



BOKU - University of Natural Resources  
and Applied Life Sciences

# Report 2004 – 2006 Department for Chemistry



analytical / bio  
chemistry  
organic / wood



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The cover shows the VIRIS Laboratory - Center of Excellence for high precision isotope analytic, which was installed at the Department of Chemistry in 2005. VIRIS is funded by the Austrian Sciences Foundation (FWF, START) and was awarded the VIENNOVATIONSprize 2006.

## Preface

In continuation of previous reports, the Department of Chemistry presents a summary of its activities covering the period 2004-2006. This time span of three years allows to monitor closely the numerous changes and major developments in a condensed form.

In the new organization format implemented at University of Natural Resources and Applied Life Sciences (BOKU) chemistry as a basic science has manifold links and interactions with the core competence fields of BOKU.

In particular, the appointment of Thomas Rosenau for the chair of Wood-, Pulp- and Fibre Chemistry will focus research activities towards "Green Chemistry" and sustainable use of renewable resources. The further development of this field will strongly benefit from the new facilities to be established at the University Research Centre Tulln (UFT).

Several highlights of the past three years should be mentioned:

Thomas Prohaska received a START Award by the Austrian Science Fund FWF for his project VIRIS related to advanced isotope analysis, Paul Furtmüller and Stephan Hann got habilitation for "Biochemistry" and "Analytical Chemistry", respectively.

In addition to the strong position of the department in receiving competitive FWF funding for basic research, cooperation with industrial partners has also been expanded (Bridge-program, Vienna Spot of Excellence program, EC-projects).

Infrastructure has been boosted by successful participation in the UNI-infrastructure program leading to the installation of novel instrumentation (IR, CD, NMR spectrometers, LC-MS and ICP MS equipment). These major accomplishments will also contribute substantially to the emerging Vienna Institute of Biotechnology (VIBT) at the campus Muthgasse.

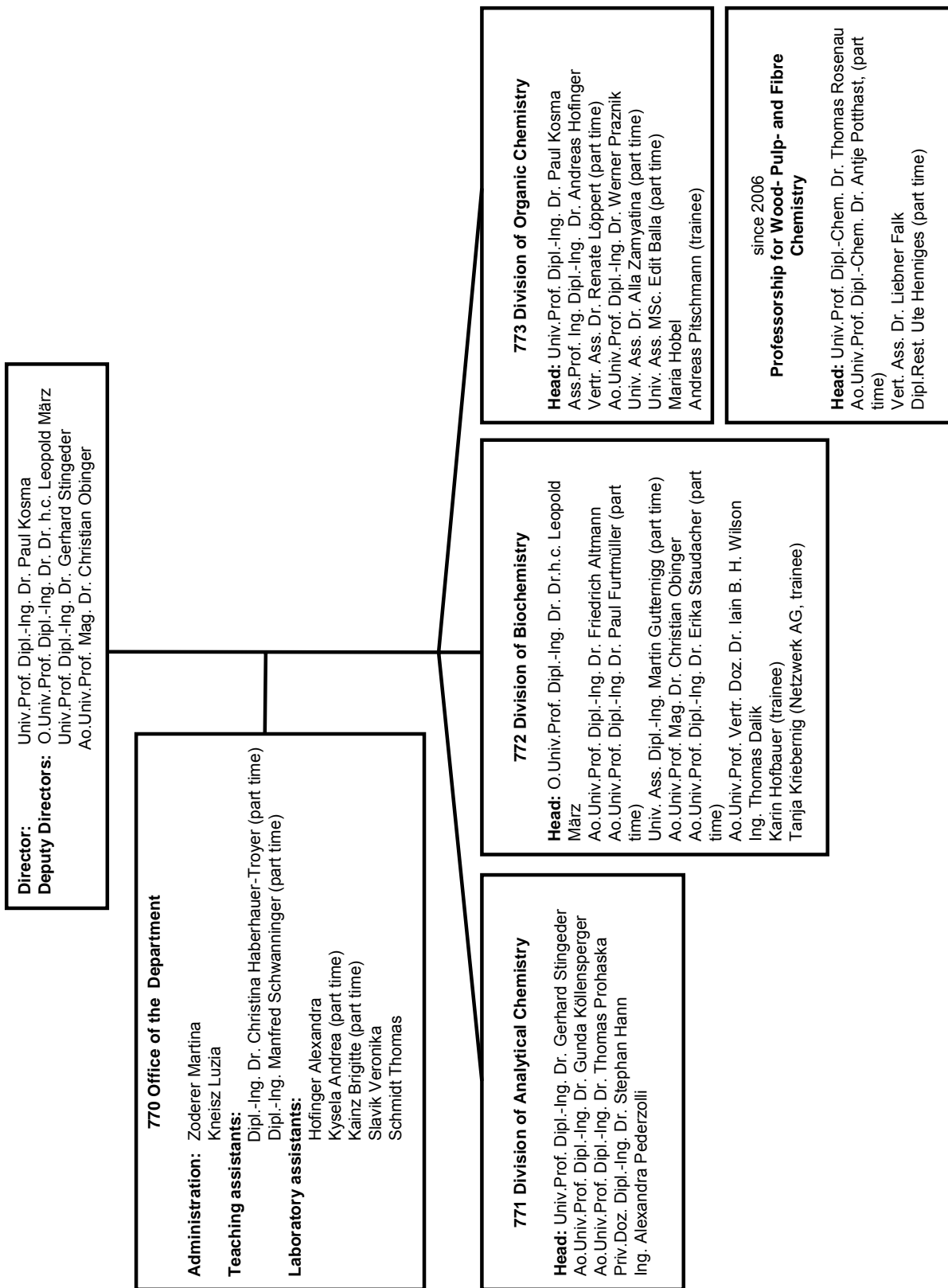
Integration into the international scientific community is reflected in the organization of past (Japanese-European Workshop on Cellulose 2005, 9th EWLP 2006) and future conferences (15th European Carbohydrate Symposium 2009, 21th International Glycoconjugate Symposium 2011) and the participation in network activities (COST, European Polysaccharide Network of Excellence).

The past three years have also seen a strong increase in student numbers, especially in the study programs of food- and biotechnology leading to enormous teaching loads for the department staff. The situation has been attenuated by the university administration by funding one teaching assistant and will be further improved with additional lab space for biochemistry courses in 2009. New courses and lectures have been implemented for several of the bachelor and master study programs and initiatives have been started for international master curricula.

Last but not least I take the opportunity to thank all people and institutions both within and outside the University for continuous support and assistance providing the essential basis for successful future work and development.

Univ.Prof.Dipl.-Ing.Dr. Paul Kosma  
Head of Department

## Organigram



## **Personnel**

### **Director of the Department**

Univ.Prof. Dipl.-Ing. Dr. Paul Kosma

### **Deputy Directors of the Department**

O.Univ.Prof. Dipl.-Ing. Dr. Dr. h.c. Leopold März

Univ.Prof. Dipl.-Ing. Dr. Gerhard Stinger

Ao.Univ.Prof. Mag. Dr. Christian Obinger

### **Full professors**

O.Univ.Prof. Dipl.-Ing. Dr. Dr.h.c. Leopold März

Univ.Prof. Dipl.-Ing. Dr. Gerhard Stinger

Univ.Prof. Dipl.-Chem. Dr. Thomas Rosenau

### **Associate professors**

Ao.Univ.Prof. Dipl.-Ing. Dr. Friedrich Altmann

Ao.Univ.Prof. Dipl.-Ing. Dr. Paul G. Furtmüller, part time

Priv.Do. Dipl.-Ing. Dr. Stephan Hann

Ao.Univ.Prof. Dipl.-Ing. Dr. Gunda Köllensperger

Ao.Univ.Prof. Mag. Dr. Christian Obinger

Ao.Univ.Prof. Dipl. Chem. Dr. Antje Potthast, part time

Ao.Univ.Prof. Dipl.-Ing. Dr. Werner Praznik

Ao.Univ.Prof. Dipl.-Ing. Dr. Thomas Prohaska

Ao.Univ.Prof. Dr. Iain B.H. Wilson

### **Assistant professors**

Univ.Ass. M.Sc. Edit Balla, part time

Univ.Ass. Dr. Martin Gutternigg, part time

Dipl.-Ing. Dr. Christina Haberhauer-Troyer, part time

Univ.Ass. Dipl.-Rest. Ute Hennings, part time

Ass.Prof. Dipl.-Ing. Dr. Andreas Hofinger

Vert.Ass. Dr. Falk Liebner

Vert.Ass. Dr. Renate Löppert, part time

Dipl.-Ing. Manfred Schwanninger, part time

Univ.Ass. Dr. Alla Zamyatina, part time

**Secretary**

Lucia Kneisz  
Martina Zoderer

**Technical Staff**

Ing. Thomas Dalik  
Maria Hobel  
Ing. Alexandra Pederzoli  
Ing. Karin Polacsek

**General Laboratory Staff**

Alexandra Hofinger  
Andrea Kysela, part time  
Brigitte Kainz, part time  
Gernot Schmidt, until 2005  
Thomas Schmidt  
Veronika Slavik, since 2005

**Trainees**

Karin Hofbauer  
Denise Kerner, until 2006  
Tanja Kriehring  
Andreas Pitschmann

**External Lecturers**

Ao.Univ.Prof. Dipl.-Ing. Dr. Walter Binder  
Univ.Do. Dr. Bernhard Fischer  
Ao.Univ.Prof. Dipl.-Ing. Dr. Karl Stich  
Univ. Prof. Dr. Frank Unger

**(Project) Personnel**

Mag. Beatriz Abad Romero  
Dipl.-Ing. Dr. Christian Adelwöhrer, until 2006  
Dipl.-Ing. Dr. Immanuel Adorjan, until 2005  
Dr. Hassan Abdelzaher Mohamed Amer, since 2006  
Andreas Aspöck, until 2005  
M.Sc. Edit Balla  
M.Sc. Srijib Banerjee, since 2005  
Dipl.-Ing. Monika Bencúróva, until 2005  
Dipl.-Ing. Margit Bernroither, since 2005  
Dr. Markus Betz, until 2006



Lucia Kneisz



General Laboratory Staff

Dipl.-Ing. (FH) Markus Blaukopf, since 2006  
Dipl.-Ing. Rainer Bohrn, until 2005  
Dipl.-Ing. Stefan Böhmendorfer, since 2006  
MSc. Jayakumar Singh Bondili, since 2006  
Dr. Sergei Boulyga, since 2005  
Dipl.-Chem. Dr. Martin Fischer, until 2005  
Dipl.-Ing. Patrick Galler, since 2005  
Dipl.-Ing. Andrea Graziani, until 2004  
Mag. Leonhard Jaitz, since 2006  
Mag. Dr. Christa Jakopitsch  
Dipl.-Ing. Dr. Walter Jantschko, until 2004  
M.Sc. Chunsheng Jin, since 2006  
Dipl.-Ing. Dr. Katherina Kanitsar, until 2004  
Dipl.-Ing. Elisabeth Kloser, since 2005  
Mag. Dr. Eva Klötzli-Chowanetz, since 2005  
Dipl.-Ing. Dr. Daniel Kolarich  
Dr. Mirjana Kostic, until 2005  
Dipl.-Ing. (FH) Karin Krainz, since 2006  
Dr. Thomas Lange, until 2004  
Dipl.-Ing. Dr. Katharina Lenz, until 2005  
Dr. Renaud Léonard  
Dipl.-Ing. Gerd Margreiter, since 2005  
Dr. Gentiana Nagel, until 2005  
Dipl.-Ing. Martina Opietnik, since 2006  
Mag. Martin Pabst, since 2006  
Dipl.-Ing. Katharina Paschinger  
M.Sc. M.Phil. Anjan Patel, since 2005  
Dipl.-Ing. Dr. Martina Paumann, until 2004  
Mag. Gerald Pöttl, since 2006  
Dipl.-Ing. Maximilian Popp, since 2005  
Dipl.-Ing. Dr. Dubravko Rendic  
Lukas Richter, until 2005  
Judith Rudolf, since 2006  
Mag. Dr. Elisabeth Rudolph, until 2005  
B.Sc. Maria del Carmen Ruiz Ruiz  
Dipl.Holzwirt Axel Rußler, until 2006  
Dipl.-Ing. Dr. Sonja Schiehser  
Peter Schmid, until 2005  
Dr. Gerald Schultheis, until 2004  
Mag. Georg Sixta, since 2004  
Dr. John Sjöberg, until 2004  
Johanna Linda Smolle, until 2006

Mag. Christina Stadlbauer, until 2006  
 Dipl.-Ing. Johannes Stadlmann, since 2004  
 Dipl.-Ing. Alexander Standler, until 2005  
 Dipl.-Ing. Christian Stanetty, since 2006  
 Dr. Zsolt Stefanka, until 2005  
 Dipl.-Ing. Verena Stingl, until 2006  
 Dr. Michael Sulyok, until 2005  
 Mag. Siegfried Swoboda  
 M.Pharm. Mayank Thakur, since 2006  
 Dipl.Chem. Ivana Tot, since 2005  
 Dipl.-Ing. Jutta Vlasits, since 2006  
 Dipl.-Ing. Kurt Wimmer, since 2005  
 M.Sc. Yuko Yoneda, since 2005  
 Dipl.-Ing. Martina Zederbauer  
 Dr. Reinhard Zeleny, until 2005

## Lectures and Practical Courses

The Department of Chemistry takes part in the teaching of all major degree courses at the BOKU. The degree course in Food Science and Biotechnology (LBT) includes a broad education in chemistry. The other degree courses have mandatory lecture courses in General Chemistry and optional courses for specialisation.

### Lectures and courses 2006 (Bachelor- and Master- studies)

Lectures and Courses	Lecturers	Hours	Semester
<b>MANDATORY COURSES</b>			
771.101 Introduction to General Chemistry	G. Stinger	VO 2	WS
771.102 Introductory Course to General Chemistry	Dep. Personnel	UE 2	WS
771.103 General and Physical Chemistry	G. Stinger / T. Prohaska / G. Köllensperger	VO 4	WS
771.104 Analytical Chemistry	G. Stinger / S. Hann	VO 4	SS
771.105 Practical Course in Classical Analytical Chemistry	Dep. Personnel	UE 6	SS
771.106 Practical Course in Instrumental Analytical and Physical Chemistry	Dep. Personnel	UE 7	WS
773.107 Organic Chemistry for LBT	P. Kosma	VO 3	WS
773.108 Practical Course in Organic Chemistry	Dep. Personnel	UE 3	WS/SS
772.109 Fundamentals in Biochemistry	F. Altmann	VO 3	WS
772.112 Practical Course in Biochemistry I	Dep. Personnel	UE 5	WS/SS
772.301 Practical Course in Biochemistry II	Dep. Personnel	UE 5	WS/SS
770.100 General and Inorganic Chemistry for AW	C. Obinger	VO 2	WS
770.101 Organic Chemistry and Biochemistry	T. Rosenau / E. Staudacher	VO 3	SS



773.119 Practical Course in Basic Chemistry	Dep. Personnel	UE	4	SS
773.120 Organic Chemistry	A. Hofinger	VO	2	SS
770.150 General Chemistry	B. Hinterstoisser	VO	3	WS
772.113 Biochemistry and microbial Physiology	C. Obinger/ C. Schäffer	VO	4	SS
773.125 Chemical Technology of Biobased Materials	A. Potthast	VO	2	SS
770.113 Bakkelaureatsseminar	Dep. Personnel	SE	2	WS/SS

### OPTIONAL COURSES

770.102 Practical Course in Chemistry for Students of Agriculture	Dep. Personnel	UE	4	WS/SS
770.117 Environmental Analysis	G. Stingerder / A. Loibner / S. Hann			
	T. Prohaska / G. Köllensperger	VO	2	SS
773.116 Renewable Primary Products	W. Praznik	VO	2	WS
771.118 Calculation in Chemistry I	T. Prohaska	VU	2	WS
771.119 Calculation in Chemistry II	T. Prohaska	VU	2	SS
772.300 Biophysical Chemistry	I.B. Wilson	VU	2	SS
772.302 Protein Chemistry	B. Fischer	VO	2	WS
772.303 Bioinorganic Chemistry	C. Obinger	VU	2	SS
772.306 Proteomics	F. Altmann	VO	2	SS
772.307 Glycobiology	I.B. Wilson	VO	2	WS
772.309 Biochemistry of Trace Elements	C. Obinger	VO	2	WS
773.310 Bioorganic Chemistry	P. Kosma	VO	2	SS
772.311 Kinetic of Biochemical Reactions	P. Furtmüller	VU	2	SS
772.312 Plant Biochemistry	K. Stich	VO	2	WS
773.313 Modern Methods of Structural Analysis	P. Kosma / A. Potthast			
	A. Hofinger	VU	3	SS
772.317 Advanced Practical Course in Biochemistry	Dep. Personnel	UE	3	WS/SS
771.314 Instrumental Analytic Chemistry for Master students	G. Stingerder/ T. Prohaska / G. Köllensperger	VU	3	SS
771.315 Practical Courses on Instrumental Analysis	G. Stingerder / T. Prohaska / G. Köllensperger	UE	4	SS
772.316 Seminar in Biochemistry	Dep. Personnel	SE	2	WS
772.317 Advanced Practical Courses in Biochemistry	Dep. Personnel	PR	2	WS/SS
773.318 Chemistry and Analysis of Nutritional Additives	W. Praznik	VO	2	SS
772.321 Biochemical and Biotechnological Methods	E. Staudacher / K. Vorauer-Uhl	VU	3	WS
773.325 Polymer Chemistry and Technology	W. Binder	VU	2	WS
<b>ADDITIONAL COURSES</b>				
772.003 Seminar for Diploma and Doctoral Candidates	Dep. Personnel	SE	4	WS/SS
771.004 Doctoral Seminar in Analytical Chemistry	Dep. Personnel	SE	2	WS/SS
772.015 Doctoral Seminar in Biochemistry	Dep. Personnel	SE	2	WS/SS
771.031 Instrumental Methods in Analytical Chemistry	G. Stingerder	VO	2	SS
771.040 Seminar in Analytic Chemistry				

for Diploma and PhD Candidates	Dep. Personnel	SE	4	WS/SS
771.080 Holistic Sciences	T. Prohaska	VO	1	SS
771.091 Advanced Analytical Techniques for Elemental Trace Analysis	T. Prohaska	VO	2	WS
772.049 Technology and its Environment	L. März	VO	2	SS
770.088 Practical Course in Chemistry for EE	A. Hofinger / B. Hinterstoisser	UE	4	SS
771.304 Environmental Chemistry	Dep. Personnel	SE	3	SS
773.322 Chemistry for Civil Engineers	N.N.	VO	2	SS
773.572 Seminar for Diploma and Doctoral Candidates for Organic Chemistry	Dep. Personnel	SE	4	WS/SS
773.803 Doctoral Seminar in Bioorganic Chemistry	Dep. Personnel	SE	2	WS/SS

For more details look at <http://www.chemie.boku.ac.at/299.html>

List of abbreviations:

SE Seminar  
VO Lecture Course  
VU Lecture with Exercise  
UE Practical Course

WS Winter Semester  
SS Summer Semester  
LBT Food Sciences and Biotechnology  
EE Environmental Engineering  
AW Agriculture Sciences

## Doctoral and Diploma Theses

### Division of Analytical Chemistry

Böck Katharina

Multidimensional separation schemes for ICP-MS analysis of metal-protein interaction

Diploma thesis since 2006

Supervisor: Köllensperger Gunda, Hann Stephan

Brunner Marion

Food authenticity studies via isotope signature using ICP-MS

Diploma thesis since 2006

Supervisor: Prohaska Thomas

Falta Thomas

Analysis of toxic metals and assessment of their bioaccessibility from urban particulate matter by ICP-MS

Diploma thesis since 2005

Supervisor: Hann Stephan, Stingeder Gerhard (joint with Andreas Limbeck, TU-Vienna)

Feuerstein Juliet

Determination of radionuclides in environmental samples by (MC-)ICP-MS

Diploma thesis since 2006

Supervisor: Prohaska Thomas

Galler Patrick

Development of an In-line FI Rb/Sr separation method for  $^{87}\text{Sr}/^{86}\text{Sr}$  isotope ratio determination by ICP-MS

Diploma thesis 2004 (submitted at TU-Vienna)

Supervisor: Prohaska Thomas, Stingeder Gerhard (joint with Andreas Limbeck, TU-Vienna)

Galler Patrick

Precise isotope ratio measurements by (MC) - ICP-MS

Doctoral thesis since 2005

Supervisor: Prohaska Thomas

Huemer Christiane

Migration studies of humans by isotopic fingerprints using (LA)-(MC)-ICP-MS.

Diploma thesis since 2006

Supervisor: Prohaska Thomas

Jaitz Leonhard

Entwicklung von LC-MS Methoden im Rahmen des BOKU-Netzwerks für Schad- und Naturstoffanalytik

Doctoral thesis since 2006

Supervisor: Hann Stephan

Lenz Katharina

Cancerostatic platinum compounds in hospital waste water – monitoring and elimination

Doctoral thesis 2005

Supervisor: Hann Stephan

Popp Maximilian

Bestimmung von Glyphosate und AMPA sowie Schwebstoff gebundenen Metallen in Oberflächenwässern

Doctoral thesis since 2005

Supervisor: Köllensperger Gunda

Stadlbauer Christina

Biomonitoring of heavy metal mobilization by (LA)-ICP-MS

Doctoral thesis 2006

Supervisor: Prohaska Thomas, Stingeder Gerhard

Swoboda Siegfried

Characterization and authentication studies by isotopic and elemental pattern

Doctoral thesis since 2004

Supervisor: Prohaska Thomas

Standler Alexander

Platinum speciation in the environment

Doctoral thesis since 2004

Supervisor: Hann Stephan

Schultheis Gerald

Stable strontium isotope ratio measurements – Characterization of archeological, anthropological and environmental materials

Doctoral thesis 2004

Supervisor: Prohaska Thomas, Stingeder Gerhard

Rudolph Elisabeth

Human biomonitoring of platinum group elements

Doctoral thesis 2005

Supervisor: Hann Stephan, Stingeder Gerhard

### **Division of Biochemistry / Glycobiology**

Bencúrová Monika

Significance in allergy of protein N-glycosylation in plants and invertebrates

Doctoral thesis 2005

Supervisor: Altmann Friedrich

Chungsheng Jin

Immunogenicity of plant glycoproteins

Doctoral thesis since 2003

Supervisor: Altmann Friedrich

Dorfner Georg

Präparation einer alpha 1,3/4 Fucosidase aus Mandeln

Diploma thesis 2006

Supervisor: Altmann Friedrich

Gutternigg Matrin

Identification, cloning and characterization of invertebrate glycan-modifying enzymes

Doctoral thesis 2003

Supervisor: Staudacher Erika, Wilson Iain B.

Iskratsch Thomas

Lectin mapping of glyco-epitopes in muscular dystrophies

Diploma thesis 2006

Supervisor: Wilson Iain B. (joint with Reginald Bittner, Med. Uni. Wien)

Kandler Barbara

Angiogenesis and Bone repair - Evaluation of the angiogenic potential of platelets and bone marrow stromal cells

Diploma thesis 2005

Supervisor: Staudacher Erika

Kretschmer-Lubich Dorothea

Hexosaminidases of *Caenorhabditis*

Diploma thesis since 2006

Supervisor: Wilson Iain B.

Kolarich Daniel

Mass spectrometry based glyco-proteomic analysis of GMO food crops and allergens from plants and insects

Doctoral thesis 2004

Supervisor: Altmann Friedrich

Loos Andreas

*Vespula vulgaris* allergens: Recombinant expression and characterisation of a hyaluronidase and its newly discovered homologue Ves v 2b

Diplomal thesis 2006

Supervisor: Altmann Friedrich

Lubich Dorothea

Hexosaminidases in *Caenorhabditis elegans*

Diploma thesis since 2003

Supervisor: Wilson Iain B.

Pabst Martin

Analysis of oligosaccharides by LC-MS

Doctoral thesis since 2004

Supervisor: Altmann Friedrich

Paschinger Katharina

Glycosylation in *Caenorhabditis elegans*

Doctoral thesis since 2002

Supervisor: Wilson Iain B.

Pörtl Gerald

Analysis of oligosaccharides by LC-MS

Doctoral thesis 2006

Supervisor: Altmann Friedrich

Simmerstatter Markus

Rekombinante Expression des O-glykosylierten Beifußallergens Art v 1

Diploma thesis 2004

Supervisor: Altmann Friedrich

Schiller Birgit

Fucosylation in *Dictyostelium discoideum*

Diploma thesis since 2006

Supervisor: Wilson Iain B.

Singh Bondili Jayakumar

The plant N-glycosylation pathway

Doctoral thesis since 2004

Supervisor: Altmann Friedrich

Sobczak Lukas

Fucosyltransferasen in *Caenorhabditis elegans*

Diploma thesis since 2006

Supervisor: Wilson Iain B.

Stadlmann Johannes

Glycomodification of recombinant glycoproteins

Doctoral thesis since 2004

Supervisor: Altmann Friedrich

Stemmer Ute

Fucosylation in *Caenorhabditis elegans*

Diploma thesis since 2006

Supervisor: Wilson Iain B.

Stowasser Karin

Fucosyltransferasen in Schnecken

Diploma thesis since 2006

Supervisor: Staudacher Erika, Gutternigg Martin

Rendić Dubravko

Recombinant and native expression of eukaryotic glycosyltransferases

Doctoral thesis 2004

Supervisor: Wilson Iain B.

Rohmberger Simone

Reconstitution in vitro of the GDP-fucose biosynthetic pathways of *Caenorhabditis elegans* and *Drosophila melanogaster*

Diploma thesis 2006

Supervisor: Wilson Iain B.

Rudolf Judith

N-Glycosylierungsmuster von Gastropoden

Diploma thesis since 2006

Supervisor: Staudacher Erika, Gutternigg Martin

Voglmeir Josef

*Arion lusitanicus*: Glycosylation Pattern

Diploma thesis 2006

Supervisor: Staudacher Erika, Gutternigg Martin

### **Division of Biochemistry / Metalloprotein Research Group**

Auer Markus

Mechanismus der H<sub>2</sub>O<sub>2</sub>-Oxidation in Catalase-Peroxidase

Diploma thesis since 2004

Supervisor: Obinger Christian

Anuruddhika Wanasinghe

Probing the electronic structure of redox intermediates in catalase-peroxidases

Diploma thesis 2004

Supervisor: Obinger Christian, Furtmüller Paul G.

Bacher Julia

Produktion und Design von Laktoperoxidase-Mutante

Diploma thesis 2006

Supervisor: Obinger Christian, Furtmüller Paul G.

Banerjee Srijib

Dynamics of structure and function of metalloproteins

Doctoral thesis since 2005

Supervisor: Obinger Christian, Furtmüller Paul G.

Bogner Martin Erik

Charakterisierung rekombinanter humaner Myeloperoxidase und Mutanten mit CD- und IR-Spektroskopie

Diploma thesis 2006

Supervisor: Obinger Christian, Furtmüller Paul G.

Bernroitner Margit

Modes of interaction between cyanobacterial cytochrome *c* oxidase, cytochrome *c*<sub>6</sub> and plastocyanin

Diploma thesis 2004

Supervisor: Obinger Christian, Furtmüller Paul G.

Bernroitner Margit

Respiration in cyanobacteria: the role of cytochrome *c*<sub>6</sub>, cytochrome *c*<sub>M</sub> and plastocyanin

Doctoral thesis since 2005

Supervisor: Obinger Christian, Furtmüller Paul G.

Feichtinger Markus

Cytochrom *c*<sub>6</sub> in *Synechocystis* PCC 6803

Diploma thesis since 2004

Supervisor: Obinger Christian

Ganster Bernadette

Glykosylation in recombinant myeloperoxidase

Diploma thesis since 2006

Supervisor: Obinger Christian, Furtmüller Paul G.

