Alkylated Oligothiophene with Polyethylene oxide: Synthesis and Properties. *Synthetic Metals*, no. 149, pp. 31-38, 2005.
- [5] Derco, J., Bodík, I.: Výročné zasadanie Rady EWA. *Vodohospodársky spravodajca*, no. 7-8, pp. 29-30, 2005.
- [6] Derco, J., Drtil, M., Bodík, I.: Basic Information on Water and Wastewater in the Slovak Republic. *Vodní hospodářství*, vol. 55, pp. 26-27, 2005.
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- [15] Hutňan, Miroslav, Drtil, Miloslav, Horňák, Marek, Derco, Ján, Mrafková, Lea: Biodegradation of hexametylenetetramine in anaerobic baffled reactor. *Polish Journal of Environmental Studies*, no. 5, vol. 14, pp. 585-591, 2005.
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- [19] Koprda, V.: Radiation Chemistry and Its Application to Radiation Technology. *NATO Science Series, Series I. Life and Behavioural Science. (Editors: Gazsó L.G., Ponta C.C.), IOS Press Amsterdam*, pp. 51-58, 2005.
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- [2] Sedláček, S.: Použitie membránových procesov pri čistení odpadových vôd. Student scientific work, KEI FCHPT STU Bratislava, 2005.

DEPARTMENT OF FIBRES AND TEXTILE CHEMISTRY

Head of Department:
Prof. Ing. Anton Marcincin, PhD.

Telephone: +421 2 529685598
Fax: +421 2 524931198
E-mail: anton.marcincin@stuba.sk

I. STAFF

Full Professors:

Eberhard Borsig, DrSc., Anton Marcincin, PhD.

Associate Professors:

Michal Krištofič, PhD., Anna Murárová, PhD., Anna Ujhelyiová, PhD.

Research Fellows:

Eva Bolhová, Marcela Hricová, Jaroslav Legéň, PhD., Ondrej Dolgoš

PhD Students:

Martina Jurenková, Andrej Rusnák, Maria Dulíková, Jozef Ryba,
Ľubica Fleischmannová-Škrovanová

Technical staff:

Agnesa Chlebáková, Albína Pokorná, Jarmila Nemčeková

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)
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 electromer Poly - stat 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, extrusiomer GOTTFERT 20 mm)
Laboratory for Structural Properties (Microscope Olympus model BHT, SALS)
Laboratory for Exhaust Dyeing Process and its Evaluation (Ahiba, Pretema)
Laboratory for Spinning of Fibres (extruders 16 and 30 mm resp.)
Laboratory for fibrous materials based on biopolymers

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Basis of Textile Technology	2/0	Ujhelyiová
3. semester (Bc)	Physiology and comfort of clothing technology	2/0	Murárová
5. semester (Bc)	Textile Materials I	2/1	Marcincin, Ujhelyiová
1. semester (Ing)	Physics of Polymers and Paper	2/0/2	Chodák, Krištofič
	Fibre Science and Technology	2/0/2	Marcincin, Hricová
	Laboratory	0/0/8	Krištofič, Ryba
Optional:	Special and Modified Fibres	0/0/2	Marcincin, Hricová
	Structure and Properties of Fibres	1/0/1	Krištofič, Murárová
	Modelling and Simulation of Processes in	1/0/1	Marcincin, Rychlý

	Polymers		
2. semester (Ing)	Colorants and Textile Auxiliaries	2/0/0	Murárová, Ujhelyiová
	Technical Textiles	2/0/0	Krištofič, Borsig
	Principles of Textile Engineering	2/0/0	Ujhelyiová, Murárová
	Laboratory II	0/0/8	Krištofič, Rusnák
3. semester (Ing)	Textile Chemistry and Technology	2/2/0	Ujhelyiová, Bolhová
	Fibre and Textile Testing	2/0	Murárová, Legéň
	Technology of Polymeric Films	2/0/0	Marcinčin, Krištofič
	Fibre and Textile Testing	2/0/0	Murárová, Legéň
	Laboratory of Textile Chemistry and Technology	0/0/10	Ujhelyiová, Bolhová
4. semester (Ing)	Diploma work	0/0/27	Borsig, Krištofič, Marcinčin, Murárová, Ujhelyiová

IV. CURRENT RESEARCH PROJECTS

A. Composite Fibres and Textiles

The aim of this project is the preparation of new types of fibres based on polymer nanocomposite and to the preparation of textiles with new multifunctional properties mainly barrier against UV light, thermoregulative, further with electric conductivity and with some aspects of intelligent materials (sensors). New properties of textiles will be the consequence of nanomodification of polymers and fibres with additives as well as new construction aspects of textiles. The project is oriented to the basic material research of fibres and
APVT 20-011-404

Project duration: from 01.05.2005 to 31.12.2007

B. Biotechnological Process for Manufacturing Cellulosic Product with added Value

Project is focused to the basic investigation of new biochemical ways how to dissolve the cellulose and change its original form. Method is based on the safe, biodegradable enzymes used instead of toxic dangerous CS₂ with the aim to create products from regenerated cellulose. Biocelsol technologies are break through in comparison with existing processes for preparation of regenerated cellulose and give harmless technologies for modification of cellulose with selected enzymes. Enzymatically modified cellulose is better soluble in water-alkali solutions and its processing to solutions is more simple.

Scientific goals of the project:

- understand enzymatic processes in cellulose and their influence on the structure and processability of the cellulose,
- investigate new products with involved functional properties based on enzymatically modified cellulose,
- ensure exceptional decrease of environmental and health influence in comparison with viscose process,
- prove new, acceptable procedures which reduce production cost in cellulose industry.

FP 505 567-1

Project duration: from 2004 to 2006

C. Nanocomposite fibres based on synthetic polymers

Project is focused to:

- the preparation of nanocomposite PP, PA and PES fibres containing inorganic and organic nanoparticles and polymer additives as well.
- the characterization of structure of nanocomposite synthetic fibres by exfoliation and intercalation of solid particles in fibre forming polymers at high deformation gradients and presence of additives. Results of this project will be a knowledge used at the preparation of nanocomposite fibres with new properties such as hydrophility, better electrostatic properties, antibacterial properties, higher color strength and color fastness. During preparation of nanocomposite fibres a main task is to manage the processing of modified polymers at spinning and drawing and to control a creation of structure and fibre properties as well.

APVT 20-010102

Project duration: from 01.09.2002 to 31.08.2005

D. Nanohybrid – designed nanostructured hybrid polymers: polymerisation catalysis and Tecton assembly

The project is focussed on to: 1. Creation of new knowledge related to macromolecular architecture designs via transition metal catalysis which will be up access to novel random and block copolymers and polymer product compositions. 2. Understanding the phenomena of nanocompomers and nanocomposites´formation either during in-situ polymerisation or during melt processing. 3. Investigation of fundamental characteristics of the organic-inorganic interphase region by multi-scale analysis.

4 Application-oriented property enhancement, thanks to nanostructured hybrid polyolefins.
FP 6 516972

Project duration: from 01.03.2005 to 28.022008

E. Composite fibres based on polymer blends with fibrillar phase structure

Project is focussed to acquirement of experience from the formation of phase structure of new fibres on the basis of binary and ternary polymer blends with hierarchical morphology of micro- and nano-structure elements. Phase structure of composite fibres is polyfibrillar. Dispersed polymer component in the matrix of fibre is in the shape of highly deformed particles. The aim of the project is to acquire a knowledge about principles of formation of composite polyfibrillar fibre structure, about interphase interactions of functional groups, about influence of rheological properties of components and the control of threephase structure formation and selected fibre properties mainly mechanical, electric, barrier and sorptive ones.

VEGA project 1/2475/05

Project duration: from 01.01.2005 to 31.12.2007

F. Physical activation of polymer fibre surfaces

Project is focussed to the evaluation of the influence of laser, microwave and low-temperature plasma energy and other media to the activity of the polymer fibre surfaces. The change of the morphological and supermolecular structure on the surface level of fibres causes the change of properties of this surface.

VEGA project 1/2451/05

Project duration: from 01.01.2005 to 31.12.2007

V. CURRENT EDUCATION PROJECTS

Postgraduate project : Chemical technology of fibres, Rhodia Ind. Yarns, a.s. Humenné

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Fibrochem, a.s., Svit			
VÚCHV, a.s. Svit			
Rhodia IY, a.s., Humenné			
SH a.s., Senica	project FP 505 567-1		
TnUAD FPT Puchov			
Polymer Institut of SAV			

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
AUTEX, Gent, Belgium	preparation of AUTEX conference		
University of Zagreb	preparation of ITC&DC conference		
TU Liberec	preparation of CEC		
TU Liberec	Summer School A. Marcinčin		2005

C. Membership in Domestic Organizations and Societies

Name Organisation or Society Position Valid date
A. Marcinčin Council of Ministry of Education program, SR, member
Development of young employees and PhD. student personalities member
VUTCH-Chemitex, spol. s r.o., Zilina, Managing Council of Certification member
VEGA Committee member
Editor-in-Chief of journal Vlakna a textil member
Slovak Society of Industrial Chemistry, section Chemical Fibres member
E. Borsig Common branch council for awarding of DSc in 14-05-9 Macromolecular Chemistry chairmann
Common branch council for awarding of PhD in 14-05-9 Macromolecular Chemistry chairmann
Slovak Chemical Society, section Polymers member
Advisory Board SAV for Chemical Sciences member
A. Murárová Slovak Society of Industrial Chemistry Board member of advisory board and its Executive Committee member
and its section Chemical Fibres chairmann
Slovak Chemical Society, section Polymers member
Co-editor of journal Vlakna a textil member
Editorial Board of journal Vlakna a textil member
A. Ujhelyiová Slovak Chemical Society, section Polymers member
Slovak Society of Industrial Chemistry member
M. Krištofič Executive Editor of journal Vlakna a textil member
Slovak Society of Industrial Chemistry member
Slovak Chemical Society, section Polymers member

Name Organisation or Society Position Valid date
Editorial Board of journal Vlakna a textil member
J. Legěň Slovak Society of Industrial Chemistry member
Slovak Chemical Society, section Polymers member
M. Hricová Slovak Society of Industrial Chemistry member

D. Membership in International Organisations and Societies

Name Organisation or Society Position Valid date
A. Marcinčin AUTEX, Association of Universities for Textiles, Gent, Belgium member
AUTEX Research Journal, Gent, Lodz, B, PL member of advisory board
Central European Conferences Committee member
Scientific Council, TU Liberec, Faculty of Textiles member
Editorial board of journal Fibres & Textiles in Eastern Europe member
E. Borsig General Assembly of National Representatives of European Polymer Federation, Eidhoven, Netherlands member
Editorial Board of Journal of Macromolecular Chemistry Pure and Applied Chemistry, USA member
Editorial Board of Chemické listy, Prague, Czech Rep. member
Committee for Awarding of DSc for scientific branches 14-05-9 Macromolecular Chemistry, Prague, CZ member
Committee for Awarding of DSc for scientific branches 28-03-9 Technology of Macromolecular Compounds, Prague, CZ member

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

Name	Organisation / Institution / Conference	State	Date / Duration
A. Marcinčin	Univ. of Potsdam	BRD	06.02.-07.02./42 days
E. Borsig	Ludwigsuniv. Freiburg	BRD	22.02.-19.03./28 days
A. Marcinčin	Pont-Eveque	F	09.-12.03./4 days
A. Marcinčin	Bielsko-Biala, IWCH Lodz	PL	30.03.-01.04./3 days

O. Dolgoš	Bielsko-Biala, IWCH Lodž	PL	30.03-01.04/3 days
A. Rusnák	Bielsko-Biala, IWCH Lodž	PL	30.03-01.04/3 days
A. Murárová	TU Liberec	ČR	06.04.-07.04/2 days
E. Borsig	M. Luther Univ., Berlin	BRD	18.05.-25.05./8 days
A. Murárová	St. Petersburg	Russia	20.05.-27.05./8 days
A. Marcinčin	TU Liberec	ČR	02.-03.06./2 days
A. Marcinčin	Grenoble	F	jun
E. Borsig	Mosk. Št. Univ.	Russia	26.06.-02.07/7 days
A. Marcinčin	Molndalo	Sweden	18.06.-22.06/5 days
A. Marcinčin	Portorose	Slovenia	25.06.-29.06/4 days
M. Krištofič	Portorose	Slovenia	25.06.-29.06/4 days
A. Marcinčin	Florenca	Italy	21.07.-24.07/5 days
A. Murárová	TU Liberec	ČR	06.09.-09.09./4 days
A. Marcinčin	Tampere	SF	13.09.-16.09./4 days
A. Ujhelyiová	Tampere	SF	13.09.-16.09./4 days
M. Krištofič	Tampere	SF	13.09.-16.09./4 days
A. Marcinčin	TU Liberec	ČR	05.-08.09/4 days
A. Ujhelyiová	TU Liberec	ČR	06-09.09/4 days
E. Bolhová	TU Liberec	ČR	31.08.-04.09/5 days
O. Dolgoš	TU Liberec	ČR	31.08.-04.09/5 days
A. Rusnák	TU Liberec	ČR	31.08.-10.09/11 days
J. Ryba	TU Liberec	ČR	31.08.-10.09/11 days
L. Škrovanová	TU Liberec	ČR	06.09.-09.09/4 days
M. Dulíková	TU Liberec	ČR	06.09.-09.09/4 days
A. Marcinčin	Ferrara	Italy	12.10.-14.10/3 days
A. Marcinčin	ENSITM Mulhouse	F	08.10.-10.10/3 days
E. Bolhová	Univ. of Gent	B	22.11.-07.12/16 days
A. Rusnák	TU, Liberec	ČR	29.11.-6.12./8 days
O. Dolgoš	TU Liberec	ČR	29.11.-6.12./8 days

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
M. Molnárová	Dyeing of chemical fibres in presence of bioactive compounds	A. Ujhelyiová

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

Name	Title of Thesis	Supervisor
Bc. Alexandra Andrejková	The study of the phase structure of polypropylene blend fibres	A. Marcinčin,
Bc. Andrea Augustínová	The study of geometric and structural unevenness on polypropylene nanocomposite fibres	E. Borsig
Bc. Alena Hoferíková	The effect of the composition of the concentrate on the mechanical properties and structural unevenness of pigmented polyester fibres	A. Marcinčin,
Bc. Silvia Podobeková	Study of the interaction between the cellulose and NaOH solution	A. Murárová
Bc. Hana Popovičová	yeability of blend PP/PES fibres with disperse dyes	. Ujhelyiová,
Bc. Zuzana Strecká	Effect of Polyvinylalcohol and nanoadditives on the dyeing of polypropylene fibres using the exhaust process	A. Ujhelyiová
Bc. Iveta Vassová	The effect of comonomers and silicate on the properties of copolyamides and modified	M. Krištofič,

	polyamide fibres	
Bc. Katarína Želinská	The transport properties of textile materials, a) through a simple textile layer, b) through an integrated textile layer	A. Murárová

E. Habilitation Theses

Name	Title of Thesis	Head of board
A. Ujhelyiová	Influence of additives to the structure and mechanical properties of synthetic fibres (2005)	D. Bakoš

VIII. PUBLICATIONS

Article in journal

- [1] Bereznenko, M.P., Vlasenko, V.I., Kovtun, C.I., Murárová, A.: Sučasnij txdid do konctrujuvannja ta optimizaciiskladu bagatofunkcional'nych bagatošarovich tekstil'nych kompozitiv. *Visnik*, no. 5, vol. 25, pp. 61-63, 2005.
- [2] Bolhová, E., Ujhelyiová, A., Marcinčin, A.: Modifikácia polypropylénu s cieľom farbenia PP vlákien klasickým postupom z kúpeľa 3. časť. Proces farbenia vlákien vyťahovacím postupom –kinetika farbenia a difúzia farbiva. *Vlákna a textil*, no. 2, vol. 12, pp. 79-81, 2005.
- [3] Chmela, Š., Kleinová, A., Fiedlerová, A., Borsig, E., Kaempfer, D., Thomann, R., Mülhaupt, R.: Photo-Oxidation of sPP/Organoclay Nanocomposites. *Journal of Macromolecular Science A: Pure and Applied Chemistry*, no. 42, pp. 821-829, 2005.
- [4] Fleischmannová, L., Borsig, E.: Štruktúra, príprava a vlastnosti polymérov s obsahom anorganického plniva. *Vlákna a textil*, no. 2, vol. 12, pp. 68-72, 2005.
- [5] Hricová, M., Hoferiková, A., Marcinčin, A., Brejka, O.: Vplyv zloženia koncentrátov na vybrané vlastnosti pigmentovaných polyesterových vlákien. *Vlákna a textil*, no. 2, vol. 12, pp. 63-67, 2005.
- [6] Körmendyová, E., Marcinčin, A., Hricová, M., Kovačič, X.: Phase morphology of polypropylene-polyethylene terephthalate blend fibres. *Textiles in EE*, no. No 1 (49), vol. Vol. 13, pp. 20-23, 2005.
- [7] Krištofič, M., Ryba, J.: Nanokompozity polyamidov. *Vlákna a textil*, no. 2, vol. 12, pp. 82-86, 2005.
- [8] Marcinčin, A., Andrejková, A., Hricová, M.: Mikroskopické hodnotenie fázovej štruktúryvlákien na báze polymérnej zmesi polypropylén/polyester. *Vlákna a textil*, no. 2, vol. 12, pp. 57-62, 2005.
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- [10] Mlynarčíková, Z., Borsig, E., Legéň, J., Marcinčin, A., Alexy, P.: Influence of the composition of polypropylene/organoclay nanocomposite fibres on their tensile strength. *Journal of Macromolecular Science A: Pure and Applied Chemistry*, no. 42, pp. 543-554, 2005.
- [11] Mlynarčíková, Z., Kaempfer, D., Thomann, R., Mülhaupt, R., Borsig, E., Marcinčin, A.: Syndiotactic poly(propylene)/organoclay nanocomposite fibres: Influence of nanofiller and the compatibilizer on the fiber properties. *Polym. Adv. Technol.*, no. 16, pp. 362-369, 2005.
- [12] Murárová, A.: Z konferencie „1st International conference Fibrous material XXI. century in St. Petersburg“. *Vlákna a textil*, no. 2, vol. 12, pp. 92-93, 2005.
- [13] Murárová, A., Murárová, Z.: Prestup tepla cez textilnú vrstvu. *Vlákna a textil*, no. 2, vol. 12, pp. 73-75, 2005.
- [14] Murárová, A., Rusnák, A., Jamblich, M.: Hollow PET Fibres. *Vlákna a textil*, no. 1, vol. 12, pp. 3-6, 2005.
- [15] Rusnák, A., Murárová, A., Ryba, J.: Aktivácia povrchov polymérnych materiálov. *Vlákna a textil*, no. 2, vol. 12, pp. 76-68, 2005.
- [16] Ujhelyiová, A., Bolhová, E., Oravkinová, J., Tiňo, R., Marcinčin, A.: Kinetics of dyeing process of blend polypropylene/polyester fibres with disperse dye. *Dyes and Pigments*, 2005.
- [17] Ujhelyiová, A., Bolhová, E., Valková, K., Marcinčin, A.: Dyeability of blend polypropylene/polyester fibres with disperse dyes. *Vlákna a textil*, no. 2, vol. 12, pp. 48-52, 2005.
- [18] Ujhelyiová, A., Marcinčin, A., Legéň, J.: DSC Analysis of Polypropylene-Low Density Polyethylene Blend Fibres. *Fibres and Textiles in Eastern Europe*, no. 5 (53), vol. 13, pp. 129-132, 2005.

Article in conference proceedings

- [1] Bolhová, E., Ujhelyiová, A., Popovičová, H., Marcinčin, A.: The colouristic properties of blend polypropylene/polyester fibres dyed from dyebath. In *Book of abstracts 4th Central European Conference*, Liberec CZ, pp. 169-170, 2005.
- [2] Bolhová, E., Ujhelyiová, A., Strecká, Z., Rusnák, A., Legéň, J.: The influence of polyvinyl Alcohol and nanoadditive on the colouristic

- properties of modified polypropylene fibres. In *Book of abstracts 4th Central European Conference*, Liberec CZ, pp. 55-56, 2005.
- [3] Borsig, E., Pavlíková, S., Mlynaříčková, Z., Thomann, R., Reichert, P., Mülhaupt, R., Fiedlerová, A., Marcinčin, A., Ujhelyiová, A.: Properties of PP/organoclay nanocomposites with oriented polymer matrix. In *Proceedings of the Conference "Modyfikacja polimerow, Kudowa Zdroj, Polsko*, pp. 318-321, 2005.
- [4] Dulíková, M., Křištofič, M., Ryba, J.: Modification of PA 6 fibres by layered silicates. In *Book of abstracts 4th Central European Conference*, Liberec, CZ, pp. 49-50, 2005.
- [5] Fleischmannová, L., Augustínová, A., Borsig, E., Erler, J., Mülhaupt, R.: Polyamide Fibers Filled by Inorganic Nanoparticles Boehmite: Mechanical and Thermal Properties. In *Book of abstracts 4th Central European Conference*, Liberec CZ, pp. 19-20, 2005.
- [6] Hricová, M., Marcinčin, A., Hoferíková, A.: The influence of concentrate composition on the mechanical properties and structural unevenness of polyester pigmented fibres. In *Book of abstracts 4th Central European Conference*, Liberec CZ, pp. 53-54, 2005.
- [7] Křištofič, M., Ujhelyiová, A., Alexy, P., Vassová, I., Ryba, J.: Synthesis and properties of semicrystalline copolyamides. In *Proceedings 5th World Textile Conference AUTEX*, Portorose, Slovenia, pp. 590-594, 2005.
- [8] Marcinčin, A.: Contemporary development in research and production of industrial fibres. In *Chemické Listy, Book of the Int. Conf. Polym. Mat. in Automotive*, Bratislava, no. 99, pp. 11, 2005.
- [9] Marcinčin, A.: Nové vláknité materiály pre textilné i technické aplikácie, „Chémia a život okolo nás“. In *príručka, STU Bratislava*, pp. 85-92, 2005.
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- [12] Marcinčin, A., Ujhelyiová, A., Hricová, M., Körmendyová, E., Marcinčin, K., Broda, J., Janicki, J.: Polypropylene-polyester blend fibres, phase structure and properties. In *Proceedings 5th World Textile Conference, AUTEX 2005*, Portorose, Slovenia, pp. 429-435, 2005.
- [13] Murárová, A.: Thermal management in system fibres-air. In *Proceedings of the Conference „Fibrous Materials – XXI Century“*, St. Petersburg, Russia, pp. 146-147, 2005.
- [14] Murárová, A., Rusnák, A., Jambrich, M.: Profiled and hollow polyester fibres and their deformability. In *Proceedings of the Conference „Fibrous Materials – XXI Century“*, St. Petersburg, Russia, pp. 82-83, 2005.
- [15] Murárová, A., Želinská, K.: Evaluation of thermophysical properties of integrated textile layers. In *4th Central European Conference Book of abstracts*, Liberec, pp. 195-196, 2005.
- [16] Sýkorová, J., Jambrich, M., Murárová, A., Hajduchová, L., Šiarnik, M.: Štruktúra a vlastnosti bytových textílií zo zmesi nových typov vlákien. In *ChemZi Abstrakty z 57. zjazdu chemických spoločností*, no. 1, vol. 1, pp. 118, 2005.
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- [18] Ujhelyiová, A., Bolhová, E., Vaľková, K., Marcinčin, A.: Dyeing of modified polypropylene fibres with disperse dyes. In *Book of abstracts of the 4th Central European Conference*, Liberec CZ, pp. 33-34, 2005.
- [19] Ujhelyiová, A., Marcinčin, A., Bolhová, E.: Dimensional stability of polyester cords. In *Chemické Listy, Abstracts book of the Int. Conf. Polym. Mat. in Automotive*, Bratislava, pp. 27, 2005.

DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

Head of Department:
Assoc.Prof. Štefan Schmidt, PhD

Telephone: ++421252926055
Fax: ++421252493198
E-mail: stefan.schmidt@stuba.sk

Full Professors:
Alexander Dandár, PhD, DSc

Associate Professors:
Jozef Augustín, PhD; Jarmila Hojerová, PhD; Jolana Karovičová, PhD; Štefan Schmidt, PhD

Assistant Professors :
Gabriel Greif, PhD; Mária Greifová, PhD; Zlatica Kohajdová, PhD; Marta Kostičová; Vladimír Mastihuba, PhD;
Stanislav Sekretár, PhD; Ladislav Staruch, PhD

Research Fellows:
Zuzana Smelíková, PhD

PhD Students:
Dagmar Bilaničová; Lucia Güllová; Michala Jancurová; Eva Krajčová; Kristína Kukurová; Jarmila Lehkoživová;
Ivana Šimonová; Lucia Zahradníková

Technical staff:
Katarína Halásová; Jarmila Mikletičová; Helena Morávková; Margita Piatriková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching 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 Cosmetology

B. 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 Cosmetology

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Hygiene and Health Protection	2/0/0	Hojerová
	Seminary of Educational Program	0/1/0	Schmidt
5. semester (Bc)	Fundamentals of Food Technology	2/0/0	Karovičová
	Fundamentals of Hygiene and Sanitation	1/1/0	Hojerová
6. semester (Bc)	Fats and Oleochemistry	1/1/0	Schmidt, Sekretár
	Packaging and Packaging Materials	1/1/0	Sekretár
	Cosmetic and Household Chemistry	1/1/0	Hojerová
	Semester Project	0/0/4	All members of the staff
1. semester (MSc)	Food Engineering	2/0/1	Schmidt
	Chemistry and Technology of	2/0/2	Dandár, Kostičová

	Saccharides		
	Theory of Food Preservation	3/0/1	Greif
	Dairy Technology I.	2/0/0	Greifová, Mastihuba
1. semester (MSc)	Laboratory Practice of Dairy Technology I.	0/0/2	Greifová, Mastihuba
	Semester Project	0/0/5	All members of the staff
2. semester (MSc)	Cereal Chemistry and Technology	4/0/1	Kohajdová, Kostičová
	Sugar technology	4/0/0	Dandár
	Laboratory of the Specialization I.	0/0/4	Kostičová, Kohajdová
	Preserved and Frozen Food Technology	2/0/1	Karovičová, Greif
2. semester (MSc)	Meat and Poultry Technology I.	2/0/1	Staruch
	Raw Materials for Canning Industry	2/0/0	Karovičová, Staruch
	Laboratory of the Specialization I.	0/0/4	Staruch, Karovičová, Greif
	Fats, Detergents and Oleochemistry	4/0/0	Schmidt, Sekretár
2. semester (MSc)	Laboratory Practice of Fats, Detergents and Oleochemistry	0/0/3	Sekretár, Schmidt
	Dairy Technology II.	2/0/0	Mastihuba, Greifová
	Laboratory Practice of Dairy Technology II.	0/0/3	Mastihuba, Greifová
	Microbiology of Milk, Fats and Cosmetics	1/0/0	Greifová
	Semester Project	0/0/5	All members of the staff
3. semester (MSc)	Chemical Engineering Processes in Sugar Technology	2/0/0	Dandár
	Technology Optimising in Canning Industry	1/0/1	Greif
	Laboratory of the Specialization II.	0/0/4	Staruch, Karovičová
	Semester Project III.	0/0/5	All members of the staff
3. semester (MSc)	Chemistry and Technology of Cosmetics	2/0/2	Hojerová
	Laboratory Practice of Microbiology of Milk, Fats and Cosmetics	0/0/2	Greifová
	Laboratory of the Specialization II.	0/0/4	
	Meat and Poultry Technology II.	2/0/0	Staruch
3. semester (MSc)	Laboratory of Meat and Poultry Technology II.	0/0/2	Staruch
	Technology Optimising in Sugar Industry	2/0/0	Dandár
	Laboratory Practice of Technology Optimising in Sugar Industry	0/0/2	Dandár
	By-products in Food Industry	2/0/0	Augustín
	PC Application in Food Industry	2/0/0	Sekretár
	Laboratory of PC Application in Food Industry	0/0/2	Sekretár
4. semester (MSc)	Diploma Work	0/0/27	All members of the staff

IV. CURRENT RESEARCH PROJECTS

A. VEGA Project No 1/2392/05 Methods for control of quality of food and health care products (Š.Schmidt)

The project proposes development and innovation of methods for control of quality and safety of food and health care products via controlling their chemical, physical and microbiological changes during production, storage and distribution to consumer as well as development and validation of analytical methods for this purpose. Special focus will be taken on oxidative changes of fat products, use of selected starter cultures possessing antimicrobial activity in production of fermented dairy and meat products, use of biosensors in assessment and authentication of food, development and validation of alternative methods for assessment of cosmetic products, study of rheology of hydrocolloids and preparation of alternative food and cosmetic additives with new functional properties or produced by procedures friendly to the environment.

Project duration: from 01.01.2005 to 31.12.2007

B. VEGA Project No 1/9133/02 Development and control of new food technologies and application of biological active components into foods to increase their quality according to criteria used in EU (Alexander Dandár)

The growth of population leads to increased demands in food production with higher quality and durability. The modern trends in new food technologies are characterized with increased productivity, durability and nutritive value of produced foods. This is closely connected with the development and optimization of basic physicochemical and biochemical processes used from raw material to final products. These trends are topical all over the world preferred by advanced national and multinational institutions. In our country there are demands mainly defined by EU. Proposed project builds on the research have been solved in the last years at our department to develop gained results.

The main goals of the project are:

- 1/ development and modification of progressive technological procedures in utilization of cereals and non-traditional pseudocereals (amaranth)
- 2/ application of natural substances to improve the food quality; i.e. natural antioxidants, stabilisers and substances with preventive effect on humans.
- 3/ utilization of microelements and other biologic important substances in raw materials and final products.
- 4/ using of lactic fermentation as a conservation method to produce semi- and final products.
- 5/ application of new liming agents without toxic compounds. Study of colorants formation and their elimination to improve sugar quality.

Project duration: from 01.01.2005 to 31.12.2007

C. Vega Project 1/0102/03 Probiotic bacteria and non-traditional raw materials in production of functional foods with aim to increase their nutritive parameters (J.Karovičová)

The goals of the project:

Monitoring of microbiological, analytical and sensory parameters of produced juices using multivariate statistic methods to objectify gained results.

Using of non-traditional raw materials to increase nutritive value of fermented products.

Preparation of lactic fermented vegetable juices for people with health handicap.

During this study were realised experiments oriented to:

Preparation of lactic acid fermented juices (cabbage, cabbage-carrot, cabbage-celery, cabbage-carrot-celery, cabbage-red beet, cabbage-onion, cabbage-garlic, cucumber-onion, cucumber-garlic, gourd, courgette, tomato, cabbage-apple and cabbage- jerusalem artichoke) with application of various microorganisms (*Lactobacillus plantarum* 92H and CCM 7039, *Saccharomyces cerevisiae* C11-3, mixture starter culture *Lactobacillus plantarum* 92H and *Saccharomyces cerevisiae* C11-3, *Bifidobacterium longum* CCM 4990).

Preparation of cabbage juices with addition of various commercial inulin preparations fermented by lactic acid bacteria (*Lactobacillus plantarum* CCM 7039 and *Bifidobacterium longum* CCM 4990).

Testing of *Lactobacillus plantarum* CCM 7039 and *Bifidobacterium longum* CCM 4990 to appreciate their probiotic properties.

Project duration: from 01.01.2003 to 31.12.2005

D. State Program of Research and Development, Life Quality – Health, Nutrition, Education, No 749/s/2003 Probiotic bacteria utilization in the production of lactic fermented vegetable juices (J.Karovičová)

The goals of the project:

The proposal of a new method of probiotic bacteria application.

The proposal of a new production processes and evaluation of lactic fermented vegetable juices.

The proposal of statistic analysis methods in evaluation of analytic, microbiologic and sensory results gained from lactic fermented vegetable juices analysis.

Results publications.

Realized experiments:

1. Preparation of different lactic fermented vegetable juices with different microorganisms (*Lactobacillus plantarum* 92H and CCM 7039, *Saccharomyces cerevisiae* C11-3, mixed starting culture *Lactobacillus plantarum* 92H and *Saccharomyces cerevisiae* C11-3, *Bifidobacterium longum* CCM 4990).

2. Preparation of cabbage juices with addition of inuline based specimens fermented with lactic bacteria (*Lactobacillus plantarum* CCM 7039 and *Bifidobacterium longum* CCM 4990). The changes monitoring of selected analytical and sensory parameters in these juices was done. The optimal fermentation time was 48, 72 and 96 h respectively.

Lactobacillus plantarum CCM 7039 and *Bifidobacterium longum* CCM 4990 were tested to survive in different conditions simulated gastrointestinal tract.

Another criteria to choose probiotics are their resistance to salts bile. Used concentrations were 0,3, 0,5 and 1% of salts bile. The resistances as well as the sensitivity of used bacteria to different antibiotics were another analyzed properties. Both were resistant to netilmicine, gentamycine and cephotaxime and *Lactobacillus plantarum* CCM 7039 was resistant to cephuroxime too.

Project duration: from **01.05. 2003** to **31.12.2005**

E. State Program of Research and Development, Life Quality – Health, Nutrition, Education, No 748/s/2003 Utilization of natural substances to improve the quality of fat containing foodstuffs (Š.Schmidt)

The goals of the project:

Substitution of synthetic stabilisers in fat contained food with natural ones to minimize health risk, to improve the safety as well as to increase the maintenance of these products

Development of stabilisation formulations for actual fat systems

The project had three periods:

1. Oxidation stability of fats and fat products.
2. Oxidation inhibition of actual lipid systems.
3. Stabilization formulations for selected fat products and optimalization of their influence.

Project duration: from **01.05.2003** to **31.12.2005**

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Ministry of Agriculture of Slovak Republic, Bratislava	Consultations, Grant No. 524 and 526 (13a and 13b)	Karovičová,J Schmidt,Š	continue
Food Research Institute, Bratislava	Member of Editorial Board of Bull.PV	Dandár,A Schmidt,Š	continue
Slovak Academy of Sciences	Modification of Saccharides Development of Biosensors	Mastihuba,V	continue
Research Institute of Plant Production, Piešťany	Food Quality and Safety	Mastihuba,V	since 2003
TAURIS, Rimavská Sobota	Development and Inovation of Meat Products	Staruch,L	continue
RAJO, Co. Bratislava	Improvement of quality and safety control of dairy products	Hojerová,J	continue
Palma-Henkel, Co. N.Mesto nad Váhom	Educational process	Schmidt,Š Sekretár,S	continue
Palma-Tumys, Bratislava	Educational process	Schmidt,Š Sekretár,S	continue
Institute of Dairy Research, Žilina	Consultation; Development of improved control of food safety for industry	Greifová,M Mastihuba,V. Greif,G.	continue
Slovak Society of Cosmetology, Bratislava	Cooperation at the scientific conferences	Hojerová,J	continue
Central Laboratory MILEX-Progress, Co, Bratislava	Consultation	Greifová,M Mastihuba,V	continue
De Miclén, Co, Levice	Consultation of cosmetics quality and safety	Hojerová,J.	continue
Q-CHEM, Modra	Modification of Saccharides	Bilaničová,D. Mastihuba,V	2003-04
Incheba, Co., Bratislava	Consultation about quality of cosmetic products	Hojerová,J	continue

Zentiva, Co., Hlohovec	Educational process	Hojerová,J.	2005
Fytofarm, Co., Bratislava	Consultation	Hojerová,J.	continue

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
BBSRC Institute of Food Research, Norwich, UK	Development of improved control of food safety for industry	Mastihuba,V Greifová,M	continue
Department of Saccharide's Technology	Publications	Dandár,A	continue
Dublin City University, Biomedical and Environmental Seneor Technology Centre, Dublin, Ireland	Development of improved control of food safety for industry	Mastihuba,V Greifová,M	continue
Institute of Chemical Technology, Dep. Of Dairy and Fat Technology, Prague	Natural antioxidants	Schmidt,Š Mastihuba,V Greifová,M Sekretár,S	continue
Milcom – Dairy Research Institute, Prague	Development of improved control of food safety for industry	Greifová,M Mastihuba,V	continue
Institute of Food Research, Manchester, UK	Research of Antioxidants	Schmidt,Š Sekretár,S	continue
Akademia Rolnicza, Krakow, Poland	Clarification agents in sugar industry	Dandár,A Kostičová,M	continue
Zuckerforschungsinsttitut Tulln, Austria	Problems in sugar industry	Dandár,A.	continue
Technical University Lodž, Poland	Microbial activity during sucrose extraction	Dandár,A. Kostičová,M Gullová,L	continue
Research Institute of Sugar Technology, Prague	Member of Editorial Board of Sugar Papers	Dandár,A	continue
International Federation of Cosmetic Chemists, UK	Cooperation. Publications	Hojerová, J.	continue
Czech Society of Cosmetology, Prague, Czech Republic	Cooperation	Hojerová, J.	continue
Institute of Hydrodynamic, Academy of Science of Czech Republic, Prague	Development of rheology of food and cosmetic materials and products	Hojerová, J.	continue

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Schmidt,Š	Slovak Chemical Society	Member	Since 1995-

Schmidt,Š	Editorial Board of Bull. Of Food Research	Member	Since 1989-
Schmidt,Š	Committee of the Slovak Chemical Society	member	Since 1990-
Schmidt,Š	Grant Agency of ME SR and SAS, editorial board VEGA No. 10	Member	continue
Staruch,L	Slovak Soc. Of Agricultural, FORESTRY, food and Veterinary Sci., Bratislava	Member	Since 1990-
Staruch,L	Foundation SLOVAK GOLD, Bratislava	Member	continue
Staruch,L	The Union of Slovak Butchers	Member	Since 1994-
Staruch,L	Slovak Institute of Technical Normalization, Bratislava	Member	Since 2003-
Staruch,L	Food Processing, Development and Food Products	Judge expert	Since 1999-
Staruch,L	Committee DANUBIUS GASTRO	Member	Since 2003-
Augustín,J	Slovak Soc. Of Agricultural, FORESTRY, food and Veterinary Sci., Bratislava	Member	Since 1985-
Karovičová, J.	Slovak Soc. Of Agricultural, FORESTRY, food and Veterinary Sci., Bratislava	Member	Since 1985-
Kohajdová, Z.	Slovak Soc. Of Agricultural, FORESTRY, food and Veterinary Sci., Bratislava	Member	Since 2000-
Hojerová,J	Commission for Technical Standards No 79, Slovak Institute for Technical Standards	Member	continue
Hojerová,J	Editorial board of DERMA	Member	continue
Hojerová,J	Editorial board of DERMA Revue	Member	continue
Greifová,M	Slovak Chemical Society	Member	Since 1999-
Greifová,M	Scientific board of VÚM, Žilina	Member	Since 2003-
Mastihuba,V	Slovak Chemical Society	Member	continue
Dandár,A	Slovak Soc. Of Agricultural, FORESTRY, food and Veterinary Sci., Bratislava	President	continue
Dandár,A	Slovak Academy of Agricultural Sci., Bratislava	Member	continue
Dandár,A	Slovak Academy of Technical Sciences, Bratislava	Member	continue
Dandár,A	ICUMSA, Slovak National Committee	Chairman	Since 1980-
Dandár,A	Slovak Agricultural Academy, Nitra	Member	Since 1992-
Dandár,A	SAPV, specialization of Food	Vice-president	continue
Dandár,A	Editorial board of Bull. Of Food Research	Member	continue
Hojerová,J	Foundation SLOVAK GOLD, Bratislava	Chairman of Cosmetic Committee	continue
Hojerová,J	INCHEBA, Joint Stock Company, Technical Committee for Cosmetics	Chairman of Cosmetic Committee	continue
Hojerová,J	Slovak Society of Cosmetology	President	continue
Hojerová,J	Member of Editorial Board of SLOVAK CHOICE	Member	Since 2005

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Schmidt,Š	Federation of European Chemical Societies, division of Food Chemistry	Member	continue
Schmidt,Š	Editorial board of European Journal of Lipid Science and Technology	member	continue
Staruch,L	Editorial board of journal MASO	Member	Since 2003-
Staruch,L	WEPSA, Israel	member	continue
Augustín,J	Czechoslovak Microbiology Society	member	continue
Hojerová,J	International Federation of Societies of Cosmetic Chemists, USA	member	continue
Greifová,M	Czechoslovak Microbiology Society	member	continue
Dandár,A	American Chemical Society	Member	continue
Dandár,A	International Commission for Uniform Methods of Sugar Analysis – ICUMSA, Italy	Member	continue
Dandár,A	Commission International Technique de Sucrierie – CITS, Brussels, Belgium	Member	continue
Dandár,A	Verein der Zuckerfabriken Österreichs, Vienna, Austria	Member	continue

Dandár,A	Stowarzyszenie Technikow Cukrownikow, Wroclaw, Poland	Member	continue
Dandár,A	Scientific board at FCHPT VŠCHT, Prague	Member	continue

E. Visitors from Abroad

Name	Organisation or Institution	State	Date / Duration
Pločková,M. Filíp, V.	University of Chemical Technology, Prague	Czech Republic	June 2005 (2 days)
Iciek,J.	Technical University of Łódź	Poland	September 2005 (3 days)
Surówka,K.	Agricultural University of Krakow	Poland	September 2005 (3 days)

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

Name	Organisation or Institution	State	Date / Duration
Kukurová, K.	University of Chemical Technology, Prague	Czech Republic	May 2005 (28 days)
Kohajdová, Z. Kukurová, K. Lehkoživová, J.	UNILEVER, Nelahozeves	Czech Republic	April 2005 (3 days)
Greifová,M Mastihuba,V. Greif,G.	VŠCHT, Prague, course	Czech Republic	Mai 2005 (3 days)
Schmidt,Š. Sekretár,S. Karovičová,J. Hojerová,J. Mastihuba,V. Greif,G. Greifová,M. Staruch,L. Güllová,L.	Hodonín, UNILEVER, Nelahozeves, Kostelecke uzeniny, Ryor, Praha, VŠCHT, Praha	Czech Republic	April 2005 (3 days)
Güllová,L., Dandár.A.	Sugar Technology Conference, Luhačovice	Czech Republic	February 2005 (3 days)
Zahradníková,L.	Strážnice, Conference	Czech Republic	Mai 2005 (3 days)
Dandár,A.	Technical University of Łódź	Poland	Mai 2005 (6 days)
Dandár,A.	Agricultural University of Vienna-BOKU	Austria	October 2005 (2 days)
Dandár,A.	Research Institute of Sugar, Prague	Czech Republic	April 2005 (2 days)
Dandár,A.	VŠCHT, Prague	Czech Republic	February 2005 (5 days)
Hojerová, J., Ondrušek, P.	Institute of Hydrodynamic, Academy of Science of Czech Republic, Prague	Czech Republic	March 2005 (2 days)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Baláková,S.	Chemical composition and processing of selected mushrooms.	Karovičová,J.
Brezovický,R.	Characteristics and using of bioprotectors and starting cultures in food industry.	Staruch,L.
Gajdošová,Z.	Technological and nutritive aspects of natural cheeses.	Greifová,M.
Gajdošová,Ž.	Utilization of pseudocereals in cereal production.	Kohajdová,Z.
Habaj,L.	Autenticity and evaluation of wine quality.	Kukurová,K.

