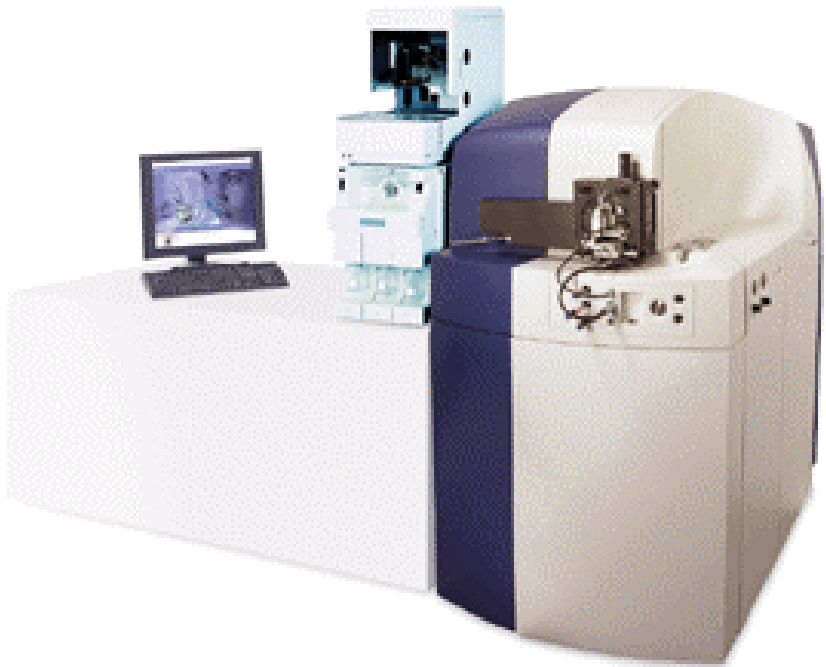


Report

2001-2003

Institute of Chemistry

BOKU - University of Natural Resources
and Applied Life Sciences,
Muthgasse 18, 1190 Vienna, Austria



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The cover displays the Micromass Q-ToF Ultima GLOBAL with a hybrid quadrupole/orthogonal acceleration Time-of-Flight mass spectrometer (Q/oa-TOF MS) fitted with a unique software switchable dual mode source

Preface

Looking back at the time period since the last edition of this report in 2000, one may safely state that during these three years numerous and far-reaching developments have taken place within the University system in Austria. At the University of Natural Resources and Applied Life Sciences (replacing the former name as University of Agricultural Sciences) these changes also pertain to the introduction of new curricula in the studies of Food- and Biotechnology, Civil Engineering and Water Management and Forestry, which starting from the winter term 2003 are performed as new Bachelor and Master programs.

The Institute is taking a heavy teaching load in particular for the former study, which shows a record number of first year students this year. Moreover, the institute supports the new Fachhochschulstudiengänge ("Biotechnische Verfahren" and "Bioengineering") by giving lectures and through the organisation and supervision of chemical laboratory courses.

Initiatives have been started to supply our students with electronic learning devices and web-based lectures. The outstanding support by all members of the scientific, technical and administrative staff in managing these teaching duties is highly appreciated.

Ao.Univ.Prof.Dipl.-Ing. Erika Staudacher has taken over the responsibility as Vice-Rector of studies and our best wishes are extended to her in fulfilling this important official duty.

Despite the intensive teaching activities, research has also flourished, which is reflected in the increasing number of publications in top journals and the successful endeavours to obtain national and international grants. Five members of the scientific staff have been appointed as lecturers (Habilitation): Dr. Iain Wilson for Biochemistry, Dr. Thomas Prohaska for Analytical Chemistry, Dr. Thomas Rosenau for Organic Chemistry, Dr. Antje Potthast for Wood Chemistry and Dr. Gunda Köllensperger for Analytical Chemistry. The high level of instrumentation has been further strengthened by the acquisition of EPR- and CD-spectrometers as well as a Laser-Ablation ICP mass spectrometer and a Waters Micromass Q-TOF LC-MS/MS spectrometer, which is depicted on the cover page of the report.

