

# ANNUAL REPORT 2008

S T U • • SLOVAK UNIVERSITY OF TECHNOLOGY IN BRATISLAVA  
• • • • • Faculty of Chemical and Food Technology  
F C H P T  
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**Faculty of Chemical and Food Technology**  
Slovak University of Technology

Radlinského 9, 812 37 Bratislava

March 2009

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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 12 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, Inorganic Technology and Materials, Organic Technology and Technology of Fuels, Technology of Polymer Materials, Chemical Engineering, Environmental Engineering, Process Control, Chemistry and Food Technology, Biotechnology, Teoretical and Computer Chemistry).

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, Acta Chimica Slovaca, Fibres and Textile, Plastics and Rubber, Journal of Radioanalytical and Nuclear Chemistry, Biology, Folia Microbiologica, Wineyard and Wine.

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

March 2009

Prof. Dušan Bakoš, DSc  
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## INSTITUTE OF ANALYTICAL CHEMISTRY

**Head of Institute**

**Prof. Jozef Lehotay, DSc.**



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**Foreword**

The Department of Analytical Chemistry was created in 1941. The Institute of Analytical Chemistry was established in January 2006 by joining the Department of Analytical Chemistry and the Department of NMR Spectroscopy and Mass Spectrometry.

The Institute is directed to the perspective branches of study of the new analytical procedures and theoretical approaches aimed to the solution of various subjects predominantly of food, pharmaceutical industry and environment. The institute has achieved the top-position in the Slovak Republic; it has also developed fruitful cooperation with domestic as well as foreign institutions.

**Teaching activities**

Analytical Chemistry is one of the basic subjects, which are fully provided by Institute of Analytical Chemistry for all Bachelors' study programs. The Institute guarantees the subjects Analytical methods in clinical praxis and Testing and quality control. Students participate in the research in the frame of a wide variety of Bc. projects. In the graduate study our Institute directs and provides almost full teaching for the program Technical Chemistry, module Analytical Chemistry. Further it provides teaching of 15 subjects for other study programs. In PhD study the Institute guarantees the study branch Analytical Chemistry and educates 10 PhD students. The pedagogical process is performed by 6 professors, 8 associated professors, 5 assistant professors, 6 scientific-researchers and 10 Ph.D. students.

**Research profile**

The research is concentrated in the following areas:

- trace and ultratrace electroanalytical and spectrophotometric analysis of plenty of elements with the stress to the presence of heavy metals in complex matrices,
- trace and ultratrace analysis of volatile and semivolatile analytes in complex organic systems utilising isolation and preconcentration techniques in combination with fast GC and MS,
- utilisation of DNA biosensors to determine hazardous chemicals in trace concentration, determination of activators and inhibitors of the structural DNA damage,
- study of structure of selected compounds
- separation and determination of enantiomers.

## Department of Analytical Chemistry

Head of Department Prof. Jozef Lehotay, DSc.



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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-20-035205	<a href="#">APVV-20-035205</a>
	Title: <i>(in slovak)</i>	Vývoj nových metód vysokoúčinnnej kvapalinovej a plynovej chromatografie so špecifickou selektivitou na analýzu izomérov biologicky aktívnych látok.	
	Title:	Development of new high performance liquid and gas chromatography methods with specific selectivity for analysis of biologically active compounds isomers	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.05.2006 - 30.04.2009	
	Responsible person:	Prof. Ing. Jozef Lehotay, DrSc.	
APVV	Project number:	APVV-20-000705	<a href="#">APVV-20-000705</a>
	Title: <i>(in slovak)</i>	Rýchla plynová chromatografia - hmotnostná spektrometria pre analýzu vybraných organických polutantov v environmentálnych a potravinových maticiach.	
	Title:	Fast Gas Chromatography - Mass Spectrometry for environmental and food analysis of selected groups of organic pollutants	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.05.2006 - 31.10.2009	
	Responsible person:	Prof. Ing. Eva Matisová, DrSc.	
APVV	Project number:	APVV-0057-06	<a href="#">APVV-0057-06</a>
	Title: <i>(in slovak)</i>	Nové elektranalytické techniky a elektrochemické postupy na zvyšovanie efektivity atómovej spektroskopie – stanovenie a chemometrická charakterizácia analytov.	
	Title:	New Electroanalytical techniques and Procedures of Improvement of Atomic Spectroscopy- Determination and Chemometrical Characterization of Analytes.	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.02.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Peter Tomčík, PhD.	
APVV	Project number:	APVV-0319-07	<a href="#">APVV-0319-07</a>
	Title: <i>(in slovak)</i>	Vývoj nových profilovacích analytických metód pre kvalitné a bezpečné potraviny.	
	Title:	Development of novel profiling analytical methods for food quality and safety	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.09.2008 - 31.12.2010	
	Responsible person:	Ing. Ivan Špánik, PhD.	



ESF	Project number:	ESF/JPD 3 2005/1-041	<a href="#">ESF/JPD 3 2005/1-041</a>
	Title: <i>(in slovak)</i>	MEDITECH -inovačný program moderných biomedicínskych technológií.	
	Title:	MEDITECH - innovative programm of modern biomedical technologies	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.03.2006 - 31.10.2008	
	Responsible person:	Prof. Ing. Ján Labuda, DrSc.	
KEGA	Project number:	3/5207/07	<a href="#">3/5207/07</a>
	Title: <i>(in slovak)</i>	Multimediálna učebnica "Analytické metódy v klinickej chémii".	
	Title:	e-Book "Analytical Methods in Clinical Chemistry"	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.01.2007 - 31.12.2008	
	Responsible person:	Doc. Ing. Jana Sádecká, PhD.	
AV MŠ SR	Project number:	4/0103/06	<a href="#">4/0103/06</a>
	Title: <i>(in slovak)</i>	Využitie biosenzorov, biomateriálov a biosignálov v medicíne.	
	Title:	Use of biosensors, biomaterials and biosignals in medicine.	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.01.2006 - 31.12.2009	
	Responsible person:	Prof. Ing. Ján Labuda, DrSc.	
VEGA	Project number:	2/7074/7	<a href="#">2/7074/7</a>
	Title: <i>(in slovak)</i>	Určenie parametrov aktivity potenciálnych inhibítorov aldózareduktázy - príspevok ku terapii chronických komplikácií diabetu.	
	Title:	Evaluation of activity parameters of potential inhibitors of aldose reductase - a contribution to therapy of chronic diabetic complications.	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.01.2007 - 31.12.2009	
	Respons. person(STU):	Ing. Pavel Májek, PhD.	
	Responsible person:	RNDr. Magdaléna Májeková, PhD.	
VEGA	Project number:	1/0852/08	<a href="#">1/0852/08</a>
	Title: <i>(in slovak)</i>	Využitie nanotechnológie pri tvorbe DNA a LDL biosenzorov.	
	Title:	Using of nanotechnology in preparation of DNA and LDL biosensors	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Ing. Adriana Ferancová, PhD./Prof. Ing. Ján Labuda, DrSc.	

VEGA	Project number:	1/0827/08	<a href="#">1/0827/08</a>
	Title: <i>(in slovak)</i>	Vývoj rýchlych a účinných metód analýzy organických zlúčenín, dôležitých z hľadiska kvality životného prostredia, v selektívnych jedno- a viackolónových zostavách plynovej chromatografie v spojení s hmotnostnou spektrometriou v režimoch EI/CI/NCI.	
	Title:	Development of fast and efficient methods of analysis in selective gas chromatographic single- and multicolumn setups hyphenated to mass spectrometry with EI/CI/NCI spectra measurements for organic compounds of environmental concern	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	prof. Ing. Ján Krupčík, DrSc.	
VEGA	Project number:	1/0058/08	<a href="#">1/0058/08</a>
	Title: <i>(in slovak)</i>	Analytické a termodynamické štúdium separácie opticky aktívnych látok metódou HPLC v on-line spojení s DAD, NMR a polarimetrickou detekciou. Príprava nových selektívnych sorbentov použiteľných pri príprave vzorky.	
	Title:	Analytical and thermodynamic study of the separation of the optically active compounds by HPLC method with on-line DAD, NMR and polarimetric detection. The preparation of new selective sorbents used for the preparation of the samples.	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	prof. Ing. Jozef Lehotay, DrSc.	
VEGA	Project number:	1/0318/08	<a href="#">1/0318/08</a>
	Title: <i>(in slovak)</i>	Kombinácia fluorescenčnej spektroskopie a chemometrie pre analýzu mnohozložkových zmesí.	
	Title:	Fluorescence Spectroscopy Combined with Chemometrics for Analysis of Multi-component Mixtures.	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Jana Sádecká, PhD.	

VEGA	Project number:	1/0500/08	<a href="#">1/0500/08</a>
	Title: <i>(in slovak)</i>	Nové elektroanalytické techniky na stanovenie stopových koncentrácií a chemických foriem arzénu, antimónu a selénu vo vodách pre použitie v laboratóriách i v teréne.	
	Title:	New electroanalytical techniques for routine determination of trace concentrations and speciation analysis of arsenic, antimony and selenium in water for laboratory and field applications	
	Department:	Department of Analytical Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Doc. Ing. Ernest Beinrohr, CSc.	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
BT	<a href="#">Bc. Alexandra Pažitná</a> Analytické metódy pre charakterizáciu prchavých zlúčenín v alkoholických nápojoch z borievok.	<a href="#">Ing. Ivan Špánik, PhD.</a>
DT	<a href="#">Ing. Silvia Ondreková</a> Využitie rýchlej GC-MS na analýzu vybraných endokrinných disruptorov	<a href="#">prof. Ing. Eva Matisová, DrSc.</a>
DT	<a href="#">Ing. Mária Andraščíková</a> Analýza rezíduí pesticídov vo vodách rýchlou GC-MS	<a href="#">Ing. Andrea Hercegová, PhD.</a>
DT	<a href="#">Ing. Katarína Beníková</a> Nanoštrukturované DNA biosenzory pre hodnotenie poškodenia DNA	<a href="#">Ing. Adriana Ferancová, PhD.</a>
DT	<a href="#">Ing. Roman Hudec</a> Využitie automatizovaného elektrochemického meracieho systému na bezobslužné monitorovanie škodlivín vo vodách	<a href="#">doc. Ing. Ernest Beinrohr, CSc.</a>
BT	<a href="#">Bc. Zuzana Hyravá</a> Kvantitatívna analýza halogenovaných fenolov metódou GC-MS a GC-ECD	<a href="#">doc. Ing. Eva Benická, CSc.</a>
BT	<a href="#">Bc. Veronika Kocková</a> Stanovenie rezíduí pesticídov vo vode rýchlou GC	<a href="#">Ing. Andrea Hercegová, PhD.</a>
BT	<a href="#">Bc. Jana Grancová</a> Využitie elektrochemického biosenzora pri hodnotení antioxidačnej aktivity potravín	<a href="#">Ing. Adriana Ferancová, PhD.</a>
BT	<a href="#">Bc. Jana Riecka</a> In vitro redoxný metabolizmus a účinky niektorých potravinových aditív, liečiv a polutantov sledované pomocou DNA elektrochemického biosenzora	<a href="#">prof. Ing. Ján Labuda, DrSc.</a>
DT	<a href="#">Ing. Lucia Nosáľová</a> CGC separation of volatile organic compounds present in dairy products.	<a href="#">Ing. Ivan Špánik, PhD.</a>

DT	<a href="#">Ing. Sylvia Cifrová</a> Vnútroelektrodová coulometrická titrácia na stanovenie oxidu chlórčitého v pitných vodách	<a href="#">doc. Ing. Ernest Beinrohr, CSc.</a>
BT	<a href="#">Bc. Lukáš Lauko</a> Stanovenie rezíduí dezinfekčných prostriedkov v pitnej vode metódou prietokovej coulometrie	<a href="#">doc. Ing. Ernest Beinrohr, CSc.</a>
DT	<a href="#">Ing. Lýdia Pokorná</a> Optimalizácia podmienok selektívnej analýzy skupín substituovaných fenolov plynovou chromatografiou	<a href="#">doc. Ing. Eva Benická, CSc.</a>
BT	<a href="#">Bc. Diana Markechová</a> Využitie fluorescenčnej spektrometrie pri analýze potravinových vzoriek	<a href="#">doc. Ing. Jana Sádecká, PhD.</a>
DissT	<a href="#">Ing. Milan Střelec</a> Elektrochemické predkoncentračné metódy pre atómovú spektroskopiu	<a href="#">doc. Ing. Ernest Beinrohr, CSc.</a>
DissT	<a href="#">Ing. Michal Kirchner</a> Rýchla plynová chromatografia v kombinácii s hmotnostnou spektrometriou v stopovej a ultrastopovej analýze. Využitie v analýze rezíduí pesticídov	<a href="#">prof. Ing. Eva Matisová, DrSc.</a>
DissT	<a href="#">Ing. Júlia Galandová</a> Vývoj DNA biosenzorov ako analytických skriningových zariadení	<a href="#">prof. Ing. Ján Labuda, DrSc.</a>
DissT	Ing. Dáša Kružlicová Mnohorozmerná analýza potravinárskych komodít	<a href="#">prof. Ing. Ján Mocák, DrSc.</a>
DissT	<a href="#">Ing. Miroslava Lachová</a> Vývoj nových predkoncentračných techník pri stanovení niektorých enantiomérov organických zlúčenín metódou HPLC v biologických vzorkách	<a href="#">prof. Ing. Jozef Lehotay, DrSc.</a>
DissT	<a href="#">Ing. Damián Meričko</a> Termodynamické štúdium enantioseparácie enantiomérov niektorých organických látok použitím HPLC	<a href="#">prof. Ing. Jozef Lehotay, DrSc.</a>

## Selected publications

**Sádecká, Jana** [100%] - Netriová, Jana [neuv.%]: Analytické metódy v klinickej chémii. - : STU v Bratislave, 2008. - 272s. - ISBN 978-80-227-2821-8

**Galandová, Júlia** [50%] - Ziyatdinova, Guzel [30%] - **Labuda, Ján** [20%]: Disposable electrochemical biosensor with multiwalled carbon nanotubes-chitosan composite layer for the detection of deep DNA damage. In: Analytical Sciences. - 24-6 (2008), s. 711-516, [Project number: APVT-20-015904. - 4/0103/06. - 1/2462/05]

**Hroboňová, Katarína** [60%] - **Lehotay, Jozef** [20%] - Čižmárik, Jozef [20%]: Determination of some phenolic acids in propolis by an HPLC method. In: Journal of Liquid Chromatography and Related Technologies. - 31-8 (2008), s. 1213-1226

**Janáčková, Antónia** [25%] - Sádecká, Jana [20%] - **Kohajdová, Zlatica** [10%] - **Špánik, Ivan** [45%]: The Identification of Aroma-Active Compounds in Slovak Brandies Using GC-Sniffing, GC-MS and Sensory Evaluation. In: Chromatographia. - ISSN 0009-5893. - 67 (2008), s. 113-121

**Kirchner, Michal** [30%] - **Húšková, Renáta** [30%] - **Matisová, Eva** [30%] - **Mocák, Ján** [10%]: Fast gas chromatography for pesticide residues analysis using analyte protectants. In: Journal of Chromatography. - ISSN 0021-9673. - A 1186 (2008), s. 271-280

**Krupčík, Ján** [20%] - **Mydlová-Memersheimerová, Janka** [60%] - **Májek, Pavel** [10%] - **Šimon, Peter** [10%] - Armstrong, Daniel W. [1%]: Methods for studying reaction kinetics in gas chromatography, exemplified by using the 1-chloro-2,2-dimethylaziridine interconversion reaction. In: Journal of Chromatography. - ISSN 0021-9673. - A 1186 (2008), s. 144-160, [Project number: APVV-20-035205. - 1/2461/05]

**Mydlová-Memersheimerová, Janka** [84%] - **Krupčík, Ján** [14%] - Korytár, Peter [1%] - Sandra, Pat [1%]: On the use of computer assisted resolution of non-separable peaks in a congener specific polybrominated diphenyl ethers capillary GC analysis. In: Journal of Chromatography. - ISSN 0021-9673. - A 1147 (2007), s. 95-104, [Project number: APVV-20-035205. - 1/2461/05]

**Rievaj, Miroslav** [40%] - **Tomčík, Peter** [20%] - **Jánošíková, Zuzana** [20%] - **Bustin, Dušan** [10%] - Compton, R.G [10%]: Trace Determination of Manganese(II) in Pharmaceutical Supplements by Cathodic Stripping Voltammetry on Bare Carbon Paste Electrode. In: Chemia analityczna. - ISSN 0009-2223. - 53-2 (2008), s. 153-161

**Sádecká, Jana** [60%] - **Májek, Pavel** [30%] - **Tóthová, Jana** [30%]: CE Profiling of Organic Acids in Distilled Alcohol Beverages Using Pattern Recognition Analysis. In: Chromatographia. - ISSN 0009-5893. - 67 (2008), S69-S74

Zapadlo, Michal [40%] - **Benická, Eva** [20%] - **Mydlová-Memersheimerová, Janka** [10%] - Vítková, Kateřina [10%] - **Krupčík, Ján** [20%]: Using ionic liquids for separation in gas chromatography. In: Chemické listy. - ISSN 0009-2770. - Vol. 101 (2007), s. 241-245

Ziyatdinova, Guzel [50%] - **Galandová, Júlia** [30%] - **Labuda, Ján** [20%]: Impedimetric nanostructured disposable DNA-based biosensors for the detection of deep DNA damage and effect of antioxidants. In: International Journal of Electrochemical Science. - ISSN 1452-3981. - 3 (2008), s. 223-235, [Project number: APVT-20-015904. - 4/0103/06]

**Ferancová, Adriana** [60%] - **Labuda, Ján** [40%]: DNA biosensors based on nanostructured materials. In: Nanostructured Materials in Electrochemistry, Eftekhari, Ed., WILEY-VCH Verlag. - , 2008. - ISBN 978-3-527-31876-6. - S. 409-434

**Húšková, Renáta** [34%] - **Matisová, Eva** [33%] - **Kirchner, Michal** [33%]: Fast GC-MS Pesticide Multiresidue Analysis of Apples. In: Chromatographia, ISSN 0009-5893. -68 (2008), s. 49-55

**Mydlová-Memersheimerová, Janka** [58%] - **Krupčík, Ján** [10%] - **Májek, Pavel** [10%] - **Skačáni, Ivan** [10%] - **Jakubík, Tibor** [10%] - Sandra, Pat [1%] - Armstrong, Daniel W. [1%]: Gas chromatographic determination of interconversion energy barrier for dialkyl-2,3-pentadienedioate enantiomers. In: Journal of Chromatography. - ISSN 0021-9673. - A 1150 (2007), s. 124-130, [Project number: APVV-20-035205. - 1/2461/05]

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## Projects

Type of Project	Details 1	Details 2	Code
VEGA	Project number:	2/0093/08	<a href="#">2/0093/08</a>
	Title: (in slovak)	Následky akútnej ischémie mozgu v závislosti od veku zvierat a ich ovplyvnenie pyridoindolmi a inými oxidantami	
	Title:	Consequences of acute brain ischemia in relation to the age of animals and the effect of pyrolidones and other antioxidants.	
	Department:	Department of NMR Spectroscopy and Mass Spectrometry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Doc. Ing. Tibor Liptaj, CSc.	
APVV	Project number:	51-017905	<a href="#">51-017905</a>
	Title: (in slovak)	Molekulové mechanizmy pôsobenia nových liečiv, ovplyvňujúcich oxidačný stres - významný etiopatogenický faktor početných chorôb	
	Title:	Molecular mechanisms of the new drugs affecting oxidative stress - the important factor of the number of illnesses	
	Department:	Department of NMR Spectroscopy and Mass Spectrometry	
	Project duration:	01.03.2006 - 31.03.2009	
	Responsible person:	Doc. Ing. Tibor Liptaj, CSc.	
SP	Project number:	2003SP200280203	<a href="#">2003SP200280203</a>
	Title: (in slovak)	Dobudovanie špičkového laboratória so zameraním na nukleárnu magnetickú rezonanciu	
	Title:	Establishment of the Top-Class Nuclear Magnetic Resonance Laboratory	
	Department:	Department of NMR Spectroscopy and Mass Spectrometry	
	Project duration:	01.06.2003 - 31.12.2010	
	Responsible person:	Doc. Ing. Tibor Liptaj, CSc.	

## List of dissertation (DissT) thesis

Type	Final thesis	Supervisor
DissT	RNDr. Svatava Kašparová	<a href="#">doc. Ing. Tibor Liptaj, CSc.</a>
	Analýza kreatín kinázového systému v patologickom mozgu pomocou prenosu magnetizácie 31-P NMR	

## Selected publications

**Liptaj, Tibor** [100%]: Nuclear Magnetic Resonance. In: Mitochondrial Medicine. - , 2008. - ISBN 978-1-4020-6713-6. - S. 279-302

## INSTITUTE OF INORGANIC CHEMISTRY, TECHNOLOGY AND MATERIALS

### Head of Institute

Prof. Pavel Fellner, DSc.



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### Foreword

The Institute of Inorganic Chemistry, Technology and Materials consists of three departments: Department of Inorganic Chemistry, Department of Inorganic Technology, and Department of Ceramics, Glass and Cement. The Institute offers courses in Basic and Advanced Inorganic Chemistry, Industrial Inorganic Chemistry, Applied Thermodynamics, Kinetics and reactors, Materials Science and Technology, Applied Electrochemistry. Key research topics are as follows: Chemistry of Inorganic Complexes, including investigation of their biological activity, Magnetochemistry, Ceramic materials, Molten Salt Electrochemistry, and Corrosion and Metal Deposition. Important is the cooperation with foreign universities and Slovak industry.

### Teaching activities

*Bachelor's study programs:* Chemistry and Medical Chemistry; Chemical Technologies; Polymer Materials Technologies; Chemical Engineering; Automation, Information Engineering and Management in Chemical and Food Industries

*Master's study programs:* Inorganic Technology; Ceramics, Glass and Cement; Inorganic Chemistry; other - Environmental Chemistry and Technology; Management of Chemical and Food Industries; Fuels Technology and Petrochemistry ; Organic Technology.

### Research profile

Investigation of the structure, composition, chemical, physical and biological properties of coordination compounds Chemistry of molten salts. Theoretical problems of electrowinning of aluminium. Spent nuclear fuel treatment. Surface treatment of metals. Preparation of filling powder to polymer composite. Low-waste technologies. Silicate chemistry. Sol-gel technology, special inorganic binders and glasses. Bioceramics. Microstructure processing of ceramics and glass-ceramic materials.



## Department of of Inorganic Chemistry

Head of Department Prof. Marián Koman, DSc.



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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	COST-0006-06	<a href="#">COST-0006-06</a>
	Title: <i>(in slovak)</i>	Multifunkčné anorganické materiály zložené z koordinačných zlúčenín	
	Title:	Multifunctional Inorganic Materials Assembled from Coordination Compounds	
	Department:	Department of Inorganic Chemistry	
	Project duration:	01.02.2007 - 31.12.2009	
	Responsible person:	Prof. Ing. Roman Boča, DrSc.	

APVV	Project number:	VVCE-0004-07	<a href="#">VVCE-0004-07</a>
	Title: <i>(in slovak)</i>	Magnetoaktivita, elektroaktivita a fotoaktivita koordinačných zlúčenín.	
	Title:	Magnetoactivity, electroactivity and photoactivity of coordination compounds.	
	Department:	Department of Inorganic Chemistry	
	Project duration:	01.09.2008 - 31.12.2010	
	Responsible person:	Prof. Ing. Roman Boča, DrSc.	
APVV	Project number:	APVV-0006-07	<a href="#">APVV-0006-07</a>
	Title: <i>(in slovak)</i>	Magnetotepelné vlastnosti nových nízkorozmerných magnetických materiálov.	
	Title:	Magnetothermal properties of novel low-dimensional magnetic materials.	
	Department:	Department of Inorganic Chemistry	
	Project duration:	01.09.2008 - 31.12.2010	
	Respons. person (STU):	Prof. Ing. Roman Boča, DrSc.	
VEGA	Project number:	1/4454/07	<a href="#">1/4454/07</a>
	Title: <i>(in slovak)</i>	Príprava a štúdium nových „malých molekúl“ s vopred očakávanou štruktúrou a vlastnosťami.	
	Title:	Preparation and study of new "small molecules" having anticipated structure and properties.	
	Department:	Department of Inorganic Chemistry	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Prof. Ing. Marian Koman, DrSc.	
VEGA	Project number:	1/0213/08	<a href="#">1/0213/08</a>
	Title: <i>(in slovak)</i>	Nové magnetické materiály na báze koordinačných zlúčenín.	
	Title:	New magnetic materials based upon coordination compounds.	
	Department:	Department of Inorganic Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	prof. Ing. Roman Boča, DrSc.	
VEGA	Project number:	1/0353/08	<a href="#">1/0353/08</a>
	Title: <i>(in slovak)</i>	Komplexy kovov pre biologické procesy.	
	Title:	Metal complexes for biological processes	
	Department:	Department of Inorganic Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	prof. RNDr. Milan Melník, DrSc.	
Internat. project	Project number:	SK-MAD-004-06	<a href="#">SK-MAD-004-06</a>
	Title:	Vlastnosti roztokov komplexov Cu(II) a Fe(II) s terapeuticky účinnými ligandami.	
	Title: <i>(in slovak)</i>	Vlastnosti roztokov komplexov Cu(II) a Fe(II) s terapeuticky účinnými ligandami.	
	Project duration:	01.01.2007 - 31.12.2008	
	Project coordinator:	Prof. RNDr. Milan Melník, DrSc.	
	Respons. person (STU):	Prof. RNDr. Milan Melník, DrSc.	
	Department:	Department of Inorganic Chemistry	

Internat. project	Project number:	COST D-35 (COST-0006-06)	<a href="#">COST D-35 (COST-0006-06)</a>
	Title:	From molecules to molecular devices	
	Title: <i>(in slovak)</i>	Od molekúl k molekulovým zariadeniam	
	Project duration:	01.01.2007 - 31.12.2009	
	Project coordinator:	Prof. Dr. A. Vlček	
	Respons. person (STU):	Prof. Ing. Roman Boča, DrSc.	
	Department:	Department of Inorganic Chemistry	
Internat. project	Project number:	DAAD 3/2008	<a href="#">DAAD 3/2008</a>
	Title:	D-correlations in Magnetism of Cobalt (II) Compl.	
	Title: <i>(in slovak)</i>	Magnetizmus kobaltnatých komplexov - D-korelácie.	
	Project duration:	01.01.2008 - 31.12.2009	
	Project coordinator:	doc. Ing. Blažena Papánková, PhD.	
	Respons. person (STU):	doc. Ing. Blažena Papánková, PhD.	
	Department:	Department of Inorganic Chemistry	
Internat. project	Project number:	Nem/Slov/DAAD/Darm05	<a href="#">Nem/Slov/DAA D/Darm05</a>
	Title:	Magneto-structural relationships for novel substances and materials.	
	Title: <i>(in slovak)</i>	Magnetoštruktúrne vzťahy pre nové látky a materiály.	
	Project duration:	01.01.2005 - 31.12.2008	
	Project coordinator:	Prof. Dr. d.h.c. Hartmut Fuess	
	Respons. person (STU):	Prof. Ing. Roman Boča, DrSc.	
	Department:	Department of Inorganic Chemistry	
Internat. project	Project number:	Nem/SR/FCHPT1/08	<a href="#">Nem/SR/FCHPT1/08</a>
	Title:	Coordination compounds as multifunctional nanoobjects.	
	Title: <i>(in slovak)</i>	Koordinačné zlúčeniny ako multifunkčné nanoobjekty.	
	Project duration:	01.01.2008 - 31.12.2011	
	Project coordinator:	prof. Ing. Roman Boča, DrSc.	
	Respons. person (STU):	prof. Ing. Roman Boča, DrSc.	
	Department:	Department of Inorganic Chemistry	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Ján Pavlík</a> Application of Models of the Spin Crossover	<a href="#">prof. Ing. Roman Boča, DrSc.</a>
BT	<a href="#">Bc. František Šimo</a> Synthesis and Properties of Kojic Acid Derivatives and their Iron(III) complexes	<a href="#">Ing. Rastislav Šípoš, PhD.</a>
DissT	<a href="#">RNDr. Ján Titiš, PhD.</a> Magnetická anizotropia v jednojadrových komplexoch Ni(II)	<a href="#">prof. Ing. Roman Boča, DrSc.</a>
DissT	<a href="#">Ing. Petra Stachová, PhD.</a> Štúdium nitrobenzoátomeďnatých komplexov s bioligandmi	<a href="#">prof. RNDr. Milan Melník, DrSc.</a>
DissT	<a href="#">Ing. Rastislav Šípoš, PhD.</a> Roztokové vlastnosti komplexov Cu(II) a Fe(III) s bioligandmi	<a href="#">prof. Ing. Jozef Šima, DrSc.</a>