Klempová,K.	Characterization of probiotic properties of lactic bacteria.	Lehkoživová,J.
Kollárová,L.	Antimicrobial effects of tea fat (<i>Melaleuca alternifolia</i>) and its utilization in human nutrition.	Augustín,J.
Kraková,T.	Biocatalysts utilization in conversion of single sugars.	Mastihuba,V.
Kunštek,M.	Fermented meat products – production of piece goods fermented products.	Staruch,L.
Kušíková,Z.	Non-chocolate confectionery. New trends in production.	Gúllová,L.
Pogáň,G.	Characteristics and using of new natural colorant ARPINK RED.	Staruch,L.
Sékelyová,Z.	Sea hydrocolloids application in modern food industry.	Hojerová,J.
Stopková,M.	Bee honey not only as a sweetener.	Kostičová,M.
Škottová,D.	Practical sense of rheological evaluation of foods.	Hojerová,J.
Toporková,M.	Nut-oil – food adjunct to the nutrition.	Schmidt,Š.

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

Name	Title of Thesis	Supervisor
Adamová,A.	Antioxidant and Antimicrobial Activity of Selected Natural Antioxidants.	Sekretár,S.
Čimbora,J.	Beverages Analysis and Sensory Evaluation.	Karovičová,J.
Jancurová,M.	Determination of Lactic Acid during Sucrose Extraction and Analysis of Antiincrustant Effect in Evaporator.	Dandár,A.
Kantorová,M.	Analysis of the Content of Risk Material in respect to BSE in meat products.	Staruch,L.
Kočíšová,E.	An Effect of Selected Raw Materials and Additives on Rheological Properties of Dough and Final Cereal Products.	Dodok,L.
Košťálová,Z.	An Effect of Raw Materials and Additives on Rheological Properties of Dough and of the Quality of Biscuits.	Dodok,L.
Krajčová,E.	Analysis of Natural Antioxidants and Minor Fat Constituents by HPLC.	Schmidt,Š.
Lešková,L.	Characteristics and Application of Bio-protectors and Starting Cultures in Meat Products.	Staruch,L.
Ochránková,K.	An Influence of Decreased Lime Addition on the Quality of Technical Juices.	Kostičová,M.
Ondrušek,P.	Rheological Aspects of Selected Food and Cosmetic Hydrocolloids.	Hojerová,J.
Peterková,Z.	Probiotic Properties of Selected Lactobacilli.	Greifová,M.
Plencnerová,S.	Production of Prebiotic Galactooligosaccharides by Immobilised Beta-galactosidases from <i>Lactobacillus reuteri</i> .	Mastihuba,V.
Poláková,L.	Enzymatic Transformations of Saccharides.	Mastihuba,V.
Stojnev,S.	ITP Application in Analysis of Lactic Fermented Products.	Kohajdová,Z.
Sulová,Z.	Impact of Some Flavonoids on Target Physiological and Biochemical Parameters of Hypertension Rats.	Schmidt,Š.
Šimonová,I.	Sensory and Analytical Evaluation of Lactic Fermented Vegetable Juices.	Kohajdová,Z.
Tkáč,R.	Using of ITP in Analysis of Selected Food Compounds.	Karovičová,J.
Turčániová,I.	Isolation of Natural Antioxidants for Stabilisation of Fats.	Sekretár,S.

VIII. PUBLICATIONS

Book

- [1] Dandár, A., Stolina, M.: *Významní vedeckí pracovníci Slovenskej spoločnosti pre poľnohospodárske, lesnícke, potravinárske a veterinárske vedy pri SAV*, Slovenská spoločnosť SAV, Ministerstvo poľnohospodárstva SR, Bratislava, 2005.
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- [1] Pokorný, J., Schmidt, Š., Parkányová, J.: *Analysis of lipid oxidation*, Editor(s): AOCS Press, Chapter: Ultraviolet-Visible spectrophotometry in the analysis of lipid oxidation. AOCS Press, pp. 17-39, 2005.

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- [1] Augustín, J.: Med je potravinou i liek. *Výživa a Zdravie* č.1, pp. 20-29, 2005.
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DEPARTMENT OF GRAPHIC ARTS TECHNOLOGY AND APPLIED PHOTOCHEMISTRY

Head of Department:
Assoc. Prof. Michal Čeppan, PhD

Telephone: +421252495276
Fax: +421252493198
E-mail: michal.ceppan@stuba.sk

I. STAFF

Associate Professors:
Michal Čeppan, PhD; Milan Mikula, PhD; Ján Panák, PhD

Assistant Professors :
Viera Jančovičová, PhD.

Research Fellows:
Vladimír Dvonka; Bohuslava Havlínová, PhD.; Zuzana Jakubíková; Milena Reháková, PhD.

PhD Students:
Zdenka Klučiarová; Iveta Mrláková; Branislav Prosnan; Miriam Turanová; Bystrík Trnovec (since 1. 10. 2005);
Alexandra Valaseková

Technical staff:
Mária Bardúnová; Stanislava Kováčová

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

B. Research laboratories:

Laboratory of Absorption Spectroscopy and Colorimetry

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Surface and Thin Film Technology	2/0/0	Mikula
6. semester (Bc)	Paper and Printing, Graphic Arts	2/2	Panák, Šutý
	Term Project	0/4	Mikula and other members of the academic staff
1. semester (MSc)	Colloids Systems and Interfaces	2/1/0	Bakoš, Jakubíková, Mikula
	Polymer and Paper Physics	0/2/0	Jančovičová
	Photochemistry and Photography I.	2/1/0	Čeppan, Jančovičová, Reháková
	Surface and Thin Film Technology	2/0/0	Mikula
1. semester (MSc)	Advanced Laboratory Course I.	0/0/9	Havlínová, Jančovičová, Mikula
	Typography and Text Processing	0/2/0	Dvonka
2. semester (MSc)	Photochemistry and Photography II.	2/0/0	Čeppan
	Printing Technology I.	2/0/0	Panák
	Advanced laboratory Course II.	0/0/7	Čeppan, Dvonka, Havlínová, Jančovičová
	Planning for Printing Production	0/2/0	Panák, Dvonka
2. semester (MSc)	Text and Image Processing	1/1/0	Čeppan, Dvonka
3. semester (MSc)	Printing Technology II.	2/0/0	Panák
	Repronc	1/3/0	Mikula, Dvonka
	Advanced Laboratory Course III:	0/0/10	Panák, Dvonka
4. semester (MSc)	Diploma Thesis	0/0/27	members of the academic staff

IV. CURRENT RESEARCH PROJECTS

A. VEGA Project No 1/2454/05 Atmospheric Plasma Treatment and Modification of the Surface Properties of Paper and Cellulose Fibre Based Materials (Milan Mikula)

Preparation and modification of thin layer properties on a paper or on flat cellulose fibre based materials, focusing in the functionality, quality, strengthening, stabilization and protection. Modification/treatment of paper by a new type of atmospheric barrier discharge directly in active zone of reactive gas plasma, or by consecutive grafting and/or UV curing. Hydrophobization of paper using UV cured polymers based on siloxanes, acrylates and water-based polymers and their unsaturated derivatives. The study of the final surface properties of modified paper, final strength, layer adhesion, optical and permeation barrier properties. Cleaning and deacidification of naturally aged paper from archives (saving of cultural heritage) in alkaline plasma (nitrogen, ammonia) and its strengthening and stabilization by layers prepared.

Project duration: from 01. 01.2005 to 31. 12. 2007

B. 5th Framework Programme of EU: Thematic Network /EVK4-CT-2002-20010 Transitional Metals in Paper (MIP), (Michal Čeppan)

Transitional metals may cause an accelerated ageing of historic paper documents, drawings and other cellulose containing objects. The aim of the network MIP is to exchange present knowledge related to the effects and on how to reduce the effects of transitional metals in paper and how to fit in these results to innovative conservation strategies consisting of assessments methods and treatment technologies.

Project duration: from 01. 03. 2003 to 01. 03. 2006

C. VEGA Project No 1/2455/05 Study of properties of inks, dyes and printing inks in the structures of graphic images (Michal Čeppan)

Development of methods of molecular spectroscopy (IR, UV-VIS) aimed to the study of documents with graphic records. Chemometric procedures will be utilized to extract useful chemical information from complex sets of spectra (factor analysis, multivariate statistical analysis). These methods will be used in study of processes during the ageing of historical documents containing iron-gall inks. Study of processes of photochemical decay of inks containing aryl methane dyes as well as the relation between conservations procedures and properties of ink records. Study of relation between properties of paper, transfer characteristics and quality of printed image.

Project duration: from 01. 01.2005 to 31. 12. 2007

D. Project of ME SR No 661/2003 Preservation, Stabilization and Conservation of Traditional Information Supports in the Slovak Republic (Dušan Bakoš, Milena Reháková)

This project covers programme of saving, stabilization and conservation of traditional holders of information (books, archival documents etc.). Big portion of cultural heritage stored in historical books and archival documents is endangered with destructive impacts of abiotic and biotic factors. This can cause irretrievable loss of cultural heritage of Slovak Republic. Solving of this problem is divided into two time steps. First includes years 2003 - 2005 and its subject covers basic research. Except of this, second step will also include applied research and development.

Project duration: from 01.10. 2003 to 31. 12. 2006

E. APVT Project No. 20-034202 The Deterioration of Historical Manuscripts and Documents Related to Transitional Elements in Writing Inks (Michal Čeppan)

In overall there are 13.1 mil. pieces of threatened documents and manuscripts destined for preservation in the Slovak Republic. Hand written documents (letters, letter sets, drawings, book pages etc.) often contain transitional elements (mainly copper and iron) in their inks which cause and promote destruction and degradation processes of supporting lignocelluloses materials.

This project is focused on investigation of ageing process reactions and kinetics by modern optical and spectral methods.

Gathered knowledge should contribute to material and method selection positively affecting the durability and capacity of historical documents and manuscripts preservation in feasible economical and ecological conditions.

Project duration: from 01. 01. 2004 to 31. 12. 2006

F. 6th Framework Programme of European Commission: Innovation and Sustainable Development in the Fibre Based Packaging Value Chain. (SUSTAINPACK) (Dušan Bakoš, Milan Mikula).

The participation is based on the study of the deposition kinetics of polymer emulsion particles to the pulp fibers, rate of deposition, degree of cover, retention, retention agents – polyelectrolytes and characterization of materials. Particularly, it includes photo- and plasmochemical activation, modification and/or covering of cellulose fibres in suspension or in a paper-like material, and characterization of materials and activation/deposition kinetics by FTIR spectroscopy, UV Vis. spectral and colorimetry analysis, wetting, adsorption, mechanical and barrier properties measurements.

Project duration: from 01. 06. 2004 to 31. 5. 2008

G. APVT Project No 26-038602 The Influence of Fiber Net and Fiber Properties on Transfer and Qualitative Paper Parameters. Phase 6 – Study of the Printing Quality Evaluation (Juraj Gigac, Ján Panák)

The printing characteristics of selected offset printing papers samples – Transfer curves measurements and determination of Walker-Fetsko and Tolenaar-Oittinen equations parameters and their correlation with some paper parameters. Study and comparison of the current print quality evaluation methods. Development of a new evaluation method for the missing screen dots based on an image analysis. Optimization of the fractal analysis for the characterization of the printing paper properties and prints printed on them. Evaluation of the screen dots and details reproductions using modulatory transfer function.

Project duration: from 01. 02. 2004 to 30. 6. 2006

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Slovak National Archives	Study of preservation of historical documents	Hanus Jozef, head of the Department of archival preservation, Drotárska cesta 42, 817 01 Bratislava	01.01.2000 -
Institute of Physics SAS	Amorphous a-Si:H structures for solar cells (VEGA project) Study of barrier layers (EC project)	Pinčík Emil, Dúbravska cesta 9, 845 11 Bratislava	01.01.2001 -
Faculty of Mathematics, Physics and Informatics, CU, Bratislava	Polymer surface treatment by atmospheric discharges	Černák Miroslav, Mlynská dolina, 842 48 Bratislava	01.09.2000 -
Slovak National Library, Martin	Study of preservation of historical documents	Maková Alena, Námestie j. C. Hronského 1, 036 01 Martin	01.01.2004 -
Institute of Forensic Science, Slovak Police Corps, Bratislava	Properties and diagnostics of printed documents	Adriana Jabconová, Sklabinská 1, 812 37 Bratislava	01.01.2002

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Departement de Photochimie Generale, Université de Haute Alsace, Mulhouse, France	UV curing reaction of waterbased clearcoats	Decker Christian, professor, 3 rue Alfred Werner, Mulhouse Cedex, France	01. 09. 2002 -

Fraunhofer Institute Process Engineering and Packaging (IVV), Freising, Germany	Research of barrier layers on flexible foils (EC project)	Noller Klaus, dr., Fraunhofer Inst. IVV, 853 54 Freising	01. 09. 2002 -
Fraunhofer Institute for Silicate Research, Wurzburg, Germany	Properties of Ormocer lacquer layers (EC project)	Amberg-Schwab Sabine, dr., Fraunhofer Inst. ISC, 970 82 Wurzburg	01. 09. 2002 -
Faculty of Chemistry, Technical University Brno, Czech Republic	Photochemical properties of light sensitive layers	Michal Veselý, Purkyňova 118, 612 00 Brno	01. 09. 2001 -
State Central Archives in Prague, Czech Republic	Longlasting measurements of nonaged and aged papers	Đurovič Michal, head of department, Archivní 4, 149 01 Praha 4 - Chodovec	01. 01. 2001 -
Pulp and Paper Institute Ljubljana, Slovenia	Analysis of coatings of paper for ink jet printing	Hladnik Ales, Bogišičeva 8, SI-1000 Ljubljana	01. 09. 2004 -
Netherlands Institute for Cultural Heritage	Analysis of spectra of historical documents	Han Neevel, 1070 KA Amsterdam, Netherlands	01. 09. 2004 -
Institut Royal du Patrimoine Artistique	Analysis of pigments in paint layer of historical materials	Sanyova-Debongnie Jana, Cellule technique picturale, Park du Cinquantenaire 1, B-1000 Bruxelles	01. 09. 2004 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Čeppan Michal	Slovak Union for Industrial Chemistry	member	1980 -
Dvonka Vladimír	Slovak Union for Industrial Chemistry	member	1996 -
Havílinová Bohuslava	Slovak Union for Industrial Chemistry	member	1980 -
Jančovičová Viera	Slovak Union for Industrial Chemistry	member	1999 -
Mikula Milan	Slovak Union for Industrial Chemistry	member	1980 -
Panák Ján	Slovak Union for Industrial Chemistry	member	1978 -
Reháková Milena	Slovak Union for Industrial Chemistry	member	2001 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Čeppan Michal	European Photochemistry Association	member	1990 -
Čeppan Michal	International Society of Imaging Science and Technology, Springfield, USA	member	1985 -
Michal Čeppan	Graphic Arts Technical Foundation, Sewickley, USA	member	1988 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Đurovič, M.	National Archives in Prague	Czech Republic	June 2005 (2 days)
Paulusová, H.	National Archives in Prague	Czech Republic	June 2005 (2 days)
Kaplanová, M.	University of Pardubice, Pardubice	Czech Republic	June 2005 (2 days)
Lapčík, L.	Tomas Bata University, Zlín	Czech Republic	June 2005 (2 days)
Veselý, M.	Brno University of Technology, Brno	Czech Republic	June 2005 (2 days)

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

Name	Organisation / Institution / Conference	State	Date / Duration
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Čeppan, M.	University of Rome La Sapienza, Rome	Italy	February 2005 (6 days)
Havlíňová, B., Čepecová, K., Cséfalvayová, L.	National Archives in Prague	Czech Republic	March 2005 (4 days)
Šubrtová, M.	University of Pardubice, Pardubice	Czech Republic	March 2005 (4 days)
Jančovičová, V.	Brno University of Technology, Brno	Czech Republic	March 2005 (1 day)
Dvonka, V., Jakubíková, Z.	National Archives in Prague	Czech Republic	March 2005 (3 days)
Panáč, J., Dvonka, V., Kováčová, S., Jakubíková, Z., Reháková, M., Prosnan, B., Turanová, M., Valaseková, A., Mrlláková, I., Klučiarová, Z.	Seminar Print Media, Heidelberg	Germany	April 2005 (4 days)
Dvonka, V., Jakubíková, Z., Mrlláková, I., Turanová, M., Klučiarová, Z.	23th International fair Embax Print, Brno	Czech Republic	May 2005 (1 day)
Dvonka, V.	National Archives in Prague	Czech Republic	May 2005 (2 days)
Jančovičová, V.	Brno University of Technology, Brno	Czech Republic	May 2005 (1 day)
Čeppan, M.	Brno University of Technology, Brno	Czech Republic	June 2005 (2 days)
Čeppan, M.	University of Pardubice, Pardubice	Czech Republic	June 2005 (2 days)
Čeppan, M.	Zentrum für Bucherhaltung, Leipzig	Germany	June 2005 (4 days)
Jančovičová, V.	PTS, Papiertechnische Akademie, München	Germany	June 2005 (4 days)
Čeppan, M.	Brno University of Technology, Brno	Czech Republic	September 2005 (1 day)
Čeppan, M., Panáč, J.	University of Pardubice, Pardubice	Czech Republic	September 2005 (3 days)
Čeppan, M., Havlíňová, B., Dvonka, V., Jakubíková, Z., Mrlláková, I., Prosnan, B., Mikula, M., Jančovičová, V., Reháková, M.	3 rd Meeting of Chemistry and Life, Brno	Czech Republic	September 2005 (3 days)
Dvonka, V., Jakubíková, Z., Panáč, J.	7 th Seminar of Graphic Arts, University of Pardubice, Pardubice	Czech Republic	September 2005 (3 days)
Panáč, J.	MAN Ofebach	Germany	October 2005 (3 days)
Reháková, M.	Institute Royal de Patrimoine Artistique (IRPA) Brusel	Belgium	November 2005 (7 days)
Jančovičová V., Trnovec, B.	Printing Future Days, Chemnitz	Germany	November 2005 (5 days)
Čeppan, M.	Brno University of Technology, Brno	Czech Republic	November 2005 (1 day)
Havlíňová, B.	National Archives in Prague	Czech Republic	November 2005 (5 days)
Čeppan, M.	Tomas Bata University, Zlin	Czech Republic	November 2005 (1 day)
Čeppan, M.	The Society of Restores Latvia, Riga	Latvia	December 2005 (4 days)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Belányiová, E.	Study of stability of pigments during accelerated aging	Havlíňová, B.
Buzinkay, A.	Study of aging of systems iron gall ink – paper	Čeppan, M.

Macek, M.	Surface formation evaluation of printed materials with image analysis	Dvonka, V.
Malčíková, M.	Study of aging of model systems of historical documents caused by iron gall inks	Čeppan, M.
Petrovičová, M.	Study of degradation of historical documents	Havlíňová, B.
Rakovanová, M.	Study of interaction of components of historical writing means	Jančovičová, V.
Vašíček, M.	Characterization of plasma treated pulp	Mikula, M.
Veršćáková, I.	Evaluation of print quality	Panáč, J.

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

Name	Title of Thesis	Supervisor
Cíbičová, H.	Study of ageing of historical documents caused by transitional metals	Čeppan, M.
Cséfalvayová, L.	Study of paper degradation caused by iron gall inks	Havlíňová, B.
Čečková, K.	Study of accelerated aging of paper after deacidification	Havlíňová, B.
Grachová, L.	Comparison and optimization of selected preservation methods for books and documents	Reháčková, M.
Hodál M.	Study of photopolymerisation of modified silanes	Jančovičová, V.
Iždinská, Z.	Photochemical modification of paper properties	Jančovičová, V.
Jamnický, P.	Wetting in offset printing and new types of printing inks and plates	Panáč, J.
Košová, J.	Analysis and identification of pigments in historical writing means	Reháčková, M.
Polončanová, P.	Image analysis of the printed image	Dvonka, V.
Reháč P.	Modification of pulp and paper properties by DB discharge	Mikula, M.
Šubrtová M.	Study of the methods for evaluation of printability and print quality	Panáč, J.
Trnovec, B.	Preparation and modification of thin films on paper for its stabilization	Mikula, M.
Voltemarová, V.	Analysis and evaluation of changes of properties of paper during ageing caused by transitional metals	Čeppan, M.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Lörinczová, I.	Study of preparation and properties of UV-curable waterborn acrylate layers	Čeppan, M.

VIII. PUBLICATIONS

Article in journal

- [1] Cséfalvayová, L., Havlíňová, B., Paulusová, H., Maková, A., Petrovičová, M.: Iron-gall ink corrosion: Estimation of the progress of paper degradation using infrared spectroscopy and standard mechanical testing. *Chemické Listy*, vol. 99, pp. S555-S557, 2005.
- [2] Čečková, K., Maková, A., Havlíňová, B.: Deacidification and Stabilization of Paper. *Chemické Listy*, vol. 99, pp. s560-s562, 2005.
- [3] Čeppan, M., Neevel, J.G.: The application of factor analysis of VIS-NIR spectra to identification of iron-gall inks. *Chemické Listy*, vol. 99, pp. s535-s539, 2005.
- [4] Havlíňová, B., Mináriková, J., Švorcová, L., Hanus, J., Brezová, V.: Influence of fixatives and deacidification on the stability of arylmethane dyes on paper during the course of accelerated aging. *Restaurator*, vol. 26, pp. 1-13, 2005.
- [5] Jakubíková, Z., Mikula, M., Prosnan, B.: Surface Free Energy Comparison by Different Contact Angle Interpretations. *Chemické Listy*, vol. 99, pp. s454-s457, 2005.
- [6] Jančovičová, V.: Trendy vo výrobe obalov. *Papier a polygrafia*, no. 4, vol. 3, pp. 40, 2005.
- [7] Jančovičová, V., Lörinczová, I., Mrláková, I., Iždinská, Z.: Barrier properties of polymer coatings based on modified water soluble polymers. *Chemické Listy*, vol. 99, pp. s522-s524, 2005.
- [8] Klučiarová, Z., Havlíňová, B., Turanová, M., Čeppan, M.: Influence of pH Values and Accelerated Ageing on Light Stability of Paper. *Chemické Listy*, vol. 99, pp. s578-s582, 2005.
- [9] Mikula, M., Prosnan, B., Jakubíková, Z.: Degradation and optimal treatment of polypropylene by atmospheric DB discharge. *Chemické Listy*, vol. 99, pp. s525-s528, 2005.
- [10] Mikula, M., Valaseková, A., Prosnan, B., Šutý, Š.: Optical and spectral changes of aged papers and prints. *Chemické Listy*, vol. 99, pp. s592-s593, 2005.
- [11] Mrláková, I., Jančovičová, V., Mikula, M.: Photochemically active polymeric layers based on modified gelatine. *Chemické Listy*, vol.

99, pp. s598-s600, 2005.

- [12] Mullerova, J., Jurečka, S., Sutta, P., Mikula, M.: Structural and optical studies of a-Si:H thin films: From amorphous to nanocrystalline silicon. *Acta Phys. Slov.*, no. 3, vol. 55, pp. 351-359, 2005.
- [13] Reháková, M., Dvonka, V., Čeppan, M.: Light stability of ink-jet prints. *Chemické Listy*, vol. 99, pp. 398-402, 2005.
- [14] Šurina, I., Polovka, M., Vrška, M., Frisová, M., Katuščák, S., Mikula, M., Martvoňová, H.: The Study of Cone Calorimeter Method of Accelerated Paper Aging and Spectral Determination of Paper Performance Characteristics. *Chemické Listy*, vol. 99, pp. s388-s391, 2005.
- [15] Turanová, M., Havlínová, B., Brezová, V.: INFLUENCE OF ACCELERATED AGEING ON MECHANICAL PROPERTIES OF DIFFERENT TYPES OF PAPERS. *Chemické Listy*, vol. 99, pp. s516-s522, 2005.

Article in conference proceedings

- [1] Brezová, V., Pigošová, J., Havlínová, B., Dvoranová, D., Ďurovič, M.: Štúdium fotodegradácie arylmetánových farbív EPR spektroskopiou. Editor(s): Národní archiv Praha, In *XII. seminář restaurátoru a historiku Praha 2003*, 2005.
- [2] Černák, M., Černáková, L., Mikula, M., Kováčik, D., Štahel, P., Buček, A.: Low-Cost Plasma Activation and Chitosan Grafting of Polypropylene and Poly-Lactic-Acid Nonwoven Fabrics. In *15th Symposium of Applications of Plasma Processes (SAPPXV) and 3rd EU-Japan Joint Symposium on Plasma Processing (EJJSPP'05)*, Podbanske Jan. 2005, Comenius Univ. Press, UK Bratislava, pp. 77-78, 2005.
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DEPARTMENT OF INFORMATION ENGINEERING AND PROCESS CONTROL

Head of Department:
Dr. Miroslav Fikar, PhD

Telephone: +421252495269
Fax: +421252496469
E-mail: head@kirp.chtf.stuba.sk

I. STAFF

Full Professors:

Ján Mikleš, PhD, DSc; Alojz Mészáros, PhD;

Associate Professors:

Monika Bakošová, PhD; Ján Danko, PhD; Ján Dvoran, PhD; Miroslav Fikar, PhD;

Assistant Professors :

Ľuboš Čírka, PhD; Mária Karšaiová, PhD; Magdaléna Ondrovičová; Anna Vasičkaninová;

PhD Students:

Karol Calík; Peter Burian; Lukáš Dermíšek; Tomáš Hirmajer; Lucia Pastoreková; Dalibor Puna; Juraj Vöröš; Jana Závacká;

Technical staff:

Eva Fuseková; Andrea Kalmárová; Stanislav Vagač;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Process Control
Laboratory of Control Systems
Laboratory of Measuring Instruments and Techniques
Computer Laboratory (PC - Windows, Linux)
Computer Laboratory (Solaris)

B. Research laboratories:

Laboratory of Control Theory
Laboratory of Modelling and Simulation
Laboratory of Identification
Laboratory of Optimisation
Laboratory of Neural Networks
Laboratory of Fuzzy Control and Expert Systems
Laboratory of Chemical Reactor Analysis and Control
Laboratory of Biochemical Process Analysis and Control
Laboratory of Distillation Column Analysis and Control
Laboratory of Computer Aided Design (Siemens – SIMATIC S-7 300, FOXBORO, Yokogawa)

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Informatics	1/0/2	Calík, Hirmajer, Ondrovičová, Pastoreková, Vasičkaninová, Závacká
2. semester (Bc)	Informatics	1/0/2	Ondrovičová, Puna, Vasičkaninová, Vöröš
5. semester (Bc)	Computer Based Data Processing	0/0/2	Dermíšek, Karšaiová, Ondrovičová
6. semester (Bc)	Automatic Control Fundamentals	2/0/0	Bakošová, Fikar
	Laboratory Exercises of Automatic Control Fundamentals	0/0/2	Bakošová, Calík, Dermíšek, Fikar,

			Hirmajer, Karšaiová , Ondrovičová, Vasičkaninová
	Bachelor projects	0/0/4	Bakošová, Čirka, Dvoran, Fikar, Mészáros, Ondrovičová, Vasičkaninová
1. semester (MSc)	Process Control	1/0/2	Mészáros, Burian
	Process Dynamics	2/0/0	Bakošová
	Operating Systems	1/0/1	Fikar
	Control Devices and Systems	2/0/1	Danko
	Computer Programs	1/0/2	Čirka
	Laboratory Projects	0/0/8	Bakošová, Čižniar, Hirmajer, Karšaiová
	Laboratory Projects	0/0/7	Čirka, Fikar
2. semester (MSc)	Optimisation	2/0/1	Dvoran
	Control Theory I	2/0/2	Čirka, Mikleš
	Laboratory Exercises of Control Theory I	0/0/2	Mikleš
	Experimental Identification	2/0/0	Fikar
	Laboratory Project II	0/0/6	Čirka, Danko, Dvoran, Mikleš
	Modelling and Control of Polymerisation Processes	2/0/2	Dvoran
	Process Dynamics	2/0/0	Bakošová
	Laboratory Exercises of Process Dynamics	0/0/1	Bakošová
	Measurement of Process Variables	1/2/0	Čirka
3. semester (MSc)	Control Theory II	2/0/0	Mészáros
	Laboratory Exercises of Control Theory II	0/0/2	Mészáros
	Intelligent Control Systems	2/0/0	Dvoran
	Semestral Project	0/0/8	Čirka, Dvoran, Karšaiová, Mikleš, Ondrovičová
	CAD systems	2/0/0	Karšaiová
	Industrial Applications of Process Control	2/0/0	Mikleš, Ondrovičová
	Control of Technological Processes	1/0/2	Bakošová
	Robust Control	2/0/0	Fikar
4. semester (MSc)	Diploma Theses	0/0/27	Bakošová, Čirka, Dermíšek, Fikar, Mészáros, Mikleš , Ondrovičová

IV. CURRENT RESEARCH PROJECTS

A. VEGA Project No 1/1046/04 Progressive methods of adaptive and intelligent control applied to processes of chemical/biochemical technologies (Alojz Mészáros)

The scientific project is focused on development of new strategies of adaptive, robust and intelligent control with respect to potential applications to the processes of chemical/biochemical technologies. The main goal is to make further progress in the field of adaptive lambda-tracking and artificial neural network (ANN) based identification and control. For effective ANN training a new approach is proposed: the hybrid modelling method. New adaptive and robust control structures are designed and tested by both, computer simulations and laboratory control experiments. An original, inverse plant model based robust neural controller is introduced through bias neuron weights adaptation as well as neuro-fuzzy system utilization. An integrating factor of project objectives is application of results to non-linear chemical processes through simulation experiments as well as laboratory scale implementation. As reference processes chemical reactor, biochemical reactor, fixed-bed tube reactor and distillation column are chosen. Results achieved will be offered for industrial application in collaboration with external partners.

Project duration: from 01.01.2004 to 31.12.2006

B. VEGA Project No 1/0135/03 Development of optimal and supervisory control methods for mass transfer processes (Miroslav Fikar)

The project deals with development of modern control methods and focuses into mass transfer processes: chemical reactors, distillation columns, waste-water treatment plants, and other processes of chemical and food

technologies. Involves static and dynamic methods, two level control where supervision and dynamic optimisation will be investigated at the higher level and feedback control at the lower level. Developed algorithms, controllers, and control structures will be tested by simulations and in laboratory conditions.

Project duration: from 01.01.2003 to 31.12.2005

C. Project of Slovak – Czech Scientific Cooperation No 041 Advanced control methods for processes of chemical and food technologies (Ján Mikleš)

The aim of the project is to develop new methods of adaptive, robust and intelligent control and to implement obtained control algorithms for processes of chemical and food technologies.

Project duration: from 01.01.2004 to 31.12.2005

D. Project of Norwegian – Slovak Scientific Cooperation No 2032040 Norwegian competencies transfer into new curricula of environmental engineering education at the Slovak University of Technology in Bratislava (Alojz Mészáros)

The aim of the project is to transfer Norwegian competencies into new curricula of environmental engineering education at the Slovak University of Technology in Bratislava.

Project duration: from 01.01.2004 to 31.12.2005

E. Project of Slovak – French Scientific Cooperation Štefánik No 07921RE Dynamic and global process optimisation (Miroslav Fikar)

This research project deals with unsteady-state operation of dynamic processes that are described by a detailed mathematic models, typically with non-linear and differential equations. The optimisation of performances of such processes consists in the determination of optimal profiles of decision variables (temperature, pressure, flow, heat, ...) or optimal parameter values of the dynamic model which optimise (minimise, maximise) a given performance index (time of operation, yield, energy consumption,...), over a time horizon, under specified constraints (environment, process physical limits,...). This kind of problems is known as dynamic optimisation (or open-loop optimal control). Some selected problems include determination of optimal control in batch processes, estimation of optimal kinetic parameters in chemical reactions based on experimental data, determination of optimal control trajectory during set-point change, security analysis of processes, model based predictive control based on continuous model.

Project duration: from 01.01.2004 to 31.12.2005

F. Project of Slovak – Hungarian Scientific Cooperation No 21 Modelling and Control of Modern Processes with Heat and Mass Transfer (Alojz Mészáros)

With regard to ongoing research projects at the two partner departments, 3 research areas can be selected for future scientific collaboration. They are: Chemical Process Modelling and Control, Integrated Process Design, Hybrid Separation Process Design.

Project duration: from 01.01.2005 to 31.12.2006

V. CURRENT EDUCATION PROJECTS

SOCRATES No 2004/5 (Miroslav Fikar)

The aim of the project is to develop a MATLAB package for dynamic optimisation based on orthogonal collocation on finite elements.

Project duration: from 01.10.2004 to 01.3.2005

KEGA Project No 3/3121/05 Network of virtual laboratories for control of real systems (Miroslav Fikar)

The aim of the project is to create an open network of virtual laboratories in Slovakia connected together via Internet and to laboratory networks abroad. The project will also implement and test properties of centralised

network managed by an educational portal and distributed network created from servers on the participants laboratories.

Project duration: from 1.1.2005 to 31.12.2007

ESF Project No 13120110014 Program of continuing education in industrial automation and information technologies (Miroslav Fikar)

The aim of the project is to realize various courses in industrial automation and information technologies for support of employment.

Project duration: from 1.1.2005 to 31.12.2006

ESF Project Development of human resources for research in the field of automation (Miroslav Fikar)

The main aim of the project is to improve quality of employment of Bratislava region using development of human resources in research. Project should enforce regional research in automation, to create and develop learning society and network connected to national and international communities, to transfer the newest knowledge from academia to industry, and to increase awareness of enterprises about the research potential in the region.