Gusenbauer Doris

Elektronentransportkomponenten der Atmungskette in *Nostoc* PCC 7120

Diploma thesis since 2006

Supervisor: Obinger Christian

Helm Jutta

Produktion der Myeloperoxidase Mutanten Asp94Val und Met243Val in CHO-Zellen

Diploma thesis 2005

Supervisor: Obinger Christian, Furtmüller Paul G.

Hochmann Sylvia

Production of <sup>13</sup>C and <sup>15</sup>N labelled cytochrome *c*<sub>6</sub> and copper A domain of cytochrome *c* oxidase from *Synechocystis* PCC 6803

Diploma thesis 2005

Supervisor: Obinger Christian, Furtmüller Paul G

Jantschko Walter

Developing inhibitors for human myeloperoxidase.

Doctoral thesis 2004

Supervisor: Obinger Christian, Furtmüller Paul G.



Neugschwandtner Karin

Produktion und Charakterisierung rekombinanter Myeloperoxidase aus CHO-Zellen

Diploma thesis 2005

Supervisor: Obinger Christian, Furtmüller Paul G.

Lanz Martina

Production of Recombinant Human Lactoperoxidase in *Pichia pastoris* and *Escherichia coli*

Diploma thesis 2004

Supervisor: Obinger Christian, Furtmüller Paul G.

Lehner Isabella

Charakterisierung der Glykoformen humaner Myeloperoxidase

Diploma thesis 2006

Supervisor: Obinger Christian, Furtmüller Paul G.

Nagl Daniela Maria

Mutational and kinetic analysis of the substrate channel of catalase-peroxidase Charakterisierung des

Substratkanals von Katalase-Peroxidasen aus *Synechocystis* PCC 6803

Diploma thesis 2006

Supervisor: Obinger Christian, Jakopitsch Christa

Paumann Martina

Cloning, Overexpression in *Rhodobacter sphaeroides* and mutational characterization of cyanobacterial cytochrom *c* oxidase

Doctoral thesis 2004

Supervisor: Obinger Christian, Peschek Günter

Pichler Hans

Produktion rekombinanter humaner Lactoperoxidase in *Pichia pastoris*

Diploma thesis 2004

Supervisor: Obinger Christian, Furtmüller Paul G.

Rodriguez R. Daniel

Mechanism of halogenation reactions in human peroxidases

Visiting PhD student (10 months) 2004-2006, Universidade de A Corunia, Spain

Supervisor: Obinger Christian, Furtmüller Paul G.

Schachinger Judith

Copper A from *Nostoc* PCC 7120

Diploma thesis since 2006

Supervisor: Obinger Christian

Schmuckenschlager Florian

Charakterisierung des Substratkanals von Catalasen-Peroxidasen

Diploma thesis 2004

Supervisor: Obinger Christian, Furtmüller Paul G.

Schwaiger Hans Jörg

Sequenzierung, Klonierung, Überexpression in *E. coli* und Charakterisierung der ersten monofunktionalen Katalase aus dem Cyanobakterium *Nostoc punctiforme*

Diploma thesis 2004

Supervisor: Obinger Christian, Furtmüller Paul G.

Schwanninger Manfred

Lignin chemistry and wood anatomy of spruce (*Picea abies* (L.) KARST) as wood quality factors

Doctoral thesis 2006

Supervisor: Kosma Paul

Stampler Johanna

Produktion und Design von Myeloperoxidase-Mutante

Diploma thesis 2006

Supervisor: Obinger Christian, Furtmüller Paul G.

Stich Leo

*Pinus sylvestris* L. Chemische Charakterisierung von rezentem und subfossilem Kiefernholz

Diploma thesis 2006

Supervisor: Hinterstoisser Barbara

Tangl Daniela

Cyanobakterielles Cytochrom  $c_M$

Diploma thesis 2006

Supervisor: Obinger Christian

Vlasits Jutta

The covalent Met-Tyr-Trp crosslink in catalase-peroxidase: a CD- and FTIR Spectroscopy study

Diploma thesis 2005

Supervisor: Obinger Christian

Vlasits Jutta

Structure-function relationships of catalase-peroxidase

Doctoral thesis since 2006

Supervisor: Obinger Christian, Jakopitsch Christa

Zederbauer Martina

The role of protein linkages in heme distortion and catalysis of mammalian peroxidases

Doctoral thesis 2006

Supervisor: Obinger Christian, Furtmüller Paul G.

Zehner Florian

Characterization of a Monofunctional Catalase from *Nostoc punctiforme*

Diploma thesis 2004

Supervisor: Obinger Christian, Furtmüller Paul G.

### **Division of Organic Chemistry / Christian Doppler-Laboratory of Pulp Reactivity**

Abad Romero Beatriz

Synthesis and derivatization of xylooligomers

Doctoral thesis since 2004

Supervisor: Kosma Paul

Adelwöhrer Christian

Chemie der Aminoxide

Doctoral thesis 2004

Supervisor: Rosenau Thomas

Adorjan Immanuel M.

Chromophore formation and carbohydrate conversions in the system NMMO/Cellulose (Lyocell Process)

Doctoral thesis 2005

Supervisor: Kosma Paul, Rosenau Thomas

Balla Edit

Synthesis of ADP-Heptose analogs

Doctoral thesis since 2004

Supervisor: Kosma Paul

Blaukopf Markus

Aminoarabinose-Epitope

Doctoral thesis since 2006

Supervisor: Kosma Paul

Bohrn Rainer

Determination of carboxylic groups in cellulose and xylan

Doctoral thesis 2005

Supervisor: Kosma Paul, Rosenau Thomas

Böhmdorfer Stefan  
Spiropolymerization of tocopherol derivatives  
Doctoral thesis since 2006  
Supervisor: Rosenau Thomas

del Ruiz-Ruiz Maria Carmen  
Neue glycosylierte Triterpene  
Doctoral thesis since 2004  
Supervisor: Kosma Paul

Granet Nicolas  
Synthesis of a novel disaccharide model compound for investigation of oxidized cellulose  
Diploma thesis 2004 (University Lille)  
Supervisor: Kosma Paul

Güzlek Hacer  
Synthese von Heptose 7-Phosphat  
Diploma thesis since 2005  
Supervisor: Kosma Paul

Graziani Andrea  
Synthesis of ADP Heptose analogs  
Doctoral thesis 2005  
Supervisor: Kosma Paul, Zamyatina Alla

Henniges Ute  
Bestimmung des Schädigungsgrades cellulosischer Materialien  
Doctoral thesis since 2005  
Supervisor: Potthast Antje

Kloser Elisabeth  
Synthesis of novel tocopherol derivatives  
Doctoral thesis since 2005  
Supervisor: Rosenau Thomas

Krainz Karin  
Residual chromophores in bleached pulps  
Doctoral thesis since 2006  
Supervisor: Rosenau Thomas

Mohammad Matinizadeh

Studies on *Quercus brantii* (var. *persica*) in Zagrosian forest Iran. Forest ecosystem and its influence on nutrition minerals, enzyme activities and non-structural carbohydrates in twigs and leaves

Doctoral thesis 2005

Supervisor: Praznik Werner

Möslinger Roland

Rheologische Untersuchung an Viskose

Doctoral thesis since 2001 (University Linz)

Supervisor: Kosma Paul

Opietnik Martina

Synthesis of heterocyclic receptor agonists

Doctoral thesis since 2006

Supervisor: Rosenau Thomas

Patel Anjan

Oxidation chemistry of non-alpha tocopherols

Doctoral thesis since 2005

Supervisor: Rosenau Thomas

Patel Ilababen

Chemical and enzymatic modification of cellulosics

Doctoral thesis since 2006

Supervisor: Rosenau Thomas, Potthast Antje

Rußler Axel

Determination of the substituent distribution of cellulose xanthate

Doctoral thesis 2006 (University Hamburg)

Supervisor: Kosma Paul, Rosenau Thomas, Potthast Antje

Sixta Georg

Synthesis and modification of the chlamydial Kdo epitope

Doctoral thesis since 2005

Supervisor: Kosma Paul

Stanetty Christian

Neue glycosylierte Triterpene

Doctoral thesis since 2006

Supervisor: Kosma Paul

Szczepanik Marcin

Kohlenhydratzusammensetzung in Topinamburknollen und Artichoken

Diploma thesis since 2006

Supervisor: Praznik Werner

Tschenett Roslinde

Zuckerzusammensetzungen und Strukturuntersuchungen an pflanzlichen Quellstoffen

Diploma thesis since 2005

Supervisor: Praznik Werner

Tot Ivana

Fluorescence labelling of hexenuronic acid residues in cellulose

Doctoral thesis since 2005

Supervisor: Potthast Antje

Wimmer Kurt

Synthesis of glycosides of L-4-aminoarabinose

Diploma thesis 2005

Supervisor: Kosma Paul

Wimmer Kurt

Synthesis of 2-4 linked Kdo analogs

Doctoral thesis since 2005

Supervisor: Kosma Paul

Yuko Yoneda

Cellodextrins: synthesis and direct dissolution mechanism

Doctoral thesis since 2005

Supervisor: Kosma Paul, Rosenau Thomas

## Research Activities

### Division of Analytical Chemistry



Absentee: Marion Brunner, Thomas Falta, Christiane Huemer, Gunda Köllensperger, Alexandra Pederzoli and Alexander Standler were out of office.

The division of analytical chemistry is working in the field of **elemental ultra trace analysis**, **speciation analysis** and **high precision isotope measurements** by ICP-MS (inductively coupled plasma mass spectrometry). The potential of ICP-MS is explored by methodological developments and applications for problem solving in fields like environmental sciences, biology/medicine, food authenticity but also anthropology/archeology.

Sample preparation and operation of the instruments (2 magnetic sector field ICP-MS, 1 dynamic reaction cell quadrupole ICP-MS, 1 multicollector ICP-MS and a laser ablation system) are performed in clean room facilities to utilize the capabilities of ICP-MS in the ultra trace concentration region of  $\text{ng.g}^{-1}$  to  $\text{sub pg.g}^{-1}$ .

Hyphenation of ICP-MS with chromatographic methods and capillary electrophoresis is routinely used for speciation analysis. Recently, speciation analysis by elemental mass spectrometry was completed by the complementary use of molecular mass spectrometry: LC-ESI-TOF-MS and LC-ESI-MS-MS.

For our current activities, please visit our homepage.

## Division of Biochemistry / Glycobiology

The biological intelligence of complex sugars has long been as ignored as Cinderella and only recently have biotechnology and biochemistry indicated that they might invite sugars to the ball. While the understanding of the role of protein-linked carbohydrate is by far still neither satisfactory nor complete, it became evident that the abilities to structurally define protein-glycans and, even more, to control the glycosylation of recombinant proteins are essential.

The long-term goal of research in the Glycobiology Division of the Institute of Chemistry is to understand the biological significance of protein-glycosylation and to control the biosynthesis of protein-glycans. According to the old rule that one should know the "enemy", the basis of our work is the **structural analysis of oligosaccharides on glycoproteins**. A decade of experience with chromatographic and enzymatic analysis of complex carbohydrates has now met with the possibilities opened by our new top-level mass spectrometer (Waters-Micromass Q-ToF Global). Powerful and sensitive methods for the analysis of protein glycans by liquid-chromatography/mass spectrometry shall be developed which will help to elucidate the biological function of certain glycan structures. Besides that such a method is urgently needed for the analysis of glycoprotein drugs produced by the biotech industry. Other than analysing mammalian N- and O- glycans, we will continue our search for new structural features in plants, nematodes, molluscs, insects or fungi.

Hand in hand with the elucidation of structures goes the study of the **biosynthesis of complex carbohydrates** in these organisms. Enzymes that build and degrade glycans are identified and characterised on the protein and on the DNA level. The **molecular biology of glycosyltransferases** serves various purposes as e.g. the biosynthesis of defined glycan structures using recombinant enzymes, the study of yet uncharacterised enzymes after expression in yeast or insect cells, and finally the study of these enzymes function by enzyme knock-out or knock-down strategies applied to "**model organisms**" such as *Drosophila melanogaster*, *Caenorhabditis elegans* or *Arabidopsis thaliana* where we can make use of and at the same time contribute to the large amount of knowledge accumulated about these selected organisms.



Fly embryo



Fly embryo



Fly eggs

Special concern is devoted to the **immunology of protein glycans**. Certain widespread structural features of glycoproteins from plant and lower-animal are immunogenic in humans. Moreover, as part of an allergic reaction, glycans may become IgE-epitopes. With the uniquely broad panel of tools described above we are aiming to understand the role of glycans in an allergic response and to improve the specificity of *in vitro* allergy diagnosis.

## Division of Biochemistry / Metalloprotein Research Group

The main objective of research is to understand the structural basis of **metalloprotein functions**, with particular interest in iron and copper-containing enzymes. The proteins are purified from various organisms, the corresponding genes identified, cloned, sequenced, and the proteins finally heterologously overexpressed



(*Escherichia coli*, Chinese hamster ovary cells). Exchange of amino acids by site-directed mutagenesis in combination with biophysical methods (electron paramagnetic resonance spectroscopy, resonance Raman spectroscopy, UV-Vis- and fluorescence spectroscopy, circular dichroism spectroscopy), transient- and steady-state kinetic investigations (multi-mixing stopped-flow spectroscopy) and X-ray crystallography allows the elucidation of enzyme mechanisms and characterization of the corresponding redox intermediates, which are relevant in catalysis. In addition spectroscopic techniques for monitoring protein structures in the whole process of recombinant protein production are developed. The group, which is part of the Cost D21 network (Metalloproteins and Biomimetics) is sponsored mainly by the Austrian Science Fund and by cooperation with PLANTA Natural Products.



#### Ongoing projects:

(I) Structure function relationships of bifunctional **catalase-peroxidases** (KatG). The group designed and produced more than 50 recombinant variants of *Synechocystis* KatG and was successful in the identification of essential amino acids involved in both the  $H_2O_2$  oxidation and reduction reaction. X-ray crystallography, mass spectrometry and high-field electron paramagnetic resonance spectroscopy revealed new peculiar post-translational modifications and the formation of tryptophanyl and tyrosyl radicals in the reaction of the enzyme with peroxides. Their contribution to the electronic structure of the redox intermediates as well as their role in one- and two-electron oxidation reactions catalyzed by KatG are investigated. In addition we search for the actual binding site(s) of the (unknown) endogenous peroxidase substrate(s).

(II) Structure-function relationships of **human peroxidases** are investigated in order to understand their role in immunology and inflammation. Myeloperoxidase (MPO) and eosinophil peroxidase (EPO) are isolated from leukocytes (neutrophils and eosinophils, respectively). Recombinant wild-type and mutants are heterologously overexpressed in CHO-cells. The main objective is to understand the mechanism of substrate oxidation (two-electron pathway *versus* one-electron pathway) and the structural basis of the different physical and chemical features of the redox intermediates. The role of the heme to protein linkages on redox chemistry and catalysis is investigated. Furthermore, both MPO and EPO as potential pharmacological targets are tested in order to

develop inhibitors since both enzymes play an essential role in host defense but also contribute to many (inflammatory) pathologies. Therefore, it is obviously desirable to design drugs that will dampen inflammation without precipitating infectious diseases.

(III) Cyanobacterial **cytochrome c oxidase**, the key enzyme of cell respiration and, hence, of energy metabolism is investigated. Especially, the electron entry site of subunit II (i.e. the binuclear copper domain) is tested as electron acceptor of cytochrome  $c_6$ , plastocyanin (a type-I copper protein) and cytochrome  $c_M$ . The group succeeded in the heterologous overexpression in *E. coli* of all four proteins of unicellular *Synechocystis* PCC 6803 and now studies the kinetics of electron transfer between the binuclear copper site and the three potential donors. This will give new insights to respiratory electron transport and oxygenic photosynthesis, which – in cyanobacteria - are localized partially on identical membranes and share common redox components. Moreover, the successful production of polyclonal antibodies allows now the localization of these metalloproteins by cell fractionation and Western blot as well as by immunogold labeling of intact cells. Similar experiments are performed with the corresponding proteins from the filamentous  $N_2$ -fixing cyanobacterium *Nostoc* PCC 7120, which can differentiate into vegetative cells and heterocysts.

(IV) *Escherichia coli* is often used as a host for **recombinant protein production** but high level expression can lead to an accumulation of the target protein in so-called **inclusion bodies** (IBs). Spectroscopic studies clearly show that IB proteins can exist at intermediate folding states with composition of secondary structure similar to native forms. In this project we investigate the influence of fermentation conditions on the structure of IB protein as well as alternative renaturation procedures that avoid usual unproductive side reactions leading to aggregation during conventional solubilization. In combination with unfolding studies of the target protein and analyses of the corresponding protein structures by FTIR- and circular dichroism spectroscopy it is the aim to design solubilization regimes on a more rational basis.

## Division of Organic Chemistry

### General Description

#### Glycochemistry

The main research interests are focused on immunochemistry and structural biology of complex carbohydrates of microorganisms (bacteria, viruses, parasites). Key expertise has been developed in the chemical synthesis of oligosaccharides, glycopospholipids, nucleotide-activated sugars and neoglycoconjugates.

In particular, the chemical synthesis of Inner core and Lipid A structures of **bacterial lipopolysaccharides** as well as other immunogenic oligosaccharides and their conversion into artificial antigens has been accomplished. The ligands and the neoglycoconjugates are being used in the clinical diagnosis of chlamydial and parasitic (*Toxocara*) infections. Furthermore, the compounds are being used for a detailed analysis of carbohydrate-antibody interactions at collaborating institutes using serology, molecular modelling, X-ray crystallography and surface plasmon resonance spectroscopy. Thus, the small number of known crystal structures of antibody-carbohydrate complexes has been considerably increased with a set of Kdo-specific monoclonal antibodies and synthetic oligosaccharide and Kdo analogues providing a better understanding on how the adaptive immune system reacts to common bacterial sugars.

Following the full elucidation of the biosynthetic pathways of nucleotide-activated bacterial heptoses, current research projects are devoted to the synthesis of analogues as potential inhibitors of several target enzymes,

which eventually should lead to the development of novel antibiotics. Furthermore, also the interaction of the innate immune response towards heptoses is being investigated by binding studies and crystallography of lectine carbohydrate complexes. In the framework of an FWF-project starting in 2007, the contribution of bacterial aminosugars in the context of antibiotic resistance will be studied.

Finally, the group is involved in the **Antiviral Spot of Excellence** project (<http://www.aspex-vienna.at>) dedicated to chemical modification of the plant-derived drug glycyrrhizin (occurring in licorice) to develop novel antiviral compounds against SARS, influenza and other viral diseases.

Competence in **NMR-spectroscopy** is an indispensable tool for structural assignments and structure elucidation of native glycans and biosynthetic intermediates. A new HRMAS-probe will be in operation in 2007 opening new fields of application especially for fibres, polymers and food.



### Wood pulp and fiber chemistry

Polysaccharides such as cellulose and starch are fully biodegradable and renewable raw materials produced by nature on a large scale (1000 times of the amount of synthetic polymers). To organize and integrate the European scientific community in order to promote the use of these materials as industry feedstocks for the manufacturing of advanced multifunctional materials is the mission of the **European Polysaccharide Network (EPNOE)**.

Applications of these materials pertain to the pulp and paper industries, fibers, textiles, construction and packaging materials as well as to hygiene and medical fields.

The research of the workgroup „Wood pulp and fiber chemistry“ is generally concerned with the chemistry of renewable resources, with a special focus on following topics:

- Cellulose chemistry (solid state and solution structures, dissolution processes, cellulose solvents, Lyocell and Viscose production processes, “intelligent” cellulosic fibers) and polysaccharide chemistry
- Biopolymer analytics with a focus on cellulose, starch, hemicelluloses and lignin (molecular weight distributions, functional group profiling, analysis of residual chromophores, development of analytical methodology)
- Paper and cellulose conservation (evaluation of the damage in historic cellulosic objects, such as manuscripts, books, garments) and evaluation of conservation treatments

- Chemistry of phenolic antioxidants (structure-property relationships, novel tocopherol derivatives as medically active substances, multifunctional polymer stabilizers, phenolic plant extractives)
- „Green chemistry“ (environmentally benign syntheses, solvent-free reactions, microwave synthesis, novel reaction media)

The research comprises synthetic-organic chemistry (cellulosic and phenolic model compounds, cellulose derivatives, isotopic labeling, heterocyclic chemistry), structural chemistry (solid- and liquid-state NMR, EPR, X-ray analysis) as well as special analytical techniques (GPC with multiple detection, capillary electrophoresis, pyrolysis-GC/MS).

The working group is quite international and integrated into numerous national and international collaborations. Several services, such as advanced cellulose and antioxidant analytics, are offered

### **Praznik**

Development and application of analytical strategies and methods for comprehensive characterization of renewable raw materials on microscopical level, in particular of crops rich in carbohydrates.

Appropriate variation of polar/apolar solvent systems combined with chromatographic separation techniques provide valuable data for quality profiles. Based on such profiles, the classification of e.g. aqueous soluble polysaccharides significantly will be improved and enables tailored application of available materials.

Particular expertise is available for starch, fructans, plant extrudates and hemicelluloses. Additionally, carbohydrate metabolism of multi-annual crops such as trees (spruce, oak) and of starch- and fructan-containing plants are investigated with particular focus on the consequences of environmental stress.

## **Scientific Projects**

### **Division of Analytical Chemistry**

Vienna Isotope Research and Survey (VIRIS)

Start: 01 03 2005  
End: 31 02 2011  
Financing: FWF, Austrian Science Fund (START Project)

Glyphosate and AMPA in surface water and suspended solids

Start: 01 01 2005  
End: 31 12 2006  
Financing: BM für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft Wien Austria

Elimination of priority metals from communal waste water

Start: 01 10 2006  
End: 31 12 2009  
Financing: BM Kommunalkredit Austria AG Wien Austria

**BOKU-Network for Analysis of Pollutants and Natural Materials**

Start: 01 08 2005

End: 31 12 2006

Financing: BM:BWK, BM für Bildung, Wissenschaft und Kultur Wien, Austria

**Analysis of metals in the aquatic phase and in suspended matter of surface water by inductively coupled plasma mass spectrometry (ICP-MS)**

Start: 30 08 2005

End: 30 09 2007

Financing: BM für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft Wien, Austria

**Speciation of cancerostatic Pt compounds in the environment**

Start: 01 03 2003

End: 31 02 2006

Financing: FWF, Austrian Science Fund

**Analysis of (pre) historical findings by LA-ICP-DRC-MS**

Start: 01 07 2002

End: 30 06 2004

Financing: FWF, Austrian Science Fund

**Humanbiomonitoring of Platinum Group Elements**

Start: 27 06 2002

End: 06 03 2004

Financing: Österreichische Nationalbank (Jubiläumsfonds)

**Occupational monitoring of <sup>234</sup>U, <sup>235</sup>U, <sup>238</sup>U and <sup>232</sup>Th by ICP-SFMS**

Start: 01 01 2001

End: 31 12 2004

Financing: Treibacher Industrie AG

**CE and CE-ICP-SFMS in Rhizosphere Research**

Start: 01 08 2001

End: 31 07 2004

Financing: FWF, Austrian Science Fund

**Elemental pattern and isotope analysis in water**

Start: 01 01 2000

End: 31 12 2004

Financing: Hochschuljubiläumsstiftung der Stadt Wien

Assessment of root exudates and metal speciation in rhizosphere solutions of metal hyperaccumulators using capillary electrophoresis (CE) and CE hyphenated to inductively coupled plasma sector field mass spectrometry (CE-ICP-SFMS): Method development and application

Start: 01 09 2001  
End: 31 08 2004  
Financing: FWF, Austrian Science Fund

### **Division of Biochemistry / Glycobiology**

Recombinant pharmaceuticals from plants for human health

Start: 01 02 2004  
End: 31 12 2009  
Financing: European Commission, Brussels, European Union

Modulation of the N-glycosylation pathway in plants for the production of pharmaceutically relevant glycoproteins

Start: 01 02 2004  
End: 31 01 2008  
Financing: WWTF

Neural Glycosylation in *Drosophila*

Start: 01 12 2004  
End: 30 11 2006  
Financing: FWF, Austrian Science Fund

Glycosylation of *Caenorhabditis elegans* II

Start: 01 10 2005  
End: 30 09 2007  
Financing: FWF, Austrian Science Fund

Glycogenomics of *Dictyostelium discoideum*

Start: 01 11 2006  
End: 31 11 2009  
Financing: FWF, Austrian Science Fund

Arabinosylated allergens in weed pollen

Start: 01 08 2006  
End: 31 07 2009  
Financing: FWF, Austrian Science Fund

**Post-translational Modifications of autologous und heterologous expressed proteins**

Start: 02 12 2002  
End: 31 12 2005  
Financing: BM:VIT, BM für Verkehr, Innovation und Technologie; Vienna; Austria

***Caenorhabditis elegans* glycosylation**

Start: 01 01 2002  
End: 31 12 2004  
Financing: FWF, Austrian Science Fund

**Re-engineering Glycosylation in Insect cells**

Start: 01 11 2006  
End: 31 11 2009  
Financing: FWF, Austrian Science Fund

**Significance in allergy of protein glycosylation in plants and invertebrates**

Start: 01 01 2001  
End: 31 12 2005  
Financing: FWF, Austrian Science Fund

**Phosphorylation of lysosomal enzymes**

Start: 01 12 2003  
End: 31 12 2004  
Financing: Hochschuljubiläumsstiftung der Stadt Wien; Austria

**Division of Biochemistry / Metalloprotein Research Group****Proteinreinigung und Strukturanalysen**

Start: 01 08 1998  
End: 31 12 2012  
Financing: Planta Natural Products Vertriebs GmbH, Vienna Austria

**Uniinfrastruktur II & III**

Start: 01 08 2004  
End: 31 12 2006  
Financing: BM:BWK, Bundesministerium für Bildung, Wissenschaft und Forschung, Austria

**Structure-function relationships in catalase-peroxidases**

Start: 01 01 2006  
End: 31 12 2008  
Financing: FWF, Austrian Science Fund

**Spectroscopic techniques for bioprocess optimization**

Start: 01 11 2005  
End: 31 10 2008  
Financing: FWF, Austrian Science Fund

**Respiration in cyanobacteria: the role of cytochrome  $c_6$ , cytochrome  $c_M$  and plastocyanin**

Start: 01 02 2005  
End: 31 01 2008  
Financing: FWF, Austrian Science Fund

**Probing Structure-Function Relationships of Human Peroxidases**

Start: 01 10 2002  
End: 31 09 2005  
Financing: FWF, Austrian Science Fund

**Structure-function relationships in catalase-peroxidases**

Start: 01 01 2002  
End: 31 12 2004  
Financing: FWF, Austrian Science Fund

**Natural, engineered peroxidases and synthetic heme model compounds with peroxidase-like activity**

Start: 01 01 2001  
End: 31 12 2005  
Financing: COST Chemistry working group action D21: Metalloenzymes and chemical biomimetics

**Small molecules activation at biological and biomimetic metal centres**

Start: 01 01 2001  
End: 31 12 2005  
Financing: COST Chemistry working group action D21: Metalloenzymes and chemical biomimetics

**Wood K plus: Area 1**

Start: 01 10 2000  
End: 30 09 2004  
Financing: 60% public money  
40% industry

**Division of Organic Chemistry****ADP-Heptose Analoga**

Start: 15 09 2001  
End: 14 09 2004  
Financing: FWF, Austrian Science Fund



**Antiviral Spot of Excellence (ASPEX)**

Start: 01 03 2006  
End: 28 02 2009  
Financing: ZIT

**Chemistry of ortho-quinone methides**

Start: 01 01 2005  
End: 31 12 2007  
Financing: FWF, Austrian Science Fund

**Cellodextrins – structure and dissolution**

Start: 01 04 2005  
End: 31 03 2008  
Financing: FWF, Austrian Science Fund

**Cellulose damage in historical papers**

Start: 01 03 2006  
End: 28 02 2009  
Financing: FWF, Austrian Science Fund

**Entwicklung eines zerstörungsfreien Untersuchungsverfahrens zur Bestimmung des Schädigungsgrades von Cellulose**

Start: 01 03 2006  
End: 28 02 2008  
Financing: PAL

**EU Network of Excellence “The European Polysaccharide Network”**

Start: 01 05 2005  
End: 30 04 2009  
Financing: European Commission Brussels European Union