## Selected publications

**Šima, Jozef** [100%]: Photochemical Reactions of Iron(III) Complexes - Classification, Mechanisms And Application. In: Photochemistry Research Progress. - , 2008. - ISBN 978-1-60456-568-3. - 103-160[5,14AH]

Baran, Peter [5%] - **Boča, Roman** [55%] - Chakraborty, Indranil [5%] - Giapintzakis, John [5%] - **Herchel, Radovan** [5%] - Huang, Qing-Li [5%] - McGrady, John [5%] - Raptis, Raphael G. [5%] - Sanakis, Yannis [5%] - Simopoulos, Athanasios [5%]: Synthesis, characterization, and study of octanuclear iron-oxo clusters containing a redox-active Fe<sub>4</sub>O<sub>4</sub>-cubane core. In: Inorganic chemistry. - ISSN 0020-1669. - 47-2 (2008), s. 645-655

**Jorík, Vladimír** [40%] - Scholtyvová, Eva [30%] - **Segľa, Peter** [30%]: Combined powder diffraction and solid-state DFT study of [Cu(2,6-dimethoxynicotinate)<sub>2</sub>(μ-ironicoll)<sub>2</sub>]<sub>n</sub> complex. In: Zeitschrift für Kristallographie. - ISSN 0044-2968. - 223-8 (2008), s. 524-529

**Kavalírová, Jana** [15%] - Korabik, Maria [5%] - **Stachová, Petra** [15%] - **Moncol', Ján** [20%] - Sillanpaa, Reijo [5%] - Lis, Tadeusz [5%] - **Mikloš, Dušan** [5%] - **Melník, Milan** [5%] - Mrozinski, Jerzy [5%] - **Valigura, Dušan** [20%]: Synthesis, spectral and magnetic properties of two different 2-nitrobenzoatocopper(II) complexes containing N,N-diethylnicotinamide. In: Polyhedron. - ISSN 0277-5387. - 27-5 (2008), s. 1333-1342

**Ondrejковиčová, Iveta** [30%] - **Galková, S.** [30%] - Mrozinski, Jerzy [10%] - Klak, Julia [10%] - Lis, Tadeusz [10%] - Olejnik, Zofia [10%]: New polymeric thiocyanatoiron(II) complex with N,N'-diethylnicotinamide - Synthesis, structure, magnetic and spectral properties. In: Inorganica chimica acta. - ISSN 0020-1693. - 361-8 (2008), s. 2483-2490

**Segľa, Peter** [20%] - Miklovič, Jozef [10%] - **Mikloš, Dušan** [10%] - **Titiš, Ján** [10%] - **Herchel, Radovan** [5%] - **Moncol', Ján** [10%] - Kaliňáková, Barbora [10%] - **Hudecová, Daniela** [10%] - Mrázová, Viera [5%] - Lis, Tadeusz [5%] - **Melník, Milan** [5%]: Crystal structure, spectroscopic and magnetic properties, and antimicrobial activities of cobalt(II) 2-methylthionicotinate complex with N-heterocyclic ligands. In: Transition Metal Chemistry. - ISSN 0340-4285. - 33 (2008), s. 967-974

**Šipoš, Rastislav** [30%] - Plánkáne Szabó, Terézia [5%] - Rockenbauer, Antal [5%] - Nagy, Nóra Veronika [5%] - **Šima, Jozef** [30%] - **Melník, Milan** [20%] - Nagypál, István [5%]: Equilibra Of 3-pyridylmethanol with copper(II). Comparative Electron Spin Resonance Study by the Decomposition of Spectra in Liquid and Frozen Solutions. In: Journal of Physical Chemistry A. - ISSN 1089-5639. - 112-41 (2008), s. 10280-10286

Szabó-Plánka, Terézia [14%] - Gyurcsik, Béla [14%] - Nagy, Nóra Veronika [14%] - Rockenbauer, Antal [14%] - **Šipoš, Rastislav** [14%] - **Šima, Jozef** [14%] - **Melník, Milan** [14%]: Complexation of 5-fluorosalicylic acid with copper(II): A pH-potentiometric, UV-vis spectroscopic, and electron spin resonance study by the two-dimensional simulation of spectra. In: Journal of Inorganic Biochemistry. - ISSN 0162-0134. - 102-1 (2008), s. 101-109

## Department of Inorganic Technology

Head of Department Prof. Pavel Fellner, DSc.



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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-0203-07	<a href="#">APVV-0203-07</a>
	Title: <i>(in slovak)</i>	Výskum technológií spracovania dolomitu a magnezitu na hydroxid horečnatý, oxid horečnatý a uhličitan vápenatý.	
	Title:	Development of technology for production of magnesium hydroxide , magnesium oxide and calcium carbonate from dolomite and magnesite.	
	Department:	Department of Inorganic Technology	
	Project duration:	01.06.2008 - 31.12.2010	
	Responsible person:	prof. Ing. Pavel Fellner, DrSc.	
VEGA	Project number:	1/0535/08	<a href="#">1/0535/08</a>
	Title: <i>(in slovak)</i>	Elektrolytické vylučovanie kovov pulzným prúdom.	
	Title:	Electrolytic deposition of metals by pulse current.	
	Department:	Department of Inorganic Technology	
	Project duration:	01.01.2008 - 31.12.2010	
Responsible person:	prof. Ing. Pavel Fellner, DrSc.		
Internat. project	Project number:	Ukr/SR/STU/08	<a href="#">Ukr/SR/STU/08</a>
	Title:	Characterization of Surfaces of Electrodeposited Layers of Refractory Metals.	
	Title: <i>(in slovak)</i>	Charakterizácia povrchov elektrolyticky vylúčených povlakov žiaruvzdorných kovov.	
	Project duration:	01.01.2008 - 31.12.2009	
	Project coordinator:	doc. Ing. Vladimír Danielik, PhD.	
	Respons. person (STU):	doc. Ing. Vladimír Danielik, PhD.	
Department:	Department of Inorganic Technology		
Internat. project	Project number:	SK-UA-0012-07	<a href="#">SK-UA-0012-07</a>
	Title:	Tungsten and molybdenum carbide coatings on fine semiconductor materials from ionic melts	
	Title: <i>(in slovak)</i>	Vylučovanie vrstiev karbidov volfrámu a molybdénu na polovodičových materiáloch v prostredí iónových tavenín.	
	Project duration:	01.01.2008 - 31.12.2009	
	Project coordinator:	prof. Ing. Pavel Fellner, DrSc.	
	Respons. person (STU):	prof. Ing. Pavel Fellner, DrSc.	
Department:	Department of Inorganic Technology		

Internat. project	Project number:	CBP.EAP.CLG 983119	<a href="#">CBP.EAP.CLG 983119</a>
	Title:	Decontamination of chemical warfare agents by environmentally-friendly oxidants iron(IV) and iron(VI)	
	Title: ( <i>in slovak</i> )	Dekontaminácia chemických otravných látok pomocou ekologických oxidantov Fe(IV) a Fe(VI)	
	Project duration:	01.01.2008 - 31.12.2009	
	Project coordinator:	Prof. Virender K. Sharma	
	Respons. person (STU):	Doc. Ing. Ján Híveš, PhD.	
	Department:	Department of Inorganic Technology	

### Bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Beáta Káčová</a> Príprava sodno-draselných železanov	<a href="#">doc. Ing. Ján Híveš, PhD.</a>
BT	<a href="#">Ing. Peter Szobolovszký</a> Palivové články	<a href="#">doc. Ing. Ján Híveš, PhD.</a>
DT	<a href="#">Ing. Zuzana Tomášková</a> Vplyv nečistôt na povrchové napätie elektrolytov používaných pri výrobe hliníka	<a href="#">prof. Ing. Pavel Fellner, DrSc.</a>
DT	<a href="#">Ing. Peter Barborík</a> Vlastnosti fluoridových tavenín vhodných pre jadrovú energetiku	<a href="#">Ing. Marta Ambrová, PhD.</a>
DT	<a href="#">Ing. Tomáš Pavlík</a> Fázové rovnováhy v sústavách s obsahom zlúčenín žiaruvzdorných kovov	<a href="#">doc. Ing. Jana Gabčová, CSc.</a>
DT	<a href="#">Ing. Mária Molnárová</a> Fázový diagram a hustota tavenín sústavy FLINAK - K <sub>2</sub> NbF <sub>7</sub>	<a href="#">prof. Ing. Pavel Fellner, DrSc.</a>
DT	<a href="#">Ing. Patrícia Krívdová</a> Analýza pigmentovaných anodických povlakov hliníka	<a href="#">Ing. Matilda Zemanová, CSc.</a>
DT	<a href="#">Ing. Pavol Lovás</a> Elektrochemické vylučovanie žiaruvzdorných kovov	<a href="#">doc. Ing. Vladimír Danielik, PhD.</a>

### Selected publications

**Ambrová, Marta** [50%] - **Jurišová, Jana** [20%] - **Danielik, Vladimír** [20%] - **Gabčová, Jana** [10%]: On the solubility of lanthanum oxide in molten alkali fluorides. In: Journal of Thermal Analysis and Calorimetry. - ISSN 1418-2874. - ISSN 1388-6150. - 91-2 (2008), s. 569-573, [Project number: APVT-20-000204]

**Híveš, Ján** [25%] - **Mácová, Zuzana** [25%] - **Benová, Michaela** [25%] - **Bouzek, Karel** [25%]: Comparison of the Ferrates(VI) synthesis in the eutectic NaOH-KOH melt and water solution. - , 2008. In: Journal of the Electrochemical Society. - ISSN 0013-4651. - Vol. 155, E113-E119

**Híveš, Ján** [20%] - **Gál, Miroslav** [20%] - **Benová, Michaela** [20%] - **Uher, Dalibor** [20%] - **Turoňová, Andrea** [20%]: Electrochemical Impedance Measurements on a stirred heterogeneous system of conductive/nonconductive powder particles-electrolyte. - , 2008. In: Journal of the Electrochemical Society. - ISSN 0013-4651. - Vol. 155, D542-D546



**Zemanová, Matilda** [unenter %] - **Chovancová, Marta** [unenter %] - Blaho, Pavol [unenter %] - Ušák, Elemír [20%] - **Valtýni, Ján** [unenter %]: Effect of Plating Mode and Complexing Agent on Morphology of Pigmented Anodic Alumina Coating. In: Transactions of the Institute of Metal Finishing. - ISSN 0020-2967. - Vol. 86, No. 2 (2008), s. 109-114, [Project number: 1/2109/05]

**Zemanová, Matilda** [65%] - **Chovancová, Marta** [10%] - **Gáliková, Zuzana** [5%] - Krivošík, Pavol [20%]: Nickel Electrolytic Colouring of Anodic Alumina for Selective Solar Absorbing Films. In: Renewable Energy. - ISSN 0960-1481. - Vol. 33, No. 10 (2008), s. 2303-2310

## Department of Ceramics, Glass and Cement

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



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## Projects

Type of Project	Details 1	Details 2	Code
RAV MŠ SR	Project number:	4/2006/08	<a href="#">4/2006/08</a>
	Title: ( <i>in slovak</i> )	Nové technológie výroby slnečných kolektorov.	
	Title:	New technologies in production of solar collectors	
	Department:	Department of Ceramics, Glass and Cement	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	prof. Ing. Ján Lokaj, PhD.	
VEGA	Project number:	1/0571/08	<a href="#">1/0571/08</a>
	Title: ( <i>in slovak</i> )	Vplyv fosforečnanu trivápenatého a apatitov z alternatívnych palív na zloženie, štruktúru a reaktivitu slinkových minerálov a vlastnosti portlandského cementu.	
	Title:	Effect of tricalcium phosphate and apatites from alternative fuels upon the composition, structure and reactivity of clinker minerals and upon the properties of Portland cement	
	Department:	Department of Ceramics, Glass and Cement	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Martin Palou, PhD.	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Tomáš Ifka</a> Vplyv fosforečnanov vápenatých na vznik alitu v portlandskom slinku	<a href="#">doc. Dr. Ing. Martin Tchingnabé Palou</a>

## Selected publications

**Kuzielová, Eva [35%] - Palou, Martin Tchingnabé [35%] - Lokaj, Ján [15%] - Kozánková, Jana [15%]:** Bioactivity investigation of glass and glass ceramics in Li<sub>2</sub>O-SiO<sub>2</sub>-CaO-P<sub>2</sub>O<sub>5</sub>-CaF<sub>2</sub> system. In: Advances in Applied Ceramics. - ISSN 1743-6753. - 107/4 (2008), s. 203-209, [Project number: APVT-20-015904]

**Palou, Martin Tchingnabé [40%] - Bakoš, Dušan [20%] - Kuzielová, Eva [30%] - Labuda, Ján [10%]:** Potential applications of Glass and Glass-ceramics Based on lithium disilicate as Biomaterials. In: Key engineering materials. - ISSN 1013-9826. - Vol. 361-363 (2008), s. 273-276

## INSTITUTE OF ORGANIC CHEMISTRY, CATALYSIS AND PETROCHEMISTRY

**Head of Institute**

**Prof. Ľubor Fišera, DSc.**



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**Foreword**

Institute of Organic Chemistry, Catalysis and Petrochemistry consists of three departments: Department of Organic Chemistry, Department of Organic Technology and Department of Petroleum Technology and Petrochemistry. It covers wide area of theoretic and applied organic chemistry and offers interesting undergraduate and graduate courses as well as PhD studies in this field.

**Teaching activities**

The institute guarantees the Dipl. Eng. study programs and PhD study programs in the field of organic chemistry, organic technology and petroleum technology from theoretical point of view through laboratory practice and analysis to industrial realisations and projecting.

**Research profile**

Stereospecific syntheses and chiral compounds, chemistry of natural compounds and drugs.  
Research in the field of industrial chemicals with the main accent on modern catalytic systems.  
Chemical specialities (so called fine chemistry – antioxidants, pigments).  
Fuel, refinery technologies and technologies for deep processing of crude oil products.

## Department of Organic Chemistry

Head of Department Prof. Tibor Gracza, DSc.



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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-20-000305	<a href="#">APVV-20-000305</a>
	Title: ( <i>in slovak</i> )	Nové stratégie pre stereoselektívne a asymetrické syntézy biologicky aktívnych prírodných látok.	
	Title:	New strategies for stereoselective and asymmetric syntheses of biologically active natural compounds.	
	Department:	Department of Organic Chemistry	
	Project duration:	01.05.2006 - 30.04.2009	
	Responsible person:	Prof. Ing. Tibor Gracza, DrSc.	
APVV	Project number:	LPP-0238-06	<a href="#">LPP-0238-06</a>
	Title: ( <i>in slovak</i> )	Asymetrická syntéza s využitím templátu pre kryštalizáciu indukovanú asymetrickú transformáciu (CIAT).	
	Title:	Asymmetric synthesis based on a template for crystallization-induced asymmetric transformation (CIAT).	
	Department:	Department of Organic Chemistry	
	Project duration:	01.12.2006 - 30.11.2009	
	Responsible person:	Prof. Ing. Ľubor Fišera, DrSc.	
APVV	Project number:	APVV-0164-07	<a href="#">APVV-0164-07</a>
	Title: ( <i>in slovak</i> )	Nové paládiom katalyzované transformácie v totálnej syntéze biologicky aktívnych prírodných látok a ich analógov.	
	Title:	Novel palladium catalysed transformations in the total synthesis of biologically active natural products and analogues.	
	Department:	Department of Organic Chemistry	
	Project duration:	01.09.2008 - 31.12.2010	
	Responsible person:	Ing. Peter Szolcsányi, PhD.	
APVV	Project number:	APVV-0210-07	<a href="#">APVV-0210-07</a>
	Title: ( <i>in slovak</i> )	Nové efektívne stratégie pre stereoselektívne syntézy analógov biologicky aktívnych indolizidínových alkaloidov z aminokyselín.	
	Title:	New effective strategies for stereoselective syntheses of analogues of biologically active indolizidine alkaloids from amino acids.	
	Department:	Department of Organic Chemistry	
	Project duration:	01.09.2008 - 31.12.2010	
	Responsible person:	Prof. Ing. Štefan Marchalín, DrSc.	
KEGA	Project number:	3/3161/05	<a href="#">3/3161/05</a>
	Title: ( <i>in slovak</i> )	Učebnica APLIKOVANÁ MOLEKULOVÁ SPEKTROSKOPIA.	
	Title:	Textbook Applied molecular spectroscopy.	
	Department:	Department of Organic Chemistry	
	Project duration:	01.01.2005 - 31.12.2008	
	Responsible person:	Doc. Ing. Viktor Milata, CSc.	

VEGA	Project number:	1/3549/06	<a href="#">1/3549/06</a>
	Title: ( <i>in slovak</i> )	Asymetrické a stereoselektívne reakcie. Dipolárne cykloadície, Sm(II)-indukované adície, cyklizácie a oxykarbonylácie v totálnych syntézach prírodných látok a ich analógov.	
	Title:	Asymmetric and Stereoselective Reactions. Dipolar Cycloadditions, Sm(II)-Induced Additions, Cyclizations and Oxycarbonylations in the Total Syntheses of Natural Products and Its Analogues.	
	Department:	Department of Organic Chemistry	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. Ing. Ľubor Fišera, DrSc.	
VEGA	Project number:	1/4453/07	<a href="#">1/4453/07</a>
	Title: ( <i>in slovak</i> )	Štúdium syntézy nových pi-konjugovaných heterocyklických zlúčenín vykazujúcich optoelektronické vlastnosti, špecifickú biologickú aktivitu a apoptózu.	
	Title:	Syntheses directed towards novel pi-conjugated heterocyclic compounds such that show opto-electronic properties, specific bioactivity, and apoptosis.	
	Department:	Department of Organic Chemistry	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Ing. Daniel Végh, DrSc.	
VEGA	Project number:	1/0225/08	<a href="#">1/0225/08</a>
	Title: ( <i>in slovak</i> )	Príprava, biologické a fyzikálnochemické vlastnosti nových heterocyklických zlúčenín s potenciálnym využitím v medicíne, nanotechnológiách, ochrane dreva a papiera a iných aplikáciách.	
	Title:	Preparation, biological and physico-chemical properties of new heterocyclic compounds with potential use in medicine, nanotechnologies, wood and paper protection and other applications.	
	Department:	Department of Organic Chemistry	
	Project duration:	01.01.2008 - 30.11.2010	
	Responsible person:	doc. Ing. Viktor Milata, PhD.	
VEGA	Project number:	1/0629/08	<a href="#">1/0629/08</a>
	Title: ( <i>in slovak</i> )	Syntetické štúdie modifikovaných oxoaminokyselín a ich derivátov.	
	Title:	Synthetic studies of substituted oxoamino acids and their derivatives.	
	Department:	Department of Organic Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Dušan Berkeš, PhD.	



VEGA	Project number:	1/0161/08	<a href="#">1/0161/08</a>
	Title: ( <i>in slovak</i> )	Stereoselektívna syntéza indolizidinolov a ich analógov.	
	Title:	Stereoselective synthesis of indolizidinols and their analogues.	
	Department:	Department of Organic Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	prof. Ing. Štefan Marchalín, DrSc.	
Internat. project	Project number:	SK-FR-0005-07	<a href="#">SK-FR-0005-07</a>
	Title:	Domino reactions in the ionic liquids and their application in the natural product synthesis.	
	Title: ( <i>in slovak</i> )	Domino reakcie v iónových kvapalinách a ich využitie v syntéze prírodných alebo neprírodných produktov.	
	Project duration:	01.01.2008 - 31.12.2009	
	Project coordinator:	prof. Ing. Tibor Gracza, DrSc.	
	Respons. person (STU):	prof. Ing. Tibor Gracza, DrSc.	
	Department:	Department of Organic Chemistry	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Andrej Ďuriš</a> Homológy statínov - syntéza a vlastnosti	<a href="#">doc. Ing. Dušan Berkeš, CSc.</a>
BT	<a href="#">Bc. Robert Kurinec</a> Príprava a reakcie 4-chinolónov	<a href="#">doc. Ing. Viktor Milata, CSc.</a>
BT	<a href="#">Bc. Kristína Plevová</a> Štúdium reakcií 3-fluóranilínu s aktivovanými enolétermi	<a href="#">doc. Ing. Viktor Milata, CSc.</a>
BT	<a href="#">Bc. Katarína Reichová</a> Racemická syntéza kalvínu a epikalvínu	<a href="#">Ing. Peter Szolcsányi, PhD.</a>
BT	<a href="#">Bc. Marianna Ďuranová</a> Syntetická štúdia pallavicinínu a neopallavicinínu	<a href="#">prof. Ing. Tibor Gracza, DrSc.</a>
BT	<a href="#">Bc. Martina Uhrinová</a> CIAT v syntéze chirálnych beta-aminoketónov	<a href="#">doc. Ing. Dušan Berkeš, CSc.</a>
BT	<a href="#">Bc. Katarína Čamborová</a> Homológy PDMP - syntéza a vlastnosti	<a href="#">doc. Ing. Dušan Berkeš, CSc.</a>
DT	<a href="#">Ing. Daniela Moravčíková</a> Intramolekulová Michaelova adícia v syntéze heterocyklických zlúčenín	<a href="#">RNDr. Anna Koreňová, CSc.</a>
BT	<a href="#">Bc. Martin Markovič</a> Asymetrické Pd(II)-katalyzované karbonylácie nenasýtených polyolov	<a href="#">prof. Ing. Tibor Gracza, DrSc.</a>
BT	<a href="#">Bc. Veronika Bottová</a> Cykloadície chirálnych nitrónov s ynolátmi.	<a href="#">Ing. Branislav Dugovič, PhD.</a>
BT	<a href="#">Bc. Veronika Ďurišová</a> Preparation of 2,6-disubstituted piperidines via Pd(II)-catalysed methoxyaminocarbonylation	<a href="#">Ing. Peter Szolcsányi, PhD.</a>

BT	<a href="#">Bc. Daniela Lackovičová</a>	<a href="#">prof. Ing. Tibor Gracza, DrSc.</a>
	Štúdium stereoselektivity adícií vinylmagnéziu bromidu na (2S,3S)-2,3-O-izopropylidén-2,3-dihydroxy-butanal (4-deoxy-2,3-O-izopropylidén-L-treózu	
BT	<a href="#">Bc. Milica Sabolová</a>	<a href="#">prof. Ing. Ľubor Fišera, DrSc.</a>
	Príprava izoxazolidinylových nukleozidov	
BT	<a href="#">Bc. Kristína Illéssová</a>	<a href="#">prof. Ing. Ľubor Fišera, DrSc.</a>
	Využitie izoxazolidinylových derivátov v syntéze prírodných látok	
BT	<a href="#">Bc. Ivan Sivák</a>	<a href="#">Ing. Andrej Kolarovič, PhD.</a>
	Syntéza polyhydroxylovaných 3-acylakrylových kyselín	
DissT	<a href="#">Ing. Eva Hýrošová, PhD</a>	<a href="#">prof. Ing. Ľubor Fišera, DrSc.</a>
	Príprava a využitie modifikovaných nukleozidov	
BT	<a href="#">Ing. Peter Koóš, PhD</a>	<a href="#">prof. Ing. Tibor Gracza, DrSc.</a>
	Asymmetric Palladium (II) – Catalysed Carbonylation of Unsaturated Aminopolyols in the Synthesis of Gaissman-Waiss Lactone. Total Synthesis of Hyacinthacine A <sub>1</sub> and B <sub>2</sub>	

## Selected publications

Bella, Maroš [60%] - **Milata, Viktor** [40%]: New Route for Preparation of Nitrosubstituted 1,2-Phenylenediamines. In: Journal of Heterocyclic Chemistry. - ISSN 0022-152X. - 45-425 (2008), s. 425-427

**Berkeš, Dušan** [20%] - **Jakubec, Pavol** [20%] - **Winklerová, Dagmar** [20%] - **Považanec, František** [20%] - Daich, A. [20%]: CIAT with simultaneous epimerization at two stereocenters. Synthesis of substituted beta-methyl-alpha-homophenylalanines. - , 2007. In: Organic and Biomolecular Chemistry. - 5-1 (2007) (), s. 121-124, [Project number.: 1/2469/05]

**Dugovič, Branislav** [50%] - **Fišera, Ľubor** [50%] - Reissig, H.U. [unenter %]: 1,3-Dipolar Cycloadditions of N-Benzyl-2,3-O-isopropylidene-D-glyceraldehyde Nitrone to Methoxyallene - Control of Site-Diastereoselectivity of Isoxazolidine Formation by Lewis Acids. In: European Journal of Organic Chemistry. - ISSN 1434-193X. - 2008 (2008), s. 277-284

**Hýrošová, Eva** [45%] - **Fišera, Ľubor** [45%] - **Kožíšek, Jozef** [5%] - **Perašínová, Lucia** [5%]: Diastereoselective synthesis of D-erythro- and D-threo-isoxazolidinyl nucleosides. In: Synthesis. - ISSN 0039-7881. - 8 (2008), s. 1233-1240

**Šafář, Peter** [20%] - **Žúžiová, Jozefína** [20%] - **Bobošíková, Mária** [20%] - **Marchalín, Štefan** [20%] - **Prónayová, Nadežda** [10%] - Dalla, V. [5%] - Daich, A. [1%]: Highly diastereoselective approach to novel tetrahydrofuran-fused indolizidinols: a one-step formation of three contiguous stereocenters. In: Tetrahedron: Asymmetry. - ISSN 0957-4166. - 19-4 (2008), 467-475 / 9

**Szolcsányi, Peter** [40%] - **Gracza, Tibor** [30%] - **Špánik, Ivan** [30%]: Short racemic syntheses of calvine and epicalvine. In: Tetrahedron Letters. - ISSN 0040-4039. - 49 (2008), s. 1357-1360, [Project number.: APVT-20-020904. - 2003SP200280203]

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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-99-003105	<a href="#">APVV-99-003105</a>
	Title: <i>(in slovak)</i>	Vysoko účinné katalyzátory pre polyuretány.	
	Title:	Highly-effective catalysts for polyurethanes.	
	Department:	Department of Organic Technology	
	Project duration:	01.05.2006 - 30.11.2008	
	Responsible person:	Matisová Marta, RNDr. CSc.	
	Respons. person (STU):	Doc. Ing. Alexander Kaszonyi, PhD.	
APVV	Project number:	APVV-20-036805	<a href="#">APVV-20-036805</a>
	Title: <i>(in slovak)</i>	Chemické a biotechnologické transformácie glycerolu z obnoviteľných zdrojov na chemické špeciality a bezsírne zložky do palív.	
	Title:	Chemical and biochemical transformations of glycerol from renewable sources to fine chemicals and fuel components without sulfur.	
	Department:	Department of Organic Technology	
	Project duration:	01.05.2006 - 28.02.2009	
	Responsible person:	Doc. Ing. Alexander Kaszonyi, PhD.	
	Project number:	APVV-0446-07	
Title: <i>(in slovak)</i>	Výskum technológie prípravy derivátov difenylamínu ako stabilizátorov polymérov a olejov a postupy na dosiahnutie ich vyššieho účinku.		
Title:	Research of technology of diphenylamine derivatives as inhibitors to polymers and oils and procedures for obtaining of higher effect.		
Department:	Department of Organic Technology		
Project duration:	01.09.2008 - 30.10.2010		
Responsible person:	Ing. Ján Uhlár, CSc.		
Respons. person (STU):	Prof. Ing. Dušan Mravec, PhD.		
APVV	Project number:	APVV-0168-07	<a href="#">APVV-0168-07</a>
	Title: <i>(in slovak)</i>	Výskum efektívnych a ekologických technológií výroby sulfenamidov.	
	Title:	Research of effective and ecological technologies of sulfenamides production.	
	Department:	Department of Organic Technology	
	Project duration:	01.09.2008 - 31.12.2010	
	Responsible person:	Prof. Ing. Milan Hronec, DrSc.	
VEGA	Project number:	1/0768/08	<a href="#">1/0768/08</a>
	Title: <i>(in slovak)</i>	Selektívne procesy pre chemické špeciality.	
	Title:	Selective Processes for Chemical Specialties.	
	Department:	Department of Organic Technology	
	Project duration:	01.01.2008 - 31.12.2010	
Responsible person:	doc. Ing. Magdaléna Štolcová, PhD.		