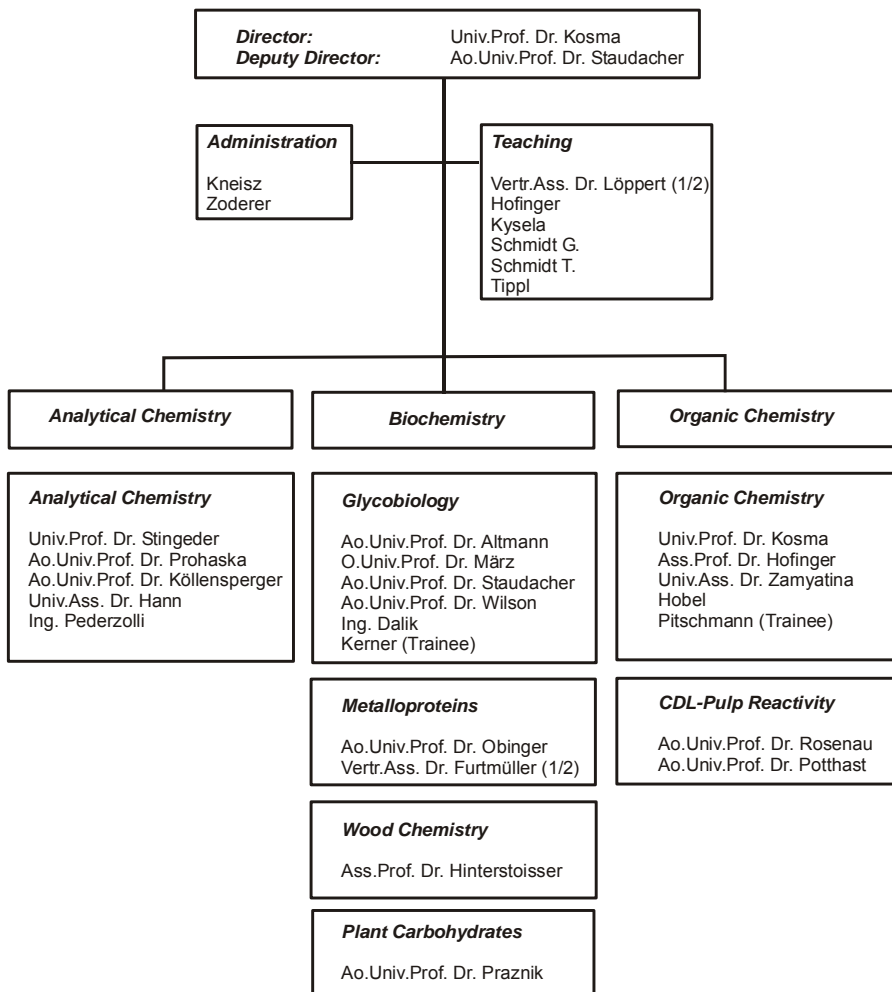
With the return of Rector O.Univ.Prof.Dipl.-Ing.Dr.Dr.h.c. Leopold März to his former position at the institute and the implementation of new department development programs, also a reallocation of the inner structure of the institute will take place. Thus, a tripartite internal structure will be established and named following the conventional description of chemical disciplines (Analytical Chemistry, Biochemistry, Organic Chemistry). The research and teaching activities, however, will be deeply rooted into the manifold and specific requirements of the University and the new departments.

Finally, on behalf of the institute I would like to express our gratitude towards the university, the cooperating partners and funding institutions for continuous support and help which will be needed also in forthcoming years.