**Ecophysiological study of *Quercus libanii* var. *persicain* in Iran.**

Start: 01 10 2002  
End: 30 09 2005  
Financing: OEAD (Nord-Süd-Dialog-Stipendium)

**Molecular characterization of carbohydrate-specific antibodies against Chlamydiae**

Start: 01 08 2004  
End: 31 07 2008  
Financing: FWF, Austrian Science Fund

#### Reaction mechanisms in Organosolv-Pulping

Start: 01 04 2005  
End: 31 03 2008  
Financing: Wood K plus - Kompetenzzentrum Holz GmbH Linz Austria

#### Residual chromophores in bleached pulps

Start: 01 10 2006  
End: 30 09 2009  
Financing: Österreichische Forschungsförderungsgesellschaft mbH Wien Austria  
FFG

#### Spiro-polymerization: polytocopherols as antioxidants

Start: 01 11 2006  
End: 31 10 2009  
Financing: FWF, Austrian Science Fund

#### Synthesis of heterocyclic receptor agonists

Start: 01 10 2006  
End: 30 09 2009  
Financing: FWF, Austrian Science Fund

#### The utilization of *Jerusalem artichoke* extracts for application as component in beverages.

Start: 01 01 2003  
End: 31 12 2004  
Financing: Wiss. – techn. Zusammenarbeit Österreich-Polen, Projekt 17/2003

#### Chemie der Aminoxide

Start: 01 05 2001  
End: 30 04 2004  
Financing: FWF, Austrian Science Fund

#### The activity of new vitamin E-type antioxidants and the physiological function of their quinoid metabolites.

Start: 01 03 2003  
End: 27 02 2005  
Financing: FWF, Austrian Science Fund

#### A novel approach to assess the deterioration state of aged papers

Start: 2004  
Financing: Hochschuljubiläumsstiftung der Stadt Wien

## **Division of Organic Chemistry / Christian Doppler-Laboratory of Pulp Reactivity**

Pulp reactivity

Start: 01 10 1998  
End: 31 03 2006  
Financing: Christian-Doppler-Society

For more details about Scientific Projects look at [research information service](#)

## **Cooperation Partners**

### **Division of Analytical Chemistry**

Academy of Fine Arts, Vienna, Austria  
Austrian Research Center, ARC, Seibersdorf, Austria  
Corvinus University Budapest, Hungary  
Department of Analytical Chemistry, Johannes Kepler University, Linz, Austria  
Department of Forensic Medicine, University of Vienna  
Department of Geology, University of Vienna  
European Joint Research Center IRMM Geel, Belgium  
European Space Agency, Netherlands  
GSF, Neuherberg, Germany  
IAEA Vienna  
Institut für Spektrochemie und angewandte Spektroskopie (ISAS), Dortmund  
Institute of Analytical Chemistry, University of Technology Graz, Austria  
Institute of Analytical Chemistry, University of Technology Vienna, Austria  
Institute of Inorganic Chemistry, University of Vienna  
Institute of Nuclear Sciences, Laboratory of Analytical Chemistry, University of Ghent, Belgium  
Institute of Prehistory, University of Vienna  
Laboratory of Inorganic Chemistry, ETH Zürich, Switzerland  
Medical University of Vienna  
Museum of Natural History, Vienna  
Treibacher Chemische Werke, Austria  
University of Helsinki, Finland  
University of Oviedo, Spain  
Department of Internal Medicine I, Vienna University School of Medicine

### **Division of Biochemistry / Glycobiology**

AKH, Institut für Allgemeine und Experimentelle Pathologie Wien  
IFA-Tulln BetriebsgesmbH, Tulln, Austria  
Fraunhofer-Gesellschaft zur Förderung der Angewandten Forschung

Forschungszentrum Borstel, Borstel, Germany  
Institute of Nutrition, Vienna, Austria  
Istituto Superiore di Sanita, Roma, Italy  
Paul-Ehrlich Institut, Langen, Germany  
Institute for Biotechnology, TU Graz, Graz, Austria  
University Salzburg, Austria  
Utrecht University, Utrecht, Netherlands

### **Division of Biochemistry / Metalloprotein Research Group**

Institute of Physical Chemistry, University of Vienna, Austria  
Department of Biotechnology, BOKU  
Department of Biological Sciences, University of Essex, Colchester, U.K.  
Department of Microbiology, University of Manitoba, Canada  
Department of Chemistry, University of Florence, Italy  
Section de Bioenergetique, URA CNRS, Saclay, France  
Department of Chemistry, University of Modena and Reggio Emilia, Modena, Italy  
Institut de Biologia Molecular de Barcelona, Spain  
Institute of Medical Physics and Biophysics, University of Leipzig, Germany  
Institut für Anorganische Chemie, ETH Zürich, Switzerland  
Planta Natural Products, Vienna, Austria

### **Division of Organic Chemistry**

Department of Nanobiotechnology, BOKU  
Leibniz Center of Biomedicine, Borstel, Germany  
Department of Microbiology & Immunology, Univ. Western Ontario  
NIH, National Institute of Diabetes and Kidney Diseases  
Department of Pathogen Genomics, National Research Council of Canada, Ottawa, Canada  
Department of Biochemistry and Microbiology, University of Victoria Canada  
National Research Council of Canada, Ottawa, Canada  
Department of Pathology and Immunology, Washington School of Medicine, St. Louis, USA  
Department of Physiology and Biophysics, Boston University School of Medicine, Boston, USA  
Department of Pathophysiology, AKH Wien, Austria  
Department of Zoology, Animal and Population Genetics, University of Edinburgh, UK  
Carlsberg Laboratories, Copenhagen, Denmark  
Department of Applied Synthetic Chemistry, TU Vienna, Austria

Staatliche Akademie der Bildenden Künste, Stuttgart, Germany  
Universitätsbibliothek Marburg, Germany  
PAL, Preservation Academy Leipzig, Germany  
Schweizerische Landesbibliothek Bern, Switzerland

Stadt- und Universitätsbibliothek Bern, Switzerland  
Institute of Applied Genetics und Cell Biology, BOKU, Austria  
Centre de Recherche sur la Conservation des Documents Graphiques, France  
Bundesforschungsanstalt für Holzforschung, Hamburg, Germany

UMIST, Manchester, U.K.  
CDL-Dornbirn, Austria  
University Jena, Germany  
KF-University Graz, Austria  
University Linz, Austria  
CERMAV, Grenoble France  
Tottori University, Japan  
University of Strasbourg, France  
Auburn University, Alabama, USA  
Technion Haifa, Israel  
Technical University Helsinki, Finland  
Tottori University, Japan  
Kyoto University, Japan  
Vienna University of Technology, Austria  
University of Veterinary Medicine Vienna, Austria  
Federal Institute of Materials Research and Testing, Berlin, Germany  
Abo Academy, Turku, Finland  
University of Veterinary Medicine Vienna, Austria  
Centre de Mise en Forme des Matériaux, CEMEF, Sophia-Antipolis, France

Institut für Chemie, KF-University, Graz, Austria  
Department für Pflanzenbau und Pflanzenzüchtung, BOKU, Austria  
Department für Lebensmitteltechnologie, BOKU, Austria  
Department of Human Nutrition, Akademia Rolnicze, Krakau, Polen  
Department of Carbohydrates, Akademia Rolnicze, Krakau, Polen  
Institute of Forest and Rangelands, Karaj, Iran  
Institut für Allgemeine Botanik, Humboldt Universität Berlin, Germany  
Department of Biotechnology and Biochemistry, Cinvestav, Mexico  
Institut für Pharmazeutische Technologie der Universität Wien, Austria  
Institut für Verfahrenstechnik, Umwelttechnik und Technische Biowissenschaften der Technischen Universität Wien, Austria  
Department of Biotechnology and Biochemistry, University of Guadalajara, Mexico

### **Companies**

Onepharm research and development GmbH Wien, Austria  
Novatec Diagnostica, Germany  
Lenzing AG

PAL  
SCA Hallein  
Borregaard  
BASF  
DEGUSSA AG

## Publications

### Division of Analytical Chemistry

#### Original articles and reviews in refereed journals

##### 2006

Berger, T.W., Swoboda, S., Prohaska, T., Glatzel, G. (2006): The role of calcium uptake from deep soils for spruce (*Picea abies*) and beech (*Fagus sylvatica*). *For. Ecol. Manage.*, 229, 234-246.

Boulyga, S., Heumann, K. (2006): Inductively coupled plasma mass spectrometry for determination of extremely low <sup>236</sup>U/<sup>238</sup>U isotope ratios in environmental samples. *J. Environm. Radioa.*, 88, 1-10.

Boulyga, S., Klötzli, U., Prohaska, T. (2006): Improved abundance sensitivity in MC-ICP-MS for determination of <sup>236</sup>U/<sup>238</sup>U isotope ratios in the 10<sup>-7</sup> to 10<sup>-8</sup> range', S.F: Boulyga, Urs Klötzli and T. Prohaska. *J. Anal. Atom. Spectrom.*, 21, 1-4.

Hann, S., Obinger, S., Stingeder, G., Paumann, M., Furtmüller, P.G., Köllensperger, G. (2006): Studying metal integration in native and recombinant copper proteins by hyphenated ICP-DRC-MS and ESI-TOF-MS capabilities and limitations of the complementary techniques *J. Anal. At. Spectrom.*, 21, 1224-1231. ISSN 0267-9477.

Prohaska, T., Bulska, E., Duta, S., Leito, I., Magnusson, B., Majcen, N., Prichard, E., Robouch, P., Suchanek, M., Taylor, P., Vassileva, E., Wegscheider, W., (2006) Report of the 1st AcadeMiC Summer School for "Metrology in Chemistry". *Anal. Bioanal. Chem.*, 385, 1031-1032. ISSN 1618-2642

Rudolph, E., Limbeck, A., Hann, S. (2006): Novel matrix separation - on-line preconcentration procedure for accurate quantification of palladium in environmental samples by isotope dilution inductively coupled plasma sector field mass spectrometry. *J. Anal. At. Spectrom.*, 21, 1287-1293. ISSN 0267-9477.

Stefanka, Z., Köllensperger, G., Stingeder, G., Hann, S. (2006): Down-scaling narrowbore LC-ICP-MS to capillary LC-ICP-MS: A comparative study of different introduction systems. *J. Anal. At. Spectrom.*, 21, 86-89.

**2005**

Boulyga, S., Heilmann, J., Heumann, K. (2005): Isotope dilution ICP-MS with laser assisted sample introduction for direct determination of sulfur in petroleum products. *Anal. Bioanal. Chem.*, 382, 1808-1814.

Boulyga, S., Heumann, K. (2005): Direct determination of halogens in powdered geological and environmental samples using isotope dilution laser ablation ICP-MS. *Int. J. Mass Spectrom.*, 242, 291-296.

Boulyga, S., Heumann, K. (2005): Direct determination of platinum group elements and their distribution in geological and environmental samples at the ng g<sup>-1</sup> level using LA-ICP-IDMS. *Anal. Bioanal. Chem.*, 383, 442-447.

Hann, S., Latkoczy, C., Bereuter, T., Prohaska, T., Stingeder, G., Reiter, C. (2005): Reconstruction of a case of thallium poisoning using LA-ICP-SFMS. *Int. J. Legal Med.*, 119, 35-39.

Hann, S., Stefanka, Z., Lenz, K., Stingeder, G. (2005): Novel separation method for highly sensitive speciation of cancerostatic platinum compounds by HPLC-ICP-MS. *Anal. Bioanal. Chem.*, 381, 405-412.

Hartinger, C.G., Hann, S., Köllensperger, G., Sulyok, M., Grössl, M., Timerbaev, A.R., Rudnev, A.V., Stingeder, G., Keppler, B.K. (2005): Interactions of a novel ruthenium-based anticancer drug (KP1019 or FFC14a) with serum proteins - significance for the patient. *International J. Clin. Pharm. Ther.*, 43, 583-585.

Lenz, K., Hann, S., Köllensperger, G., Stefanka, Z., Stingeder, G., Weissenbacher, N., Mahnik, S.N., Fürhacker, M. (2005): Monitoring and elimination of cancerostatic platinum compounds present in hospital effluents. *Sci. Tot. Environ.*, 345, 141-152.

Mironov, V., Matusevich, J., Kudrjashov, V., Ananich, P., Zhuravkov, V., Boulyga, S., Becker, J. (2005): Determination of uranium concentration and burn-up of irradiated reactor fuel in contaminated areas in Belarus using uranium isotopic ratios in soil samples. *Radiochimica Acta*, 93, 781-784.

Prohaska, T., Wenzel, W.W., Stingeder, G. (2005): ICP-MS-based tracing of metal sources and mobility in a soil depth profile via the isotopic variation of Sr and Pb. *Int. J. Mass Spectrom.*, 242, 243-250.

Puschenreiter, M., Wenzel, W.W., Wieshammer, G., Fitz, W.J., Wieczorek, S., Kanitsar, K., Köllensperger, G. (2005): Novel micro suction cup design for sampling soil solution at defined distances from roots. *J. Plant Nutr. Soil Sci.*, 168, 386-391.

Rudolph, E., Hann, S., Stingeder, G., Reiter, C. (2005): Ultra-trace analysis of platinum in human tissue samples. *Anal Bioanal Chem*, 382, 1500-1506.

Stadlbauer, C., Prohaska, T., Reiter, C., Knaus, A., Stingeder, G. (2005): Time resolved monitoring of heavy-metal intoxication in single hair by laser ablation ICP-DRCMS. *Anal. Bioanal. Chem.*, 383(3), 500-508.

Sulyok, M., Hann, S., Hartinger, C., Keppler, B.K., Stingeder, G., Köllensperger, G. (2005): Two dimensional separation schemes for investigation of the interaction of an anticancer ruthenium(III) compound with plasma proteins. *J. Anal. At. Spectrom.*, 20, 856-863.

Sulyok, M., Miró, M., Stingeder, G., Köllensperger, G. (2005): The potential of flow-through microdialysis for probing low-molecular weight organic anions in rhizosphere soil solution. *Analytica Chimica Acta*, 546, 1 - 10.

Teschler-Nicola, M., Prohaska, T., Wild, E. (2005): Der Fundkomplex von Schletz und seine Bedeutung für den aktuellen Diskurs endlinearbandkeramischer Phänomene in Zentraleuropa. *Collegium Anthropologicum*

## 2004

Berger, T.W., Köllensperger, G., Wimmer, R. (2004): Plant-soil feedback in spruce (*Picea abies*) and mixed spruce-beech (*Fagus sylvatica*) stands as indicated by dendrochemistry. *Plant and Soil*, 264, 69-83.

Hann, S., Köllensperger, G., Obinger, C., Furtmüller, P.G., Stingeder, G. (2004): SEC-ICP-DRCMS and SEC-ICP-SFMS for determination of metal-sulphur ratios in metalloproteins. *J. Anal. Atom. Spectrom.*, 19, 74 - 79.

Hlavay, J., Prohaska, T., Weisz, M., Wenzel, W.W., Stingeder, G. (2004): Determination of trace elements bound to soils and sediment fractions. *Pure Appl. Chem.*, 76, 2, 415-442.

Kozlov, V., Leskelä, M., Prohaska, T., Schultheis, G., Stingeder, G., Sipilä, H. (2004): TIBr crystal growth, purification and characterisation. *Nuclear Instruments and Methods in Physics Research, A* 531, 165-173.

Lenz K., Mahnik S., Weissenbacher N., Hann S., Köllensperger G., Mader R., Fürhacker M. (2004): Adsorptionsverhalten ausgewählter Zytostatika im Abwasser und in Kontakt mit Belebtschlamm. *Österr. Wasser- und Abfallwirtschaft*, 56.JG, 9-10, 127-131.

Limbeck, A., Rudolph, E., Hann, S., Köllensperger, G., Stingeder, G., Rendl, J. (2004): Flow injection on-line pre-concentration of platinum coupled with electrothermal atomic absorption spectrometry. *J. Anal. At. Spectrom.*, 19, 1474-1478.

Pavicevic, M.K., Wild, E.M., Amthauer, G., Berger, M., Boev, B., Kutschera, W., Priller, A., Prohaska, T., Stefan, I. (2004): AMS measurements of <sup>26</sup>Al in quartz to assess the cosmic ray background for the geochemical solar neutrino experiment LOREX. *Physics Research - Nuclear Instruments and Methods B*, 223 - 224, 660 - 667.

Schultheis, G., Prohaska, T., Schreiner, M., Stingeder, G. (2004): Characterisation of ancient and art nouveau glass samples by Pb isotope analysis using laser ablation coupled to a magnetic sector field inductively coupled plasma mass spectrometry (LA-ICP-SF-MS). *J. Anal. Atom. Spectrom.*, 19, 838 - 843.

Stefanka, Z., Hann, S., Köllensperger, G., Stingeder, G. (2004): Investigation of the reaction of cisplatin with methionine in aqueous media using HPLC-ICP-DRCMS. *J. Anal. Atom. Spectrom.*, 19, 894 - 898.



**Conference & workshop proceedings, abstracts****2006**

Boulyga, S., Heilmann, J., Heumann, K. (2006): Direkte Bestimmung von Schwefel und Metallspuren in Brennstoffen mittels LA-ICP-MS/MS. In: Deutsche Gesellschaft für Massenspektrometrie: 39. Jahrestagung der Deutschen Gesellschaft für Massenspektrometrie, 05 - 08 March 2006, Mainz, D4-8.

Boulyga, S., Heilmann, J., Heumann, K. (2006): Direkte Bestimmung von Schwefel und Metallspuren in Brennstoffen mittels LA-ICP-MS/MS. In: Deutsche Gesellschaft für Massenspektrometrie: 39. Jahrestagung der Deutschen Gesellschaft für Massenspektrometrie, 05 - 08 March 2006, Mainz, D4-8.

Fürhacker, M., Mahnik, S.N., Lenz, K., Weissenbacher, N., Mader, R.M., Krenn, P., Hann, S., Köllensperger, G., Knasmüller, S., Ferk, F., Uhl, M., Bursch, W. (2006): Application of model calculation, chemical monitoring and effect measurements to assess the risk of the emissions of cytostatic compounds. In: Scientific Committee: 3rd SWIFT-WFD workshop in collaboration with AQUATERRA, 15-16

Galler, P., Teschler-Nicola, M., Prychistal, A., Stingeder, G., Boulyga, S., Prohaska, T. (2006): Bestimmung von Sr87/Sr86 Isotopenverhältnissen in historischen Zahnproben mittels Laser Ablation-Multicollector-ICP-MS (LA-MC-ICP-MS). In: Karl-Franzens-Universität Graz: 2. ASAC JunganalytikerInnen Forum, 09.06. - 10.06.2006, Graz.

Galler, P., Teschler-Nicola, M., Prychistal, A., Stingeder, G., Boulyga, S., Prohaska, T. (2006): Bestimmung von Sr87/Sr86 Isotopenverhältnissen in historischen Zahnproben mittels Laser Ablation-Multicollector-ICP-MS (LA-MC-ICP-MS). 17. Massenspektrometrische Diskussionsveranstaltung, 15. Februar 2006, Universität Wien

Galler, P., Teschler-Nicola, M., Prychistal, A., Stingeder, G., Boulyga, S., Prohaska, T. (2006): Bestimmung von Sr87/Sr86 Isotopenverhältnissen in historischen Zahnproben mittels Laser Ablation-Multicollector-ICP-MS (LA-MC-ICP-MS). In: Karl-Franzens-Universität Graz: 2. ASAC JunganalytikerInnen Forum, 09.06. - 10.06.2006, Graz

Galler, P., Teschler-Nicola, M., Prychistal, A., Stingeder, G., Boulyga, S., Prohaska, T. (2006): Non Invasive Determination of 87Sr/86Sr Isotope Ratios in Human Teeth via Laser Ablation-Multi Collector-ICP-MS (LA-MC-ICP-MS). 39. Jahrestagung der Deutschen Gesellschaft für Massenspektrometrie (DGMS) + 20. ICP-MS Anwendertreffen + 7. Symposium über Massenspektrometrische Verfahren der Elementspurenanalyse, 5. - 8. März 2006, Johannes Gutenberg Universität, Mainz, Deutschland

Hann, S., Köllensperger, G., Falta, T., Boulyga, S., Popp, M., Prohaska, T., Stingeder, G. (2006): Applications of ICP-MS with Dynamic Reaction Cell Technique (ICP-DRCMS). Seminar on Spectroscopic Techniques, June 14, 2006, Cordoba, Spain

Köllensperger, G., Knasmüller, S., Ferk, F., Uhl, M., Bursch, W. (2006): Application of model calculation, chemical monitoring and effect measurements to assess the risk of the emissions of cytostatic compounds. In: Scientific Committee: 3rd SWIFT-WFD workshop in collaboration with AQUATERRA, 15-16 May 2006, Barcelona, Spain, 49 - 50, Barcelona.

Köllensperger, G., Hann, S., Prohaska, T., Stingeder, G. (2006): Präzisionsanalytik mittels ICP-MS. Anorganika 2006, 28. September 2006, Wien

Köllensperger, G., Hann, S., Prohaska, T., Stingeder, G. (2006): Präzisionsanalytik mittels ICP-MS. Anorganika 2006, 27. September 2006, München, Deutschland

Köllensperger, G., Hann, S., Prohaska, T., Stingeder, G. (2006): Präzisionsanalytik mittels ICP-MS. Anorganika 2006, 26. September 2006, Olten, Deutschland

Köllensperger, G., Hann, S., Prohaska, T., Stingeder, G. (2006): Präzisionsanalytik mittels ICP-MS. Anorganika 2006, 25. September 2006, Karlsruhe, Deutschland

Mentler A., Busch-Peterson A., Köllensperger G., Popp M., Fürhacker M. (2006): Verhalten von Glyphosate und AMPA in Böden. In: Arbeitsgemeinschaft für Lebensmittel-, Veterinär- und Agrarwesen (ALVA): Tierische Lebensmittel im Spannungsfeld zwischen Genuss, Gesundheit und Risiko, 22. - 23. Mai 2006, Landwirtschaftskammer Niederösterreich, St. Pölten, 222-224; ISSN 1606-612X.

Popp, M., Hann, S., Stingeder, G., Mentler, A., Fürhacker, M., Köllensperger, G. (2006): Bestimmung von Glyphosat/AMPA (und Phosphonaten) in Umweltproben. In: Karl-Franzens-Universität Graz: 2. ASAC JunganalytikerInnen Forum, June 09 - 10 2006, Graz.

Prohaska, T. (2006): Wasser, Mythologie und Wissenschaft. In: Wasser – Jahrestagung des Österreichischen Restauratorenverbandes Wien/A, Nov. 2006.

Prohaska, T., Boulyga, S., Wenzel, W., Mayer, H. K., Schreiner, M., Krška, R., Klötzli, U., Lohninger, H., Jakubowski, N., Horacek, M., Wimmer, B., Fodor, P., Vanhaecke, F. (2006): Extended isotopic "fingerprints" for highly reliable authentication and traceability of Marchfeld asparagus: a pilot study. TRACE (Tracing Food Commodities in Europe) - 2nd Annual Meeting, April 24 - 26, 2006, Prague

Prohaska, T., Boulyga, S., Swoboda, S., Galler, P., Horacek, M. (2006): Tracing the origin of food by (LA)-ICP-MS, Plasma Winter Conference, January 2006, Tucson, Arizona

Raeder, S., Schumann, P., Wendt, K., Bushaw, B., Boulyga, S. (2006): Hochselektive Isotopenanalyse von Uran-236 mittels HR-RIMS. In: Deutsche Gesellschaft für Massenspektrometrie: 39. Jahrestagung der Deutschen Gesellschaft für Massenspektrometrie, 05 - 08 March 2006, Mainz, Germany, P4-23.

Raeder, S., Schumann, P., Wendt, K., Bushaw, B., Boulyga, S. (2006): Hochselektive Isotopenanalyse von Uran-236 mittels HR-RIMS. In: Deutsche Gesellschaft für Massenspektrometrie: 39. Jahrestagung der Deutschen Gesellschaft für Massenspektrometrie, 05 - 08 March 2006, Mainz, Germany, P4-23.

Standler, A., Köllensperger, G., Stingeder, G., Buchberger, W., Hann, S. (2006): Platinhaltige Zytostatika in Krankenhausabwässern: eine Gefährdung für die Gewässer? In: Karl-Franzens-Universität Graz: 2. ASAC JunganalytikerInnen Forum, 09.06. - 10.06.2006, Graz.

May 2006, Barcelona, Spain, 49 - 50, Barcelona.

Standler, A., Köllensperger, G., Stingeder, G., Buchberger, W., Hann, S. (2006): Platinhaltige Zytostatika in Krankenhausabwässern: eine Gefährdung für die Gewässer? In: Karl-Franzens-Universität Graz: 2. ASAC JunganalytikerInnen Forum, 09.06. - 10.06.2006, Graz.

## 2005

Boulyga, S., Heumann, K. (2005): LA-ICP-IDMS using high pulse energy laser radiation: crossing the borders in direct trace analysis in solid samples. In: Peter Fodor: European Winter Conference on Plasma Spectrochemistry, 30 January - 3 February 2005, Budapest, Hungary.

Boulyga, S., Klemens, P., Feuerbacher, H., Heumann, K. (2005): ICP-MS determination of extreme uranium isotope ratios using a new microflow nebulizer system. In: Peter Fodor: European Winter Conference on Plasma Spectrochemistry, 30 January - 3 February 2005, Budapest, Hungary.

Eichinger, R., Sulyok, M., Paschkunova, I., Hann, S., Köllensperger, G., Keppler, B.K. (2005): Interaction of the ruthenium complex KP1019 (FFC14A) with cytosolic proteins. In: Keppler, B.: Symposium - Novel Approaches for the Discovery and the Development of Anticancer Agents, July 7 - 9, 2005, Vienna, Austria.

Hann, S., Köllensperger, G. (2005): ICP-MS for environmental and biomedical analysis of platinum group elements. In: Peter Fodor: European Winter Conference on Plasma Spectrochemistry 2005, 30 January - 3 February 2005, Budapest, Hungary.

Hann, S., Köllensperger, G. (2005): Speciation of cancerostatic platinum compounds for development of elimination strategies in waste water. In: Warsaw University: 3rd Summer School - Speciation analysis as a modern tool for environmental risk assessment, 11. - 14. Juni 2005, Warsaw, Poland.

Hann, S., Köllensperger, G., Stingeder, G. (2005): Umweltbelastung durch Platingruppenelemente? In: Gesellschaft für Mineralstoffe und Spurenelemente: 21. Jahrestagung der Gesellschaft für Mineralstoffe und Spurenelemente: Experimentelle Modelle der Spurenelementforschung, 28 - 29 October 2005, BOKU, Vienna, Austria, 21.

Hann, S., Obinger, C., Furtmüller, P.G., Hartinger, C.G., Keppler, B.K., Stingeder, G., and Köllensperger, G. (2005): Speciation analysis of metalloproteins and metalprotein adducts. In: I. Bertini, First European Conference on Chemistry for Life Sciences, 4-6 October, Rimini, P200.

Hann, S., Rottensteiner, H., Daubert, S., Kolarich, D., Altmann, F., Stingeder, G., Köllensperger, G. (2005): HPLC Trennungen zum komplementären Einsatz von LC-ESI-MS und LC-ICP-MS in der Metalloproteinanalytik. In: A. Kyriakopoulos: Gemeinsame Herbsttagung - Metalloproteine und Metalloidproteine, 24 - 25 November 2005, Hahn-Meitner Institut, Berlin, Germany.