Project duration: from 1.10.2004 to 31.12.2006

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
ProCS, Ltd., Šaľa	Processing of graphical displays for RS Centum CS 3000.	Bartošovič Štefan, director, Dolná 16, Šaľa	01.10.2003 -
Department of Automation and Control, FEEIT STU, Bratislava	Education in information technologies and automatic control.	Huba Mikuláš, associate professor, Ilkovičova 3, Bratislava	01.06.2004 -
Department of Automation and Measurement, FME STU, Bratislava	Education in information technologies and automatic control.	Rohal-Ilkiv Boris, professor, Nám. Slobody 17, Bratislava	01.06.2004 -
Siemens, Inc., Bratislava	Industrial control systems.	Pätoprstý Radomír, Siemens, Bratislava	01.01.2001 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Department of Process Control and Computer Techniques, FCT, University of Pardubice, Czech Republic	Advanced control methods for processes of chemical and food technologies.	Taufer Ivan, professor, Nám. Čs. legií 565, Pardubice, Czech Republic	01.01.2000 -
LSGC-CNRS, Ecole Nationale Supérieure des Industries Chimiques (ENSIC), Nancy, France	Dynamic optimisation of distillation columns, waste-water treatment plants.	Latifi Mohamed Abderrazak, professor, 1 rue Grandville, Nancy, France	01.01.1997 -
Control Engineering Laboratory, FEIS, Ruhr University, Bochum, Germany	Closed-loop identification, predictive control.	Unbehauen Heinz, professor, Universitätstr. 150, Bochum, Germany	01.01.1998 -
Control Engineering Laboratory, FEIS, Ruhr University, Bochum, Germany	E-learning in control.	Schmid Christian, professor, Universitätstr. 150, Bochum, Germany	01.01.2003 -
Institute of Information Technologies, Tomas Bata University, Zlín, Czech Republic	Adaptive control, decentralized control.	Dostál Petr, professor, Nám. T. G. Masaryka 275, Zlín, Czech Republic	01.01.1998 -

Institute of Information Technologies, Tomas Bata University, Zlín, Czech Republic	Adaptive control, robust control.	Prokop Roman, professor, Nám. T. G. Masaryka 275, Zlín, Czech Republic	01.01.1998 -
Department of Chemical Engineering, TU Budapest, Hungary	Modelling of chemical processes,	Mizsey Peter, professor, Műlgetem rkp. 3, Budapest, Hungary	01.01.1996 -
Faculty of Electrical Engineering, Czech Technical University, Prague, Czech Republic	Adaptive control, polynomial synthesis.	Šebek Michael, Technická 2, Prague, Czech Republic	01.01.1998 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Bakošová Monika	Slovak Society of Chemical Engineering	member	03.05.1995 -
Dvoran Ján	Slovak Society of Chemical Engineering	member	03.05.1995 -
Mészáros Alojz	Slovak Society of Chemical Engineering	member	03.05.1995 -
Mikleš Ján	Slovak Society of Chemical Engineering	member	03.05.1995 -
Dvoran Ján	Slovak Society for Cybernetics and Informatics	member	01.01.1992 -
Mikleš Ján	Slovak Society for Cybernetics and Informatics	member	01.01.1992 -
Mészáros Alojz	Slovak Society for Cybernetics and Informatics	member	01.01.1992 -
Bakošová Monika	Slovak Society of Industrial Chemistry	member	01.01.1983 -
Čirka Ľuboš	Slovak Society of Industrial Chemistry	member	01.01.1998 -
Danko Ján	Slovak Society of Industrial Chemistry	member	01.01.1975 -
Dvoran Ján	Slovak Society of Industrial Chemistry	member	01.01.1975 -
Fikar Miroslav	Slovak Society of Industrial Chemistry	member	01.01.1990 -
Karšaiová Mária	Slovak Society of Industrial Chemistry	member	01.01.1975 -
Mészáros Alojz	Slovak Society of Industrial Chemistry	member	01.01.1981 -
Mikleš Ján	Slovak Society of Industrial Chemistry	member	01.01.1975 -
Ondrovičová Magdaléna	Slovak Society of Industrial Chemistry	member	01.01.1991 -
Vasičkaninová Anna	Slovak Society of Industrial Chemistry	member	01.01.1985 -
Dermíšek Lukáš	Slovak Society of Industrial Chemistry	member	01.01.2003 -
Mikleš Ján	Scientific Grant Agency VEGA MŠSR a SAV - Commission for Elektrotechnics and Informatics	member	30.04.2002 -
Mikleš Ján	Commission for defence of dissertations (DSc) at science 28-30-9 Chemical Engineering and Process Control	member	01.11.1998 -
Mikleš Ján	Commission for defence of dissertations (DSc) at science 38-01-9 Automation and Control	chairmann	01.01.1998 -
Mikleš Ján	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	vice-chairman	01.01.1998 -
Bakošová Monika	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	02.12.2003 -
Danko Ján	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	01.01.1998 -
Dvoran Ján	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	01.01.1998 -
Fikar Miroslav	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	02.12.2003 -
Mészáros Alojz	Common branch commission for PhD study at science 28-30-9 Chemical Engineering and Process Control	member	01.01.1998 -
Mikleš Ján	Common branch commission for PhD study at science 38-01-9 Automation and Control	member	09.09.1997 -
Bakošová Monika	Common branch commission for the field of study 5.2.14 Automation	member	01.03.2005 -
Dvoran Ján	Common branch commission for the field of study 5.2.14 Automation	member	01.03.2005 -
Fikar Miroslav	Common branch commission for the field of study 5.2.14 Automation	member	01.03.2005 -
Mészáros Alojz	Common branch commission for the field of study 5.2.14 Automation	member	01.03.2005 -
Mikleš Ján	Common branch commission for the field of study 5.2.14 Automation	member	01.03.2005 -
Mikleš Ján	Editorial board of AT&P Journal	member	01.01.1993 -

Dvoran Ján	Editorial board of AT&P Journal	member	01.01.1993 -
Mészáros Alojz	Editorial board of AT&P Journal	member	01.01.1993 -
Mikleš Ján	Editorial board of Cybernetics and Informatics	member	01.01.1993 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Mikleš Ján	International Federation of Automatic Control, Technical Committee on Control Design	member	01.01.1996 -
Mikleš Ján	International Federation of Automatic Control (IFAC), Slovak National Member Organisation (Slovak NMO)	other	01.01.1997 -
Bakošová Monika	Czech Society of Chemical Engineering	member	01.01.2000 -
Mészáros Alojz	Czech Society of Chemical Engineering	member	01.01.2000 -
Mészáros Alojz	The New York Academy of Sciences	member	01.01.1996 -
Mészáros Alojz	Public Board of the Hungarian Academy of Sciences	member	01.01.2004 -
Mészáros Alojz	European Federation of Biotechnology	member	01.01.1997 -
Fikar Miroslav	EUCA (European Union Control Association) Council	member	01.12.2005 -

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Dostál, P.	Institute of Information Technologies, Tomas Bata University, Zlín	Czech Republic	May 2005 (2 days)
Taufer, I.	Faculty of Chemical Technology, University of Pardubice, Pardubice	Czech Republic	May 2005 (2 days)
Honc, D.	Faculty of Chemical Technology, University of Pardubice, Pardubice	Czech Republic	June 2005 (4 days)
Dušek, F.	Faculty of Chemical Technology, University of Pardubice, Pardubice	Czech Republic	June 2005 (4 days)
Taufer, I.	Faculty of Chemical Technology, University of Pardubice, Pardubice	Czech Republic	June 2005 (3 days)
Latifi, M. A.	LSGC-CNRS, Ecole Nationale Supérieure des Industries Chimiques (ENSIC), Nancy	France	June 2005 (8 days)
Lesage, F.	LSGC-CNRS, Ecole Nationale Supérieure des Industries Chimiques (ENSIC), Nancy	France	June 2005 (8 days)
Salhi, D.	LSGC-CNRS, Ecole Nationale Supérieure des Industries Chimiques (ENSIC), Nancy	France	June 2005 (1 day)
Taufer, I.	Faculty of Chemical Technology, University of Pardubice, Pardubice	Czech Republic	October 2005 (4 days)
Horváth, M.	Technical University of Budapest, Budapest	Hungary	December 2005 (8 days)

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

Name	Organisation / Institution / Conference	State	Date / Duration
Mészáros, A.	Technical University of Budapest, Budapest	Hungary	February 2005 (2 days)
Mikleš, J.	IAESTED International Conference MIC 2005, Innsbruck	Austria	February 2005 (5 days)
Mészáros, A.	Institute of Information Technologies, Tomas Bata University, Zlín	Czech Republic	April 2005 (2 days)
Fikar, M.	Czech Technical University in Prague, Prague	Czech Republic	May 2005 (1 day)

Bakošová, M.	15th International Conference ESCAPE-15, Barcelona	Spain	May - June 2005 (6 days)
Mészáros, A.	University of Porto, Porto	Portugal	June 2005 (5 days)
Bakošová, M.	Institute of Information Technologies, Tomas Bata University, Zlín	Czech Republic	June 2005 (1 day)
Dvoran, J.	Institute of Information Technologies, Tomas Bata University, Zlín	Czech Republic	June 2005 (1 day)
Mészáros, A.	Technical University of Budapest, Budapest	Hungary	June 2005 (1 day)
Mészáros, A.	13th Mediterranean Control Conference, Limassol	Cyprus	June – July 2005 (8 days)
Fikar, M.	World Congress IFAC, Prague	Czech Republic	July 2005 (5 days)
Mikleš, J.	World Congress IFAC, Prague	Czech Republic	July 2005 (5 days)
Mészáros, A.	Technical University of Budapest, Budapest	Hungary	September 2005 (3 days)
Dvoran, J.	VŠB – Technical University of Ostrava, Ostrava	Czech Republic	September 2005 (3 days)
Fikar, M.	VŠB – Technical University of Ostrava, Ostrava	Czech Republic	September 2005 (3 days)
Čížniar, M.	LSGC-CNRS, Ecole Nationale Superieure des Industries Chimiques (ENSIC), Nancy	France	October 2005 (7 days)
Fikar, M.	LSGC-CNRS, Ecole Nationale Superieure des Industries Chimiques (ENSIC), Nancy	France	October 2005 (7 days)
Fikar, M.	Conference E-learning in a New Europe, Eisenstadt	Austria	October 2005 (3 days)
Burián, P.	Technical University of Budapest, Budapest	Hungary	October 2005 (7 days)
Mészáros, A.	Technical University of Budapest, Budapest	Hungary	October 2005 (7 days)
Bakošová, M.	Institute of Information Technologies, Tomas Bata University, Zlín	Czech Republic	October 2005 (1 day)
Bakošová, M.	Workshop MOODLE, Čeladná	Czech Republic	November 2005 (3 days)
Čírka, L.	Workshop MOODLE, Čeladná	Czech Republic	November 2005 (3 days)
Mészáros, A.	University of Veszprém, Veszprém	Hungary	November 2005 (1 day)
Čížniar, M.	Conference Technical Computing Prague 2005, Prague	Czech Republic	November 2005 (3 days)
Mészáros, A.	Technical University of Budapest, Budapest	Hungary	November 2005 (1 day)
Mészáros, A.	Technical University of Budapest, Budapest	Hungary	December 2005 (1 day)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Bihuňová, M.	Design of fuzzy controllers in MATLAB.	Vasičkaninová, A.
Blahová, L.	Control of a distillation column by IMC method.	Vasičkaninová, A.
Blaňár, P.	Design of distillation column control.	Vasičkaninová, A.
Borošová, Z.	Fuzzy modelling of process dynamics in MATLAB.	Vasičkaninová, A.
Čemanová, L.	GUI development for simple controller design.	Bakošová, M.
Dovál, P.	E-learning module for experimental identification.	Čírka, L.
Hladíková, M.	Industrial control system GENIE.	Ondrovičová, M.
Hunčár, P.	Data visualisation using Internet techniques.	Čírka, L.
Jančík, M.	Modelling and control in JAVA language.	Čírka, L.
Juhášová, E.	Animations in process simulation via Internet using JAVA.	Fikar, M.
Madzin, T.	Control system Foxboro.	Ondrovičová, M.
Minarovský, P.	Samba server for students at the DIEPC.	Fikar, M.
Mištec, P.	Robust control of a continuous-time stirred tank reactor.	Bakošová, M.
Podmajerský, M.	LQ Controller design via Internet.	Čírka, L.
Vlkanová, J.	Design of controllers for cascade control of heat exchangers	Vasičkaninová, A.

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

Name	Title of Thesis	Supervisor
Baleja, J.	Development of a library of mathematical models of technological processes	Bakošová, M.
Borkovič, P.	Creation of interface for transfer of configuration data to system Yokogawa	Dermíšek, L., Fikar, M.
Burian, P.	Adaptive control of systems with recycle.	Mészáros, A.
Čížniar, M.	Dynamic optimisation of processes.	Fikar, M.
Gese, M.	Design of an electrical model of a nonlinear process.	Danko, J.
Hisira, M.	Tank control by control system Foxboro.	Ondrovičová, M.
Palacka, O.	Control of the reboiler of the distillation column.	Ondrovičová, M.
Pastoreková, L.	Control of systems by artificial neural network.	Mészáros, A.
Prček, T.	Monitoring and control of a laboratory fan heater LTR 700 over the Internet.	Čírka, L.
Rybářová, K.	E-learning book: Controller design.	Čírka, L.
Valo, R.	Internet database system for the course Automatic Control Fundamentals.	Fikar, M.
Závacká, J.	E-learning book: Modelling of technological processes.	Čírka, L.

VIII. PUBLICATIONS

Book

- [1] Švec, P., Fikar, M., Dzivák, J., Vozár, L.: *Základy práce v operačnom systéme Solaris*, Michal Vaško, Prešov, (66pp), 2005.

Article in journal

- [1] Bakošová, M., Baleja, J., Ondrovičová, M.: MODELTOOL 1.0 - toolbox matematických modelov chemickotechnologických procesov. *AT&P Journal*, no. 12, vol. 12, pp. 59-60, 2005.
- [2] Čírka, L., Fikar, M.: Adaptívne LQ riadenie laboratórneho výmenníka tepla. *AT&P Journal*, no. 12, vol. 12, pp. 73-75, 2005.
- [3] Fikar, M., Chachuat, B., Latifi, M.A.: Optimal Operation of Alternating Activated Sludge Processes. *Control Engineering Practice*, no. 7, vol. 13, pp. 853-861, 2005.
- [4] Halldorsson, U., Fikar, M., Unbehauen, H.: Nonlinear predictive control with multirate optimisation step lengths. *IEE Proceedings - Control Theory and Applications*, no. 3, vol. 152, pp. 273-285, 2005.
- [5] Hirmajer, T., Fikar, M.: Optimálne riadenie systémov s hybridnou dynamikou. *AT&P Journal*, no. 12, vol. 12, pp. 81-84, 2005.
- [6] Vasičkaninová, A., Bakošová, M., Dvoran, J.: Využitie fuzzy regulátorov pri kaskádovom riadení chemického reaktora (1). *AT&P Journal*, no. 12, vol. 12, pp. 66-68, 2005.

Article in conference proceedings

- [1] Bakošová, M., Ondrovičová, M., Vasičkaninová, A.: Využitie multimédií pri výučbe chémie. In *Chémia a život okolo nás*, Vydavateľstvo STU, Bratislava, pp. 93-98, 2005.
- [2] Bakošová, M., Puna, D.: Robust control of a chemical reactor in an unstable steady state. In *Proc. 15. Int. Conference Process Control '05*, STU, Bratislava, Štrbské Pleso, High Tatras, Slovakia, (Poster: Puna), pp. CD ROM 118, 2005.
- [3] Bakošová, M., Puna, D., Mészáros, A.: Control of a Chemical Reactor in an Unstable Steady State using Robust Static Output Feedback. In *Proc. 32. Int. Conf. SSCHE*, SSCHE Bratislava, Tatranské Matliare (Slovakia), (Poster: Puna), pp. CD ROM 060, 2005.
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- [5] Bakošová, M., Vasičkaninová, A., Puna, D., Ondrovičová, M.: Cascade Control of a Chemical Reactor. In *Proc. 32. Int. Conf. SSCHE*, SSCHE Bratislava, Tatranské Matliare (Slovakia), (poster: Puna), pp. CD ROM 061, 2005.
- [6] Čírka, L., Fikar, M.: Registration - Module for LMS Moodle. Editor(s): M. Huba, In *Proceedings of 6th International Conference Virtual University VU'05*, Bratislava, pp. 229-232, 2005.
- [7] Čírka, L., Fikar, M.: IDTOOL 3.0 - A Dynamical System Identification Toolbox for MATLAB/SIMULINK. In *Proc. 15. Int. Conference Process Control '05*, Štrbské Pleso, High Tatras, Slovakia, 2005.
- [8] Čírka, L., Fikar, M., Mikleš, J.: Youla-Kučera Parameterisation Approach to LQ Tracking and Disturbance Rejection Problem. In *Proc. of the 16th IFAC World Congress*, Prague, Czech Republic, (FRM22-TO/5), 2005.

- [9] Čirka, L., Puna, D., Hirmajer, T., Fikar, M.: Moodle: a Software Package for Producing Internet-based Courses and Web Sites. In *Proc. 15. Int. Conference Process Control '05*, Štrbské Pleso, High Tatras, Slovakia, pp. 206f.pdf, 2005.
- [10] Čížniar, M., Salhi, D., Fikar, M., Latifi, M.A.: A MATLAB Package for Orthogonal Collocations on Finite Elements in Dynamic Optimisation. In *Proc. 15. Int. Conference Process Control '05*, Štrbské Pleso, High Tatras, Slovakia, pp. 058f.pdf, 2005.
- [11] Čížniar, M., Salhi, D., Fikar, M., Latifi, M.A.: DYNOPT - Dynamic Optimisation Code for MATLAB. In *Technical Computing Prague 2005*, pp. cizniar.pdf, 2005.
- [12] Dermíšek, L., Vöröš, J., Mikleš, J.: Two-level optimal process control. In *Proc. 15. Int. Conference Process Control '05*, Štrbské Pleso, High Tatras, Slovakia, pp. 216f.pdf, 2005.
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- [14] Fikar, M., Čirka, L.: E-learning Course on Solaris Operating System. Editor(s): M. Huba, In *Proceedings of 6th International Conference Virtual University VU'05*, Bratislava, pp. 72-75, 2005.
- [15] Fikar, M., Čirka, L., Hirmajer, T., Katusčák, S., Tiňo, R.: Information System for the Project KNIHA.SK. In *Proc. 15. Int. Conference Process Control '05*, Štrbské Pleso, High Tatras, Slovakia, 2005.
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- [17] Hirmajer, T., Fikar, M., Calík, K.: Computations of Sensitivity Coefficients for Dynamic Systems. In *Proc. 15. Int. Conference Process Control '05*, Štrbské Pleso, High Tatras, Slovakia, 2005.
- [18] Lesage, F., Fikar, M., Latifi, M.A.: Recent developments in the dynamic optimisation package DYNO. In *Proc. 15. Int. Conference Process Control '05*, Štrbské Pleso, High Tatras, Slovakia, pp. 186f.pdf, 2005.
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- [21] Mészáros, A., Šperka, L., Burian, P.: Adaptive Control of Processes with Recycle. In *Proc. 15. Int. Conference Process Control '05*, 2005.
- [22] Mikleš, J., Fikar, M., Čirka, L., Dermíšek, L.: Implementation of H2 Optimal Controller with Integral Action. Editor(s): M. H. Hamza, In *Proceedings of the 24th IASTED International Conference on Modelling, Identification, and Control*, ACTA Press, Innsbruck, Austria, pp. 457-175.pdf, 2005.
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- [26] Šperka, L., Mészáros, A., Mizsey, P., Andrášik, A.: Control of pH in a laboratory fermenter using neuro-fuzzy logic technique. In *Proc. of the 16th IFAC World Congress*, 2005.
- [27] Vasičkaninová, A., Bakošová, M.: Cascade fuzzy logic control of a chemical reactor. In *Proc. 15. Int. Conference Process Control '05*, Štrbské Pleso, High Tatras, Slovakia, 2005.
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Technical manual

- [1] Čížniar, M., Fikar, M., Latifi, M.A.: MATLAB Dynamic Optimisation Code DYNOPT. User's Guide. Bratislava, 2005.
- [2] Hirmajer, T., Fikar, M.: Optimal Control of a Hybrid Dynamical System: Two Coupled Tanks. FCFT STU, Radlinského 9, 812 37 Bratislava, Slovakia, 2005.

DEPARTMENT OF INORGANIC CHEMISTRY

Head of Department:

Prof. Marian Koman, PhD, DSc (since 1.10.2004)

Telephone:

+421252495257

Fax:

+421252493198

E-mail:

marian.koman@stuba.sk

I. STAFF

Full Professors:

Roman Boča, PhD, DSc; Marian Koman, PhD, DSc; Milan Melník, PhD, DSc; Gregor Ondrejovič, PhD, DSc; Jozef Šima, PhD, DSc;

Associate Professors:

Adela Kotočová, PhD; Anna Mašlejová, PhD; Iveta Ondrejkočová, PhD; Blažena Papánková, PhD., Peter Segfa, PhD; Dušan Valigura, PhD;

Assistant Professors :

Mário Izakovič, PhD; Vladimír Jorík, PhD; Ján Moncol, PhD., Jozef Švorec, Miroslav Tatarko, PhD;

Research Fellows:

Ľubor Dlháň, PhD; Dušan Mikloš, PhD; Milan Ružička;

PhD Students:

Radoslava Ivaniková (since 1.10.2003); Jana Jašková (since 1.10.2003); Jaroslava Maroszová (since 1.10.2004); Michaela Miháliková (since 1.10.2004); Petra Stachová (since 1.10.2002); Katarína Šintalová (since 1.10.2003); Jozef Švorec (since 1.10.2001); Ján Titiš (since 1.10.2004); Silvia Galková (since 1.10.2005); Jozef Malo (since 1.10.2005); Juraj Pelikán (since 1.10.2005); Zuzana Púčeková (since 1.10.2005); Branislav Šípoš (since 1.10.2005);

Technical Staff:

Andrea Bočová; Valéria Habudová; Leonard Kováč; Helena Križanová; Silvia Markusová; Marta Sprušanská;

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
Laboratory of Elemental Analysis

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Inorganic Chemistry I	3/2/0	Boča, Šima, Kotočová, Ondrejkočová, Valigura
	Inorganic Chemistry I (Laboratory)	0/0/3	
2. semester (Bc)	Inorganic Chemistry II	2/2/0	Melník, Ondrejovič, Koman, Segfa
	Inorganic Chemistry II (Laboratory)	0/0/4	
1. semester (MSc)	Chemical Bond and Chemical Structure	2/0/0	Boča
	Chemistry of Coordination and Organometallic Compounds	2/0/0	Ondrejovič
	Inorganic Syntheses	2/0/0	Valigura
	Inorganic Photochemistry	2/0/0	Šima
1. semester (MSc)	Laboratory Practice in the Major I	0/0/10	Boča, Kotočová, Ondrejkočová,

			Ondrejovič, Růžička
	Laboratory Practice in the Major I	0/0/10	Segľa, Valigura
2. semester (MSc)	Indirect Methods of Research of Inorganic Compounds	2/2/0	Mašlejová
	Crystallochemistry	2/0/0	Mikloš
	Laboratory Practice in the Major II	0/0/6	Jorík, Mašlejová, Mikloš
	Spectral Methods of Control Technological Processes	2/2/0	Segľa
2. semester (Bc)	Reaction mechanisms of Inorganic Compounds	2/0/0	Šima
3. semester (Bc)	Inorganic Materials	2/1/0	Koman
	Bioinorganic Chemistry	2/1/0	Melník
	Laboratory of Speciality	0/0/10	Koman, Papánková, Ružička,
3. semester (Bc)	Inorganic Biopharmacs	2/0/0	Melník
	Catalysis	2/0/0	Ondrejovičová
	Engineering of Inorganic Substances	2/0/0	Ondrejovič
4. semester (Bc)	Diploma Thesis	0/0/27	supervisors

IV. CURRENT RESEARCH PROJECTS

A. VEGA Project No 1/2453/05 Tuning the Magnetoactivity of Coordination Compounds (Roman Boča).

A rational design of the zero-field splitting parameter in metal complexes lies at the centre of focus. An extensive series of the Ni(II) complexes with a variable coordination sphere (unidentate, bidentate and polydentate ligands) has been synthesized and the recorded magnetic response (the temperature variation of the isothermal magnetic susceptibility and the field dependence of the magnetization) has been analyzed by the developed software. At this stage the sign and magnitude of the zero-field splitting parameter (the axial magnetic anisotropy parameter) can be predicted. This parameter correlates with the structural distortions relative to the pattern octahedral reference. New program that handles the complete space spanning by the crystal-field multiplets and Zeeman levels has been outlined. At present the project concentrates to the understanding of the magnetic anisotropy in binuclear complexes.

See: (a) P. Baran, M. Boča, R. Boča, A. Krutošíková, J. Miklovič, J. Pelikán, J. Titiš: *Polyhedron* 24 (2005) 1510-1516. *Structural characterization, spectral and magnetic properties of nickel(II) complexes with furopyridine derivatives and isothiocyanate.* (b) R. Boca: *Struct. Bonding* 117 (2006) 1-264. *Magnetic Parameters and Magnetic Functions in Mononuclear Complexes Beyond the Spin-Hamiltonian Formalism.* (c) A. Mašlejová, R. Ivaníková, I. Svoboda, B. Papánková, L. Dlháň, D. Mikloš, H. Fuess, R. Boča: *Polyhedron* (2006). *Structural characterization and magnetic properties of hexakis(imidazole)nickel(II) bis(formate), bis(chloracetate), bis(2-chloropropionate) and hexakis(1-methyl-imidazole)nickel(II) chloride dihydrate*

Project duration: from 01. 01. 2005 to 31. 12. 2007

B. MVTS Project No NEM/Slov/DAAD/Darm05 Magneto-structural relationships for novel substances and materials (Roman Boča).

Polynuclear exchange-coupled systems have been investigated with the aim to prepare molecule-based magnets and single-molecule magnets.

See: R. Boča, M. Hvastijová, J. Kozíšek, M. Valko, H. Ehrenberg, W. Haase, I. Svoboda, R. Werner, H. Fuess: *Inorg. Chem. Commun.* 8 (2005) 548-551. *A Trinuclear Cyanamidonitrate-Copper(II) Complex Bridged by Imidazolato Ligands.*

Project duration: from 01. 01. 2005 to 31. 12. 2007

C. MVTS Project No NEM/Slov/DFG/CH Molecular Electronic Multistability (Roman Boča).

Spin crossover phenomenon was studied by several experimental techniques on novel substances. The prepared iron(II) complex shows a temperature-induced hysteresis centered at room temperature and of the width of 35 K.

See: R. Boča, F. Renz, M. Boča, H. Fuess, W. Haase, G. Kickelbick, W. Linert, Vrbová-Schikora: *Inorg. Chem. Commun.* 8 (2005) 227-230. *Tuning of the spin crossover above room temperature: Iron(II) complex of substituted, and deprotonated 2,6-bis(benzimidazol-2-yl)pyridine.*

Project duration: from 01. 01. 2002 to 31. 12. 2007

D. APVT Project No 20-005204 Magnetostructural Correlations in Unconventional Magnetic Materials (Roman Boča).

Molecular (0D) and chain (1D) coordination compounds were synthesized and their magnetic properties recorded and analyzed. New generation of the molecule-based magnets has been discovered.

See: (a) R. Herchel, R. Boča: *Dalton Trans.* (2005) 1352-1353. *Ferromagnetism in a Mononuclear Cobalt(II) Complex Containing Schiff-base Pentadentate Ligand.* (b) A. Tomkiewicz, R. Boča, M. Nahorska, J. Mrozinski: *J. Mol. Struct.* 734 (2005) 143-148. *Ferrimagnetic, bimetallic chain systems: [Ni(tetren)]ReCl₆ and [Ni(tetren)]ReCl₆.CH₃OH where tetren = tetraethylenepentamine.*

Project duration: from 01. 08. 2005 to 31. 12. 2007

E. ECONET Project (France-Slovakia) Etude par méthode FORC du comportement hystérique de solides moléculaires commutables (Roman Boča).

Modeling of the hysteresis behaviour for spin crossover materials has been done. This leads to understandings of the solid-state cooperativeness that rules the switching from the low-spin to high-spin state and back.

Project duration: from 01. 08. 2005 to 31. 12. 2006

F. VEGA Project 1/2452/05 Novel Complexes of Bioligands: Synthesis, Structure, Properties and Applications (Milan Melník).

Investigation of new metal complexes exhibiting controlled antiphlogistic and antituberculous effects is an important task of contemporary bioinorganic chemistry. The project is focused on a complete research of the formation, structure, properties and practical applications of copper, iron, zinc and other metal complexes with non-steroid antiphlogistics (derivatives of salicylic and propionic acids, fenamates) and antituberculous (derivatives of quinolons, nicotinic acid, nicotinamide, pyridylcarbinol and imidazole). The synthesized complexes will be studied as solids and in the solutions by x-ray diffraction of crystals and powders, spectral, magnetic, thermal, electrochemical and photochemical methods. Obtained characterization of the compounds will be compared and confronted with literature data in order to extract trends related to important biological aspects. A basic biological screening of the prepared complexes will be focused on cytotoxicity and its mechanisms. Conclusions about relation between the chemical structure and the cytotoxic activity will be formulated and applied to preparation of new substances.

Project duration: from 01. 01. 2005 to 31. 12. 2007

G. APVT Project APVT-20-005504 Synthesis and investigation nonsteroidal antiphlogistics based on copper(II) complexes (Milan Melník).

The submitted project is aimed at studying conditions of preparation, electronic, vibrational and EPR spectra, molecular and crystal structures of solid Cu(II) complexes with ligands of therapeutic importance, such as derivatives of salicylic, propionic, fenamic acids, and with neutral ligands. In addition, an attention will be paid to solution properties of the complexes, particularly to their speciation. Biological screening will be performed. Redox behaviour of the complexes using electrochemical and photochemical methods will be investigated and compared to that of analogous iron complexes with structural and functional model compounds. Most of experimental work will be carried out at Department of Inorganic Chemistry. The results obtained will be published in CC journals and presented at conferences, or patented.

Project duration: from 01. 01. 2005 to 31. 12. 2007

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Pharmaceutical Faculty, Comenius University, Bratislava	Synthesis and spectral properties of Schiff base with Cu(II) complexes	Valent Aladár, Assoc. professor, Kalinčiakova 8, 832 32 Bratislava	2002 -
Medical Faculty, Comenius University, Bratislava	Cu(II) Schiff-base complexes as perspective antidotes	Čársky Jozef, professor, Sasinkova 10, 813 72 Bratislava	2000 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Materials Science, University of Technology, Darmstadt, Germany	New Crystal, Molecular, Electronic and Magnetic Structures with Functional Properties	Fuess Hartmut, professor, Petersenstrasse 23, 64287 Darmstadt, Germany	1994 -
Institute of Inorganic Chemistry, Johannes-Guttenberg-University, Mainz, Germany	Molecular Electronic Multistability	Renz Franz, Dr., Staudinger Weg 9, D-55099 Mainz, Germany	2002 -
Institute of Applied Synthetic Chemistry, Vienna University of Technology, Vienna, Austria	Coordination Compounds with Interesting Magnetic Properties	Linert Wolfgang, professor, A-1060 Vienna, Austria	1998 -
Institute of Inorganic and Physical Chemistry, University of Technology, Darmstadt, Germany	New Crystal, Molecular, Electronic and Magnetic Structures with Functional Properties	Haase Wolfgang, professor, Petersenstrasse 23, 64287 Darmstadt, Germany	1994 -
Department of Chemistry, University of Puerto Rico, San Juan, USA	Magnetism of Multinuclear Coordination Compounds and Clusters	Raptis Raphael, professor, San Juan, PR 00931-3346, USA	1994 -
Institute of Solid State Chemistry, Faculty of Chemical Technology, Prague, Czech Republic	RTG analysis of monocrystals and powders	Kratochvíl Bohumil, professor, Technická 5, 16628 Prague 6, Czech Republic	1992 -
York University, Toronto, Canada	X-ray analysis of transition and non-transition metal atoms	Holloway Clive Eduard, director, 4700 Keele Street, North York M3J 1P3, Toronto, Ontario, Canada	1976 -
University of Helsinki, Helsinki, Finland	X-ray analysis of solid compounds	Sundberg Markku, professor, A. I. Virtasen aukio 1, P.O. Box 55, Helsinki, Finland	1968 -
Department of Chemistry, University of Jyväskylä, Yyveskilää, Finland	X-ray analysis of solid compounds	Sillanpää Reijo, professor, FIN-40351 Jyväskylä, Finland	2003 -
Wroclaw University, Wroclaw, Poland	Magnetic properties of solid compounds	Mrozinski Jerzy, professor, 14, F. Joliot-Curie str, 50-383 Wroclaw, Poland	1972 -
Okayama University, Okayama, Japan	Synthesis and magnetic properties of solid compounds	Kojima Masaaki, professor, Tsushima, Okayama, 700-8530 Japan	2003 -
Aoyama Gakuin University, Tokyo Japan	Schiff bases and chemistry of copper complexes	Hasegawa Miki, professor, 6-16-1 Chitosedai Setagaya-ku, Tokyo, 157-8572 Japan	2003 -
Kwansei Gakuin University, Osaka, Japan	Magnetic and spectral properties solid compounds	Mikuriya Masahiro, professor, 2-1 Gakuen, Sanda 669-1337, Japan	2003 -
Ochanomizu University, Tokyo, Japan	PhD students exchange	Fukuda Yutaka, professor, Ochanomizu University, 2-1-1 Otsuka, Bunkyo-ku 112-8610, Tokyo, Japan	2003 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Koman Marian	Slovak Expert Group of Solid State Chemistry and Physics	chairmann	01. 06. 1985 -
Koman Marian	Regional Committee of Czech and Slovak Crystallographers	vice-president	01. 01. 1992 -
Koman Marian	Czech and Slovak Association for Crystal Growth	member	01. 02. 1994 -
Koman Marian	Slovak Society for Industrial Chemistry	member	01. 01. 1985 -
Moncol' Ján	Czech & Slovak Crystallographic Association	member	01. 07. 2001 -
Ružička Milan	The Czechoslovak Association for Crystal Growth	vice-president	1991 -
Ružička Milan	Slovak Expert Group of Solid Chemistry and Physics	other	1975 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Koman Marian	Slovak Expert Group of Solid State Chemistry and Physics	chairmann	01. 06. 1985 -
Koman Marian	Regional Committee of Czech and Slovak Crystallographers	vice-president	01. 01. 1992 -
Koman Marian	Czech and Slovak Association for Crystal Growth	member	01. 02. 1994 -
Moncoř Ján	Czech & Slovak Crystallographic Association	member	01. 07. 2001 -
Ružička Milan	The Czechoslovak Association for Crystal Growth	vice-president	1991 -
Ružička Milan	Slovak Expert Group of Solid Chemistry and Physics	other	1975 -
Melník Milan	American Chemical Society	member	1998 -
Melník Milan	Finnish Chemical Society	member	1974 -
Melník Milan	Editorial board MGMC	member	1998 -
Izakovič Mário	European Photochemistry Association	member	01. 01. 1997
Tatarko Miroslav	European Photochemistry Association	member	01. 01. 1996

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Svoboda, I.	Technical University Darmstadt	Germany	January 2005 (7 days)
Linert, W.	Technical University Vienna	Austria	March 2005 (2 days)
Linares, J.	University Versailles, Paris	France	April 2005 (8 days)
Sameson, G.	Technical University Vienna	Austria	October 2005 (2 days)
Fuess, H.	Technical University Darmstadt	Germany	December 2005 (3 days)

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

Name	Organisation / Institution / Conference	State	Date / Duration
Boča, R.	DFG Bonn, Bad Dürkheim	Germany	January 2005 (4 days)
Boča, R.	DFG Bonn, Bad Dürkheim	Germany	February 2004 (4 days)
Šima, J.	Technical University Vienna	Austria	February 2005 (1day)
Dlháň, L.	Technical University Darmstadt	Germany	February 2005 (16 days)
Růžička, M.	Institute of Physics, Czech Academy od Sciences	Czech Republic	March 2005 (1 day)
Boča, R.	Technical University Vienna	Austria	May 2005 (1 day)
Melník, M.	University Cambridge	England	May 2005 (4 days)
Ivaníková, R.	Technical University Darmstadt	Germany	June 2005 (14 days)
Boča, R.	Technical University Vienna	Austria	June 2005 (1 day)
Šima, J.	Technical University Vienna	Austria	June 2005 (1 day)
Šima, J.	Technical University Vienna	Austria	June 2005 (1 day)
Boča, R.	University Barcelona	Spain	June 2005 (6 days)
Boča, R.	University Versailles, Paris	France	June 2005 (14 days)
Herchel, R.	Technical University Darmstadt	Germany	July 2005 (14 days)
Papánková, B.	Technical University Darmstadt	Germany	July 2005 (8 days)
Mašlejová, A.	Technical University Darmstadt	Germany	July 2005 (8 days)
Boča, R.	Technical University Darmstadt	Germany	July 2005 (13 days)
Melník, M.	York University, Toronto	Canada	July 2005 (30 days)
Koman, M.	VŠCHT, Prague	Czech Republic	August 2005 (1 day)
Boča, R.	J. G. University, Mainz	Germany	August 2005 (20 days)
Melník, M.	University Delhi	India	September 2005 (16 days)
Boča, R.	Technical University Vienna	Austria	October 2005 (1 day)
Pelikán	Technical University Darmstadt	Germany	October 2005 (38 days)
Pelikán, J.	Technical University Darmstadt	Germany	November 2005 (31 days)
Koman, M.	VŠCHT, Prague	Czech Republic	November 2005 (2 days)
Segla, P.	VŠCHT, Prague	Czech Republic	November 2005 (2 days)
Melník, M.	VŠCHT, Prague	Czech Republic	November 2005 (2 days)
Melník, M.	Free University, Bruxelles	Belgium	December 2005 (4 days)
Jorík, V.	Charles University, Prague	Czech Republic	December 2005 (1 day)
Jorík, V.	VŠCHT, Prague	Czech Republic	December 2005 (1 day)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Böhmová, J.	Preparation and properties of halogenosalicylatocopper(II) complexes with pyridylcarbinols.	Melník, M.
Nemec, I.	Magnetic properties of polynuclear complexes.	Boča, R.
Kavalířová, J.	Preparation and properties of carboxylatocopper(II) complexes with biologically active ligands	Valigura, D.
Varíný, M.	Preparation and study of magnetic properties of some dinuclear nickel(II) complexes.	Boča, R.

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

Name	Title of Thesis	Supervisor
Galková, S.	Preparation and study of properties of Fe(III) complexes.	Ondrejkočová, I.
Malo, J.	Preparation and study of properties of iron complexes with tertiary phosphane- and arsane-oxides.	Ondrejkočová, I.
Púčeková, Z.	Methyl- and methoxysalicylatocopper(II) complexes with biologically active ligands.	Valigura, D.
Šípoš, R.	Formation and stability of Fe(III) and Cu(II) complexes with some derivatives of kojic and salicylic acid.	Šima, J.
Vašková, Z.	Nitrobenzoatocopper(II) with biologically active ligands.	Valigura, D.

C. Dissertations (PhD)

Herchel, R.	Magnetism of the multiterm systems and systems with the exchange interaction.	Boča, R.
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VIII. PUBLICATIONS

Book

- [1] Ružička, M.: *Technológia prípravy monokryštálov*, STU Press, Bratislava, 2005.
[2] Šima, J., Koman, M., Kotočová, A., Segla, P., Tatarko, M., Valigura, D.: *Anorganická chémia*, STU Press, Bratislava, 2005.

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- [1] Baran, P., Boča, M., Boča, R., Krutošíková, A., Miklovič, J., Pelikán, J., Titiš, J.: Structural characterization, spectral and magnetic properties of nickel(II) complexes with furopyridine derivatives and isothiocyanate. *Polyhedron*, vol. 24, pp. 1510, 2005.
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DEPARTMENT OF INORGANIC TECHNOLOGY

Head of Department:
Prof. Pavel Fellner, PhD, DSc

Telephone: +421252963637
Fax: +421252 92 01 71
E-mail: pavel.fellner@stuba.sk
www.chtf.stuba.sk/kant

I. STAFF

Full Professors:
Prof. Pavel Fellner, PhD, DSc.

Associate Professors:
Jana Gabčová, PhD, Ján Híveš, PhD, Marta Chovancová, PhD, Vladimír Danielik, PhD

Assistant Professors :
Anna Žúžiová, PhD.

Research Fellows:
Peter Adamčík, Marta Ambrová, Vladimír Khandl, Matilda Zemanová, PhD

PhD Students:
Michaela Benová, Zuzana Gáliková, Jana Jurišová, Alexandra Sýkorová, Dalibor Uher

Technical staff:
Daniela Dančová, Viliam Cauner

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:

3. semester (Bc)	Fundamental Principles of Inorganic Technology	2/2/0	Gabčová, Híveš
5. semester (Bc)	Corrosion and Material Surface Treatment	2/0/2	Chovancová
1. semester (MSc)	Phase Equilibria	1/2/0	Gabčová
	Corrosion and Material Protection	2/1/0	Chovancová, Zemanová
	Applied Thermodynamics	2/2/0	Fellner, Danielik
	Laboratories I.	0/0/8	Gabčová, Híveš, Chovancová, Žúžiová
	Inorganic Technology II.	2/0/0	Gabčová, Híveš, Šíma
2. semester (MSc)	Chemical Reaction Engineering	2/2/0	Híveš, Danielik
	Applied Electrochemistry	2/2/0	Híveš
	Laboratories II.	0/0/8	Gabčová, Híveš, Chovancová, Žúžiová
3. semester (MSc)	Fertilizers	2/0/0	Žúžiová, Gabčová
	Electrochemical Engineering	1/1/0	Híveš, Fellner
	Elements of System Engineering	1/1/0	Danielik
	Laboratories III.	0/0/10	Danielik, Fellner, Gabčová, Híveš, Chovancová,
4. semester (MSc)	Diploma work	0/0/27	Danielik, Fellner, Gabčová, Híveš, Chovancová

IV. CURRENT RESEARCH PROJECTS

VEGA Project No 1/2109/05 The Use of the Pulse Technique on the Preparation of the Composite and Alloy Layers on the Metal Substrates (Marta Chovancová)

Ni – W alloy coatings were deposited from aqueous electrolytes by direct current and pulse current under various current densities and different pulse ratios and pulse cycles. In the case of direct current the content of the tungsten in Ni – W alloy increased with current density and for the pulse deposition the tungsten is deposited in the major part at the higher current densities as well. The deposits obtained by direct and pulse current are homogenous and their surface is fine-grained without segmentation. The corrosion resistance of Ni – W alloys has been investigated before and after thermal treatments. Corrosion resistance of annealed alloy deposits is higher in comparison to the only electroplated ones.

The composite coatings with the nickel matrix and polytetrafluoroethylene dispersed particles TF 5033 were prepared with high reproducibility. The adhesion and microhardness of the composite coatings depends on the used substrates (carbon steel and stainless steel). The scanning electron microscopy photographs of Ni-PTFE composites showed the PTFE layer covering the deposited metal grains.

The influence of the used electrolyte type for electrolytic colouring of anodised aluminium was investigated. Anodic oxidation of aluminium was realised in sulphuric acid electrolyte and electrolytic colouring on the nickel (Ni) basis. The stress was put on colouring electrolyte with and without complexing agent. Ni was deposited by alternative current (AC) at precisely defined conditions at constant 50 Hz frequencies. In particular, the waveform of current was given as a sine wave with variable amplitude superimposed on variable DC component. Also, half-wave and full-wave rectified current waveforms have been tested. The aim is to reveal the influence of current waveform shape on the quality of the anodised surface. After dipping of the obtained finishes in the chromium – phosphoric solution, alumina layer was stripped off and amount of Ni was determined by EDX. Complexing agent influences the amount of Ni in the finishes and thorough intensity of colouring of the anodised finishes.

Project duration: from January 2005 to December 2007

VEGA Project No 1/2108/05 The Chemical and Electrochemical Reactions of Sulphur Species at Aluminium Electrolysis (Pavel Fellner)

Sulphur is introduced to the aluminium cell from the graphite anode and from raw materials, fluoride salts and secondary alumina (alumina from dry scrubbers). Aim of the project is to investigate the chemical and electrochemical reactions of sulphur species at aluminium electrolysis.

I. In the first period of the project, the adsorption of SO₂ on alumina will be investigated. Equilibrium adsorption data will be obtained for different pressures of SO₂ and temperatures. From the analysis of this data the nature of the interaction between alumina and SO₂ will be established.