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

Organigram

ORGANIGRAM (until 2003)



Personnel

Director of Institute

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

Deputy Director of Institute

Ao.Univ.Prof. Dipl.-Ing. Dr. Erika Staudacher

Full professor

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

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

Associate professors

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

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

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

Ao.Univ.Prof. Dipl. Chem. Dr. Antje Potthast

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

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

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

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

Assistant professors

Ass.Prof. Univ.Ass. Mag. Dr. Barbara Hinterstoisser

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

Vertr.Ass. Dipl.-Ing. Dr. Ursula Burner, part time, until 2001

Univ.Ass. Dipl.-Ing. Dr. Stephan Hann

Univ.Ass. Mag. Dr. Michael Puchberger, until 2001

Univ.Ass. Dipl.-Ing. Dr. Jürgen Röhrling, until 2003

Univ.Ass. Dr. Alla Zamyatina, since 2003

Vertr.Ass. Dipl.-Ing. Dr. Paul G. Furtmüller, part time, since 2001

Vertr.Ass. Dr. Renate Löppert, part time

Secretary

Lucia Kneisz, since 2002

Petra Posch, until 2002

Martina Zoderer



Technical Staff

Ing. Thomas Dalik

Maria Hobel

Ing. Alexandra Pederzoli

General Laboratory Staff

Monika Marek, part time, until 2003

Alexandra Hofinger

Andrea Kysela, part time

N.N., part time

Gernot Schmidt

Thomas Schmidt

Alexander Tippl, part time until 2001



Trainees

Susanne Egelseer, until 2002

Denise Kerner

Andreas Pitschmann

Martin Rohrer, until 2002

External Lecturers

O.Univ.Prof. Dr. Josef Leibetseder

Univ.Do. Dr. Bernhard Fischer

Ao.Univ.Prof. Dipl.-Ing. Dr. Karl Stich

Univ. Prof. Dr. Frank Unger

Ass. Prof. Dr. Juliane Paschinger

Dipl.-Ing. Manfred Schwanninger

Dipl.-Ing. Oliver Szolar

Demonstrators (Lektoren) 2001-2003

Dipl.-Ing. Christian Adelwöhrer

Dipl.-Ing. Immanuel Adorjan

Dipl.-Ing. Sabine Bürgmayr

Dipl.-Ing. Rainer Bohm

Dipl.-Ing. Martin Gutternigg

Mag. Dr. Christa Jakopitsch

Dipl.-Ing. Walter Jantschko

Dipl.-Ing. Katharina Kanitsar

Dipl.-Ing. Daniel Kolarich

Mag. Dr. Johanna Nurmi
 Dipl.-Ing. Katharina Paschinger
 Dipl.-Ing. Martina Paumann
 Mag. Gerald Pötl
 Dipl.-Ing. Gerald Schultheis
 Mag. Dr. Günther Regelsberger
 Mag. Elisabeth Rudolph
 Dipl.-HW. Axel Rußler
 Dipl.-Ing. Manfred Schwanninger
 Dipl.-Ing. Martina Zederbauer