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Michal Mihálik</a> Štúdium parciálnej oxidácie metánu v plynnej fáze	<a href="#">doc. Ing. Magdaléna Štolcová, PhD.</a>
BT	<a href="#">Bc. Martin Šustek</a> Oxidácia cyklohexánu	<a href="#">Ing. Dana Gašparovičová, PhD.</a>
BT	<a href="#">Bc. Katarína Klimová</a> Zeolity ako katalyzátory v alkylačných procesoch	<a href="#">prof. Ing. Dušan Mravec, CSc.</a>
DT	<a href="#">Ing. Pavol Čepec</a> Príprava éterov glycerolu	<a href="#">prof. Ing. Dušan Mravec, CSc.</a>
DT	<a href="#">Ing. Jozef Lavička</a> Alkylácia difenylamínu	<a href="#">prof. Ing. Dušan Mravec, CSc.</a>
BT	<a href="#">Bc. Monika Bothová</a> Výroba a využitie syntézneho plynu	<a href="#">doc. Ing. Magdaléna Štolcová, PhD.</a>
BT	<a href="#">Bc. Juraj Sághy</a> Etanol - výroba a využitie	<a href="#">prof. Ing. Dušan Mravec, CSc.</a>
DT	<a href="#">Ing. Lucia Hrnčiariková</a> Príprava kyseliny nikotínovej selektívnou oxidáciou 3-pikolínu	<a href="#">prof. Ing. Milan Hronec, DrSc.</a>
DT	<a href="#">Ing. Marián Mondočko</a> Štúdium oxidácie amínov na heterogénnych katalyzátoroch	<a href="#">doc. Ing. Alexander Kaszonyi, CSc.</a>
DT	<a href="#">Ing. Andrej Podmaka</a> Štúdium prípravy aminoéterov, katalyzátorov pri výrobe polyuretánov	<a href="#">doc. Ing. Alexander Kaszonyi, CSc.</a>
BT	<a href="#">Bc. Stanislav Vajíček</a> Propylénoxid -- výroba a použite	<a href="#">doc. Ing. Alexander Kaszonyi, CSc.</a>
BT	<a href="#">Bc. László Seemann</a> Manufacturing of glycerol carbonate. Výroba glycerolkarbonátu	<a href="#">doc. Ing. Alexander Kaszonyi, CSc.</a>
BT	<a href="#">Bc. Andrej Turan</a> Využitie katalytických vlastností zeolitov pre prípravu organických medziproduktov	<a href="#">prof. Ing. Dušan Mravec, CSc.</a>

## Selected publications

**Horváth, Blažej** [34%] - **Hronec, Milan** [33%] - Glaum, Robert [33%]: Epoxidation of propylene in the gas phase. In: Topics in Catalysis. - ISSN 1022-5528. - 46-1/2 (2007), s. 129-135

**Slobodník, Marek** [40%] - **Hronec, Milan** [15%] - **Cvengrošová, Zuzana** [15%] - Bejblová, Martina [15%] - Čejka, Jiří [15%]: Synthesis of pyridines over zeolites in gase phase. In: Collection of Czechoslovak Chemical Communications = Collection des travaux chimiques de Tchechoslovaquie. - ISSN 0010-0765. - 72-5/6 (2007), s. 618-628

**Štolcová, Magdaléna** [40%] - Litterscheid, Christian [10%] - **Hronec, Milan** [40%] - Glaum, Robert [10%]: Bimetallic orthophosphate and pyrophosphate catalysts for direct oxidation of methane to formaldehyde. In: Studies in Surface Science and Catalysis. - ISSN 0021-9517. - 167 (2007), s. 37-42

**Vičko, Miroslav** [25%] - **Cvengrošová, Zuzana** [25%] - **Hronec, Milan** [25%] - Praserthdam, Pyiasan [25%]: Gas-phase dehydrocyclization of diphenylamine. In: Applied catalysis A. - ISSN 0926-860X. - General 328 (2007), s. 183-188

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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-20-036705	<a href="#">APVV-20-036705</a>
	Title: <i>(in slovak)</i>	Využitie odpadových polymérnych a olejových materiálov vo výrobe asfaltov.	
	Title:	The use of waste polymer and oil materials in production of bitumen.	
	Department:	Department of Petroleum Technology and Petrochemistry	
	Project duration:	01.05.2006 - 31.08.2009	
	Responsible person:	Doc. Ing. Pavol Daučík, PhD.	
VEGA	Project number:	1/3575/06	<a href="#">1/3575/06</a>
	Title: <i>(in slovak)</i>	Možnosti spracovania kvapalných a pevných uhľovodíkových odpadov v katalytických štiepnych procesoch spracovania ropných frakcií –fluidnom katalytickom krakovaní a hydrokrakovaní na palivá. Modifikácia a charakterizácia zeolitov a zeolitových katalyzátorov	
	Title:	Possibilities of treatment of liquid and solid hydrocarbon wastes in catalytic cracking processes of petroleum fractions treatment – fluid catalytic cracking and hydrocracking to fuels. Modification and characterization of zeolites and zeolite catalysts	
	Department:	Department of Petroleum Technology and Petrochemistry	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Doc. Ing. Agáta Smiešková, CSc.	
VEGA	Project number:	1/3587/06	<a href="#">1/3587/06</a>
	Title: <i>(in slovak)</i>	Alternatívne suroviny v uhľovodíkových technológiách na výrobu ekologických palív a petrochemikálií.	
	Title:	Alternative feedstocks in hydrocarbon technologies in the production of ecological fuels and petrochemicals.	
	Department:	Department of Petroleum Technology and Petrochemistry	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. Ing. Martin Bajus, DrSc.	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Head of thesis
DT	<a href="#">Ing. Zdenka Tadiálová</a>	<a href="#">doc. Ing. Pavol Hudec, CSc.</a>
	IČ-spektrá kyslých centier zeolitov (IR-spectra of Acid Centers of Zeolites)	
DT	<a href="#">Ing. Milan Hrnčírík</a>	<a href="#">prof. Ing. Martin Bajus, DrSc.</a>
	Koksovanie pri kopyrolýze zmesných plastov s primárnym benzínom (Coking at Copyrolysis of Mixed Polymers with Primary Gasoline)	
BT	<a href="#">Bc. Bronislav Novák</a>	<a href="#">doc. Ing. Pavol Daučík, PhD.</a>
	Stanovenie vody v ropných produktoch (Determination of Water in Petroleum Products)	

## Selected publications

**Hájeková, Elena** [30%] - **Mlynková, Božena** [20%] - **Bajus, Martin** [30%] - **Špodová, Lenka** [20%]: Copyrolysis of naphtha with polyalkene cracking products, the influence of polyalkene mixtures composition on product distribution. In: Journal of analytical and applied pyrolysis. - ISSN 0165-2370. - 79 (2007), p. 196-204

**Klepáčová, Katarína** [20%] - **Mravec, Dušan** [30%] - **Kaszoniy, Alexander** [20%] - **Bajus, Martin** [30%]: Etherification of glycerol and ethylene glycol by isobutylene. In: Applied catalysis A. - ISSN 0926-860X. - General 328 (2007), p. 1-13

Mockovčiaková, Annamária [20%] - Matík, Marek [20%] - Orolínová, Zuzana [20%] - **Hudec, Pavol** [20%] - Kmecová, Erika [20%]: Structural characteristics of modified natural zeolites. In: Journal of Porous Materials. - ISSN 1380-2224. - 2008 (2008), p. 559-564

Schneider, Peter [40%] - Šolcová, Olga [30%] - **Hudec, Pavol** [30%]: Pore-volume and surface area in microporous-mesoporous solids. In: Microporous and mesoporous materials. - ISSN 1387-1811. - 115 (2008), p. 491-496

**Daučík Pavol** [25%] - **Višňovský Jozef** [25%] – **Ambro Jozef** [25%] - **Hájeková, Elena** [25%] : Temperature Dependence of the Viscosity of Hydrocarbon Fractions. In: Acta Chimica Slovaca - Vol. 1 (2008), p. 43-57

Soják, Ladislav [20%] - Kubinec, Róbert [10%] - Jurdáková, Helena [10%] - **Hájeková, Elena** [30%] - **Bajus, Martin** [30%]: High resolution gas chromatographic-mass spectrometric analysis of polyethylene and polypropylene thermal cracking products. In: Journal of analytical and applied pyrolysis. - ISSN 0165-2370. - 78 (2007), p. 387-399



## INSTITUTE OF PHYSICAL CHEMISTRY AND CHEMICAL PHYSICS

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### Foreword

Institute of Physical Chemistry and Chemical Physics was formed in 2006 by integrating the Department of Physical Chemistry and the Department of Chemical Physics. Director of the Institute is Prof. S. Biskupič. Department of Physical Chemistry was established shortly after founding Slovak University of Technology in the course 1940/41. MUDr. J. Skotnický, Prof. Dr. D. Ilkovič and Prof. B. Stehlík were the first heads and lecturers of the Department. Since 1952, the Department was headed for 35 years by Prof. V. Kellö, then by Prof. S. Biskupič, Assoc. Prof. P. Kovařík, Prof. L. Valko, Prof. A. Staško and again Prof. S. Biskupič. At present, the Department is headed by Prof. P. Šimon. The staff of the Department counts 36 people including teachers, scientific workers and technicians.

The Department of Chemical Physics was constituted at the end of 1977 from the former dept. of Radiochemistry and Radiation Chemistry. Staff of the department was formed partly from the staff of the former department and completed with physics-oriented teachers from other faculty departments and from the Dept. of Physics of the Faculty of Machine Engineering. The first head of the Department was Prof. Ing. Štefan Varga, who guided the department until 1984. During that time, the student laboratories were created, textbooks written and gradually also the scientific orientation of the department was formed. The next head of the Department, during the years 1984 - 1990, was Assoc. Prof. Stanislav Košina, in the period 1990-1993, Assoc. Prof. Viliam Laurinc, in the period 1994-1999, Prof. Fedor Valach, and in the years 2000-2007 Assoc. Prof. Viliam Laurinc. At present, the Department is headed by Assoc. Prof. P. Fedorko.

### Teaching activities

The institute guarantees the Dipl. Eng. study program Nutrition and Health Protection, and Medical Engineering, which were found to be very attractive for students, and PhD study programs Biochemistry, and Nutrition and Health Protection. The key subjects taught at the Institute are Biology, Biochemistry (7 courses), Microbiology (4 courses), Molecular biology and genetics (2 courses), Immunochemistry, Cell Cultures, Principles of Nutrition, Food chemistry (2 courses), Food analysis (2 courses), etc. In education, our main effort is to develop the abilities and critical thinking of our students. The basic courses of General

Physics and Physical Chemistry are fundamental for studying other branches of chemistry. Besides the basic courses, we deliver also courses for the students specialised in Physical Chemistry. The students graduated in Physical Chemistry are educated in modern theoretical chemistry as well as its practical applications. We guarantee three PhD programs in Physical Chemistry, Chemical Physics and Theoretical and Computer Chemistry.

### Research profile

The Institute of Physical Chemistry and Chemical Physics belongs to the most productive institutes at STU. The workers of the Institute publish approximately 60 CC publications yearly and their papers are cited about 500 times per year. The following research groups work at the Institute: Magnetic resonance methods (EPR and NMR), Electrical properties of conducting polymers and carbon nanotubes, Molecular distillation, X-ray structural analysis and statistics in the study of monocrystals, Theoretical and computational chemistry, Thermal analysis and chemical kinetics. A number of great persons of science have their origin at our Institute, among them Prof. I. Hubáč, Prof. V. Kvasnička, Prof. L. Lapčík, Prof. S. Miertuš, Prof. M. Remko, Prof. L. Omelka and others.

## Department of Physical Chemistry

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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-20-037105	<a href="#">APVV-20-037105</a>
	Title: ( <i>in slovak</i> )	Kvapalné palivá na báze rastlinných olejov a živočíšnych tukov pre dopravu a energetiku.	
	Title:	Liquid fuels based on vegetable oils and animal fats for transport and energetics.	
	Department:	Department of Physical Chemistry	
	Project duration:	01.05.2006 - 30.04.2009	
	Responsible person:	Doc. Ing. Ján Cvengroš, DrSc.	
APVV	Project number:	APVV-0055-07	<a href="#">APVV-0055-07</a>
	Title: ( <i>in slovak</i> )	Spektroskopická analýza prírodných a syntetických derivátov chinolínov s fotochemickými a fotobiologickými vlastnosťami	
	Title:	Spectroscopic analysis of natural and synthetic quinoline derivatives with photochemical and photobiological properties.	
	Department:	Department of Physical Chemistry	
	Project duration:	01.06.2008 - 31.12.2010	
	Responsible person:	prof. Ing. Vlasta Brezová, DrSc.	
APVV	Project number:	APVV-0093-07	<a href="#">APVV-0093-07</a>
	Title: ( <i>in slovak</i> )	Molekulový dizajn modelových systémov "modrých" mednatých proteínov ako zdrojov energie.	
	Title:	Molecular design of blue copper model system as power resources	
	Department:	Department of Physical Chemistry	
	Project duration:	01.09.2008 - 31.12.2010	
	Responsible person:	Prof. Ing. Stanislav Biskupič, DrSc.	

other	Project number:	P 7191/07	<a href="#">P 7191/07</a>
	Title: ( <i>in slovak</i> )	Spôsob diagnostikovania stavu motorového oleja z prevádzky motorov spaľujúcich čistý rastlinný olej a jeho regenerácia	
	Title:	Diagnostics method for the state of motor oils from operation on pure plant oils and its regeneration.	
	Department:	Department of Physical Chemistry	
	Project duration:	01.01.2008 - 30.11.2008	
	Responsible person:	Doc. Ing. Ján Cvengroš, DrSc.	
KEGA	Project number:	3/6285/08	<a href="#">3/6285/08</a>
	Title: ( <i>in slovak</i> )	Vzdelávanie stredoškolských učiteľov chémie a biológie zamerané na osvojenie si nových poznatkov z oblasti prírodných vied, chemických a potravinárskych technológií a ekológie a na výučbu prírodovedných predmetov na stredných školách pomocou integrovaný	
	Title:	Education of the secondary schools teachers of chemistry and biology aimed at new information from the branches of natural sciences, chemical and food technologies and teaching natural-science subjects at secondary schools.	
	Department:	Department of Physical Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Pavel Kovařík, PhD	
VEGA	Project number:	1/3566/06	<a href="#">1/3566/06</a>
	Title: ( <i>in slovak</i> )	Vývoj a aplikácia výpočtových metód na štúdium elektrónovej štruktúry molekulových systémov	
	Title:	Development and applications of computational methods of the study of the electronic structure of molecular systems.	
	Department:	Department of Physical Chemistry	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. Ing. Stanislav Biskupič, DrSc.	
VEGA	Project number:	1/3579/06	<a href="#">1/3579/06</a>
	Title: ( <i>in slovak</i> )	Spektroskopická analýza štruktúry a reaktivity radikálov a komplexov kovov v chemických, biologických a fotochemických systémoch.	
	Title:	Spectroscopical analysis of structure and reactivity of radicals and transition metals complexes in chemical, biological and photochemical systems.	
	Department:	Department of Physical Chemistry	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. Ing. Vlasta Brezová, DrSc.	

VEGA	Project number:	1/3567/06	<a href="#">1/3567/06</a>
	Title: ( <i>in slovak</i> )	Materiály – fyzikálnochemické metódy štúdia ich vlastností	
	Title:	Materials – physico-chemical methods of thier study.	
	Department:	Department of Physical Chemistry	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. Ing. Peter Šimon, DrSc.	
VEGA	Project number:	1/0575/08	<a href="#">1/0575/08</a>
	Title: ( <i>in slovak</i> )	Syntéza, spektroskopické vlastnosti a biologická aktivita komplexných zlúčenín prechodných prvkov s SOD aktivitou.	
	Title:	Synthesis, spectral properties and biological activity of metal-dependent SOD mimetic compounds	
	Department:	Department of Physical Chemistry	
	Project duration:	01.01.2008 - 30.12.2010	
	Responsible person:	doc. Ing. Marián Valko, DrSc.	
VEGA	Project number:	1/0817/08	<a href="#">1/0817/08</a>
	Title: ( <i>in slovak</i> )	Extrakcia chemických a fyzikálnochemických vlastností z difrakčných dát.	
	Title:	Extraction of chemical and physicochemical properties from diffraction data	
	Department:	Department of Physical Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Jozef Kožíšek, PhD.	
Internat. project	Project number:	NMP3-CT-2004-500311	<a href="#">NMP3-CT-2004-500311</a>
	Title:	Innovation and sustainable development in the fibre based packaging value chain.	
	Title: ( <i>in slovak</i> )	Inovácia a trvalo udržateľný rozvoj v hodnotovom reťazci obalov založených na celulózových vláknach.	
	Project duration:	01.06.2004 - 31.05.2008	
	Project coordinator:	Thomas Johannesson	
	Respons. person (STU):	Prof. Ing. Peter Šimon, DrSc.	
	Department:	Department of Physical Chemistry	
Internat. project	Project number:	3 Fokoop DEU/1063827	<a href="#">3 Fokoop DEU/1063827</a>
	Title:	In situ spectroelectrochemistry of new materials with extended pi-system for applications in optoelectronic devices, sensors and catalysis.	
	Title: ( <i>in slovak</i> )	In situ spektroelektrochémia nových materiálov s konjugovaným pí-systémom pre optoelektroniku, senzoriku a katalýzu.	
	Project duration:	01.01.2007 - 31.12.2009	
	Project coordinator:	Prof. Dr. Lothar Dunsch	
	Respons. person (STU):	Doc. Ing. Peter Rapta, DrSc.	
	Department:	Department of Physical Chemistry	

Internat. project	Project number:	Bil/Austr/SR/STU/06	<a href="#">Bil/Austr/SR/STU/06</a>
	Title:	The extraction of microscopic information on electronic structure of molecules from experimental diffraction data.	
	Title: ( <i>in slovak</i> )	Extrakcia mikroskopických informácií o elektrónovej štruktúre molekúl z experimentálnych difrakčných údajov.	
	Project duration:	01.01.2006 - 31.12.2008	
	Project coordinator:	Prof. Dylan Jayatilaka	
	Respons. person (STU):	Prof. Ing. Stanislav Biskupič, DrSc.	
	Department:	Department of Physical Chemistry	
Internat. project	Project number:	Mex/SR/STU/08	<a href="#">Mex/SR/STU/08</a>
	Title:	Advanced Organic materials in electro-optical applications (Solar cell materials)	
	Title: ( <i>in slovak</i> )	Perspektívne organické materiály v elektro-optických aplikáciách (materiály pre solárne články).	
	Project duration:	01.01.2008 - 31.12.2010	
	Project coordinator:	doc. Ing. Jozef Kožíšek, PhD.	
	Respons. person (STU):	doc. Ing. Jozef Kožíšek, PhD.	
	Department:	Department of Physical Chemistry	
Internat. project	Project number:	SK-AT-00106	<a href="#">SK-AT-00106</a>
	Title:	Anti-aging at the molecular level: Antioxidants in Slovak and Austrian wines.	
	Title: ( <i>in slovak</i> )	Inhibícia starnutia na molekulovej úrovni: Antioxidanty v slovenských a rakúskych vínach.	
	Project duration:	01.01.2006 - 30.06.2008	
	Project coordinator:	Prof. Georg Gescheidt, PhD., D.Sc.	
	Respons. person (STU):	Prof. Ing. Vlasta Brezová, DrSc.	
	Department:	Department of Physical Chemistry	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Michal Ulčák</a>	<a href="#">doc. Ing. Ján Cvengroš, DrSc.</a>
	Príprava a vlastnosti diménych metylesterov mastných kyselín	
BT	<a href="#">Bc. Lukáš Gaľa</a>	<a href="#">doc. RNDr. Milan Mazúr, DrSc.</a>
	NMR spektroskopia hroznového muštu, burčiaku a mladého vína	
BT	<a href="#">Bc. Miroslava Bobeničová</a>	<a href="#">Ing. Dana Dvoranová, PhD.</a>
	EPR štúdium fotochemických reakcií irinotecanu	
BT	<a href="#">Bc. Mariana Slovákova</a>	<a href="#">doc. Ing. Peter Rapta, DrSc.</a>
	Antioxidačné testy vzoriek vín račianskej oblasti pomocou EPR a UV/VIS/NIR spektroskopie	
BT	<a href="#">Bc. Andrea Černá</a>	<a href="#">Ing. Zuzana Cibulková, PhD.</a>
	Štúdium termooxidačnej stability polymérov využitím DSC metódy	

BT	<a href="#">Bc. Radka Javureková</a> Použitý fritovací olej pri výrobe alternatívnych palív pre dieselové motory	<a href="#">Ing. Andrea Kleinová</a>
BT	<a href="#">Bc. Zuzana Krajnáková</a> Antioxidačné a radikál zhášajúce účinky nových liečiv na báze stobadinu a ich oxidačno-redukčné reakcie	<a href="#">doc. Ing. Peter Rapta, DrSc.</a>
DissT	<a href="#">Ing. Martin Hudák</a> Výpočet nábojových hustôt z röntgeno-štruktúrnych dát	<a href="#">Prof. Ing. Stanislav Biskupič, DrSc.</a>
DissT	<a href="#">Ing. Martin Gróf</a> Štúdium štruktúry organických molekúl spektroskopickými metódami a RTG analýzou	<a href="#">doc. Ing. Anton Gatial, CSc.</a>
DissT	<a href="#">Ing. Michal Zalibera</a> Využitie EPR a UV-Vis spektroskopie pri sledovaní účinku antioxidantov ako zhášačov radikálov tvorených organizmami v stresových podmienkach	<a href="#">doc. Ing. Peter Rapta, DrSc.</a>
DissT	<a href="#">Ing. Marián Gall</a> Kvantovo-chemické štúdium fosfazénov	<a href="#">doc. Ing. Martin Breza, CSc.</a>

## Selected publications

**Gall, Marián** [90%] - **Breza, Martin** [10%]: On the structure of hexahydroxocyclotriphosphazene. In: Journal of Molecular Structure (Theochem). - ISSN 0166-1280. - Vol. 861 (2008), s. 33-38

**Gróf, Martin** [35%] - **Gatial, Anton** [20%] - **Milata, Viktor** [15%] - **Prónayová, Nadežda** [10%] - **Sümmchen, L.** [10%] - **Salzer, Reiner** [10%]: Conformational studies of 3-aminomethylene-2,4-pentanedione using vibrational and NMR spectra, and ab initio calculations. In: Journal of Molecular Structure. - ISSN 0022-2860. - 843 (2007), s. 1-13

**Kleinová, Andrea** [25%] - **Fodran, Peter** [25%] - **Brňčalová, Lucia** [25%] - **Cvengroš, Ján** [25%]: Substituted esters of stearic acid as potential lubricants. In: Biomass and Bioenergy. - 32 (2008), s. 366-371

**Kleinová, Miroslava** [17%] - **Hewitt, M.** [17%] - **Brezová, Vlasta** [15%] - **Madden, J.C.** [17%] - **Cronin, Mark T.D.** [17%] - **Valko, Marián** [17%]: Antioxidant properties of carotenoids: QSAR prediction of their redox potentials. In: General Physiology and Biophysics. - ISSN 0231-5882. - 26-2 (2007), s. 97-103, [Project number: 1/2450/05. - 1/3579/06. - APVT-20-004504]

**Kožíšek, Jozef** [50%] - **Diaz, Jesús García** [25%] - **Albor Atzimba, García** [25%]: Poly[aquadi- $\mu$ (3)-dicyanamido-di- $\mu$ (2)-dicyanamido-dicopper(II)]. In: Acta Crystallographica Section E. - ISSN 1600-5368. - E63 (2007), I125-I126

**Paligová, Jarmila** [33%] - **Joríková, Ľudmila** [33%] - **Cvengroš, Ján** [34%]: Study of FAME stability. In: Energy & Fuels. - 22 (2008), s. 1991-1996

**Perašinová, Lucia** [50%] - **Andicsová, Anita** [20%] - **Végh, Daniel** [10%] - **Kožíšek, Jozef** [10%]: 5-[(9H-Fluoren-9-ylidene)methyl]furan-2-carbonitrile. In: Acta Crystallographica Section E. - ISSN 1600-5368. - (2008), O273

**Rapta, Peter** [25%] - **Popov, A.Alexej** [25%] - **Yang, Shangfeng** [25%] - **Dunsch, Lothar** [25%]: The Charged States of Sc<sub>3</sub>N@C<sub>68</sub>: An in situ Spectroelectrochemical Study of the Radical Cation and Radical Anion of a Non-IPR Fullerene. In: Journal of Physical Chemistry A. - ISSN 1089-5639. - 112-26 (2008), s. 5858-5865

**Šimon, Peter** [25%] - **Hynek, David** [25%] - **Malíková, Marta** [25%] - **Cibulková, Zuzana** [25%]: Extrapolation of accelerated thermooxidative tests to lower temperatures applying non-Arrhenius temperature functions. In: Journal of Thermal Analysis and Calorimetry. - ISSN 1418-2874. - ISSN 1388-6150. - 93-3 (2008), s. 817-821, [Project number: 1/3567/06]



**Štaško, Andrej** [30%] - **Brezová, Vlasta** [20%] - **Mazúr, Milan** [20%] - **Čertík, Milan** [10%] - **Kaliňák, Michal** [10%] - Gescheidt, Georg [10%]: A comparative study on the antioxidant properties of Slovakian and Austrian wines. In: LWT Food Science and Technology. - ISSN 0023-6438. - 41/10 (2008), s. 2126-2135, [Project number: APVT-20-004504. - SK-AT-00106. - 1/2390/05. - 2003 SP 20/028 02 03]

**Zalibera, Michal** [40%] - **Rapta, Peter** [30%] - Dunsch, Lothar [30%]: The power of in-situ ESR spectroelectrochemistry in the analysis of a C84 fullerene isomer. In: Electrochemistry Communications. - 10-6 (2008), s. 943-946

**Cvengroš, Ján** [20%] - **Paligová, Jarmila** [20%] - **Cvengrošová, Zuzana** [20%] - Pokorný, Juraj [20%] - Rotheneder, Heinz [20%]: Patent SK 286 091, 15.1.2008. - , 2008. - 1s.