Sulphur is introduced to the cell in the form of sulphates. The chemical and electrochemical reduction of sulphates in the conditions met in the aluminium cell will be investigated. Carbon and aluminium dissolved in cryolite melt will be used as reducing agents.

The electrochemical reactions of sulphates will be investigated as well. Cyclic voltametry and chronopotentiometry will be used. Mechanism and kinetics of these reaction will be determined.

II. Behavior of sulphates at an inert (platinum) and graphite electrode will be studied. When an inert electrode is used the anodic product is oxygen and sulphur oxides. Mechanism and kinetics of this reaction will be studied.

When graphite anode containing sulphur (thiophene) is used, COS originates as one of the anode products. Mechanism and kinetics of this process will be studied.

Project duration: from January 2005 to December 2007

State Project E 02.02.01 Concept of Twosteps Transmutation (Pavel Fellner)

Investigation and critical analysis of phase equilibria and electrochemical properties of the lanthanide and actinide fluorides, electrodeposition of lanthanum.

Project duration: from October 2003 to December 2006

NATO / EST.CLG.979931 Environmentally Friendly Oxidant Iron(VI), Synthesis and Applications in Water Quality Security (Ján Hiveš)

Commonly used treatment methods are not adequate to neutralize the impact of terrorism on water quality security. An innovative treatment technology involving an environmentally friendly oxidant, iron(VI) (Fe(VI)), can meet criteria needed for water supply safety. Iron(VI) is one of the most powerful multi-purpose oxidizers known. It can treat effectively a wide range of contaminants including cyanide, microorganisms and radionuclides. Three

Fe(VI) synthetic techniques are being used to synthesize Fe(VI) in the laboratory: a wet method, oxidizing a basic solution of Fe(III) salt by hypochlorite; a dry method, heating of various potassium- and iron containing minerals; and electrolyzing a alkaline solution with an iron anode. Unfortunately, commercialization of Fe(VI) is hindered because of low yields, Fe(VI) chemical instability, and the toxicity of the by-products produced during the Fe(VI) production in all three techniques. Proposed research is an international collaborative approach using the needed expertise of five research groups to study various parameters of the synthesis techniques in order to understand process mechanisms. It is expected that studies will optimize parameters of the synthetic processes to produce Fe(VI) in large quantities.

The proposed research will elucidate a better understanding of the thermodynamics and kinetics of chemical and electrochemical reactions in molten electrolyte during synthesis of ferrates. Our contribution we expected in :

- (1) selecting of proper molten system for ferrates synthesis,
- (2) understanding of the mechanisms of electro-chemical oxidation processes to synthesize Fe(VI);
- (3) studying of the variables of a suitable industrial synthetic technique for Fe(VI); and
- (4) knowing the role of Fe(VI) as an innovative treatment chemical in on-site decontamination of potential terrorism chemicals to the water supply.

Project duration: from September 2003 to September 2005

VEGA Project No 1/2476/05 Ferrates– Thermodynamics and Kinetics of Chemical and Electrochemical Reactions in Molten Electrolyte and on the Phase Boundary Electrode - Electrolyte (Ján Híveš)

Many problems are associated with previously known synthesis of Fe(VI) salts. The common problems encountered are low yield rate, Fe(VI) chemical instability, and the toxicity of the by-products produced during synthesis. A novel approach is needed to produce Fe(VI) product in a large quantity for use in full-scale water supply security. Systematic studies of electrochemical molten salt synthesis are proposed for an effective method for synthesis of Fe(VI).

The ways to reach the project goals can be summarised as follows :

- to make a thermodynamic topology search of the molten systems suitable for preparation of alkali ferrates
- decreasing of the working electrolyte temperature to the lowest possible value
- to measure an electrochemical characteristic of chosen molten system with a different type of electrodes material
- electrochemical synthesis of alkali ferrates in the molten system
- investigation of electrode reaction mechanism
- impedance characteristic of the measured systems
- optimisation of the working parameters as current density, electrode material, melt composition, polarisation mode (AC/DC)
- study of the properties of boundary layer on working electrode
- SEM investigation of the electrode surface layer

Project duration: from January 2005 to December 2007

APVT Project No APVT-20-000204 Electrochemical Deposition of Lanthanum from Fluoride Melts (Marta Ambrová)

The spent nuclear fuel treatment is one of the alternatives to the present storage of spent fuel in deep geological storages. The present used ways are based on the neutron source. The possibility of using of chemical separation processes is under study, too. No one commercial cycle exists which could be fully satisfactory. The separation processes in the melts were studying in 50th years. But they were not implemented because of high requirements on materials. These processes are realized at the temperature higher than 500 °C and used chemical agents are very aggressive. It means that there are serious problems at choosing of appropriate construction materials.

The separation process of lanthanides and actinides is partially handled in chloride melts. However, this process does not suit the concept of the new types of reactors, where the fluoride melts are considered as carrier melts. It is important to handle the separation process from fluoride melts. In Czech Republic in Nuclear Research Centre in Řež, the technology based on the distillation of volatile fluorides was proposed. Uranium species can be distilled as UF₆ from the spent fuel. Solid fluoridated products and non-fluoridated species remain in the distillation residue (plutonium, actinides, ...). Electroseparation could be used to separate these species.

New knowledge on the properties of the possible melt systems is needed for electroseparation. At present, the thermodynamic properties of the pure compounds, a few relevant phase diagrams and some "standard" (but inconsistent) electrochemical potentials of lanthanides and actinides compounds are available.

Electrodeposition of lanthanum was chosen as a model system. Different methods of the electrodeposition can be tested in the model system. The main objective is split into the following steps:

- solubility of lanthanum compounds in fluoride melts,

- construction of the high-temperature electrolytic cell with exactly defined conditions,
- electrode materials for electrodeposition with lanthanum depolarisation,
- electrolytic deposition of lanthanum from the appropriate electrolyte,
- influence of the pulse electrolysis.

Project duration: from January 2005 to December 2007

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
VUJE, Trnava	Transmutation of spent nuclear fuel	Ing. Petr Dařílek	January – December 2005
Slovzink, a.s.	Special treatment of ZnO		November – December 2005
SHMÚ	Balance of green house emissions	Ing. Janka Szemesova	16.6. - 31.10.2005

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
SINTEF, Norway	Sulphur project	Prof. Jomar Thonstad	January - December 2005
BorsodChem, Czech Republic	Factors influencing decomposition of ammonia nitrate		January – October 2005

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
M. Chovancová	Slovak Society for Surface Treatment and Technology	other	from 1995
M. Chovancová	Slovak Chemical Society	member	from 1987
M. Chovancová	Slovak Cleaner Production Centre	member	from 1993
M. Chovancová	Union of Slovak Scientific and Technological Societies	member	from 1972
J. Híveš	Slovak Society for Surface Treatment and Technology	member	from 1987
J. Híveš	Slovak Chemical Society	member	from 2000
J. Híveš	Union of Slovak Scientific and Technological Societies	member	from 1987
A. Žúžiová	Slovak Chemical Society	member	from 1993
A. Žúžiová	Union of Slovak Scientific and Technological Societies	member	from 1972
J. Gabčová	Slovak Chemical Society	member	from 1972
J. Gabčová	Union of Slovak Scientific and Technological Societies	member	from 1972
J. Valtýni	Union of Slovak Scientific and Technological Societies	member	from 1972
V. Khandl	Union of Slovak Scientific and Technological Societies	member	from 1972
V. Danielik	Slovak Chemical Society	member	from 1992
M. Zemanová	Slovak Chemical Society	member	from 1992
M. Zemanová	Slovak Society for Surface Treatment and Technology	member	from 1995
P. Fellner	Slovak Chemical Society	member	from 1972
P. Fellner	Union of Slovak Scientific and Technological Societies	member	from 1972
P. Fellner	Slovak Society for Surface Treatment and Technology	member	from 1995
P. Fellner	Scientific Board of UACH SAV	member	2003
P. Fellner	Editorial Board of Chemical Papers	member	2003
P. Fellner	Scientific Board of Faculty of Technology of University of Trenčín	member	2003

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
P. Fellner	EFCE, group Electrochemical Engineering	member	from 1999
J. Híveš	International Society of Electrochemistry	member	from 2000

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Prof. J. Thonstad	NTNU, Trondheim	Norway	October 2005 (4 days)
Dr. K. Bouzek	VŠCHT, Praha	Czech Republic	April 2005 (2 days)
Dr. K. Bouzek	VŠCHT, Praha	Czech Republic	November 2005 (2 days)
Prof. V. Sharma	FIT Melbourne	Florida, USA	November 2005 (2 day)
Dr. M. Gál	Heyrovského Institut, Praha	Czech Republic	September 2005 (2 days)
W. Siegert	Collini Vienna	Austria	June 2005 (2 days)
Dr. J. Unruh	LGA Fachschulen, Nürnberg	Austria	June 2005 (2 days)
P. Vodehnal	LECOM, Ledec nad Sázavou	Czech Republic	June 2005 (2 days)
M. Palko	IDEAL-Trade Servis, Brno	Czech Republic	June 2005 (2 days)
P. Szelag	PRAGOCHEMA, Praha	Czech Republic	June 2005 (2 days)
L. Obr	MAG galvanochemie, Jablonec nad Nisou	Czech Republic	June 2005 (2 days)
J. Kudláček	Fakulta strojní, ČVUT, Praha	Czech Republic	June 2005 (2 days)
Dr. V. Kreibich	Fakulta strojní, ČVUT, Praha	Czech Republic	June 2005 (2 days)

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

Name	Organisation / Institution / Conference	State	Date / Duration
M. Zemanová	BRD FZ Karlsruhe	Germany	September - December 2005 (4 month)
J. Híveš	NTNU Trondheim	Norway	August 2005 (1 month)
J. Híveš	FIT Melbourne	Florida, USA	July 2005 (2 weeks)
M. Ambrová	VUT, Brno	Czech Republic	December 2005 (3 days)
V. Danielik	VUT, Brno	Czech Republic	December 2005 (3 days)
P. Fellner	134th Annual Meeting and Exhibition	USA	February 2005 (1 week)
M. Ambrová	AER Working Group, Třešť	Czech Republic	April 2005 (4 days)
V. Danielik	AER Working Group, Třešť	Czech Republic	April 2005 (4 days)
M. Ambrová	Nové trendy v anorganické technologii	Czech Republic	May 2005 (3 days)
J. Jurišová	Nové trendy v anorganické technologii	Czech Republic	May 2005 (3 days)
M. Zemanová	Nové trendy v anorganické technologii	Czech Republic	May 2005 (3 days)
Z. Gálíková	Nové trendy v anorganické technologii	Czech Republic	May 2005 (3 days)
V. Danielik	Nové trendy v anorganické technologii	Czech Republic	May 2005 (3 days)
P. Fellner	Nové trendy v anorganické technologii	Czech Republic	May 2005 (3 days)
A. Žúžiová	Nové trendy v anorganické technologii	Czech Republic	May 2005 (3 days)
J. Gabčová	Nové trendy v anorganické technologii	Czech Republic	May 2005 (3 days)
M. Chovancová	Nové trendy v anorganické technologii	Czech Republic	May 2005 (3 days)
P. Fellner	VŠCHT, Prague	Czech Republic	June 2004 (1 day)
P. Fellner	Molten Salts 7	France	September 2005 (6 days)
V. Danielik	Molten Salts 7	France	September 2005 (6 days)
J. Híveš	7th ESEE	France	September 2005 (4 days)
M. Zemanová	Oberflächentage 2005	Austria	September 2005 (3 days)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Barborík, P.	Material and Energy Balances of Ammonia Plant	Danielik, V.

Bazelová, Z.	Chronopotenciometry in Aqueous Solutions	Híveš, J.
Bubenčík, J.	Corrosion in Liquid Fertilizers	Ambrová M.
Harag, I.	Passivation Layers on the Iron Substrate	Zemanová, M.
Lovás, P.	Material and Energy Balance of Urea Plant	Danielik, V.
Pavlik, T.	Chromating of Zinc Coatings	Chovancová M.
Tomášková, Z.	Study of the Phase Equilibria in the System NaCl – NaF	Gabčová, J.

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

Name	Title of Thesis	Supervisor
Čech, J.	Characterization of Pigmented Anodic Coatings	Zemanová, M.
Kamenár, J.	Preparation of Composite Coatings with PTFE Dispersed Particles	Chovancová, M.
Kováč, L.	Electrochemical Extraction of Lanthanum	Gabčová, J.
Krivošová, I.	Phase Diagrams of the Molten Fluorides Systems	Danielik, V.
Obžerová, L.	Influence of Redox Properties of Glass-Forming Batch on Oxidation State of Glass	Híveš, J.
Onderčín, M.	Interfacial Tension in System Cryolite Melt – Aluminium	Korenko, M. (SAS)
Pentrák, M.	Electrochemical Reactions of Sulphur Compounds in the Melts	Fellner, P.
Podzimek, F.	Sintering of Al ₂ O ₃ in the Presence of the Liquid Phase	Sedláček, J. (SAS)

VII. PUBLICATIONS

Book

- [1] Fellner, P., Gabčová, J., Danielik, V., Híveš, J.: *Anorganická technológia*, Slovenská technická univerzita v Bratislave, Vazovova 5, Bratislava, 2005.

Article in journal

- [1] Ambrová, M., Fellner, P., Gabčová, J., Sýkorová, A.: Chemical Reactions of Sulphur Species in Cryolite-Based Melts. *Chemical Papers*, no. 4, vol. 59, pp. 235-239, 2005.
- [2] Danielik, V.: Phase Equilibria in the System KF - AlF₃ - Al₂O₃. *Chemical Papers*, no. 2, vol. 59, pp. 81-84, 2005.
- [3] Fellner, P., Ambrová, M., Híveš, J., Korenko, M., Thonstad, J.: Chemical and Electrochemical Reactions of Sulphur Species in Cryolite Melts. *Light Metals*, pp. 577-581, 2005.

Article in conference proceedings

- [1] Ambrová, M., Fellner, P.: Electrochemical Reactions of Sulphur in Chloride and Fluoride Melts. In *ChemZi*, Tatranské Matliare, no. 1, vol. 1, pp. 164, 2005.
- [2] Ambrová, M., Fellner, P.: Elektrochemické reakcie zlúčenín síry vo fluoridových taveninách. Editor(s): Bouzek, K., Fila, V., Šťastný, P., In *Nové trendy v anorganické technológii*, VŠCHT Praha, pp. 190-200, 2005.
- [3] Benová, M., Híveš, J.: Železany - efektívne činidlo pri likvidácii odpadov vo vodnom hospodárstve. In *47. medzinárodná galvanická konferencia*, STU Bratislava, pp. 118-125, 2005.
- [4] Benová, M., Híveš, J.: Železany - záruka kvality vody v budúcnosti?. Editor(s): Bouzek, K., Fila, V., Šťastný, P., In *Nové trendy v anorganické technológii*, VŠCHT Praha, pp. 162-171, 2005.
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- [6] Chovancová, M., Híveš, J., Zemanová, M., Fellner, P.: Korózia pod napätím v prostredí piesku a ílu. Editor(s): Tuleja, S., In *Korózia úložných zariadení*, Košice, pp. 97-103, 2005.
- [7] Chovancová, M., Zemanová, M., Kamenár, J.: Príprava kompozitných povlakov s PTFE disperznými časticami. In *Acta Mechanica Slovaca*, Košice, no. A, vol. 3, pp. 73-80, 2005.
- [8] Danielik, V., Gabčová, J., Nemčeková, M.: Phase Diagrams of the Systems MF - La₂O₃ and M₃AlF₆ - La₂O₃ where M = Li, Na, K. Editor(s): Pierre Taxil, Catherine Bessada Michel Cassir, Marcelle Gaune-Escard, In *7th International Symposium on Molten Salts Chemistry & Technology*, Toulouse, France, pp. 655-658, 2005.
- [9] Danielik, V., Híveš, J.: Katódové napätie a obsah sodíka v roztavenom hliníku počas elektrolýzy. Editor(s): Bouzek, K., Fila, V.,

- Šťastný, P., In *Nové trendy v anorganické technológii*, VŠCHT Praha, pp. 201-205, 2005.
- [10] Danielik, V., Korenko, M., Fellner, P.: Termodynamika systému Al - Na. Editor(s): Bouzek, K., Fila, V., Šťastný, P., In *Nové trendy v anorganické technológii*, VŠCHT Praha, pp. 184-189, 2005.
- [11] Fellner, P.: Katedra anorganickej technológie FCHPT STU v Bratislave. Editor(s): Bouzek, K., Fila, V., Šťastný, P., In *Nové trendy v anorganické technológii*, VŠCHT Praha, pp. 23-24, 2005.
- [12] Fellner, P., Ambrová, M., Híveš, J., Korenko, M., Thonstad, J.: Chemical and Electrochemical Reactions of Sulphur Species in Fluoride Melts. In *134th Annual Meeting & Exhibition*, San Francisco, CA, USA, pp. 334, 2005.
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- [2] Híveš, J., Benová, M.: Electrochemical Study of Iron in a Molten Eutectic NaOH-KOH System. Editor(s): Gordon Nelson, Imre Hronzsky, In *Environmental Studies Implications for Sustainability*, Arisztotelész Publishing Co., Budapest, pp. 255-266, 2005.
- [3] Thonstad, J., Híveš, J.: Electrical Conductivity Measurements in Molten Fluorides. Editor(s): Pierre Taxil, Catherine Bessada Michel Cassir, Marcelle Gaune-Escard, In *7th International Symposium on Molten Salts Chemistry & Technology*, Toulouse, France, pp. 63-66, 2005.

DEPARTMENT OF LANGUAGES

Head of Department:
Alžbeta Oreská, M. A.

Telephone: +421252496708
Fax: +421252493198
E-mail: alzbeta.oreska@stuba.sk

I. STAFF

Assistant Professors :

Magdaléna Horáková; Ľubica Kachničová; Viera Kuželová, PhD; Veronika Polóniová; Zuzana Štefanovičová;

Technical staff:

Katarína Věpyová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

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

B. Research laboratories:

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Technical English I.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
	Technical German I.	0/2/0	Kuželová
	English language I.	0/2/0	Horáková, Kachničová, Oreská, Polóniová
	Slovak language I. (for foreign students)	/0/4/0	Kuželová
1. semester (Bc)	Russian language	0/2/0	Kachničová
	German language	0/2/0	Kuželová
	English conversation	0/2/0	Kachničová
2. semester (Bc)	Technical English II.	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
	Technical German II.	0/2/0	Kuželová
	English language II.	0/2/0	Horáková, Kachničová, Oreská, Polóniová
	Slovak language II. (for foreign students)	/0/4/0	Kuželová
2. semester (Bc)	Russian language	0/2/0	Kachničová
	German language	0/2/0	Kuželová
	English conversation	0/2/0	Kachničová
3. semester (Bc)	Technical English I.	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
	Technical English II.	0/2/0	Horáková, Kachničová, Oreská, Polóniová
	English language I.	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
	English language II.	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
3. semester (Bc)	Russian Language	0/2/0	Kachničová
	German Language	0/2/0	Kuželová
	English konversation	0/2/0	Kachničová
4. semester (Bc)	Technical English I.	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
	Technical English II.	0/2/0	Horáková, Kachničová, Oreská, Polóniová
	English language I.	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
	English language II.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
4. semester (Bc)	Russian Language	0/2/0	Kachničová
	German Language	0/2/0	Kuželová
	English conversation	0/2/0	Kachničová

5. semester (Bc)	Technical English I.	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
	Technical English II.	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
	English language I.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
	English language II.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
5. semester (Bc)	Russian Language	0/2/0	Kachničová
	German Language	0/2/0	Kuželová
	English conversation	0/2/0	Kachničová
6. semester (Bc)	Technical English I.	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
	Technical English II..	0/2/0	Horáková, Oreská, Polóniová, Štefanovičová
	English language I.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová
	English language II.	0/2/0	Horáková, Kachničová, Oreská, Polóniová, Štefanovičová

B. Postgraduate Study:

3 semesters of an optional course in English for Specific Purposes /0/2/0; Oreská, Štefanovičová

V. CURRENT EDUCATION PROJECTS

A. Pedagogical project No 304/03 Aspects of Teaching Foreign Languages for Specific Purposes at the University of Technology (Veronika Polóniová)

Aims of the project are : to realise teaching of foreign languages in distant form of study; to prepare innovative material suitable for on-line study of foreign languages at FCHPT; to teach basics of ESP and GSP for the needs of profession.

Project duration: from 01.01.2003 to 31.12.2005

Final report.: 15.03. 2006

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Language departments of STU, Bratislava	Preparing syllabuses for EU exam courses UNICERT introducing besides the general language also the area of professional language	Polóniová Veronika, assistant professor, FCHPT STU, Radlinského 9, 812 37 Bratislava	01.01.2000 -
Specialist departments of FCHPT STU, Bratislava	Language section of the annual "Students' Scientific and Research Activity" competition - advisers Zálupský Peter, Šima Jozef	Oreská Alžbeta, head of Language Department, FCHPT STU, Radlinského 9, 812 37 Bratislava	01.01.1994 -
Slovak Association of Translators and Interpreters, Bratislava	Multimedia and Translation	Polóniová Veronika, assistant professor, FCHPT STU, Radlinského 9, 812 37 Bratislava	01.01.1998 -
University of Third Age, STU, Bratislava	Language course	Oreská Alžbeta, head of Language Department, FCHPT STU, Radlinského 9, 812 37 Bratislava, Štefanovičová Zuzana, assistant professor, FCHPT STU	1. 9. 2003 - 1. 9. 2004 -
Language Centre, Rectorate of STU, Bratislava	Language courses: ZoD 1/330/05, ZoD 111/330/05	Kuželová Viera, head of Language Centre STU, Laurinská 14, 810 00 Bratislava	01.01.1994 -

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
CASAJC, Bratislava	Slovak and Czech Association of Language Centres in Higher Education- preparing materials for Portfolio and Unicert	Oreská Alžbeta, head of Language Department, FCHPT STU, Radlinského 9, 812 37 Bratislava	01.02.2003 -
Leonardo da Vinci Community	EU Vocational Action Programme - practical placements for Slovak University students (cooperation with Civil Engineering Faculty STU)	Horáková Magdaléna, assistant professor, FCHPT STU	12.12.2003 -

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Slovak Association of Translators and Interpreters, Bratislava	Translation and Interpreting in Technical English(Polóniová Veronika)	member	01.01.1998 -

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
British Council - Resource Centre, Bratislava	Teaching English for Specific Purposes (Horáková Magdaléna)	member	01.09.1996 -
CERCLES/CASAJC, Slovak Republic	European Confederation of Language Centres in Higher Education(Horáková, Oreská,Polóniová,Štefanovičová)	member	11.02.2003 -

VIII. PUBLICATIONS

Booklet

[1] Kuželová, V.: Kondensation des Ausdrucks in slowakischen und deutschen Fachtext. 2005.

DEPARTMENT OF MANAGEMENT

Head of Department:
Assoc. Prof. Dušan Baran, PhD.

Telephone: 00421-7-52495246
Fax: 00421-7-52493198
E-mail: dusan.baran@stuba.sk

I. STAFF

Associate Professors:

Pavel Herzka, Ph.D.; Marta Šostroneková, Ph.D.; Dušan Špirko, Ph.D.

Assistant Professors :

Štefan György, Ph.D.; Dr. Milan Majerník; Martin Jozefček, Ph.D.; Jana Kajanová, Ph.D.; Jana Plchová; Martina Kuperová; Monika Zatrochová.

Technical staff:

Katarína Macušková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory of Computerized Technique

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Fundamentals of Environmental Philosophy	(2-0 h)	Špirko
	Philosophy	(2-0 h)	Špirko
	Fundamentals of Law	(2-0 h)	György
2. semester (Bc)	Economics	(2-0 h)	Majerník
3. semester (Bc)	Logics	(2-0 h)	Špirko
5. semester (Bc)	Economics and Management of Enterprise	(2-2 h)	Šostroneková, Jozefček, Kajanová,
	Marketing	(2-2 h)	Špirko
	Social Communication	(2-0 h)	Špirko
6. semester (Bc)	Accounting	(2-2 h)	Šostroneková
	Introduction to Law	(2-0 h)	György
	Semester Project	(0-4 h)	Baran
1. semester (MSc)	Calculations and Prices	(2-2 h)	Šostroneková, Plchová, Kajanová
	Corporate Economics	(2-2 h)	Herzka, Jozefček
	Operations Research	(3-2 h)	Šostroneková, Kuperová
	Strategic Management	(3-2 h)	Herzka, Jozefček
	Supplying and distribution logistics	(2-2 h)	Kuperová
2. semester (MSc)	Capital Market and Corporation Finances	(2-0 h)	Baran
	Decision-Making in Business	(2-3 h)	Herzka
	Human Resource Management	(2-2 h)	Herzka
	Marketing	(2-0 h)	Špirko
	Organizational Structure of Entrepreneurial Subjects	(2-3 h)	Baran
	Production Management	(2-3 h)	Baran, Kuperová
3. semester (MSc)	Analysis of Business Economics	(3-2 h)	Baran, Majerník, Zatrochová
	Financial Management	(3-2 h)	Baran, Zatrochová
	Fundamentals of Mercantile and Financial Law	(2-0 h)	György
	International Marketing	(2-2 h)	Špirko, Plchová
	Logistics	(2-2 h)	Kuperová
	Annual Project	(0-4 h)	Baran

IV. CURRENT RESEARCH PROJECTS

Project A-162/2003

Application of modern management methods in chemical and food-processing enterprises

Leader of the project: Dušan Baran

Project participants: Agáta Ďurkovičová, Pavel Herzka, Marta Šostroneková, Dušan Špirko, Štefan György, Martina Kuperová, Milan Majerník, Jana Plchová, Martin Jozefček, Jana Kajanová, Martina Svítková, Monika Zatrochová, Martin Mikloš, Katarína Macušková.

Parts of the project:

Environmental management in conditions of the chemical and food-processing enterprises (Leader of the part A: Dušan Špirko. Participants: Štefan György, Ing. Jana Plchová)

Financial management of chemical and food-processing enterprises in Slovakia (Leader of the part B: Dušan Baran. Participants: Martina Kuperová, Milan Majerník, Martina Svítková, Monika Zatrochová, Katarína Macušková)

Modern trends in the management of a firm. (Leader of the part C: Pavel Herzka. Participants: Agáta Ďurkovičová, Marta Šostroneková, Martin Jozefček, Jana Kajanová, Martin Mikloš)

Research in 2005 was carried out within the basic orientation of the project giving emphasis to „ Modern trends in the management of a firm” (part C)

Scientific objectives in 2005:

1. Transformation of management approaches involving the organization system, strategy formation, planning approaches, motivations, control of the work with people, etc. into a new form.
2. Application of theoretical and practical marketing approaches characteristic of the present period.
3. Estimation of new requirements for managers who should be abound not only in various ideas but who should be personalities with the foresight ability that are able to integrate the individual merits of members of the organization and conduct the teams consisting of people of different cultures.

Scientific objectives in 2005 were executed.

The solution of the fractional assignments being outlined within modern research trends in the corporate management proceeded in accordance with objectives of the whole project; attention of the research team was focused, primarily in the first part of the project, on the analysis of the present state of knowledge and elaboration of the given problem arising in the theoretical and practical basis. In concrete terms, the point in question was an investigation of the transformation of management approaches, such as the organizational system, strategy formation, planning approaches, costing, motivations and control of employees and of the new form of the work with people in changed conditions of the growing market economy. The analytical part of the research led to concrete proposals for the solution of problems in the conditions of enterprises operating in the Slovak market for the benefit of the before-mentioned management spheres. These proposals are applicable and modifiable in present small- and medium-sized enterprises.

An extraordinary attention was devoted to the evaluation of the importance and employment of costs in the corporate management and in pricing implemented in entrepreneurial subjects, to the importance of the accounting of costs and revenues in managing the enterprise, to costs as an information source for the creation of calculations, as well as to the double-entry accounting viewed from the same aspect, etc.

The next part of the research project was aimed at the creation and evaluation of marketing strategies in small- and medium-sized enterprises mainly from the aspect of the analysis of external (branch and competition) and internal environment. Attention was paid to forecasting from the viewpoint of its importance and utilizable methods in respective conditions of the chemical and food-processing industry in the Slovak Republic. The problems of marketing itself were also considered; in fact the successful course of the realization phase of the marketing strategic plan is not dependent only on its careful and professional elaboration but also on the application of the inevitable sources.. This part of the research project was dealing with the above-indicated sources and the main stress was laid on the labour force. The final part of the project under solution was concentrated on all significant aspects of the enterprise personnel management from the theoretical as well as practical point of view when the current conditions of enterprises of the chemical and food-processing industry were taken into account. Besides classical problems of the recruitment and choice of employees, but also of the filling of vacancies, the research activity was directed towards aspects of the labour motivation, conditions of the communication and towards the question of personnel problems in workplaces.

The research brought the new information within:

- investigation of the transformation of management approaches,
- applications of theoretical and practical approaches of the strategic marketing-management,
- applications of theoretical and practical approaches of the enterprise personnel management,

- employment of workers through the personnel agency,
- supply strategies and SCM for chemical, food-processing, automobile and IT firms,
- costs as an information source of the creation of calculations,
- problems of costs in the chemical industry,
- importance and utilization of calculations on managing production enterprises,
- utilization of distribution routes in enterprises of the chemical and food-processing industry,
- competitive ability of the small- and medium-sized enterprises after the entry into EU,
- process of the supranational harmonization of accounting in the Slovak Republic after the entry into EU.

In addition to the basic research programme in 2004 some research works were implemented also within other assignments.

A. Environmental management in conditions of the chemical and food-processing enterprises

The new findings were obtained in the following spheres: application of the life cycles of products in managerial systems; strategic evaluation of impacts on the environment on applying the expertise law – SEA; the role of the human factor in the systems of quality; applications of marketing in systems of the environmental management; evaluation of environmental costs and revenues in an enterprise; environmental protection as a component of the corporate management; responsibility of the management of a firm for the balance between the supplier and consumer; comparison of conceptions of the permanently sustainable development and of the permanently sustainable life; scope of the global man's responsibility.

B. Financial management of chemical and food-processing enterprises in Slovakia

The new facts were found in the following spheres: organizational incorporation of controlling into the corporate management; applications of the management of acquisition and fusion; controlling as a subsystem of the management; modern approaches to planning of the firm's portfolio; methods of the financial analysis "EX ANTE"; application of reengineering in the implementation of enterprise changes and logistic processes; prediction methods of the financial analysis of enterprises; problems concerned with the introduction of JIT and benchmarking of logistic processes; application of the supply logistics in an enterprise; cycles of the customer's order; exploitation of the financial-economic analysis in the managerial activity of the manager; importance of the developer process and of the developer himself during selection of the investment project; application of the KANBAN system.

Project duration: from 1 January 2003 to 31 December 2005

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Frucona Košice, Inc.	Material-technical cooperation	Ing. Ján Király, general manager and chairman of the Board of directors	
CCW, Ltd. Bratislava	Pedagogic cooperation	Dipl.Ing. Magdaléna Sulanová, marketing manager	
Slovak association of small enterprises	Scientific-technical cooperation	Ing. Vladimír Sirotko, PhD.	
Stock exchange, Inc. in Bratislava	Pedagogic cooperation	Ing. Barbora Lazorová	
TENTO, Inc. Žilina	Material-technical cooperation	Ing. Marián Majtán, financial director	
Chemosvit, Inc. Svit	Material-technical cooperation	Ing. Vlad. Balogh, Ing. Ján Olekšák	
Matej Bel University, Faculty of Economics, Banská Bystrica	Pedagogical cooperation	Assoc. Prof. Jaroslav Ďado Prof. Ľubica Lesáková Prof. Marková Assoc.Prof. František Lipták	
University of Economy, Bratislava	Pedagogical cooperation	Prof. Július Alexy Prof. Miroslav Majtán Prof. Štefan Slávik Assoc. Prof. Šubertová Elena	

University of Žilina, Faculty of Economics, Transport and Communication	Pedagogical cooperation	Prof. Štefan Cisko Prof. Štefan Hittmar Assoc. Prof. Jozef Strišš Assoc. Prof. Szilágyi	
Slovak University of Technology, Faculty of Materials Science and Technology, Trnava	Pedagogical cooperation	Prof. Jozef Sáblik Assoc. Prof. Miloš Čambal Assoc. Prof. Alexander Štrbka Assoc. Prof. Peter Sakál	
Slovak University of Technology, Faculty of Mechanical Engineering	Pedagogical cooperation	Assoc. Prof. Štepka Igor Prof. Dita Hekelová	
Slovak University of Technology, Faculty of Civil Engineering	Pedagogical cooperation	Prof. Koloman Ivanička Assoc. Prof. Mária Zúbková Prof. Trávník Igor	
Alexander Dubček University, Faculty of Social-Economic Relations, Trenčín	Pedagogical cooperation	Prof. Baránik Michal Assoc. Prof. Sergej Vojtovič	
Comenius University Bratislava, Faculty of Management	Pedagogical cooperation	Prof. Sedlák Michal Assoc. Prof. Ľubica Bajžíková	

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
BORSOD CHEM Moravian Chemical Plants, Ostrava Czech Republic	Material-technical and pedagogic cooperation	Ing. Alexander Pálffy, CSc. general manager	
University of Economics, Faculty of Business Administration, Prague, Czech Republic	Pedagogical cooperation	Prof. Eduard Stehlík Assoc. Prof. Ludmila Mládková Assoc. Prof. Jan Koudelka	
Institute of Chemical Technology, Faculty of Chemical Engineering, Prague, Czech Republic	Pedagogical cooperation	Prof. Ivan Gros Assoc. Prof. Stanislava Grosová	
Karol Adamiecki University of Economics in Katowice, Faculty of Management, Poland	Pedagogical cooperation	Prof. Kornelia Karcz Prof. Żofia Kedzior	
University of Economics in Krakow, Faculty of Management, Poland	Pedagogical cooperation	Prof. Jan W. Wiktor Assoc. Prof. Grażyna Woźnievska	
Tallin Technical University	Pedagogical cooperation	Prof. habil. doctor Vaino Rajangu	
Vilnius University, Faculty of Humanities in Kaunas, Lithuania	Pedagogical cooperation	Prof. Vitas Vitkus Assoc. Prof. Jogaila Mačerinskas Assoc. Prof. Irena Mačerinskas	
Masaryk University Brno, Faculty of Economics and Administration, Czech Republic	Pedagogical cooperation	Prof. Blažek Miroslav Dr. Viliam Záthurecký	
Technische Universität (Technical University) Darmstadt, Institut für Betriebswirtschaftslehre	Pedagogical cooperation	Prof. Dr. Günther Specht	
L'vov Polytechnic National University, Institute of Economics and Management, Ukraine	Pedagogical cooperation	Assoc. Prof. Natalia Čuchraj	
Kiev National Economic University, Ukraine	Pedagogical cooperation	Prof. I. L. Reshetnikova	
University of Pardubice, Faculty of Chemical Technology, Czech Republic	Pedagogical cooperation	Assoc. Prof. Hana Lošťáková, Assoc. Prof. Oto Machač	
University of Daugavpils, Latvia	Pedagogical cooperation	Prof. Gončarovs	
Technical University of Riga, Latvia	Pedagogical cooperation	Prof. Baranovskas	

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Baran, D.	Slovak Society for Industrial Chemistry	member	from 2000
György, Š.	Slovak Society for Industrial Chemistry	member	from 2000
Herzka, P.	Slovak Society for Industrial Chemistry	member	from 2000
Jozefček, M.	Slovak Society for Industrial Chemistry	member	from 2000
Kajanová, J.	Slovak Society for Industrial Chemistry	member	from 2000
Kuperová, M.	Slovak Society for Industrial Chemistry	member	from 2000
Macušková, K.	Slovak Society for Industrial Chemistry	member	from 2000
Majerník, M.	Slovak Society for Industrial Chemistry	member	from 2000
Přichová, J.	Slovak Society for Industrial Chemistry	member	from 2000
Šostroneková, M.	Slovak Society for Industrial Chemistry	member	from 2000
Špirko, D.	Slovak Society for Industrial Chemistry	member	from 2000
Špirko, D.	Slovak Philosophical Association	member	from 1990
Špirko, D.	Slovak Philosophical Association	auditor	from 2004
Špirko, D.	Slovak Society of Military History and Historical Guns Shooters	secretary	from 1993
Špirko, D.	Slovak Shooting Federation	member	from 1992
Zatrochová, M.	Slovak Society for Industrial Chemistry	member	from 2000

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Baran, D.	Corporate Governance Association	member	from 2004
Baran, D.	Czech Marketing Society	member	from 2004
Špirko, D.	Central European Napoleonic Society	member	from 2000

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Gros, I. Grosová, S.	VŠCHT Praha	Czech Republic	Juni 2005 / 2 days
Bagdoniene, L.	Kaunas University of Technology, Kaunas	Lithuania	September 2005 / 2 days
Bajoruniene, I. S.	Faculty of Social Sciences, Kaunas University of Technology, Kaunas	Lithuania	September 2005 / 2 days
Bartoš, V.	Faculty of Business and Management, Brno University of Technology, Brno	Czech Republic	September 2005 / 2 days
Beranová, M.	FP VUT, Brno	Czech Republic	September 2005 / 2 days
Bizys, N.	Vilnius Gediminas Technical University, Vilnius	Lithuania	September 2005 / 2 days
Botek, M.	Faculty of Chemical Engineering, Institute of Chemical Technology, Prague,	Czech Republic	September 2005 / 2 days
Ciburiene, J.	Kaunas University of Technology, Economics and Management Faculty,	Lithuania	September 2005 / 2 days
Duchoň, B.	ČVUT Fakulta dopravní Praha	Czech Republic	September 2005 / 2 days
Hradecký, P.	Fakulta chemicko-inženýrská, VŠCHT Praha	Czech Republic	September 2005 / 2 days
Hrbková, J.	Katedra společenských věd Fakulta stavební, ČVUT Praha	Czech Republic	September 2005 / 2 days
Humlová, V.	EF VŠB Ostrava	Czech Republic	September 2005 / 2 days
Hloušková, P.	FCHI, VŠCHT, Praha	Czech Republic	September 2005 / 2 days
Koudelka, J.	Katedra marketingu, FPH, VŠE Praha	Czech Republic	September 2005 / 2 days

Name	Organisation or Institution	State	Date / Duration
Kubátová, J.	Filozofická fakulta, UP Olomouc	Czech Republic	September 2005 / 2 days
Langviniene, N.	Kaunas University of Technology, Faculty of Social Sciences	Lithuania	September 2005 / 2 days
Liška, V.	SF ČVUT, Praha	Czech Republic	September 2005 / 2 days
Lošťáková, H.	KEMCH, FCHT Univerzita Pardubice	Czech Republic	September 2005 / 2 days
Mačerinskiene, I.	Kaunas University of Technology	Lithuania	September 2005 / 2 days
Machač, O.	KEMCH, FCHT, UP Pardubice	Czech Republic	September 2005 / 2 days
Mavljutova, I.	Banking Institution of Higher Education Riga	Latvia	September 2005 / 2 days
Minaříková, V.	Fakulta podnikatelská VUT Brno	Czech Republic	September 2005 / 2 days
Minkute-Henrickson, R.	Kaunas University of Technology, Faculty of Social Sciences	Lithuania	September 2005 / 2 days
Mládková, L.	VŠE Praha	Czech Republic	September 2005 / 2 days
Navickas, V.	Kaunas Uni of Technology, Faculty of Economics and Management	Lithuania	September 2005 / 2 days
Němeček, P.	FP VUT Brno	Czech Republic	September 2005 / 2 days
Novák, J.	Kabinet aplikované ekonomie FF UP, Pardubice	Czech Republic	September 2005 / 2 days
Oržekauskas, P.	Kaunas University of Technology, Faculty of Social Sciences	Lithuania	September 2005 / 2 days
Pálfy, A.	Borsodchem MCHZ, Ostrava	Czech Republic	September 2005 / 2 days
Pusinaite, R.	Vilnius University, Kaunas Faculty of Humanities,	Lithuania	September 2005 / 2 days
Schelle, K.	Právnická fakulta, Masarykova univerzita Brno,	Czech Republic	September 2005 / 2 days
Simanaviciene, Ž.	Vilnius University, Faculty of Humanities in Kaunas	Lithuania	September 2005 / 2 days
Streimikiene, D.	Vilnius University Kaunas, Faculty of Humanities, Kaunas	Lithuania	September 2005 / 2 days
Šánová, P.	Katedra obchodu a financí Provozně ekonomická fakulta ČZU Praha	Czech Republic	September 2005 / 2 days
Šmaižienė, I.	Faculty of Social Sciences, Kaunas University of Technology	Lithuania	September 2005 / 2 days
Vegnerová, P.	FCHI, VŠCHT, Praha	Czech Republic	September 2005 / 2 days
Vengrauskas, P. V.	Department of Business administration, Kaunas University of Technology, faculty of Social sciences	Lithuania	September 2005 / 2 days
Zitkiene, R.	Kaunas University of Technology, Faculty of Social Sciences	Lithuania	September 2005 / 2 days
Zitkus, L.	Institute of Europe, Kaunas University of Technology	Lithuania	September 2005 / 2 days

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

Name	Organisation / Institution / Conference	State	Date / Duration
Baran, D.	VŠCHT Praha	Czech Republic	February 2005 / 1 day
Baran, D.	VŠE Praha	Czech Republic	February 2005 / 2 days
Baran, D.	Rietavas College, Rietavas	Lithuania	May 2005 / 1 day
Baran, D.	Vilnius University, Vilnius	Lithuania	May 2005 / 3 days
Baran, D.	Technical University of Riga	Latvia	May 2005 / 1 day
Baran, D.	Technical University of Tallin	Estonia	May 2005 / 4 days

Baran, D.	Borsodchem MCHZ, Ostrava	Czech Republic	May 2005 / 2 days
Baran, D.	VUT Brno	Czech Republic	May 2005 / 3 days
Baran, D.	VUT Brno	Czech Republic	Juni 2005 / 2 days
Baran, D.	UP Pardubice	Czech Republic	Juni 2005 / 2 days
Baran, D.	MU Brno	Czech Republic	August 2005 / 2 days
Baran, D.	VUT Brno	Czech Republic	October 2005 / 1 day
Baran, D.	Borsodchem MCHZ, Ostrava	Czech Republic	November 2005 / 1 day
Baran, D.	Vilnius University, Vilnius	Lithuania	September 2005 / 3 days
Baran, D.	Technical University of Riga	Latvia	September 2005 / 1 day
Baran, D.	University of Daugavpils, Daugavpils	Latvia	September 2005 / 1 day
Baran, D.	University of New South Wales, Sydney	Australia	December 2005 / 10 days
Baran, D.	Deaken University, Melbourne	Australia	December 2005r / 2 days
Kajanová, J.	UTB Zlín	Czech Republic	April 2005 / 1 day
Kajanová, J.	VUT Brno	Czech Republic	October 2005 / 1 day
Přichová, J.	UP Pardubice	Czech Republic	Juni 2005 / 2 days
Šostroneková, M.	UP Pardubice	Czech Republic	Juni 2005 / 2 days
Zatrochová, M.	UTB Zlín	Czech Republic	April 2005 / 1 day
Zatrochová, M.	VUT Brno	Czech Republic	October 2005 / 1 day

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Bublávek, J.	Client in the Marketing and Advertising Context	Špirko, D.
Cagalíneck, M.	Bank System of Slovak Republic	Baran, D.
Ferenčíková, L.	Particularities of Marketing Promotion on Internet	Špirko, D.
Figlár, M.	Food-Processing Industry Participation in GDP Creation	Majerník, M.
Gabčová, Z.	Company Financing Investment Activities	Baran, D.
Jančová, K.	Employees Working Motivation Proces	Herzka, P.
Löbbová, M.	Freights of the Company	Kajanová, J.
Matogová, S.	Information Sources for Corporate Strategic Planning	Špirko, D.
Návojská, E.	Characteristic of Controlling as Subsystem of Control	Baran, D.
Pápyová, B.	Sales Promotion as an Instrument of Marketing Communication	Špirko, D.
Pašeková, K.	Calculation and its Application in a Business Practice	Kajanová, J.
Pohanková, L.	Options of Obtaining Credits in Slovak Republic	Zatrochová, M.
Purová, V.	Financial Aspects of Establishment of a Company	Zatrochová, M.
Sluková, A.	Firm's Financial Needs in Conditions of Market Economy in SR	Baran, D.