(Project) Personnel

M.Sc. Dr. Hassan Amer	ÖAD-Fellowship, FWF, Austrian Science Fund, until 2002
Dipl.-Ing. Christian Adelwöhrer	Christian Doppler-Laboratory
Dipl.-Ing. Immanuel Adorjan	Christian Doppler-Laboratory
Dipl.-Ing. Peter Bencúr	FWF, Austrian Science Fund
Dipl.-Ing. Monika Bencúrová	FWF, Austrian Science Fund
Dr. Elena Berger-Nicoletti	Christian Doppler-Laboratory, until 2002
Dipl.-Ing. Günter Bindeus	BOKU-Research grant, until 2002
Dipl.-Ing. Rainer Bohrn	Christian Doppler-Laboratory
Dipl.-Ing. Sabine Bürgmayr	FWF, Austrian Science Fund, until 2003
Gerald Ebner	Christian Doppler-Laboratory, until 2001
Dipl.-Ing. Andrea Graziani	FWF, Austrian Science Fund
Dipl.-Ing. Martin Gutternigg	FWF, Austrian Science Fund
Dipl.-Ing. Dr. Gustáv Fabini	FWF, Austrian Science Fund, until 2002
Dipl.-Ing. Dr. Paul G. Furtmüller	FWF, Austrian Science Fund, part time
Mag. Dr. Christa Jakopitsch	FWF, Austrian Science Fund
Dipl.-Ing. Walter Jantschko	FWF, Austrian Science Fund
Dipl.-Ing. Katharina Kanitsar	FWF, Austrian Science Fund
Mag. Alexandra Kedzierski	Research Fellowship
Dipl.-Ing. Daniel Kolarich	Shared Cost Action (EU)
Dr. Mirjana Kostic	Christian Doppler-Laboratory
Dr. Thomas Lange	Marie-Curie-Fellowship (EU), Christian Doppler-Laboratory
Dipl.-Ing. Katharina Lenz	FWF, Austrian Science Fund
Dr. Renaud Léonard	FWF, Austrian Science Fund
Dipl.-Ing. Roland Möslinger	Christian Doppler-Laboratory, until 2002
Mag. Dr. Johanna Nurmi	FWF, Austrian Science Fund
Dipl.-Ing. Katharina Paschinger	FWF, Austrian Science Fund
Dipl.-Ing. Martina Paumann	FWF, Austrian Science Fund
Karin Polacsek	Funded by the Institute
Mag. Dr. Günther Regelsberger	FWF, Austrian Science Fund, until 2002
Dipl.-Ing. Dubravko Rendić	Neose Technologies (USA)

Dr. Thomas Röder	Christian Doppler-Laboratory, until 2002
Mag. Elisabeth Rudolph	FWF, Austrian Science Fund
Dipl.-HW. Axel Rußler	Christian Doppler-Laboratory
Dipl.-Ing. Jürgen Sartori	Christian Doppler-Laboratory
Dr. Sonja Schiehser	Christian Doppler-Laboratory
Peter Schmid	Christian Doppler-Laboratory
Dipl.-Ing. Gerald Schultheis	FWF, Austrian Science Fund
Dipl.-Ing. Manfred Schwanninger	Wood K plus (Public / Industry) / FWF, Austrian Science Fund
Dipl.-Ing. Susanne Siebenhandl	BOKU-Research grant, until 2002
Dr. John Sjöberg	Christian Doppler-Laboratory
Mag. Christina Stadlbauer	Research Fellowship
Dipl.-Ing. Barbara Stefke	Wood K plus (Public / Industry) until 2002
Dr. Tatiana Kirpenko	FWF, Austrian Science Fund, until 2002
Dr. Norbert Wimmer	FWF, Austrian Science Fund, until 2001
Dipl.-Ing. Martina Zederbauer	FWF, Austrian Science Fund
Mag. Dr. Stefanka Zsolt	FWF, Austrian Science Fund

Lectures and Practical Courses

The Institute of Chemistry takes part in the teaching of all five 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 2001 and 2002