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## Projects

Type of Project	Details 1	Details 2	Code
other	Project number:	IT-5c	<a href="#">IT-5c</a>
	Title: <i>(in slovak)</i>	Tvorba multimediálnych prostriedkov a ich aplikácia vo výučbe fyziky.	
	Title:	Creation of multimedia tools and their application in education of physics.	
	Department:	Department of Chemical Physics	
	Project duration:	01.04.2007 - 28.02.2008	
	Responsible person:	Doc. RNDr. Oľga Holá, PhD.	
KEGA	Project number:	3/3062/05	<a href="#">3/3062/05</a>
	Title: <i>(in slovak)</i>	Multimediálny program vzdelávania v oblasti ionizujúceho žiarenia a radiačnej ochrany.	
	Title:	Multimedia program of education in ionizing radiation and radiation protection.	
	Department:	Department of Chemical Physics	
	Project duration:	01.01.2005 - 31.12.2008	
	Responsible person:	Doc. RNDr. Karol Holý, PhD.	
	Respons. person (STU):	Doc. RNDr. Oľga Holá, PhD.	
VEGA	Project number:	1/3036/06	<a href="#">1/3036/06</a>
	Title: <i>(in slovak)</i>	Výskum elektro-optických vlastností nových organických zlúčenín ako prekursorov pre prípravu materiálov aplikovateľných v elektronike a v nanotechnológii.	
	Title:	Research of elektro-optical properties of novel organic materials as precursors with potential application in electronic and nanotechnology.	
	Department:	Department of Chemical Physics	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Doc. Ing. Vladimír Lukeš, PhD.	
VEGA	Project number:	1/3572/06	<a href="#">1/3572/06</a>
	Title: <i>(in slovak)</i>	Modelovanie štruktúrnych fragmentov obsahujúcich atómy prechodných prvkov v kryštálových štruktúrach metaloproteinov.	
	Title:	Molecular modelling of the structural fragments containing the transition element atoms in the crystal structures of metalloproteins.	
	Department:	Department of Chemical Physics	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. Ing. Fedor Valach, DrSc.	

VEGA	Project number:	1/0774/08	<a href="#">1/0774/08</a>
	Title: ( <i>in slovak</i> )	Transportné vlastnosti vodivých polymérov a sietí z uhlíkových nanotrubic.	
	Title:	Transport properties of conducting polymers and carbon nanotube networks.	
	Department:	Department of Chemical Physics	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Pavol Fedorko, PhD.	
Internat. project	Project number:	DAAD 4/2008	<a href="#">DAAD 4/2008</a>
	Title:	Transport studies in carbon nanotube networks.	
	Title: ( <i>in slovak</i> )	Štúdium transportu v sieťach z uhlíkových nanotrubic.	
	Project duration:	01.01.2008 - 31.12.2009	
	Project coordinator:	doc. Ing. Pavol Fedorko, PhD.	
	Respons. person (STU):	doc. Ing. Pavol Fedorko, PhD.	
Internat. project	Project number:	SK-FR-0001-07	<a href="#">SK-FR-0001-07</a>
	Title:	Electronic transport in doped conjugated systems. Theory and experiment.	
	Title: ( <i>in slovak</i> )	Elektrónový transport v dopovaných konjugovaných systémoch. Teória a experiment.	
	Project duration:	01.01.2008 - 31.12.2009	
	Project coordinator:	doc. Ing. Pavol Fedorko, PhD.	
	Respons. person (STU):	doc. Ing. Pavol Fedorko, PhD.	
Internat. project	Project number:	SK-AT-00506	<a href="#">SK-AT-00506</a>
	Title:	Theoretical study of photo-physical properties of small substituted aromatic molecules with TD-DFT and CEO methods.	
	Title: ( <i>in slovak</i> )	Teoretické štúdium foto-fyzikálnych vlastností malých substituovaných päť a šesťčlánkových aromatických molekúl metódami TD-DFT a CEO.	
	Project duration:	01.01.2006 - 30.06.2008	
	Project coordinator:	Dr. Anne-Marie Kelterrer	
	Respons. person (STU):	Doc. Ing. Vladimír Lukeš, PhD.	
Department:	Department of Chemical Physics		

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
BT	<a href="#">Bc. Ivan Hrablay</a> Experimentálne a teoretické štúdium foto-fyzikálnych vlastností derivátov antrónu s tiofénom a benzénom	<a href="#">doc. Ing. Vladimír Lukeš, PhD.</a>
DissT	<a href="#">Ing. Michal Ilčin</a> Rozvoj a aplikácia teoretických metód na štúdium slabých medzimolekulových interakcií	<a href="#">doc. RNDr. Viliam Laurinc, CSc.</a>

## Selected publications

**Ilčin, Michal** [30%] - **Lukeš, Vladimír** [30%] - **Laurinc, Viliam** [20%] - **Biskupič, Stanislav** [20%]: Ab initio study of Hg...H<sub>2</sub> van der Waals complex. In: Chemical Physics. - ISSN 0301-0104. - 349 (2008), s. 32-36

**Klein, Erik** [50%] - **Lukeš, Vladimír** [50%]: DFT/B3LYP Study of the substituent effect on the reaction enthalpies of the individual steps of sequential proton loss electron transfer mechanism of phenols antioxidant action: Correlation with phenolic C-O bond length. In: Journal of Molecular Structure (Theochem). - ISSN 0166-1280. - Vol. 805/1-3 (2007), s. 153-160, [Project number: APVT-20-005004. - 1/2021/05. - 1/3566/06]

**Lukeš, Vladimír** [15%] - **Matuszná, Katarína** [15%] - **Rapta, Peter** [15%] - **Šolc, Roland** [10%] - **Dunsch, Lothar** [15%] - **Aquino, Adelia** [10%] - **Lischka, Hans** [10%]: Experimental and Theoretical Study of Model Ladder Fluoranthenopyracylene with Two-dimensional pi-conjugation upon Charging: Structure and Optical Properties. In: Journal of Physical Chemistry C. - ISSN 1932-7447. - Vol. 112 (2008), s. 3949-3958

**Matuszná, Katarína** [40%] - **Breza, Martin** [40%] - **Pálszegi, Tibor** [20%]: On electronic structure of neutral and monocharged 9,9--spirobifluorene. In: Journal of Molecular Structure (Theochem). - ISSN 0166-1280. - Vol. 851 (2008), s. 277-283

**Rimarčík, Ján** [30%] - **Lukeš, Vladimír** [20%] - **Klein, Erik** [30%] - **Griesser, Markus** [10%] - **Kelterer, Anne-Marie** [10%]: Theoretical study of structure and electronic properties of cyano-substituted pyrroles. In: Chemical Physics. - ISSN 0301-0104. - 353 (2008), s. 177-184, [Project number: 1/3036/06. - APVT-20-005004]

## INSTITUTE OF POLYMER MATERIALS

### Head of Institute

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### Foreword

The Institute of Polymer Materials consists of four departments:

- Department of Chemical Technology of Wood, Pulp and Paper
- Department of Fibres and Textile Chemistry
- Department of Graphic Arts Technology and Applied Photochemistry
- Department of Plastics and Rubber

The history of the Institute dates back to 1943, when the Department of wood technology and the Department of technology of organic substances were established and first lectures connected with polymer chemistry and polymer technology were opened. The Institute occupies of specific position within the Slovak Republic and relates to wide spectrum of chemical, wood, paper, textile, rubber, plastics and graphic arts industries.

### Teaching activities

The Institute of Polymer Materials has a widely oriented programme leading to the development of basic scientific fields in polymer chemistry, production and processing technology of plastics and rubber, fiber and textile technology, wood, pulps and paper technology and graphic arts and printing technology. Institute offers study in two bachelor courses:

- Technology of Polymer Materials
- Plastics in Engineering and Technology of Plastics Processing

three master courses:

- Natural and Synthetic Polymers
- Polymers in Automotive Industry and
- Conservation Science and Technology

and two PhD courses:

- Technology of Polymer Materials and
- Macromolecular Chemistry

### Research profile

Preservation, stabilization and conservation of traditional carriers of information (books and archival documents) and graphical objects of cultural heritage. Surface treatment and modification of reinforcing materials, paper, textile materials and plastic films. Plasma treatment and applied plasma technology. Optical properties and spectroscopy of structures of graphical images. Polymer blends and composites based on biopolymers and biodegradable materials. Polymer nanocomposites and composite materials based on rubber with magnetic fillers. Modification of fibres for multifunctional textiles. Renewable resources - materials and energy. Wood, pulp and paper science and technology. Recycling of Polymer Waste.

## Department of Chemical Technology of Wood, Pulp and Paper

Head of Department Prof. Svetozár Katuščák, PhD.



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## Projects

Type of project	Details 1	Details 2	Code
VEGA	Project number:	1/0770/08	<a href="#">1/0770/08</a>
	Title: ( <i>in slovak</i> )	Štúdium morfológických, chemických a fyzikálno-mechanických zmien lignocelulóзовých materiálov pri recyklácii.	
	Title:	Study of morphological, chemical and physico-mechanical changes of lignocellulosic materials during recycling	
	Department:	Department of Chemical Technology of Wood, Pulp and Paper	
	Project duration:	01.01.2008 - 30.12.2010	
	Responsible person:	doc. Ing. Milan Vrška, PhD.	
VEGA	Project number:	1/3567/06	1/3567/06
	Title: ( <i>in slovak</i> )	Materiály - fyzikálno-chemické metódy ich štúdiá	
	Title:	MATERIALS – physico-chemical methods of their study	
	Department:	Department of Chemical Technology of Wood, Pulp and Paper	
	Project duration:	01. 01. 2006 - 31. 12. 2008	
	Responsible person:	Ing. Igor Šurina, PhD.	

State prog.	Project number:	2003SP200280301	2003SP20028 0301
	Title: ( <i>in slovak</i> )	Záchrana, stabilizácia a konzervovanie tradičných nosičov informácií v Slovenskej republike KNIHA SK	
	Title:	Preservation, Stabilization and Conservation of Traditional Information Carriers of the Slovak Republic KNIHA SK	
	Department:	Department of Chemical Technology of Wood, Pulp and Paper	
	Project duration:	27.11.2003-31.12.2008	
	Responsible person:	Prof. Ing. Dušan Bakoš, DrSc.	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Viera Sjekelová</a>	<a href="#">Ing. Katarina Vizarová, CSc.</a>
	Metóda merania prieniku modifikačných látok do papierového listu	
DT	<a href="#">Ing. Mariana Kaskötö</a>	<a href="#">Ing. Michal Jablonský, PhD.</a>
	Hodnotenie kinetiky impregnácie listových lignocelulóзовých materiálov vodnými sústavami	
BT	<a href="#">Bc. Zuzana Oravcová</a>	<a href="#">Ing. Katarina Vizarová, CSc.</a>
	Overovanie účinnosti modifikačnej sústavy, obsahujúcej antioxidant na stabilizáciu papierových nosičov informácií	
DT	<a href="#">Ing. Monika Gonová</a>	<a href="#">Ing. Štefan Šutý, CSc.</a>
	Chemické a morfológické zmeny buničínových vlákien počas recyklácie	
DT	<a href="#">Ing. Jana Kosinková</a>	<a href="#">Ing. Igor Šurina, CSc.</a>
	Využitie drevnej biomasy v kozmetickom priemysle	
BT	<a href="#">Bc. Aleš Ház</a>	<a href="#">Ing. Igor Šurina, CSc.</a>
	Termická degradácia rastlinných surovín	
DT	<a href="#">Ing. Lukáš Šmatko</a>	<a href="#">doc. Ing. Milan Vrška, PhD.</a>
	Zvýšenie účinnosti kyslíkovej delignifikácie použitím peroxidu vodíka	
BT	<a href="#">Bc. Michal Hnát</a>	<a href="#">Ing. Radovan Tiňo, PhD.</a>
	Úprava vlastností aglomerovaných lignocelulóзовých materiálov účinkom atmosférickej DCSBD plazmy	
DT	<a href="#">Ing. Jana Poláková</a>	<a href="#">Ing. Štefan Šutý, CSc.</a>
	Revitalizácia vlastností starnutého papiera	
BT	<a href="#">Bc. Anna Briškárová</a>	<a href="#">Ing. Katarina Vizarová, CSc.</a>
	Prieskum stavu zbierky plagátov v Historickom múzeu SNM z hľadiska konzervovania papiera	



## Selected publications

**Jablonský, Michal** [40%] - **Hroboňová, Katarína** [30%] - **Tiňo, Radovan** [30%]: Prediction of the Acetic and Formic Acid Formation in the Paper During the Accelerated Ageing by the Change of Optical Properties : 4th Meeting on chemistry and Life. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 1079-1082, [Project number.: 2003 SP 20/028 03 01]

**Kirschnerová, Soňa** [60%] - **Vizárová, Katarína** [35%] - **Katuščák, Svetozár** [5%]: Effect of Hexametyldisiloxane Solution of Zirconium Propoxide on Permanence of Paper. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 1210-1212, [Project number.: 2003 SP 20/028 03 01]

Letko, Michal [40%] - Nováková, Erika [30%] - **Vrška, Milan** [30%]: Determination of the yield of soda-anthraquinone semichemical pulp from hardwood mixture: 4th Meeting on Chemistry and Life 9.-11.9. 2008. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 952-995, [Project number.: 1/0770/08]

**Mikulášik, Radoslav** [40%] - **Cvengroš, Ján** [20%] - **Šurina, Igor** [30%] - **Katuščák, Svetozár** [5%] - **Polovka, Martin** [5%]: Príprava bionafty z talového oleja : Faculty of Chemistry, Brno University of Technology, Brno. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 552 – 555

## Department of Fibres and Textile Chemistry

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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVT 20-011404	<a href="#">APVT 20-011404</a>
	Title: ( <i>in slovak</i> )	Kompozitné vlákna a textilie.	
	Title:	Composite fibres and textiles	
	Department:	Department of Fibres and Textile Chemistry	
	Project duration:	01.01.2005 - 31.05.2008	
	Responsible person:	Prof. Ing. Anton Marcincin, PhD.	
APVV	Project number:	APVV-0226-06	<a href="#">APVV-0226-06</a>
	Title: ( <i>in slovak</i> )	Vysokopevné a termopojivé polyolefínové vlákna.	
	Title:	High tenacity and thermobonding metallocene polyolefine fibres.	
	Department:	Department of Fibres and Textile Chemistry	
	Project duration:	01.02.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Anna Ujhelyiová, PhD.	
VEGA	Project number:	1/4456/07	<a href="#">1/4456/07</a>
	Title: ( <i>in slovak</i> )	Zmesné nanokompozitné vlákna na báze syntetických polymérov.	
	Title:	Blend nanocomposite fibres based on synthetic polymers.	
	Department:	Department of Fibres and Textile Chemistry	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Anna Ujhelyiová, PhD.	

VEGA	Project number:	1/0406/08	<a href="#">1/0406/08</a>
	Title: ( <i>in slovak</i> )	Štrukturalizácia a funkcionálna povrchová vlákňitých materiálov.	
	Title:	Structuralization and functionalization of surfaces of fibrous materials	
	Department:	Department of Fibres and Textile Chemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Anna Murárová, PhD.	
Internat. project	Project number:	NMP3-CT-2005-516972	<a href="#">NMP3-CT-2005-516972</a>
	Title:	Designed nanostructured hybrid polymers: Polymerisation catalysis and tecton assembly.	
	Title: ( <i>in slovak</i> )	Dizajnované nanoštruktúrované hybridné polyméry: Katalytická polymerizácia a usporiadanie tektonov.	
	Project duration:	01.03.2005 - 29.02.2008	
	Project coordinator:	Paolo Locatelli	
	Respons. person (STU):	Prof. Ing. Anton Marcinčin, PhD.	
	Department:	Department of Fibres and Textile Chemistry	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
BP	<a href="#">Bc. Janka Kubačková</a>	<a href="#">doc. Ing. Anna Ujhelyiová, CSc.</a>
	Bariérové vlastnosti modifikovaných polypropylénových vlákien	
DissT	<a href="#">Ing. Marcela Hricová</a>	<a href="#">Prof. Ing. Anton Marcinčin, PhD.</a>
	Vplyv pigmentov na štruktúru a vlastnosti syntetických vlákien	
DissT	<a href="#">Ing. Zuzana Strecká</a>	<a href="#">Doc. Ing. Anna Ujhelyiova, PhD.</a>
	Zmesné polypropylénové vlákna modifikované nanoplňivami	

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### Projects

Type of Project	Details 1	Details 2	Code
VEGA	Project number:	1/0800/08	<a href="#">1/0800/08</a>
	Title: <i>(in slovak)</i>	Štúdium vlastností farebných a záznamových vrstiev objektov kultúrneho dedičstva.	
	Title:	Study of properties of color and writing layers of objects of cultural heritage.	
	Department:	Department of Graphic Arts Technology and Applied Photochemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Michal Čeppan, PhD.	
VEGA	Project number:	1/0815/08	<a href="#">1/0815/08</a>
	Title: <i>(in slovak)</i>	Povrchové úpravy papiera a plastových fólií pre tlač elektronických a informačných štruktúr štandardnými tlačovými technikami.	
	Title:	Surface Modifications of Paper and Plastic Foils for Printing of Electronic and Information Structures by Standard Printing Techniques	
	Department:	Department of Graphic Arts Technology and Applied Photochemistry	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. RNDr. Milan Mikula, PhD.	
Internat. project	Project number:	COST D42/08	<a href="#">COST D42/08</a>
	Title:	Chemical Interactions between Cultural Artefacts and Indoor Environment (ENVIART) - Deterioration of Historical Documents Containing Iron Gall Inks in Polluted Atmosphere	
	Title: <i>(in slovak)</i>	Chemické interakcie medzi artefaktmi kultúrneho dedičstva a vnútorným prostredím (ENVIART) - Degradácia historických dokumentov so železogatovými atramentmi v znečistenej atmosfére.	
	Project duration:	01.01.2008 - 31.12.2008	
	Project coordinator:	Dr John B.G.A. Havermans	
	Respons. person (STU):	doc. Ing. Michal Čeppan, PhD.	
	Department:	Department of Graphic Arts Technology and Applied Photochemistry	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Adam Gilan</a>	<a href="#">doc. RNDr. Milan Mikula, CSc.</a>
	Modifikácia a hodnotenie kvality povrchu pre tlač jemných štruktúr	
DT	<a href="#">Ing. Zuzana Šedivá</a>	<a href="#">Ing. Milena Reháková, CSc.</a>
	Štúdium starnutia modelových systémov papiera v znečistenej atmosfére	
DT	<a href="#">Ing. Peter Ambróz</a>	<a href="#">Ing. Vladimír Dvonka</a>
	Farebná vernosť ink-jetovej tlače kópií historických dokumentov	
DT	<a href="#">Ing. Lucia Bobáľová</a>	<a href="#">doc. Ing. Michal Čeppan, CSc.</a>
	Štúdium vlastností modelových systémov historických dokumentov	
BT	<a href="#">Bc. Jana Očková</a>	<a href="#">doc. Ing. Ján Panák, CSc.</a>
	CTP technológie v ofsetovej tlači a jej využívanie na Slovensku	
DT	<a href="#">Ing. Božena Marušicová</a>	<a href="#">RNDr. Bohuslava Havlínová, CSc.</a>
	Vplyv urýchleného starnutia na vlastnosti pergamenu	
BT	<a href="#">Bc. Silvia Candráková</a>	<a href="#">doc. Ing. Michal Čeppan, CSc.</a>
	Štúdium vlastností písacích látok v historických dokumentoch a kresbách	
BT	<a href="#">Bc. Barbora Gmitterová</a>	<a href="#">Ing. Milena Reháková, CSc.</a>
	Využitie analytických a spektroskopických metód pri sledovaní vlastností papiera počas urýchleného starnutia	
DT	<a href="#">Ing. Gabriel Nagy</a>	<a href="#">Ing. Viera Jančovičová, CSc.</a>
	Príprava, modifikácia a vlastnosti polymérnych vrstiev	
BT	<a href="#">Bc. Katarína Szabóová</a>	<a href="#">Ing. Milena Reháková, CSc.</a>
	Štúdium starnutia modelových systémov papiera v znečistenej atmosfére	

## Selected publications

**Čeppan, Michal** [60%] - **Jančovičová, Viera** [15%] - **Reháková, Milena** [15%] - Buzinkay, Andrej [10%]: Kinetic of Degradation of Historical Documents Containing Iron-Gall Inks. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 989-991, [Project number.: 1/0800/08. - COST D42/08. - 2003 SP 20/028 03 01]

**Havlínová, Bohuslava** [70%] - Ohlidalová, Martina [10%] - **Petrovičová, Miroslava** [10%] - **Marušicová, B.** [10%]: Effect of Accelerated Ageing Properties of Parchment. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 1175-1177, [Project number.: 1/0800/08. - COST D42/08. - 2003 SP 20/028 03 01]

**Havlínová, Bohuslava** [80%] - Ďurovič, Michal [5%] - **Jančovičová, Viera** [10%] - **Petrovičová, Miroslava** [5%]: Influence of Booksaver Deacidification Process on Stability of Arylmethane Dyes on Paper. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 1172-1174, [Project number.: 1/0800/08. - COST D42/08. - 2003 SP 20/028 03 01]

**Jančovičová, Viera** [70%] - Amberg Schwab, Sabine [10%] - Dzik, Petr [5%] - **Mikula, Milan** [15%]: Improvement of Barrier Properties of Paper using Photochemically Modified Polymer Layers. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 1051-1053, [Project number.: 1/0815/08. - 1/4095/07]

**Mikula, Milan** [50%] - Pobudová, Zuzana [10%] - **Gilan, Adam** [40%]: Roughness of Plasma Treated Papers and Foils and Conductivity of Printed Structure. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 1164-1165, [Project number.: 1/0815/08]

**Reháková, Milena** [70%] - **Čeppan, Michal** [20%] - **Dvonka, Vladimír** [10%]: Study of Influence of Iron-gall Inks Composition on Properties of Historical Documents. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 1013-1015, [Project number.: 1/0800/08. - 2003 SP 20/028 03 01]

**Čeppan, Michal** [100%]: Degradation of Historical Documents and Drawings Containing Iron Gall Inks. In: Blaž Baromič 08 - 12th International Conference on Printing, Design and Graphic Communications. - , 2008. - ISBN 987-953-96020-9-1. - S. 17-21 [Project number.: 1/0800/08. - COST D42/08 . - APVT-20-034202]

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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-99-038805	<a href="#">APVV-99-038805</a>
	Title: <i>(in slovak)</i>	Aplikácia metódy plánovaných experimentov (DoE) a matematicko-štatistických postupov pri formulovaní receptúr elastomérnych zmesí.	
	Title:	Application of the Method of the Design of Experiments (DoE) and Mathematic-Statistical Procedures in the Formulation of the Recipes of Rubber Compounds.	
	Department:	Department of Plastics and Rubber	
	Project duration:	01.05.2006 - 31.12.2008	
	Responsible person:	Ing. Pavol Meluš, PhD.	
APVV	Respons. person (STU):	Doc. Ing. Pavol Alexy, CSc.	<a href="#">3/5200/07</a>
	Project number:	3/5200/07	
	Title: <i>(in slovak)</i>	Hypertextová učebnica: Plasty – technické materiály.	
	Title:	Hypertext textbook: Plastics – technical materials.	
	Department:	Department of Plastics and Rubber	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Doc. RNDr. Tatiana Liptáková, PhD.	
Respons. person (STU):	Doc. Ing. Pavol Alexy, PhD.		



VEGA	Project number:	1/4455/07	<a href="#">1/4455/07</a>
	Title: ( <i>in slovak</i> )	Modifikácia polymérnych zmesí a kompozitov s obsahom biodegradovateľných polymérov a biopolymérov z obnoviteľných zdrojov.	
	Title:	Modification of Polymer Blends and Composites containing Biodegradable Polymers and Biopolymers from Renewable Sources.	
	Department:	Department of Plastics and Rubber	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Pavol Alexy, PhD.	
VEGA	Project number:	1/4095/07	<a href="#">1/4095/07</a>
	Title: ( <i>in slovak</i> )	Povrchové úpravy materiálov plazmou pri atmosferickom tlaku.	
	Title:	Atmospheric-pressure plasma treatment of material surfaces.	
	Department:	Department of Plastics and Rubber	
	Project duration:	01.01.2007 - 31.12.2009	
Responsible person:	Doc. Ing. Ľudmila Černáková, PhD.		
VEGA	Project number:	1/0662/08	<a href="#">1/0662/08</a>
	Title: ( <i>in slovak</i> )	Vývoj nových polymérnych nanokompozitov na báze prírodných nanomateriálov.	
	Title:	Development of new polymer nanocomposites based on natural nanofibres	
	Department:	Department of Plastics and Rubber	
	Project duration:	01.01.2008 - 31.12.2010	
Responsible person:	doc. Ing. Viera Khunová, PhD.		
State prog.	Project number:	2003 SP 20/028 03 01	<a href="#">2003 SP 20/028 03 01</a>
	Title: ( <i>in slovak</i> )	Záchrana, stabilizácia a konzervovanie tradičných nosičov informácií v Slovenskej republike.	
	Title:	Preservation, stabilization and conservation of traditional information supports in the Slovak Republic.	
	Department:	Department of Plastics and Rubber	
	Project duration:	01.10.2003 - 30.09.2009	
Responsible person:	Prof. Ing. Dušan Bakoš, DrSc.		
Internat. project	Project number:	Nem/SR/STU07	<a href="#">Nem/SR/STU07</a>
	Title:	Composite materials based on rubber with magnetic fillers and study of influence of surface modification by plasma on the properties of materials which applied in rubber products.	
	Title: ( <i>in slovak</i> )	Kompozitné materiály na báze elastomérov s magnetickými plnivami a štúdium vplyvu povrchovej modifikácie plazmou na vlastnosti materiálov aplikovaných v gumárenských výrobkoch.	
	Project duration:	01.01.2007 - 31.12.2009	
	Project coordinator:	doc. Ing. Ivan Hudec, PhD.	
	Respons. person (STU):	Doc. Ing. Ivan Hudec, PhD.	
	Department:	Department of Plastics and Rubber	

Internat. project	Project number:	EUR3866/UK07	<a href="#">EUR3866/UK07</a>
	Title:	Ecological Liquidation of Rubber Waste by Mobile Equipment.	
	Title: ( <i>in slovak</i> )	Ekologické spracovanie odpadu z gumy mobilným zariadením.	
	Project duration:	01.01.2007 - 31.12.2009	
	Project coordinator:	Ing. Stanislav Holemý	
	Respons. person (STU):	Doc. Ing. Ivan Hudec, PhD.	
	Department:	Department of Plastics and Rubber	
Internat. project	Project number:	EURB-0013-06 (E!3866)	<a href="#">EURB-0013-06 (E!3866)</a>
	Title:	Ekologická likvidace odpadu gumy mobilním zařízením.	
	Title: ( <i>in slovak</i> )	Ekologická likvidácia odpadu z gumy mobilným zariadením.	
	Project duration:	15.02.2007 - 01.07.2009	
	Project coordinator:	Ing. Stanislav Holemý	
	Respons. person (STU):	Doc. Ing. Ivan Hudec, PhD.	
	Department:	Department of Plastics and Rubber	
Internat. project	Project number:	Nem/SR/STU1/07	<a href="#">Nem/SR/STU1/07</a>
	Title:	Polymer blends and composites based on biopolymers and biodegradable polymers.	
	Title: ( <i>in slovak</i> )	Polymérne zmesi a kompozity na báze biopolymérov a biodegradovateľných polymérov.	
	Project duration:	01.01.2007 - 31.12.2009	
	Project coordinator:	Doc. Ing. Pavol Alexy, PhD	
	Respons. person (STU):	Doc. Ing. Pavol Alexy, PhD	
	Department:	Department of Plastics and Rubber	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Silvia Krajňáková</a> Materiály používané na spevňovanie a konzervovanie predmetov z historického dreva	<a href="#">doc. Ing. Ivan Hudec, CSc.</a>
DT	<a href="#">Ing. Adriana Dušová</a> Príprava a vlastnosti polymérnych nanokompozitov na báze halloyzitu	<a href="#">doc. Ing. Viera Khunová, PhD.</a>
DT	<a href="#">Ing. Peter Krkoška</a> Využitie surovín z obnoviteľných zdrojov v polymérnych zmesiach	<a href="#">doc. Ing. Pavel Alexy, CSc.</a>
DT	<a href="#">Ing. Milan Volovič</a> Povrchová modifikácia výstužných materiálov pre konštrukciu plášťov plazmou	<a href="#">doc. Ing. Ivan Hudec, CSc.</a>
DT	<a href="#">Bc. Dominik Jánošík</a> Vplyv nanoplnív na horľavosť polymérnych nanokompozitov	<a href="#">doc. Ing. Viera Khunová, PhD.</a>
DT	<a href="#">Ing. Alžbeta Chochulová</a> Termická stabilita polymérov a ich zmesí	<a href="#">doc. Ing. Pavel Alexy, CSc.</a>
DT	<a href="#">Ing. Ľubomíra Rapošová</a> Vplyv nukleačných činidiel na štruktúru a vlastnosti etylén-propylénových kopolymérov	<a href="#">doc. Ing. Ivan Hudec, CSc.</a>

BT	<a href="#">Bc. Viera Šestáková</a> Povrchová úprava fóliových materiálov plazmou pre zlepšenie potlače fólií	<a href="#">doc. Ing. Ivan Hudec, CSc.</a>
BT	<a href="#">Bc. Mária Petková</a> Membrány z polyelektrolytových komplexov chitozánu	<a href="#">Dr.h.c. prof. Ing. Dušan Bakoš, DrSc.</a>
BT	<a href="#">Bc. Zdenka Michalovičová</a> Polymérne nanokompozity na báze prírodných nanoplín	<a href="#">doc. Ing. Viera Khunová, PhD.</a>
BT	<a href="#">Bc. František Benovič</a> Polymérne zmesi na báze polyvinylalkoholu	<a href="#">doc. Ing. Pavel Alexy, CSc.</a>
DissT	<a href="#">Ing. Peter Bugaj</a> Biodegradovateľné polymérne obalové materiály na báze polykaprolaktónu	<a href="#">doc. Ing. Pavel Alexy, CSc.</a>

## Selected publications

**Alexy, Pavol** [50%] - **Feranc, Jozef** [20%] - **Kramárová, Zuzana** [6%] - Hajšová, Martina [6%] - Ďuračka, Miroslav [6%] - Mošková, Daniela [6%] - Chodák, Ivan [6%] - Ilisch, Sibyll [6%]: Application of lignins in rubber compounds. In: Kautschuk Gummi Kunststoffe. - ISSN 0948-3276. - 1-2 (2008), s. 26-32

**Hudec, Ivan** [20%] - Jasso, Michal [20%] - **Krump, Henrich** [20%] - Černák, Mirko [20%]: The Influence of Plasma Polymerization on Adhesion of Polyester Cords to Rubber Matrix. In: Kautschuk Gummi Kunststoffe. - ISSN 0948-3276. - 61-3 (2008), s. 95-97

**Černáková, Ľudmila** [50%] - **Katuščák, Svetozár** [10%] - **Hudec, Ivan** [10%] - **Vrška, Milan** [10%] - **Bakoš, Dušan** [10%] - Černák, Mirko [10%]: Spôsob povrchovej úpravy papiera chitosanom a jeho derivátmi : Patent SR 286525 effective from 7.10.2008. - , 2008. - nestr. s.