B. Graduate Theses (M.Sc. Degree) for state examinations after five years of study

Name	Title of Thesis	Supervisor
Al-Karagholi, A.	Granting Real-Estate Credits by Selected Banking Subject	Majerník, M.
Blahová, L.	Planning of Production by the ERP Information Method in Conditions of I.D.C. HOLDING, Inc.	Kuperová, M.
Čáni, Peter	Application of Outsourcing Methods in IT Control in a Selected Firm	Baran, D.
Erdošová, K.	Controlling in a Selected Enterprise	Šostroneková, M.
Hatyina, M.	Quality Management in the Company TENTO ltd. Žilina	Přichová, J.
Hudec, P.	Proceeding of Loans by the Non-Banking Institutions	Herzka, P.
Kučerová, E.	Application of Marketing Information System in Leoni Slovakia Ltd.	Baran, D.
Melcherová, S.	Application of Supply Chain and Distribution Logistics in a Selected Firm	Zatrochová, M.
Mikulášová, M.	Marketing Analysis in Westtech, Ltd. Bratislava	Špirko, D.
Olejník, P.	Financial Analysis in a Selected Medium Enterprise	Baran, D.
Rášová, K.	Realization of Assets Transactions in a Commercial Bank	Majerník, M.
Reviřáková, S.	Financial Analysis in a Selected Chemical Enterprise	Baran, D.

Rolinová, J.	Financial and Economical Analysis of Environmental Infrastructure Projects	Baran, D.
Sládečková, T.	Total Quality Management in a Selected Food-Processing Enterprise	Herzka, P.
Šinská, K.	Development Strategy in Sanct Georgen's Wein Ltd.	Kajanová, J.
Tešovičová, Z.	Taxation in Slovak Republic after Tax Reform Application	Baran, D.
Valachová, V.	Cost calculation in VÚVH Inc.	Šostroneková, M.
Veliká, J.	Actual Problems of Personal Management in Corporate Practice in SR	Herzka, P.

VIII. PUBLICATIONS

Book

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- [2] Baran, D., Pálffy, A., Svítková, M., Zatrochová, M., Kardoš, P.: *Podnikové financie*, STU, 2005.
- [3] Kajanová, J.: *Náklady a ceny*, Iris Bratislava, 2005.
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- [1] Baran, D.: Aplikácia riadenia procesu akvizície a fúzie v podmienkach podnikateľského subjektu. *Podniková ekonomika a manažment*, no. 2, vol. I., pp. 52-57, 2005.
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- [4] Baran, D.: Metódy finančnej analýzy „EX ANTE“ I. *Podniková ekonomika a manažment*, no. 3, vol. I., pp. 74-80, 2005.
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- [1] Baran, D.: ACQUISITIONS OF BUSINESS AREAS. In *HARIDUS JA MAJANDUS 2005 - EDUCATION AND ECONOMY 2005. Zborník z medzinárodnej vedeckej konferencie*, Tallin University of Technology, Estonia, pp. 17-20, 2005.
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Miscellaneous

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DEPARTMENT OF MATHEMATICS

Head of Department:
Doc. Štefan Varga, PhD

Telephone: +421252495177
Fax: +421252495177
E-mail: stefan.varga@stuba.sk

I. STAFF

Full Professors:

Vladimír Kvasnička, Ing., DSc

Associate Professors:

Vladimír Baláž, PhD; Anna Kolesárová, PhD; Jiří Pospíchal, DSc; Michal Šabo, PhD; Štefan Varga, PhD

Assistant Professors :

Jozef Antoni, PhD; Július Bánki, PhD; Štefan Boor, MSc; Ivan Garaj, PhD; Viera Grusková, PhD; Eva Hainzlová, MSc; Ľubomíra Horanská, PhD; Milan Jasem, PhD; Peter Sarkoci, Ing.

PhD Students:

Štefan Babinec, Ing., Jozef Babjak, Ing., Peter Grančič, Ing., Dagmar Zelisková, Ing.

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Laboratory equipped by personal computers for the Basics of Computer Science

B. Research laboratories:

III. TEACHING

A. Undergraduate Study:

1. semester (Bc)	Calculus I	2/3/0	Antoni, Baláž, Horanská, Jasem, Kolesárová, Šabo
	Calculus I (external study)	2/2/0	Baláž, Horanská, Jasem
	Calculus I (FA STU)	2/2/0	Sladká, Varga
	Informatics	1/0/2	Antoni, Bánki, Hainzlová
	Informatics (external study)	1/0/2	Bánki, Boor, Hainzlová
	Informatics and algorithms	2/0/1	Babinec, Babjak, Kvasnička
	Informatics and algorithms (external study)	2/0/1	Babinec, Kvasnička
2. semester (Bc)	Calculus II	4/4/0	Baláž, Horanská, Jasem, Šabo
	Calculus II (external study)	2/2/0	Kolesárová
	Basics of Computer Science	1/0/2	Antoni, Babinec, Babjak, Bánki, Hainzlová
	Basics of Computer Science (external study)	1/0/1	Antoni, Bánki, Boor, Hainzlová
5. semester (Bc)	Calculus III	2/0/2	Garaj, Varga
	Calculus III (external study)	1/0/1	Garaj
1. semester (MSc)	Discrete mathematics	2/1/0	Kolesárová
	Programming and algorithms	2/0/1	Pospíchal
	Numerical mathematics	2/0/1	Šabo
	Computer architecture	2/0/0	Antoni
	Laboratory of specialization	0/0/10	Sarkoci, Zelisková
2. semester (MSc)	Artificial intelligence in chemistry	2/0/1	Kvasnička
	Statistics	2/0/1	Varga
	Laboratory of specialization II	0/0/6	Sarkoci, Zelisková
3. semester (MSc)	Database systems	2/0/1	Antoni
	Laboratory of specialization	0/0/10	Sarkoci
	Financial mathematics	2/0/0	Horanská

IV. CURRENT RESEARCH PROJECTS

Mathematical vague information processing and its applications

VEGA GRANT No. 1/0085/03 (Anna Kolesárová)

Quantification of uncertainty related to the vagueness of studied objects. Extension of the theory of aggregation operators, new construction methods for aggregation operators, in particular, construction of stable aggregation operators, clarifying their structure and uniqueness. Ordinal aggregation operators for aggregation of data of qualitative nature. The study of possible applications of different types of aggregation operators in inference process in fuzzy logic and construction of new operators for this purpose. Fuzzy preference modelling and decision making. Mixed fuzzy-stochastic models.

Project duration: from 01/01/2003 to 31/12/2005

COST ACTION 274/2 : Theory and Applications of Relational Structures as Knowledge Instruments (TARSKI)

Project EU ISTC (Anna Kolesárová)

The main objective of the Action COST 274 is to advance the understanding and use of relational structures in applicable object domains. The researchers of FCHFT STU are involved in the working group WG3 for the development of non-invasive scaling methods for the prediction of relational data and comparing, and possibly, integrating, a nominal scaling approach with numerical methods such as fuzzy relations, etc. The aim is also the improvement of methods and procedures for gaining information from everyday relational situations such as, e.g., preference models.

Project duration: from to 06/2001 to 06/2005

Many valued logics in expert systems

VEGA GRANT No. 1/ 2005/05 (Michal Šabo)

Many valued logics allow to use vague and uncertain human knowledge expressed in natural language in decision processing. Preference modelling, fuzzy modelling, multicriteria decision making, utilisation of neural network, prediction of time series, fuzzy regression models are important parts of many valued inference processes. These projects face many problems for solution of which can be used the classical knowledge from mathematical analysis, discrete mathematics, graph theory, theoretical computer science. Such problems are, e.g., problems of convenience of fuzzy connectives, existence of preference structures, domination of operators, similarities of objects. Applications of the results of this project can be expected in many-valued inference modelling, fuzzy analysis, topology, chemical technology, energetics, management etc. Some theoretical results can enrich the classical set theory and mathematical analysis

Project duration: from 01/2005 to 12/2007

Echo state neural networks

VEGA GRANT No. 1/1047/04 (Jiří Pospíchal)

The goal of the project is the study of a modern approach to recurrent neural networks, which is exceptionally suitable both for a time series prediction, as well as for modeling of cognitive processes in artificial neural systems. Neural network in this approach includes a block of neurons with a recurrent architecture, which is randomly generated and the weight coefficient of its connections are fixed during the learning stage of the network. The input activities incoming to the neural network will be mapped onto a rich dynamic structure of activities of hidden neurons, which are used as an input to the layer of output neurons. The learning of this network consists in adjusting of weight coefficients between hidden neurons and output neurons. Weight coefficients between the hidden and the input neurons and in-between hidden neurons are randomly generated and do not change during the learning stage. Current research emphasis is on evolutionary improvement of networks bringing more robustness to the quality of predictions.

Project duration: from 01/01/2004 to 31/12/2006

Artificial chemistry and molecular evolution

VEGA GRANT No. 1/0062/03 (Vladimír Kvasnička)

Biotic and abiotic molecular systems with kinetics determined by Eigen's replicator system are studied by methods of artificial chemistry. Molecules are represented by strings of tokens over a finite alphabet. These molecules are capable of a physical process called "folding" (an analogy with biomacromolecules RNA). Each molecule is evaluated by a fitness on the basis of its particular folding. Molecules are placed in a chemical-reaction system, where they take part in a reproduction process (with probabilities proportional to their fitness) consisting in a simple copying accompanied by mutations. Such a simple reaction system corresponds to biomacromolecular systems that are capable of Darwinian evolution on molecular level. A goal of evolution specified in this way is an emergency of strings with required folding (required phenotype or a goal phenotype). The present in-silico approach offers a conceptual and notional machinery for a deeper theoretical interpretation and description of molecular Darwinian evolution.

Project duration: from 01/01/2003 to 31/12/2005

V. CURRENT EDUCATION PROJECTS

A. Mathematics on-line: An internet course

KEGA GRANT No. 3/100603 (Jana Dobráková/ Anna Kolesárová)

The aim of the project is to propose and create the framework for a dynamical mathematical electronic education using XML documents, with respect to new pedagogical methods. The electronic net course will be addressed to the students of all faculties at STU in the first year of their study.

Project duration: from 01/01/2003 to 31/12/2006.

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
SjF STU Bratislava	New trends in teaching mathematics	Doc. J. Dobráková, Mgr. M. Kováčová	2003-2006
FEI STU Bratislava	New trends in teaching mathematics	Doc. Ľ. Marko	2003-2006
SjF STU Bratislava	Scientific cooperation in Statistics	Doc. I. Janiga	2005
SvF STU Bratislava	COST TARSKI 274 cooperation	Prof. R. Mesiar	2002-2005

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
FFP UO, Opava	Organization of a seminar on Artificial Life and Cognition	Prof. RNDr. J. Kelemen, DrSc.	1.5.2000-
University of Alcalá de Henares, Madrid	COST 274 TARSKI cooperation	Prof. T. Calvo, Prof. E. Muel	2002-2005
J. Kepler University, Linz	CEEPUS cooperation	Prof. E.P. Klement	2003-2005
Universita di Lecce, Italy	Scientific cooperation in Statistics	Prof. C. Sempi, Dr. F. Durante	2005
J. Kepler University, Linz	COST 274 TARSKI cooperation	Prof. E.P. Klement, Dr. Saminger	2005
University of Gent, Belgium	COST 274 TARSKI cooperation	Prof. B. De Baets	2005
Univ. J. Monnet, St. Etienne	Scientific cooperation (prog. Štefánik)	Prof. G. Grekos	2005
Univ. Luminy, Marseille de Provence IMP	Scientific cooperation	Prof. H. Fauvre	2005

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Kvasnička Vladimír	Slovak Academic Society	member	1997
Kvasnička Vladimír	Slovak Artificial Intelligence Society	chairmann	29.8.2000-
Kvasnička Vladimír	Slovak Computer Science Society	member	1.1.1996-
Kvasnička Vladimír	Slovak Society for Mathematicians and Physicists	member	1980-1992
Kvasnička Vladimír	Scientific Commity of FCHPT STU	member	1.9.2002-
Kvasnička Vladimír	Scientific Commity of FIIT STU	member	1.10.2003-
Kvasnička Vladimír	Joint Commission for PhD study in Applied Informatics	member	1.1.1998-
Kvasnička Vladimír	Joint Commission for PhD study in Artificial Intelligence	member	1.1.2000-
Šabo Michal	Joint Commission for PhD study in Applied Mathematics	member	1.1.1998-
Kvasnička Vladimír	Commission for defence of DrSc. dissertations in Chemical Physics	member	1.1.1998-
Garaj Ivan	Technical commission TK71 Applications of statistical methods in quality control	member	1.1.2003
Garaj Ivan	Committee of Slovak Statistical and Demographic Society	member	1.1.2000
Kolesárová Anna	Slovak Society for Mathematicians and Physicists	member	1974-
Kolesárová Anna	Editorial Board of Tatra Mountains Math. Publ.	member	1998
Šabo Michal	Slovak Society for Mathematicians and Physicists	member	1968-
Pospíchal Jiří	Slovak Computer Science Society	member	1.1.1996-
Pospíchal Jiří	Slovak Artificial Science Society	member	29.8.2000-
Antoni Jozef	Slovak Society for Mathematicians and Physicists	member	1968-
Baláž Vladimír	Slovak Society for Mathematicians and Physicists	member	1978-
Baláž Vladimír	Slovak Mathematical Society	Member	1996-
Jasem Milan	Slovak Society for Mathematicians and Physicists	member	1978-
Varga Štefan	Slovak Society for Mathematicians and Physicists	member	1968-
Horanská Ľubomíra	Slovak Society for Mathematicians and Physicists	member	1993-

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Kvasnička Vladimír	MATCH Communications in Mathematical Chemistry	member of advisory board	1.1.1998 -
Kvasnička Vladimír	Neural Network World	member of advisory board	1.1.2001 -
Kvasnička Vladimír	Croatica Chimica Acta	member of advisory board	1.1.2002 -
Kolesárová Anna	European Society for Fuzzy Logic and Technology (EUSFLAT)	member	1998-
Šabo Michal	European Society for Fuzzy Logic and Technology (EUSFLAT)	member	1998-
Šabo Michal	SEFI - Mathematical Working Group	member	1994-
Sarkoci Peter	European Society for Fuzzy Logic and Technology (EUSFLAT)	member	2005-
Baláž Vladimír	Editorial Board of Uniform Distribution Theory	manager editor	2005-
Pospíchal Jiří	EURO Working group on fuzzy sets (EUROFUSE) (http://allserv.rug.ac.be/~bdebaets/members.html#SlovakRepublic)	member	1999-

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

Name	Organisation / Institution / Conference	State	Date / Duration
Kolesárová Anna	Széchenyi István University, Győr, CEEPUS stay	Hungary	15.6. - 2.7. 2005
Kolesárová Anna	J. Kepler University, Linz, COST stay	Austria	2.- 8. 11. 2005
Kolesárová Anna	J. Kepler Univ., FLLL, Linz : 26th Seminar Linz	Austria	1. - 5. 2. 2005

Kolesárová Anna	TU Barcelona : EUSFLAT-LFA	Spain	7. - 9. 9. 2005
Kolesárová Anna	TU Zittau-Goerlitz : 12 th East- West Colloquium	Germany	21.-23.9. 2005
Šabo Michal	TU Barcelona : EUSFLAT-LFA	Spain	7. - 9. 9. 2005
Šabo Michal	Univ. della Svizzera italiana : AGOP' 2005	Switzerland	10.-15. 7. 2005
Baláž Vladimír	Marseille, St. Etienne, Int. Conf. on Arithmetique	France	1. -6.7. 2005
Baláž Vladimír	Univ. J. Manet, St. Etienne - stay	France	7.-15.7. 2005
Baláž Vladimír	Univerzita Ostrava - CS. Int. Conf. on Number Theory	Czech Republik	5.-10.9. 2005
Sarkoci Peter	Univ. della Svizzera italiana : AGOP' 2005	Switzerland	10.-15. 7. 2005
Sarkoci Peter	J. Kepler Univ., FLLL , Linz : 26th Seminar Linz	Austria	1. - 5. 2. 2005
Sarkoci Peter	J. Kepler University , Linz, CEEPUS stay	Austria	6.2.-28.2. 2005
Sarkoci Peter	J. Kepler University , Linz, CEEPUS stay	Austria	3.3.- 25.3.2005
Zeliskova Dagmar	Széchenyi István University, Gyor, CEEPUS stay	Hungary	1.6.-30.6. 2005
Zeliskova Dagmar	Univ. della Svizzera italiana : AGOP' 2005	Switzerland	10.-15. 7. 2005
Babinec Štefan	TU Brno: 11th Int. Conf. On Soft Computing Mendel	Czech Republik	15.-17. 6. 2005
Babinec Štefan	Int. Conf. On Artificial Neural Networks, Warsawa	Poland	11.-15.9. 2005
Babjak Jozef	Int. Conf. On Artificial Neural Networks, Warsawa	Poland	11.-15.9. 2005

VII. THESES AND DISSERTATIONS

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

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

Name	Title of Thesis	Supervisor
Gall Marián	Artificial Chemistry and Evolution " In Silico"	Kvasnička Vladimír
Kubovičová Daniela	Predictions in Neural Networks and Regression Models	Varga Štefan
Perašínová Lucia	Application of Genetic Programming for a Prediction Physico-Chemical Properties	Pospíchal Jiří
Vážna Zuzana	Predictions in Neural Networks and Discriminant Analysis	Varga Štefan

VIII. PUBLICATIONS

Book

- [1] Garaj, I., Janiga, I.: Jednostranné tolerančné medze normálneho rozdelenia s neznámou strednou hodnotou a rozptylom. One sided tolerance limits of normal distribution with unknown mean and variability, Vydavateľstvo STU Bratislava, 214 s, 2005.

Article in journal

- [1] Babjak, J.: A Biological Model Optimized by New Strategies of SOMA. *Journal of Electrical Engineering*, pp. 56-59, 2005.
- [2] Garaj, I.: Porovnanie Akahirovej aproximácie s exaktným výpočtom z jednostranných tolerančných činiteľov normálneho rozdelenia. *Forum Statisticum Slovacum*, vol. 2, pp. 19 - 24, 2005.
- [3] Janiga, I., Garaj, I.: On Exact Computation of One-sided Tolerance Factors of Normal Distributions. *Forum Statisticum Slovacum*, vol. 1, pp. 74-79, 2005.
- [4] Janiga, I., Garaj, I.: On One-Sided Tolerance Intervals of Normal Distribution With Unknown Parameters. *Journal of Applied Mathematics, Statistics and Informatics*, no. 1, (AMS Subject Classification (2000): 62H10), vol. 1, pp. 87-100, 2005.
- [5] Klement, E.P., Kolesárová, A.: Extensions to copulas and quasi-copulas as special 1-Lipschitz aggregation operators. *Kybernetika*, no. 3, (AMS Subject Classification: 60E05, 26B99), vol. 41, pp. 329-348, 2005.
- [6] Malík, F., Varga, Š., Slugeň, D.: Evaluation of wine tasters. *Mitteilungen Klosterneuburg*, no. 3-4, vol. 55, pp. 107-113, 2005.
- [7] Sarkoci, P.: Domination in the Families of Frank and Hamacher t-norms. *Kybernetika*, no. 3, (AMS Subject Classification: 26D15), vol. 41, pp. 349-360, 2005.
- [8] Szitás, A., Szeiffová, G., Varga, Š., Annus, J., Babiak, M.: Recognition of wood species. Classification accuracy or RGB tristimulus values. *Chemická Listy*, vol. 99, pp. 618 - 619, 2005.

- [9] Šabo, M., Strežo, P.: On Reverses of Some Binary Operations. *Kybernetika*, no. 4, (AMS Subject Classification: 08A72), vol. 41, pp. 437-452, 2005.
- [10] Varga, Š.: Classical regression models versus fuzzy regression models. *Journal of Applied Mathematics, Statistics and Informatics*, no. 2, vol. 1, pp. 95-101, 2005.
- [11] Varga, Š., Grančič, P., Katuščák, S., Sztítás, A.: Predikcie v neurónových sieťach a logistickej regresii. *Forum Statisticum Slovaca*, vol. 3, pp. 138-145, 2005.

Article in conference proceedings

- [1] Babinec, Š.: Optimization Echo State neural networks with Hebbian learning and Genetic algorithm. In *Proceedings of ISCAM, Bratislava*, pp. 7, 2005.
- [2] Babinec, Š., Pospíchal, J.: Optimalizácia Echo State neurónových sietí pomocou Hebbovho učenia a genetického algoritmu. In *Kognice a umělý život V, Slezská univerzita, Opava*, pp. 47-62, 2005.
- [3] Babinec, Š., Pospíchal, J.: Time Series Prediction by Echo State Neural Networks with Combined Evolutionary Optimisation. In *Proc. of 1-st Slovak - Japanese Seminar on Intelligent Systems, Herlany, Slovak Republic*, 2005.
- [4] Babinec, Š., Pospíchal, J.: Two approaches to optimize echo state. In *Proceedings of Mendel 2005, 11th International Conference on Soft Computing*, pp. 39-44, 2005.
- [5] Babjak, J., Kvasnička, V.: Znovuobjavenie horolezeckého algoritmu s učením. In *Kognice a umělý život V, Slezská univerzita, Opava*, pp. 63-68, 2005.
- [6] Baláž, V., Šalát, T.: Uniform density u and corresponding lu and lu -star-convergence. In *The 17th Czech and Slovak Int. Conference on Number Theory, Malenovice, Czech Republic*, 2005.
- [7] Baláž, V., Šalát, T.: Uniform density u and corresponding l_u -convergence. In *XXIV-iemes Journées Arithmétiques, 4-8 juillet, 2005, Marseille, France*, pp. 15, 2005.
- [8] Garaj, I., Janiga, I.: Application of One-Sided Tolerance Factors of Normal Distribution in Sampling Inspection by Variables. In *4nd International Conference APLIMAT 2005, Plenary Lecture, Part I, February 1-4, Bratislava*, pp. 133-142, 2005.
- [9] Janiga, I., Garaj, I.: One-sided Tolerance Factors of Normal Distributions with Unknown Mean and Variability. In *MEASUREMENT 2005. 5nd International Conference on Measurement. Smolenice*, pp. 39-42, 2005.
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- [11] Kolesárová, A.: Aggregation of qualitative information : Weighted means on ordinal scales. In *Proc. 12th Zittau East-West Colloquium, Zittau, Germany, September*, pp. 272-278, 2005.
- [12] Sarkoci, P.: Domination on two Families of Triangular Norms. Editor(s): Radko Mesiar, Gabriella Pasi, Marco Faré, Peter Struk, In *Proceedings of AGOP 2005 Lugano*, pp. 119-122, 2005.
- [13] Sarkoci, P.: Positive Subhomogeneity and the Domination of t-norms. In *Proceedings of the PhD Seminar of FLLL/SCCH 2005 Hagenberg, February*, pp. 5-8, 2005.
- [14] Sarkoci, P.: Two Counterexamples in Domination of t-norms. In *Proceedings of ISCAM, Bratislava*, pp. 29-30, 2005.
- [15] Šabo, M.: On some properties of reverses of binary operations. In *Proceedings of EUSFLAT-LFA, Barcelona, Spain*, pp. 375-379, 2005.
- [16] Šabo, M.: Reverses of binary operations and selfreversibility. In *Proceedings of AGOP'2005, Lugano, Switzerland*, pp. 109-112, 2005.
- [17] Šabo, M.: The history and new results in fuzzy preference structures. In *Proceedings of APLIMAT, Bratislava*, pp. 531-537, 2005.

Article in collection

- [1] Jasem, M.: On polars and Direct Decompositions of Lattice Ordered Monoids. In *Contributions to General Algebra 16, Verlag Johannes Heyn, Klagenfurt*, pp. 115-132, 2005.
- [2] Klement, E.P., Kolesárová, A.: 1-Lipschitz Aggregation Operators, Quasi-copulas and Copulas with given Opposite Diagonal. Editor(s): B. Reusch, In *Computational Intelligence, Theory and Applications. Advances in Soft Computing*, Springer-Verlag, Berlin Heidelberg, no. 2, pp. 565-571, 2005.

DEPARTMENT OF NUTRITION AND FOOD ASSESSMENT

Head of Department:
Assoc. Prof. Ernest Šturdík, PhD.

Telephone: ++421-2-59325491
Fax: ++421-2-52493198
E-mail: ernest.sturdik@stuba.sk

I. STAFF

Full Professors:

Alexander Príbela, Prof., DSc.

Associate Professors:

Vladimír Frank, PhD.; Mária Takácsová, PhD.; Ľubomír Valík, PhD.

Assistant Professors :

Eva Hybenová, PhD; Mária Kováčová, PhD; Denisa Liptáková, PhD.

Research Fellows:

Ladislav Dodok, Assoc. Prof., Kitti Németh, PhD., PhD.; Bernadetta Hozová, PhD; Anna Mikulajová, MSc.;

PhD Students:

Lucia Brindzová, MSc.; Barbora Bajúsová, MSc.; Anna Chovancová, RNDr., Iveta Együdová, RNDr.; Alena Gajdošová, RNDr.; Michaela Kokindová, RNDr.; Katarína Mériová, MSc.; Petra Moravčíková, MSc., Peter Polka, MSc., Barbora Vidová, RNDr., Zuzana Sulová, Ing.

Technical staff:

Edita Kovačičová; Gabriela Sisáková, Eva Vosátková

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

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

B. Research laboratories:

Laboratory of Food Microbiology and Hygiene
Laboratory of Food Analysis and Assessment
Laboratory of Food Chemistry
Laboratory of Nutrition and Health

III. TEACHING

A. Undergraduate Study:

5. semester (Bc)	Food Chemistry I.	(2 h)	Takácsová
6. semester (Bc)	Food Analysis	(2 h)	Kováčová
	Laboratory of Food Analysis	(4 h)	Kováčová, Hozová, Frank, Mikulajová, Liptáková, Gajdošová, Brindzová, Chovancová, Mériová
	Semestral Project	(0-4 h)	All Department Staff
1. semester (MSc)	Food Microbiology	(2 h)	Valík
	Laboratory of Food Microbiology	(3 h)	Valík, Liptáková, Bajúsová
	Food Additives and Contaminants	(2-0 h)	Hybenová
	Laboratory Practice Food Additives and Contaminants	(0-2 h)	Hybenová
1. semester (MSc)	Physiology and Pathophysiology of Human Nutrition	(2-2 h)	Kajaba
	Semestral Project I.	(0-5 h)	All Department Staff
	Laboratory of specialization		Hybenová, Fodran
	Special practice		Liptáková

	Commodity Marketing	(2-2 h)	Lacková, Karkalíková
2. semester (MSc)	Food Hygiene	(2-1 h)	Valík
	Food Chemistry II.	(2 h)	Takácsová
	Diethology	(2 h)	Kajaba
	Semestral Project II.	(0-5 h)	All Department Staff
2. semester (MSc)	Laboratory of Food Chemistry II	(1 h)	Takácsová
	Food Analysis II.	(2 h)	Prachár, Mikulajová
	Laboratory of Food Analysis II	(4 h)	Hozová, Hybenová, Kováčová, Jakubík
	Food Toxicology	(2 h)	Piecková
2. semester (Bc)	Laboratory Practices	(0-4 h)	All Department Staff
3. semester (MSc)	Food Additives and Contaminants	(0-2 h)	Hybenová
	Food Evaluation	(2 h)	Žúbor, Príbela, Fodran
	Laboratory of Food Evaluation	(0-2 h)	Brindzová, Liptáková, Mikulajová, Príbela, Fodran
	Laboratory Practice Food Additives and Contaminants	(0-2 h)	Hybenová
3. semester (MSc)			
	Semestral Project III.	(0-5 h)	All Department Staff
	Food Legislative	(2 h)	Šinková
	Industry production of ready-to eat meal	(2 h)	Mráz
4. semester (MSc)	Diploma Project	(0-27 h)	All Department staff
3. semester (MSc)			

IV. CURRENT RESEARCH PROJECTS

A. Governmental project 2003 SP 27/028 0E 02/028 0E 02 Quality, safety and functionality of primary food resources“ (E. Hybenová)

The project is coordinated by Research Institute of Plant Production where some tasks of the project are carried out in our Faculty. Objectives of these tasks are focused on a) Enhancement of nutritional value of various types of cereals, b) Evaluation and selection of primary food resources and preparation of functional foods with preventive-medical properties.

Project duration: from 2003 to 2005

B. National project 2003 SP 27/028 0E 01/028 0E 01 Quality, safety and functionality of primary food resources (L. Valík, D. Liptáková).

The project is coordinated by Food Research Institute Bratislava. The task on "Study of the influence environmental factors on behaviour of technological and health relevant microflora in foods and food production areas" is also carried out at the Department of Nutrition and Food Evaluation. Principles of predictive microbiology within evaluation of food safety were used. Mathematical modelling of growth of relevant microorganisms in model systems, in food and in emulsion was worked out. Prediction of shelf-life and dynamics of microbial deterioration of foods was studied. Influence of external and internal environmental determinants on food microflora.

Project duration: from 2003 to 2005

C. VEGA Project No 1/9133/02" Development and control of new food technologies and application of biological active components into foods to increase their quality according to criteria used in EU" (A. Dandár, V. Frank)

The growth of population leads to increased demands in food production with higher quality and durability. The modern trends in new food technologies are characterized with increased productivity, durability and nutritive value of produced foods. This is closely connected with the development and optimization of basic physicochemical and biochemical processes used from raw material to final products. These trends are topical all over the world preferred by advanced national and multinational institutions. In our country there are demands mainly defined by EU. Proposed project builds on the research have been solved in the last years at our department to develop gained results.

Project duration: from 2005 to 2007

V. CURRENT EDUCATION PROJECTS

A. Nutrition and health in training and education - M. Takáčsová; V. Frank

Preparation of variable training and educational modules for various groups. Preparation of conceptual framework and subjects for whole-life education in nutrition, health and food safety in cooperation with the EAEA - European Association for the Education of Adults (<http://www.eaea.org/slovak/eaea.html>) and Institute of whole-life education at Slovak University of Technology (<http://www.stuba.sk/svk1/icv/slovak.html>). Establishing of the Educational centre STU in co-operation with College of Education of the Trnava university. Development of programmes for pre-school and school nutrition recommendations.

Project duration: from 2004 to 2006

B. Project ESF No. (ITMS) 131 201 10055 "Preparation and realization of specialists in the field of human nutrition" (V. Frank)

At the present time, it is generally accepted that in favour of health of human population it is necessary to focus our aim most of all on the field of prevention. It means to secure appropriate nutrition of population from point of view of various ages, physical and intellectual activity, profession and the like. In this direction it is inevitable to prepare needed specialists already at this time.