Hartinger, C.G., Sulyok, M., Hann, S., Köllensperger, G., Größl, M., Timerbaev, A.R., Rudnev, A.V., Semenova, O., Stingeder, G., Keppler, B.K. (2005): Binding of KP1019 (FFC14A) to human serum albumin and transferrin. In: Keppler, B.K.: Symposium - Novel Approaches for the Discovery and the Development of Anticancer Agents, July 7 - 9, 2005, Vienna, Austria.

Heumann, K., Bettmer, J., Boulyga, S., Loreti, V., Klemens, P. (2005): Isotope dilution ICP-MS and ICP-MS hyphenated techniques as an accurate and sensitive tool for trace element and metalloprotein analyses. In: University of Ulster: Trace Elements in Man and Animals, Scientific developments, Novel Applications and Progress into the 21st Century, 19 - 23 June 2005, University of Ulster, Coleraine, Northern Ireland, 23.

Heumann, K., Tibi, M., Boulyga, S. (2005): Isotope dilution laser ablation ICP-MS: an accurate and independent calibration method for direct trace element determinations in powdered solid samples. In: University of Antwerp: Colloquium Spectroscopicum Internationale XXXIV, 04 - 09 September 2005, University of Antwerp, Belgium.

Ketterer, M., Maclellan, G., Corcoran, B., Haffer, K., Szechenyi, S., Mietelski, J., Buzinny, M., Gulin, S., Boulyga, S. (2005): Chernobyl plutonium and americium in Eastern Europe: source and transport studies by sector-field ICPMS. In: Peter Fodor: European Winter Conference on Plasma Spectrochemistry, 30 January - 3 February 2005, Budapest, Hungary.

Köllensperger, G., Hann, S. (2005): Metallproteinanalytik mittels LC-ICP-MS und LC-ESI-MS. In: Franz Weigang: 22. Forum Analytik, 15. - 16. Februar 2005, Vienna, Austria.

Köllensperger, G., Hann, S. (2005): Anorganische Massenspektrometrie zur Untersuchung von Proteinaddukten metallhaltiger Pharmazeutika. In: A. Kyriakopoulos: Gemeinsame Herbsttagung - Metalloproteine und Metalloidproteine, 24 - 25 November 2005, Hahn-Meitner Institut, Berlin, Germany.

Köllensperger, G., Hann, S. (2005): Speciation analysis: from environmental to biological application. In: Warsaw University: 3rd Summer School - Speciation analysis as a modern tool for environmental risk assessment, 11. - 14. Juni 2005, Warsaw, Poland.

Köllensperger, G., Hann, S., Obinger, C., Furtmüller, P.G., Stingeder, G. (2005): LC-ICP-MS and LC-ESI-MS for the characterization of metalloproteins in interdisciplinary bioinorganic studies. In: Peter Fodor: European Winter Conference on Plasma Spectrochemistry 2005, 30 January - 3 February 2005, Budapest, Hungary.

Lenz, K., Hann, S., Köllensperger, G., Stefanka, Z., Stingeder, G., Weissenbacher, N., Mahnik, S., Fürhacker, M. (2005): Speciation of cancerostatic platinum compounds (CPC) in hospital wastewater for development of elimination procedures. In: Peter Fodor: Winter Conference on Plasma Spectrochemistry 2005, 30 January - 3 February 2005, Budapest, Hungary.

Prohaska, T., Stadlbauer, C., Stingeder, G., Reiter, C., Knaus, A. (2005): Laser Ablation ICP-MS of Human Hair. In: Peter Fodor: European Winter Conference on Plasma Spectrochemistry, 30 January - 3 February 2005, Budapest, Hungary.

Rudolph, E., Hann, S., Limbeck, A., Stingeder, G. (2005): Analysis of Pt, Pd and Rh in biological samples via matrix separation and on-line pre-concentration coupled to ICP-SFMS. In: Peter Fodor: European Winter Conference on Plasma Spectrochemistry 2005, 30 January - 3 February 2005, Budapest, Hungary.

Schumann, P., Boulyga, S., Geppert, C., Passler, G., Schmitt, A., Trautmann, N., Wendt, K. (2005): Erstmaliger Nachweis von U-236 mittels HR-RIMS. In: Deutsche Physikalische Gesellschaft: Spring Meeting of German Physical Society, 04 - 09 March 2005, Berlin, Germany.

Stefanka, Z., Hann, S., Sulyok, M., Stingeder, G., Lesueur, C., Fürhacker, M., Köllensperger, G. (2005): Analysis of phosphorus containing micro pollutants in aquatic samples by LC-ICP-SFMS and LC-ICP-DRCMS. In: Peter Fodor: Winter Conference on Plasma Spectrochemistry 2005, 30 January - 3 February 2005, Budapest, Hungary.

Stingeder, G. (2005): ICPMS at BOKU - University of Natural Resources and Applied Life Sciences. In: Warsaw University: 3rd Summer School - Speciation analysis as a modern tool for environmental risk assessment, 11. - 14. Juni 2005, Warsaw, Poland.

Sulyok, M., Hann, S., Hartinger, C.G., Keppler, B.K., Stingeder, G., Köllensperger, G. (2005): Two dimensional separation schemes for investigation of the interaction of an anticancer ruthenium(III) compound with plasma proteins. In: Keppler, B.K.: Symposium - Novel Approaches for the Discovery and the Development of Anticancer Agents, July 7 - 9, 2005, Vienna, Austria.

## **2004**

Berger, T.W., Prohaska, T. (2004): The role of calcium uptake in deep soils for spruce and beech using Sr isotopes. In: Albert-Ludwigs-Universität Freiburg: Eurosoil 2004, 4 - 12 Sep 2004, Freiburg, Germany, Abstracts, 84-85.

Hann, S., Köllensperger, G., Stefanka, Z., Lenz, K., Fürhacker, M., Buchberger, W., Mader, R. M., Stingeder, G. (2004): Analysis of cancerostatic platinum compounds in hospital waste water. In: Rudi Schierl: Analytica Conference, 11. - 13. May 2004, München, Germany.

Hann, S., Köllensperger, G., Stefanka, Z., Lenz, K., Fürhacker, M., Buchberger, W., Mader, R. M., Stingeder, G. (2004): Speciation of cancerostatic platinum compounds by HPLC-ICP-MS. In: Rudi Krška: IFA Tulln, 02.06.2004, Tulln, Austria.

Hann, S., Lenz, K., Köllensperger, G., Stefanka, Z., Weissenbacher, N., Mahnik, S., Fürhacker, M. (2004): Elimination von platinhaltigen Zytostatika aus Krankenhausabwässern. In: Rudi Schierl: 9. Edelmetallforum, 13.-14. Dezember 2004, München, Germany.

Hann, S., Lenz, K., Köllensperger, G., Stefanka, Z., Weissenbacher, N., Mahnik, S., Fürhacker, M. (2004): Elimination von platinhaltigen Zytostatika aus Krankenhausabwässern.. In: Rudi Schierl: 9. Edelmetallforum, 13.-14. Dezember 2004, München.

Hann, S., Stefanka, Z., Köllensperger, G., Stingeder, G. (2004): Evaluierung verschiedener Probeneinführungssysteme zur Speziierung mittels HPLC-ICP-MS. In: Detlef Günther: 19. ICP-MS Anwendertreffen, 1. - 3. September 2004, Zürich, Switzerland.

Köllensperger, G., Hann, S., Furtmüller, P.G., Obinger, C., Schuhmacher, R., Krška, R., Stingeder, G. (2004): The potential of ICP-MS in the field of metal-binding protein analysis. In: Bernhard Michalke: Third International Conference on Trace Element Speciation in Bio-medical, Nutritional and Environmental Sciences, 10. - 13. May 2004, München, Germany.

Köllensperger, G., Hann, S., Furtmüller, P.G., Obinger, C., Schuhmacher, R., Krška, R., Stingeder, G. (2004): Metalloproteinanalytik mittels LC-ICP-MS. In: Detlef Günther: 19. ICP-MS Anwendertreffen, 1. - 3. September 2004, Zürich, Switzerland.

Prohaska, T. (2004): Challenges of ICP-MS in environmental Applications. In: Grenville Holland: 9th International Durham Conference, Sep. 2004, Durham, UK.

Rudolph, E., Hann, S., Stingeder, G., Limbeck, A., Reiter, C. (2004): Evaluation of different sample preparation strategies for ICP-MS determination of platinum group elements in biological samples. In: Michael Zischka: Trends in Sample Preparation, 5. - 7. July 2004, Seggau, Austria.

Rudolph, E., Hann, S., Stingeder, G., Reiter, C. (2004): Bestimmung von Platin in menschlichen Gewebeproben. In: Rudi Schierl: 9. Edelmetallforum, 13.-14. Dezember 2004, München, Germany.

Stadlbauer, C., Prohaska, T., Reiter, C., Stingeder, G. (2004): Investigation of human hair by LA-ICP-MS. In: Detlef Günther: 19. ICP-MS Anwendertreffen, Sep. 2004, Zürich, Switzerland.

Stefanka, Z., Hann, S., Köllensperger, G., Lenz, K., Fürhacker, M., Standler, A., Buchberger, W., Mader, R. M., Stingeder, G. (2004): Platinum speciation for environmental and biological analysis of cancerostatic platinum compounds. In: Grenville Holland: 9th International Conference on Plasma Source Mass Spectrometry, 12. - 17. September 2004, University of Durham, UK.

Stefanka, Z., Hann, S., Köllensperger, G., Stingeder, G. (2004): Cancerostatic platinum compounds in the aquatic environment - a HPLC-ICP-MS model study. In: Bernhard Michalke: Third International Conference on Trace Element Speciation in Bio-medical, Nutritional and Environmental Sciences, 10. - 13. May 2004, München, Germany.

Weissenbacher, N., Lenz, K., Mahnik, S., Mader, R., Hann, S., Köllensperger, G., Stefanka, Z., Knasmüller, S., Fürhacker, M. (2004): Chemical Analysis, Risk Assessment and Removal of Selected Antinoplastic Agents from Hospital Wastewater. In: Proceedings: Conference on Sustain Life and Survival II, 2004, Prague.

## **Books and book chapters**

### **2006**

Hann, S., Rudolph, E., Köllensperger, G., Reiter, C. (2006): Analysis of Palladium by High Resolution ICP-MS. In: Zereini, F., Alt, F., Palladium Emissions in the Environment - Analytical Methods, Environmental Assessment and Health Effects, 73-82; Springer, Heidelberg.

Lenz, K., Köllensperger, G., Fürhacker, M., Stingeder, G., Hann, S. (2006): Desorption of cancerostatic platinum compounds from solid phases in sewage treatment. In: Windisch, W. and Plitzner, C. (Eds.), Experimentelle Modelle der Spurenelementforschung, Schriftenreihe der Gesellschaft für Mineralstoffe und Spurenelementforschung, 124-132; Herbert Utz Verlag, München.

Prohaska, T., Teschler-Nicola, M., Galler, P., Prychistal, A., Stingeder, G., Jelenc, M., Klötzli, U. (2006): Non destructive determination of  $^{87}\text{Sr}/^{86}\text{Sr}$  isotope ratios in early upper paleolithic human teeth from the Mladec caves - preliminary results. In: Teschler-Nicola, M. (Ed.), Monographie Mladec, 505-514; Springer, Wien

### **2005**

Hann, S., Helmers, E., Köllensperger, G., Hoppstock, K., Parry, S., Rauch, S., Rossbach, M. (2005): Nuclear Analytical Methods for Platinum Group Elements. International Atomic Energy Agency; International Atomic Energy Agency, Wien; ISBN ISBN 92-0-102405-3.

Hann, S., Köllensperger, G. (2005): Speciation by CE-ICP-MS. In: Simon Nelms, Inductively Coupled Plasma Mass Spectrometry, 1; Blackwell, Oxford, UK.

Prohaska, T., Stingeder, G. (2005): Arsenic and Arsenic Species in Environment and Human Nutrition. In: Cornelis, R., Crews, G., Caruso, J., Heumann, K.G., Handbook of Elemental Speciation II: Species in the Environment, Food, Medicine and Occupational Health, 69-85; John Wiley & Sons, Chichester, England.

Prohaska, T. Aregbe Y. and Evans P. (2005) Metrology in Chemistry: ICP-MS Analysis in Environmental Science', in Plasma Source Mass Spectrometry: Applications and Emerging Technologies, eds. J.G. Holland and S.D. Tanner, the Royal Society of Chemistry, Cambridge

Prohaska T. (2005) HR-ICP-MS –in ICP-Mass Spectrometry Handbook, S. Nelms (ed.), Blackwell publishing, 2005, 41-54

Stefanka, Z., Hann, S., Lenz, K., Köllensperger, G., Fürhacker, M., Stingeder, G. (2005): Speciation of cancerostatic platinum compounds in a waste water pilot plant. In: Holland, G., Bandura, D.R., Plasma Source Mass Spectrometry: Current Trends and Future Developments, 235-241; The Royal Society of Chemistry, UK.

Nurmi, J., Köllensperger, G., Stingeder, G., Metze, D., Jakubowski, N. (2005): Speciation of selenium compounds by Capillary Electrophoresis-ICP-MS –Evaluation of ICP-SF-MS / ICPDRC-MS detection and different quantification methods, in Plasma Source Mass Spectrometry: Applications and Emerging Technologies, eds. J.G. Holland and D. Bandura, the Royal Society of Chemistry, Cambridge. 28-42

## **2004**

Köllensperger, G. (2004): Conference Report: 5th International Symposium on Speciation of Elements in Biological, Environmental and Toxicological Sciences, Almunecar, Spain. J. Anal. At. Spectrom., 19, 3N-4N.

Publications are also available at [research information service](#)

## **Division of Biochemistry / Glycobiology**

### **Original articles and reviews in refereed journals**

## **2006**

Altmann, F. (2007) The role of protein-glycosylation in allergy. *Int. Arch. Allergy Immunol.* 142, 99-115.

Brunner, A., Kolarich, D., Voglmeir, J., Paschinger, K., Wilson, I.B.H. (2006): Comparative characterisation of recombinant invertebrate and vertebrate peptide O-xylosyltransferases. *Glycoconjugate J.*, 23, 543-554.

Bondili, J.S., Castilho, A., Mach, L., Glössl, J., Steinkellner, H., Altmann, F., Strasser, R. (2006): Molecular cloning and heterologous expression of  $\beta$ 1,2-xylosyltransferase and core  $\alpha$ 1,3-fucosyltransferase from maize. *Phytochemistry*, 67, 2215-2224.

Drakakaki, G., Marcel, S., Arcalis, E., Altmann, F., Gonzalez-Melendi, P., Fischer, R., Christou, P., Stoger, E. (2006): The intracellular fate of a recombinant protein is tissue-dependent. *Plant Physiol.* 141, 578-586.

Jin, C., Bencúrová, M., Borth, N., Ferko, B., Jensen- Jarolim, E., Altmann, F., Hantusch, B. (2006): Immunoglobulin G specifically binding plant N-glycans with high affinity could be generated in rabbits but not in mice. *Glycobiology* 16, 349-357.



Kolarich, D., Altmann, F., Sunderasan, E. (2006): Structural analysis of the glycoprotein allergen Hev b 4 from natural rubber latex by mass spectrometry. *Biochim. Biophys. Acta* 1760, 715-720.

Kolarich, D., Weber, A., Turecek, P.L., Schwarz, H.P., Altmann, F. (2006): Comprehensive glyco-proteomic analysis of human  $\alpha$ 1-antitrypsin and its charge isoforms. *Proteomics* 6, 3369-3380.

Kolarich, D., Turecek, P.L., Weber, A., Mitterer, A., Graninger, M., Matthiessen, P., Nicolaes, G.A.F., Altmann, F., Schwarz, H.P. (2006) Biochemical, molecular characterization and glyco-proteomic analyses of  $\alpha$ 1-proteinase inhibitor products used for replacement therapy. *Transfusion* 46, 1959-1977.

Leitsch, D., Wilson, I.B.H., Paschinger, K., Duchêne, M. (2006): Comparison of the proteome profiles of *Entamoeba histolytica* and its close but non-pathogenic relative *Entamoeba dispar*. *Wien. Klin. Wochenschr.* 118 (Suppl. 3), 37-41.

Léonard, R., Rendić, D., Rabouille, C., Wilson, I.B.H., Prétat, T., Altmann, F. (2006): The *Drosophila* fused lobes Gene Encodes an N-Acetylglucosaminidase Involved in N-Glycan Processing. *J. Biol. Chem.*, 281, 4867-4875.

Paschinger, K., Hackl, M., Gutternigg, M., Kretschmer-Lubich, D., Stemmer, U., Jantsch, V., Lochnit, G., Wilson, I.B.H. (2006): A Deletion in the Golgi  $\alpha$ -Mannosidase II Gene of *Caenorhabditis elegans* Results in Unexpected Non-wild-type N-Glycan Structures. *J. Biol. Chem.*, 281, 28265-28277.

Pörtl, G., Ahrazem, O., Paschinger, K., Ibañez, M.D., Salcedo, G., Wilson, I.B.H. (2006): Molecular and immunological characterisation of the glycosylated orange allergen Cit s 1. *Glycobiology*, in press.

Pörtl, G., Kerner, D., Paschinger, K., Wilson, I.B.H. (2006) N-glycans of the porcine nematode parasite *Ascaris suum* are modified with phosphorylcholine and core fucose residues. *FEBS J.*, in press

Rendić, D., Linder, A., Paschinger, K., Borth, N., Wilson, I.B.H., Fabini, G. (2006): Modulation of neural carbohydrate epitope expression in *Drosophila melanogaster* cells. *J. Biol. Chem.*, 281, 3343-3353.

Rendić, D., Kludiny, J., Stemmer, U., Schmidt, J., Paschinger, K., Wilson, I.B.H. (2006): Towards abolition of immunogenic structures in insect cells: characterisation of a honeybee multi-gene family reveals both an allergy-related core  $\alpha$ 1,3-fucosyltransferase and the first insect Lewis histo-blood group-related antigen synthesising enzyme. *Biochem. J.* in press DOI: 10.1042/BJ20060964

Rhomberg, S., Fuchsluger, C., Rendić, D., Paschinger, K., Jantsch, V., Kosma, P., Wilson, I.B.H. (2006): Reconstitution in vitro of the GDP-fucose biosynthetic pathways of *Caenorhabditis elegans* and *Drosophila melanogaster*. *FEBS J*, 273, 2244-2256.

Stolze, K., Rohr-Udilova, N., Rosenau, T., Hofinger, A., Kolarich, D., Nohl, H. (2006): Spin trapping of C- and O-centered radicals with methyl-, ethyl-, pentyl-, and phenyl-substituted EMPO derivatives. *Bioorg Med Chem.* 14, 3368-3376.

Strasser, R., Schoberer, J., Jin, C., Glössl, J., Mach, L., Steinkellner, H. (2006): Molecular cloning and characterization of *Arabidopsis thaliana* Golgi  $\alpha$ -mannosidase II, a key enzyme in the formation of complex N-glycans in plants. *Plant J.*, 45, 789-803.

Yeruva, V.C., Duggirala, S., Lakshmi, V., Kolarich, D., Altmann, F., Sritharan, M. (2006): Identification and characterization of a major cell wall-associated iron-1 regulated envelope protein (Irep-28) in *Mycobacterium tuberculosis*. *Clin. Vaccine Immunol.* 13, 1137-1142.

Zeleny, R., Kolarich, D., Strasser, R., Altmann, F. (2006): Sialic acid concentrations in plants are in the range of inadvertent contamination. *Planta*, 224, 222-227.

Zeleny, R., Leonard, R., Dorfner, G., Dalik, T., Kolarich, D., Altmann, F. (2006): Molecular cloning and characterization of a plant  $\alpha$ 1,3/4-fucosidase based on sequence tags from almond fucosidase I. *Phytochemistry*, 67, 641-648.

## 2005

Abranches, R., Marcel, S., Arcalis, E., Altmann, F., Fevereiro, P., Stoger, E. (2005): Plants as bioreactors: A comparative study suggests that *Medicago truncatula* is a promising production system. *J. Biotechnol.* 120, 121-134.

Bencúr, P., Steinkellner, H., Svoboda, B., Mucha, J., Strasser, R., Kolarich, D., Hann, S., Köllensperger, G., Glössl, J., Altmann, F., Mach, L. (2005): *Arabidopsis thaliana*  $\beta$ 1,2-xylosyltransferase: an unusual glycosyltransferase with the potential to act at multiple stages of the plant N-glycosylation pathway. *Biochem. J.*, 388, 515-525.

Drexler, C., Glock, B., Staudacher, E., Dauber, E-M., Ulrich, S., Reisacher, R.B.K., Mayr, W.R., Lanzer, G., Wagner, T. (2005): Tetragametic chimerism detected in a healthy woman with mixed-field agglutination reactions in ABO blood grouping. *Transfusion*, 45, 698-703.

Kählig, H.P., Kolarich, D., Zayni, S., Scheberl, A., Kosma, P., Schäffer, C., Messner, P. (2005): N-Acetylmuramic acid as capping element of  $\alpha$ -D-fucose-containing S-Layer glycoprotein glycans from *Geobacillus tepidamans* GS5-97T. *J. Biol. Chem.*, 280, 21, 20292-20299.

Kolarich, D., Léonard, R., Hemmer, W., Altmann, F. (2005): The N-glycans of yellow jacket venom hyaluronidases and the protein sequence of its major isoform in *Vespula vulgaris*. *FEBS J.*, 272, 5182-5190.

Leitsch, D., Radauer, C., Paschinger, K., Wilson, I.B.H., Breiteneder, H., Scheiner, O., Duchêne, M. (2005): *Entamoeba histolytica*: Analysis of the trophozoite proteome by two-dimensional polyacrylamide gel electrophoresis. *Experimental Parasitology*, 110, 191-195.

Leonard, R., Petersen, B.O., Himly, M., Kaar, W., Wopfner, N., Kolarich, D., van Ree, R., Ebner, C., Duus, J., Ferreira, F., Altmann F. (2005): Two novel types of O-glycans on the mugwort pollen allergen Art v 1 and their role in antibody binding. *J. Biol. Chem.*, 280, 7932-7940.

Marzban, G., Pühringer, H., Dey, R., Brynda, S., Martinelli A., Zaccarini M., Kolarich, D., Altmann, F., Katinger, H., Laimer M. (2005): Localisation and distribution of major apple allergens in fruit tissue. *Plant Science*, 169, 1, 387-394.

Müller, R., Hülsmeier, A.J., Altmann, F., Hagen, K.T., Tiemeyer, M., Hennet, T. (2005): Characterization of mucin-type core-1  $\beta$ 1-3 galactosyltransferase homologous enzymes in *Drosophila melanogaster*. *FEBS J.*, 272, 4295-4305.

Paschinger, K., Fabini, G., Schuster, D., Rendić, D., Wilson, I.B.H. (2005): Definition of immunogenic carbohydrate epitopes (Review). *Acta Biochimica Polonica*, 52, 629-632.

Paschinger, K., Staudacher, E., Stemmer, U., Fabini, G., Wilson, I.B.H. (2005): Fucosyltransferase substrate specificity and the order of fucosylation in invertebrates. *Glycobiology*, 15, 463-474.

Strasser, R., Stadlmann, J., Svoboda, B., Altmann, F., Glössl, J., Mach, L. (2005): Molecular analysis of N-acetylglucosaminyltransferase I deficiency in *Arabidopsis thaliana* plants lacking complex glycans. *Biochem. J.*, 387, 385-91.

## 2004

Arcalis, E., Marcel, S., Altmann, F., Kolarich, D., Drakakaki, G., Fischer, R., Christou, P., Stoger, E. (2004): Unexpected deposition patterns of recombinant proteins in post-endoplasmic reticulum compartments of wheat endosperm. *Plant Physiology*, 136, 3, 3457-66.

Bencúrová, M., Hemmer, W., Focke-Tejkl, M., Wilson, I.B.H. and Altmann, F. (2004): Specificity of IgG and IgE antibodies against plant and insect glycoprotein glycans determined with artificial glycoforms of human transferrin. *Glycobiology*, 14, 457-466.

Eder, R., Schenkermayr, H., Kaack, K., and Staudacher, E. (2004): Bestimmung von Lektinen in Beeren des Schwarzen Holunders (*Sambucus nigra*). Teil 2: Zusammenhang zwischen Reifestadium und Lektin Gehalt. *Mitteilungen Klosterneuburg*, 54, 3-11.

Gutternigg, M., Ahrer, K., Grabher-Meier, H., Bürgmayr, S., Staudacher, E. (2004): Neutral N-glycans of the gastropod *Arion lusitanicus*. *Eur. J. Biochem.*, 271, 1348-56.

Hemmer, W., Focke, M., Kolarich, D., Dalik, I., Götz, M. and Jarisch, M. (2004): Identification by immunoblot of venom glycoproteins displaying immunoglobulin E-binding N-glycans as cross-reactive allergens in honeybee and yellow jacket venom. *Clin. Exp. Allergy*, 34, 460-469.

Koprivova A., Stemmer C., Altmann F., Hoffmann A., Kopriva S., Gorr G., Reski R., Decker E. (2004): Targeted knockouts of *Physcomitrella* lacking plant specific immunogenic N-glycans. *Plant Biotechnol. J.*, 2, 517-523; ISSN 1467-7644.

Lauer, I., Foetisch, K., Kolarich, D., Ballmer-Weber, B.K., Conti, A., Altmann, F., Vieths, S., Scheurer, S. (2004): Hazelnut Vicilin Cor a 11: Molecular characterisation of a glycoprotein and its allergenic activity. *Biochem. J.*, 383, 327-334.

Léonard, R., Kolarich, D., Paschinger, K., Altmann, F., Wilson, I.B.H. (2004): A genetic and structural analysis of the N-glycosylation capabilities of rice and other monocotyledons. *Plant Mol. Biol.*, 55, 631-644.

Mucha, J., Domlatil, J., Lochnit, G., Rendić, D., Paschinger, K., Hinterkörner, G., Hofinger, A., Kosma, P. and Wilson, I.B.H. (2004): The *Drosophila melanogaster* homologue of the human histo-blood group Pk gene encodes a glycolipid-modifying  $\alpha$ 1,4-N-acetylgalactosaminyltransferase. *Biochem. J.*, 382, 67-74.

Paschinger, K., Rendić, D., Lochnit, G., Jantsch, V., Wilson, I.B.H. (2004): Molecular basis of anti-horseradish peroxidase staining in *Caenorhabditis elegans*. *J. Biol. Chem.*, 279, 49588-49598.

Peyer, C., Bonay, P., Staudacher, E. (2004): Purification and characterization of a beta-xylosidase from potatoes (*Solanum tuberosum*). *Biochim Biophys Acta*, 1672, 27-35.

Strasser, R., Altmann, F., Glossl, J., Steinkellner, H. (2004): Unaltered complex N-glycan profiles in *Nicotiana benthamiana* despite drastic reduction of beta1,2- N -acetylglucosaminyltransferase I activity. *Glycoconj. J.*, 21, 275-282.

Strasser, R., Altmann, F., Mach, L., Glössl, J., Steinkellner, H. (2004): Generation of Arabidopsis thaliana plants with complex N-glycans lacking beta linked xylose and core alpha linked fucose. *FEBS Letters*, 561, 132-136.

Wicklein, D., Lindner, B., Moll, H., Kolarich, D., Altmann, F., Becker, W-M., Petersen, A. (2004): Carbohydrate moieties can induce mediator release: a detailed characterization of two major timothy grass pollen allergens. *Biol. Chem.*, 385, 397-407.

Wilson, I.B.H. (2004): The never-ending story of peptide O-xylosyltransferase. *Cell Mol. Life Sci.*, 61, 794-809.