Černák, Mirko [20%] - **Černáková, Ľudmila** [20%] - **Hudec, Ivan** [20%] - Kováčik, Dušan [20%] - Zahoranová, Anna [20%]: Diffuse Coplanar Surface Barrier Discharge and its Applications for in-line Processing of low-added-value materials. In: HAKONE XI, Contributed Papers, Vol.1, XI Int Symposium on High Pressure Low Temperature Plasma Chemistry, Oléron Island, France, September 7-12, 2008. - : Université Paul Sabatier, Toulouse, 2008. - S. 33-40

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### Foreword

The institute consists of the Department of Biochemical Technology and the Department of Food Science and Technology. It offers undergraduate and graduate courses as well as PhD studies in the fields: *Biotechnology* and *Food Science and Technology*.

### Teaching activities

*Biotechnology courses:* Biochemical and Biotechnological Information; Fundamentals of Fermentation Technology; Food Biotechnology Bioanalytical Methods; Pharmaceutical Biotechnology; Fundamentals of Recombinant Technology; Enzymology and Enzyme Engineering; Biosynthesis and Transformation of Metabolites; Environmental Biotechnology; Malting and Brewing; Chemistry and Microbiology of Wine Gene Manipulations.

*Food Science and Technology courses:* Hygiene and Health Protection; [Information Technologies in Food Industry](#); Food and Biotechnological Raw Materials; Fundamentals of Food Technology; [Packaging and Distribution of Foods](#); Food Safety; Food Engineering; Cosmetic and Household Chemistry; Chemistry and Technol. of Sacharides; Dairy Technology; Cereal Chemistry and Technology; Sugar technology; Preserved and Frozen Food Technology; Meat and Poultry Technology; Fats, Detergents and Oleochemistry; Microbiology of Milk, Fats and Cosmetics; Chemistry and Technology of Cosmetics; By-products in Food Industry.

### Research profile

*Department of Biochemical Technology:* microbiology, biochemistry and bioengineering of beer, wine, ethanol and microbial biomass production and technology, environmental biotechnology with emphasis on microbial degradation of pollutants, fermentative production of organic acids, lipids, pigments and biotransformation of carbohydrates, overproduction of secondary metabolites used in pharmacy and medicine, bioengineering  
*Department of Food Science and Technology:* chemistry and analysis of lipids, technology of edible oils and technical fats, technology hygiene and sanitation, cosmetic and household chemistry, cereal chemistry and technology, technology and microbiology of milk and milk products, meat chemistry and technology, biopreservation of vegetable products, sugar-making technology.

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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-20-014105	<a href="#">APVV-20-014105</a>
	Title: ( <i>in slovak</i> )	Využitie mikroorganizmov žijúcich s vyššími rastlinami pre alternatívnu biotechnologickú produkciu protinádorových taxánov, fytochemikálií ihličnanu Taxus.	
	Title:	Using the microorganisms living with the higher plants to alternative production of anticancer taxanes, phytochemicals of yew-tree Taxus	
	Department:	Department of Biochemical Technology	
	Project duration:	01.05.2006 - 31.12.2008	
	Responsible person:	Doc. Ing. Mária Šturdíková, PhD.	
APVV	Project number:	APVV-99-007405	<a href="#">APVV-99-007405</a>
	Title: ( <i>in slovak</i> )	Vplyv repných rezkov na štruktúru a väzbový potenciál papiera.	
	Title:	Influence of sugar beet pulp on structure and bonding potential of paper.	
	Department:	Department of Biochemical Technology	
	Project duration:	01.05.2006 - 31.12.2008	
	Respons. person (STU):	Doc. Ing. Michal Rosenberg, CSc.	
APVV	Project number:	APVV-0310-06	<a href="#">APVV-0310-06</a>
	Title: ( <i>in slovak</i> )	Výskum a vývoj funkčných potravín.	
	Title:	Study and development of functional foods.	
	Department:	Department of Biochemical Technology	
	Project duration:	08.02.2007 - 31.12.2009	
	Responsible person:	Prof. Ing. Ján Šajbidor, DrSc.	
APVV	Project number:	APVV-0488-07	<a href="#">APVV-0488-07</a>
	Title: ( <i>in slovak</i> )	Čisté kultúry kvasiniek verzus senzorické a antioxidantné vlastnosti vína.	
	Title:	Pure cultures of yeasts versus sensory and antioxidant properties of wine.	
	Department:	Department of Biochemical Technology	
	Project duration:	01.06.2008 - 31.12.2010	
	Responsible person:	prof. Ing. Fedor Malík, DrSc.	

APVV	Project number:	APVV-0681-07	<a href="#">APVV-0681-07</a>
	Title: ( <i>in slovak</i> )	Kvasinky ako nástroj pre produkciu biotechnologicky hodnotných steroidov: biochemický a genetický prístup.	
	Title:	Yeast as a tool for producing biotechnologically valuable sterols: the biochemical and genetic approach.	
	Department:	Department of Biochemical Technology	
	Project duration:	17.07.2008 - 31.12.2010	
	Responsible person:	RNDr. Ivan Hapala, CSc.	
	Respons. person (STU):	Doc. Ing. Milan Čertík, PhD.	
APVV	Project number:	VVCE-0064-07	<a href="#">VVCE-0064-07</a>
	Title: ( <i>in slovak</i> )	Biomembrány: Štruktúra a dynamika biologických membrán vo vzťahu k bunkovým funkciám.	
	Title:	Biomembranes: Membrane structure and dynamics in relation to cell functions.	
	Department:	Department of Biochemical Technology	
	Project duration:	28.08.2008 - 30.06.2011	
	Responsible person:	RNDr. Ivan Hapala, CSc.	
	Respons. person (STU):	Doc. Ing. Milan Čertík, PhD.	
APVV	Project number:	APVV-0043-07	<a href="#">APVV-0043-07</a>
	Title: ( <i>in slovak</i> )	Produkcia konjugovanej linolovej kyseliny ovplyvňovaním diét u prežúvavcov.	
	Title:	The production of conjugated linoleic acid by influencing of diets in ruminants.	
	Department:	Department of Biochemical Technology	
	Project duration:	16.09.2008 - 31.12.2010	
	Responsible person:	MVDr. Dušan Jalč, CSc.	
	Respons. person (STU):	Doc. Ing. Milan Čertík, PhD.	
VEGA	Project number:	1/4357/07	<a href="#">1/4357/07</a>
	Title: ( <i>in slovak</i> )	Bioremediácia pôd kontaminovaných degradačnými produktami pesticídov typu chlórphenolov: potenciálne využitie organominerálneho komplexu (OMK), zeolitu a humínových kyselín.	
	Title:	Bioremediation of soil contaminated by degradation products of the pesticides of the chlorophenols series: potential use of organomineral complex (OMC), zeolite, and humic acids.	
	Department:	Department of Biochemical Technology	
	Project duration:	01.01.2007 - 31.12.2009	
Responsible person:	Doc. Ing. Katarína Dercová, PhD.		



VEGA	Project number:	1/4452/07	<a href="#">1/4452/07</a>
	Title: ( <i>in slovak</i> )	Vývoj nových imobilizovaných biooxidačných systémov na báze hyperoxygenovaných celobunkových/enzýmových biokatalyzátorov pre nové biele biotechnológie.	
	Title:	Development of new immobilized biooxidation systems based on hyperoxygenated whole cell/enzyme biocatalysts for novel white biotechnologies.	
	Department:	Department of Biochemical Technology	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Michal Rosenberg, PhD.	
VEGA	Project number:	1/0747/08	<a href="#">1/0747/08</a>
	Title: ( <i>in slovak</i> )	Biotechnologické zhodnotenie domácich obnoviteľných zdrojov na biologicky aktívne produkty využiteľných v potravinárstve, farmácii a veterinárnej praxi.	
	Title:	Biotechnological evaluation of national renewable resources to biologically active products applied for food, agriculture, pharmacy and veterinary uses.	
	Department:	Department of Biochemical Technology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Milan Čertík, PhD.	
VEGA	Project number:	1/0786/08	<a href="#">1/0786/08</a>
	Title: ( <i>in slovak</i> )	Vývoj nových kmeňov mikroorganizmov a fermentačných systémov pre efektívnu produkciu bio-etanolu a fermentovaných nápojov špecifických vlastností.	
	Title:	Development of new strains of microorganisms and fermentative systems for effective bioethanol production and beverages of specific properties	
	Department:	Department of Biochemical Technology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Daniela Šmogrovičová, PhD.	

Internat. project	Project number:	SK-ZA-0010-07	<a href="#">SK-ZA-0010-07</a>
	Title:	Analysis of phenolic and flavour compounds of the mead varieties in South Africa and Slovakia.	
	Title: ( <i>in slovak</i> )	Analýza fenolových a aromatických látok medoviny v Juhoafrickej republike a Slovenskej republike.	
	Project duration:	28.07.2008 - 31.12.2009	
	Project coordinator:	doc. Ing. Daniela Šmogrovičová, PhD.	
	Respons. person (STU):	Doc. Ing. Daniela Šmogrovičová, PhD.	
	Department:	Department of Biochemical Technology	
Internat. project	Project number:	CEEPUS CII-HR-0306-01-0809	CEEPUS CII-HR-0306-01-0809
	Title:	For Safe and Healthy Food in Middle-Europe	
	Title: ( <i>in slovak</i> )	Za bezpečné a zdravé potraviny v strednej Európe	
	Project duration:	1.9.2008 - 31.8.2009	
	Project coordinator:	doc. Ing. Daniela Šmogrovičová, PhD.	
	Respons. person (STU):	Doc. Ing. Daniela Šmogrovičová, PhD.	
	Department:	Department of Biochemical Technology	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
BT	<a href="#">Bc. Michal Cířák</a>	<a href="#">doc. Ing. Milan Čertík, PhD.</a>
	Mikrobiálna príprava derivátov sterolov	
BT	<a href="#">Bc. Jana Majeríková</a>	<a href="#">Ing. Helena Hronská, PhD.</a>
	Mikrobiálna produkcia kyseliny trans-epoxyjantárovej	
BT	<a href="#">Bc. Vladimír Sládek</a>	<a href="#">doc. Ing. Michal Rosenberg, CSc.</a>
	Biotechnologická produkcia etanolu na xylóze	
DT	<a href="#">Ing. Paulína Micháľková</a>	<a href="#">doc. Ing. Mária Šturdiková, PhD.</a>
	Optimalizovanie podmienok pre produkciu cytotoxických metabolitov <i>Streptomyces</i> sp. z <i>Taxus baccata</i>	
DT	<a href="#">Ing. Alexandra Poturnayová</a>	<a href="#">doc. Ing. Daniela Šmogrovičová, CSc.</a>
	Composition and Antioxidant Activity of Beer Produced Using Genetically Modified Yeast	
BT	<a href="#">Bc. Eva Buchtová</a>	<a href="#">doc. Ing. Mária Šturdiková, PhD.</a>
	Optimalizovanie kultivačného média a podmienok pre produkciu cytotoxických metabolitov izolátom <i>Streptomyces</i> sp. z farmaceutickej rastliny	
BT	<a href="#">Bc. Igor Dolejš</a>	<a href="#">Ing. Martin Rebroš, PhD.</a>
	Bakteriálna produkcia etanolu	
DT	<a href="#">Ing. Marta Jalčaková</a>	<a href="#">doc. Ing. Milan Čertík, PhD.</a>
	Produkcia sterolov a ich derivátov kvasinkami	

DT	<a href="#">Ing. Hana Dudášová</a> Využitie 5'-nukleázovej polymerázovej reťazovej reakcie v potravinárstve	<a href="#">doc. Ing. Katarína Dercová, PhD.</a>
BT	<a href="#">Bc. Jozef Ševcech</a> Vplyv čistých kultúr <i>Saccharomyces cerevisiae</i> na profil organických kyselín vo víne	<a href="#">prof. Ing. Fedor Malík, DrSc.</a>
BT	<a href="#">Bc. Slavomíra Zorádová</a> Perzistentné organické polutanty ako environmentálne stresové faktory pre mikrobiálnu bunku	<a href="#">doc. Ing. Katarína Dercová, PhD.</a>
DT	<a href="#">Ing. Lucia Sedláková</a> Regulácia homeostázy fosfolipidov u kvasinky <i>Saccharomyces cerevisiae</i>	<a href="#">doc. Ing. Milan Čertík, PhD.</a>
DT	<a href="#">Ing. Marta Brlejšová</a> Štúdium vlastností kvasinkových polysacharidov	<a href="#">doc. Ing. Milan Čertík, PhD.</a>
BT	<a href="#">Bc. Soňa Gibašíková</a> Modelovanie biochemických procesov	<a href="#">doc. Ing. Michal Rosenberg, CSc.</a>
DT	<a href="#">Ing. Katarína Janechová</a> Biotechnologická produkcia etanolu zo substrátov obsahujúcich xylózu	<a href="#">doc. Ing. Michal Rosenberg, CSc.</a>
BT	<a href="#">Bc. Eva Petrášiková</a> Biotechnologická produkcia a vlastnosti kvasinkových polysacharidov	<a href="#">doc. Ing. Milan Čertík, PhD.</a>
DT	<a href="#">Ing. Zuzana Adamechová</a> Príprava a vlastnosti mikrobiálnych produktov obohatených o polynenasýtené mastné kyseliny	<a href="#">doc. Ing. Milan Čertík, PhD.</a>
DT	<a href="#">Ing. Michaela Hildebrandová</a> Vplyv kultivačných podmienok a kmeňa kvasiniek na profil sensoricky aktívnych metabolitov fermentovaných nápojov	<a href="#">doc. Ing. Daniela Šmogrovičová, CSc.</a>
BT	<a href="#">Bc. Jana Lakatošová</a> Vplyv kmeňa kvasiniek na profil sensoricky aktívnych metabolitov vo fermentovaných nápojoch	<a href="#">doc. Ing. Daniela Šmogrovičová, CSc.</a>
BT	<a href="#">Bc. Lucia Mikušová</a> Regulácia produkcie mikrobiálnych pigmentov	<a href="#">doc. Ing. Milan Čertík, PhD.</a>
BT	<a href="#">Bc. Ivana Dokupilová</a> Genetické aspekty pre biosyntézu antibiotík streptomycétami	<a href="#">doc. Ing. Mária Šturdiková, PhD.</a>
DT	<a href="#">Ing. Jana Molnárová</a> Ekotoxicita pôd v priebehu biodegradácie pentachlórfenolu v prítomnosti humínových kyselín	<a href="#">doc. Ing. Katarína Dercová, PhD.</a>
BT	<a href="#">Bc. Tomáš Augustovič</a> Biologické odbúranie kyseliny jablčnej	<a href="#">Ing. Martin Rebroš, PhD.</a>
BT	<a href="#">Bc. Martin Sák</a> Overenie využitia novopripravených kvasiniek v pivovarníctve	<a href="#">doc. Ing. Daniela Šmogrovičová, CSc.</a>
BT	<a href="#">Bc. Petra Zajkoska</a> Mikrobiálne stenové polysacharidy ako potenciálne biosorbenty perzistentných organických polutantov	<a href="#">doc. Ing. Katarína Dercová, PhD.</a>
DT	<a href="#">Ing. Michal Palatáš</a> Biotechnologická produkcia butanolu	<a href="#">doc. Ing. Michal Rosenberg, CSc.</a>
BT	<a href="#">Bc. Adam Kučera</a> Čisté kultúry kvasiniek a sensorické vlastnosti vína	<a href="#">prof. Ing. Fedor Malík, DrSc.</a>

## Selected publications

**Dercová, Katarína** [50%] - **Sejáková, Zuzana** [20%] - **Skokanová, Marianna** [10%] - Barančíková, Gabriela [10%] - Makovníková, Jarmila [10%]: Bioremediation of soil contaminated with pentachlorophenol (PCP) using humic acids bound on zeolite. In: Chemosphere. - ISSN 0045-6535. - 66-5 (2007), s. 783-790

**Dercová, Katarína** [20%] - **Čičmanová, Jana** [20%] - Lovecká, Petra [20%] - Demnerová, Kateřina [10%] - Macková, Martina [10%] - Hucko, Pavol [10%] - Kušnír, Patrik [10%]: Isolation and identification of PCB-degrading microorganisms from contaminated sediments. In: International Biodeterioration and Biodegradation. - 62-3 (2008), s. 219-225

**Grosová, Zuzana** [unenter %] - **Rosenberg, Michal** [unenter %] - **Rebroš, Martin** [unenter %] - **Šipőcz, Matej** Entrapment of beta-galactosidase in polyvinylalcohol hydrogel. [unenter %] - Sedláčková, Barbora [unenter %]: In: Biotechnology Letters. - ISSN 0141-5492. - ISSN 1573-6776. - online (2007), nestr.

**Lobpreis, Tomáš** [30%] - Vrana, Branislav [20%] - Dominiak, Ewa [20%] - **Dercová, Katarína** [10%] - Mills, Graham A. [10%] - Greenwood, Richard [10%]: Effect of the sampler housing design on the performance of Chemcatcher passive sampler for monitoring non-polar organic pollutants in water. In: Environmental Pollution. - ISSN 0269-7491. - 153 (2008), s. 706-710

**Selecký, Radoslav** [50%] - **Šmogrovičová, Daniela** [20%] - Sulo, Pavol [30%]: Beer with Reduced Ethanol Content Produced Using *Saccharomyces cerevisiae* Yeasts Deficient in Various Tricarboxylic Acid Cycle Enzymes. In: Journal of the Institute of Brewing. - ISSN 0046-9750. - 114/2 (2008), s. 97-101

**Čertík, Milan** [100%]: Biotransformation of Oils to Value-added Compounds. In: Biocatalysis and Bioenergy. - : John Wiley & Sons, 2008. - ISBN 978-0-470-13404-7. - S. 571-585

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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-0158-07	<a href="#">APVV-0158-07</a>
	Title: <i>(in slovak)</i>	Využitie potenciálu kyslomliečnych baktérií v ekosystéme syrov za účelom zvýšenia zdravotnej bezpečnosti.	
	Title:	Exploitation of potential of lactic acid bacteria in cheese ecosystem for improvement of health safety	
	Department:	Department of Food Science and Technology	
	Project duration:	01.09.2008 - 31.12.2010	
	Responsible person:	Ing. Mária Greifová, PhD.	
VEGA	Project number:	1/3546/06	<a href="#">1/3546/06</a>
	Title: <i>(in slovak)</i>	Monitorovanie a prevencia tvorby biogénnych amínov v súvislosti so zabezpečením kvality a zdravotnej bezpečnosti potravín.	
	Title:	Monitoring and prevention of creation of biogenic amines to ensure food quality and safety.	
	Department:	Department of Food Science and Technology	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Doc. Ing. Jolana Karovičová, PhD.	
VEGA	Project number:	1/0438/08	<a href="#">1/0438/08</a>
	Title: <i>(in slovak)</i>	In vitro hodnotenie prestupu kožou a účinnosti antioxidantných a UV fotoprotektívnych látok.	
	Title:	In vitro assesment of skin penetration and efficacy of antioxidants and UV protectives.	
	Department:	Department of Food Science and Technology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Jarmila Hojerová, PhD.	

VEGA	Project number:	1/0570/08	<a href="#">1/0570/08</a>
	Title: ( <i>in slovak</i> )	Predĺženie trvanlivosti a zvýšenie nutričnej hodnoty pekárenských výrobkov.	
	Title:	Prolongation of shelf-life and enhancing nutritional value of baked goods.	
	Department:	Department of Food Science and Technology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Ing. Zlatica Kohajdová, PhD.	
VEGA	Project number:	1/0746/08	<a href="#">1/0746/08</a>
	Title: ( <i>in slovak</i> )	Štúdium vplyvu rizikových faktorov na bezpečnosť požívatin a kozmetických prípravkov.	
	Title:	Study of the risk factors influence on the safety of food and cosmetic products.	
	Department:	Department of Food Science and Technology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Štefan Schmidt, PhD.	
VEGA	Project number:	2/0090/08	<a href="#">2/0090/08</a>
	Title: ( <i>in slovak</i> )	Nové farmakologické prístupy ovplyvnenia reumatoidnej artritídy študované na modeli adjuvantnej artritídy.	
	Title:	The new pharmacological accesses of rheumatoid arthritis's influence studied on a model of adjuvant arthritis.	
	Department:	Department of Food Science and Technology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	PharmDr. Katarína Bauerová, PhD.	
APVV	Respons. person (STU):	doc. Ing. Jarmila Hojerová, PhD.	<a href="#">APVV-51-017905</a>
	Project number:	APVV-51-017905	
	Title: ( <i>in slovak</i> )	Molekulové mechanizmy pôsobenia nových liečiv ovplyvňujúcich oxidačný stres - významný etiopatogenetický faktor početných chorôb.	
	Title:	Molecular mechanisms of new drugs influencing oxidative stress - important ethiopathogenetic factor of numerous diseases	
	Department:	Department of Food Science and Technology	
	Project duration:	01.01.2006 - 31.12.2009	
Responsible person:	doc. MUDr. Svorad Štolc, DrSc.		
Respons. person (STU):	doc. Ing. Jarmila Hojerová, PhD.		