Project duration: from 2005 to 2007

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Adivit Nitra	Experimental and consult. projects	E. Šturdík, E. Hybenová, M. Kováčová, L. Dodok, B. Hozová, Ľ. Valík	From 01.01.2004
Pečivárne Liptovský Hrádok	Consultations	L. Dodok	31.01.2004
Institute of Food Research, Bratislava	Experimental project	Ľ. Valík, D. Liptáková	01.09.2003-
Agrifood , accredited testing laboratory s.r.o., Prievidza	Microbiological analysis	V. Frank	1998-
Research Institute of Plant Production Piešťany	Cooperation on governmental project "Quality, safety and functionality of primary food resources"	E. Šturdík, E. Hybenová	01.09.2003-
Adivit Nitra	Experimental project	E. Hybenová	31.01.2004
Adivit Nitra	Experimental project	L. Dodok	31.01.2004
Food Chamber of Slovakia, Bratislava	Consultation	Ľ. Valík	2004
Slovak Chamber of Agriculture and Food, Bratislava	Consultation	Ľ. Valík	2004
Institute of Molecular Physiology and Genetics SAV, Bratislava	Experimental project	E. Šturdík	2004
Institute of Experimental Oncology SAV, Bratislava	Experimental project	E. Šturdík	2004
Institute of Hearth research SAV, Bratislava	Experimental project	E. Šturdík	2004

Institute of Preventive and Clinical Medicine, Bratislava	Experimental project	E. Šturdík	2004
Mlyn Sládkovičovo, a.s.	Experimental project	L. Dodok	2005
Mlyn Pohronský Ruskov, a.s.	Experimental project	L. Dodok	2005
Ireks Enzyrna, s.r.o.	Consultations	L. Dodok	2004-
Podnikateľský zväz pekárov, cukrárov a cestovinárov, Bratislava	Consultations	L. Dodok	2005
Cech pekárov a cukrárov, Bratislava	Consultations	L. Dodok	2005
Institute of Experimental Pharmacology	Experimental project	E. Šturdík	2005
SSPLPVV, Bratislava	Cooperation	A. Príbela	2005
PMD Union, a.s., Bratislava	Consultations	L. Dodok	2005
Research Institute of Drugs, Modra	Experimental and consultation project	E. Šturdík	2003

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Budapest University of Technology and Economics	Experimental project	M. Kokindová	from 2005
JCC Vienna	Consultations	L. Dodok	From 1985

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
B. Hozová	Expert of the Slovak National Accreditation Service – Technical Commission TVA-L4	member	2000
E. Hybenová	Member of Committee of the Food Section SCHS	member	
V. Frank, B. Hozová	Slovak Chemical Society (SCHS)	member	
E. Hybenová	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences	member	
Ľ. Valík	Member of the Editorial Board of the Journal of Food and Nutrition Research	member	2005
A. Mikulajova	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences, Bratislava	member	
B. Hozová	Expert of the Deutsches Akkreditierungssystem Profwissen GmbH (DAP) for the microbiological food control	member	2000
V. Frank, E. Šturdík	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences	member	1995
E. Šturdík	Scientific board of the Institute of Preventive and Clinical Medicine	member	2003
E. Šturdík	Scientific board of the Chemical Institute of the Slovak Academy of Science	member	2003
E. Šturdík	Academic board of the Slovak Nuclear Society	member	2003
E. Šturdík	Scientific board of the UCM University Trnava	member	2003
E. Šturdík	Editorial Board of the Bulletin of Food Research	member	2003
M. Takáčsová	Editorial Board-Czech Journal of Food Sciences	member	2003
L. Dodok, M. Kováčová, B. Hozová, A. Príbela	Slovak Society of Forestry, Agricultural, Food and Veterinary Sciences at Slovak Academy of Sciences	member	1995
L. Dodok	SUTN Bratislava	member	1990
K. Németh	Journal "Výživa a zdravie" (Nutrition and Health)	secretary	2004
E. Šturdík	Editorial Board of the journal "Nutrition and Health"	chairmann	2002

E. Šturdík	Editorial Board of the journal "Nova Biotechnologica"	member	2004
A. Příbela	Editorial Board of the Czech Journal of Food Science	member	2005
A. Příbela	Slovak Chemical Society	member	2005
A. Příbela	Editorial Board of the Bulletin of Food Research	member	2005
E. Šturdík	Scientific Board of the Research Institute of Plant Production	member	2005

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
B. Hozová, V. Frank, L. Valík	Czechoslovak Society for Microbiology	member	

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
V. Alyabyeva	Ministry of Education and Science of Ukraine	Ukraine	1 day
J. Příhoda	VŠCHT Praha	Czech republic	2 days

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

Name	Organisation / Institution / Conference	State	Date / Duration
L. Valík	University of Chemical Technology, Prague	CZ	January 2005 (2 days)
L. Valík	Institute of Food Research, Norwich	GB	January 2005 (4 days)
L. Dodok	Mendel's Agriculture University	CZ	March 2005 (1 day)
M. Kokindová	Budapest University of Technology and Economics	H	from November 2005
D. Liptáková	University of Chemical Technology, Prague	CZ	January 2005 (2 days)
Z. Sulová	National Center of Public Health Protection	BG	From October 2005
L. Valík	CIAA Workshop, Vienna	CZ	January 2005 (1 day)

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
L. Janovčíková	Antimicrobial activity of lactic acid bacteria	D. Liptáková
K. Klačanová	Infectious diseases of pathogenic yeasts	D. Liptáková
A. Hudecová	Yeasts as food contaminants	D. Liptáková
A. Potzyová	Microbiological and technological aspects of bryndza production	L. Valík
M. Smuckerová	Microbiological and technological aspects of bread production	L. Valík
V. Štrbová	Determination of beta-glucans in the cereals	B. Hozová
E. Drobcová	The important place of the soya and their products in the nutrition and food industry	M. Kováčová
D. Šedivá	Phytoestrogenic and antioxidative effects of the isoflavones of soya	M. Kováčová
A. Turzová	The health useful substances of the cacao tree (Theobroma cacao)	M. Kováčová
M. Škultétyová	Theobromine in the cocoa beans and their products	M. Kováčová
K. Findurová	importance use of the whole grain products	M. Kováčová
M. Danielič	Cereals as the base for development of health beneficial foods	E. Šturdík

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

Name	Title of Thesis	Supervisor
Barbora Bajúsová	Growth and toxin production by <i>Staphylococcus aureus</i> in model experiments	Ľ. Valík
Lucia Šindelková	Effect of protective culture and temperature on growth of <i>Candida maltosa</i> in yoghurt	D. Liptáková
Nataša Hudjec	Occurrence and Stability of Vitamin B6 in Selected Cereals	E. Hybenová
Janka Plesková	Occurrence and Stability of Folic Acid in Selected Cereals	E. Hybenová
Stanislava Špaldová	Antioxidant Properties of Cereals	A. Mikulajová
Eva Malinová	The Phenolic Acids of the Cereals	M. Kováčová
Elena Baxová	The Lignans Present in Cereals	M. Kováčová

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Brindzová L.	Free radicals formation, prevention by natural oat antioxidants and their effect on human health	M. Takáčsová
Kukurová I.	Interactions of antibiotics in milk in the determination of detection limits.	B. Hozová
Mériová K.	Development of plant nutraceuticals for preventive medical purpose	E. Šturdík
Petríková J.	Quantitative analysis of mutual relationships among microorganisms in foods.	Ľ. Valík
Együdová I.	Valuation and selection cereals for development foods with minimal contents unfavourable substances.	V. Frank
Gajdošová A.	Choice, evaluation and using of cereals for the preparation of functional food products with immunomodulating properties	B. Hozová
Mikulajová A.	Effect of addition of some raw materials and secondary raw materials on food lipids stability.	M. Takáčsová
Vidová B.	Development of rapid diagnostic methods for detection of food microbial pathogens.	E. Šturdík
G. Bertaová	PCR application in food microbiology	Ľ. Valík
M. Kokindová	Isolation of natural extracts from herbs by supercritical fluid extraction	B. Šimandi (H)
Polka P.	Research and development of cereals profitable for health with better nutrition and organoleptic attributes	L. Dodok
Chovancová A.	Medical aspects of nutraceuticals	E. Šturdík

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- [1] Príbela, A.: *Senzorické hodnotenie obalov a obalových materiálov SL*, STU Bratislava, 2005.
- [2] Príbela, A., Pokorný, J., Malík, F.: *Senzorické hodnotenie vína SL*, STU Bratislava, 2005.
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DEPARTMENT OF ORGANIC CHEMISTRY

Head of Department:
Prof. Ľubor Fišera, PhD, DSc

Telephone: +421252968560
Fax: +421252968560
E-mail: lubor.fisera@stuba.sk

I. STAFF

Full Professors:

Prof. Ľubor Fišera, PhD, DSc; Prof. Tibor Gracza, PhD, DSc; Prof. Štefan Marchalín, PhD, DSc;

Associate Professors:

Dušan Berkeš, PhD; Ľubomír Floch, PhD; Viktor Milata, PhD; František Považanec, PhD; Štefan Stankovský, PhD; Katarína Špirková, PhD (until 30. 05. 2005); Ladislav Štibrányi, PhD;

Assistant Professors :

Mária Bobošíková, PhD; Eva Jedlovská, PhD (until 30. 05. 2005); Anna Koreňová, PhD; Angelika Lásiková PhD; Peter Szolcsányi PhD; Peter Šafař, PhD;

Research Fellows:

Matej Babjak, PhD; Iva Blanáriková-Hlobilová, PhD (until 31. 01. 2005); Branislav Dugovič, PhD (since 01. 04. 2005); Daniel Végh, PhD, DSc; Peter Zálupský, PhD; Jozefína Žúžiová, PhD;

PhD Students:

Anita Andicsová (since 01. 10. 2005); Barbora Baumlová; Helena Horváthová (until 30. 04. 2005); Eva Hýrošová; Mária Gardiánová; Pavol Jakubec (until 31. 03. 2005); Peter Kapitán (until 30. 09. 2005); Peter Kooš; Peter Kubizna (since 01. 10. 2005); Martin Petro; Zita Puterová; Juraj Rehák (since 01. 10. 2005); Tomáš Solčán (since 01. 10. 2005); Tomáš Wiesenganger; Dagmar Winklerová;

Technical staff:

Miroslava Caňová (until 12. 04. 2005); Eva Kaisová; Mária Krajčírová (since 01. 06. 2005); Mária Nemcová; Anton Pavlíček; Jakub Rečičár (since 15. 10. 2005; Stanislav Tomek (until 30. 06. 2005); Iva Viskupičová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Basic Skills in Organic Chemistry Laboratory I, II.
Organic Synthesis Laboratory

B. 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. Undergraduate Study:

1. semester (Bc)	General and Organic Chemistry	3/1/0	Považanec
2. semester (Bc)	General and Organic Chemistry Laboratory	0/0/4	Stankovský, Kotočová
3. semester (Bc)	Organic Chemistry	2/2/0	Marchalín, Gracza
	Organic Chemistry Laboratory	0/0/4	all teachers and research workers
4. semester (Bc)	Organic Chemistry	2/2/0	Fišera, Považanec
	Organic Chemistry Laboratory	0/0/4	all teachers and research workers

3. semester (Bc) (Pt)	Organic Chemistry	1/1/0	Špirková
	Organic Chemistry Laboratory	0/0/4	Špirková, Winklerová
4. semester (Bc) (Pt)	Organic Chemistry	1/1/0	Špirková, Floch
	Organic Chemistry Laboratory	0/0/4	Špirková, Wiesenganger, Winklerová
5. semester (Bc)	Chemical Information	1/1/0	Zálupský, Kubizna
6. semester (Bc)	Chemical Specialities	2/2/0	Mravec, Štibrányi
	Semestral Project	0/0/4	Berkeš, Bobošíková, Fišera, Gracza, Hýrošová, Milata, Szolcsányi, Stankovský, Šafař, Végh
1. semester (MSc)	Organometallic Compounds	1/1/0	Gracza
	Mechanisms of Organic Reactions I	3/1/0	Fišera
	Bioorganic Chemistry	2/0/0	Berkeš
	Laboratory Project I	0/0/10	Koreňová
1. semester (MSc)	Organic Chemistry III	1/1/0	Považanec
2. semester (MSc)	Organic Synthesis	2/1/0	Floch
	Asymmetric Synthesis	2/1/0	Gracza
	Stereochemistry	0/2/0	Štibrányi
	Spectroscopic Methods in the Control of Technology	2/2/0	Milata, Segľa
2. semester (MSc)	Laboratory Project II	0/0/6	Šafař, Štibrányi
	Training at Industrial Production Floor	15 d	Végh, Fišera, Milata, Štibrányi
3. semester (MSc)	Mechanisms of Organic Reactions II	1/1/0	Marchalín
	Applied Organic Synthesis	1/1/0	Považanec
	Physical Organic Chemistry I	0/2/0	Milata
	Chemistry of Heterocyclic Compounds	2/0/0	Stankovský
	Chemistry of Natural Substances and Drugs	2/0/0	Berkeš
	Chemical Information Systems	2/0/0	Zálupský
3. semester (MSc)	Laboratory Project	0/0/10	Végh, Fišera, Milata, Štibrányi
4. semester (MSc)	Diploma Seminar		Považanec
	Diploma Thesis Project		Végh, Gracza

C. Doctoral Study:

1. semester (PhD)	Advanced Organic Chemistry	2/0/0	Gracza
1. semester (PhD)	Advanced Stereochemistry	2/0/0	Fišera
2. semester (PhD)	Advanced Organic Chemistry	2/0/0	Gracza
2. semester (PhD)	Advanced Stereochemistry	2/0/0	Fišera
2. semester (PhD)	Structure Reactivity Relationship	2/0/0	Marchalín
2. semester (PhD)	Chemistry of Heterocyclic Compounds	2/0/0	Stankovský

IV. CURRENT RESEARCH PROJECTS

VEGA project No 1/0057/2003 The Application of Stereoselective Cycloaddition, Cyclization and Oxycarbonylation Reactions in the Total Syntheses of Natural Products and Its Analogues (Lubor Fišera)

The syntheses of natural products and their analogues, especially polyhydroxylated derivatives of pyrrolidines, piperidines, pyrrolizidines and indolizidines via asymmetric palladium(II)-catalyzed oxy-/amino-/amidocarbonylation of unsaturated polyols and/or aminopolyols and 1,3-dipolar cycloaddition of nitrones. The study of the effect of substituent/Lewis acids to influence diastereoselectivity of nitrone cycloaddition reactions. Modeling and synthesis of chiral palladium(II)-complexes for kinetic resolution of racemic mixtures in Pd(II)-catalyzed cyclization and carbonylation reactions of unsaturated polyols and aminopolyols. The application of these reactions as a key step in the total asymmetric synthesis.

Project duration: from 01.01.2003 to 31.12.2005

APVT project No 20-010702 Synthesis of optically pure buildings blocks for syntheses of

biologically active natural compounds and their analogues as potential chemotherapeutics (Tibor Gracza)

Development and optimization of new synthetic ways - chiral pool approaches - in the syntheses of optically pure alkenitols derived from cheap and commercially available monosaccharides in laboratory grams and multigrams scale. Study of chemo-, regio- and stereoselectivity of palladium(II)-catalyzed oxy-/amino-/amidocarbonylation and cyclization of unsaturated polyols and aminopolyols. Evolution of asymmetric version of the transformations using chiral palladium(II)-complexes. The study of stereoselectivity of 1,3-dipolar cycloaddition of nitrile oxides and nitrones with chiral alkenes. The study of the effect of substituent/Lewis acids to influence the diastereoselectivity of the cycloadditions. The new type of cross-coupling reaction with contributing neighbouring group and finding of the reaction conditions for kinetic resolution of racemic polyols and aminopolyols.

Project duration: from 01.10.2002 to 30.09.2005

VEGA project No 1/2456/05 Stereoselective Syntheses of Chiral 1,4-Dihydropyridines and Analogs of Indolizine type Alkaloids (Stefan Marchalín)

The principal goal of the project is to investigate possible utilization of 2-formyl- dihydropyridines in the synthesis of novel chiral nonracemic 2-substituted dihydropyridines, bi- and tricyclic heterocycles respectively, containing a 1,4-dihydropyridine ring. Preparation and characterization of coordination compounds of both transition and non transition metals carrying 1,4-dihydropyridine based ligands, examination of their composition, structure, and investigation of their catalytic activity. The project aims at preparation of carefully designed substituted indolizines and indolizidines - compounds with possible bioactivity. Practical application of regio-, chemo- and stereoselective reactions making use of novel features of organic synthesis. Elaboration of novel, simple, and generally applicable stereocontrolled syntheses of pure analogs of indolizine type alkaloids, utilizing chiral synthons based on hetero[f]indolizinediones.

Project duration: from 01. 01. 2005 to 31.12.2007

VEGA project No 1/0058/03 Benzazines and Their Condensed Analogues; Preparation, Properties and Utilisation (Štefan Stankovský)

The objective of the proposed research project lies in preparation of novel condensed aromatic heterocycles – derivatives of benzazines mainly of the quinazoline and quinoline type fused with another ring containing O, S, N as heteroatoms. Special attention will be paid to use of non-traditional precursors leading to desired skeletons carrying desired functionality, or such that allow to preserve the original skeleton and introduce desired substituents. Such modifications are expected to streamline structures of target compounds to achieve significant bioactivity, mainly antimicrobial, antifungal and cytostatic. Structural and spectral characteristics of novel compounds will be studied, including the x-ray analysis and study of supramolecular parameters by computational methods.

Project duration: from 01.01.2003 to 31.12.2005

VEGA project No 1/1379/04 Syntheses directed towards novel heterocyclic compounds such that show opto-electronic properties, specific bioactivity, and apoptosis (Daniel Végh)

Design of syntheses of novel compounds supported by modern trends gleaned from theoretical studies. Synthesis of novel heterocyclic compounds from the furan, thiophene, pyrrole, imidazole, pyrazine, pyrone series a modeling of their biological activity. Study of controlled di- and trimerization of the prepared conjugated heterocyclic compounds aiming at preparation of molecular and supramolecular functional units and nano-structures. Modeling of supramolecular structures and potential conjugated antennae systems for molecular recognition and self-organization by theoretical calculations a combination of building blocks. Utilization of perfluoroaromatics for molecular recognition. Structure modeling of compounds with cancerostatic effects and those capable of initiating apoptosis.

Project duration: from 01.01.2004 to 31.12.2006

VEGA project No 1/2469/05 Study of stereoselective transformations of non proteinogenic oxoaminocarboxylic acids (Dušan Berkeš)

Synthesis of enantiomerically pure, conformationally restricted derivatives of homophenylalanine and of its heteroanalogues by crystallization induced asymmetric transformation (CIAT) coupled with the aza-Michael addition and electrophilic lactonization. Study of simultaneous CIAT taking place at two stereogenic centers. Synthesis and stereoselective transformations of bicyclic tetramic acid derivatives. Utilization of such asymmetric

transformation in the synthesis of natural polysubstituted amino acids and their derivatives. Preparation of 5 aryl-substituted 3-amino-2-hydroxytetrahydrofurans and study of their conversion to optically pure substituted C-aryl amino-furanosides.

Project duration: from 01.01.2005 to 31.12.2007

VEGA project No 1/9254/02 Preparation, properties and reactivity of the nitrogen heterocycles with fused ring containing O, S, Se or N atoms (Viktor Milata)

The preparation of new aromatic polyazaheterocycles on the basis of quinoline, quinazoline and benzoazoles with other fused aromatic or saturated heterocycle containing O, S, Se or N, is the subject of this proposed project. In the first period of this project the greatest attention will be aimed at the preparation of new precursors of the mentioned heterocycles. In the next part these precursors of nitroquinazolines, nitrobenzimidazoles, nitroselenodiazoles, imidoylhalogenides, cyanoacetamides, quinazolones and their thioanalogues will be used for the synthesis of the target compounds in the cyclization and cyclocondensation reactions. Derivatisation of the newly synthesized heterocycles by incorporation of saccharide or other hydrophilic component, an increased solubility of compounds in water and thus better biological application will be pursued. Attention will be given to physico-chemical and spectral parameters, e.g. X-Ray analysis and supramolecular chemistry will be confronted with calculated models.

Project duration: from 01.01.2002 to 31.12.2004

APVT Project No. 20-007304 Synthesis and properties of the pharmacologically potentially active nitrogen heterocycles (Viktor Milata)

Study and optimisation of the new synthetic methods for preparation of analogues of natural condensed aromatic polyazaheterocyclic compounds with fused aromatic or saturated ring containing O, S, Se or N atoms. Preparation of precursors of cited heterocycles and their nitro- and aminoderivatives, imidoylchlorides, imidoyl and amidinoylisothiocyanates. Exploitation of new precursors in cyclisation and cyclocondensation reactions for preparation of target compounds. Derivatisation of newly prepared heterocyclic compounds by introduction of carbohydrate or other hydrophilic part aiming to higher solubility of prepared compounds allowing their more effective biological application. Study of physico-chemical properties and spectral characteristics of final derivatives in relation to their X-ray structural analysis, supramolecular chemistry using quantum-chemical calculations.

Project duration: from 01.01.2005 to 31.12.2007

APVT Project No. 20-000904 Asymmetric Pd(II)-catalysed reactions as a methodology for the preparation of chiral building blocks for the synthesis of biologically active natural compounds (Peter Szolcsányi)

The main aim of the project is to develop a new and efficient methodology of asymmetric palladium-catalysed intramolecular and intermolecular aminocarbonylations and halocyclisations for the enantioselective preparation of optically pure building blocks. These valuable intermediates will serve as suitable chiral precursors for targeted total syntheses of biologically active natural compounds and/or their analogues with their potential use in human medicine. The sub-objectives of the project involve the development of a simple and rapid preparation of necessary aminoalkenitols as starting substrates in multi-gram quantities and required purity, as well as an effective synthesis of enantiomerically pure chiral Pd-catalysts essential for key asymmetric transformations.

Project duration: from 01.01.2005 to 31.12.2007

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Synkola, Bratislava	Seminars and conferences	Karvaš Milan, director, Mlynská dolina, 842 15 Bratislava 4	01.01.1992-

Duslo, Šaľa	The synthesis of heterocyclic compounds.	Lehocký Peter, director, Duslo, a. s. 927 03 Šaľa	01.01.1990-
Slovak Academy of Sciences, Bratislava	The synthesis of heterocyclic compounds.	Tvaroška Igor, director, Dubravská cesta 9, 841 04 Bratislava 4	01.01.1970
Slovak Academy of Sciences, Bratislava	The synthesis of heterocyclic compounds.	Šoltés Ladislav, UEF, Dubravská cesta 9, 841 04 Bratislava 4	01. 01.1997-
Tau-Chem, Bratislava	The synthesis of heterocyclic compounds.	Žvak Vladimír, director, Nobelova 34, 836 05 Bratislava 3	01.01.1996
Institute of Drugs Research, Modra	The synthesis of heterocyclic compounds.	Šmahovský Vendelín, director, Horná 36, 900 01 Modra	01.01.1980-
Tatra Trade, Prievidza	The synthesis of heterocyclic compounds.	Klínovský Ján, director, Matice slovenskej 10, 971 01 Prievidza	01.01.2000-
Institute of Preventive Medicines, Bratislava	The synthesis of heterocyclic compounds.	Sedlák Ján, Dr., Vlárská 1, 833 91 Bratislava 37	01.01.2000-
National Center of Onkology, Bratislava	The synthesis of heterocyclic compounds.	Chalupa Ivan, Dr, Vlárská 7, 831 01 Bratislava 37	01.01.2000-
Georganics, Bratislava	The synthesis of heterocyclic compounds.	Đuriš Juraj, director, Koreničova 1, 811 03 Bratislava 1	01.01.2000-
CMS, Bratislava	The synthesis of heterocyclic compounds.	Toman Jaromír, director, Nobelova 34, 836 03 Bratislava 3	01.01.2000-
Zentiva a.s., Hlohovec	Research and teaching	Chylik Jaroslav Dr., API prod. manager, Nitrianska cesta 100, 920 27 Hlohovec	01.07.2003-
UPJŠ, Košice	The synthesis of heterocyclic compounds.	Hricová Oľga Dr., Košice	01.01.2005

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Inst. für Angewandte Synthese Chemie TU Vienna, Austria	The synthesis of heterocyclic compounds	Fröhlich Hannes, dean, professor, Getreide Markt 9, A-1060 Vienna, Austria	01. 01. 1991-
Inst. für Organische Chemie Univ. Stuttgart, Germany	Stereoselective dipolar cycloaddition and oxycarbonylation reactions	Jäger Volker, professor, Pfaffenwaldring 55, D-70569 Stuttgart, Germany	01. 01. 1989-
Max Plank Institute, Stuttgart, Germany	The synthesis of heterocyclic compounds for nanotubes	Roth Siegmar, Dr., Helsenbergerstr. 1, D-70569 Stuttgart, Germany	01.01.2002-
Inst. für Organische Chemie Univ. Berlin, Germany	Stereoselective reactions of chiral nitrones	Reissig Hans-Ulrich, professor, Takustr. 3, D-14195 Berlin, Germany	01. 01. 2002-
Inst. de Chimie Moleculaire d'Orsay, France	Resau formation recherche	Basch E. H., professor, IUT d'Orsay Université de Paris-Sud (XI) Département Chimie Plateau du Moulon 91400 ORSAY, France	01.01.1976-
Institute de Chimie Moleculaire, Orsay, Univ. Paris-Sud, France	NMR study of chiral compounds and cooperation in exchange of students	Loupy, A. , professor, Institut of Molecular Chemistry, ICMO, University Paris – South, Orsay, France	01.01.2000-
URCOM, Univ. Le Havre, France	The synthesis of condensed heterocyclic compounds	DECROIX B., DAICH A., professors Laboratoire de Chimie URCOM, EA 3221 Faculté des Sciences et Techniques Université du Havre 25, r	01.01.1990
Inst. für Festkörperphysik der Univ. Vienna, Austria	New materials for microelectronics	Kauffmann H. F. professor, University of Vienna, Intitut fur Physikalische chemie, Währingerstrasse 42, Wien, Austria.	01.010.2001-
Laboratorium für Org. Chem, ETH, Zürich, Switzerland	The total synthesis of natural products	Vasella Andrea, professor ETH Höggerberg, HCI H315 CH-8093, Zürich, Switzerland	01.01.1990-

Institute of Organic Chemistry, TU Wroclaw, Poland	The synthesis of heterocyclic compounds	Mlochowski Jacek, professor, Technical University of Wroclaw, 50-370 Wroclaw, Poland	01.01.1986-
Institute of Organic Chemistry, Univ. Debrecen, Hungary	The synthesis of heterocyclic compounds	Lévai Albert, professor, H-4010 Debrecen, P.O.Box 20, Hungary	01.01.1995-
Institute of Organic Chemistry, U Warsaw, Poland	The synthesis of heterocyclic compounds	Cyranski, M. K., professor, 02 093 Warsaw, Poland	01.01.1996-
Institute of Organic Chemistry, AU Krakow, Poland	The synthesis of heterocyclic compounds	Tomasik Piotr, professor, Mickiewicz Ave. 21 31 120 Krakow, Poland	01.01.1975-
Department of Organic Chem. and Biology UNED, Madrid, Spain	The synthesis of heterocyclic compounds, NMR spectroscopy	Claramunt, R. M., Cabildo, P., Lopéz G., professors, UNED, Madrid, Spain	01.01.1998-
Instituto de Quimica Medica (CSIC), Madrid, Spain	Physical organic chemistry	Elguerro, J. B., professor, Madrid, Spain	01.01.1998-
Institute of Organic Chemistry, Panon Univ. Mosonmagyaróvár, Hungary	The synthesis of heterocyclic compounds. Utilization in Agriculture	Schmiedt Rudolf, professor, Mosonmagyaróvár, Hungary	01.01.1997-
Department of Chemistry, Univ. Puerto Rico, USA	Structure determination of amino acids and peptides	Baran Peter, Dr, Department of Chemistry, Univ. of Puerto Rico, Rio Pedras, PO Box 23346, San Juan 00931-3346, Puerto Rico, USA	2002
Department of Chemistry, Keele University, United Kingdom	The synthesis of heterocyclic compounds	Ramsden Christopher, professor, Keele, Staffordshire ST55BG, United Kingdom	1980
Department of Chemistry, Cambridge University, United Kingdom	The total synthesis of natural products	Ley Steven V., professor, Cambridge University, United Kingdom	1998
School of Chemistry, Manchester University, United Kingdom	The total synthesis of natural products	Dixon Darren J., professor, Manchester University, United Kingdom	2005

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Fišera Ľubor	Academic board of STU	member	2003
Fišera Ľubor	Academic board of FCHPT	member	1997
Fišera Ľubor	Scientific Grant Agency	chairmann	2000-2005
Gracza, Tibor	Scientific Grant Agency	member	2005
Fišera Ľubor	Chemical Papers	member	1994
Berkeš Dušan	Slovak Chemical Society	member	1984
Bobošíková Mária	Slovak Chemical Society	member	1993
Fišera Ľubor	Slovak Chemical Society	chairmann	1971
Floch Lubomír	Slovak Chemical Society	member	1972
Gracza Tibor	Slovak Chemical Society	member	1984
Hlobilová Iva	Slovak Chemical Society	member	1997
Jedlovská Eva	Slovak Chemical Society	member	2003
Koreňová Anna	Slovak Chemical Society	member	1983
Milata Viktor	Slovak Chemical Society	vice-president	1977
Považanec František	Slovak Chemical Society	member	1983
Stankovský Štefan	Slovak Chemical Society	member	1971
Šafař Peter	Slovak Chemical Society	member	2000
Špirková Katarína	Slovak Chemical Society	member	1983
Végh Daniel	Slovak Chemical Society	member	1972
Žúžiová Jozefína	Slovak Chemical Society	member	1989
Gardianová Mária	Slovak Chemical Society	member	2002
Lásiková Angelika	Slovak Chemical Society	member	1996
Marchalín Štefan	Slovak Chemical Society	member	2005
Berkeš Dušan	Slovak Society of Industrial Chemistry	member	1995

Bobošíková Mária	Slovak Society of Industrial Chemistry	member	1995
Fišera Ľubor	Slovak Society of Industrial Chemistry	member	1993
Floch Lubomír	Slovak Society of Industrial Chemistry	member	1995
Gracza Tibor	Slovak Society of Industrial Chemistry	member	1996
Hlobilová Iva	Slovak Society of Industrial Chemistry	member	1998
Jedlovská Eva	Slovak Society of Industrial Chemistry	member	1993
Koreňová Anna	Slovak Society of Industrial Chemistry	member	1995
Milata Viktor	Slovak Society of Industrial Chemistry	member	1993
Marchalín Štefan	Slovak Society of Industrial Chemistry	member	1996
Považanec František	Slovak Society of Industrial Chemistry	member	1995
Stankovský Štefan	Slovak Society of Industrial Chemistry	member	1995
Šafař Peter	Slovak Society of Industrial Chemistry	member	1998
Špirková Katarína	Slovak Society of Industrial Chemistry	member	1993
Végh Daniel	Slovak Society of Industrial Chemistry	member	1993
Žúžiová Jozefína	Slovak Society of Industrial Chemistry	member	1995
Gardianová Mária	Slovak Society of Industrial Chemistry	member	2003
Lásiková Angelika	Slovak Society of Industrial Chemistry	member	1996
Zálupský Peter	Slovak Society of Industrial Chemistry	member	1996
Štibrányi Ladislav	Slovak Society of Industrial Chemistry	member	1995
Dugovič Branislav	Slovak Society of Industrial Chemistry	member	2003
Babjak Matej	Slovak Society of Industrial Chemistry	member	2000

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Fišera Ľubor	ARKIVOC	member	2000
Fišera Ľubor	American Chemical Society	member	1994
Fišera Ľubor	German Chemical Society	member	1994
Fišera Ľubor	Czech Chemical Society	member	1994
Gracza Tibor	German Chemical Society	member	1994
Gracza Tibor	Czech Chemical Society	member	1997
Marchalín Štefan	Czech Chemical Society	member	1980
Milata Viktor	Czech Chemical Society	member	2002
Milata Viktor	ARKIVOC	member	2000
Végh Daniel	Magyar Tudomanos Akademia	member	2001
Gracza Tibor	Advisory Board of EUROCAT	member	2002
Milata Viktor	Molecules	member	2000
Milata Viktor	Eur. J. Org. Chem.	member	2002
Fišera Ľubor	Eur. J. Org. Chem.	member	2002

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Peters, P.	CAS, Columbus	USA	January 2005 (1 day)
Jäger, V.	Univ. Stuttgart	Germany	April 2005 (3 days)
Griesser, H.	Univ. Stuttgart	Germany	April 2005 (3 days)
Reissig, H.-U.	FU Berlin	Germany	April 2005 (3 days)
Redcliffe, L.	Univ. Stuttgart	Germany	April 2005 (3 days)
Gulla, M.	Univ. Stuttgart	Germany	April 2005 (3 days)
Williardt, J. C.-E.	Univ. Stuttgart	Germany	April 2005 (3 days)
Brasholz, M.	FU Berlin	Germany	April 2005 (3 days)
Helm, M.	FU Berlin	Germany	April 2005 (3 days)
Bressel, B.	FU Berlin	Germany	April 2005 (3 days)
Kaden, S.	FU Berlin	Germany	April 2005 (3 days)
Dash, J.	FU Berlin	Germany	April 2005 (3 days)
Zimmer, R.	FU Berlin	Germany	April 2005 (3 days)
Wefelscheid, U.	FU Berlin	Germany	April 2005 (3 days)
Aulenta, F.	FU Berlin	Germany	April 2005 (3 days)

Högermeier, J.	FU Berlin	Germany	April 2005 (3 days)
Blot, V.	FU Berlin	Germany	April 2005 (3 days)
Cantagrel, F.	FU Berlin	Germany	April 2005 (3 days)
Chowdhury, M.	FU Berlin	Germany	April 2005 (3 days)
Dekaris, V.	FU Berlin	Germany	April 2005 (3 days)
Gwiazda, M.	FU Berlin	Germany	April 2005 (3 days)
Lechel, T.	FU Berlin	Germany	April 2005 (3 days)
Saadi, J.	FU Berlin	Germany	April 2005 (3 days)
Schefzig, L.	FU Berlin	Germany	April 2005 (3 days)
Feng, J.	Univ. Stuttgart	Germany	April 2005 (3 days)
Li, F.	Univ. Stuttgart	Germany	April 2005 (3 days)
Wang, X.	Univ. Stuttgart	Germany	April 2005 (3 days)
Sunitha, S.	Univ. Stuttgart	Germany	April 2005 (3 days)
Baskakovova, A.	Univ. Stuttgart	Germany	April 2005 (3 days)
Coisson, D.	Univ. Stuttgart	Germany	April 2005 (3 days)
Young, L.	Univ. Stuttgart	Germany	April 2005 (3 days)
Wallasch, F.	Univ. Stuttgart	Germany	April 2005 (3 days)
Diderich, F.	ETH Zürich	Switzerland	May 2005 (1 day)
Girardot, A.	IUT Orsay, Univ. Paris-Sud	France	May-June 2005 (60 days)
Bardin, E.	IUT Orsay, Univ. Paris-Sud	France	May-June 2005 (60 days)
Andres, P.	IUT Orsay, Univ. Paris-Sud	France	May-June 2005 (60 days)
Bellus, D.	Basel	Switzerland	October 2005 (2 days)
Fröhlich, H.	TU Vienna	Austria	October 2005 (1 day)
Sharpless, B. K.	La Jolla, California	USA	October 2005 (1 day)
De Rosa, M.	Media, Pennsylvania	USA	November 2005 (2 days)

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

Name	Organisation / Institution / Conference	State	Date / Duration
Babjak, M.	Univ. Grenoble	France	2005 (244 days)
Baumlová, B.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Berkeš, D.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Berkeš, D.	Univ. Le Havre	France	2005 (60 days)
Berkeš, D.	Conference, Prague	Czech. Republic	November 2005 (3 days)
Dugovič, B.	FU Berlin	Germany	2005 (180 days)
Dugovič, B.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Fišera, L.	TU Vienna	Austria	2005 (5 days)
Fišera, L.	Univ. Thessaloniki	Greece	April 2005 (4 days)
Fišera, L.	FU Berlin	Germany	July 2004 (14 days)
Fišera, L.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Gracza, T.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Gracza, T.	Conference, Prague	Czech. Republic	November 2005 (3 days)
Gracza, T.	Univ. Stuttgart	Germany	October 2005 (4 days)
Kapitán, P.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Kapitán, P.	TU Vienna	Austria	2005 (2 days)
Koóš, P.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Koóš, P.	Univ. Oxford	UK	2005 (90 days)
Marchalín, Š.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Milata, V.	T. Univ. Vienna	Austria	2005 (10 days)
Milata, V.	Univ. Paris-Sud, Orsay	France	March, July 2005 (35 days)
Milata, V.	Conference, Poznan	Poland	September 2005 (5 days)
Milata, V.	Conference, Pardubice	Czech Republic	June 2004 (4 days)
Milata, V.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Milata, V.	MU, Brno	Czech. Republic	December 2005 (1 day)
Puterová, Z.	Conference, Prague	Czech. Republic	2005 (days)
Stankovský, Š.	BDSHC, Brno	Czech. Republic	August 2005 (4 days)
Szolcsányi, P.	Conference, Cambridge	United Kingdom	December, 2005 (3 days)
Szolcsányi, P.	School of Chemistry, Manchester	United Kingdom	December, 2005 (4 days)
Végh, D.	Conference, Poznan	Poland	September 2005 (5 days)
Végh, D.	Univ. Mosonmagyaróvár, Univ. Budapest	Hungary	2005 (5 days)

Végh, D.	TU Vienna	Austria	May 2005 (1 day)
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VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Csatayová, K.	Intra- vs. Intermolecular Pd(II)-Catalysed Aminocarbonylations of Alkenitols	Szolcsányi, P.
Igazová, M.	Stereoselective Syntheses of Substituted Indolizines	Bobošíková, M.
Karlubíková, O.	Pd(II)-Catalyzed Bicyclizations of Unsaturated Polyols in the Tetrahydrofurans Synthesis	Gracza, T.
Kertész, M.	Stereoselective Syntheses of Substituted Hydroxyindolizidines	Bobošíková, M.
Korenačková, Z.	Conformationally Restricted Heterocyclic Analogous of Haloperidol	Šafař, P.
Krok, A.	Asymmetric Palladium(II)-Catalyzed Oxycarbonylations of Unsaturated Polyols	Gracza, T.
Mathia, F.	Pd(II)-Catalyzed Bicyclizations of Unsaturated Aminoalcohols	Gracza, T.
Medvecký, M.	Stereoselectivity of Chiral 1,3-Dipolar Cycloadditions with Baylis-Hillman Alkenes	Fišera, L.
Petráš, P.	Synthesis and Reactions of Alkanoylacrylic Acids	Berkeš, D.
Podolan, G.	1,3-Dipolar Cycloadditions of Nitrones with α,β -Unsaturated Carbonyl Compounds and Their Derivatives	Fišera, L.
Rubický, T.	Preparation of Cyclic Nitrones and Their Utilization in 1,3-Dipolar Cycloadditions	Fišera, L.
Staho, T.	Synthetic Utilisation of Haller-Bauer Reaction for the Preparation of 3,4-Substituted Thiophen Derivatives as Novel Materials with Opto-Electronic Properties	Végh, D.
Suchoň, T.	Preparation of Isoxazolidinyl Nucleosides via 1,3-Dipolar Cycloaddition of Nitrones with N-Vinyllic Nucleosidic Bases	Fišera, L.
Svítková, Z.	Preparation and Properties of Pyridocondensed Benzazoles	Milata, V.
Škodová, M.	Preparation and Properties of Condensed Nitrogen Heterocycles	Milata, V.
Tavalýová, M.	Quinazoline N, S, O-Glycosides	Stankovský, Š.

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

Name	Title of Thesis	Supervisor
Andicsová, A.	Synthesis of new heterocyclic compounds. Potential angiotensin II receptor antagonists	Végh, D.
Kubizna, P.	Pd(II)/CuCl ₂ -Catalysed chlorocyclisations of aminoalkenitols	Gracza, T.
Rehák, J.	Pd(II)-Catalysed alkoxy carbonylations of aminoalkenitols	Gracza, T.
Solčán, T.	Synthesis and synthetic utilisation of pentafluorobenzaldehyde	Végh, D.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Dugovič, B.	1,3-Dipolar Cycloadditions of Nitrones Catalyzed by Lewis Acids and their Utilization in the Synthesis	Fišera, L.
Jakubec, P.	Crystallisation induced dynamic resolution (CIDR) and its utilisation in the synthesis of α -aminoacids	Berkeš, D.
Kapitán, P.	Enantioselective Palladium (II)-Catalyzed Oxycarbonylation in the Synthesis of Bicyclic Lactones. Synthesis of Natural Products.	Gracza, T.

VIII. PUBLICATIONS

Chapter or pages in book

[1] Ondrejčovičová, I., Izakovič, M., Bakošová, M., Jantová, S., Koreňová, A., Kovařík, P., Marcinčin, A., Ondrovičová, M., Prousek, J.: *Chémia a život okolo nás*, Editor(s): I. Ondrejčovičová, M. Izakovič, Chapter: Izoméria organických zlúčenín. STU v Bratislave, pp. 32-

Article in journal

- [1] Babjak, M., Kapitán, P., Gracza, T.: Synthesis of (+)-goniothalesdiol and (+)-7-epi-goniothalesdiol. *Tetrahedron*, vol. 61, pp. 2471-2479, 2005.
- [2] Babjak, M., Remeň, L., Karlubíková, O., Gracza, T.: Synthesis of Tetrahydrofurans through a Novel Pseudo-meso-trick. *Synlett*, no. 10, pp. 1609-1611, 2005.
- [3] Babjak, M., Remeň, L., Szolcsányi, P., Karlubíková, O., Zálupský, P., Mikloš, D., Gracza, T.: Novel bicyclisation of unsaturated polyols and aminopolyols in a 'magic' PdCl₂-CuCl₂-AcOH catalytic system. *Materials Structure*, no. 3, vol. 12, pp. 206-208, 2005.
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- [6] Breza, Martin, Milata, Viktor: Quantum-chemical studies of the nitration of benzazoles. *Arkivoc*, pp. 80-89, 2005.
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- [10] Dugovič, B., Wiesenganger, T., Fišera, L., Hametner, C., Prónayová, N.: Nitronc 1,3-Dipolar Cycloadditions to Enol Ethers Catalyzed by Lewis acids. An Access to -Amino Acids. *Heterocycles*, vol. 65, pp. 591-605, 2005.
- [11] Fischer, R., Hýrošová, E., Fišera, L., Hametner, C., Cyraňski, M.K.: Preparation of 7- Methylene-pyrrolo[1,2-c]pyrimidin-1(5H)-ones and their 1,3-Dipolar Cycloaddition towards Isoxazoliny and Isoxazolidiny Spiro-nucleosides. *Chemical Papers*, vol. 59, pp. 275-288, 2005.
- [12] Fischer, R., Jedlovská, E., Solčániová, E.: 1,3-Dipolar cycloadditions of mesitonitrile oxide to chiral unsaturated enones catalyzed by Lewis acids. *Arkivoc*, pp. 103-115, 2005.
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DEPARTMENT OF ORGANIC TECHNOLOGY

Head of Department:
Assoc. Prof. Alexander Kaszonyi, PhD.

Telephone: +421252495242
Fax: +421252493198
E-mail: alexander.kaszonyi@stuba.sk

I. STAFF

Full Professors:

Milan Hronec, PhD., DrSc., Dušan Mravec, PhD.

Associate Professors:

Alexander Kaszonyi, PhD., Magdaléna Štolcová, PhD., Ján Vojtko, PhD.

Assistant Professors :

Dana Gašparovičová, PhD.

Research Fellows:

Zuzana Cvengrošová, PhD., Blažej Horváth, Katarína Fulajtárová

PhD Students:

Katarína Klepáčová, Gabriel Kostráb, Barbora Krejčová, Miroslav Mrzula, Marek Slobodník, Zuzana Vallušová, Miroslav Vlčko

Technical staff:

Gabriel Mikeš, Eva Šuleková, Ľudmila Tvarožková,

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

Technological laboratory 1, 2, 3, 4

B. Research laboratories:

Laboratory of catalytic processes
Laboratory of reactor technique
Laboratory of separation (chromatographic) methods
Laboratory of spectroscopic methods

III. TEACHING

A. Undergraduate Study:

4. semester (Bc)	Organic Technology and Petrochemistry	(3-1 h)	Hronec, Kaszonyi, Štolcová, Gašparovičová
6. semester (Bc)	Fine Chemicals	(2-2 h)	Mravec
6. semester (Bc)	Semestral project	(0-4 h)	Cvengrošová, Hronec, Kaszonyi, Mravec, Štolcová, Gašparovičová
1. semester (MSc)	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
1. semester (MSc)	Laboratory Practise I	(0-8 h)	Cvengrošová, Gašparovičová
			Kaszonyi, Mravec, Štolcová
2. semester (MSc)	Kinetics and Reactors	(0-2 h)	Kaszonyi
	Process Design	(2-1 h)	Hronec, Králik
	Technology of Monomers	(2-0 h)	Vojtko

	and Polymers		
	Special Organic Products	(2-0 h)	Mravec
2. semester (MSc)	Analysis of Complex Organic Systems	(0-2 h)	Štolcová, Cvengrošová
	Laboratory Practise II	(0-7 h)	Cvengrošová, Horváth, Hronec, Kaszonyi, Gašparovičová, Mravec, Štolcová
3. semester (MSc)	Coating Materials	(2-0 h)	Kramár
	Manufacturing of Pharmaceuticals	(2-1 h)	Mravec
	Laboratory Practise III	(0-14 h)	Cvengrošová, Gašparovičová, Kaszonyi
			Štolcová
	Environmental technologies	(2-0 h)	Mravec
4. semester (MSc)	Seminar to Masters Theses	(0-3 h)	Cvengrošová, Hronec, Kaszonyi, Štolcová
1. semester (PhD)			
	Catalysis (PhD)	(2 h)	Hronec

IV. CURRENT RESEARCH PROJECTS

Catalysts for specialty chemicals VEGA 1/2459/05 (M. Hronec)

The scientific objective of the project is to use a series of well characterized catalysts in the synthesis of nitrogen and oxygen containing compounds in order to establish quantitative relationships between the catalytic properties (activity, selectivity, deactivation) and chemical properties of the catalysts. Catalytic reactions are focused on the preparation of industrially very important nitrogen and oxygen containing compounds or their precursors using oxidation, hydrogenation, and condensation processes. Gas-phase hydroxylation and oxidative amination of benzene, liquid phase hydrogenation of aromatic nitro compounds, partial oxidation of methane to formaldehyde, selective oxidation of cyclohexylamine to cyclohexanone oxime, oxidation of propylene to propylene oxide and head-tail oxidative condensation of aniline are the main reactions. The benefits expected are mainly clean processes for the synthesis of these chemicals or new catalysts.