### **Conference & workshop proceedings, abstracts**

#### **2006**

Altmann, F. (2006): N- and O-glycans of plant and insect allergens. XXV Congress of the European Academy of Allergology and Clinical Immunology. 10 - 14 June 2006, Vienna, Austria

Altmann, F. (2006): Kreuzreaktive Zucker oder warum man etwas Belangloses beachten sollte. Wörthersee-Symposium der Öst. Ges. für Dermatologie und Venerologie und der ÖGAI, 19.-21. Mai, Velden, Austria

Gutternigg, M., Lubich, D., Hackl, M., Paschinger, K., Stemmer, U., Jantsch, V., Lochnit, G., Ranftl, R., Geier, P., Wilson, I.B.H., (2006): Glycosidases of *Caenorhabditis elegans* involved in N-glycan processing (Poster P6). 5th International Symposium on Glycosyltransferases, 25-28 June 2006, Tsukuba, Japan

Gutternigg, M., Lubich, D., Hackl, M., Paschinger, K., Stemmer, U., Jantsch, V., Lochnit, G., Ranftl, R., Geier, P., Wilson, I.B.H., (2006): Glycosidases of *Caenorhabditis elegans* involved in N-glycan processing (Poster). European Worm Meeting 2006, 29. April - 3. May 2006, Hersonissos, Greece

Marzban, G., Herndl, A., Stoyanova, E., Hoffmann-Sommergruber, K., Breiteneder, H., Martinelli, A., Zaccharini, M., Asero, R., Kolarich, D., Altmann, F., Katinger, H., Laimer M. (2006): Localisation and distribution of the major allergens in apple fruits and tissues. In: IAPTC 6 B: Regionale wissenschaftliche Konferenz Pflanzenbiotechnologie IAPTC&B – Sektionen Österreichs, Deutschlands und der Schweiz, 22. – 24. März 2006., Wien; Abstractband, 59.

Paschinger, K., Hackl, M., Pörtl, G., Gutternigg, M., Kretschmer-Lubich, D., Stemmer, U., Rendić, D., Wilson, I.B.H. (2006): Structure and biosynthesis of unusual N-glycans in *Caenorhabditis elegans* (Poster 53). Congress of the Croatian Society for Biochemistry and Molecular Biology (HDBMB 2006), 3.-7. October 2006, Vodice, Croatia

Pörtl, G., Paschinger, K., Gutternigg, M., Rendic, D., Voglmeir, J., Kerner, D., Wilson, I.B.H. (2006): Simple organisms but not so simple glycans - mass spectrometric glycome screening of invertebrates. Short Talk. 4. Österreichisches Proteomforschungssymposium, 20-21. Sept. 2006, Wien

Pörtl, G., Kerner, D., Paschinger, K., Wilson, I.B.H. (2006): Zucker verlängert das Leben, zumindest von Parasiten: MS basierte Analyse von immunsupprimierenden Nematodenglykanen (Short Talk). 10. Österreichischer Kohlenhydrat-Workshop, 16. 2. 2006, Wien

Rendić, D., Paschinger, K., Gutternigg, M., Pörtl, G., Stemmer, U., Voglmeir, J., Kerner, D., Voglauer, R., Lochnit, G., Jantsch, V., Tiemeyer, M., Wilson, I.B.H. (2006): Are invertebrates good models for investigating glycan post-translational modifications? (Invited Lecture) Congress of the Croatian Society for Biochemistry and Molecular Biology (HDBMB 2006), 3.-7. October 2006, Vodice, Croatia

Rendić, D., Stemmer, U., Sharrow, M., Perlman, M., Sen, R., Overcarsh, B., Tiemeyer, M., Wilson, I.B.H. (2006): The anti-horseradish peroxidase epitope in insects (Poster P8). 5th International Symposium on Glycosyltransferases, 25-28 June 2006, Tsukuba, Japan

Rendić, D., Paschinger, K., Gutternigg, M., Pörtl, G., Fabini, G., Iskratsch, T., Stemmer, U., Voglmeir, J., Kerner, D., Voglauer, R., Lochnit, G., Jantsch, V., Tiemeyer, M., Wilson, I.B.H. (2006): N-glycosylation pathways in

*Caenorhabditis* and *Drosophila*: what can we learn from model organisms? (Invited Lecture O5). 5th International Symposium on Glycosyltransferases, 25-28 June 2006, Tsukuba, Japan

Stadlmann, J., Weber, A., Turecek, P.L., Schwarz, H.P., Sakalauskas, R., Altmann, F., Kolarich, D. (2006): Glycoproteomic assessment of IgG and  $\alpha$ 1-Proteinase Inhibitor (A1PI) from a chronic obstructive Pulmonary Disease (COPD) Patient in plasma and Bronchoalveolar lavage fluid. In: American College of Chest Physicians, Chest 2006, 21.10.-26.10.2006, Salt Lake City, Ut, Chest, Supplement to Chest, 130, 173S-173S.

Strasser, R., Altmann, F., Steinkellner, H. (2006): Plant specific N-glycan epitopes on plant made pharmaceuticals: risk or negligible. In: Proceedings: FinMed2006, 27.3. - 31.3. 2006, Saariselkä, Lapland, Finland.

## 2005

Altmann, F. (2005): Glycosylation of Proteins in the Secretory System. The Rank Prize Funds, Mini-Symposium on Improving the Plant Secretory System for, 23. - 26. Mai, Grasmere, Lake District, UK.

Altmann, F., Zeleny, R., Richard Strasser, R., Kolarich, D. (2005): A mass spectrometric search for sialic acid in plants. XVI. Massenspektrometrische Diskussionsveranstaltung, 23-24.02.2005, Universität Wien.

Brunner, A., Kolarich, D., Paschinger, K., Schuster, D., Drexler, J., Kinner, M., Wilson, I.B.H. (2005): Characterisation of the first step in glycosaminoglycan biosynthesis: peptide o-xylosyltransferases from fly, worm and man (Poster P4). Life Sciences 2005, 26.-28. Sept. 2005, Wien.

Bürgmayr, S., Gutternigg, M., Staudacher E. (2005): N-Glycosilation in Gastropods. XVIII International Symposium on Glycoconjugates September 2005 Florenz, Italy (Poster)

Gutternigg, M., Kretschmer-Lubich, D., Paschinger, K., Ranftl, R., Geier, P., Wilson, I.B.H. (2005): Glycosidases of *Caenorhabditis elegans* involved in N-glycan processing (Poster P3). Life Sciences 2005, 26.-28. Sept. 2005, Wien.

Gutternigg, M., Kretschmer-Lubich, D., Paschinger, K., Ranftl, R., Geier, P., Wilson, I.B.H. (2005): Glycosidases of *Caenorhabditis elegans* involved in N-glycan processing. In: XVIII International Symposium on Glycoconjugates (Abstract P160), September 4-9, 2005, Firenze, Italy; Glycoconjugate J., 22, 295-296.

Kolarich, D., Weber, A., Turecek, P.L., Schwarz, H.P., Altmann, F. (2005): Site specific glycosylation analysis of human  $\alpha$ 1-antitrypsin. In: Jerka Dumic and Mirna Floegel: Glycoproteomics: Protein modifications for versatile functions, June 28-30, 2005, Dubrovnik, Croatia, 116; ISSN 953-6256-54-1.

Kolarich, D., Weber, A., Turecek, P.L., Schwarz, H.P., Altmann, F. (2005): Site specific mapping of post translational modifications in human  $\alpha$ 1-antitrypsin. In: Springer Science&Business Media B.V., Formerly Kluwer

Academic Publishers B.V.: GLYCO XVIII - XVIII International Symposium on Glycoconjugates, September 4-9, 2005, Firenze, Italy, 22, 153 - 380; Springer; ISSN ISSN:0282-0080.

Kolarich, D., Altmann, F. (2005): Comprehensive glyco-proteomic analysis of human alpha1 antitrypsin and its charge isoforms. Aralast Structure – Alpha-1 Foundation MASAC Update Meeting, 27th, Sept. 2005, Bethesda, MD, USA.

Kolarich, D., Léonard, R., Zeleny, R., Dorfner, G., Hemmer, W., Altmann, F. (2005): From tandem MS peptide sequence tags to cDNA - Application to glycoproteins. XVI. Massenspektrometrische Diskussionsveranstaltung, 23-24.02.2005, Wien.

Kolarich, D., Léonard, R., Hemmer, W., Altmann, F. (2005): Glyco-Proteomics of wasp venom allergens - Identification and cDNA cloning of the previously undescribed major form of the glycoprotein hyaluronidase in *Vespula vulgaris*. 6. Iglers MS Tage, 16.-18.02.2005, Innsbruck Iglers.

Kolarich, D., Léonard, R., Marzban, G., Hemmer, W., Altmann, F. (2005): Glyco-Proteomics of yellow jacket venom allergens. Life Sciences 2005, 26.-28. Sept. 2005, Vienna.

Kolarich, D., Weber, A., Turecek, P.L., Schwarz, H.P., Altmann, F. (2005): Site specific mapping of post translational modifications in human  $\alpha$ 1-antitrypsin. Life Sciences 2005, 26.-28. Sept. 2005, Vienna.

Léonard, R., Rendić, D., Wilson, I.B.H., Altmann, F. (2005): Adaptation of the "in-gel release method" to glycome studies from a very low amount of material. In: XVIII International Symposium on Glycoconjugates (Abstract P018), September 4-9, 2005, Firenze, Italy; Glycoconjugate J., 22, 238.

Paschinger, K., Rendić, D., Jantsch, V., Lochnit, G., Fabini, G., Wilson, I.B.H. (2005): Fucosylation in worms and flies. 9. Österreichischer Kohlenhydratworkshop, 17. Februar 2005, Graz.

Paschinger, K., Lochnit, G., Rendić, D., Kerner, D., Wilson, I.B.H. (2005): Mass spectrometric screening of *Caenorhabditis* and *Drosophila* glycosylation mutants. 3. Österreichisches Proteomforschungssymposium, 28.-29. Sept. 2005, Wien.

Paschinger, K., Kerner, D., Wilson, I.B.H. (2005): Fucosylation in *nematode* and *trematode* parasites. 39. Jahrestagung der Österreichischen Gesellschaft für Tropenmedizin und Parasitologie, 17.-19. November 2005, Wien.

Rendić, D., Fabini, G., Kerner, D., Paschinger, K., Wilson, I.B.H. (2005): Fucosylation in worms and insects (Short talk ST-I). Life Sciences 2005, 26.-28. Sept 2005, Wien.

Rendić, D., Fabini, G., Kerner, D., Paschinger, K., Wilson, I.B.H. (2005): Fucosylation in worms and insects. In: XVIII International Symposium on Glycoconjugates (Abstract P171), September 4-9, 2005, Firenze, Italy; Glycoconjugate J., 22, 300.

Rhomberg, S., Fuchsluger, C., Rendić, D., Paschinger, K., Kosma, P., Wilson, I.B.H. (2005): Reconstitution *in vitro* of the GDP-Fucose biosynthetic pathways of *Caenorhabditis elegans* and *Drosophila melanogaster*. In: XVIII International Symposium on Glycoconjugates (Abstract L141), September 4-9, 2005, Firenze, Italy; Glycoconjugate J., 22, 212.

## 2004

Fabini, G., Rendić, D., Paschinger, K. and Wilson, I.B.H. (2004): Fucosylation and the neural anti-horseradish peroxidase epitopes of *Drosophila melanogaster* and *Caenorhabditis elegans*. Bioscience 2004, 18-22. July 2004, Glasgow.

Kolarich, D., Dalik, T., Altmann, F. (2004): Assignment of *A. thaliana* hypothetical protein Q9LKB2 as peptide N-glycosidase. GlycoT, 4th. International Symposium on Glycosyltransferases, 4. - 6. 11. 2004, Le Touquet, France.

Kolarich, D., Polacsek, K. Altmann, F. (2004): Glyco-Proteomics of wasp venoms. First International Symposium of the Austrian Proteomics Platform, 26-29 January, Seefeld, Austria.

Kolarich, D., Polacsek, K., and Altmann, F (2004): Glyco-Proteomics von Wespengiften. XV. Massenspektrometrische Diskussionsveranstaltung, 17.-18. Februar, Wien.

Léonard R., Rendic D., Altmann F. (2004): The *Drosophila* fused lobes gene encodes an N-acetylglucosaminidase acting exclusively on the  $\alpha$ 1,3 branch of N-glycans. GlycoT, 4th. International Symposium on Glycosyltransferases, 4. - 6. 11. 2004, Le Touquet, France.

Paschinger, K., Rendić, D., Jantsch, V., Lochnit, G., Fabini, G., Wilson, I.B.H. (2004): Fucosylation in worms and flies. 4th International Symposium on Glycosyltransferases, November 4-6, 2004, Le Touquet, France. (Invited lecture)

Paschinger, K., Staudacher, E., Fabini, G., Wilson, I.B.H. (2004): Fucosyltransferase substrate specificity and the order of fucosylation in invertebrates. 4th International Symposium on Glycosyltransferases, November 4-6, 2004, Le Touquet, France.

Strasser, R., Altmann, F., Glößl, J., Mach, L., Steinkellner, H (2004): Modulation of the N-glycosylation pathway in plants. 4th International Symposium on Glycosyltransferases, 04-06.11, Le Touquet, France.



**Biochemistry / Metalloprotein Research Group****Original articles and reviews in refereed journals****2006**

Alves, A., Schwanninger, M., Pereira, H., Rodrigues, J., (2006): Calibration of NIR to assess lignin composition (H/G ratio) in maritime pine wood using analytical pyrolysis as the reference method. *Holzforschung*, 60, 1, 29-31; ISSN-0018-3830.

Alves, A., Schwanninger, M., Pereira, H., Rodrigues, J., (2006): Analytical pyrolysis as a direct method to determine the lignin content in wood: Part 1: Comparison of pyrolysis lignin with Klason lignin. *Journal of Analytical and Applied Pyrolysis*, 76, 1-2, 209-213; ISSN: 0165-2370.

Arnhold, J., Monzani, E., Furtmüller, P.G., Zederbauer, M., Casella, L., Obinger, C. (2006): Kinetics and thermodynamics of halide and nitrite oxidation by mammalian heme peroxidases. *Eur. J. Inorg. Chem.*, 19, 3801-3811; ISSN 1434-1948.

Battistuzzi, G., Bellei, M., Zederbauer, M., Furtmüller, P.G., Sola, M., Obinger, C. (2006): Redox thermodynamics of the Fe(III)/Fe(II) couple of human myeloperoxidase in its high-spin and low-spin forms. *Biochemistry-US*, 45, 12750-12755; ISSN 0006-2960.

Bellei, M., Jakopitsch, C., Battistuzzi, G., Sola, M., Obinger, C. (2006): Redox thermodynamics of the ferric-ferrous couple of wild-type *Synechocystis* KatG and KatG(Y249F). *Biochemistry*, 45, 4768-4774.

Brogioni, S., Feis, A., Marzocchi, M.P., Zederbauer, M., Furtmüller, P.G., Obinger, C., Smulevich, G. (2006): Resonance Raman assignment of myeloperoxidase and selected mutants Asp94Val and Met243Thr: Effect of the heme-distortion. *J. Raman Spectrosc.*, 37, 263-276.

Fackler, A., Gradinger, C., Hinterstoisser, B., Messner, K., Schwanninger, M. (2006): Lignin degradation by white rot fungi on spruce wood shavings during short-time solid-state fermentations monitored by near infrared spectroscopy. *Enzyme. Microb. Tech.*, 39, 1476-1483. ISSN 0141-0229.

Furtmüller, P.G., Zederbauer, M., Jantschko, W., Helm, J., Bogner, M., Jakopitsch, C., Obinger, C. (2006): Active site structure and catalytic mechanisms of human peroxidases. *Arch. Biochem. Biophys.*, 445, 199-213.

Gierlinger, N., Schwanninger, M. (2006): Chemical Imaging of Poplar Wood Cell Walls by Confocal Raman Microscopy. *Plant Physiology*, 140, 4, 1246-1254; ISSN: 1532-2548.

Gierlinger, N., Schwanninger, M., Reinecke, A., Burgert, A. (2006): Molecular changes during tensile deformation of single wood fibres followed by Raman microscopy. *Biomacromolecules*, 7, 7, 2077-2081.

Jakopitsch, C., Obinger, C., Un, S., Ivancich, A. (2006): Identification of Trp106 as the tryptophanyl radical intermediate in *Synechocystis* PCC 6803 catalase-peroxidase by multifrequency electron paramagnetic resonance spectroscopy. *J. Inorg. Biochem.*, 100, 1091-1099.

Jakopitsch, C., Wiseman, B., Vlasits, J., Loewen, P., Obinger, C. 2006. Redox intermediates in the catalase cycle of catalase-peroxidase from *Synechocystis*, *Mycobacterium tuberculosis* and *Burkholderia pseudomallei*. *Biochemistry*, in press

Meissl, K., Smidt, E., Schwanninger, M. (2006): Prediction of humic acid content and respiration activity of biogenic waste by means of Fourier Transform Infrared (FTIR) spectra and partial least squares regression (PLS-R) models. *Talanta*, in press

Obinger, C. (2006): Chemistry and biology of human peroxidases. *Arch. Biochem. Biophys.*, 445, 197-198.

Rodrigues, J., Alves, A., Pereira, H., da Silva Perez, D., Chantre, G., Schwanninger, M., (2006): NIR PLSR results obtained by calibration with noisy, low-precision reference values: Are the results acceptable? *Holzforschung*, 60, 4, 402-408; ISSN-0018-3830.

Smulevich, G., Droghetti, E., Jakopitsch, C., Obinger, C. (2006): Probing the structure and bifunctionality of catalase-peroxidase. *J. Inorg. Biochem.*, 100, 568-585.

Sykacek, E., Gierlinger, N., Wimmer, R., Schwanninger, M., (2006): Using near-infrared spectroscopy to predict natural durability of commercially available *European* and *Siberian larch*. *Holzforschung*, 60, 643-647. ISSN-0018-3830.

Vlasits, J., Jakopitsch, C., Schwanninger, M., Holubar, P., Obinger, C. 2006. Hydrogen peroxide oxidation by catalase-peroxidase follows a non-scrambling mechanism. *FEBS Lett.*, in press

Zederbauer, M. Furtmüller, P.G., Brogioni, S. Jakopitsch, C. Smulevich, G., Obinger, C. (2007): Heme to protein linkages in human peroxidases: Impact on spectroscopic redox and catalytic properties. *Natural Products Report*, in press.

## 2005

Allegra, M., Furtmüller, P.G., Jantschko, W., Zederbauer, M., Tesoriere, L., Livrea, M.A., Obinger, C. (2005): Mechanism of interaction of betanin and indicaxanthin with human myeloperoxidase and hypochlorous acid. *Biochem. Biophys. Res. Commun.*, 332, 837-844.

Furtmüller, P.G., Arnhold, J., Zederbauer, M., Jantschko, W., Jakopitsch, C., Obinger, C. (2005): Standard reduction potentials of all couples of the peroxidase cycle of lactoperoxidase. *J. Inorg. Biochem.*, 99, 1220-1229.

Furtmüller, P.G., Jantschko, W., Zederbauer, M., Schwanninger, M., Jakopitsch, C., Herold, S., Koppenol, W., Obinger C. (2005): Peroxynitrite efficiently mediates the interconversion of redox intermediates of myeloperoxidase. *Biochem. Biophys. Res. Commun.*, 337, 944-954.

Jakopitsch, C., Droghetti, E., Schmuckenschlager, F., Furtmüller, P.G., Smulevich, G., and Obinger, C. (2005): Role of the Main Access Channel of Catalase-Peroxidase in Catalysis. *J. Biol. Chem.*, 280, 42411-422.

Jakopitsch, C., Wanasinghe, A., Jantschko, W., Furtmüller, P.G., and Obinger C. (2005): Kinetics of Interconversion of Ferrous Enzymes, Compound II and Compound III, of Wild-type *Synechocystis* Catalase-peroxidase and Y249F: Proposal for the Catalytic Mechanism. *J. Biol. Chem.*, 280, 9037-9042.

Jantschko, W., Furtmüller, P.G., Zederbauer, M., Neugschwandtner, K., Jakopitsch, C., and Obinger, C. (2005): Reaction of ferrous Lactoperoxidase with hydrogen peroxide and dioxygen: an anaerob stopped-flow study. *Arch. Biophys. Biochem.*, 434, 51-59.

Jantschko W, Furtmüller P.G, Zederbauer M, Neugschwandtner K, Lehner I, Jakopitsch C, Arnhold J, Obinger C (2005): Exploitation of the unusual thermodynamic properties of human myeloperoxidase in inhibitor design. *Biochem. Pharmacol.*, 69, 1149-1157.

Paumann, M., Regelsberger, G., Obinger, C., Peschek, G.A. (2005): The bioenergetic role of dioxygen and the terminal oxidase(s) in cyanobacteria. *Biochim. Biophys. Acta - Bioenergetics*, 1707, 231-253.

Smidt E., Schwanninger M. (2005): Characterization of Waste Materials Using FTIR Spectroscopy: Process Monitoring and Quality Assessment. *Spectroscopy Letters*, 38, 3, 247-270. ISSN 0038-7010.

Zederbauer, M., Jantschko, W., Neugschwandtner, K., Jakopitsch, C., Moguilevsky, N., Obinger, C. Furtmüller, P.G. (2005): Role of the Covalent Glutamic Acid 242-Heme Linkage in the Formation and Reactivity of Redox Intermediates of Human Myeloperoxidase. *Biochemistry*, 44, 6482-6491.

## 2004

Ardissone, S., Frendo, P., Laurenti, E., Jantschko, W., Obinger, C., Puppo, A., Ferrari, R.P. (2004): Purification and physical-chemical characterization of the three hydroperoxidases from the symbiotic bacterium *Sinorhizobium meliloti*. *Biochemistry*, 43, 12692-99.

Furtmüller, P.G., Jantschko, W., Zederbauer, M., Jakopitsch, C., Arnhold, J., Obinger, C. (2004): Kinetics of interconversion of redox intermediates of lactoperoxidase, eosinophil peroxidase and myeloperoxidase. *J. Japan. Infect. Des.*, 5, 57, 30-31.

Gradinger, C., Promberger, A., Schwanninger, M., Messner, K., Sixta H. (2004): Characterization of fungal growth on Lenzing beech logs. *Lenzinger Berichte*, 83, 1-5. ISSN 0024-0907.

Gierlinger, N., Jacques, D., Grabner, M., Wimmer, R., Schwanninger, M., Rozenberg, P., Pâques, L.E. (2004): Colour of larch heartwood and relationships to extractives and brown-rot decay resistance. *Trees – Structure and Function*, 18, 102-108. ISSN: 0931-1890 .

Gierlinger, N., Jacques, D., Schwanninger, M., Wimmer, R., Pâques, L.E. (2004): Heartwood extractives and lignin content of different larch species (*Larix* sp.) and relationships to brown-rot decay-resistance. *Trees – Structure and Function*, 18, 230-236. ISSN: 0931-1890.

Gierlinger, N., Schwanninger, M., Wimmer, R. (2004): Characteristics and Classification of Fourier-Transform near infrared spectra of the heartwood of different larch species (*Larix* sp.). *Journal of Near Infrared Spectroscopy*, 12, 2, 113-119. ISSN: 0967-0335.

Gindl, W., Hansmann, C., Gierlinger, N., Schwanninger, M., Hinterstoisser, B., Jeronimidis, G. (2004): Using a water soluble melamine-formaldehyde resin to improve the hardness of Norway spruce wood. *J. App. Polymer Sci.*, 93, 1900-1907.

Hansmann, Ch., Schwanninger, M., Stefke, B., Hinterstoisser, B., Gindl, W. (2004): UV-Microscopic Analysis of Acetylated Wood Cell Walls. *Holzforschung*, 58, 483-488. ISSN 0018-3830.

Jakopitsch, C., Ivancich, A., Schmuckenschlager, F., Wanasinghe, A., Pörtl, G., Furtmüller, P.G., Rüker, F., Obinger, C. (2004): Influence of the unusual covalent adduct on the kinetics and formation of radical intermediates in *Synechocystis* catalase-peroxidase: a stopped-flow and EPR characterization of the M275, Y249 and R439 variants. *J. Biol. Chem.*, 44, 279, 46082-46095.

Jantschko, W., Furtmüller, P. G., Zederbauer, M., Jakopitsch, C., Obinger, C. (2004): Kinetics of oxygen binding to ferrous myeloperoxidase. *Arch. Biochem. Biophys.*, 426, 91-96.

Paumann, M., Bernroither, M., Lubura, B., Peer, M., Jakopitsch, C., Furtmüller, P.G., Peschek, G.A., Obinger, C. (2004): Kinetics of electron transfer between plastocyanin and the soluble Cu(A) domain of cyanobacterial cytochrome *c* oxidase. *FEMS Microbiol Lett.*, 2, 239, 301-307.

Paumann, M., Feichtinger, M., Bernroither, M., Goldfuhs, J., Jakopitsch, C., Furtmüller, P.G., Regelsberger, G., Peschek, G.A., Obinger, C. (2004): Kinetics of interprotein electron transfer between cytochrome  $c_6$  and the soluble Cu<sub>A</sub> domain of cyanobacterial cytochrome *c* oxidase. *FEBS Lett*, 576, 101-106.

Paumann, M., Lubura, B., Regelsberger, G., Feichtinger, M., Köllensberger, G., Jakopitsch, C., Furtmüller, P. G., Peschek, G. A., and Obinger, C. (2004): Soluble Cu<sub>A</sub> Domain of Cyanobacterial Cytochrome *c* Oxidase. *J. Biol. Chem.*, 279, 10293-10303.

Peschek, G. A., Obinger, C., Paumann, M. (2004): The respiratory chain of blue-green algae (*cyanobacteria*). *Physiol. Plant.*, 120, 358-369.

Regelsberger, G., Laaha, U., Dietmann, D., Rüker, F., Canini, A., Grilli-Caiola, M., Furtmüller, P.G., Jakopitsch, C., Peschek, G., Obinger, C. (2004): The iron superoxide dismutase from the filamentous cyanobacterium *Nostoc PCC 7120*: localization, overexpression and biochemical characterization. *J. Biol. Chem.*, 43, 279, 44384-393.

Santoni, E., Jakopitsch, C., Obinger, C., Smulevich, G. (2004): Comparison between catalase-peroxidase and cytochrome *c* peroxidase. The role of the hydrogen-bond networks for protein stability and catalysis. *Biochemistry*, 43, 5792-5802.

Santoni, E., Jakopitsch, C., Obinger, C. Smulevich, G. (2004): Manipulating the Covalent Link Between Distal Side Tryptophan, Tyrosine, and Methionine in Catalase-Peroxidases: An Electronic Absorption and Resonance Raman Study. *Biopolymers*, 74, 46-50.

Schwanninger, M., Hinterstoisser, B., Gierlinger, N., Wimmer, R., Hanger, J. (2004): Application of Fourier Transform Near Infrared Spectroscopy (FT-NIR) to thermally modified wood. *Holz als Roh- und Werkstoff*, 62, 6, 483-485. ISSN: 0018-3768.

Schwanninger, M., Hinterstoisser, B., Gradinger, C., Messner, K., Fackler, K., (2004): Examination of spruce wood biodegraded by *Ceriporiopsis subvermispora* using near and mid infrared spectroscopy. *Journal of Near Infrared Spectroscopy*, 12, 6, 397-409; ISSN: 0967-0335.

Schwanninger, M., Rodrigues, J., Pereira, H., Hinterstoisser, B. (2004): Effects of short-time vibratory ball milling on the shape of FT-IR spectra of wood and cellulose; *Vibrational Spectroscopy*, 36, 1, 23-40. ISSN: 0924-2031.

Schwanninger M., Smidt E. (2004): Charakterisierung der organischen Substanz mit FT-IR Spektroskopie und Thermogravimetrie. *Waste Reports*, 11, 21-35. ISSN: 1027-4006.

### **Conference & workshop proceedings, abstracts**

#### **2006**

Arnhold, J., Furtmüller, P.G., Spalteholz, H., Obinger, C. (2006): Redox properties of human heme peroxidases. In: Phil Jackson: Peroxidase Meeting, 7.-9. Juli 2006, Aveiro, Portugal.