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
BT	<a href="#">Bc. Petra Hermanová</a> Celiakia	<a href="#">Ing. Michala Jancurová</a>
BT	<a href="#">Bc. Kristína Černí</a> Faktory ovplyvňujúce prestup látok kožou	<a href="#">Ing. Martina Boreková</a>
BT	<a href="#">Bc. Jana Balková</a> Probiotické kmene mikroorganizmov a ich účinok na hostiteľský organizmus	<a href="#">Ing. Gabriel Greif, PhD.</a>
BT	<a href="#">Bc. Michal Macák</a> Štartovacie a probiotické kultúry v mäsových výrobkoch.	<a href="#">Ing. Ladislav Starúch, CSc.</a>
BT	<a href="#">Bc. Eva Špakovská</a> Mliečne fermentované zeleninové šťavy	<a href="#">Ing. Zlatica Kohajdová, PhD.</a>
BT	<a href="#">Bc. Eszter Pálosová</a> Čokoládové cukrovinky	<a href="#">Ing. Lucia Minarovičová, PhD.</a>
BT	<a href="#">Bc. Anna Štoffová</a> Čokoláda a čokoládové cukrovinky	<a href="#">Ing. Lucia Minarovičová, PhD.</a>
BT	<a href="#">Bc. Ivana Kolesárová</a> Akceleračné faktory oxidácie tukov	<a href="#">Ing. Stanislav Sekretár, CSc.</a>
DT	<a href="#">Ing. Martin Čertík</a> Analýza vybraných metabolitov baktérií mliečneho kvasenia	<a href="#">Ing. Gabriel Greif, PhD.</a>
BT	<a href="#">Bc. Michal Magala</a> Spôsoby predĺženia trvanlivosti pekárenských výrobkov	<a href="#">Ing. Zlatica Kohajdová, PhD.</a>
BT	<a href="#">Bc. Dorota Sílešová</a> Laktóza a jej význam vo výžive a v mliekarenskej technológií	<a href="#">Ing. Mária Greifová, PhD.</a>
BT	<a href="#">Bc. Branislav Šenkery</a> Med a ostatné včelie produkty	<a href="#">Ing. Zlatica Kohajdová, PhD.</a>
BT	<a href="#">Bc. Lucia Szeifová</a> Nečokoládové cukrovinky	<a href="#">Ing. Lucia Minarovičová, PhD.</a>
DT	<a href="#">Ing. Andrea Medovčíková</a> In vitro hodnotenie účinnosti kozmetiky na ochranu pred ultrafialovým žiarením	<a href="#">doc. Ing. Jarmila Hojerová, PhD.</a>
DT	<a href="#">Ing. Anton Pagurko</a> Rast a produkcia metabolitov Lactobacillus reuteri v modelových podmienkach	<a href="#">Ing. Mária Greifová, PhD.</a>
BT	<a href="#">Bc. Jana Pelikánová</a> Škrob a jeho priemyselné využitie	<a href="#">Ing. Lucia Minarovičová, PhD.</a>
BT	<a href="#">Bc. Marianna Ižoldová</a> Vnútorne a vonkajšie spôsoby antiradikálovej ochrany kože	<a href="#">Ing. Martina Boreková</a>
BT	<a href="#">Bc. Viera Pencáková</a> Káva a kávoviny ako nealkoholické nápoje v našom stravovaní	<a href="#">doc. PharmDr. Jozef Augustin, CSc.</a>
BT	<a href="#">Bc. Matej Polačko</a> Probiotiká = zdravý životný štýl	<a href="#">Ing. Mária Greifová, PhD.</a>
BT	<a href="#">Bc. Jana Obešterová</a> Voda a minerálne vody. Fyziologické účinky minerálnych látok a stopových prvkov	<a href="#">doc. PharmDr. Jozef Augustin, CSc.</a>



BT	<a href="#">Bc. Dagmar Morávková</a> Probiotiká v prevencii a liečbe	<a href="#">Ing. Eva Marunová</a>
BT	<a href="#">Bc. Adam Vagánek</a> Srvátka, jej využitie, membránové procesy pri jej spracovaní	<a href="#">Ing. Mária Greifová, PhD.</a>
DT	<a href="#">Ing. Silvia Majerníková</a> Ochranný potenciál vybraných kyslomliečnych baktérií	<a href="#">Ing. Eva Marunová</a>
DT	<a href="#">Ing. Alexandra Hradecká</a> Povrchovo aktívne vlastnosti vybraných prírodných látok	<a href="#">Ing. Stanislav Sekretár, CSc.</a>
DT	<a href="#">Ing. Ján Polačok</a> Charakteristika rastu a antimikrobiálnych vlastností laktobacilov izolovaných z droždia	<a href="#">Ing. Mária Greifová, PhD.</a>
BT	<a href="#">Bc. Jana Blichová</a> Škodcovia a choroby cukrovej repy	<a href="#">prof. Ing. Alexander Dandár, DrSc.</a>
BT	<a href="#">Bc. Lenka Vrbíková</a> Med a ostatné včelie produkty	<a href="#">Ing. Zlatica Kohajdová, PhD.</a>
BT	<a href="#">Bc. Katarína Lehetová</a> Umelé sladidlá	<a href="#">Ing. Lucia Minarovičová, PhD.</a>
BT	<a href="#">Bc. Silvia Hirländerová</a> Probiotiká v ľudskej výžive	<a href="#">Ing. Mária Greifová, PhD.</a>
BT	<a href="#">Bc. Andrea Romančáková</a> Bryndza - potravina alebo liek	<a href="#">Ing. Mária Greifová, PhD.</a>
BT	<a href="#">Bc. Marína Juhosová</a> Mäsové výrobky vhodné pre celiatikov.	<a href="#">Ing. Ladislav Starúch, CSc.</a>
BT	<a href="#">Bc. Paula Mularčíková</a> Moderné spôsoby hodnotenia účinnosti opaľovacej kozmetiky	<a href="#">doc. Ing. Jarmila Hojerová, PhD.</a>
BT	<a href="#">Bc. Eva Husťáková</a> All around sugar	<a href="#">prof. Ing. Alexander Dandár, DrSc.</a>
BT	<a href="#">Bc. Martina Stopková</a> Celiakia	<a href="#">Ing. Michala Jancurová</a>
BT	<a href="#">Bc. Michaela Jurasová</a> Káva a kávoviny ako potravinárske pochutiny	<a href="#">doc. PharmDr. Jozef Augustin, CSc.</a>
DT	<a href="#">Ing. Lenka Orságová</a> Implementation of the in vitro methods for evaluation of the chemicals' skin penetration	<a href="#">doc. Ing. Jarmila Hojerová, PhD.</a>

## Selected publications

**Hojerová, Jarmila** [70%] - Škultétyová, Katarína [30%]: Materiály. Učebnica pre 2. a 3. ročník študijného odboru Kozmetik. - Prvé vydanie. - : Slovenské pedagogické nakladateľstvo, 2008. - 231s. - ISBN 978-80-10-01261-9

**Boreková, Martina** [40%] - **Hojerová, Jarmila** [40%] - **Koprda, Vasil** [10%] - Bauerová, Katarína [10%]: Nourishing and Health Benefits of Coenzyme Q10. In: Czech Journal of Food Sciences. - ISSN 1212-1800. - 26-4 (2008), s. 229-241, [Project number: APVV-51-017905. - 1/0438/08. - 1/0746/08]

**Janáčková, Antónia** [25%] - Sádecká, Jana [20%] - **Kohajdová, Zlatica** [10%] - **Špánik, Ivan** [45%]: The Identification of Aroma-Active Compounds in Slovak Brandies Using GC-Sniffing, GC-MS and Sensory Evaluation. In: Chromatographia. - ISSN 0009-5893. - 67 (2008), s. 113-121.

**Augustín, Jozef** [30%] - Jaworska, Grażina [30%] - **Dandár, Alexander** [20%] - Cejpek, Kamil [20%]: Bocznik ostrygowaty (*Pleurotus ostreatus*) jako źródło b-D-glukanów. In: Żywność. Nauka. Technologia. Jakość. - ISSN 1425-6959. - 55-6 (2007), s. 170-176. [Project number: 1/0746/08]

**Hojerová, Jarmila** [45%] - Medovčíková, Andrea [20%] - **Mikula, Milan** [20%] - **Boreková, Martina** [15%]: The efficacy of commercial sunscreens with the same SPF by in vitro method. In: Journal of the Polish Society of Cosmetic Chemists. - ISSN 1506-7181. - 10-4 (2008), s. 191-197 [Project number: 1/0438/08. - 1/0746/08. - 1/0815/08]

**Kohajdová, Zlatica** [70%] - **Karovičová, Jolana** [30%]: Influence of hydrocolloids on quality of baked goods. In: ACTA Scientiarum Polonorum Formatio Circumiectus. - ISSN 1644-0730. - 7/2 (2008), s. 43-49 [Project number: 1/0570/08. - APVT-20-002904. - APVV-0310-06]

Pípek, Petr [80%] - **Staruch, Ladislav** [10%] - Valchar, Petr [10%]: Schimmelpilzwachstum und Salzkristallisierung auf Wurstwaren. In: FT Fleischerei Technik. - ISSN 0176-9502. - 23/9-10 (2007). - : B&L MedienGesellschaft mbH & Co.KG, s. 52-58. [Project number: 1/0746/08]

**Krajčová, Eva** [50%] - **Greifová, Mária** [40%] - **Schmidt, Štefan** [10%]: Study of antimicrobial activity of selected plant extracts against bacterial food contaminants. In: Journal of Food and Nutrition Research. - ISSN 1336-8672. - 47-3 (2008), s. 125-130 [Project number: APVV-0310-06. - 1/0746/08]

**Zahradníková, Lucia** [50%] - **Schmidt, Štefan** [20%] - **Sékelyová, Zuzana** [15%] - **Sekretár, Stanislav** [15%]: Fractionation and Identification of Some Phenolics Extracted from Evening Primrose Seed Meal. In: Czech Journal of Food Sciences. - ISSN 1212-1800. - 26-1 (2008), s. 58-64 [Project number: APVV-0310-06. - 1/0746/08]

## INSTITUTE OF BIOCHEMISTRY, NUTRITION AND HEALTH PROTECTION

**Head of Institute**

Prof. Ľudovít Varečka, DSc.



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**Foreword**

The institute consists of the Department of biochemistry and microbiology and the Department of nutrition and food assesment. It offers interesting undergraduate and graduate courses as well as PhD studies. Long history of research is supported by grants, good scientific equipment and laboratories for sensory analysis, genetics, cell culture and radioactive measurements.

**Teaching activities**

The institute guarantees the Dipl. Eng. study program Nutrition and Health Protection, and Medical Engineering, which were found to be very attractive for students, and PhD study programs Biochemistry, and Nutrition and Health Protection. The key subjects taught at the Institute are Biology, Biochemistry (7 courses), Microbiology (4 courses), Molecular biology and genetics (2 courses), Immunochemistry, Cell Cultures, Principles of Nutrition, Food chemistry (2 courses), Food analysis (2 courses), etc.

**Research profile**

Our research includes the metabolic and biological aspects of microbes. Main areas are the study of fungal transport, metabolism and enzyme secretion, evaluation of food quality and safety, designing functional foods and nutraceuticals, predictive microbiology and testing of biological effects of xenobiotics.

## Department of Biochemistry and Microbiology

Head of Department Prof. Ľudovít Varečka, DSc.



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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	LPP-0092-06	<a href="#">LPP-0092-06</a>
	Title: <i>(in slovak)</i>	Pilotný program rozvoja experimentálnych schopností z biológie a chémie u stredoškolských študentov.	
	Title:	Pilot program for the development of experimental skills in high school students in biology and chemistry.	
	Department:	Department of Biochemistry and Microbiology	
	Project duration:	01.10.2006 - 30.11.2009	
	Responsible person:	Prof. RNDr. Ľudovít Varečka, DrSc.	
APVV	Project number:	APVV-0642-07	<a href="#">APVV-0642-07</a>
	Title: <i>(in slovak)</i>	Využitie komplexných prírodných organických materiálov (KPOM) na energetické účely s použitím netradičných mikroorganizmov.	
	Title:	Exploitation of complex organic materials (CNOM) by means of non-traditional micro-organisms for energetic purposes.	
	Department:	Department of Biochemistry and Microbiology	
	Project duration:	01.09.2008 - 31.12.2010	
	Responsible person:	Prof. RNDr. Ľudovít Varečka, DrSc.	

VEGA	Project number:	1/3251/06	<a href="#">1/3251/06</a>
	Title: ( <i>in slovak</i> )	Úloha homeostázy H <sup>+</sup> pri adaptívnych odpovediach transportu živín vo vláknitých hubách.	
	Title:	The role of H <sup>+</sup> homeostasis in adaptive responses of nutrient transport in filamentous fungi.	
	Department:	Department of Biochemistry and Microbiology	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. RNDr. Ľudovít Varečka, DrSc.	
VEGA	Project number:	1/4305/07	<a href="#">1/4305/07</a>
	Title: ( <i>in slovak</i> )	Štúdium cytotoxicity a mechanizmu účinku nových xenobiotík	
	Title:	Study of cytotoxicity and mode of action of novel xenobiotics	
	Department:	Department of Biochemistry and Microbiology	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Soňa Jantová, CSc.	
VEGA	Project number:	1/0462/08	<a href="#">1/0462/08</a>
	Title: ( <i>in slovak</i> )	Mikroorganizmy izolované z lignitu - impulz pre štúdium regulácie metabolického obratu a potenciálny zdroj nových sekundárnych metabolitov.	
	Title:	Microbial isolates from lignite - an impetus for the study of metabolic turnover and a potential source of novel secondary metabolites	
	Department:	Department of Biochemistry and Microbiology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. RNDr. Daniela Hudecová, PhD.	
VEGA	Project number:	1/0589/08	<a href="#">1/0589/08</a>
	Title: ( <i>in slovak</i> )	Polymorfizmus génov pre vybrané subjednotky proteínkinázy závislej na 5'-AMP (AMPK) a jej vzťah ku obezite a pohybovej výkonnosti.	
	Title:	Polymorphism of the genes for selected subunits of 5'-AMP dependent protein kinase (AMPK) and its relationship to the obesity and physical fitness	
	Department:	Department of Biochemistry and Microbiology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Ing. Boris Lakatoš, PhD.	
VEGA	Project number:	1/0434/08	<a href="#">1/0434/08</a>
	Title: ( <i>in slovak</i> )	Mechanizmy sekrécie extracelulárnych proteáz vláknitej huby Trichoderma viride.	
	Title:	Mechanisms of extracellular protease secretion in filamentous fungus Trichoderma viride.	
	Department:	Department of Biochem.Microbiology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Ing. Martin Šimkovič, PhD.	

VEGA	Project number:	2/066/08	<a href="#">2/066/08</a>
	Title: ( <i>in slovak</i> )	Antioxidačná génová terapia in vivo pri liečbe hypertenzie.	
	Title:	In-vivo antioxidant gene transfer in the therapy of hypertension.	
	Department:	Department of Biochemistry and Microbiology	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	RNDr. Ima Dovinová, PhD.	
	Respons. person (STU):	RNDr. Helena Paulíková, CSc.	
Internat. project	Project number:	HENVINET No 037019	<a href="#">HENVINET No 037019</a>
	Title:	Health and environment network.	
	Title: ( <i>in slovak</i> )	Prepojenie zdravia a životného prostredia.	
	Project duration:	01.11.2006 - 30.04.2010	
	Project coordinator:	Dr. Inga Floisand	
	Respons. person (STU):	Ing. Andrea Šovčíková, PhD.	
	Department:	Department of Biochemistry and Microbiology	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
BT	<a href="#">Bc. Tomáš Bertók</a>	<a href="#">doc. Ing. Soňa Jantová, CSc.</a>
	Fotodynamická terapia - metóda využívaná pri liečbe rakoviny	
BT	<a href="#">Bc. Lucia Bialešová</a>	<a href="#">Ing. Boris Lakatoš, PhD.</a>
	Sledovanie vtoku Ca <sup>2+</sup> do ľudských lymfocytov pomocou fluorescenčných metód	
DT	<a href="#">Ing. Kristína Némethyová</a>	<a href="#">Ing. Petra Olejníková</a>
	Rezistencia vláknitých húb voči antimikrobiálnym látkam indukovaná UV-žiarením	
DT	<a href="#">Ing. Emília Gallová</a>	<a href="#">doc. RNDr. Daniela Hudecová, CSc.</a>
	Sekundárne metabolity mikromycéty <i>Epicoccum</i> sp. izolovanej z lignitu	
BT	<a href="#">Bc. Mária Čarná</a>	<a href="#">RNDr. Helena Paulíková, CSc.</a>
	Interakcia bunkovej membrány s potenciálnymi protinádorovými látkami	
BT	<a href="#">Bc. Zuzana Zemková</a>	<a href="#">Ing. Martin Šimkovič, PhD.</a>
	Intracelulárne proteázy z vláknitej huby <i>Trichoderma viride</i> .	
BT	<a href="#">Bc. Janka Helcová</a>	<a href="#">prof. RNDr. Ľudovít Varečka, DrSc.</a>
	Využitie Janusovej zelene na stanovenie počtu buniek	
DT	<a href="#">Ing. Martina Hamadová</a>	<a href="#">doc. RNDr. Daniela Hudecová, CSc.</a>
	Biologická aktivita nových Cu <sub>4</sub> Ox <sub>6</sub> (4 Mepy) <sub>4</sub> komplexov	
DT	<a href="#">Ing. Juraj Kučerák</a>	<a href="#">doc. Ing. Soňa Jantová, CSc.</a>
	Cytotoxická/antiproliferačná aktivita a mechanizmus účinku vybraných prírodných a syntetických látok	

DT	<a href="#">Ing. Alena Helcová</a>	<a href="#">doc. Ing. Milan Čertík, PhD.</a>
	Biochemická a molekulárna charakterizácia cystickej fibrózy	
BT	<a href="#">Bc. Kristína Jamborová</a>	<a href="#">RNDr. Helena Paulíková, CSc.</a>
	Glutacionylácia proteínov a apoptóza buniek	
BT	<a href="#">Bc. Mária Kristová</a>	<a href="#">doc. Ing. Soňa Jantová, CSc.</a>
	Úloha chemopreventívnych látok v liečbe rakoviny	
BT	<a href="#">Bc. Štefan Belický</a>	<a href="#">doc. Ing. Soňa Jantová, CSc.</a>
	Štúdium zdravotnej bezpečnosti nových biomateriálov využiteľných v medicíne	
BT	<a href="#">Bc. Ildikó Bénes</a>	<a href="#">Ing. Barbora Kaliňáková</a>
	Vplyv UV žiarenia na viabilitu <i>Aureobasidium pullulans</i>	
BT	<a href="#">Bc. Katarína Turáková</a>	<a href="#">Ing. Boris Lakatoš, PhD.</a>
	Biochemické zmeny sprevádzajúce stárnutie nekonidujúceho mutanta vláknitej huby <i>Trichoderma viride</i>	
DT	<a href="#">Ing. Alena Opattová</a>	<a href="#">doc. Ing. Soňa Jantová, CSc.</a>
	Biologická aktivita extraktov rastlín rodu <i>Philadelphus</i>	
BT	<a href="#">Bc. Jana Balážiková</a>	<a href="#">Ing. Silvia Letašiová, PhD.</a>
	Rakovina pankreasu a vplyv faktorov životného prostredia	
DT	<a href="#">Ing. Stanislava Keltošová</a>	<a href="#">RNDr. Helena Paulíková, CSc.</a>
	Cytotoxicita nových DNA-interkalátorov	
BT	<a href="#">Bc. Martina Balážová</a>	<a href="#">Ing. Silvia Letašiová, PhD.</a>
	Rakovina obličiek a močového mechúra a vplyv faktorov životného prostredia	
DT	<a href="#">Ing. Katarína Koňariková</a>	<a href="#">Ing. Silvia Letašiová, PhD.</a>
	Cytotoxický a fototoxický účinok chinolónových derivátov v in vitro podmienkach	
DT	<a href="#">Ing. Veronika Dudová</a>	<a href="#">Ing. Martin Šimkovič, PhD.</a>
	Vývojové zmeny v rezistencii vláknitých húb voči mutagénom	

## Selected publications

**Birošová, Lucia** [70%] - **Mikulášová, Mária** [30%]: The mechanism of ciprofloxacin resistance in dihydrogen peroxide-induced mutants of *Salmonella enterica* subsp. *enterica* serovar Typhimurium consists mainly in mutations in *gyrA* gene and less in mutations affecting ciprofloxacin uptake. In: *Folia microbiologica*. - ISSN 0015-5632. - 53-4 (2008), s. 368-372, [Project number: 1/4305/07]

**Jantová, Soňa** [60%] - **Repický, Andrej** [10%] - Paulovičová, Eva [10%] - **Letašiová, Silvia** [10%] - Čipák, Ľuboš [10%]: Antiproliferative activity and apoptosis induced by 6-bromo-2-(morphin-1-yl)-4-anilinoquinazoline in leukemia cell lines. In: *Experimental Oncology*. - ISSN 0204-3564. - 30-2 (2008), s. 1-4, [Project number: APVT-20-007304. - 1/1173/04]

**Jantová, Soňa** [60%] - **Theiszová, Marica** [10%] - **Letašiová, Silvia** [10%] - **Birošová, Lucia** [10%] - **Palou, Martin Tchingnabé** [10%]: In vitro effects of fluor-hydroxyapatite, fluorapatite and hydroxyapatite on colony formation, DNA and mutagenicity: Genetic Toxicology and Environmental Mutagenesis. In: *Mutation Research*. - ISSN 1383-5718. - 652-2 (2008), s. 139-144, [Project number: APVT-20-015904]



**Jantová, Soňa** [70%] - **Repický, Andrej** [10%] - **Letašiová, Silvia** [10%] - Čipák, Ľuboš [10%]: 4-amino-3-acetylquinoline-induced apoptosis of murine L1210 leukemia cells involves ROS-mitochondrial-mediated death signaling and activation of p38 MAPK. In: Cell Biochemistry and Function. - ISSN 0263-6484. - 26-5 (2008), s. 609-619, [Project number: APVT-20-007304. - 1/1173/04]

**Segľa, Peter** [20%] - Miklovič, Jozef [10%] - **Mikloš, Dušan** [10%] - **Titiš, Ján** [10%] - **Herchel, Radovan** [5%] - **Moncol, Ján** [10%] - Kaliňáková, Barbora [10%] - **Hudecová, Daniela** [10%] - Mrázová, Viera [5%] - Lis, Tadeusz [5%] - **Melník, Milan** [5%]: Crystal structure, spectroscopic and magnetic properties, and antimicrobial activities of cobalt(II) 2-methylthionicotinate complex with N-heterocyclic ligands. In: Transition Metal Chemistry. - ISSN 0340-4285. - 33 (2008), s. 967-974.

**Šimkovič, Martin** [24%] - Ditte, Peter [24%] - Kurucová, Anita [24%] - **Lakatoš, Boris** [14%] - **Varečka, Ľudovít** [14%]: Ca<sup>2+</sup>-dependent induction of conidiation in submerged cultures of *Trichoderma viride*. In: Canadian Journal of Microbiology. - 54-4 (2008), s. 291-298, [Project number.: 1/2335/05. - 1/3251/06. - APVT- 20-003904]

Vrecková, Zuzana [20%] - **Brezová, Vlasta** [20%] - Bella, Maroš [20%] - **Milata, Viktor** [20%] - **Jantová, Soňa** [20%]: EPR study on photoinduced processes of novel quinolone derivatives. In: Chemické listy. - ISSN 0009-2770. - 102-S (2008), s. 521-522, [Project number: APVV-0055-07. - 1/0225/08. - 1/3579/06. - 1/4305/07]

**Paulíková, Helena** [35%] - Kadlečíková, Eva [15%] - Sucháňová, Mária [15%] - Valková, Zuzana [10%] - Rauko, Peter [10%] - **Hudecová, Daniela** [10%] - Valent, Aladár [5%]: Cytotoxicity of copper(II) complexes of N-salicyliden-L-glutamate: modulation by ascorbic acid. In: Neoplasma. - ISSN 0028-2685. - 55-4 (2008), s. 342-348, [Project number: 1/4305/07]

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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-20-005605	<a href="#">APVV-20-005605</a>
	Title: <i>(in slovak)</i>	Bezpečnosť a originalita remeselne vyrábaných syrov zo surového mlieka - aplikácia metód prediktívnej mikrobiológie a PCR pri hodnotení rizika (risk assessment)	
	Title:	Safety and originality of cheeses produced artisanally from raw milk- application of predictive microbiology and PCR methods in risk assessment	
	Department:	Department of Nutrition and Food Assessment	
	Project duration:	01.05.2006 - 30.04.2009	
	Responsible person:	Doc. Ing. Ľubomír Valík, PhD.	
APVV	Project number:	VMSP-P-0040-07	<a href="#">VMSP-P-0040-07</a>
	Title: <i>(in slovak)</i>	Vývoj prípravkov s obsahom štartovacích kultúr a ďalších zložiek pre výrobu funkčných cereálnych výrobkov.	
	Title:	Development of preparations with contents of starter cultures and further ingredients for production of cereal products.	
	Department:	Department of Nutrition and Food Assessment	
	Project duration:	01.01.2008 - 31.12.2008	
	Responsible person:	Ing. František Žitný	
ESF	Project number:	ESF/DP 161/05-I/32-2.1	<a href="#">ESF/DP 161/05-I/32-2.1</a>
	Title: <i>(in slovak)</i>	Školenie podnikateľských zručností pre priemysel s biotechnologickou orientáciou.	
	Title:	Training of enterprise skill for biotechnological industry.	
	Department:	Department of Nutrition and Food Assessment	
	Project duration:	01.06.2006 - 30.06.2008	
	Responsible person:	Doc. Ing. Ernest Šturdík, CSc.	
RAV MŠ SR	Project number:	4/0013/07	<a href="#">4/0013/07</a>
	Title: <i>(in slovak)</i>	Monitoring, frakcionácia a využitie cereálií pre produkciu zdraviu prospešných potravinárskych výrobkov.	
	Title:	Monitoring, fractionation and cereals utilization for healthy foods production.	
	Department:	Department of Nutrition and Food Assessment	
	Project duration:	01.01.2007 - 31.12.2009	
Responsible person:	doc. Ing. Ernest Šturdík, PhD.		

VEGA	Project number:	1/3488/06	<a href="#">1/3488/06</a>
	Title: <i>(in slovak)</i>	Štúdium, matematický popis a predikcia správania sa technologicky a hygienicky relevantnej mikroflóry v opracovaných a originálnych slovenských fermentovaných potravinách s cieľom zvýšiť ich hygienickú bezchybnosť, funkčné vlastnosti a trvanlivosť	
	Title:	Study, mathematical description and prediction of behaviour of technologically and hygienically relevant microflora in treated and original Slovak fermented food with the aim enhance their safety, functional properties and shelf-life	
	Department:	Department of Nutrition and Food Assessment	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Doc. Ing. Ľubomír Valík, PhD.	
VEGA	Project number:	1/0845/08	<a href="#">1/0845/08</a>
	Title: <i>(in slovak)</i>	Analýza zdraviu prospešných látok cereálií a ich využitie v pekárskech výrobkoch s preventívno-lekáorskymi vlastnosťami.	
	Title:	Analysis of health benefit cereal components and their use in bakery products with preventive and medicinal properties.	
	Department:	Department of Nutrition and Food Assessment	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. Ing. Mária Takáčsová, PhD.	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
BT	<a href="#">Bc. Jana Máleková</a> Slovenská výživová politika	<a href="#">doc. Ing. Ernest Šturdík, CSc.</a>
BT	<a href="#">Bc. Emília Valková</a> Voda v potravinách, vo výžive človeka a v životnom prostredí	<a href="#">doc. Ing. Ľubomír Valík, PhD.</a>
BT	<a href="#">Bc. Adriana Studeničová</a> Potravinová bezpečnosť	<a href="#">doc. Ing. Ernest Šturdík, CSc.</a>
DT	<a href="#">Ing. Petra Gereková</a> Isolation, Identification and Properties of Lactobacilli and Their Use in Bakery Starter Cultures	<a href="#">Ing. Eva Hybenová, PhD.</a>
DT	<a href="#">Ing. Ľubomír Mikuš</a> Využitie flavonoidov ako ingrediencií funkčných potravín	<a href="#">Ing. Mária Kováčová, PhD.</a>
BT	<a href="#">Bc. Adriana Zaťková</a> Význam lignanov v prevencii nádorových ochorení	<a href="#">Ing. Mária Kováčová, PhD.</a>

BT	<a href="#">Bc. Jana Savková</a> Probiotiká a materské mlieko	<a href="#">Ing. Eva Hybenová, PhD.</a>
BT	<a href="#">Bc. Natália Juríková</a> Štartovacie kultúry v pekárskom priemysle	<a href="#">Ing. Eva Hybenová, PhD.</a>
BT	<a href="#">Bc. Svetlana Kokošová</a> Antikarcinogénne zložky potravín	<a href="#">Ing. Eva Hybenová, PhD.</a>
DT	<a href="#">Ing. Agrikola Potzyová</a> Food Preservatives of Vegetables Origin	<a href="#">RNDr. Peter Fodran</a>
BT	<a href="#">Bc. Lucia Bučková</a> Zdraviu prospešné účinky rozpustnej a nerozpustnej vlákniny na ľudský organizmus	<a href="#">Ing. Mária Kováčová, PhD.</a>
BT	<a href="#">Bc. Marta Senková</a> Flavonoidy v potravinách a ich zdravotný úžitok	<a href="#">Ing. Mária Kováčová, PhD.</a>
DT	<a href="#">Ing. Ema Drobcová</a> Sója ako zdroj bielkovín a fytoestrogénov	<a href="#">Ing. Mária Kováčová, PhD.</a>
BT	<a href="#">Bc. Ildikó Cseriová</a> Význam probiotík pre ľudský organizmus a ich využitie v potravinárstve	<a href="#">Ing. Denisa Liptáková, PhD.</a>
BT	<a href="#">Bc. Eva Brejčáková</a> Prírodné toxické látky v potravinách	<a href="#">Ing. Eva Hybenová, PhD.</a>
BT	<a href="#">Bc. Alena Dunajčáková</a> Traditional and Modern Methods of making Bread	<a href="#">Ing. Zuzana Petruláková</a>
BT	<a href="#">Bc. Michal Porubiak</a> Účinky fenolových látok kakaových bôbov a ich produktov na ľudský organizmus	<a href="#">Ing. Mária Kováčová, PhD.</a>
BT	<a href="#">Bc. Beáta Cukrovaná</a> Vplyv výživy na srdcovocievne ochorenia	<a href="#">Ing. Eva Hybenová, PhD.</a>
DT	<a href="#">Ing. Miroslava Schmuckerová</a> Effects of Fractionation and Extrusion on Antioxidant Activity of Oat	<a href="#">Ing. Lucia Brindzová, PhD.</a>
DT	<a href="#">Ing. Margita Florovičová</a> Dynamika rastu mikroorganizmov počas kysnutia hrudkových syrov zo surového mlieka	<a href="#">doc. Ing. Ľubomír Valík, PhD.</a>
BT	<a href="#">Bc. Andrea Holubková</a> Výživové doplnky pre športovcov	<a href="#">doc. Ing. Ernest Šturdík, CSc.</a>
DT	<a href="#">Ing. Dagmar Simonidesová</a> Development of Starter Cultures to Foods on the Cereal Basis	<a href="#">doc. Ing. Ernest Šturdík, CSc.</a>
DissT	<a href="#">Ing. Lucia Brindzová, PhD.</a> Formation free radicals and their prevention with natural compounds from cereals	<a href="#">doc. Ing. Mária Takáčová, PhD</a>
DissT	<a href="#">RNDr. Barbora Vidová</a> Development of PCR Detection Method for Bovine Mastitis Bacteria and Study of Streptococcus agalactiae Surface Proteins Useful for Phage Display Vaccines	<a href="#">doc. Ing. Ernest Šturdík, PhD.</a>

## Selected publications

**Brindzová, Lucia** [40%] - **Čertík, Milan** [10%] - **Rapta, Peter** [10%] - **Zalibera, Michal** [20%] - **Mikulajová, Anna** [10%] - **Takáčsová, Maria** [10%]: Antioxidant activity, beta-glucan and lipid contents of oat varieties. In: Czech Journal of Food Sciences. - ISSN 1212-1800. - 26-3 (2008), s. 163-173, [Project number: 1/0845/08. - 1/3488/06. - 1/2390/05. - 4/0013/07. - APVT-20-004504]

Gremeň, Lukáš [40%] - **Moravčíková, Petra** [30%] - Fodran, Peter [27%]: GC-MS analýzy prírodných banánových aróm. In: Chemické listy. - ISSN 0009-2770. - 102-2 (2008), s. 148-151

**Mikulajová, Anna** [30%] - **Takáčsová, Maria** [20%] - **Alexy, Pavol** [30%] - **Brindzová, Lucia** [20%]: Optimalizácia extrakcie fenolových zložiek z pohánky na základe výsledkov plánovaného experimentu. In: Chemické listy. - ISSN 0009-2770. - 101-9 (2007), s. 563-568, [Project number: 2003 SP 27/028 0E 02/028 0E 02, ČÚ 02 VE 06]

**Moravčíková, Petra** [25%] - Fodran, Peter [25%] - Kolek, Emil [25%] - **Brezová, Vlasta** [25%]: Transformation of substituted cinnamic acids using L-cysteine metal complexes in aqueous media. In: Food Research International. - ISSN 0963-9969. - 41-4 (2008), s. 429-432, [Project number: 1/3579/06. - 1/3488/06]

**Liptáková, Denisa** [45%] - **Valík, Ľubomír** [40%] - **Medved'ová, Alžbeta** [10%] - Hudecová, Anna [5%]: Kvantitatívna analýza rastu *Escherichia coli* a *Lactococcus lactis* subsp. *lactis* pri súbežnej kultivácii v mlieku. In: Slovak Journal of Animal Science. - ISSN 1335-3686. - 41/2 (2008), s. 91-97

**Valík, Ľubomír** [45%] - **Medved'ová, Alžbeta** [45%] - **Liptáková, Denisa** [10%]: Characterization of the growth of *Lactobacillus rhamnosus* GG in milk at suboptimal temperatures. In: Journal of Food and Nutrition Research. - ISSN 1336-8672. - 47-2 (2008), s. 60-67 [Project number: APVV-20-005605. - 1/3488/06]

**Valík, Ľubomír** [43%] - **Medved'ová, Alžbeta** [45%] - **Bajúsová, Barbora** [6%] - **Liptáková, Denisa** [6%]: Variability of growth parameters of *Staphylococcus aureus* in milk. In: Journal of Food and Nutrition Research. - ISSN 1336-8672. - 47-1 (2008), s. 18-22.