Project duration: from January 2005 to December 2007

Intermediates for fine chemicals, part of project VEGA 1/2458/05 (D. Mravec)

The main scientific objective of the project was etherification of glycerol with perspective utilization of di- and tri-tert-butyl ethers of waste glycerol as fuel oxygenate additives. The catalytic activity of acid form of ion-exchange resins has been studied. The next objective of the project was tert-butylation of toluene to 4-tert-butyltoluene over shape-selective zeolite catalysts. 4-tert-Butyltoluene is intermediate product for pharmaceuticals, fragrances and other special chemicals.

Project duration: from January 2003 to December 2005

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
DETOX, a. s. Banská Bystrica		Kaszonyi	from 1996
DUSLO, a. s., Šaľa		Hronec	from 1996
FERMAS, s. r. o., Slovenská Ľupča		Kaszonyi	from 2003
NCHZ, a. s., Nováky		Kaszonyi	from 1995

PlasticOmnium, s. r. o., Lozorno		Kaszonyi	from 2002
SLOVNAFT VURUP, a. s., Bratislava		Kaszonyi, Hronec	from 1990
VUCHT, Bratislava		Hronec	from 1990
CHEMZA, a. s., Strážske		Vojtko	from 2003
CarCode, Bratislava		Kaszonyi	from 2001
Mostex		Mravec	from 2005
SLOVAKOFARMA, a.s,Hlohovec		Mravec	from 1995

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
ENSCM, Montpellier, France	- zeolite catalysts, - physico-chemical characterisation of solid catalysts	Mravec, Hronec	from 1992
Universita di Padova, Italy	ad hoc projects on polymer supported catalysts, characterisation	Králik, Hronec	from 1991
Italian National Centre of research, Padova - Legnaro, Italy	ad hoc project on preparation of organic supports for catalysts	Králik, Hronec	from 1993
Bangkok University Thailand	Catalysts for oxidation processes	Hronec	from 2004
Research Support. Dep. Korea	Oxidation of alkylaromatics	Hronec	from 2005
M&G Fin. Industr., Italy	Oxidation processes	Hronec	from 2003
Gifu University, Japan	Alkylation of aromatics, zeolites characterization	Mravec	from 2003
CNRS, Lyon, France	Oxidation of organic materials	Hronec, Horváth	from 2002

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Hronec M.	SAIV (Slovak Academy of Engineering Sciences)	chairmann	from 2001
Hronec M.	SSPCH (Slovak Society for Industrial Chemistry)	chairmann	from 1990
Hronec M., Kaszonyi A., Mravec D.	SCHS (Slovak Chemical Society)	member	from 1990
Hronec M.	Editorial Board of Journal: Petroleum and Coal	member	from 1992

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Hronec M.	National representative of the European Federation of catalysis Societies (EFCATS)	member	from 1992
Hronec M.	Member of the European Academy of Sciences and Arts	member	from 1995

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Červený L., Tichý J., Čejka J., Jeřábek K.	ICT Prague and Pardubice, CAS	Czech Republic	31. 1. – 1. 2. 2005
Margitfalvi J.	University Budapest,	Hungary	21. – 23. 4. 2005
Praserthdam P.	University Bangkok	Thailand	15. – 19. 5. 2005
Litterscheid C.	University Bonn	Germany	24. 5. – 29. 5.2005
Jae Sung Lee	University of Korea	Korea	21. – 22. 8. 2005
Ramakul P.	University Bangkok	Thailand	11. 9. – 30. 9. 2005
Rancharoen U.	University Bangkok	Thailand	6. – 9. 10. 2005
Kongsuebchart W.	University Bangkok	Thailand	5. – 14. 12. 2005
Fotopoulos A.	University Thessaloniki	Greece	14. – 21. 12. 2005

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

Name	Organisation / Institution / Conference	State	Date / Duration
Hronec M.	University Bangkok	Thailand	9 – 20.1. 2005
Hronec M., Horváth B.	Concorde, Brussels	Belgium	24. – 27. 1. 2005
Hronec M.	SC, ICT Prague	CR	23. 2. 2005
Hronec M.	Concorde , Berlin	Germany	27. 2. – 1. 3. 2005
Hronec M.	University, Vienna	Austria	2. 5. 2005
Hronec M.	State exams ICT, Prague	ČR	31. 5. - 1. 6. 2005
Hronec M.	1. Int. COIL, Salzburg	Austria	18. – 23. 6. 2005
Štolcová M.	Budapest	Hungary	3. – 7. 7. 2005
Horváth B.	University Bonn	Germany	4. – 15. 7. 2005
Vlčko M.	University Bangkok	Thailand	20. 3. 20. 9. 2005
Gašparovičová D., Hronec M., Horváth B., Kaszonyi A., Štolcová M., Slobodník M., Vallušová Z.	8th Pannonian Intern. Symposium on Catalysis, Sofia	Bulgaria	27. 8. - 1. 9. 2005
Hronec M., Slobodník M., Kostrab G.	FEZA, Prague	ČR	27. 8. – 1. 9. 2005
Horváth B.	Concorde, Berlin	Germany	16. – 18. 9. 2005
Hronec M.	ICT Prague	CR	9. – 10. 10. 2005
Hronec M.	Concorde, Frankfurt	Germany	23. – 27. 10. 2005
Hronec M.	SC, ICT Prague	CR	1. – 2. 11. 2005
Gašparovičová D., Horváth B., Hronec M., Slobodník M., Vlčko M.	XXXV. Symposium on catalysis, Prague	CR	6. - 8. 11. 2005
Hronec M.	Concorde, Krakow	Poland	15. – 17. 11. 2005
Slobodník M.	Vienna	Austria	5. 12. 2005

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Boroš Tomáš	Výroba a použitie ftalanhydridu Manufacture and uses of phtalanhydride	Štolcová Magdaléna
Florovič Stanislav	Výroba a použitie fenolu Manufacture and uses of phenol	Štolcová Magdaléna
Hollý Michal	Výroba a využitie syntézneho plynu Manufacture and uses of synthesis gas	Štolcová Magdaléna
Kocman Richard	Výroba 3-chlóranilínu a jeho použitie Manufacture and utilization of 3-chloroaniline	Gašparovičová Dana, Králik Milan
Koželuhová Marcela	Výroba základných antioxidantov Manufacture of basic aromatic hydrocarbons	Hronec Milan
Kutašová Viktória	Pyridín – výroba a použitie Pyridine – manufacture and utilization	Cvengrošová Zuzana
Lavička Jozef	Výroba a využitie etylénu Manufacture and uses of ethylene	Mravec Dušan
Lelovský Marek	Výroba a využitie benzéndikarboxylových kyselín Manufacture and uses benzenedicarboxylic acids	Kaszonyi Alexander
Lovič Martin	Výroba a využitie alifatických amínov Manufacture and uses of aliphatic amines	Mravec Dušan
Madač Peter	Príprava alkylovaných difenylamínov Preparation of alkyl-substituted diphenylamines	Hronec Milan
Šulc Marek	Výroba anilínu, cyklohexylamínu a dicyklohexylamínu Manufacture of aniline, mono- and dicyclohexylamine	Gašparovičová Dana, Králik Milan
Tobiáš Tomáš	Chemická recyklácia PET Chemical recirculation of PET	Hronec Milan
Tomčalová Anna	Výroba a využitie oxiránov Manufacture and uses of oxiranes	Cvengrošová Zuzana

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

Name	Title of Thesis	Supervisor
Bartoš Kristián	Parciálna oxidácia metánu na fosfátových katalyzátoroch Partial oxidation of methane over phosphate catalysts	Štolcová Magdaléna
Csányi Marián	Oxidácia cyklohexylamínu v parnej fáze Oxidation of cyclohexylamine in gas phase	Kaszonyi Alexander
Foltín Tomáš	Aminácia benzénu amoniakom Amination of benzene by ammonia	Kaszonyi Alexander
Kerekeš Ladislav	Priama epoxidácia olefinov v plynnej fáze Direct epoxidation of olefins in gas	Hronec Milan
Krejčová Barbora	Syntéza pyridínu z etanolu, formaldehydu a čpavku Synthesis of pyridine from ethanol, formaldehyde and ammonia	Cvengrošová Zuzana
Pavlík Juraj	Aminácia fenolu Amination of phenol	Hronec Milan
Ragač Pavel	Premena metanolu na olefiny Transformation of methanol to olefins	Štolcová Magdaléna
Rovenský Peter	Syntéza karbazolu z difenylamínu Synthesis of carbazole from diphenylamine	Cvengrošová Zuzana

C. Dissertations (PhD)

Báhidský M.	Priama oxidácia arómátov na hydroxyderiváty Direct oxidation of aromatics to hydroxyderivates
Gašparovičová D.	Odstraňovanie dusičnanov z pitnej vody na polymérnych katalyzátoroch Removal of nitrates from drinking water over polymer catalysts

E. Habilitation Theses

VII. PUBLICATIONS

Article in journal

- [1] Báhidský, M., Hronec, M.: Direct hydroxylation of aromatics over copper-calcium phosphates in the gas phase. *Catal. Today*, no. 1-2, vol. 99, pp. 187-192, 2005.
- [2] Besson, M., Gauthard, F., Horváth, B., Gallezot, P.: Catalytic Oxidation with Air of Cyclohexanone to Dicarboxylic Acids on Synthetic Carbons. Effect of Supported Metals and Solvents. *Journal of Physical Chemistry B*, no. 6, vol. 109, pp. 2461, 2005.
- [3] Gauthard, F., Horváth, B., Gallezot, P., Besson, M.: Catalytic oxidation with air of cyclododecanone and 3,3,5-trimethylcyclohexanone to the corresponding linear dicarboxylic acids over synthetic carbons. *Applied Catalysis A: General*, no. 279, vol. *,
- [4] Klepáčová, K., Mravec, D., Bajus, M.: Etherification of glycerol with tert-butyl alcohol catalysed by ion-exchange resins. *Chemical Papers*, (In Press, Corrected Proof), 2005.
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- [6] Kostrab, G., Mravec, D., Bajus, M., Janotka, I., Sugi, Y., Cho, S.J., Kim, J.H.: ter-Butylation of toluene over mordenite and cerium-modified mordenite catalysts. *Applied Catalysis A: General, Corrected proof, In Press*, (Corrected Proof), 2005.
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- [8] Sá, J., Gašparovičová, D., Hayek, K., Halwax, E., Anderson, J., Vinek, H.: Water denitration over a Pd-Sn/Al₂O₃ catalyst. *Catalysis Letters*, no. 105, vol. 2005, pp. 209 - 217, 2005.
- [9] Slobodník, M., Hronec, M., Cvengrošová, Z., Kaszonyi, A.: Synthesis of pyridines over modified ZSM-5 catalysts. *Studies in surface science and catalysis*, 2005.
- [10] Vojtko, J.: New way of production of cyclopentanone. *Petroleum and Coal* 47 (1), 1-4, 2005.

Article in conference proceedings

- [1] Gašparovičová, D., Hronec, M., Zecca, M., Králik, M.: Liquid phase reduction of nitrates over Pd-Cu catalysts supported on cationic resins. In *EUROPACAT-VII, Sofia, Bulgaria, Book of Abstract, PO - P9-07*, 2005.

- [2] Gašparovičová, D., Laluch, J., Hronec, M.: State of the art in the preparation of N,N'-substituted p-phenylenediamine. In *XXXVII Symposium on Catalysis, Prague, Book of Abstract, PO - 14*, 2005.
- [3] Horváth, B., Hronec, M.: Epoxidation of propylene in gas phase. In *1st conference Concorde, 26-28th January 2005, Louvain-la-Neuve, Belgium*, 2005.
- [4] Horváth, B., Hronec, M.: Gas phase epoxidation of propylene. In *XXXVII Symposium on Catalysis, Nov. 7-8, 2005 Prague, Czech Republic*, 2005.
- [5] Horváth, B., Hronec, M.: Gas-phase epoxidation of propylene. In *Europacat VII, 1-3th Sept., 2005, Sofia, Bulgaria*, 2005.
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- [9] Klepáčová, K., Mravec, D., Bajus, M.: Ion-exchange resins catalysed etherification of glycerol. In *42nd International Petroleum Conference, Bratislava, 11-12 October 2005, Zborník na CD (ISBN 80-969371-2-X)*, 2005.
- [10] Kostrab, G., Janotka, I., Mravec, D.: terc. Butylácia toluénu na Ce-modifikovaných mordenitoch. In *Prírodné a syntetické zeolity na Slovensku, Bratislava, SR, 14.6.2005, Pr, Zborník prednášok na CD*, 2005.
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- [13] Mravec, D., Kostrab, G., Zavadan, P., Kaszonyi, A., Bajus, M., Janotka, I., Joffre, J., Moreau, P.: Tert-butylation of toluene over zeolite catalysts. In *3rd FEZA Conference, ČR, Praha, 23-26. August 2005, Po, Book of Abstracts and Recent Research Reports*, 2005.
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- [15] Slobodník, M., Hronec, M., Cvengrošová, Z., Kaszonyi, A.: Synthesis of pyridines over modified ZSM-5 catalysts. In *3rd FEZA Conference, Book of abstracts*, 2005.
- [16] Slobodník, M., Hronec, M., Cvengrošová, Z., Krejčová, B.: Production of pyridine bases over zeolites. In *XXXVII Symposium on Catalysis, Book of abstracts*, 2005.
- [17] Štolcová, M., Hronec, M.: Partial oxidation of methane over iron and manganese phosphate catalysts. In *Extended Abstracts, Europacat-VII on CD*, 2005.
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Patent

- [1] Macho, V., Králik, M., Horniaková, J., Mravec, D., Balážová, J., Beňo, L., Seidl, A.: Spôsob prípravy cyklických karbonátov, SK 284 530 (2. 6. 2005). SK 284 530, 2005.

DEPARTMENT OF PETROLEUM TECHNOLOGY AND PETROCHEMISTRY

Head of Department:
Assoc. Prof. Pavol Daučík, PhD

Telephone: +421252926037
Fax: +421252493198
E-mail: pavol.daucik@stuba.sk

I. STAFF

Full Professors:
Martin Bajus, DSc;

Associate Professors:
Pavol Daučík, PhD; Pavol Hudec, PhD; Agáta Smiešková, PhD; Zdenek Židek, PhD;

Assistant Professors :
Elena Hájeková, PhD;

Research Fellows:
Jozef Ambro;; Ľuboš Šabo;

PhD Students:
Alena Bartková; Michal Horňáček; Pavel Marcinkovič; Peter Michalica; Božena Mlynková; Lenka Špodová

Technical staff:
Marcela Hadvinová; Dagmar Machatová; Marta Olleová;

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching 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 Petrochemistry
Laboratory of Rheology of Lubricants
Laboratory of Infra-Red Spectroscopy
Laboratory of Natural Gas Conversion

B. 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 Petrochemistry
Laboratory of Rheology of Lubricants
Laboratory of Infra-Red Spectroscopy
Laboratory of Natural Gas Conversion

III. TEACHING

A. Undergraduate Study:

1. semester	Energy Technologies and Materials	2/2/0	Bajus
4. semester (Bc)	Organic Technology and Petrochemistry	3/1/0	Bajus, Daučík
1. semester (MSc)	Technology of Crude Oil	3/0/0	Židek, Daučík
	Analysis of Petroleum Products	2/0/0	Daučík, Židek
	Combustion Processes	1/2/0	Smiešková
	Refinery and Petrochemical Plants	1/2/0	Daučík, Ambro

	Laboratory exercise I.	0/0/8	Daučík, Židek
1. semester (MSc)	Catalysis	0/1/0	Hudec
2. semester (MSc)	Catalytic and Thermal Processes in Crude Oil Treatment	2/0/0	Židek, Smiešková
	Alternative Fuels	2/0/0	Bajus, Hájeková
	Lubricants in Tribology	2/0/0	Hájeková, Daučík
	Kinetic and Reactors	0/2/0	Hudec
2. semester (MSc)	Laboratory exercise II.	0/8/0	Hudec
3. semester (MSc)	Petrochemistry	3/0/0	Bajus, Hudec
	Gas Industry	2/0/0	Hudec, Daučík
	Laboratory exercise III	0/0/10	Hudec, Židek

IV. CURRENT RESEARCH PROJECTS

VEGA project No1/2458/05 Alternative feedstocks in hydrocarbon technologies in the production of ecological fuels and petrochemicals (Professor M. Bajus)

The subject of the scientific project was the study of reaction kinetics of the thermal and catalytic transformations of the alternative feedstocks over heterogenous catalysts in hydrocarbon technologies by chemical recycling of waste polyethylene (LDPE) and polypropylene (PP) to desired alkenes; pyrolysis of used tyres; the utilization of glycerol as an alternative feedstock of biogenic origin by etherification with C₄-fraction to ethers of glycerol suitable as oxygenate additives to diesel fuels.

During the year 2005 the following was studied:

- Thermal cracking of individual polymers (LDPE and PP) in batch reactor in order to prepare polyalkene oil/waxes soluble in hydrocarbon fractions
- Fractionation of the waxes and determination of properties and composition of individual fractions
- Copyrolysis of naphtha and polyalkene oil/waxes in flow tubular reactor at 780 and 820°C (Hájeková E., Bajus M., J. Anal. Appl. Pyrol., 74 (1-2), 270-281 (2005))
- *tert*-Butylation of glycerol by C₄-olefines over acid catalysts (Klepáčová K., Mravec D., Bajus M., Appl. Catal. A: Gen. 294, 141-147 (2005))

Project duration: from 01. 01. 2005 to 31. 12. 2005

Project VEGA 1/2457/05: Microporous and mesoporous molecular sieves, their preparation, modification, characterization and application in ecologically advantageous catalytic processes of conversion of hydrocarbons and petroleum fractions (Hudec Pavol, Doc. Ing. CSc.)

Project deals with the modification of microporous (zeolites Y, ZSM-5, mordenite) and mesoporous (MCM-41, MCM-48) molecular sieves as high-active and effective component of solid acid and bifunctional catalysts, that could replace in many industrial processes still used non-ecological and corrosive liquid acid catalysts of Friedel-Crafts type or to improve activity of conventional catalysts. Zeolites have advantage as high active shape-selective acid catalysts; mesoporous molecular sieves allow to adsorb and to convert bulk molecules of nano-scale with higher efficiency as conventional mesoporous catalysts. The aim is to prepare solid acid catalyst for alkylation of aromatics with 1-olefins, catalyst for direct conversion of methane to liquid hydrocarbons, and to improve properties of hydrorefining catalysts with additives of zeolite Y and mesoporous molecular sieves, to improve activity of FCC-catalyst by additives of modified ZSM-5 zeolites. Acid and structural properties of all modified zeolites will be characterized by modern spectral methods as FTIR and ²⁷Al and ²⁹Si-MAS NMR. The also project deals with the evaluation of properties of feeds and products from these processes also from ecologic point of view

Project duration: from 01. 01. 2005 to 31. 12. 2005

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
SLOVNAFT, j.s.co., Bratislava		Židek, Daučík	from 1990
PETROCHEMA, j. s. co., Dubová		Židek, Daučík	from 1990

TRANSPETROL, j. s. co., Bratislava	Evaluation of crude	Daučík	from 2000
VÚRUP, j. s. co., Bratislava		Hudec, Daučík	from 1989
DRON - Sklady, ltd. co.	Recycling of polymer waste	Bajus	
Slovak Academy of Science, Institute of Polymers, Bratislava		Bajus	
Institute of Chemistry, Faculty of Natural Sciences, Comenius University, Bratislava	Synthesis of silica aerogels	Hudec	from 1998
Department of Nuclear Physics and Technology, Faculty of Electrical Engineering, Bratislava	Moessbauer spectroscopy of Fe-modified zeolites	Hudec	from 1997

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
ABO – University, Finland	Modification and characterization of zeolites and their application in izomerization reactions	Hudec	from 2001
University of Calgary, Canada	Determination of physical properties and chemical structure of polymer modified bitumens	Daučík	from 2000
Institute of Physico-Chemistry and Electrochemistry, Academy of Sciences, Prague, Czech Republic	Evaluation of adsorption properties zeolites	Hudec.	from 1997

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
Ambro Jozef	Slovak Society of industrial Chemistry	member	
Bajus Martin	Slovak Society of industrial Chemistry	member	
Daučík Pavol	Slovak Society of industrial Chemistry	member	
Hájeková Elena	Slovak Society of industrial Chemistry	member	01. 01. 1994
Hudec Pavol	Slovak Society of industrial Chemistry	member	
Michalica Peter	Slovak Society of industrial Chemistry	member	
Smiešková Agáta	Slovak Society of industrial Chemistry	member	
Židek Zdenek	Slovak Society of industrial Chemistry	member	
Daučík Pavol	Slovak institute of technical normalization	member	30. 04. 2001
Daučík Pavol	Examining board in the field of oils	member	29. 11. 2001
Hudec Pavol	Slovak zeolite association at SSPCH	president	01. 01. 2001
Smiešková Agáta	Slovak zeolite association at SSPCH	member	
Šabo Ľuboš	Slovak zeolite association at SSPCH	member	
Židek Zdenek	Slovak zeolite association at SSPCH	member	
Hudec Pavol	Slovak Society of Chemical Engineering	member	
Smiešková Agáta	Slovak Society of Chemical Engineering	member	
Židek Zdenek	Slovak Society of Chemical Engineering	member	

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Zanzotto, L.	Faculty of Engineering, University of Calgary, Calgary	Canada	7 days

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

Name	Organisation / Institution / Conference	State	Date / Duration
Bajus M.	3 rd International Symposium on Feedstock recycling of Plastics	Germany	25.-29. 9. 2005

Hudec P.	3 rd FEZA Int. Symposium, Praha	ČR	23.-26.8.2005
Smiešková A.	3 rd FEZA Int. Symposium, Praha	ČR	23.-26.8.2005
Hudec P.	XXXVII. Symposium on Catalysis, Praha	ČR	7.-8.11.2005
Smiešková A.	XXXVII. Symposium on Catalysis, Praha	ČR	7.-8.11.2005
Daučík P.	The Univeristy of Calgary, Calgary	Canada	27. 10. - 22. 12. 2005

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Katarína Gavalcová	Evaluation of Detector Response of HPLC to Components of Modified Asphalts	Daučík P.
Jozef Višňovský	Time Influence of Paraffines Sedimentation on Low Temperature Fuel Properties	Ambro J.
Silvia Fáberová	Recycling of Waste Polymers by Copyrolysis	Hájeková E.
Matijko Marián	Hydrocracking of Crude oil Fractions	Hudec, P.
Šenkár Jaroslav	Processes for the Modern Gasoline Production	Bajus M.
Kompaník Ivan	Antioxidants Production	Bajus M.
Hadvinová Marcela	Evaluation of Additives for Diesel fuels Production	Daučík P.
Molnár Ľudovít	Separation of Aromatics from Recycling Oil	Daučík P.
Pavelka Dušan	Petroleum Distillation	Bajus M.

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

Name	Title of Thesis	Supervisor
Košík Jozef	Distribution of Compounds in Waste Oils	Daučík, P.
Gazdík Ján	Sedimentation of Paraffin in Diesel Fuels	Daučík, P.
Horňáček Michal	Synthesis of Mesoporous Molecular Sieves	Hudec, P.
Porkertová Gabriela	Aromatization of Methane	Smiešková, A.
Bartková Alena	Characterization of Acid Properties of Zeolites	Smiešková A.
Bokšanský Viliam	Recycling of Used Tyres by Pyrolysis	Bajus, M.
Špodová Lenka	Separation and Analysis of Products from Thermal Cracking of Polymers	Hájeková, E.
Mlynková Božena	Copyrolysis of Mixed Plastics with Petroleum Fractions	Hájeková, E.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Ambro Jozef.	Low Temperature Properties of Middle Crude Oil Distillates	Židek Z.

VIII. PUBLICATIONS

Article in journal

- [1] Finnäs, T., Kumar, N., Salmi, T., Rahkamaa-Tolonen, K., Maunula, T., Härkönen, M., Decyk, P., Ziolk, M., Hudec, P.: Fe modified Beta zeolite catalysts as reducing agent: influence of acidity and preparation methods. *Manuscript submitted to Catalysis Today*, 2005.
- [2] Hudec, P., Nociar, A., Smiešková, A., Jakubík, T.: Liquid-phase alkylation of benzene by long-chain linear α -olefins over Y and mordenite type zeolite catalysts. Influence of Si/Al ratio. *Studies in Surface Science and Catalysis*, no. 158, pp. 1795-1802, 2005.
- [3] Villegas, J.I., Kumar, N., Heikkilä, T., Smiešková, A., Hudec, P., Salmi, T., Murzin, D.Yu.: A highly stable and selective Pt-modified mordenite catalyst for skeletal isomerization of n-butane. *Applied Catalysis A: General*, no. 284, pp. 223-230, 2005.

- [4] Villegas, J.I., Kumar, N., Salmi, T., Murzin, D.Yu., Heikkilä, T., Hudec, P., Smiešková, A.: Isomerization of n-butane over Pt-modified mordenite zeolite catalysts: effect of Pt loadings and dealumination. *Studies in Surface Science and Catalysis*, no. 158, pp. 1859-1866, 2005.

Article in conference proceedings

- [1] Ambro, J., Daučík, P., Marcinkovič, P.: Modified Balint's Method for Determination of Aromatic Contents in Middle Distillates. In *42nd International Petroleum Conference, Bratislava, October 11th–12th*, no. Po.14, pp. 1-4, 2005.
- [2] Ambro, J., Daučík, P., Marcinkovič, P.: Influence of Paraffins Settling on Low Temperature Properties of Diesel Fuels. In *42nd International Petroleum Conference, Bratislava, October 11th–12th*, no. Pr.11, pp. 1-7, 2005.
- [3] Bartková, A., Smiešková, A., Hudec, P., Horňáček, M., Šabo, L.: Vzťah medzi Co-iónovými a morfológickými vlastnosťami zeolitov ZSM-5. In *2. Seminár „Prírodné a syntetické zeolity na Slovensku“*, Bratislava 14. 6. 2005, no. Po.1, pp. 1-8, 2005.
- [4] Chmielewska, E., Gáplovská, K., Jesenák, K., Hudec, P., Sabová, L.: Active surface induced removal of anionic pollutants on polyoxide based natural cationic exchangers. In *International Conference on Advanced Materials, Micro and Nanotechnology CAMIN05 (Slovak FP6), Smolenice April 27-29, 2005*, str. p.81-82, 2005.
- [5] Daučík, P., Ambro, J., Marcinkovič, P.: The Model of Paraffins Settling in Diesel Fuels. In *42nd International Petroleum Conference, Bratislava, October 11th–12th*, no. Po.6, pp. 1-4, 2005.
- [6] Finnäs, T., Kumar, N., Salmi, T., Rahkamaa-Tolonen, K., Maunula, T., Härkönen, M., Decyk, P., Ziolk, M., Hudec, P.: Fe modified Beta zeolite catalysts as reducing agent: influence of acidity and preparation methods. In *International Symposium on Air pollution abatement catalysis, Book of Extended Abstracts, 21-24 September 2005, Cracow, Poland*, pp. 171, 2005.
- [7] Horňáček, M., Hudec, P., Šabo, L., Smiešková, A., Bartková, A.: Synthesis and properties of mesoporous molecular sieves. In *42nd International Petroleum Conference*, no. Po7, pp. 1-11, 2005.
- [8] Horňáček, M., Hudec, P., Šabo, L., Smiešková, A., Bartková, A.: SYNTÉZA A VLASTNOSTI MEZOPÓROVÝCH MOLEKULOVÝCH SÍT. In *2. Seminár „Prírodné a syntetické zeolity na Slovensku“*, no. Po.3, pp. 1-11, 2005.
- [9] Hudec, P., Nociar, A., Smiešková, A., Jakubík, T.: Liquid Phase Alkylation of Aromatics with Long-Chain 1-Olefins over Solid Acid Catalysts. In *42nd International Petroleum Conference*, no. Pr.08, pp. 1-9, 2005.
- [10] Hudec, P., Smiešková, A.: CHARAKTERIZÁCIA MIKROPÓROVÝCH A MEZOPÓROVÝCH VLASTNOSTÍ MOLEKULOVÝCH SÍT. In *2. Seminár „Prírodné a syntetické zeolity na Slovensku“*, no. Pr.06, pp. 1-13, 2005.
- [11] Kumar, N., Arve, K., Villegas, J.I., Hudec, P., Datka, J., Kukulska-Zajac, E., Salmi, T., Murzin, D.Yu.: Physico-chemical and catalytic properties of Cu-Mordenite zeolite catalysts synthesized with varying acidities for NOx reduction and hydrocarbon transformation reactions. In *International Symposium on Microporous and Mesoporous Materials as Catalytic Hosts for Fe, Co and Cu. Scheveningen, The Netherlands, March 1 - 4, 2005, Book of Abstracts*, pp. 71, 2005.
- [12] Kumar, N., Rusu, O., Dumitriu, E., Hudec, P., Smiešková, A., Heikkilä, T., Lehto, V., Salmi, T., Murzin, D.Yu.: Isomerization of n-Butane over H-MCM-22 and Pt-H-MCM-22 Catalysts: Influence of Acidity, Pt modification and Catalyst Pretreatment. In *42nd International Petroleum Conference*, no. Po.3, pp. 1-14, 2005.
- [13] Kumar, N., Villegas, J.I., Kubicka, D., Hudec, P., Salmi, T., Murzin, D.Yu.: Hydrocarbon transformation over H- and metal modified zeolite catalysts for production of clean fuels. In *VII EUROPACAT, 2005, Sofia, Bulgaria*, 2005.
- [14] Smiešková, A., Hudec, P., Kumar, N., Salmi, T., Murzin, D.Yu., Porkertová, G.: Aromatization of Methane on MoZSM-5 and MoMCM22 Catalysts. In *XXXVII Symposium on Catalysis*, 2005.
- [15] Šabo, L., Hudec, P., Smiešková, A.: Characterization and Properties of Ordered Mesoporous Materials Based on SiO₂. In *International Conference on Advanced Materials, Micro and Nanotechnology CAMIN05 (Slovak FP6), Smolenice April 27-29, p.89-90*, 2005.

Phd's thesis

- [1] Ambro, J.: Nízokoteplotné vlastností stredných ropných destilátov. FCHPT, 2005.

DEPARTMENT OF PHYSICAL CHEMISTRY

Head of Department:
Prof. Stanislav Biskupič, PhD, DSc

Telephone: ++ 421-2-5292 6032
Fax: ++ 421-2-5249 3198
E-mail: stanislav.biskupic@stuba.sk

I. STAFF

Full Professors:

Stanislav Biskupič, PhD, DSc; Tomáš Bleha, PhD, DSc; Vlasta Brezová, PhD, DSc; Andrej Staško PhD, DSc; Peter Šimon, PhD, DSc

Associate Professors:

Martin Breza, PhD; Ján Cvengroš, PhD, DSc; Anton Gatíal, PhD; Pavel Kovařík, PhD; Jozef Kožíšek, PhD; Milan Mazúr, PhD, DSc; Jiří Polavka, PhD; Peter Rapta, PhD; Ján Reguli, PhD; Marián Valko, PhD, DSc.

Assistant Professors :

Dana Dvoranová, PhD; Marek Fronc; Erik Klein, PhD; Ľubomír Zalibera, PhD

Research Fellows:

Andrea Kleinová, Jarmila Paligová

PhD Students:

Linda Cséfalvayová, Zuzana Cibulková, Marián Gall, Martin Gróf, Martin Hudák, Miroslava Kleinová, Teodora Kocsisová, Ingrid Kortišová, Katarína Matuszná, Lucia Perašínová, Júlia Polovková, Michal Zalibera

Technical staff:

Imrich Csonka, Elena Fabíková, Alžbeta Chochulová, Marta Lintnerová, Štefan Miksai, Milan Štefunko, Mária Šuleková.

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
Computational Laboratory

B. Research laboratories:

Laboratory of Thermal Analysis and Calorimetry
Laboratory of EPR Spectroscopy
Laboratory of IR spectroscopy
Laboratory of X-ray analysis
Laboratory of Molecular Distillation and Alternative Diesel Fuels

III. TEACHING

A. Undergraduate Study:

3. semester (Bc)	Physical Chemistry I	(3-2 h)	S. Biskupič, A. Gatíal
	Physical Chemistry II	(3-2 h)	P. Rapta
	Laboratory Practice in Physical Chemistry I	(0-3 h)	J. Reguli
4. semester (Bc)	Physical Chemistry II	(3-2 h)	S. Biskupič, P. Kovařík, A. Gatíal
	Laboratory Practice in Physical Chemistry II	(0-3 h)	J. Reguli
5. semester (Bc)	Physical Fundamentals of Spectroscopic Methods	(2-2 h)	A. Staško, V. Brezová
6. semester (Bc)	Biophysical Chemistry I	(2-2 h)	M. Valko
1. semester (MSc)	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)	T. Bleha
1. semester (MSc)	Statistical Treatment and Evaluation of Exp. 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
2. semester (MSc)	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
2. semester (MSc)	Traineeship		
	Excursion		
3. semester (MSc)	Molecular Spectroscopy	(2-1 h)	A. Staško
	Chemical Physics III	(2-0 h)	A. Gatjal
	Physical Chemistry of Macromolecules	(2-0 h)	T. Bleha
	Special Laboratory Practice III	(0-10 h)	P. Rapta

IV. CURRENT RESEARCH PROJECTS

DEVELOPMENT AND APPLICATION OF COMPUTATIONAL METHODS TO THE STUDY OF ELECTRONIC STRUCTURE OF MOLECULAR SYSTEMS (Stanislav Biskupič)

Within this research project, new theoretical treatments based on quantum-chemical principles are developed and then - with other accessible techniques - used to obtain exact and detailed information on the structure and dynamics of selected molecular systems. Many-body perturbation and CC formalism of interaction energy evaluation (higher order contributions) has been elaborated and applied to some van der Waals complexes that are important for chemical reactions in upper shells of the Earth atmosphere. Systematic study of the factors causing unusual electronic structure of selected compounds with interesting physico-chemical properties has been oriented to oligothiophenes, cyclophosphazenes, transition metal complexes in unusual oxidation states and blue proteins model compounds. Vibration spectra of new push-pull olephines (as model compounds of pharmacotherapeutics) have been calculated and interpreted.

Project duration: from 2003 to 2005

SPECTROSCOPICAL ANALYSIS OF STRUCTURE AND REACTIVITY OF FREE RADICALS AND TRANSITION METAL COMPLEXES IN CHEMICAL, BIOLOGICAL AND PHOTOCHEMICAL SYSTEMS (Vlasta Brezová)

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 spectroelectrochemical and spectrophotochemical techniques continued, as well as further analysis of experimental error sources in quantitative EPR spectroscopy is performed.

Project duration: from 01/2003 to 12/2005

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, oxidation stability of drugs and foods, etc. The method is expected to be applied in the quality management and risk assessment in technological processes. Theory of model-free isoconversional kinetics is developed and a new incremental isoconversional method has been elaborated. The method enables modeling the processes without deeper insight into their mechanism. 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.

Project duration: from 2003 to 2005

ELECTRON STRUCTURE AND PROPERTIES OF MATERIALS IN SOLID PHASE (Jozef Kožišek)

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, developing new materials (spin cross-over systems), or catalysts for asymmetric synthesis. Project benefits from just developed laboratory for studying electronic structure (GEMINI R diffractometer, 16-processor cluster), running EU project in HASYLAB/DESY (synchrotron radiation), as well as the possibility to make data collection on neutron sources (Garching, Grenoble).

Project duration: from 2005 to 2007

Research and development of biogenic ecological fuels and lubricants from domestic renewable resources (Ján Cveňgroš)

The research project is focused on the research, development, production and application of esters of higher fatty acids as ecological fuels for diesel engines based on the renewable domestic raw materials with complex utilisation of the by-products. The main results in 2003 are as follows:

1. Oxidation of methyl esters based on rapeseed oil and methyl esters based on frying oils used as the alternative diesel fuels, unstabilized and stabilized by some antioxidants has been studied by differential thermal analysis/thermogravimetry (DTA/TG) under non-isothermal conditions for various heating rates and by Rancimat test under isothermal conditions. Low oxidation stability of the undistilled methyl esters was stated. The induction period increased expressively by the addition of low quantities of selected antioxidants. Especially high stabilising effect was reached for pyrogallol. The results obtained by the both methods are compared and the differences are accounted for by the oxygen diffusion within the samples. The DTA/TG method is suitable for the evaluation of the oxidation stability of the studied esters.
2. The importance of the alternative fuels based on the biomass as reliable domestic and renewable resource is great. The environmental, energetic and economical effects connected with the production and the utilization of biofuels in the transportation were evaluated. The analysis of the biofuels taxation in the tax system of Slovakia was carried out.
3. Glycerol is a valuable by-product used in the production of methyl esters. Its production can positively influence economical balance of the production of methyl esters. The method of refinement of glycerol in vacuum evaporator with wiped film was tested and the parameters of the distilled glycerol were stated. Distilled glycerol meets the requirements of the industrial glycerol according to the standard.

Project duration: from 2002 to 2005

Basic characteristics of horizontal evaporator with wiped film (Ján Cveňgroš)

Model study of evaporation, distillation and film flow in horizontal evaporator with wiped film. Basic characteristics of horizontal evaporator with controlled residence time of liquid on evaporation surface. The influence of selected design parameters (wiper, evaporation surface) and operational parameters (feed rate, viscosity, peripheral speed of wiper, pressure, temperature, evaporation degree) on the evaporator performance.

Project duration: from 2004 to 2006

Thermooxidation and photooxidation processes in chemical and biological systems and their influence on the quality of life (Stanislav Biskupič)

The project is oriented towards spectroscopic (EPR, UV/VIS) and thermoanalytical (DSC) characterization of the processes occurring in thermal and photooxidative degradation of food, drugs and newly synthesized pharmaceutical precursors. A great attention is paid to spectroscopic study of antioxidative properties of foods with the aim of selecting the group of beneficial functional food and to monitor and improve their quality. Elaboration of time-saving procedures for the determination of stability of food and drugs (DSC, EPR). Study of photoinitiated radical transformations of drugs, interpretation of the results by quantum-chemical calculations with the aim of elucidating the mechanisms of their effects and targeted improvement of their quality.

Project duration: from 06/2002 to 06/2005

Antioxidant and prooxidant properties of carotenoids - EPR study (Marian Valko)

Carotenoids are pigments that are found in plants and microorganisms and may prevent or inhibit certain types of cancer, atherosclerosis, age-related muscular degeneration, and other diseases. The protective role of carotenoids is related to their antioxidant ability to efficiently scavenge free radicals. The main objective of this project is to perform a comparative study of antioxidant efficiency of several carotenoids to scavenge oxygen free radicals in solution. However, recent epidemiological studies have surprisingly demonstrated that some carotenoids can also exhibit prooxidant properties. In this connection we plan to investigate the most important factors, such as concentration, role of trace metals (Cu^{2+} , Fe^{2+}), isomerism and oxygen partial pressure ($p\text{O}_2$), which affect a switch between antioxidant and prooxidant behaviour of carotenoids using EPR spectroscopy. In particular the role of cis-trans isomerism within the conjugated chain, which recent biochemical experiments suggest might have a very significant effect on activity, has received little attention.

Project duration: from 2005 to 2007

I. SUSTAINPACK - Innovation and Sustainable Development in the Fibre Based Packaging Value Chain (Peter Šimon)

FP6 EU project aimed to mobilising the European scientific expertise in the packaging value chain to establish the European forest industry cluster as the dominant player in the packaging area within a decade. It will be implemented through the Sustainpack project which is intended to make real breakthroughs in fibre based packaging.

The overall objective of the RTD activities is to develop and implement a Sustainable Packaging Tool Platform based on renewable resources, giving innovative properties to packaging, thereby offering new value added packaging options for packaging users and for consumers. The Tool Platform comprises New Innovative Material Properties and New Innovative Process Developments to transform these materials into new packaging solutions.