Banerjee, S., Furtmüller, P.G., Obinger, C. (2006): Thermal and conformational stability of lactoperoxidase and myeloperoxidase. In: Miguel Teixeira: EUROBIC-8, 2.-7. Juli 2006, Aveiro, Portugal.

Banerjee, S., Furtmüller, P.G., Obinger, C. (2006): Thermodynamic analysis of unfolding of lactoperoxidase and myeloperoxidase. In: Phil Jackson: Peroxidase Meeting, 7.-9. Juli 2006, Aveiro, Portugal.

Bellei, M., Jakopitsch, C., Battistuzzi, G., Sola, M., Obinger, C. (2006): Redox thermodynamics of the Fe(III)/Fe(II) couple in wild-type heme peroxidases and in their CN-adducts. In: Phil Jackson: Peroxidase Meeting, 7.-9. Juli 2006, Aveiro, Portugal.

Bernroitner, M., Jakopitsch, C., Obinger, C. (2006): Detoxification of hydrogen peroxide in cyanobacteria. In: Phil Jackson: Peroxidase Meeting, 7.-9. Juli 2006, Aveiro, Portugal.

Bernroitner, M., Tangl, D., Schachinger, J., Obinger, C. (2006): Interaction between cytochrome  $c_M$  and the copper A domain of *Synechocystis* cytochrome *c* oxidase. In: Miguel Teixeira: EUROBIC-8, 2.-7. Juli 2006, Aveiro, Portugal.

Furtmüller, P.G., Arnhold, J., Zederbauer, M., Obinger, C. (2006): Redox properties of human peroxidases. In: Miguel Teixeira: EUROBIC-8, 2.-7. Juli 2006, Aveiro, Portugal.

Furtmüller, P.G., Zederbauer, M., Schwanninger, M., Banerjee, S., Koppenol, W. H., Obinger, C. (2006): Nitrite and peroxyxynitrite effectively mediates the interconversion of redox intermediates of human peroxidases. In: Phil Jackson: Peroxidase Meeting, 7.-9. Juli 2006, Aveiro, Portugal.

Jakopitsch, C., Obinger, C., Un, S., Ivancich, A. (2006): Identification of the unique site (Trp106) for the formation of the [Fe(IV)=O Trp.] intermediate in *Synechocystis* PCC6803 KatG and the (distal heme side) extended H-bonding network with a crucial role in catalase activity by using multifrequency (9-285 GHz) EPR spectroscopy. In: Miguel Teixeira: EUROBIC-8, 2.-7. Juli 2006, Aveiro, Portugal.

Jakopitsch, C., Vlasits, J., Obinger, C. (2006): Trapping the spectral features of the redox intermediates in the catalytic cycle of catalase-peroxidase. In: Miguel Teixeira: EUROBIC-8, 2.-7. Juli 2006, Aveiro, Portugal.

Jakopitsch, C., Wiseman, B., Vlasits, J., Obinger, C. (2006): Probing the reaction of three distinct catalase-peroxidases with peroxides. In: Phil Jackson: Peroxidase Meeting, 7.-9. Juli 2006, Aveiro, Portugal.

Loewen, P. C., Obinger, C., Un, S., Ivancich, A. (2006): Towards understanding the role of protein-based radical intermediates as alternative oxidation sites in mono- and bifunctional peroxidases (KatGs). In: Phil Jackson: Peroxidase Meeting, 7.-9. Juli 2006, Aveiro, Portugal.

Obinger, C., Arnhold, J., Zederbauer, M., Furtmüller, P. G. (2006): Halide oxidation by heme peroxidases. In: Luigi Casella and Marc De Ley: COST D21 Final workshop on Metalloenzymes and Chemical Biomimetics, 25-28. May, Leuven, Belgium.

Obinger, C., Vlasits, J., Jakopitsch, C. (2006): The catalytic activity of monofunctional catalases and bifunctional catalase-peroxidases follows different mechanisms. In: Miguel Teixeira: EUROBIC-8, 2.-7. Juli 2006, Aveiro, Portugal.

Obinger, C., Zederbauer, M., Stampler, J., Jakopitsch, C., Furtmüller, P.G. (2006): Structure and function of peroxidases from the lactoperoxidase superfamily. In: Phil Jackson: Peroxidase Meeting, 7.-9. Juli 2006, Aveiro, Portugal.

Zederbauer, M., Medzihradzky, K., F., Huang, L., Wojciechowsky, G., Furtmüller, P.G., Ortiz de Montellano, P., Obinger, C. (2006): Analyzing heme to protein linkages of recombinant myeloperoxidase by mass spectrometry. In: Phil Jackson: Peroxidase Meeting, 7.-9. Juli 2006, Aveiro, Portugal.

Zederbauer, M., Stampler, J., Furtmüller, P.G., Obinger, C. (2006): The role of the aspartate 94 ester linkage with heme in recombinant myeloperoxidase. In: Miguel Teixeira: EUROBIC-8, 2.-7. Juli 2006, Aveiro, Portugal.

## 2005

Arnhold, J., Furtmüller, P.G., Panasenko, O., Spalteholz, H., Obinger, C. (2005): Redox properties of human peroxidases. In: M. Coletta: COST D-21 Workshop on Metalloproteins, 26.-29. Mai, Rom, Italy.

Bernroitner, M., Paumann, M., Peschek, G. A., Obinger, C. (2005): Kinetics of electron transport between cytochrome  $c_6$  or plastocyanin and respiratory cytochrome  $c$  oxidase in cyanobacteria. In: G. Weitzer: Joint Annual Meeting of ÖGBM, ÖGGGT and ÖGBT, September, 26.-28., Vienna.

Bernroitner, M., Paumann, M., Peschek, G.A., Obinger, C. (2005): Both cytochrome  $c_6$  and plastocyanin serve as electron donors for respiratory cytochrome  $c$  oxidase in cyanobacteria. In: I. Bertini: First European Conference on Chemistry for Life Sciences, 4.-6. October, Rimini, Italy.

Droghetti, E., Jakopitsch, C., Obinger, C., Smulevich, G (2005): The role in the stability of the heme architecture of selected catalase-peroxidase mutants. An overview of a spectroscopic study. In: M. Coletta: COST D-21 Workshop on Metalloproteins, 26.-28. Mai, Rom, Italy.

Droghetti, E., Jakopitsch, C., Obinger, C., Smulevich, G. (2005): The role of selected residues in the heme architecture of catalase-peroxidases. In: Wariishi, H.: The VII Conference on Plant Peroxidases, September 11-15, Fukuka, Japan.

Fackler, K., Schwanninger, M., Gradinger, C., Hinterstoisser, B., Messner, K. (2005): Near Infrared Spectroscopy Assay for the Biotechnical Modification of Wood. , 2nd European Conference on Wood Modification, 6.-7. Oktober 2005, Göttingen, 55-57.

Furtmüller, P.G., Jantschko, W., Schwanninger, M., Banerjee, S., Koppenol, W. H., Obinger, C. (2005): Human myeloperoxidase is a sink for both nitrite and peroxyxynitrite produced during phagocytosis. In: G. Weitzer: Joint Annual Meeting of the ÖGBM, ÖGGGT and ÖGBT, September, 26.-28., Vienna.

Furtmüller, P.G., Jantschko, W., Schwanninger, M., Banerjee, S., Koppenol, W.H., Obinger, C., (2005): The mechanism of reaction of nitrite and peroxynitrite with human myeloperoxidase. In: I. Bertini: First European Conference on Chemistry for Life Sciences, 4.-6. October, Rimini, Italy.

Hann, S., Obinger, C., Furtmüller, P.G., Hartinger, C.G., Keppler, B.K., Stingeder, G., and Köllensperger, G. (2005): Speciation analysis of metalloproteins and metalprotein adducts. In: I. Bertini: First European Conference on Chemistry for Life Sciences, 4-6 October, Rimini, P200.

Ivancich, A., Un, S., Obinger, C., Loewen, P. (2005): Protein-based radical intermediates in bifunctional heme peroxidases. In: Dimitri Coucouvanis and Joan Broderick: XII International Conference on Bioinorganic Chemistry (ICBIC-12), July 31 - August 5, Ann Arbor, Michigan, USA.

Jakopitsch, C., Vlasits, J., Ivancich, A., Obinger, C. (2005): Probing the role of the peculiar Trp-Tyr-Met adduct in the heme pocket of bifunctional catalase-peroxidases. In: G. Weitzer: Joint Annual Meeting of ÖGBM, ÖGGGT and ÖGBT, September, 26.-28., Vienna.

Jakopitsch, C., Vlasits, J., Ivancich, A., Obinger, C. (2005): The role of the unusual crosslinked distal site Trp-Tyr-Met adduct in catalysis of bifunctional catalase-peroxidase. In: I. Bertini: First European Conference on Chemistry for Life Sciences, 4.-6. October, Rimini, Italy.

Obinger, C., Furtmüller, P.G., Jantschko, W., Zederbauer, M., Jakopitsch, C., Herold, S., Koppenol, W.H. (2005): Mechanism of reaction of human peroxidases with nitrite and peroxynitrite. In: M. Coletta: COST D-21 Workshop on Metalloproteins, 26.-28. Mai, Rom, Italy.

Obinger, C., Furtmüller, P.G., Zederbauer, M., Jakopitsch, C. (2005): Spectral and kinetic studies on redox intermediates in heme peroxidases from both superfamilies. In: I. Bertini: First European Conference on Chemistry for Life Sciences, 4.- 6. October, Rimini, Italy.

Zederbauer, M., Furtmüller, P.G., Bogner, M., Obinger, C. (2005): Increasing heme flexibility by manipulation of the Glu242-heme linkage of myeloperoxidase: biophysical and biochemical consequences. In: G. weitzer: Joint Annual Meeting of ÖGBM, ÖGGGT and ÖGBT, September, 26. -28., Vienna.

Zederbauer, M., Furtmüller, P.G., Bogner, M., Obinger, C., (2005): The role of Glu242-heme linkage in the catalysis of myeloperoxidase. In: I. Bertini: First European Conference on Chemistry for Life Sciences, 4.-6. October, Rimini, Italy.

## **2004**

Alves, A., Schwanninger, M., Pereira, H., da Silva Peres, D., Chantre, G., Rodrigues, J.C. (2004): Determination of the lignin content of Maritime pine wood with NIR - PLSR – models based on noisy reference data: Can predicted values be more precise than the reference values? In: Menezes, J.C.: 9th CAC-2004 The Ninth



Chemometrics in Analytical Chemistry Conference: 9th CAC-2004 The Ninth Chemometrics in Analytical Chemistry Conference, September 20th to 23rd, Lisbon, Portugal, Abstract, 174, Lisbon, Portugal.

Arnhold, J., Furtmüller, P.G., Spalteholz, H., Panasenko, O. M., Obinger, C. (2004): Redox properties of myeloperoxidase and eosinophil peroxidase. In: Suzuki, K.: The 4th International Peroxidase Meeting, Oct. 27.-30. 2004, Kyoto, Japan, Talk.

Fackler, K., Gradinger, C., Schwanninger, M., Hinterstoisser, B., Messner, K. (2004): Near Infrared Spectroscopy Screening for Short Term Lignolytic Activities of Biopulping Fungi, 9th International Conference on Biotechnology in the Pulp and Paper Industry, 10.-14. Oct. 2004, Durban, 82-84.

Furtmüller, P.G., Jantschko, W., Zederbauer, M., Jakopitsch, C., Arnhold, J., Obinger, C. (2004): Redox Intermediates of human heme peroxidases: a comparative mutational and kinetic study. In: C. Kratky: 2nd European Conference on Chemistry towards Biology. 25. - 29 September, 2004, Seggau, Graz, Austria. Talk

Furtmüller, P.G., Jantschko, W., Zederbauer, M., Neugschwandtner, K., Moguelevsky, N., Obinger, C. (2004): Manipulating the covalent link in recombinant myeloperoxidase. In: Suzuki, K.: The 4th International Peroxidase Meeting, Oct. 27.-30. 2004, Kyoto, Japan, Poster.

Gradinger, C., Fackler, K., Schwanninger, M., Eder, M., Messner, K. (2004): Bio-modification: Fungal modification of spruce wood for industrial purpose. 1. Minisymposium für Nachwachsende Rohstoffe und Erneuerbare Energien Wien, 04.06.2004, Wien, 48-49.

Gradinger, C., Fackler, K., Schwanninger, M., Eder, M., Messner, K. (2004): Bio-modification: Fungal modification of spruce wood for industrial purpose. 7th Pacific Rim Bio-based Composites Symposium, 31.10. - 2.11.2004, Nanjing, China, 1, 25-27.

Jakopitsch, C., Schmuckenschlager, F., Zehner, F., Wanasinghe, A., Furtmüller, P.G., Obinger, C. (2004): Towards understanding the catalytic activity of peroxidases and catalases? In: Smulevich Giulietta and Ivancich Anabella, Centre d'Etudes de Saclay, Gif-sur-Yvette, France: COST Chemistry Action D21, 28.-29. May 2004, Cite Universitaire, Paris, France; In: Working Group Natural Engineered Peroxidases and Synthetic Heme Model Compounds with Peroxidase-Like Activity, Talk 10.

Jantschko, W., Furtmüller, P.G., Zederbauer, M., Jakopitsch, C., Obinger, C. (2004): Reactivity of ferrous heme peroxidases from both superfamilies with hydrogen peroxide and molecular oxygen. In: Smulevich Giulietta and Ivancich Anabella, Centre d'Etudes de Saclay, Gif-sur-Yvette, France: COST Chemistry Action D21, 28.-29. May 2004, Cite Universitaire, Paris, France; Working Group Natural Engineered Peroxidases and Synthetic Heme Model Compounds with Peroxidase-Like Activity, Talk 12.

Köllensperger, G., Hann, S., Furtmüller, P.G., Obinger, C., Schuhmacher, R., Krska, R., Stingeder, G. (2004): The potential of ICP-MS in the field of metal-binding protein analysis. In: Bernhard Michalke: Third International

Conference on Trace Element Speciation in Bio-medical, Nutritional and Environmental Sciences, 10. - 13. May 2004, München, Germany.

Köllensperger, G., Hann, S., Furtmüller, P.G., Obinger, C., Schuhmacher, R., Krska, R., Stingeder, G. (2004): Metalloproteinanalytik mittels LC-ICP-MS. In: Detlef Günther: 19. ICP-MS Anwendertreffen, 1. - 3. September 2004, Zürich, Switzerland.

Obinger, C., Jantschko, W., Zederbauer, M., Jakopitsch, C., Furtmüller, P.G. (2004): Kinetics of interconversion of redox intermediates of lactoperoxidase, eosinophil peroxidase and myeloperoxidase. In: Suzuki, K.: The 4th International Peroxidase Meeting, Oct. 27.-30. 2004, Kyoto, Japan, Talk 5.1.

Schwanninger, M., Rodrigues, J.C., Gierlinger, N., Grabner, M., Wimmer, R., Gindl, M., Gindl, W., Hinterstoisser, B. (2004): Infrared Spectroscopy and Cluster Analysis – Tools for the Differentiation of Wood. In: Menezes, J.C.: 9th CAC-2004 The Ninth Chemometrics in Analytical Chemistry Conference: 9th CAC-2004 The Ninth Chemometrics in Analytical Chemistry Conference, September 20th to 23rd, Lisbon, Portugal, Abstract, 175.

Schwanninger, M., Rodrigues, J.C., Lloyd Jones, G., Alves, A., Pereira, H., Cahalan, C., Hinterstoisser, B. (2004): Lignin content estimation of *Picea abies* wood with different infrared techniques – An inter-laboratory comparison. In: Menezes, J.C.: 9th CAC-2004 The Ninth Chemometrics in Analytical Chemistry Conference: 9th CAC-2004 The Ninth Chemometrics in Analytical Chemistry Conference, September 20th to 23rd, Lisbon, Portugal, Abstract, 145.

Smidt, E., Schwanninger, M. (2004): Anwendung der FT-IR Spektroskopie für abfallwirtschaftliche Fragestellungen. In: ÖAWV Gesellschaft für Wasser- und Abfallwirtschaft GmbH: 11. Österr. Abfallwirtschaftstagung, 24. – 25. März, Graz, Österreich, Poster.

Smulevich, G., Santoni, E., Jakopitsch, C., Obinger, C. (2004): Insights into catalase-peroxidase by electronic absorption, resonance Raman spectroscopy, and site-directed mutagenesis. In: Kadish, K. M., Smith, K. M., Sessler, J. L (Eds.): Third International Conference on Porphyrins and Phthalocyanines (ICPP-3), July 11-16, 2004, New Orleans, Louisiana, Talk.

## **Books and book chapters**

### **2006**

Sixta, H., Blechschmidt, J., Gruber, E., Heinemann, S., Koch, G., Krotschek, A., Potthast, A., Putz, H-J., Ressel, J.B., Schwanninger, M., Süss, H-U. (2006): Handbook of Pulp. , 1348, WILEY- VCH Verlag GmbH & Co. KGaA, Weinheim; ISBN: 978-3-527-30999-3.

Publications are also available at [research information service](#)

**Division of Organic Chemistry / Christian Doppler-Laboratory of Pulp Reactivity****Original articles and reviews in refereed journals****2005**

Adorjan, I., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2005): Discoloration of cellulose solutions in N-methyl-morpholine-N-oxide (Lyocell). Part 1: Studies on model compounds and pulps. *Cellulose*, 12, 1, 51-57.

Bohrn, R., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2005): Synthesis and testing of a novel fluorescence label for carboxyls in carbohydrates and cellulose. *Synlett*, 20, 3087-3090.

Nagel, G., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2005): Oxidation of reducing end groups in celluloses according to different protocols. *Lenzinger Berichte*, 84, 27-35; 00240907.

Potthast, A. (2005): New strategies in chemical analysis of pulp and paper. *IPW Das Papier*, 8, 9-11.

Potthast, A., Rosenau, T., Kosma, P., Saariaho, A.-M., Vuorinen, T., Sixta, H. (2005): On the nature of carbonyl groups in cellulosic pulps. *Cellulose*, 12, 1, 43-50.

Rosenau, T., Potthast, A., Milacher, W., Adorjan, I., Hofinger, A., Kosma, P. (2005): Discoloration of cellulose solutions in N-methylmorpholine-N-oxide (Lyocell). Part 2: Isolation and identification of chromophores. *Cellulose*, 12, 2, 197-208.

Rosenau, T., Potthast, A., Möslinger, R., Kosma, P. (2005): Confirmation of the presence of hydroxyl radicals during pre-ripening of alkali cellulose. *J. Wood Chem. Technol.*, 26, 1, 1-11.

Rosenau, T., Renfrew, A.H.M., Adelwöhrer, C., Potthast, A., Kosma, P. (2005): Cellulose modified with slow-release reagents. Part I. Synthesis of triazine-anchored reagents for slow release of active substances from cellulosic materials. *Polymer*, 46, 5, 1453; 1458.

Rosenau, T., Schmid, P., Kosma, P. (2005): On the non-classical course of Polonowski reactions on N-benzylmorpholine-N-oxide (NBnMO). *Tetrahedron*, 61, 14, 3483-3487.

Rosenau, T., Schmid, P., Potthast, A., Kosma, P. (2005): Stabilization of cellulose solutions in N-methylmorpholine-N-oxide (Lyocell dopes) by addition of an N-oxide as sacrificial substrate. *Holzforschung*, 59, 5, 503-506.

Sjöberg, J., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2005): Cross-sectional analysis of the polysaccharide composition in cellulosic fiber materials by enzymatic peeling/high-performance capillary zone electrophoresis. *Biomacromolecules*, 6, 6, 3146-3151.

**2004**

Adorjan, I., Rosenau, T., Potthast A., Kosma, P., Mereiter, K., Pauli, J., Jäger, C. (2004): Crystal and molecular structure of methyl 4-O-methyl- $\beta$ -D-ribo-hex-3-ulopyranoside. *Carbohydrate Research*, 339, 4, 795-799.

Adorjan, I., Sjöberg, J., Rosenau, T., Hofinger, A., Kosma, P. (2004): Kinetic and chemical studies on the isomerization of monosaccharides in N-methylmorpholine-N-oxide (NMMO) under Lyocell conditions. *Carbohydrate Research*, 339, 11, 1899-1906.

Bates, I., Maudru, E., Phillips, D.A.S., Renfrew, A.H.M., Rosenau, T. (2004): Formation of 2-oxido-4-quaternary ammonium-s-triazinyl betaines from dichloro-s-triazinyl compounds: evidence for a bis-quaternary ammonium-s-triazinyl intermediate. *Dyes and Pigments*, 63, 3, 291-299.

Bohrn, R., Potthast, A., Rosenau, T., Kosma, P. (2004): Molekulare Qualitätsparameter. *Holz-Bildung-Forschung*, 6, 56, 6-7. ISSN 1812-6928.

Bohrn, R., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2004): A novel diazo reagent for fluorescence labeling of carboxyl groups in pulp. *Lenzinger Ber.*, 83, 84-91. ISSN00240907.

Potthast, A., Schiehser, S., Rosenau, T., Sixta, H., Kosma, P. (2004): Effect of UV radiation on the carbonyl distribution in different pulps. *Holzforschung*, 58, 6, 597-602.

Rosenau, T., Hofinger, A., Potthast, A., Kosma, P. (2004): A general, selective, high-yield N-demethylation procedure for tertiary amines by solid reagents in a convenient column chromatography-like setup. *Organic Letters*, 6, 4, 541-544.

Rosenau, T., Potthast, A., Kosma, P. (2004): Studies on the carbenium-iminium ions derived from N-methylmorpholine-N-oxide (NMMO). *Tetrahedron*, 60, 301-306.

Rosenau, T., Potthast, A., Kosma, P. (2004): Verunreinigungen auf cellulosischen Fasern. *Holz-Bildung-Forschung*, 56, 1, 6-7.

Rosenau, T., Potthast, A., Milacher, W., Hofinger, A., Kosma, P. (2004): Isolation and identification of residual chromophores in cellulosic materials. *Polymer*, 45, 19, 6437-6443.

Sartori, J., Potthast, A., Rosenau, T., Hofinger, A., Sixta, H., Kosma, P. (2004): Alkaline degradation of model compounds related to beech xylan. *Holzforschung*, 58, 6, 588-596.

Sjöberg, J., Adorjan, I., Rosenau, T., Kosma, P. (2004): An optimized CZE method for analysis of mono- and oligomeric aldose mixtures. *Carbohydrate Research*, 339, 11, 2037-2043.

Xu, J., Rosenau, T., Renfrew, A.H.M., Phillips, D.A.S., Maudru, E. (2004): Modification of cellulose with N-(2-chloroethyl)diethylamine hydrochloride: mechanism of improved dyeability with 5-chloro-2,4-difluoropyrimidinyl dyes. *Coloration Technol.*, 120, 6, 316-319.

## Patents

Adelwöhrer, A., Kosma, P., Potthast, A., Renfrew, H., Rosenau, T., Sixta, H. (2005): Pulp and viscose fibre modification with covalently linked reagents showing slow-release of active substances. 12.05.2005; WO 2005/042588 A1.

## Conference & workshop proceedings, abstracts

### 2005

Abad-Romero, B., Rosenau, T., Potthast, A., Kosma, P., Haltrich, D., Sixta, H. (2005): Isolation, synthesis and derivatization of xylodextrins. In: Department of Chemistry: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien, 30.

Abad-Romero, B., Rosenau, T., Potthast, A., Kosma, P., Haltrich, D., Sixta, H. (2005): Isolation, synthesis and derivatization of xylodextrins. In: Zellcheming: Cellulose-Chemiker Rundgespräch, 27.-30.Juni, Wiesbaden; Abstracts, 12-13, Germany.

Adorjan, I., Querner, J., Ruiz-Ruiz, M.C., Granet, N., Rosenau, T., Kosma, P. (2005): Synthesis of cellodextrins. 2nd Austrian-Hungarian Carbohydrate Conference, May 24-26, 2005, Somogyaszalo, Hungary.

Bohrn, R., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2005): Determination of functional groups in cellulosic substrates: A novel diazo reagent for the fluorescence labeling of carboxyl groups. In: American Chemical Society: 229th National Meeting, March 13-17, San Diego; CELL 200; ISBN ISBN0841239568.

Bohrn, R., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2005): A novel approach towards the analysis of carboxyl groups in cellulosic substrates. In: Department of Chemistry, BOKU: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien, 39.

Fischer, M., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2005): Investigation of aldose oxidation in acidic bisulfite pulps. In: Department of Chemistry, BOKU: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien, 47.

Henniges, U., Banik, G., Potthast, A. (2005): A fluorescence approach to assess the deterioration state of copper-corroded paper. In: Department of Chemistry, BOKU: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien, 49.

Henniges, U., Potthast, A., Banik, G. (2005): A fluorescence labelling approach to assess the deterioration state of aged papers. In: Zellcheming: Cellulose-Chemiker-Rundgespräch, 27.-30.Juni, Wiesbaden; Abstractband, 17-18, Darmstadt.

Kawada, T., Yoneda, Y., Minato, K., Rosenau, T. (2005): Synthesis of a  $\beta$ -1,4-GlcNAc- $\beta$ -1,4-GIN chito-tetrasaccharide repeating unit. In: Department of Chemistry, BOKU: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien, 54-55.

Kosma, P., Potthast, A., Rosenau, T. (2005): Analysis of functional groups in cellulose. In: Department of Chemistry, BOKU: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien; Book of Abstracts, 12, Wien.

Kostic, M., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2005): Development of a micro method for the determination of carbonyl groups for DMAc/LiCl-insoluble pulps by fluorescence labeling. In: Department of Chemistry, BOKU: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien, 61-62.

Nagel, G., Potthast, A., Kosma, P., Sixta, H. (2005): Oxidation of reducing end groups in cellulose by different approaches. In: Department of Chemistry, BOKU: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien, 69.

Potthast, A. (2005): Determination of oxidized functionalities in cellulose. Gordon Research Conference, 5.06.-10.06.2005, Hong Kong.

Potthast, A. (2005): New strategies in pulp and paper analytics. Zellcheming, Juni 2005, Wiesbaden.

Querner, J., Adorjan, I., Ruiz-Ruiz, C., Rosenau, T., Kosma, P. (2005): Synthesis of a trisaccharide cellulose model compound, methyl 4'''-O-methyl- $\beta$ -D-celotrioside. In: Department of Chemistry, BOKU: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien, 73.

Querner, J., Potthast, A., Rosenau, T., Kosma, P. (2005): Synthesis of a trisaccharide cellulose model compound methyl 4'''-O-methyl- $\beta$ -D-celotrioside. In: Zellcheming: Cellulose-Chemiker-Rundgespräch, 27.-30. Juni, Wiesbaden; Abstractband, 18-19, Darmstadt.

Rosenau, T., Potthast, A., Kosma, P. (2005): Two novel tools in cellulose analytics. In: American Chemical Society: 229th National Meeting, March 13-17, San Diego; Cell, 172; ISBN ISBN0841239568.

Rußler, A., Potthast, A., Sixta, H., Kosma, P. (2005): New methylation analysis of viscose. In: Institute of Chemistry, Slovak Academy of Sciences: 13th European Carbohydrate Symposium, 21-26 August, Bratislava; Book of Abstracts, P99. ISBN 8096935968.

Rußler, A., Saake, B., Potthast, A., Rosenau, T., Puls, J., Sixta, H., Kosma, P. (2005): A novel approach to assess xanthate group distribution in viscose. In: Department of Chemistry, BOKU: Japanese-European Workshop on Cellulose and Functional Polysaccharides, September 11-14, Wien, 74.

## 2004

Adorjan, I., Sjöberg, J., Rosenau, T., Potthast, A., Sixta, H., Kosma, P. (2004): Isomerization of monosaccharides under Lyocell conditions. In: Royal Chemical Society: 22nd International Carbohydrate Symposium, 23.-27. Juli, Glasgow; Book of Abstracts, P212.