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<http://www.kirp.chtf.stuba.sk/?lang=en>

**Foreword**

Our institute was established in 1.1.2006 from two departments:  
Department of Information Engineering and Process Control and  
Department of Mathematics. It offers interesting undergraduate and  
graduate courses as well as PhD studies.

**Teaching activities**

Department of Information Engineering and Process Control guarantees  
three study programs: bachelor study program Information Engineering,  
Automation and Management in Chemical and Food Industry, master  
study program Information Engineering, Automation and Management in  
Chemical and Food Industry and PhD study program Process Control.  
Department of Mathematics provides basic and advanced courses of  
Mathematics, Informatics, Mathematical Statistics and Numerical  
Mathematics in all study programs.

**Research profile**

Our research has focused on the following areas: modelling, identification,  
optimisation and process control in chemical and food industries, design  
and projection, measurement and data processing, process automation  
and visualisation, mathematical statistics, fuzzy sets and fuzzy logic,  
ordered algebraic structures.

## Department of Information Engineering and Process Control

Head of Department

Prof. Miroslav Fikar



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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	LPP-0092-07	<a href="#">LPP-0092-07</a>
	Title: ( <i>in slovak</i> )	Prediktívne riadenie hybridných systémov.	
	Title:	Model Predictive Control of Hybrid Systems.	
	Department:	Department of Information Engineering and Process Control	
	Project duration:	01.06.2008 - 31.05.2011	
	Responsible person:	Prof. Ing. Dr. Miroslav Fikar	
APVV	Project number:	APVV-0029-07	<a href="#">APVV-0029-07</a>
	Title: ( <i>in slovak</i> )	Algoritmy pre optimálne riadenie procesov prestupu tepla a látky s hybridnou dynamikou.	
	Title:	Algorithms for Optimal Control of Heat and Mass Transfer Processes with Hybrid Dynamics.	
	Department:	Department of Information Engineering and Process Control	
	Project duration:	01.09.2008 - 31.12.2010	
Responsible person:	Prof. Ing. Dr. Miroslav Fikar		
ESF	Project number:	13120200115	<a href="#">13120200115</a>
	Title: ( <i>in slovak</i> )	Doktorandi za modernú priemyselnú automatizáciu v SR	
	Title:	PhD students for modern industrial automation in SR	
	Department:	Department of Information Engineering and Process Control	
	Project duration:	28.06.2006 - 30.11.2008	
	Responsible person:	Prof. Ing. Dr. Miroslav Fikar	

VEGA	Project number:	1/3081/06	<a href="#">1/3081/06</a>
	Title: ( <i>in slovak</i> )	Optimalizácia a riadenie chemických a biochemických procesov.	
	Title:	Optimisation and control of chemical and biochemical processes.	
	Department:	Department of Information Engineering and Process Control	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. Dr. Ing. Miroslav Fikar	
VEGA	Project number:	1/4055/07	<a href="#">1/4055/07</a>
	Title: ( <i>in slovak</i> )	Moderné prístupy k riadeniu chemických a biochemických procesov s neurčitostami.	
	Title:	Advanced approaches to control of chemical and biochemical processes with uncertainties.	
	Department:	Department of Information Engineering and Process Control	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Monika Bakošová, PhD.	
Internat. project	Project number:	SK-MAD-001-06	<a href="#">SK-MAD-001-06</a>
	Title:	Modelovanie, optimalizácia a riadenie procesov prestupu tepla a látky.	
	Title: ( <i>in slovak</i> )	Modelovanie, optimalizácia a riadenie procesov prestupu tepla a látky.	
	Project duration:	01.01.2007 - 31.12.2008	
	Project coordinator:	Prof. Dr. Ing. Miroslav Fikar	
	Respons. person (STU):	Prof. Dr. Ing. Miroslav Fikar	
Internat. project	Project number:	SK-CZ-0042-07	<a href="#">SK-CZ-0042-07</a>
	Title:	Algorithms for control of processes with mass and heat transfer.	
	Title: ( <i>in slovak</i> )	Algoritmy pre riadenie procesov prestupu látky a tepla.	
	Project duration:	01.01.2008 - 31.12.2009	
	Project coordinator:	doc. Ing. Monika Bakošová, PhD.	
	Respons. person (STU):	doc. Ing. Monika Bakošová, PhD.	
Internat. project	Project number:	SK-FR-0003-07	<a href="#">SK-FR-0003-07</a>
	Title:	Dynamic and Global Optimisation of Processes.	
	Title: ( <i>in slovak</i> )	Dynamická a globálna optimalizácia procesov.	
	Project duration:	01.02.2008 - 31.12.2009	
	Project coordinator:	prof. Ing. Miroslav Fikar, Dr.	
	Respons. person (STU):	prof. Ing. Miroslav Fikar, Dr.	
Department:	Department of Information Engineering and Process Control		

ESF	Project number:	13120120287	13120120287
	Title:	Preparation of university teachers for ICT in education	
	Title: <i>(in slovak)</i>	Príprava učiteľov na využívanie IKT vo vyučovacom procese	
	Project duration:	01.11.2006 - 30.11.2008	
	Project coordinator:	prof. Ing. Miroslav Fikar, Dr.	
	Respons. person (STU):	prof. Ing. Miroslav Fikar, Dr.	
	Department:	Department of Information Engineering and Process Control	
Internat. project	Project number:	CH-SK	CH-SK
	Title:	Software for modeling and simulation of hybrid systems	
	Title: <i>(in slovak)</i>	Tvorba softwaru na modelovanie a simuláciu hybridných systémov	
	Project duration:	2007 - 2009	
	Project coordinator:	Ing. Michal Kvasnica, PhD., Ing. Martin Herceg	
	Respons. person (STU):	Ing. Michal Kvasnica, PhD., Ing. Martin Herceg	
	Department:	Department of Information Engineering and Process Control	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Peter Šlapanský</a> Informačný systém pre sklad motorových palív v Oktan a.s. Kežmarok	<a href="#">Ing. Ľuboš Čirka, PhD.</a>
BT	<a href="#">Bc. Erika Szakálová</a> Control using the industrial control system SIMATIC	<a href="#">Ing. Katarína Vaneková</a>
DT	<a href="#">Ing. Gabriela Beňová</a> Spracovanie Simulinkových schém v Matlabe	<a href="#">Ing. Michal Kvasnica, PhD.</a>
BT	<a href="#">Bc. Juraj Oravec</a> Tvorba softvéru pre syntézu regulátorov	<a href="#">doc. Ing. Monika Bakošová, CSc.</a>
BT	<a href="#">Bc. Ján Dzurov</a> Webové služby pre spracovanie HTML stránok	<a href="#">Ing. Michal Kvasnica, PhD.</a>
BT	<a href="#">Bc. Róbert Uhrecký</a> The creation of a web page with the help of XHTML/CSS	<a href="#">Ing. Tomáš Hirmajer, PhD.</a>
BT	<a href="#">Bc. Lýdia Pavúková</a> Dynamické generovanie prechodových charakteristík pomocou PHP	<a href="#">Ing. Tomáš Hirmajer, PhD.</a>
BT	<a href="#">Bc. Veronika Csizmadiaová</a> Modelovanie a riadenie laboratórnych zásobníkov kvapaliny	<a href="#">Ing. Jana Závacká</a>
BT	<a href="#">Bc. Jaroslav Kuzma</a> Vytvorenie webovej stránky pomocou XHTML/CSS	<a href="#">Ing. Tomáš Hirmajer, PhD.</a>
BT	<a href="#">Bc. Martin Kalúz</a> Elektronická učebnica pre predmet Experimentálna identifikácia	<a href="#">Ing. Ľuboš Čirka, PhD.</a>
BT	<a href="#">Bc. Renáta Švardová</a> Robustné riadenie procesov s dopravným oneskorením	<a href="#">doc. Ing. Monika Bakošová, CSc.</a>

BT	<a href="#">Bc. Martin Struhár</a> Prehľad spôsobov a aplikácií jazykovej lokalizácie open-source projektov	<a href="#">prof. Dr. Ing. Miroslav Fikar</a>
BT	<a href="#">Bc. Ivana Repčíková</a> Časové odozvy prietochných procesov s jednoduchou akumuláciou	<a href="#">prof. Ing. Ján Mikleš, DrSc.</a>

BT	<a href="#">Bc. Miriam Hulíková</a> Prediktívne riadenie chemického reaktora	<a href="#">Ing. Anna Vasičkaninová</a>
BT	<a href="#">Bc. Jozef Merčák</a> Analýza systémov s neurčitostami a robustného riadenia	<a href="#">Ing. Jana Závacká</a>
DT	<a href="#">Ing. Viktor Lučanský</a> Riadiaci systém Allen-Bradley pre sklad bioetanolu	<a href="#">Ing. Katarína Vaneková</a>
BT	<a href="#">Bc. Dávid Schmidt</a> Adaptívny neuro-fuzzy inferenčný systém	<a href="#">Ing. Anna Vasičkaninová</a>
BT	<a href="#">Bc. Radka Doležalová</a> Riadiaci systém FOXBORO	<a href="#">Ing. Katarína Vaneková</a>
BT	<a href="#">Bc. Mário Briš</a> Riadiaci systém FOXBORO	<a href="#">Ing. Katarína Vaneková</a>
BT	<a href="#">Bc. Ivana Rauová</a> Optimálne riadenie zásobníkov kvapaliny	<a href="#">Ing. Michal Kvasnica, PhD.</a>
BT	<a href="#">Bc. Robert Taraba</a> Riadenie robotov LEGO Mindstorms	<a href="#">Ing. Michal Kvasnica, PhD.</a>
BT	<a href="#">Bc. Eva Turayová</a> Prediktívne riadenie zásobníkov kvapaliny	<a href="#">Ing. Michal Kvasnica, PhD.</a>
BT	<a href="#">Bc. Zuzana Jakubcová</a> Analýza riadenia prekladu projektu Moodle do slovenského jazyka	<a href="#">prof. Dr. Ing. Miroslav Fikar</a>
BT	<a href="#">Bc. Andrea Szabová</a> Využitie WSDL služieb v prostredí Matlab	<a href="#">Ing. Michal Kvasnica, PhD.</a>
BT	<a href="#">Bc. Katarína Bangová</a> Riadenie technologického procesu pri pôsobení porúch	<a href="#">Ing. Anna Vasičkaninová</a>
BT	<a href="#">Bc. Lenka Vlková</a> Elektronická učebnica pre predmet Informatizácia a informačné systémy	<a href="#">Ing. Ľuboš Čirka, PhD.</a>
BT	<a href="#">Bc. Ladislav Miklovitz</a> Prediktívne riadenie zásobníkov kvapaliny	<a href="#">Ing. Michal Kvasnica, PhD.</a>
BT	<a href="#">Bc. Mária Mušáková</a> Modelovanie a riadenie chemického prietokového reaktora s miešaním	<a href="#">Ing. Juraj Vöröš</a>
BT	<a href="#">Bc. Tibor Kórka</a> Riadenie procesov s dopravným oneskorením	<a href="#">doc. Ing. Monika Bakošová, CSc.</a>
BT	<a href="#">Bc. Katarína Černá</a> Identifikácia chemického reaktora metódou ANFIS	<a href="#">Ing. Anna Vasičkaninová</a>
BT	<a href="#">Bc. Jana Kmeťová</a> Web aplikácia na spracovanie a analýzu údajov	<a href="#">Ing. Ľuboš Čirka, PhD.</a>
DT	<a href="#">Ing. Radoslav Paulen</a> Global Optimization of Processes	<a href="#">prof. Dr. Ing. Miroslav Fikar</a>
BT	<a href="#">Bc. Alexander Szűcs</a> Control using the industrial control system SIMATIC	<a href="#">Ing. Katarína Vaneková</a>
BT	<a href="#">Bc. Richard Dvoran</a> Tvorba dynamických webových stránok	<a href="#">Ing. Ľuboš Čirka, PhD.</a>

## Selected publications

**Bakošová, Monika** [50%] - **Fikar, Miroslav** [50%]: Riadenie procesov. - , 2008 ; : STU v Bratislave, 2008. - 1-193 s. - ISBN 978-80-227-2841-6

**Mészáros, Alojz** [60%] - **Vöröš, Juraj** [40%]: Design of Intelligent Controllers for Biotechnological Process. In: Acta Chimica Slovaca : Vol.1-1 (2008). - : STU v Bratislave. - ISBN 978-80-227-2957-4. - 208?220

**Vaneková, K.** [40%] - **Závacká, J.** [30%] - **Bakošová, Monika** [20%] - **Puna, Dalibor** [10%]: Robustné riadenie laboratórneho procesu riadiacim systémom Simatic. In: Automatizace. - ISSN 0005-125X. - Roč.51-č.1 (2008), 34-37

**Vöröš, Juraj** [40%] - **Mikleš, Ján** [40%] - **Čirka, Ľuboš** [20%]: Parameter Estimation of Nonlinear Systems. In: Acta Chimica Slovaca : Vol.1-1 (2008). - : STU v Bratislave. - ISBN 978-80-227-2957-4. - 309?320

**Bakošová, Monika** [60%] - **Puna, Dalibor** [30%] - **Vasičkaninová, Anna** [10%]: Robust control of chemical reactors. In: Acta Chimica Slovaca : Vol.1-1. - : STU v Bratislave, 2008. - ISBN 978-80-227-2957-4. - 12-23

**Čirka, Ľuboš** [30%] - **Fikar, Miroslav** [30%] - **Kvasnica, Michal** [20%] - **Herceg, Martin** [20%]: Experimental Identification - an Interactive Online Course. In: Proceedings of the 17th IFAC World Congress of the International Federation of Automatic Control, Seoul, Korea, 6.-11.7.2008. - : Elsevier, 2008. - ISBN 978-1-1234-7890-2. - S. 9812-9816

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## Projects

Type of Project	Details 1	Details 2	Code
VEGA	Project number:	1/3012/06	<a href="#">1/3012/06</a>
	Title: ( <i>in slovak</i> )	Konjunktívne agregáčne operátory.	
	Title:	Conjunctive Aggregation Operatos.	
	Department:	Department of Mathematics	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. RNDr. Anna Kolesárová, CSc.	
VEGA	Project number:	1/0374/08	<a href="#">1/0374/08</a>
	Title: ( <i>in slovak</i> )	Viačhodnotové logiky v rozhodovacích procesoch.	
	Title:	Many valued logics in decision making.	
	Department:	Department of Mathematics	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	doc. RNDr. Michal Šabo, PhD.	

## Selected publications

Durante, Fabrizio [1%] - **Kolesárová, Anna** [49%] - Mesiar, Radko [49%] - Sempi, Carlo [1%]: Semilinear copulas. In: Fuzzy Sets and Systems. - ISSN 0165-0114. - Vol. 159, Issue 1 (2008), 63-76

**Kolesárová, Anna** [49%] - Mesiar, Radko [49%] - Sempi, Carlo [2%]: Measure-preserving transformations, copulae and compatibility. In: Mediterranean Journal of Mathematics. - ISSN 1660-5446. - 5-5 (2008), 325-339

**Varga, Štefan** [100%]: Robus estimations in classical regression models versus robus estimations in fuzzy regression models. In: Kybernetika. - ISSN 0023-5954. - Vol. 43, No. 4 (2007), s. 503-508

Janiga, Ivan [40%] - Mocák, Ján [40%] - **Garaj, Ivan** [20%]: Comparison of minimum detectable concentration with the IUPAC detection limit. In: Measurement Science Review. - ISSN 1335-8871. - Vol. 8, Section 1, No. 5 (2008), s. 108-110 [Project number.: 1/3182/06]

**Jasem, Milan** [100%]: On ideals of lattice ordered monoids. In: Mathematica Bohemica. - ISSN 0862-7959. - 132-4 (2007), s. 369-387



## INSTITUTE OF CHEMICAL AND ENVIRONMENTAL ENGINEERING

### Head of Institute

Assoc. Prof. Ľudovít Jelemenský, PhD.



### Contact

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### Foreword

The Institute has a unique position among academic institutions in Slovakia being the only one in the country providing full three-stage university education and academic research in the field of chemical engineering. It is organized into two departments – Department of Chemical and Biochemical Engineering and Department of Environmental Engineering that carry out education and research in the areas of chemical, biochemical, food, safety and environmental engineering.

### Teaching activities

The institute guarantees Bachelor Study Program of Chemical Engineering, Master Study Programs of Chemical Engineering and of Environmental Chemistry and Technology and PhD. Study Programs of Chemical Engineering and of Environmental Engineering. The teachers of the institute provide most study program courses on the master and PhD level and about half of the courses on the bachelor level. Besides, they provide courses for other study programs at the Faculty which include Chemical Engineering I and II, Material (and Energy) Balances, Equipment in Chemical and Food Industry, Chemical Engineering Thermodynamics, Reaction Engineering, Biochemical Engineering, and Safety Engineering.

### Research profile

The research at the Institute is carried out within seven research groups: Bioprocess Engineering, Diffusional and Separation Processes, Reactor and Safety Engineering, Membrane Processes, Momentum and Heat Transfer, Environmental Engineering: Water Treatment and Purification, and Chemical Waste Disposal and Environmental Risk Assessment. Besides usual research and technical projects, publication activities, the Institute co-organizes together with the Slovak Society of Chemical Engineering and Association of Purification Experts of Slovak annual international conferences of chemical engineering and biannual conferences on wastewater treatment.

## Department of Chemical and Biochemical Engineering

**Head of Department** Assoc. Prof. Milan Polakovič, PhD.



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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	LPP-0181-06	<a href="#">LPP-0181-06</a>
	Title: ( <i>in slovak</i> )	Modelovanie procesov reaktívnej separácie.	
	Title:	Modeling of reactive separation processes.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	13.11.2006 - 30.11.2009	
	Responsible person:	Prof. Ing. Jozef Markoš, DrSc.	
APVV	Project number:	APVT-99-018602	<a href="#">APVT-99-018602</a>
	Title: ( <i>in slovak</i> )	Syntéza polykryštalického indium fosfidu InP a jeho charakterizácia.	
	Title:	Synthesis of polycrystalline indium phosphide InP and its characterisation.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	14.07.2003 - 31.12.2008	
	Responsible person:	Ing. Jozef Matuška, PhD.	
	Respons. person (STU):	Doc. Ing. Ján Stopka, PhD.	
APVV	Project number:	APVV-99-004405	<a href="#">APVV-99-004405</a>
	Title: ( <i>in slovak</i> )	Štúdium tvorby 2-fenyletanolu v integrovanom systéme s kontinuálnou separáciou produktu	
	Title:	Study of 2-phenylethanol formation in the integrated system of continuous product separation	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.05.2006 - 31.12.2008	
	Responsible person:	Prof. Ing. Vladimír Bálež, DrSc.	

APVV	Project number:	APVV-51-033205	<a href="#">APVV-51-033205</a>
	Title: ( <i>in slovak</i> )	Geneticky modifikované mikroorganizmy ako celobunkové katalyzátory enantioselektívnych biooxidácií pre nové imobilizované biotechnológie.	
	Title:	Genetically engineered microorganisms as whole-cell catalysts of enantioselective biooxidations performing by novel immobilization biotechnologies.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.05.2006 - 30.04.2009	
	Responsible person:	Ing. Peter Gemeiner, DrSc.	
	Respons. person (STU):	Doc. Ing. Vladimír Štefuca, CSc.	
APVV	Project number:	LPP-0234-06	<a href="#">LPP-0234-06</a>
	Title: ( <i>in slovak</i> )	Chromatografická separácia fruktooligosacharidov.	
	Title:	Chromatographic separation of fructooligosaccharides.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	13.11.2006 - 30.11.2009	
	Responsible person:	Doc. Ing. Milan Polakovič, CSc.	
APVV	Project number:	LPP-0175-06	<a href="#">LPP-0175-06</a>
	Title: ( <i>in slovak</i> )	Veda a výskum - hnacia sila prosperity.	
	Title:	Science a research - driving force of prosperity.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.01.2007 - 31.10.2009	
	Responsible person:	Prof. Ing. Vladimír Bálež, DrSc.	

APVV	Project number:	APVV – 0492-06	<a href="#">APVV – 0492-06</a>
	Title: <i>(in slovak)</i>	Modelovanie disperzie nebezpečných látok v atmosfére pomocou CFD prístupu.	
	Title:	Mathematical modeling of dispersion hazardous materials in atmosphere by CFD approach.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.02.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Ľudovít Jelemenský, PhD.	
APVV	Project number:	APVV-0353-06	<a href="#">APVV-0353-06</a>
	Title: <i>(in slovak)</i>	Spresnenie termodynamického opisu viaczložkovej rovnováhy kvapalina-para a kvapalina-kvapalina-para pre potreby modelovania separačných zariadení.	
	Title:	Improvement of thermodynamic description of multicomponent vapour-liquid and liquid-liquid-vapour equilibrium systems for design of separation columns.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.02.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Elena Graczová, PhD.	
APVV	Project number:	APVV-0518-07	<a href="#">APVV-0518-07</a>
	Title: <i>(in slovak)</i>	Integrované reakčné systémy na biokatalytickú redukciu prochirálnych karbonylových zlúčenín.	
	Title:	Integrated reduction systems for biocatalytic reduction of prochiral carbonyl compounds	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.06.2008 - 31.12.2010	
	Responsible person:	prof. Ing. Jozef Markoš, DrSc.	

APVV	Project number:	LPP-0230-07	<a href="#">LPP-0230-07</a>
	Title: <i>(in slovak)</i>	Štúdium kinetiky splyňovania biomasy na procesný plyn.	
	Title:	Kinetic study of biomass gasification to process gas	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.07.2008 - 30.06.2012	
	Responsible person:	Doc. Ing. Ľudovít Jelemenský, PhD.	
APVV	Project number:	LPP-0221-07	<a href="#">LPP-0221-07</a>
	Title: <i>(in slovak)</i>	Transportné a kinetické javy v membránovej chromatografii.	
	Title:	Transport and kinetic phenomena in membrane chromatography	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.07.2008 - 30.06.2012	
	Responsible person:	Doc. Ing. Milan Polakovič, PhD.	
APVV	Project number:	APVV-0355-07	<a href="#">APVV-0355-07</a>
	Title: <i>(in slovak)</i>	Modelovanie membránových reaktorov.	
	Title:	Membrane reactors modelling	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.09.2008 - 31.12.2010	
	Responsible person:	Ing. Zuzana Švandová, PhD.	
VEGA	Project number:	1/3581/06	<a href="#">1/3581/06</a>
	Title: <i>(in slovak)</i>	Spresnenie opisu viacložkovej rovnováhy kvapalina – para a kvapalina – kvapalina pre potreby separácie kvapalín destiláciou, extrakciou a extrakčnou destiláciou.	
	Title:	Specification of prediction of multi-component vapor-liquid and liquid-liquid equilibria for the purpose of separation of liquids by distillation, extraction and extractive distillation.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Doc. Ing. Elena Graczová, PhD.	

VEGA	Project number:	1/3573/06	<a href="#">1/3573/06</a>
	Title: <i>(in slovak)</i>	Modelovanie a štúdium hydrodynamiky a prestupu kyslíka v airlift bioreaktore.	
	Title:	Modeling, hydrodynamics and mass transfer in airlift bioreactor.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Prof. Ing. Jozef Markoš, DrSc.	
VEGA	Project number:	1/3565/06	<a href="#">1/3565/06</a>
	Title: <i>(in slovak)</i>	Inžinierske aspekty chromatografickej separácie proteínov a sacharidov.	
	Title:	Engineering aspects of proteins and saccharides chromatographic separation	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Doc. Ing. Milan Polakovič, CSc.	
VEGA	Project number:	1/3582/06	<a href="#">1/3582/06</a>
	Title: <i>(in slovak)</i>	Mechanizmy a kinetika inaktívácie enzýmov.	
	Title:	Mechanisms and kinetics of enzymes inactivation.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.01.2006 - 31.12.2008	
	Responsible person:	Doc. Ing. Vladimír Štefuca, PhD.	
VEGA	Project number:	1/4446/07	<a href="#">1/4446/07</a>
	Title: <i>(in slovak)</i>	Charakterizácia produktov pyrolýzy odpadových pneumatík.	
	Title:	Characterization of waste tire pyrolysis products.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Ing. Juma Haydary, PhD.	