Project duration: from 2004 to 2008

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
LikoSpol Bratislava	scientific	P.Šimon	2005
Research Inst. Food	scientific	P.Šimon	2005
BEL/Novaman	scientific, industrial	P.Šimon	2005
Res.Inst.Chem. Technology	scientific	P.Šimon	2005
Slovak Academy of Science	scientific	A.Staško	2005
DETOX Banská Bystrica	scientific, industrial	J.Cvengroš	2005
VŮLM Modra	scientific, industrial	J.Cvengroš	2005
Q-CHEM Bratislava	scientific, industrial	J.Cvengroš	2005
Petrolab Stupava	scientific	J.Cvengroš	2005
Kovostroj Lučenec	scientific, industrial	J.Cvengroš	2005
Ekoiil Bratislava	scientific, industrial	J.Cvengroš	2005
Lubocons Stupava	scientific	J.Cvengroš	2005
Bioenergia L. Mikuláš	scientific, industrial	J.Cvengroš	2005
Slovnaft VŮRUP Bratislava	scientific	J.Cvengroš	2005
TU Žilina	scientific	J.Cvengroš	2005
JAV-AKC Vičany	scientific	J.Cvengroš	2005
Inst. Inorganic Chemistry SAS	scientific	M. Breza	2005

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
LTNW, Manchester, UK (F.Kvasnik)	scientific	P.Šimon	2005
University of Technology, Sydney, Australia (A.Ray, P.Thomas)	scientific	P.Šimon	2005
Faculty of Chemistry, Technical University, Brno, Czech Republic (L.Omelka)	scientific	P.Šimon	2005

LUKAS Research, Prague, Czech Republic (R.Lukáš, L.Kalvoda)	scientific	P.Šimon	2005
Materialwissenschaft, TU Darmstadt, Germany (Prof. Hartmut Fuess)	scientific	J. Kožíšek	2005
State University of New York, Buffalo, USA (Prof. Philip Coppens)	scientific	J. Kožíšek	2005
Technologic Institute of Morelia, Mexico (Dr. Jesús García Díaz)	scientific	J. Kožíšek	2005
Technische Universität München (prof. Nuyken)	scientific	A.Štaško	2005
Liverpool John Moores University (Dr. Morris)	scientific	M. Valko	2005
Roosevelt University, Chicago (Prof. Telser)	scientific	M. Valko	2005
TCT Vidče, Czech Republic	industrial	J. Cvengroš	2005
Inst. Für Physikalische und Theoretische Chemie, TU Graz	scientific	V. Brezová	2005
Fac. of Science, Univ. Stuttgart	scientific	M. Breza	2005

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
P.Šimon	Slovak Chemical Society	other	2005
A.Štaško	Slovak Chemical Society	member	2005
J. Cvengroš	Slovak Chemical Society	member	2005
P. Kovařík	Slovak Chemical Society	other	2005
S. Biskupič	Slovak Chemical Society	member	2005
J. Cvengroš	Slovak Society of Chemical Engineers	member	2005
J. Reguli	Slovak Commission for Chemistry Olympiad	member	2005

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
P.Šimon	International Congress on Thermal Analysis and Calorimetry (ICTAC)	member	2005
A.Štaško	American Chemical Society	member	2005
S. Biskupič	International Society for Theoretical Chemical Physics (Germany)	member	2005
S. Biskupič	International ESR Society (USA)	member	2005
J. Kožíšek	International Union of Crystallography, IUCr	member	2005
J. Kožíšek	European Crystallographic Committee, EEC	member	2005
J. Cvengroš	American Oil Chemist's Society	member	2005

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
Joshua Telser	Roosevelt University, Chicago	USA	January 14.-23. 10 days
Jaroslav Šesták	Institute of Physical CAS, Prague	Czech. Republic	January 26.-27. 2 days
Chris Rhodes	University of Reading	UK	April 7.-13. 7 days
Joshua Telser	Roosevelt University, Chicago	USA	June 22.-30. 9 days
Bilton Rod	John Moores University, Liverpool	UK	August 7.-12. 6 days
Harry Morris	John Moores University, Liverpool	UK	August 7.-21. 15 days
Mark Cronin	John Moores University, Liverpool	UK	November 30.11.-6.12 7 days

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

Name	Organisation / Institution / Conference	State	Date / Duration
J. Kožíšek	TU- Darmstadt	Germany	January 16.-20. 5 days
J. Kožíšek	DESY – Hamburg	Germany	January 30 - February 4, 6 days
M. Fronc	DESY – Hamburg	Germany	February 3.-7. 5 days
M. Breza	University – Stuttgart	Germany	February 1.-11. 11 days
A. Staško	University – Sofia	Bulgaria	June 8.-15. 8 days
D. Dvoranová	RAMIS 2005 – Poznan, Bedlewo	Poland	April 24.-28. 5 days
M. Kleinová	RAMIS 2005 – Poznan, Bedlewo	Poland	April 24.-28. 5 days
M. Fronc	TU – Darmstadt	Germany	May 14.-23. 10 days
M. Fronc	DESY – Hamburg	Germany	June 15.-20. 6 days
J. Kožíšek	DESY – Hamburg	Germany	June 13.-16. 4 days
P. Šimon	MEDICTA Conference, Thessaloniki 2005	Greece	July 2.-6. 5 days
P. Rapta	IFW – Dresden	Germany	July 4. - August 2. 30 days
J. Kožíšek	TU – Darmstadt	Germany	July 20.-23. 4 days
P. Šimon	SUSTAINPACK - Stockholm	Sweden	August 7.-11. 5 days
P. Šimon	SUSTAINPACK - London	UK	August 31. – September 3. 4 days
M. Fronc	20th JUCr Congress – Florence	Italy	August 22.-26. 5 days
J. Kožíšek	20th JUCr Congress – Florence	Italy	August 22.-26. 5 days
Z. Cibulková	Summer School – Zakopane	Poland	September 11.-17. 7 days
T. Kocsisová	Summer School - Zakopane	Poland	September 11.-17. 7 days
P. Šimon	Volkswagen - Wolfsburg	Germany	September 4.-8. 5 days
A. Chochulová	Volkswagen - Wolfsburg	Germany	September 5.-30. 26 days
P. Šimon	SUSTAINPACK – London	UK	October 23.-26. 4 days
M. Mazur	CAS – Praha, Řež	Czech. Republic	October 17.-21. 5 days
D. Dvoranová	University – Graz	Austria	October 17. – November 15. 30 days
P. Šimon	SUSTAINPACK – London	UK	November 20.-23. 4 days
J. Kožíšek	TU – Darmstadt	Germany	November 22.-25. 4 days
M. Fronc	TU – Darmstadt	Germany	November 22.-25. 4 days
M. Valko	University - Liverpool	UK	November 23.-29. 7 days
P. Simon	SUSTAINPACK – Stockholm	Sweden	December 5.-9. 5 days

VII. THESES AND DISSERTATIONS

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

Name	Title of Thesis	Supervisor
Alžbeta Chochulová	Prediction of Termoxidation Stability of Materials by Isoconversional Methods	Peter Šimon
Dominik Jánošík	Connection of IR Spectrometer via RS232C Interface	Stanislav Biskupič
Ján Rimarčík	Investigation of Antioxidants and their Effects on Polymer Stabilization	Erik Klein
Anna Šlebodová	EPR Study of Honey Antioxidant Properties	Vlasta Brezová
Stanislava Šoralová	Quantum-chemical Study of Heavy Metal Coordination Compounds in Solution	Martin Breza
Zuzana Vrecková	EPR Study of Photochemical Processes in Sunscreens with High Sun Protection Factor	Vlasta Brezová

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

Name	Title of Thesis	Supervisor
Zuzana Belaňová	Dependence of Optical and Redox Properties of Organic Molecules on π -Delocalization: Fluoranthenes and Triarylaminines	Peter Rapta
Martin Gróf	Conformational Analysis and Interpretation of Vibrational Spectra of 3-Aminomethylene-2,4-pentanedione and its N-methyl Derivatives	Anton Gatjal
Martin Hudák	Experimental Wave Function	Stanislav Biskupič
Zuzana Kolesárová	EPR Investigations of Antioxidants	Vlasta Brezová
Lucia Kuručová	Prediction of Termoxidation Stability of Materials by Isoconversional Methods	Peter Šimon
Juraj Pelikán	Magnetic Parameters Beyond the Spin Hamiltonian Formalism	Roman Boča
Helena Švajdlenková	EPR Study on Photochemical Reactions of Carotenoids	Vlasta Brezová
Michal Zalibera	Radical Scavenging and Total Antioxidant Capacity of Pigments Produced by Yeasts under Exogenous Stress	Peter Rapta

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Martin Polovka	EPR study of antioxidant properties of food and biosystems	Vlasta Brezová

Article in journal

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spectroelectrochemistry as a tool for reaction pathway estimation. (Prednáška na zahraničnom seminári: "Electrochemical Seminar Prague-Dresden", November 21-23, 2005. Roztoky u Krivoklátu, Česká republika.), 2005.

DEPARTMENT OF PHYSICAL EDUCATION

Head of the Department
Assoc. Prof. Miroslav Bobřík, PhD

Telephone: ++421-2-52495198
++421-2-59325639
Fax: ++421-2-52493198
E-mail: miroslav.bobrik@stuba.sk

I. STAFF

Assistant Professors:

Mgr. Peter Bartok, Mgr. Ľ. Benko, PhD., Mgr. Andrea Balková, Dr. Juraj Gajdoš, PhD., Dr. Lucia Vedralová, PhD.

Technical Staff:

Gabriela Borsányiová

II. TEACHING AND RESEARCH LABORATORIES

Gym 14x21 m – ground /volleybal, basketball, football/
Two Body Building rooms 15x5 m and 10x5 m
Table Tennis room

III. TEACHING

Aerobic	(2 h)	A. Balková, L. Vedralová
Kalanethics	(2 h)	A. Balková, L. Vedralová
Harmonic gymnastics	(2 h)	A. Balková, L. Vedralová
Healing gymnastic	(2 h)	A. Balková
Athletic sport	(2 h)	Ľ. Benko
Basketball	(2 h)	P. Bartok
Football	(2 h)	P. Bartok
Handball	(2 h)	M. Bobřík
Body building	(6 h)	M. Bobřík, P. Bartok, J. Gajdoš, Ľ. Benko, L. Vedralová, Ľ. Benko,
Swimming	(2 h)	A. Balková
Canoeing and kayak	(4 h)	M. Bobřík
Volleyball	(2 h)	Ľ. Benko
Winter sports camp /skiing/ Summer sports camp /		M. Bobřík
Yoga	(4 h)	M. Bobřík J. Gajdoš

IV. RESEARCH PROJECT

State of Physical and Motor Development of Undergraduates of FCHFT STU in Bratislava (Miroslav Bobřík)

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.

VIII. PUBLICATIONS

Book

[1] Bobřík, M.: *Nemecká menšina na Slovensku a jej telovýchovné a športové aktivity v rokoch 1918 – 1945.*, vydavateľstvo STU Bratislava, 2005.

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- [2] Ondrušová, Lucia: Sledovanie intenzity zaťaženia v aquafitness u dospeljej populácie. In *Problematika plavani a plaveckých sportu.*, 2005.

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DEPARTMENT OF PLASTICS AND RUBBER

Head of Department:

Assoc. Prof. Ivan Hudec, PhD.

Telephone:

+421-2-52926 053

Fax:

+421-2-524 93 198

E-mail:

ivan.hudec@stuba.sk

I. STAFF

Full Professors:

Dušan Bakoš, DSc;

Associate Professors:

Pavol Alexy, PhD; Ivan Hudec, PhD; Viera Chrástová, PhD; Gabriela Kyselá, PhD; Eugen Špirk, PhD;

Research Fellows:

Viera Khunová, PhD (Senior Research Fellow); Ľudmila Černáková, PhD; Michal Jaššo, PhD. (since 1.11.2005); Henrich Krump, PhD. (since 1.3.2005 to 30.6.2005)

PhD Students:

Peter Bugaj (since 1.10.2004); Denisa Bellušová (since 1.10.2004); Jozef Feranc (since 1.10.2004); Silvia Hanzelová (since 1.10.2003); Michal Jaššo (since 1.10.2002); Daniela Klimová (since 1.10.2005); Zuzana Kramárová (since 1.10.2003); Pavol Lukáč (since 1.10.2004); Anna Naháľková (since 1.10.2005); Eva Simigová (since 1.10.2003); Barbora Šimková (since 1.10.2002); Ján Široký (since 1.10.2005); Katarína Štechová (since 1.10.2004); Lucia Vodná (since 1.10.2004);

Technical staff:

Viera Godályová, Mária Pekarovičová, Anna Tatarková, Emil Tvarožek

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:Laboratory of Polymer Synthesis
Laboratory of Polymer Processing
Laboratory of Polymer Testing**B. Research laboratories:**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 Properties
Laboratory of Biomaterials
Laboratory of Plasma Technology

III. TEACHING

A. Undergraduate Study:

5. semester (Bc)	Macromolecular Chemistry	2/0/0	Chrástová
	Corrosion and Material Surface Treatment	2/0/2	Chovancová, Hudec
6. semester (Bc)	Technology of Materials	2/0/0	Hudec, Marcinčin, Majling
	Semestral Project	0/4/0	
	Production, Properties and Processing of Plastics	2/0/0	Hudec (for students of Faculty of Architecture)
1. semester (MSc)	Polymer Physics	2/2/0	Chodák
	Colloids and Interfaces	2/1/0	Bakoš, Reháková
	Macromolecular Chemistry II.	2/1/0	Chrástová
	Production and Processing of Plastics	3/0/0	Hudec
	Production and Processing of Rubber	3/2/0	Kyselá
	Laboratory from Macromolecular	0/0/8	Černáková

	Chemistry		
2. semester (MSc)	Additives for Plastics	2/0/0	Hudec
	Methods of Polymer Characterisation	2/0/0	Černáková
	Biotechnological Polymers	2/0/0	Bakoš
	Design of Experiments	1/1/0	Alexy
	Laboratory from Production of Polymers	0/0/8	Alexy, Kyselá
3. semester (MSc)	Polymer Processing	3/1/0	Špírk
	Polymer Blends and Composites	2/0/0	Khunová
	Polymer Recycling and Waste Disposal	2/0/0	Hudec, Khunová, Špírk
	Polymer Testing	0/2/0	Alexy
	Laboratory from Processing of Polymers	0/0/10	Alexy, Hudec
4. semester (MSc)	Diploma work	0/0/27	

PLASTICS IN MECHANICAL ENGINEERING AND TECHNOLOGIES OF PLASTICS PROCESSING

Undergraduate Study:

2.semester (Bc)	Annual Project	0/3/0	Bakoš
3.semester (Bc)	Macromolecular Chemistry	2/0/0	Chrástová
	Production and Processing of Plastics	3/1/0	Hudec
	Polymer Testing	0/2/3	Alexy
	Analytical Chemistry of Plastics	2/1/0	Černáková

IV. CURRENT RESEARCH PROJECTS

A. VEGA Projekt N° 1/0059/03, Study of Structure and Properties of Crosslinked Polymers (Gabriela Kyselá)

The project is focused on the curing of polymers and copolymers during their preparation in the presence of multifunctional monomers and using the suitable post-polymerization reactions, too. The curing of elastomers is interesting in the application of non-harmful sulfur curing systems, based on the phosphoric accelerators and their combinations with thiazoles, respectively. The experiments are predominantly oriented on the researching of the optimal composition of accelerate systems, as well as, on the connection of the network structure of crosslinked materials and their age resistance and the level of the retaining of original physical-mechanical properties, too. Also, the crosslinking reactions are studied in the course of two stage seeded semi-continuous starved emulsion polymerization of styrene and butylacrylate in the presence of N-methylol acrylamide. Partially crosslinked latexes with core-shell particles are used for formulation of ecological paints. The influence of polymerization strategy and crosslinking reaction on the film - forming properties of modified dispersions are investigated..

Project duration: from 01.01.2003 to 31.12.2005

B. VEGA Projekt N° 1/0283/03, New Types of Blends and Composite Material Containing Biodegradable Polymers and Fillers (Ivan Hudec)

The project is aimed on the investigation of polymer blends and composite materials based on biodegradable polymers and particulate fillers. The main research and experimental efforts are focused on chemical and physical modification of thermoplastic, elastomeric and crosslinked multy-phase polymer materials by changing morphological structure and interphase interactions on polymer/polymer and polymer/filler interface. The selection of the polymer matrix and modification methods are oriented on the new achievements which enables to reveal relations between composition, structure and properties of studied multiphase polymer blends and composites.

Project duration: from 01. 01. 2003 to 31. 12. 2005

C. VEGA Project N° 1/2110/05, Polymer nanocomposites based on polyolefines, carbon nanotubes and layered silicate (Viera Khunová)

The project is aimed to develop advanced polymer nanocomposite materials with high barrier properties and electrical conductivity based on polyolefines, carbon nanotubes and layered silicates. Development of clay surface modification technologies in order to maximise interphase interactions and performance of composites. Determination of filler/modifier

and modifier/polymer interphases. Exploration of the role of interfacial modification on the structure and physico-mechanical properties of composites. Optimisation of reactive processing conditions to achieve the highest degree of filler dispersion and exfoliation. Explanation of the knowledges related to the multifunctional influence of physical and chemical characteristics of filler and modifier, as well as reactive processing conditions on the structure and end-use properties of studied materials. Identification of filler surface modification rate by application of competitive effective compounds.

Project duration: from 01. 01. 2005 to 31. 12. 2007

D. Project No 2-3-5 CHN, New Biomaterials Based on Chitosan Complexes (Dušan Bakoš).

Target of the project is complexation of natural polymers to set-up a new tissue-engineered multi-functional composite products that are successful in three-dimensional tissue regeneration as being biologically active, biodegradable, heterogenous, anisotropic structures. The research activity will be based on highly innovative technological processes and biopolymers (chitosan, hyaluronan and starch). Special nano-technologies for natural polysaccharide-based polymers will be used to optimise the materials morphological development and consequent mechanical and degradation behaviour and to tailor their in vivo performances.

Project duration: from 2002 to 2005

E. SUSTAINPACK, Integrated Project 6FP, Priority 3 – NMP, Research areas 3.4.2.2 and 3.4.2.3. (Dušan Bakoš)

(Sustainable development in the innovative fibre based packaging value chain)

Objective of the Project is to improve the competitiveness of fibre-based packaging through the development and application of nanotechnologies in order to reduce supply chain costs or add functionality. Participating in two subprojects: SP1 – Fibre based packaging value chain and SP3 – Fibre based composite packaging.

Project duration: from 2004 to 2007

F. Project of ME SR No 661/2003 Preservation, Stabilization and Conservation of Traditional Information Supports in the Slovak Republic (Dušan Bakoš)

Objective of the State Program Project is live prolonging of endangered paper documents in libraries and archives in SR, as well as assorting of books according to historical and technological criteria with livesaving of documents. In the experimental part of the project, the study is focused on an experimental evaluation of new technologies and objective comparing known and new technologies with the development of experimental base for research and education in the field of book and documents preservation.

Project duration: from 2003 to 2005

G. Project of APVT Grant Agency APVT-099-035004, Fibrous and Textile Surface Nanostructural Modification (Ivan Hudec)

The aim of project is study of surface modification of fibrous and textile materials by atmospheric plasma in various gases grafting of monomers as nano-scale layers on to textile surface after activation by plasma.

Project duration: from 2005 to 2007

H. Project of APVT Grant Agency APVT-099-013704, Polymer materials with higher utility properties (Ivan Hudec)

The aim of project is study of interactions between structure and properties of heterogeneous polymer systems, especially degree of pigments dispergation in polymer matrix on dependence of processing conditions.

Project duration: from 2005 to 2006

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
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Rubber Research Institute Matador, a.s., Púchov	Surface modification of reinforcing materials for belt construction by plasma		
Rubber Research Institute Matador, a.s. Púchov	Modification of traction properties of tires		
Research Institute of Processing and Application of Plastics, VUSAPL a.s., Nitra	New types of fillers and reinforcing materials for plastics		
VIPOTEST, Ltd., Púchov	Rheology of rubbers and rubber mixtures		
Rubber Research Institute Matador, a.s. Púchov	New types of fillers and reinforcing materials for rubber blends		
VUCHT, Bratislava	Modification of particulate polymer composites by reactive modifiers		

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
Martin Luther University of Halle-Wittenberg, Institute of Materials Science, Halle, Germany	Modification of reinforcing materials for rubber articles, New types of fillers for rubber blends	Radusch Hans-Joachim, professor, Gesauer Str., Halle-Wittenberg, D-06099 Halle(Saale), Germany	since 2002
Technical University of Szczecin, Institute of Material Engineering, Szczecin, Poland	Chemical and physical modification of polymers	Tartakowski Zenon, professor, al. Piastow č. 19, Szczecin, Poland	since 1996
Academia Rolniczna, Krakow, Poland	Biopolymers	Tomasik Piotr, professor Krakow, Poland	since 2005
Institute of Macromoleculare Chemistry, Academy of Science of the Czech Republic, Prague, Czech Rep.	Polymer nanocomposites	Kelnar Ivan, senior research fellow, Academy of Science, Praque, Czech Republic	since 2001
International Clinic for Neo-Organs, Roma, Italy	Biomaterials development	Letič Gavrilovič Anka, professor, International Clinic for Neo-Organs, Roma, Italy	since 1999
The Manchester Metropolitan University, Faculty of Science and Engineering, Manchester, UK	Reactive processing of particulate polymer composites	Liau C.M., senior research fellow, Chester str., Manchester M1 5GD, UK	since 1996
University of Minho, Department of Polymer Engineering, Guimarães, Portugal	Development of composites, polymer processing	Antonio Cunha, professor, University of Minho, Guimaraes, Portugal	since 1999
University of Pisa, Department of Chemistry and Industrial Chemistry, Pisa, Italy	Biodegradable polymers	Chiellini Emo, professor, Via Risorgimento 35, 56126 Pisa, Italy	since 1999
Department of Macromolecular Science, Fudan University, Shanghai, China	New biomaterials based on chitosan complexes	Wei Zhong, associate professor, 220 Handan Road, Shanghai 200433, P.R. China	since 2002
Institute of Materials Technology, Poznań University of Technology, Poznań, Poland	Testing of adhesion properties of reinforcing materials to rubber	Szostak Marek, associate professor, ul. Piotrowo 3, 61-138 Poznań, Poland	since 2001

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
Bakoš Dušan	European Biomaterial Society	member	since 1995
Alexy Pavol	Polymer Processing Society	member	2005 - 2006
Hudec Ivan	IRCO	member	since 2005

E. Visitors from abroad

Name	Organisation or Institution	State	Date / Duration
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Wei Zhong	Fudan University	China	August-September 2005 (28 days)
Robert H. Schuster	DIK Hannover	Germany	May 2005 (3 days)

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

Name	Organisation / Institution / Conference	State	Date / Duration
Alexy, P.	GlaxoSmithKline, Harlow	United Kingdom	November 2005 (3 days)
Alexy P.	21st Annual Meeting of the Polymer Processing Society, International Conf.	Germany	June 2005 (5 days)
Alexy P.	Narotech 2005, Int. Conference, Erfurt	Germany	September 2005 (3 days)
Bakoš, D.	Int. Conference, San Francisco	USA	February 2005 (6 days)
Bakoš, D.	Int. Conference, Granada	Spain	June 2005 (5 days)
Bakoš, D.	Sustainpack , Stockholm	Sweden	May 2005 (4 days)
Bakoš, D.	GlaxoSmithKline, Harlow	United Kingdom	November 2005 (3 days)
Bellušová, D.	Tire Technology 2005, Int. Conference, Stuttgart	Germany	February 2005 (2 days)
Bellušová, D.	Elastomers 2005, Int. Rubber Conference	Poland	October 2005 (4 days)
Bubeníková, S.	ESB 2005, 19th European Conference on Biomaterials, Sorrento	Italy	September 2005 (5 days)
Černáková, L.	Chemistry and Life, Int. Conference, Brno	Czech Republic	September 2005 (3 days)
Feranc, J.	Narotech 2005, Int. Conference, Erfurt	Germany	September 2005 (3 days)
Hudec, I.	International Rubber Conference, Yokohama	Japan	October 2005 (10 days)
Hudec, I.	21st Annual Meeting of the Polymer Processing Society, International Conf.	Germany	June 2005 (5 days)
Hudec, I.	Int. Rubber Conference Zlín	Czech Republic	September 2005 (2 days)
Jaššo, M.	Elastomers 2005, Int. Rubber Conference	Poland	October 2005 (4 days)
Jaššo, M.	Int. Rubber Conference Zlín	Czech Republic	September (2 days)
Khunová, V.	1st International symposium on „Nanostructured and functional polpolymer-based materials and composites“	Germany	April 2005 (4 days)
Khunová, V.	Summer school MATERIALS RECYCLING, Karpacz	Poland	July 2005 (10 days)
Khunová, V.	23 rd discussion conference Current and future trends in polymeric materials, Prague	Czech Republic	June 2005 (6 days)
Khunová, V.	Polymers and environment , Litomyšl,	Czech Republic	November 2005 (3 days)
Kramárová, Z.	Narotech 2005, Int. Conference, Erfurt	Germany	September 2005 (3 days)
Kramárová, Z.	21st Annual Meeting of the Polymer Processing Society, International Conf.	Germany	June 2005 (4 days)
Kunovská, K.	SRN 2005, Research and Applications, Int. Conference	Italy	April 2005 (7 days)
Kunovská, K.	Degradation of paper-new research methods, Symposium, Krakow	Poland	July 2005 (2 days)
Šimková B.	21st Annual Meeting of the Polymer Processing Society, International Conf.	Germany	June 2005 (5 days)

Špírk E.	21st Annual Meeting of the Polymer Processing Society, International Conf.	Germany	June 2005 (5 days)
Urogiová, E.	Tire technology 2005, International conf., Stuttgart	Germany	February 2005 (2 days)
Urogiová, E.	PPS 21, Int. Conference	Germany	June 2005 (4 days)
Urogiová, E.	Student mobility – Socrates – Erasmus, Martin Luther University Halle-Wittenberg	Germany	October-January 2005 (3 Mon)

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

Name	Title of Thesis	Supervisor
Budošová, J.	Study of mechanical properties of complex membranes based on biopolymers	Hanzelová, S.
Fuleová, V.	Influence of molecular parameters on rheological properties of PVAL blends	Šimková, B.
Hajšová, M.	Study of physical and chemical properties of complex membranes based on biopolymers	Kukolíková, L.
Jakubcová, L.	Evaluation of influence of additives on processing properties of PVAL blends	Alexy, P.
Koř, M.	Composite materials with magnetic fillers for construction of intelligent tyres	Urogiová, E.
Krajňáková, S.	Polymers used for restoration of paintings	Hudec, I.
Kruželák, J.	Rubber compounds for intelligent tyres	Kyselá, G.
Šútor, L.	The traction properties modification of rubber mixtures for runners	Špírk, E.
Úlehlová, J.	Study of formation of capsules on the base of polyelectrolytes	Hanzelová, S.
Wetterová, Z.	Material recycling of polyethyleneterephthalate	Khunová, V.
Wolfová, M.	Possibilities of surface modification of polymers by plasma treatment	Černáková, L.

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

Name	Title of Thesis	Supervisor
Bariaková, L.	The modification of the collagen-hyaluronan membrane and the study of diffusion of active components	Bakoš, D.
Galandová, J.	The study of the formation of capsules based on polyelectrolytes	Bakoš, D.
Horváth, M.	Study of possible interaction of biopolymers in rubber blends	Alexy, P.
Klimová, D.	Modification of nonwovens with natural polymers after plasma treatment	Černáková, L.
Mikušová, K.	Surface modification of cellulose materials	Chrástová, V.
Nahálková, A.	Biodegradable composites based on polycaprolactone	Chodák, I.
Sušková, S.	Composite materials with magnetic fillers	Hudec, I.
Šíroky, J.	Surface modification of reinforcing materials by plasma at atmospheric pressure	Hudec, I.

C. Dissertations (PhD)

Name	Title of Thesis	Supervisor
Jaššo, M.	Influence of plasma treatment on the properties of reinforcing materials for tire construction	Hudec, I.
Kršiak, M.	Utilisation of collagen hydrolysate in polymer blends	Bakoš, D.
Šimková, B.	The study of processing properties of polyvinyl alcohol blends	Bakoš, D.

E. Habilitation Theses

Name	Title of Thesis	Head of board
Černáková L.	Functionalization of Polymer Surfaces	Bakoš, D.

VIII. PUBLICATIONS

Book

- [1] Letič-Gavrilovič, A., Bakoš, D.: *New Research. Membranes and Hydrogels in Reconstructive Surgery*, Ed. B.M. Caruta, Nova Science Publishers Inc, 2005.

Chapter or pages in book

- [1] Rosina, Š., Prekop, Š., Janyška, P., Špírk, E., Šuriová, V., Gažo, P., Ondáš, M., Šuri, P., Hudec, I.: *Gumárska technológia III*, Editor(s): Ivan Chodák, Jozef Šimoník, Chapter: 4 (Základná terminológia), 7 (Surovinové využitie), 9 (Kompozitné materiály na báze gumového odpadu). GC TECH Ing. Peter Gerši, 2005.

Article in journal

- [1] Alexy, P., Kramárová, Z., Hudec, I., Špírk, E., Chodák, I., Košíková, B., Gregorová, A., Šuri, P., Feranc, J.: Biopolymers as a component of rubber blends. *Chemické Listy*, 2005.
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Miscellaneous

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CENTRAL LABORATORIES

Head of Department:
Assoc.Prof. Ján Lokaj, PhD.

Telephone: +421-7-59 325 433
Fax: +421-7-52 92 60 18
E-mail: jan.lokaj@stuba.sk

Full Professors:

Associate Professors:
Ján Lokaj, PhD; Tibor Liptaj, PhD;

Assistant Professors :

Research Fellows:
Tibor Jakubík, PhD;

PhD Students:

Technical staff:

Ladislav Bačiak; Vladimír Dobiš; Michal Kaliňák; Svatava Kašparová; Mária Mravcová; Eva Pappová; Naďa Prónayová; Miroslav Srbecký; Jozef Švorec; Walter Weis

II. TEACHING AND RESEARCH LABORATORIES

A. Teaching laboratories:

B. Research laboratories:

Laboratory of NMR Spectroscopy (NMR)
Laboratory of Mass Spectrometry (MS)
Laboratory of X-Ray Microanalysis

III. TEACHING

IV. CURRENT RESEARCH PROJECTS

Comparative study of gamma-aminobutyric acid metabolism as an approach for the understanding of its function in eucaryotic cells. VEGA 1/2334/05 (Tibor Liptaj)

The main goals of the project are:

- a/ comparative study of the gamma-aminobutyric acid (GABA) metabolism in selected yeasts and filamentous fungi
- b/ elucidation of the function of GABA in fungi in the context of current hypotheses.
- c/ investigation of the role of GABA as a bridge of carbon and nitrogen metabolism and the role in differentiation of filamentous fungi and selected animal cells.

Project duration: from 2005 to 2007

Study of neuroprotective effects of new pyrrolidine derivatives. VEGA 2/5010/5 Joint project wit SAS (Tibor Liptaj)

The main goals of the project are:

- a/ optimalization of the synthesis of new pyrrolidene derivatives
- b/ development of the protocol for short-term ischemia of experimental animals
- c/ implementation of monitoring of the ischemia induced morphological changes in the brain of experimental animals using NMR methods
- d/ mapping of the metabolite in brain tissue of experimental animals using NMT methods
- e/

Project duration: from 2005 to 2007

State program of research and science development, Project 2003SP200280203:

Establishment of the "top-class" laboratory for Nuclear Magnetic Resonance (Tibor Liptaj)

Establishment of national NMR laboratory consisting of the group of 5 specialized NMR labs with the aim to initiate the exploitation and development of NMR methods in the broad area of natural science research and education.

Project duration: from 2003 to 2010

V. CURRENT EDUCATION PROJECTS

VI. COOPERATION

A. Cooperation in Slovakia

Institution	Type of cooperation	Responsible person	Duration
Jessenius Faculty of Medicine Martin	grant, publications	Prof. MUDr. Dušan Dobrota, DrSc.	2003-2005
Medical Faculty Comenius University, Bratislava	grant	Doc. Mudr. P. Babal, PhD.	2005-2006
Institute of Experimental Pharmacology, Slovak Academy Sciences	grant	Doc. MUDr. S. Štolc, DrSc.	2005-2006
Institute of Preventive and Clinical Medicine, Bratislava	publications	Doc. MUDr. J. Horecký, PhD.	continuous
Pharmacobiochem. Lab., Medical Faculty, Comenius University Bratislava	publications	MUDr. A. Gvozdjaková, PhD RNDr. Z. Sumbalová	continuous
Slovak Academy Sciences, Chemical Institute Bratislava	state program 339/2003	RNDr. M. Matulová, PhD	2003-2005
Comenius University, Faculty of Natural Sciences, Bratislava	state program 339/2003	RNDr. E. Solčániová, PhD	2003-2005
Derer Hospital, Bratislava	state program 339/2003	Ing. V. Mlynárik, DrSc.	2003-2005
Faculty of Natural Sciences UPJŠ, Košice	state program 339/2003	Doc. RNDr. J. Imrich, PhD	2003-2005
Comenius University, Faculty of Pharmacy, Bratislava	publications, ZoD	Ing. J. Světlík, PhD., Ing. V. Kettmann, DrSc., Prof. RNDr. E. Havránek, PhD., Doc. Ing. Mucai	continuous
Research Institute of Animal Production, Nitra	ZoD, publications	Ing. R. Lahučký, PhD.	continuous
Slovnaft Bratislava	ZoD	Ing. A. Malíková	continuous
Duslo Šaľa	ZoD	Ing. J. Uhlár, PhD Ing. J. Balko, PhD	continuous
Institute of Polymers, Slovak Academy Sciences	publications	Ing. Š. Chmela, PhD., Ing. I. Lukáč, PhD., Ing. T. Nedelčev	continuous
Research Institute Soil Sciences and Conservation, Prešov	ZoD, publications	RNDr. G. Barančíková, PhD	continuous
Institute for Apiculture, Liptovský Hrádok		Ing. Čermáková	2005
Biotika Slovenská Ľupča	ZoD	PharmDr. J. Tomasch	2005
Ananchem, Bratislava		Ing. Mičúch, PhD.	2005
BELNOVAMANN, Bratislava	ZoD	Ing. M. Veverka, PhD.	2005
Synkola Bratislava	ZoD		2005
BELNOVAMANN, Bratislava	ZoD	Ing. J. Dresslerová	2005
Institute of Virology, Slovak Academy Sciences, Bratislava		RNDr. I. Dovinová, PhD.	2005
VIPOTEST, s.r.o., Púchov	ZoD	Ing. M. Chromek	2005

B. International Cooperation

Institution	Type of cooperation	Responsible person	Duration
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University of Edinburg, Chemistry Dep., UK	grant	Prof. D. Uhrín, PhD.	2003-2005
University of Veterinary and Pharmaceutical Sciences, Brno	publications	Ing. E.Švajdlenka	2005

C. Membership in Domestic Organizations and Societies

Name	Organisation or Society	Position	Valid date
T.Liptaj	Slovak Spectroscopic Society	member	2005
T.Liptaj	Slovak Chemical Society	member	2005

D. Membership in International Organisations and Societies

Name	Organisation or Society	Position	Valid date
S.Kašparová	European Society for Magnetic Resonance in Medicine and Biology	member	2004, 2005

VIII. PUBLICATIONS

Article in journal

- [1] Chovanec, Peter, Kaliňák, Michal, Liptaj, Tibor, Prónayová, Naďa, Jakubík, Tibor, Hudecová, Daniela, Varečka, Ľudovít: Study of *Trichoderma viride* metabolism under conditions of the restriction of oxidative processes. *Canadian Journal of Microbiology*, vol. 51, pp. 853-862, 2005.
- [2] Dobrota, D., Babušíková, E., Kaplan, P., Prónayová, N., Liptaj, T., Kašparová, S.: H-1 and P-31 magnetic resonance spectroscopy: an in vitro study of the RAT heart. *Journal of Molecular and Cellular Cardiology*, no. 6, vol. 38, pp. 1016-1017, 2005.
- [3] Dobrota, D., Jankovič, P., Liptaj, T., Prónayová, N., Mlynárik, V., Galanda, M., de Riggo, J., Kolarovszki, B.: In vitro 1H magnetic resonance spectroscopy differences between human brain tumours. *Journal of Neurochemistry*, no. 2, vol. 94, pp. 122-122, 2005.
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- [5] Dugovič, B., Wiesenganger, T., Fišera, L., Hametner, C., Prónayová, N.: Nitrene 1,3-dipolar cycloadditions to enol ethers catalyzed by Lewis acids. An access to beta-amino acids. *Heterocycles*, no. 3, vol. 65, pp. 591-605, 2005.
- [6] Kašparová, Svatava, Brezová, Vlasta, Valko, Marian, Horecký, Jaroslav, Mlynárik, Vladimír, Liptaj, Tibor, Vančová, Oľga, Uličná, Oľga, Dobrota, Dušan: Study of the oxidative stress in a rat model of chronic brain hypoperfusion. *Neurochemistry International*, no. 8, vol. 46, pp. 601-611, 2005.
- [7] Kašparová, Svatava, Sumbalová, Zuzana, Horecký, Jaroslav, Bystrický, Peter, Mlynárik, Vladimír, Gvozdjaková, Anna, Liptaj, Tibor: New magnetic resonance spectroscopy biomarker for monitoring neurodegenerative diseases: Animal models. *Biomedical Papers*, no. 2, vol. 149, pp. 373-376, 2005.
- [8] Kašparová, Svatava, Zbýň, Štefan, Žilka, Norbert, Horecký, Jaroslav, Liptaj, Tibor, Mlynárik, Vladimír, Juránek, Ivan: 31P magnetic resonance spectroscopy of brain creatine kinase in rats with moderate and severe hypertension and chronic cerebral hypoperfusion.. *Biologia*, no. Suppl 17, vol. 60, pp. 83-86, 2005.
- [9] Kettmann, V., Lokaj, J., Milata, V., Černuchová, P., Loupy, A., Vo-Thanh, G.: 5-Amino-4-methylsulphonyl-1-phenyl-1H-pyrazole. *Acta Crystallographica Section E*, no. 11, vol. 61, pp. 3852-3854, 2005.
- [10] Likavčanová, K., Dobrota, D., Liptaj, T., Prónayová, N., Mlynárik, V., Belan, V., Galanda, M., Beres, A., de Riggo, J.: In vitro study of astrocytic tumour metabolism by proton magnetic resonance spectroscopy. *General Physiology and Biophysics*, no. 3, vol. 24, pp. 327-335, 2005.
- [11] Liptaj, T., Barančíková, G., Prónayová, N.: Application of 31P nuclear magnetic resonance for study of phosphorus structural types in humic acids. *Agriculture*, no. 8, vol. 51, pp. 423-428, 2005.
- [12] Lokaj, J., Kettmann, V., Marko, M.: 4,4-Dinitro-5,6,7,8,9,10-hexahydro-4H-cyclo-nona[d]isoxazole. *Acta Crystallographica Section E*, no. 4, vol. 61, pp. 808-810, 2005.
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- [18] Štetinová, J., Milata, V., Prónayová, N., Petrov, O., Bartovič, A.: Synthesis and transformations of some 1,2,4-trisubstituted purroles. *Arkivoc*, no. 5, pp. 127-139, 2005.

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- [1] Borodovčáková, Nina, Bilaničová, Dagmar, Mastihuba, Vladimír, Prónayová, Naďa, Mastihubová, Mária, Čertík, Milan: Enzymatic preparation of sugar-lipid conjugates. In *Chemické Listy*, vol. 99, pp. s270-s271, 2005.
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- [3] Kašparová, Svatava, Bačiak, Ladislav, Zbýň, Štefan, Žilka, Norbert, Horecký, Jaroslav, Liptaj, Tibor, Mlynárik, Vladimír, Juránek, Ivan: ³¹P magnetic resonance spectroscopy study of brain creatine kinase in rats with moderate and severe hypertension and chronic cerebral hypoperfusion. In *Zborník*, 2005.
- [4] Kašparová, Svatava, Sumbalová, Zuzana, Horecký, Jaroslav, Bystrický, Peter, Mlynárik, Vladimír, Gvozdjáková, Anna, Liptaj, Tibor: Magnetic resonance spectroscopy biomarker for monitoring neurodegenerative diseases: animal models.. In *Biomedical Papers*, no. suppl. 1, vol. 149, pp. 12, 2005.
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