Bohrn, R., Potthast, A., Rosenau, T., Kosma, P., Sixta, P. (2004): Determination of functional groups in cellulosic substrates-fluorescence labeling of carboxyl groups. In: Latvian Institute of Wood Chemistry: Eighth European Workshop on Lignocellulosics and Pulp, 22.-25. August, Riga, 65-68, Riga; ISBN 9984196119.

Lange, T., Rußler, A., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2004): Analysis of Xanthate group distribution in viscoses. In: Zellcheming, Darmstadt: Cellulose-Chemiker-Rundgespräch, 28. Juni - 1. Juli, Wiesbaden; Abstracts, 18-20.

Potthast, A., Rosenau, T., Kosma, P., Saariaho, A.-M., Vuorinen, T. (2004): On the nature of carbonyl groups in cellulosic pulps. In: Latvian Institute of Wood Chemistry: Eighth European Workshop on Lignocellulosics and Pulp, 22.-25. August, Riga, 203-206, Riga; ISBN 9984196119.

Rosenau, T., Potthast, A., Adorjan, I., Kosma, P. (2004): Isolation and identification of chromophores on cellulosic material. In: Zellcheming, Darmstadt: Cellulose-Chemiker-Rundgespräch, 28. Juni - 1. Juli, Wiesbaden; Abstracts, 11-12.

Rosenau, T., Potthast, A., Milacher, W., Hofinger, A., Kosma, P. (2004): Isolation and identification of residual chromophores in cellulosic materials. In: Latvian Institute of Wood Chemistry: Eighth European Workshop on Lignocellulosics and Pulp, 22.-25. August, Riga, 207-210, Riga; ISBN 9984196119.

Rosenau, T., Potthast, A., Adorjan, I., Kosma, P., Sixta, H. (2004): Isolierung und Identifizierung von Chromophoren auf Cellulosematerialien. In: Thüringisches Institut für Textil- und Kunststofforschung : 6. Int. Symposium TITK: Alternative Cellulose-Herstellen, Verformen, Eigenschaften, 1.-2. September, Rudolstadt-Schwarza; Book of Abstracts.

Sjöberg, J., Dahlmann, O., Potthast, A., Rosenau, T., Kosma, P. (2004): On the polysaccharides distribution in cellulosic fibres. In: Association of Finnish Chemical Societies: Nordic Polymer Days, 12.-18. August, Turku; Kemia-Kemi, 31, 7.

Sjöberg, J., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2004): Cross-sectional fiber analysis of the polysaccharide composition in cellulosic materials by enzymatic peeling / high performance capillary zone

electrophoresis (HPCE). In: Latvian Institute of Wood Chemistry: Eighth European Workshop on Lignocellulosics and Pulp, 22.-25. August, Riga, 137-140, Riga; ISBN 9984196119.

Sjöberg, J., Potthast, A., Rosenau, T., Kosma, P., Sixta, H., Gradinger, C. (2004): Fiber surface and inner layer analysis of the polysaccharide composition in sulfate and sulfite dissolving pulps using enzymatic peeling and CZE. In: American Chemical Society: 227th National Meeting of the American Chemical Society, March 28-April 1, Anaheim, USA; CD-ROM, Abstracts of Papers, Cell, 152., ISBN 0-8412-3925-8.

## **Books and book chapters**

### **2006**

Sixta, H., Blechschmidt, J., Gruber, E., Heinemann, S., Koch, G., Krottschek, A., Potthast, A., Putz, H-J., Ressel, J.B., Schwanninger, M., Süß, H-U. (2006): Handbook of Pulp, 1348, WILEY- VCH Verlag GmbH & Co, Weinheim; ISBN: 978-3-527-30999-3.

### **2005**

Rußler, A., Lange, T., Potthast, A., Rosenau, T., Berger-Nicoletti, E., Sixta, H., Kosma, P. (2005): A novel method for analysis of xanthate group distribution in viscoses. In: T. Heinze, K. Fischer, Macromolecular Symposia, 223, 1, 189-199; WILEY-VCH, Weinheim; ISBN ISBN3527313265.

Rosenau, T., Potthast, A., Hofinger, A., Kosma, P. (2005): Isolation and identification of residual chromophores in cellulosic materials. In: T. Heinze, K. Fischer, Macromolecular Symposia, 223, 1, 239-252; WILEY-VCH, Weinheim; ISBN 3527313265.

## **Division of Organic Chemistry**

### **Original articles and reviews in refereed journals**

#### **2006**

Abad-Romero, B., Haltrich, D., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2006): Isolation, synthesis and derivatization of xylodextrins. *Macromol. Symp.*, 232, 93-97; 3527313354.

Adelwöhrer, C., Rosenau, T., Kloser, E., Mereiter, K., Netscher, T. (2006): Novel Tocopheryl Compounds XXIII. Synthesis of 5a- $\gamma$ -tocopheryl azide and its reaction to 1-(5a- $\gamma$ -tocopheryl)-1,2,3-triazols by [2+3]-cycloaddition. *Eur. J. Org. Chem.*, 9, 2081-2086.

Bohrn, R., Potthast, A., Schiehser, S., Rosenau, T., Sixta, H., Kosma, P. (2006): The FDAM method: Determination of carboxyl profiles in cellulosic materials by combining group-selective fluorescence labeling with GPC. *Biomacromolecules*, 7, 1743-1750.



Heine, H. Gronow, S. Zamyatina, A. Brade, L., Kosma, P. Brade H. (2006): Biological activities of synthetic Chlamydia Lipid A. J. Endotoxin Res. in press

Henniges, U., Banik, G., Potthast, A. (2006): Comparison of aqueous and non-aqueous treatments of cellulose to reduce copper-catalyzed oxidation processes. Macromol. Symp., 232, 129-136; ISSN 1022-1360.

Henniges, U., Banik, G., Potthast, A. (2006): Comparison of aqueous and non-aqueous treatments of cellulose to reduce copper-catalyzed oxidation processes. Macromol. Symp., 232, 129-136; ISSN 1022-1360.

Henniges, U., Prohaska, T., Banik, G., Potthast, A. (2006): A fluorescence labeling approach to assess the deterioration state of aged papers. Cellulose, 13, 4, 421-428.

Henniges, Ute Banik, Gerhard Potthast, Antje (2006): Comparison of Aqueous and Non-Aqueous Treatments of Cellulose to Reduce Copper-Catalyzed Oxidation Processes. Macromol. Symp., ISSN 1022-1360.

Kampyli, V.; Maudru, E.; Phillips, D. A. S.; Renfrew, A. H. M.; Rosenau, T. (2006): Triazinyl reactive dyes for the exhaust dyeing of cotton: Influence of the oxido group on the reactivity of chloro and *m*-carboxypyridinium leaving groups. Dyes and Pigments 2006, in press.

Kostic, M., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2006): A novel approach for the determination of carbonyl groups for DMAc/LiCl-insoluble pulps by fluorescence labelling. Cellulose, 4, 13, 429-432.

Malz, F.; Jäger, C.; Yoneda, Y.; Kosma, P.; Rosenau, T. (2006): Synthesis of methyl 4'-O-methyl- $\beta$ -D-cellobioside- $^{13}\text{C}12$  from D-glucose- $^{13}\text{C}6$ . Part 2: Solid State NMR studies. Carbohydr. Res., in press.

Maghuly, F., Pinsker, W., Praznik, W., Fluch, S. (2006): Genetic Diversity in Managed Subpopulations of Norway Spruce (*Picea Abies* L. Karst.). Forest Ecology and Management, 222, 266-271.

Maghuly, F., Nittinger, F., Pinsker, W., Praznik, W., Fluch, S. (2006): Differentiation among Austrian populations of Norway spruce [*Picea abies* (L.) Karst.] assayed by mitochondrial DNA markers. Tree Genetics and Genomes, in press.

Müller-Loennies, S., Gronow, S., Brade, L., MacKenzie, R., Kosma, P., Brade, H. (2006): A monoclonal antibody against a carbohydrate epitope in lipopolysaccharide differentiates *Chlamydophila psittaci* from *Chlamydophila pecorum*, *Chlamydophila pneumoniae*, and *Chlamydia trachomatis*. Glycobiology, 16, 3, 184-196.

Rosenau, T., Adelwöhrer, C., Kloser, E., Mereiter, K., Netscher, T. (2006): Bromination of alpha-tocopherol methano-dimer and ethano-dimer. Tetrahedron, 62, 8, 1772 - 1777.

Rosenau, T., Potthast, A., Kosma, P., Möslinger, R. (2006): Confirmation of the presence of hydroxyl radicals during pre-ripening of alkali cellulose. Journal of Wood Chemistry and Technology, 26, 1, 53-63.

Ruiz-Ruiz, M. del C., Querner, J., Adorjan, I., Kosma, P., Rosenau, T. (2006): Synthesis of the cellulose model compound methyl 4"-O-methyl-beta-D-celotrioside. *Macromol. Symp.*, 232, 68-73; 3527313354.

Rußler, A., Potthast, A., Rosenau, T., Lange, T., Saake, B., Sixta, H., Kosma, P. (2006): Determination of substituent distribution of viscoses by GPC. *Holzforschung*, 60, 5, 467-473.

Schabussova, I., Amer, H., van Die, I., Kosma, P., Maizels R. (2006): O-Methylated glycans from *Toxocara* are specific targets for antibody binding in human and animal infections. *Int. J. Parasitology*, in press

Sixta, G., Hofinger, A., Kosma, P. (2006): Synthesis of spacer-containing chlamydial disaccharides as analogues of the  $\alpha$ -Kdop  $\alpha$ -(2 $\rightarrow$ 8)-Kdop- $\alpha$ -(2 $\rightarrow$ 4)-Kdop- trisaccharide epitope. *Carbohydr. Res.* 2006, in press.

Stolze, K., Rohr-Udilova, N., Rosenau, T., Hofinger, A., Kolarich, D., Nohl, H. (2006): Spin trapping of C- and O-centered radicals with methyl-, ethyl-, pentyl- and phenyl-substituted EMPO derivatives. *Bioorg. Med. Chem.*, 14, 3368-3376.

Zayni, S., Steiner, K., Pföstl, A., Hofinger, A., Kosma, P., Messer, P. (2006) The dTDP-4-dehydro-6-deoxyglucose reductase encoding *fcd* gene is part of the surface layer glycoprotein glycosylation gene cluster of *Geobacillus tepidamans* GS5-97<sup>T</sup>. *Glycobiol.* in press.

## 2005

Adelwöhrer, C., Rosenau, T. (2005): Novel tocopherol compounds XX. 1,3,8-Trioxaphenanthrenes derived from  $\gamma$ -tocopherol. *Tetrahedron*, 61, 38, 9070-9074.

Cieslik, E., Kopec, A., Praznik, W. (2005): Healthy properties of Jerusalem Artichoke flour (*Helianthus tuberosus* L.). *Electronic Journal of Polish Agricultural Universities*, 8, issue 2; ISSN 1505-0297.

Graziani, A., Amer, H., Zamyatina, A., Hofinger, A., Kosma, P. (2005): Synthesis of C-glycosides related to glycerol-b-D-manno-heptoses. *Tetrahedron Asymm.*, 16, 1, 167; 175.

Gregor, W., Grabner, G., Adelwöhrer, C., Rosenau, T., Gille, L. (2005): Antioxidant Properties of Natural and Synthetic Chromanol Derivatives: a Study by Fast Kinetics and Electron Spin Resonance Spectroscopy. *J. Org. Chem.*, 70, 9, 3472 - 348.

Güzlek, H., Graziani, A., Kosma, P. (2005): A short synthesis of D-glycero-D-manno-heptose 7-phosphate. *Carbohydr. Res.*, 340, 18, 2808-2811.

Kählig, H.P., Kolarich, D., Zayni, S., Scheberl, A., Kosma, P., Schäffer, C., Messner, P. (2005): N-Acetylmuramic acid as capping element of  $\alpha$ -D-fucose-containing S-Layer glycoprotein glycans from *Geobacillus tepidamans* GS5-97T. *J. Biol. Chem.*, 280, 21, 20292-20299.

Praznik, W. (2005): Zukunft in unserer Hand: Nachwachsende Rohstoffe und Erneuerbare Energien. Agrarische Rundschau, 5, 14-17; ISSN 0002-0710.

Praznik, W., Huber, A. (2005): De facto molecular weight distributions of glucans by size-exclusion chromatography combined with mass/molar-detection of fluorescence labeled terminal hemiacetals. Journal of Chromatography B, 824, 295-307.

Rosenau, T., Ebner, G., Stanger, A., Perl, S., Nuri, L. (2005): From a theoretical concept to biochemical reactions: strain induced bond localization (SIBL) in oxidation of vitamin E. Chem. Eur. J., 11, 1, 289-287.

Rosenau, T., Netscher, T., Ebner, G., Kosma, P. (2005): Facile synthesis of alpha,omega-bis(5-gamma-tocopheryl)alkanes. Synlett, 2, 243-246.

Rosenau, T., Stanger, A. (2005): Synthesis and oxidation of "non-annulated" vitamin E-like compounds. Tetrahedron Lett., 46, 45, 7845-7848.

Sjöberg, J., Potthast, A., Rosenau, T., Kosma, P., Sixta, H. (2005): Cross-sectional analysis of the polysaccharide composition in cellulosic fiber materials by enzymatic peeling/high-performance capillary zone electrophoresis. Biomacromolecules, 6, 6, 3146-3151.

Staniek, K., Rosenau, T., Gregor, W., Nohl, H., Gille, L. (2005): The protection of bioenergetic functions in mitochondria by new synthetic chromanols. Biochem. Pharmacol., 70, 1361-1370.

Stolze, K., Udilova, N., Rosenau, T., Nohl, H. (2005): Spin adduct formation from lipophilic EMPO-derived spin traps with various oxygen- and carbon-centered radicals. Biochem. Pharmacol., 69, 297-305..

Stolze, K., Udilova, N., Rosenau, T., Nohl, H. (2005): Very stable superoxide radical adducts of 5-ethoxycarbonyl-3,5-dimethylpyrroline-N-oxide (3,5-EDPO) and its derivatives. Biol. Chem., 69, 1351-1361.

Yoneda, Y., Kawada, T., Rosenau, T., Kosma, P. (2005): Synthesis of methyl 4'-O-methyl- $\beta$ -cellobioside-13C12 from D-glucose-13C6. Part 1: Reaction optimization and synthesis. Carbohydr. Res., 340, 15, 2428-2435.

Ziobro, R., Gambus, H., Gumul, D., Praznik, W., Jankowski, T. (2005): Phase transistios of potato starch hydrolysates dffering in branching characteristics. Electronic Journal of Polish Agricultural Universities, 8, issue 3. ISSN 1505-0297.

## 2004

Graziani, A., Zamyatina, A., Kosma, P. (2004): A convenient synthesis of GDP D-glycero-alpha-D-manno-heptopyranose. Carbohydrate Research, 339, 1, 147-151.

Kosma, P. (2004): Bacterial polysaccharides of biomedical importance. Das Papier, T, 74.

Gregor, W., Adelwöhrer, C., Rosenau, T., Grabner, G., Gille, L. (2004): Antioxidant properties of chromanols derived from vitamin E and ubiquinone. *Ann. N.Y. Acad.Sci.* 1031, 344-347.

Mazzini, F., Mandolini, A., Salvadori, P., Netscher, T., Rosenau, T. (2004): Approaches to the preparation of 4-benzyloxy-2-(a,a,a-D3)-methylphenol, a building block for labeled d-tocopherol, and a new synthesis of R,R,R-5-D3- $\alpha$ -tocopherol. *Eur. J. Org. Chemistry*, 2004, 4864-4869.

Mucha, J., Domlatil, J., Lochnit, G., Rendic, D., Paschinger, K., Hinterkörner, G., Hofinger, A., Kosma, P. and Wilson, I.B.H. (2004): The *Drosophila melanogaster* homologue of the human histo-blood group Pk gene encodes a glycolipid-modifying  $\alpha$ 1,4-N-acetylgalactosaminyltransferase. *Biochem. J.*, 382, 67-74.

Rosenau, T., Adelwöhrer, C., Hofinger, A., Mereiter K., Kosma, P. (2004): 3-Tocopherylisoxazolines by [2+3] cycloaddition. *European Journal of Organic Chemistry*, 2004, 1323-1329.

Rosenau, T., Mereiter, P., Jäger, C., Schmid, P., Kosma, P. (2004): Sulfonium ylides derived from 2-hydroxybenzoquinones: crystal and molecular structure and their one-step conversion into Mannich bases by amine N-oxides. *Tetrahedron*, 60, 27, 5719-5723.

Stolze, K., Udilova, N., Rosenau, T., Hofinger, A., Nohl, H. (2004): Spin adducts of several N-2-(2-alkoxycarbonyl-propyl)-a-pyridyl nitron derivatives with superoxide, alkyl and lipid-derived radicals. *Biochem. Pharmacol.*, 68, 185-193.

Zamyatina, A., Sekljic, H., Brade, H., Kosma, P. (2004): Synthesis and purity assessment of tetra- and pentaacyl lipid A of *Chlamydia* containing (R)-3-hydroxyicosanoic acid. *Tetrahedron*, 60, 52, 12113-12137.

## Patents

Rosenau, T., Potthast, A., Liebner, F., Kosma, P., Wimmer, R. (2006) Cellulosic bodies by solvent and supercritical extraction from Lyocell solutions of cellulose derivatives and their application as bone replacement material. *Dienstleistungsmeldung to BOKU*, December 2006

Potthast, A., Henniges, U., Schwanniger, M. (2006) Methode für die zerstörungsfreie Bestimmung des Carbonyl- und Carboxylgruppengehaltes, der mittleren Molmasse, des Oberflächen-pH-Wertes, der Papierdicke und des Weißgrades von Zellstoffen und Papieren, *Dienstleistungsmeldung to BOKU*, Sept. 2006, *Aufgriff der Dienstleistungsmeldung durch die BOKU*, October 2006

**Conference & workshop proceedings, abstracts****2006**

Abad-Romero, B., Leitner, C., Rosenau, T., Potthast, A., Kosma, P., Haltrich, D., Sixta, H. (2006): From xylan to valuable low molecular oligosaccharides: isolation and derivatization. 10. Österreichischer Kohlenhydrat-Workshop, Vienna, Feb. 16, 2006.

Abad-Romero, B., Leitner, C., Rosenau, T., Potthast, A., Kosma, P., Haltrich, D., Sixta, H. (2006): Biomass derived pentoses, October 22-25, 2006, Reims, Frankreich, Abstr. 55 (Poster)

Abad Romero, B., Leitner, C., Rosenau, T., Potthast, A., Kosma, P., Haltrich, D.; Sixta, H. (2006): Preparation of high-value compounds from xylan: synthesis and derivatization of xylooligomers. Proceedings, 9th European Workshop on Lignocellulosics and Pulp, Aug 27-30, 2006, Vienna, Proceedings, 235-238.

Adorjan, I., Zhou, Z., Jääskeläinen, A.-S., Potthast, A. (2006): Influence of carbonyl groups on the brightness reversion of Eucalyptus Kraft pulp. 9th European Workshop on Lignocellulosics and Pulp, August 27-30, Vienna; Proceedings, 134-137.

Balla, E., Kosma, P. (2006): 10. Synthese von 2-Desoxy-heptose Derivaten Österreichischer Kohlenhydrat-Workshop, Vienna, Feb. 16, 2006.

Henniges, U. (2006): Feuchtigkeitsinduzierte Transportvorgänge von Übergangsmetallionen im Papier. „Wasser“ 20. Tagung des Österreichischen Restauratorenverbandes. MAK Wien, 10.-11.11.2006

Herrmann, A. (2006): Taube F. (Hrsg.), 49. Jahrestagung "Nachwachsende Rohstoffe im Pflanzenbau", 19. - 21. September, Rostock, Mitteilungen der Gesellschaft für Pflanzenbauwissenschaften, 18, 238-239; ISBN: 978-3-88312-411-7; ISSN 0934-5116.

Huber, A., Praznik, W. (2006): Molecular and Supermolecular Characteristics of Polysaccharides in Aqueous Media. XIV Internat. Starch Convention Cracow-Moscow, June 20-24, Cracow, Poland

Huber, A., Praznik, W. (2006): Polysaccharides: Molecular and Supermolecular Characteristics in Aqueous Media. 20th Internat. Conference on Macromolecules, June 11- 15, Bratislava, Slovakia

Kawada, T., Shimizu, K., Yoneda, Y., Rosenau, T. (2006): Synthesis of chito-dodecaose by polymerization of a starting chitobiose derivative. Proceedings, 9th European Workshop on Lignocellulosics and Pulp, Aug 27-30, 2006, Vienna.

Kosma, P., Sixta, G., Brade H. (2006): Probing the contribution of carboxylic groups towards antibody binding of chlamydial LPS epitopes. In: National Research Council Canada: XXIIIrd International Carbohydrate Symposium, July 23-27, Whistler 2006, Book of Abstracts, 243 (Lecture)

Liebhard, P., Praznik, W., (2006): Einfluss unterschiedlicher Standortbedingungen auf langjähriges Ertragsverhalten und auf ausgewählte Qualitätskriterien von *Miscanthus sinensis* "Giganteus" in Österreich. In: Löppert, R., Praznik, W., Ciesik, E., Huber, A. (2006): Healthy Effects of Fructans and their Potential for Human Nutrition. Internat. Workshop 'Agave a plant with future', May 10-12, Guadalajara, Mexico

Müller-Loennies, S., Brade, L., MacKenzie, C.R., Kosma P., Gerstenbruch, S., Brade, H. (2006): Molecular basis of specificity and cross-reactivity of antibodies against highly charged Kdo-oligosaccharides from *Chlamydiae*. In: National Research Council Canada: XXIIIrd International Carbohydrate Symposium, July 23-27, Whistler 2006; Book of Abstracts, 246 (Lecture).

Novotna, A., Praznik, W., Kasinska, M., Ziobro, R., Gambus, H., Buksa, K., Golachowski, A., Zubek, M., Achremowicz, B. (2006): The properties of starch under prolonged solubilization. XIV Internat. Starch Convention Cracow-Moscow, June 20-24, Cracow, Poland

Schabussova, I., Graininger, J.R., Amer, H., Kosma, P., Maizels R.M. (2006): Novel O-methylated glycans from *Toxocara* modulate dendritic cell phenotype and function via TLR, 11th International Congress on Parasitology, August 6-11, 2006, Glasgow, UK (Poster)

Sixta, G., Kosma, P. (2006): Derivatization of the aglycon chain of the *Chlamydia*-specific disaccharide (2-8) $\alpha$ Kdo-(2-OAllyl). 10. Österreichischer Kohlenhydrat-Workshop, Vienna, Feb. 16, 2006.

Reid, C.W., McNally, D.J., Hul, J., Graziani, A., Michael, F.St., Kosma, P., Brisson, J.R., Soo, E., Szymanski, C. (2006): Biosynthetic pathway of GDP-D-glycero- $\alpha$ -L-gluco-heptose from *Campylobacter jejuni*, Glycobiology 2006, 15-18 November, Los Angeles, USA (Poster).

Rosenau, T., Potthast, A., Kosma, P. (2006): Cellulosic fibers modified with slow-release reagents. Abstracts, Zellcheming, June 26-27, 2006, Wiesbaden, Germany.

Rosenau, T., Potthast, A., Kosma, P. (2006): Isolation and identification of residual chromophores from cellulosic material, Proceedings 17-21. Proceedings, 9th European Workshop on Lignocellulosics and Pulp, Aug 27-30, 2006, Vienna.

Rosenau, T., Potthast, A., Kosma, P. (2006): Cellulose fibers with switchable slow-release of medically active substances. Proceedings, IUPAC ICGC-1, 1st International IUPAC Conference on Green-Sustainable Chemistry, Sept. 10-15, 2006, Dresden, Germany, p. 126.

Rosenau, T., Potthast, A., Kosma, P. (2006): Cellulose fibers with switchable slow-release of medically active substances. Proceedings, MCC 2006, International Conference and Exhibition on Green Chemistry, Sept. 19-22, 2006, Kulala Lumpur, Malaysia, p. A 9.

Rosenau, T., Potthast, A., Kosma, P. (2006): Isolation and identification of chromophores from cellulosic materials. Proceedings, MCC 2006, International Conference and Exhibition on Green Chemistry, Sept. 19-22, 2006, Kuala Lumpur, Malaysia, p. A 20.

Rußler, A., Potthast, A., Rosenau, T., Sixta, H., and Kosma, P. (2006): Approaches for new methods in analysis of cellulose xanthate substituents. In: Thuringian Institute of Textile and Plastics Research (TITK), 7th International Symposium, Alternative Cellulose - Manufacturing, Forming, Properties, Rudolstadt, Sept. 6-7, 2006.

Potthast, A., Rosenau, T., Kosma, P. (2006): Advances in the characterization of cellulose: profiling of functional groups. Proceedings, MCC 2006, International Conference and Exhibition on Green Chemistry, Sept. 19-22, 2006, Kuala Lumpur, Malaysia, p. A 21.

Potthast, A. (2006): New strategies in chemical analysis of pulp and paper. Conference: Save Paper! 15.2.-17.02.2006, Bern; Swiss National Library.

Potthast, A. (2006): Advanced methodology in cellulose and paper analytics. International Seminar – Impact of loan traffic on works of art Berlin, September 4-5th, 2006, Berlin, Germany

Praznik, W. (2006): The Potential of Fructan Plants for Food and Non-Food Application. Internat. Workshop: Agave a plant with future, May 10-12, Guadalajara, Mexico

Praznik, W. (2006): Characterization of Agave Honey and Juice. Internat. Workshop: Agave a plant with future, May 10-12, Guadalajara, Mexico

Praznik, W., Prohaska, T.H., (2006): Application of Isotope Ratio Methods for Origin Analysis. Internat. Workshop: Agave a plant with future, May 10-12, Guadalajara, Mexico

Praznik, W. (2006): Die Bedeutung der Biotechnologie für nachwachsende Rohstoffe. Regionale wiss. Konferenz, 22.-24. März, Wien

Praznik, W., Huber, A. (2006): Characterization of Starch Polysaccharides in Aqueous Systems: de facto molar masses vs supermolecular structures. 57. Starch Convention, April 26–28, Detmold, Germany

Praznik, W., Huber, A. (2006): Application of Chromatographic Techniques for Polysaccharide Characterization. In: Proceedings for XIV Internat. Starch Convention Cracow-Moscow (ed.: P. Tomasik), June 20-24, Cracow, Poland, in press

Praznik, W., Huber, A. (2006): Application of Chromatographic Techniques for Polysaccharides Characterization. XIV Internat. Starch Convention Cracow-Moscow, June 20-24, Cracow, Poland

Praznik, W., Löppert, R., Huber, A. (2006): Starch Glucans: Molecular and Supermolecular Characteristics in Aqueous Systems. Invited Lecture and poster, 2. Renewable Resources and Biorefineries Conference, September 6-8, York, England

Praznik, W., Löppert, R., Zangger, K., Huber, A. (2006): Molecular Structure and Dimension of Xylan from Various Sources. Poster, 2. Renewable Resources and Biorefineries Conference, September 6-8, York, England

Yoneda, Y., Rosenau, T. (2006): Synthesis of <sup>13</sup>C-labeled cellodextrins.10. Österreichischer Kohlenhydrat-Workshop, Vienna, Feb. 16, 2006.

## 2005

Balla, E., Graziani, A., Kosma, P. (2005): Synthesis of 2-deoxy-heptose phosphates. In: Institute of Chemistry, Slovak Academy of Sciences: 13th European Carbohydrate Symposium, 21-26 August, Bratislava; Book of Abstracts, P4; ISBN 8096935968.

Balla, E. (2005): Synthesis of 2-deoxy-heptose. 2nd Austrian-Hungarian Carbohydrate Conference, 24-26 May, 2005, Somogyaszaló, Hungary.