VEGA	Project number:	1/4447/07	<a href="#">1/4447/07</a>
	Title: <i>(in slovak)</i>	Zlepšenie bezpečnosti priemyselných chemických procesov pomocou virtuálneho dynamického simulátora.	
	Title:	Improve safety of chemical processes using virtual dynamic simulators.	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.01.2007 - 31.12.2009	
	Responsible person:	Doc. Ing. Ľudovít Jelemenský, PhD.	
VEGA	Project number:	1/0876/08	<a href="#">1/0876/08</a>
	Title: <i>(in slovak)</i>	Afinitné mikročastice, nanočastice a micely a ich použitie na uskutočnenie separácií a reakcií v sústavách s membránami.	
	Title:	Affinity microparticles, nanoparticles and micelles, and their application in separation and reaction membrane systems	
	Department:	Department of Chemical and Biochemical Engineering	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Ing. Štefan Schlosser, PhD.	
Internat. project	Project number:	NMP3-CT-2004-500160	<a href="#">NMP3-CT-2004-500160</a>
	Title:	Advanced Interactive Materials by Design.	
	Title: <i>(in slovak)</i>	Progresívne interaktívne materiály pomocou navrhovania.	
	Project duration:	01.04.2004 - 31.03.2008	
	Project coordinator:	Prof. Andrzej Górak	
	Respons. person (STU):	Doc. Ing. Milan Polakovič, CSc.	
	Department:	Department of Chemical and Biochemical Engineering	

Internat. project	Project number:	NMP2-CT-2005-515831	<a href="#">NMP2-CT-2005-515831</a>
	Title:	Virtual reality and human factors applications for improving safety.	
	Title: <i>(in slovak)</i>	Využitie virtuálnej reality a ľudského činiteľa na zlepšenie bezpečnosti.	
	Project duration:	01.05.2005 - 30.04.2009	
	Project coordinator:	Prof. Alberto Cigada	
	Respons. person (STU):	Doc. Ing. Ľudovít Jelemenský, CSc.	
	Department:	Department of Chemical and Biochemical Engineering	
Internat. project	Project number:	SK-MAD-014-06	<a href="#">SK-MAD-014-06</a>
	Title:	Hybridné procesy na produkciu organických kyselín a ich esterov.	
	Title: <i>(in slovak)</i>	Hybridné procesy na produkciu organických kyselín a ich esterov.	
	Project duration:	01.01.2007 - 31.12.2008	
	Project coordinator:		
	Respons. person (STU):	Ing. Štefan Schlosser, PhD.	
	Department:	Department of Chemical and Biochemical Engineering	
Internat. project	Project number:	147-063	<a href="#">147-063</a>
	Title:	A Euro-Asia partnership for development human resource capacity of engineering education in Afghanistan.	
	Title: <i>(in slovak)</i>	Euro-ázijský partnerský projekt na zvýšenie kapacity ľudských zdrojov v inžinierskom vzdelávaní v Afganistane	
	Project duration:	01.01.2008 - 30.12.2010	
	Project coordinator:	Ing. Juma Haydary, PhD.	
	Respons. person (STU):	Ing. Juma Haydary, PhD.	
	Department:	Department of Chemical and Biochemical Engineering	

Internat. project	Project number:	04-AS-004	<a href="#">04-AS-004</a>
	Title:	Study of the adsorption-membrane filtration (Amf) hybrid process for removal of boron from seawater.	
	Title: <i>(in slovak)</i>	Štúdium hybridného procesu adsorpcia-membránová filtrácia (Amf) na odstraňovanie bóru z morskej vody.	
	Project duration:	01.02.2005 - 31.12.2008	
	Project coordinator:	Prof. Dr. Nalan Kabay	
	Respons. person (STU):	Ing. Štefan Schlosser, PhD.	
	Department:	Department of Chemical and Biochemical Engineering	

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
BT	<a href="#">Bc. Mária Petková</a>	<a href="#">doc. Ing. Ján Stopka, CSc.</a>
	Návrh technologickej linky na výrobu formaldehydu	
DT	<a href="#">Ing. Michal Vacho</a>	<a href="#">Ing. Jaroslav Šefčík</a>
	Intenzifikácia výroby polyolov v NCHZ Nováky	
BT	<a href="#">Bc. Tomáš Szvitek</a>	<a href="#">Ing. Juma Haydary, PhD.</a>
	Termická dekompozícia odpadových polymérov	
BT	<a href="#">Bc. Lýdia Šišková</a>	<a href="#">prof. Ing. Jozef Markoš, DrSc.</a>
	Návrh technologickej linky na výrobu cyklohexánu z benzénu	
BT	<a href="#">Bc. Zuzana Imreová</a>	<a href="#">doc. Ing. Milan Polakovič, CSc.</a>
	Návrh výroby izoglukózového sirupu	
DT	<a href="#">Ing. Peter Kovačín</a>	<a href="#">prof. Ing. Jozef Markoš, DrSc.</a>
	Modelovanie hybridných membránových bioreaktorov	
DT	<a href="#">Ing. Andrej Lukáč</a>	<a href="#">prof. Ing. Jozef Markoš, DrSc.</a>
	Modelovanie airlift bioreaktorov	
BT	<a href="#">Bc. Miroslava Kleimanová</a>	<a href="#">Ing. Pavel Ačai, CSc.</a>
	Návrh prietokového miešaného bioreaktora na výrobu etanolu	
BT	<a href="#">Bc. Peter Devát</a>	<a href="#">doc. Ing. Ľudovít Jelemenský, CSc.</a>
	Návrh spaľovacieho zariadenia na zníženie prchavých organických látok zo separátorov olejov z odpadových vôd	
BT	<a href="#">Bc. Ivan Šimko</a>	<a href="#">Ing. Viera Illeová, PhD.</a>
	Návrh bioreaktora na výrobu 2-fenyletanolu	
DT	<a href="#">Ing. Tomáš Pavlík</a>	<a href="#">Ing. Juma Haydary, PhD.</a>
	Simulácia primárneho delenia ropy	

BT	<a href="#">Bc. Ján Belorit</a>	<a href="#">Ing. Marcela Šedová, PhD.</a>
	Návrh technológie fermentačnej produkcie intracelulárnej fruktozyltransferázy pomocou Aureobasidium pullulans	
DT	<a href="#">Ing. Ján Peter</a>	<a href="#">Ing. Pavel Timár, CSc.</a>
	Prestup tepla pri odparovaní olejov zo stekajúceho filmu	
DT	<a href="#">Ing. Peter Ľapaj</a>	<a href="#">doc. Ing. Milan Polakovič, CSc.</a>
	Charakterizácia štruktúry pórov adsorpčných chromatografických membrán	
BT	<a href="#">Bc. Miroslava Madliaková</a>	<a href="#">Ing. Marcela Šedová, PhD.</a>
	Návrh technológie výroby fruktooligosacharidov použitím imobilizovanej extracelulárnej fruktozyltransferázy	
BT	<a href="#">Bc. Martin Szijjarto</a>	<a href="#">Ing. Pavol Steltenpohl, PhD.</a>
	Separácia arómátov z reformovaného benzínu	
BT	<a href="#">Bc. Michal Kebísek</a>	<a href="#">Ing. Juma Haydary, PhD.</a>
	Výpočet hrúbky koksu, vzniknutej pri transporte ropných produktov	
BT	<a href="#">Bc. Petra Podmanická</a>	<a href="#">Ing. Viera Illeová, PhD.</a>
	Návrh vsádzkového bioreaktora na výrobu kyseliny citrónovej	
BT	<a href="#">Bc. Juraj Moravčík</a>	<a href="#">doc. Ing. Milan Polakovič, CSc.</a>
	Návrh separácie farmaceutických monoklonálnych protilátok	
BT	<a href="#">Bc. Veronika Trnková</a>	<a href="#">doc. Ing. Ján Stopka, CSc.</a>
	Technologická linka na výrobu nitróznych plynov	
DT	<a href="#">Ing. Gabriel Csiba</a>	<a href="#">doc. Ing. Otto Mierka, CSc.</a>
	Náhrada prietochného chladiaceho systému za cirkulačný na AVD 6 (Slovnaft)	
BT	<a href="#">Bc. Michal Kuchta</a>	<a href="#">doc. Ing. Otto Mierka, CSc.</a>
	Návrh zariadenia na výrobu sušeného mlieka	
DT	<a href="#">Ing. Alena Suchoňová</a>	<a href="#">doc. Ing. Ján Stopka, CSc.</a>
	Modelovanie homogenizácie polymérov v závitovkovom extrúderi	
BT	<a href="#">Bc. Peter Csontos</a>	<a href="#">Ing. Pavel Ačai, CSc.</a>
	Návrh prietokového miešaného bioreaktora na výrobu kyseliny citrónovej	
DT	<a href="#">Ing. Lukáš Gašparovič</a>	<a href="#">doc. Ing. Ľudovít Jelemenský, CSc.</a>
	CFD modelovanie disperzie amoniaku v atmosfére	

## Selected publications

**Antošová, Monika** [20%] - **Illeová, Viera** [20%] - **Vandáková, Marcela** [20%] - Družkovská, Alexandra [20%] - **Polakovič, Milan** [20%]: Chromatografická separácia a kinetické vlastnosti fruktozyltransferázy z Aureobasidium pullulans. In: Journal of Biotechnology. - ISSN 0168-1656. - 135-1 (2008), s. 58-63

Fehér, E. [18%] - **Illeová, Viera** [18%] - Kelemen-Horváth, I. [16%] - Bélafi-Bakó, Katalin [16%] - **Polakovič, Milan** [16%] - Gubicza, László [16%]: Enzymatic production of isoamyl acetate in an ionic liquid-alcohol biphasic system. In: Journal of Molecular Catalysis. - ISSN 0304-5102. - B Enzymatic 50-1 (2008), s. 28-32

**Graczová, Elena [65%] - Steltenpohl, Pavol [35%]:** Phase equilibria of binary systems comprising formic acid, N,N-dimethylformamide, 1-chloro-2-ethylhexane and 2-ethyl-1-hexanol. In: Journal of Chemical and Engineering data. - ISSN 0021-9568. - 53-8 (2008), s. 1785-1788

**Marták, Ján [45%] - Schlosser, Štefan [40%] - Vičková, Silvia [15%]:** Pertraction of lactic acid through supported liquid membranes containing. In: Journal of Membrane Science. - 318 (2008), 298-310, [Project number.: 1/2468/05]

Sláva, Juraj [34%] - **Švandová, Zuzana [33%] - Markoš, Jozef [33%]:** Modelling of reactive separations including fast chemical reactions in CSTR. In: Chemical Engineering Journal. - ISSN 0300-9467. - 139-3 (2008), s. 517-522

**Steltenpohl, Pavol [35%] - Graczová, Elena [65%]:** Vapor-liquid equilibria of selected components in propylene oxide production. In: Journal of Chemical and Engineering data. - ISSN 0021-9568. - 53/7 (2008), s. 1579-1582

**Švandová, Zuzana [34%] - Markoš, Jozef [33%] - Jelemenský, Ľudovít [33%]:** Impact of mass transfer coefficient correlations on prediction of reactive distillation column behaviour. In: Chemical Engineering Journal. - ISSN 0300-9467. - 140/1-3 (2008), 381-390

**Tatárová, Ivana [25%] - Gramblička, Michal [25%] - Antošová, Monika [25%] - Polakovič, Milan [25%]:** Characterization of pore structure of chromatographic adsorbents employed in separation of monoclonal antibodies using size-exclusion techniques. In: Journal of Chromatography. - ISSN 0021-9673. - A 1193 (2008), s. 129-135

Wilińska, A. [25%] - De Figueiredo, Rodrigues Ana Sofia [25%] - Bryjak, J. [25%] - **Polakovič, Milan [25%]:** Thermal inactivation of exogenous pectin methylesterase in apple and cloudberry juices. In: Journal of Food Engineering. - ISSN 0260-8774. - 85-3 (2008), s. 459-465

**Kotora, Marcel [20%] - Buchaly, Carsten [20%] - Kreis, Petr [20%] - Górak, Andrzej [20%] - Markoš, Jozef [20%]:** Reactive distillation - experimental data for n-propyl propionate synthesis. In: Chemical Papers = Chemické zvesti. - ISSN 0366-6352. - Vol.62.- č.1 (2008), 65 - 69

**Labovský, Juraj [25%] - Švandová, Zuzana [25%] - Markoš, Jozef [25%] - Jelemenský, Ľudovít [50%]:** HAZOP study of a fixed bed reactor for MTBE synthesis using the dynamic approach. In: Chemical Papers = Chemické zvesti. - ISSN 0366-6352. - Vol.62.- č.1 (2008), 51 - 57

**Marták, Ján [60%] - Schlosser, Štefan [40%]:** Liquid-liquid equilibria of butyric acid for solvents containing. In: Chemical Papers = Chemické zvesti. - ISSN 0366-6352. - Vol.62.- č.1 (2008), s. 42-50, [Project number.: 1/2468/05]

**Síkula, Ivan [50%] - Markoš, Jozef [50%]:** Modeling of Enzymatic Reaction in an Airlift Reactor using an Axial Dispersion Mode. In: Chemical Papers = Chemické zvesti. - ISSN 0366-6352. - Vol.62.- č.1 (2008), 10 - 17

**Švandová, Zuzana [34%] - Markoš, Jozef [33%] - Jelemenský, Ľudovít [33%]:** Influence of the reactive distillation column configuration on its performance, a computational study. In: Chemical Papers = Chemické zvesti. - ISSN 0366-6352. - Vol.62.- č.1 (2008), 58 - 64

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## Projects

Type of Project	Details 1	Details 2	Code
APVV	Project number:	APVV-0417-07	<a href="#">APVV-0417-07</a>
	Title: <i>(in slovak)</i>	Denitrifikácia v reaktoroch s anoxickou granulovanou biomasou.	
	Title:	Denitrification in anoxic granulated biomass reactors	
	Department:	Department of Environmental Engineering	
	Project duration:	01.06.2008 - 31.12.2010	
	Responsible person:	Doc. Ing. Miloslav Drtil, PhD.	
APVV	Project number:	APVV-0491-07	<a href="#">APVV-0491-07</a>
	Title: <i>(in slovak)</i>	Príprava chemického povlaku na povrchu sklenených vlákien.	
	Title:	Chemical coating preparation on the surface of glass fibres	
	Department:	Department of Environmental Engineering	
	Project duration:	01.06.2008 - 31.12.2010	
	Responsible person:	Doc. Ing. Dušan Velič, PhD.	
	Respons. person (STU):	Prof. Ing. Gabriel Čík, PhD.	

APVV	Project number:	APVV-0144-07	<a href="#">APVV-0144-07</a>
	Title: <i>(in slovak)</i>	Aplikácie membránových reaktorov na čistenie priemyselných odpadových vôd v a.s. Duslo, Šaľa.	
	Title:	Application of membrane reactors for industrial wastewater treatment in Duslo Šaľa.	
	Department:	Department of Environmental Engineering	
	Project duration:	01.09.2008 - 31.12.2009	
	Responsible person:	Doc. Ing. Igor Bodík, PhD.	
other	Project number:	SK0023	<a href="#">SK0023</a>
	Title: <i>(in slovak)</i>	Vytvorenie centra excelentnosti pre využívanie obnoviteľných zdrojov energie na Slovensku.	
	Title:	Centre of excellency for the utilization of renewable energy sources	
	Department:	Department of Environmental Engineering	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Doc. Ing. Igor Bodík, PhD.	
VEGA	Project number:	1/0866/08	<a href="#">1/0866/08</a>
	Title: <i>(in slovak)</i>	Využitie progresívnych oxidačných postupov na rozklad prioritných, nebezpečných a rezistentných látok a minimalizáciu produkcie prebytočného kalu.	
	Title:	Application of progressive oxidation procedures in decomposition of priority, hazardous and resistant substances, and minimisation of excess sludge production	
	Department:	Department of Environmental Engineering	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Doc. Ing. Ján Derco, PhD.	



VEGA	Project number:	1/0145/08	<a href="#">1/0145/08</a>
	Title: <i>(in slovak)</i>	Využitie vedľajších produktov výroby bionafty s cieľom produkcie bioplynu a odstraňovania nutričov z odpadových vôd.	
	Title:	Utilisation of biodiesel production by-products for the production of biogas and nutrient removal from waste waters	
	Department:	Department of Environmental Engineering	
	Project duration:	01.01.2008 - 31.12.2010	
	Responsible person:	Doc. Ing. Miroslav Hutňan, PhD.	
Internat. project	Project number:	Program "Podpora vědecké spolupráce" ASO Brno, č.9-2007	<a href="#">č. 9 - 2007</a>
	Title:	Hazardous pollutants in urban and industrial water cycle.	
	Title: <i>(in slovak)</i>	Rizikové látky v komunálnom a priemyselnom vodnom cykle.	
	Project duration:	01.04.2007 - 30.11.2008	
	Project coordinator:	Doc. Ing. Petr Hlavínek, PhD.	
	Respons. person (STU):	Doc. Ing. Miloslav Drtil, PhD.	
Department:	Department of Environmental Engineering		
Internat. project	Project number:	MSCF-CT-2005-029529	<a href="#">MSCF-CT-2005-029529</a>
	Title:	Postgraduate School of Industrial Ecology.	
	Title: <i>(in slovak)</i>	Postgraduálna škola priemyselnej ekológie.	
	Project duration:	01.06.2006 - 31.05.2009	
	Project coordinator:	Norwegian University of Science and Technology [NTNU]	
	Respons. person (STU):	Prof. Ing. Gabriel Čík, PhD.	
Department:	Department of Environmental Engineering		

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

Type	Final thesis	Supervisor
DT	<a href="#">Ing. Mária Valičková</a> Využitie kovového železa a rôznych chelátorov vo Fentonovej reakcii	<a href="#">doc. Ing. Jozef Prousek, PhD.</a>
BT	<a href="#">Bc. Róbert Ambrozy</a> Porovnanie účinnosti využitia ozónu v dvoch ozonizačných reaktoroch	<a href="#">doc. Ing. Ján Derco, PhD.</a>
BT	<a href="#">Bc. Michal Mosný</a> Využitie odpadových produktov z výroby bionafty pri čistení odpadových vôd	<a href="#">doc. Ing. Igor Bodík, PhD.</a>
DT	<a href="#">Ing. Zuzana Sobkovčíková</a> Produkcia bioplynu z cielene pestovaných energetických plodín	<a href="#">doc. Ing. Miroslav Hutňan, PhD.</a>
DT	<a href="#">Ing. Samuel Cengel</a> Anaeróbne spracovanie g-fázy, vedľajšieho produktu výroby bionafty	<a href="#">doc. Ing. Miroslav Hutňan, PhD.</a>
DT	<a href="#">Ing. Gabriela Lutišánová</a> Stanovenie alfa-rádioaktivity v termálnych vodách kúpeľov Trenčianske Teplice	<a href="#">RNDr. Mária Foldesová</a>
DT	<a href="#">Ing. Tomáš Vlňa</a> Príprava a vlastnosti kompozitného fotokatalyzátora tuhý nosič - organické farbivo pre BAT environmentálne technológie	<a href="#">prof. Ing. Gabriel Čík, PhD.</a>
BT	<a href="#">Bc. Peter Kinder</a> Vyhodnotenie prevádzky a návrh opatrení vybraných ČOV	<a href="#">doc. Ing. Miloslav Drtil, PhD.</a>
BT	<a href="#">Bc. Ľubomír Ridzoň</a> Čistenie priesakových vôd zo skládky komunálneho odpadu	<a href="#">doc. Ing. Ján Derco, PhD.</a>
DT	<a href="#">Ing. Miroslav Kohút</a> Predčistenie odpadových vôd z výroby sklenených vlákien	<a href="#">doc. Ing. Ján Derco, PhD.</a>
DT	<a href="#">Ing. Michal Rybár</a> Využitie odpadov z priemyselných výrob ako organických substrátov pre denitrifikáciu	<a href="#">doc. Ing. Igor Bodík, PhD.</a>
DT	<a href="#">Ing. Ivana Jonatová</a> Granulácia denitrifikačnej biomasy	<a href="#">doc. Ing. Miloslav Drtil, PhD.</a>
DT	<a href="#">Ing. Stanislav Sedláček</a> Dlhodobá prevádzka domovej čistiarne odpadových vôd s membránovou separáciou kalu	<a href="#">doc. Ing. Igor Bodík, PhD.</a>
BT	<a href="#">Bc. Soňa Durdíková</a> Anaeróbne spracovanie vybraných komunálnych odpadov s cieľom produkcie bioplynu	<a href="#">doc. Ing. Igor Bodík, PhD.</a>
DT	<a href="#">Ing. Jana Janičkovičová</a> Využitie katecholom riadenej Fentonovej reakcie na degradáciu chlórovaných polutantov vody	<a href="#">doc. Ing. Jozef Prousek, PhD.</a>
DT	<a href="#">Ing. Igor Kordoš</a> Optimalizácia mestskej ČOV s odstraňovaním nutričov	<a href="#">doc. Ing. Miloslav Drtil, PhD.</a>
BT	<a href="#">Bc. Zuzana Brezovická</a> Využitie nespáľovacích technológií na zneškodnenie odpadov PCB v Slovenskej republike	<a href="#">prof. Ing. Gabriel Čík, PhD.</a>

BT	<a href="#">Bc. Csilla Lipková</a>	<a href="#">doc. Ing. Miloslav Drtil, PhD.</a>
	Design and Calculation of Sludge Treatment Units at WWTP	
DT	<a href="#">Ing. Miroslava Klottonová</a>	<a href="#">doc. Ing. Ján Derco, PhD.</a>
	Využitie ozónu pri čistení odpadových vôd	
BT	<a href="#">Bc. Štefan Gyuricsek</a>	<a href="#">doc. Ing. Miloslav Drtil, PhD.</a>
	Výpočet rozhodujúcich technologických parametrov ČOV	

## Selected publications

Kotianová, Petra [40%] - Puxbaum, Hans [20%] - Bauer, Heidi [10%] - Caseiro, Alexandre [10%] - Marr Lain, L. [10%] - **Čík, Gabriel** [10%]: Temporal patterns of n-alkanes at traffic exposed and suburban sites in Vienna. In: Atmospheric environment. - ISSN 1352-2310. - 42-13 (2008), s. 2993-3005

**Dančová, L.** [30%] - **Bodík, I.** [30%] - **Blšťáková, A.** [20%] - **Jakubčová, Z.** [10%] - **Drtil, M.** [10%] : Long-term operation of a domestic wastewater treatment plant with membrane filtration. Chemické listy. – ISSN 0366-6352. – 62-5 (2008), s. 451-457

**Černochová, L.** [70%] - **Derco, J.** [30%] : Dynamic simulation of biological nitrogen removal processes. Chemické listy. – ISSN 1803-2389-CZ/Praha:CES 29. – 102-S (2008), s. 353-354

**Almásiová, B.** [60%] - **Derco, J.** [20%] – **Kassai, A.** [10%] – **Hásová, E.** [10%] : Removal of 2-mercaptobenzothiazole from synthetic wastewater. Chemické listy. - ISSN 1803-2389-CZ/Praha:CES 29. -102-S (2008), s. 336-337

**Bodík, I.** [60%] – **Gašparíková, E.** [20%] – **Dančová, L.** [5%] – **Kalina, A.** [5%] – **Hutňan, M.** [5%] – **Drtil, M.** [5%] : Influence of disinfectants on domestic wastewater treatment plant performance. Bioresource Technology. – ISSN 0960-8524. – 99-3 (2008), s. 532-539

**Boreková, M.** [40%] – **Hojerová, J.** [30%] – **Koprda, K.** [20%] – **Bauerová, K.** [10%] : Nourishing and health benefits of coenzyme Q10. Czech journal of food sciences. – ISSN 1212-1800-CZ/Praha:USTA8. – 26-4 (2008), s. 229-241

## DEPARTMENT OF PHYSICAL EDUCATION AND SPORTS

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**Foreword**

The Department of Physical Education and Sports at the Faculty of Chemical and Food Technology at the Slovak University of Technology can be divided into three basic areas: pedagogy, scientific research, and others. The management abilities of our lecturers and departments were checked by AM SR/in 1988 and 1998, which also organized the university games of 1989 and 2008 wherein our teachers played key roles. The performance of an enduring positive attitude of our faculty management is because of the fact that our faculty built a PE complex (2 gymnasiums-the last one made of artificial turf cover in 2009, 1 sauna, 2 fitness centres, a table tennis room and 2 PE laboratories to diagnose physical ability and bodily performance.

**Teaching activities**

Our teaching activities are in the following areas: Aerobic, Kalanethics, Harmonic gymnastics, Healing gymnastic, Basketball, Football, Handball, Body building, Swimming, Canoeing and kayak, Volleyball, Winter sports camp /skiing/, Summer sports camp / Floorball.

**Research profile**

Our research concentrates on solving questions of fitness, bodily performance, physical ability and the physical education of undergraduates as well as on the history of physical education and sports. The lecturers at our department have published more than 250 scientific, specialist and methodological in both domestic and foreign publications. The members of our department have proven their specialization working as trainers and national trainers in top physical educational bodies in our country and abroad. The staff and the technical and sports facilities for scientific research enable the lecturers of our department to become involved in projects, to publish their presentations at home and abroad and to take an active part with their scientific results in the training process at a top level.

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## Projects

The members of the Department of Physical Education and Sports are taking part in two projects at FCHPT and other research granted projects at the Faculty of Physical Education and Sports of Comenius University:

1. State of Physical and Motor Development of Undergraduates of FCHFT STU in Bratislava (Miroslav Bobřík).
2. Swimming Ability of University Student in Slovakia (Lucia Ondrušová).
3. The intensity of movement load during the aquarobic of university student (Lucia Ondrušová).
4. Health weakened Students and their Adaptation on Physical Program in the Conditions of Integrated Physical Education at STU (Koláriková Andrea).
5. Creation of the Criteria for Intensity Assessment of Match and training Load in Sport Games (Križan Martin, Laurenčík Tomáš).

## List of bachelor (BT), diploma (DT) and dissertation (DissT) theses

### Selected publications

**Bobřík, Miroslav** [70%] - **Ortutay, Mikuláš** [30%]: Dejiny vysokoškolského športu na Slovensku. - , 2007. - 184s. - ISBN 80-969524-7-1

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## DEPARTMENT OF LANGUAGES

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**Foreword**

Foreign language tuition at this department began in the school year 1951-52 when the Russian language became a compulsory subject. Since 1954, students were expected to study another foreign language other than Russian; they could have chosen English, German or French. The language department was established as an all-university body and its first head was Boris Cebotarev, Ph.D. In 1960, independent language departments were set up at each individual faculty with the aim to meet the specific language needs of their students. The head of the Chemical Faculty Language Department became Jozef Priputen, later it was Stefan Bachraty, Irina Parnahajova, Ph.D., Alzbeta Oreska, Mgr. (M.A.) and others. At present, the department is led by Magdaléna Horáková, M. A.

**Teaching activities**

The English or German language represents a compulsory subject for each student of this faculty. Our objectives are not to teach the general language, but the language for specific-prospective professional purposes. The long-term aim is to finally enable all faculty graduates to present the essential part of their thesis in the state exams also in a foreign language. Besides the above-mentioned compulsory courses, our Department offers courses of Russian language and English conversation according to the interests of students in the current year. These are also available to SUT PhD students and employees.

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## Selected publications

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