Huber, A., Praznik, W. (2005): Branching analysis of starch glucans. 2nd Int. Symp. on Sep.&Char of Nat and Synth Macromolecules, Feb. 2-4, Amsterdam/NL

Huber, A., Praznik, W. (2005): Molar mass distribution of starch glucans by absolute techniques: apparent to de facto values. 2nd Int.Symp. on Sep.&Char of Nat and Synth. Macromolecules, Feb. 2-4, Amsterdam/NL

Kawada, T., Yoneda, Y., Minato, K., Rosenau, T. (2005): Synthesis of a  $\beta$ -1,4-GlcNAc- $\beta$ -1,4-GIN chito-tetrasaccharide repeating unit. Book of Abstracts, Japanese-European Workshop on Cellulose and Functional Polysaccharides, BOKU, Vienna, September 11-14, 2005, 54-55 (P-21).

Kosma, P. (2005): Synthesis and antibody recognition of chlamydial glycolipid antigens. In: Institute of Chemistry, Slovak Academy of Sciences: 13th European Carbohydrate Symposium, August 21-26, Bratislava; Book of Abstracts, IL-2, Bratislava; ISBN ISBN8096935968.

Kosma, P., Brade, H., Evans, S. (2005): Synthesis and antibody recognition of chlamydial LPS epitopes. In: American Chemical Society: 229th ACS National Meeting, March 13-17, San Diego; CARB 28; ISBN ISBN0841239568.

Löppert, R., Praznik, W. (2005): Importance of different plant components for industrial usage. Socrates, IP-course: Renewable Biomaterials, April 11-22, Toulouse, France



Löppert, R., Praznik, W., Cieslik, E., Huber, A. (2005): Healthy effects of fructans and their potential for human nutrition. Socrates study program, April 5-7, Nitra, Slovakia

Löppert, R., Praznik, W., Cieslik, E., Huber, A. (2005): Occurance, structure and metabolism of fructans in plants; their response to environmental conditions. Socrates study program, April 5-7, Nitra, Slovakia

Müller-Loennies, S., Brade, L., MacKenzie, C.R., Kosma, P., Brade, H. (2005): Modulation of the hydrophobic interaction increases the specificity of antibodies against a highly charged lipopolysaccharide from *Chlamydomophila psittaci*. In: Institute of Chemistry, Slovak Academy of Sciences: 13th European Carbohydrate Symposium, 21-26 August, Bratislava; Book of Abstracts, OP 66; ISBN 8096935969.

Praznik, W. (2005): Methods for the characterization of polysaccharides. Socrates, IP course: Renewable Biomaterials, April 11-22, Toulouse, France

Praznik, W., Cieslik, E., Löppert, R., Huber, A. (2005): The healthy potential of jerusalem artichoke for their application in functional food. 18th Int. Congress of Nutrition, ICC, Sept. 19-23, Durban, South Africa

Praznik, W., Huber, A. (2005): Aminopyridine labeled glucans: an approach for determination of absolute MWD by SEC-analysis. Int. Confernce Renewable Resources and Biorefineries, Sept. 19-21, Ghent, Belgium

Praznik, W., Löppert, R., Unger, F. (2005): Analytical strategy for the characterization of plant gums considering *Ocimum Basilicum* as example. Int. Conference Renewable Resources and Biorefineries, Sept. 19-21, Ghent, Belgium

Rhomberg, S., Fuchsluger, C., Rendić, D., Paschinger, K., Kosma, P., Wilson, I.B.H. (2005): Reconstitution in vitro of the GDP-Fucose biosynthetic pathways of *Caenorhabditis elegans* and *Drosophila melanogaster*. In: XVIII International Symposium on Glycoconjugates (Abstract L141), September 4-9, 2005, Firenze, Italy; Glycoconjugate J., 22, 212.

Rosenau, T., Stanger, A., Kosma, P. (2005): Regioselectivity in oxidation of vitamin E-SIBL model versus Mills-Nixon effect. Book of Abstracts, American Chemical Society, 229th National Meeting, March 13-17, 2005, San Diego, USA, ORGN 11.

Schabussova, I., Balic, A., Gomez-Escobar, N., Kosma, P., Maizels, R. (2005): Products from Th2-inducing helminth parasites modulate DC phenotype and function. In: Anne O'Garra, Jacques Banchereau and Alan Sher, National Institute for Medical Research: Dendritic cells at the center of innate and adaptive immunity: eradication of pathogens and cancer and control of immunopathology, February 1-7, Vancouver, British Columbia.

Schabussova, I., Grainger, J., Amer, H., Kosma, P., Maizels, R. (2005): Novel O-methylated glycans from *Toxocara* modulate dendritic cell phenotype and function via TLR. In: Austrian Society for Allergology and Immunology: Annual Meeting of the Austrian Society for Allergology and Immunology, 1.12.-3.12, Graz, P25.

Sixta, G., Kosma, P. (2005): Docking studies of Kdo ligands to the binding site of a chlamydial specific monoclonal antibody. 2nd Austrian-Hungarian Carbohydrate Conference, 24-26 May, 2005, Somogyaszaló, Hungary.

Yoneda, Y., Kawada, T., Rosenau, T., Kosma, P. (2005): Synthesis of methyl 4'-O-methyl- $\beta$ -D-cellobioside-13C12 from D-glucose-13C6. Book of Abstracts, Japanese-European Workshop on Cellulose and Functional Polysaccharides, BOKU, Vienna, September 11-14, 2005, 86 (P-47).

Yoneda, Y., Kawada, T., Rosenau, T., Kosma, P. (2005): Synthesis of methyl 4'-O-methyl- $\beta$ -D-cellobioside-13C12 from D-glucose-13C6. 2nd Austrian-Hungarian Carbohydrate Conference, May 24-26, 2005, Somogyaszaló, Hungary.

Zamyatina, A., Sekljic, H., Brade, H., Evans, S.V., Kosma, P. (2005): Synthesis and antibody recognition of chlamydial lipopolysaccharide. In: Sugars in the synthesis of natural products, Paszkówka, Poland 8-13 June 2005, PL 16.

## 2004

Gille, L., Gregor, W., Rosenau, T., Nohl, H. (2004): Antioxidant properties of new vitamin E derivatives. 45. Frühjahrstagung der Deutschen Gesellschaft für Pharmazie und Toxikologie (DGPT), March 09 – 11, 2004, Mainz, Germany.

Gille, L., Gregor, W., Rosenau, T., Nohl, H. (2004): Antioxidant Properties of New Vitamin E Derivatives. Naunyn-Schmiedeberg's Archives of Pharmacology 2004, 369 (suppl. 1), R137.

Graziani, A., Amer, H., Zamyatina, A., Kosma, P. (2004): Synthesis of analogs of ADP D-glycero-D-mannoheptose as potential enzyme inhibitors. In: Royal Chemical Society: 22nd International Carbohydrate Symposium, 23.-27. Jul, Glasgow; Book of Abstracts, P289.

Graziani, A., Amer, H., Zamyatina, A., Kosma, P. (2004): A straightforward approach to b-C-heptosyl phosphate analogs. In: Research Center Borstel, Leibniz-Center for Medicine and Biosciences: The Carbohydrate Workshop, 17.-20. März, Borstel, 20, Borstel.

Gregor, W., Adelwöhrer, C., Rosenau, T., Grabner, G., Nohl, H., Gille, L. (2004): Antioxidant properties of ubichromanol, ubichromenol and three new chromanols. In: Austrian Pharmacological Society: 10th Scientific Symposium, 23.-26. September, Wien.

Gregor, W., Adelwöhrer, C., Rosenau, T., Gille, L. (2004): Antioxidant properties of chromanols derived from vitamin E and ubiquinone. Vitamin E and Health, Boston, USA, May 22 – 24, 2004, P - 10.

Gregor, W., Adelwöhrer, C., Rosenau, T., Grabner, G., Gille, L. (2004): Reactive oxygen species and antioxidants. Summer Meeting SFRR-Europe Łódz, Poland, 02.-05. July 2004, p.129. New chromanol-type antioxidants and reinvestigation of ubiquinone-derived antioxidants.

Kovacova, E., Sekeyova, Z., Cmarko, D., Krauss, H., Mucha, V., Kosma, P. (2004): Development and characterization of the specificity of monoclonal antibodies to LPS epitopes in *Coxiella burnetii*. In: Medimont: Immunology 2004, 12th International Congress of Immunology and 4th annual Conference of FOCIS, 18.-23. Juli, Montreal; Proceedings, 133-137; Medimont S.r.l., Bologna; ISBN 88-7587-069-1.

Kosma, P., Graziani, A., Balla, E., Zamyatina, A., Messner, P. (2004): Biosynthesis of nucleotide-activated heptoses: new perspectives for structural biology and drug design. In: Endotoxin Society: 8th International Endotoxin Society Conference, November, Kyoto, Japan; J. Endotoxin Res., 10, 306; ISSN 0968-0519.

Rosenau, T. (2004): Vitamin E – a chemist's perspective on a healthy molecule. Lipid Research Conference, Kyoto, Japan, May 13 – 16, 2004, PL-1. International Lipid Research Award Lecture.

Stanger, A., Rosenau, T., Perl S., Ebner, G. and Nuri, L. (2004): Strain Induced Bond Localization (SIBL) in the Oxidation of Vitamin E. TACC conference, Gyeongju, Korea, Feb. 15 – 20, 2004.

Staniek, K., Rosenau, T., Gregor, W.; Nohl, H., Gille, L. (2004): Protektion oxidativ geschädigter Mitochondrien durch neue Chromanol-Derivate. 2. Xantener Gespräch zur Medizinisch-Biologischen Chemie: Von molekularen Wechselwirkungen zu Lebensvorgängen. Xanten, Germany, 09.-11. Dec. 2004.

Stolze, K., Udilova, N., Rosenau, T., Hofinger, A., Nohl, H. (2004): Detection of various oxygen- and carbon-centered radicals requires the development of novel spin traps. In: Austrian Pharmacological Society: 10th Scientific Symposium, 23.-26.Sept., Wien; Book of Abstracts.

Stolze, K., Udilova, N., Rosenau, T., Nohl, H. (2004): Increased Stability of Superoxide Radical Adducts of Different Pyridine-Substituted PBN Derivatives. Naunyn-Schmiedeberg's Archives of Pharmacology 2004, 369 (suppl. 1), R137.

Stolze, K., Udilova, N., Rosenau, T., Nohl, H. (2004): Very stable oxygen-centered radical spin adducts formed from 5-ethoxycarbonyl-3,5-dimethyl-pyrroline-N-oxide (EDPO-3,5) and its derivatives. Summer Meeting SFRR-Europe 2004 „Reactive oxygen species and antioxidants“. Łódz, Poland, 02.-05. July 2004, p. 252. Abstracts

Praznik, W., Huber, A. (2004): The Influence of Extrusion on the Molecular Weight Distribution on Starches. XII International Starch Convention Cracow-Moscow, June 14-18, Cracow, Poland

Praznik, W., Cieslik, E., Löppert, R., Huber, A. (2004): Structure and functionality of fructans from different plant sources. V. International Fructan Symposium, December 5-9, Havana, Cuba

Nowotna, A., Ziobro, R., Praznik W., Dubaj J., Placek, A., Gambus, H., Golachowski, A., Krawontka, J. (2004): Properties of starch maintained in DMSO for an extended time. XII International Starch Convention Cracow-Moscow, June 14-18, Cracow, Poland

Zamyatina, A., Sekljic, H., Brade, H., Kosma, P. (2004): Synthesis of chlamydial tetra- and penta-acyl lipid A. In: International Endotoxin Society: 8th Biennial Conference of the International Endotoxin Society, 15-18 November, Kyoto; J. of Endotoxin Research, 10, 305-306.; Maney, Leeds; ISSN 0968-0519.

## **Books and book chapters**

### **2006**

Sixta, H., Koch, G., Ressel, J.B., Potthast, A., Krottschek, A., Schwanninger, M., (2006): Handbook of Pulp. Wiley-VCH, Weinheim; ISBN 978-3-527-30999-3.

Rosenau, T. (2006): 2,2,5,7,8-Pentamethylchroman-6-ol (PMC) and related model compounds of vitamin E, in Encyclopedia of Vitamin E, Preedy, V.; Watson R. (eds.), CABI Publishing, Oxford, 2006, in press.

Rosenau, T. (2006): Chemical modification of  $\alpha$ -tocopherol, in Encyclopedia of Vitamin E, Preedy, V.; Watson R. (eds.), CABI Publishing, Oxford, 2006, in press.

Rosenau, T., Stanger A. (2006): From a theoretical concept to biochemical reactions: Strain Induced Bond Localization (SIBL) versus Mills-Nixon effect in oxidations of vitamin E., in Encyclopedia of Vitamin E, Preedy, V.; Watson R. (eds.), CABI Publishing, Oxford, 2006, in press.

Potthast, A., Rosenau, T., Kosma, P. (2006): Carbonyl and Carboxyl Profiles as Two Novel Parameters in Advanced Cellulose Analytics In Materials, Chemicals and Energy from Forest Biomass Materials, Chemicals and Energy from Forest Biomass, Argyropoulos, D. (ed.), ACS Symposium Series 954; Chapter 32, American Chemical Society, Washington, DC, (ISBN 08412-3981-9), 2006, in press.

Potthast, A., Rosenau, T., Kosma, P. (2006): Analysis of oxidized functionalities in cellulose, In Advances in Polymer Science: Polysaccharides II, Klemm, D. (ed.), Springer, Heidelberg, 2006, 205, 1-48.

Potthast, A., Rosenau, T., Kosma, P. (2006): Trapping of reactive intermediates to study reaction mechanisms in cellulose chemistry, in Advances in Polymer Science: Polysaccharides II, Klemm, D. (ed.), Springer, Heidelberg, 2006, 205, 153-197.

Kosma, P., Brade, H., Evans, S.V. (2006): Lipopolysaccharide antigens of Chlamydia. ACS Symposium Series, 2006, in press.

Praznik, W., Löppert, R., Huber, A. (2006) Analysis and Molecular Composition of Fructans from Different Plant Sources. In: Advances in Fructooligosaccharides, eds.: N. Shiomi, N. Benkeblia and S. Onodere. 2006 in press.

**2004**

Huber, A., Praznik, W. (2004): Contribution of size exclusion chromatography to starch glucan characterization. In: Wu, C. (Ed.) Handbook of size exclusion chromatography, 2nd Ed., Chpt 14, 385-437; Dekker, M., New York.

Huber, A., Praznik, W. (2004): Identification and Quantification of Renewable Crops Material. In: Stevens, C.V., Verhe, R. (Eds.), Renewable Bioresources: Scope and modification for Non-Food application, 138-159; John Wiley&Sons, Chichester; ISBN 0470854472.

Praznik, W., Stevens, C.V., Neratzis, E.T., Rymowicz, W., Kordowska-Wiater, M., Janas, P. (2004): Integral Valorization. In: Stevens, C.V., Verhe, R. (Eds.), Renewable Bioresources: Scope and modification for Non-Food application, 46-71; John Wiley&Sons, Chichester; ISBN 0470854472.

Publications are also available at [research information service](#)

**Research Activities Abroad**

Dubravko Rendić was guest in the laboratory of Michael Tiemeyer at the Complex Carbohydrate Research Centre in Athens, Georgia, USA in order to learn more about fly genetics. 2006

Ute Henniges, STFI Stockholm, January 2006

Josef Voglmeir and Thomas Iskratsch, former diploma students from the laboratory, began PhD studies at respectively, the University of Manchester (with Prof. Sabine Flitsch) and King's College London (with Dr. Elisabeth Ehler). 2006

Iain Wilson was invited to talk at the International Symposium on Glycosyltransferases in Japan (June 2006) and at the Congress of the Croatian Society for Biochemistry and Molecular Biology (October 2006). He also held talks at the Veterinary University Vienna (April 2006) and at Nagaoka University (Japan), Shandong University (Jinan, China) and the Institute of Microbiology of the Chinese Academy of Sciences (Beijing, China) in June/July 2006; he was also again PhD examiner for a thesis at the University of Edinburgh.

Martina Zederbauer

3 months at the Department of Pharmaceutical Chemistry at the University of California, 2006

Axel Rußler,

1 month at the BFH Hamburg, 2005

Walter Jantschko

1 month at the Laboratorium für Anorganische Chemie, ETH Zürich, Switzerland, 2004

## External Teaching Activities

Martin Gutternigg

is responsible for the biochemistry practical for the evening course in Bioengineering offered by the Fachhochschule Favoriten

Christina Haberhauer-Troyer

is lecturer of the FH-degree program "Bioengineering" at the FH Campus Wien

Antje Potthast

is lecturer of the FH-degree program "Biotechnical Processes" in Tulln, Austria which is organized by the University of Applied Sciences at Wiener Neustadt (Fachhochschule Wiener Neustadt).

"Technologie der Zellulose", since 2005, 2 h, WS

Thomas Prohaska

is lecturer of the FH-degree program "Biotechnical Processes" in Tulln, Austria which is organized by the University of Applied Sciences at Wiener Neustadt (Fachhochschule Wiener Neustadt).

"General and Inorganic Chemistry"

Werner Praznik

Summer course: Carbohydrates: Characterisation and their Role in Human Nutrition, Department for Food Science, University of Arkansas, Fayetteville, USA, (19. 7. – 15. 8. 2004)

Werner Praznik, Renate Löppert

Socrates study program: Characterization of fructan and their application in food, Agricultural University, Nitra, Slovakia, (10. –12.5. 2004 and 12. – 15. 4. 2005)

Werner Praznik, Renate Löppert

Socrates, IP-course: Renewable Biomaterials, Polysaccharides: Analysis and Characterization, (12.–24. 4. 2005, Toulouse; 09-22.1. 2006, Ghent)

Werner Praznik, Renate Löppert

Socrates, IP-course: Food and Consumer, Healthy effects of Fructans and their potential as functional food, (30. 1. – 10 .2. 2006, Budapest)

Werner Praznik, Renate Löppert

Course for Carbohydrate analysis, University of Guadalajara, Mexico

Thomas Rosenau

EPNOE Summer Course: Cellulosic Fibers, 2006

Manfred Schwanninger

is lecturer of the FH-degree program "Bioengineering" at the FH Campus Wien

Gerhard Stinger

is lecturer of the FH-degree program "Biotechnical Processes" in Tulln, Austria which is organized by the University of Applied Sciences at Wiener Neustadt (Fachhochschule Wiener Neustadt).

"General and Inorganic Chemistry"

Petra Viehauser

is lecturer of the FH-degree program "Bioengineering" at the FH Campus Wien

## Habilitation Theses

Paul G. Furtmüller for Biochemistry (2006)

Lecture: Biogene Halogenierung: Über die physiologische Rolle humaner Peroxidasen

Stephan Hann for Analytical Chemistry (2005)

Lecture: Analysis of platinum group elements in environmental and biological matrices by inductively coupled plasma mass spectrometry

## Awards

Daniel Kolarich und Renaud Léonard

2005 Förderpreis des Theodor-Körner-Fonds; Österreich

Antje Potthast

2005 Zellcheming Nachwuchspreis; Deutschland

Thomas Prohaska

2004 Start Preis

2006 Viennovationspreis

Gerald Pörtl

won fourth prize in the Dialog Gentechnik Press Release Prize for his text "Hygiene wurmt das Immunsystem", which was published by APA on their website

Thomas Rosenau

2004 International Lipid Research Award

## External Lectures and Seminar Talks

Renate Löppert

Fruktanpflanzen und ihre gesundheitsfördernden Eigenschaften

University meets public (UMP), Vienna, March, October, December 2006

Paul Kosma

University of Trondheim, Department of Biotechnology, NTNU, October 26, 2006

“Advanced analytics of cellulose”

Paul Kosma

University of Vienna, Institute of Analytical Chemistry

„Fortschritte in der Analytik von Zellstoff und Papier“, June 8, 2006

Paul Kosma

Synthesis and antibody recognition of chlamydial lipopolysaccharide

Sugars in the synthesis of natural products, Paszkówka, Poland 8-13 June 2005

Paul Kosma

TU Wien, Institut für Angewandte Synthesechemie, April 28, 2005

Synthese und Immunbiologie bakterieller Glykolipid-Antigene

Paul Kosma

Carlsberg Laboratories, Copenhagen, June 18, 2004

Chemical synthesis and antibody recognition of chlamydial glycolipid antigens

Paul Kosma

Synthesis, biomolecular structure and antigenicity of bacterial glycolipids

University of Chemical Technology, Prague, Czech Republic, May 6, 2004.

Andrea Graziani, Hassan Amer, Alla Zamyatina, Paul Kosma

A straightforward approach to  $\beta$ -C-heptosyl phosphate analogs

The Carbohydrate Workshop, March 17-20, 2004, Borstel, Germany.

Christian Obinger

Machern, Leipzig, September 2006

Mechanismus der Halogenid- und Nitrit-Oxidation durch humane Peroxidasen

Christian Obinger, Martjan Zederbauer, Paul Furtmüller

AstraZeneca, London December 2005

Structure and function of human peroxidases



Antje Potthast

Gordon Research Conference, June 2005, Hong-Kong

Workshop "Tintenfraß", Akademie der Bildenden Künste, 7.-8. Juli 2005

Analytik Seminar STFI Stockholm, 4.-5. April 2005

COST E41 Meeting, Stockholm, 7.-8. November 2005

Werner Praznik

Carbohydrates: Characterisation and their Role in Human Nutrition, Department for Food Science, University of Arkansas, Fayetteville, USA, Sommer course/Special Topic, 19.7. – 15.8.2004

Werner Praznik

Die Bedeutung der Biotechnologie für nachwachsende Rohstoffe.

Regionale wiss. Konferenz, 22.-24. March, 2006, Vienna

Thomas Rosenau

Lyocell Workshop, Dornbirn, 19.-20. April 2005

## Press Reports

Thomas Prohaska

Kurier Oktober 2006, Woran starb Beethoven wirklich?

ORF/ARTE-Mozart – eine Spurensuche

2004 ARTE-Documentation: Beethovens Hair

2004 ARTE-Documentation: Die Völkerwanderung

Ö1 Wissen aktuell 13:55 – Bericht über START Preisträger 2004, Interview

Paul Kosma

Siemens High-Tech, Dezember 2004, Wie Zellstoff reagiert

Austria Innovativ 3/2005, Intelligente Fasern für den High-tech-Textilmarkt

Die Presse 6. Okt. 2005, Mikroanalytik von Zellstoff und Papier

## Invited Speakers

Chmielewski, M.

Academy of Sciences, Warsaw, October 2005

Chemistry of sugar  $\delta$ -lactones

De la Rosa, M. A.

Instituto de Bioquímica Vegetal y Fotosíntesis, Universidad de Sevilla, April 2006

Protein Evolution has been Driven by Geochemical Changes: From Cytochrome  $c_6$  to Plastocyanin

Henniges U.

PAL Leipzig, July 2004

The science of paper restoration

Kolar, J. Strlic, M.

National and University Library and Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia, June 2005

Advances in paper and ink analysis

Lendl, B.

Institut für Analytische Chemie der Technischen Universität Wien, 8. March 2006

Strategien zur zeitaufgelösten FTIR-Spektroskopie von chemischen Reaktionen in der Lösung

Nagl, C.

Umweltbundesamt Wien, May 2005

Umweltproblematik Feinstaub

Navard, P.

Ecole des Mines, Centre de Mise en Forme des Matériaux, Sophia Antipolis, France, January 2005

Dissolution, crystallisation and regeneration of cellulose in N-methylmorpholine N-oxide

Rein, H.

Institut für Pharmazeutische Chemie, Universität Bonn, June 2006

Stärke in der Pharmazie

Reschetilowski, W.

TU Dresden, March 2006

Katalyse- das A und O der Grünen und Nachhaltigen Chemie

Schabussova, I.

Vienna General Hospital, Center of Physiology & Pathophysiology, Division of Immunopathology, March 2006

Toxocara canis: Sweet trouble

## Scientific Events

### 2006

Paul Kosma, Thomas Rosenau, Antje Potthast

Organizers of the 9th European Workshop on Lignocellulosics and Pulp (EWLP). 27.-30. August, 2006 at BOKU

- University of Natural Resources and Applied Life Sciences, Vienna, Austria, (165 participants)



EWLP 2006



10. Österreichischer Kohlenhydratworkshop, 16. 2., BOKU Wien

Christian Obinger

Member of the scientific and organizing committee of a Satellite Meeting on Plant peroxidases held at the 8th European Biological Chemistry Meeting (EUROBIC 8) in Portugal

Antje Potthast

COST E41 Meeting, BOKU Vienna, August 31 – September 1, 2006, (50 participants)

Werner Praznik

Workshop – Agave a plant with future, University of Guadalajara, Mexico, May 10-12, 2006

Course for Carbohydrate analysis, University of Guadalajara, Mexico, May 16-17, 2006

Gerhard Stingeder, Gunda Köllensperger, Stephan Hann, Thomas Prohaska

Edelmetallforum 2006, May 22 - 23, 2006, Museum of Natural History, Vienna

**2005**

Paul Kosma, Thomas Rosenau, Antje Potthast

Organizers of the Japanese-European Workshop on Cellulose and Functional Polysaccharides. 12.-15. September 2005 at BOKU - University of Natural Resources and Applied Life Sciences, Vienna, Austria (90 participants)

**2004**

Christian Obinger

Coordinator of the COST CHEMISTRY working group action D21-02, Metalloenzymes and chemical biomimetics; Sub-topic: Small molecules activation at biological and biomimetic metal centres.

Werner Praznik

1. Minisymposium für Nachwachsende Rohstoffe und Erneuerbare Energien, 4. June 2004 (70 participants)

Iain Wilson

was member of the International Advisory Board for the International Symposium on Glycosyltransferases (November 4 - 6, 2004, Le Touquet, France)

**Other External Activities of the Members of the Department****2006**

Leopold März

President of directorate of the Österr. Agentur für Gesundheit und Ernährungssicherheit GesmbH (AGES)

Research consultant of the BMLFUW

President of the Association for European Life Sciences Universities (ICA)

President of the Fachhochschulrat

Member of the ORF-Publikumsrat and the ORF-Stiftungsrat

Paul Kosma

Member Board of the Austrian Science Fund (till 2005), Delegate of BOKU in Austria Sciences Fund, Member of the Governing Boards of European Polysaccharide Network of Excellence, National representative of Austria in the European (ECO) and International Carbohydrate Organization (ICO), Member of Zellcheming-Fachausschuss (Germany), Member of Editorial Boards of Journal of Endotoxin Research, Carbohydrate Research

Antje Potthast

Member Management Committee COST E41 and E54

Werner Praznik

Member of executive board of Austrian Biotechnological Society,

Member of Advisory Board of Starch/Stärke

Member of Starch Experts Group, Germany

Thomas Prohaska:

June 2002 – onward: expert for the IMEP (International Measurement Evaluation Programme) educational programme of the European Commission

Thomas Rosenau

Member Editorial Board: Cellulose, Member Advisory Board Holzforschung,

Member of the Executive Committee of the European Workshop on Lignocellulosics and Pulp

## 2005

Thomas Prohaska:

May 2005 – onward – Austrian ambassador for the European Commission TrainMiC program

Thomas Prohaska:

Dec. 2005 – onward – Member of the EURACHEM WG for education and training

Iain Wilson

was examiner for a PhD thesis at the University of Edinburgh (2005).

## 2004

Thomas Prohaska:

Oct. 1999 – Jan. 2004 – Official speaker of the German speaking (D-A-CH) ICP-MS user group

Gerhard Stingeder

is member of the board of the Austrian Society of Analytical Chemistry.

Iain Wilson

is since 2004 member of the Editorial Advisory Board of the Biochemical Journal; both Iain Wilson and Prof. Leopold März continue to be members of the Editorial Board of Glycoconjugate Journal.

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Support in data collection and proof-reading by Iain B. H. Wilson and Paul G. Furtmüller is very much acknowledged.

## Impressum

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