<u>Lectures and Courses</u>	<u>Lecturers</u>	<u>Hours</u>	<u>Semester</u>
MANDATORY COURSES			
605.018 Introductory Course			
to General and Anal. Chemistry for LBT	G. Stingeder / J. Paschinger	VO 2	WS
605.019 Introductory Practical Course			
to General and Anal. Chemistry for LBT	Inst. Personnel	UE 2	WS
605.020 General and Inorganic Chemistry for LBT	G. Stingeder / T. Prohaska / G. Köllensperger	VO 4	WS
605.021 Analytical Chemistry for LBT	G. Stingeder / J. Paschinger	VO 4	1WS/3SS
605.023 Practical Course in Qualitative Inorganic Chemistry for LBT	Inst. Personnel	UE 8	SS
605.025 Practical Course in Quantitative Inorganic Analysis for LBT	Inst. Personnel	UE 8	WS
605.026 Organic Chemistry for LBT	P. Kosma	VO 3	WS
605.027 Practical Course in Organic Chemistry for LBT	Inst. Personnel	UE 2	1WS/1SS
605.022 Biochemistry for LBT	F. Altmann / C. Obinger / E. Staudacher	VO 5	3WS/2SS
605.028 Practical Course in Biochemistry for LBT	Inst. Personnel	UE 8	4WS/4SS
605.029 Food Chemistry for LBT	F. Ulberth / H. Mayer	VO 5	2WS/3SS
605.036 General and Inorganic Chemistry for LW	C. Obinger	VO 2	WS
605.039 Organic Chemistry and Biochemistry for LW	T. Rosenau / E. Staudacher	VO 3	SS
605.693 General Chemistry for KTWW/HW	B. Hinterstoisser	VO 3	WS
605.035 Organic Chemistry for HW	A. Hofinger	VO 2	SS
605.034 General Chemistry for HW	Inst. Personnel	UE 4	SS
425.025 Wood Chemistry	B. Hinterstoisser	VO 2	WS
605 037 Chemistry for LAP	A. Hofinger	VO 2	SS
OPTIONAL COURSES			
605.024 Environmental Analysis for LBT	Inst. Personnel	VO 2	SS
605.286 Bioorganic Chemistry for LBT	P. Kosma	VO 2	SS
605.627 Seminar in Biochemistry for LBT	Inst. Personnel	SE 2	WS

605.682 Biochemical Methodology for LBT	E. Staudacher	VO 2	WS
605.008 Protein Chemistry for LBT	B. Fischer	VO 2	WS
605.308 Glycobiology for LBT	F. Altmann / I.B. Wilson	VO 2	SS
605.275 Nutrition Sciences for LBT	J. Leibetseder	VO 2	WS
605.374 Chemistry and Analysis of Nutritional Additives for LBT	W. Praznik	VO 2	SS
605.550 Plant Biochemistry for LBT	K. Stich	VO 2	WS
605.737 Molecular Biology of Plants for LBT/LW	K. Stich	VO 2	SS
605.038 Practical Course for LW	Inst. Personnel	UE 4	WS or SS

ADDITIONAL COURSES

605.031 Instrumental Methods in Analytical Chemistry	G. Stingeder	VO 3	1,5WS/1,5SS
605.032 Practical Courses Analytical Chemistry III for LBT	G. Stingeder	UE 4	WS or SS
605.037 Organic Chemistry for LAP	A. Hofinger	VO 2	SS
605.759 Selected Themes in Chemistry for KTWW	A. Hofinger	VO 2	SS
605.088 Practical Course KTWW	Inst. Personnel	UE 4	SS
605.016 Bioinorganic Chemistry for LBT	C. Obinger	VO 2	SS
605.660 Selected Themes in Plant Biochemistry for LBT	K. Stich	SE 2	WS
605.748 Selected Themes in Plant Molecular Biology for LBT	K. Stich	SE 2	SS
605.003 Seminar for Diploma Candidates for LBT	Inst. Personnel	DS 4	WS or SS
605.572 Seminar for Diploma Candidates for LBT	Inst. Personnel	DS 4	WS or SS
605.004 Seminar in Analytical Chemistry for PhD Candidates	G. Stingeder	SE 2	WS or SS
605.803 Seminar in Bioorganic Chemistry for PhD Candidates	P. Kosma	SE 2	WS or SS
605.041 Seminar in Bioinorganic Chemistry for PhD Candidates	C. Obinger	SE 2	WS or SS
605.015 Seminar in Biochemistry for PhD Candidates for LBT	F. Altmann / E. Staudacher	SE 2	WS or SS

For more details look at <http://www.lzk.ac.at/lva/H605.html>

List of abbreviations:

DS Seminar for Diploma Candidates
SE Seminar for PhD Candidates
VO Lecture Course
VP Lecture and Proseminar
UE Practical Course
WS Winter Semester
SS Summer Semester

LBT Food Science and Biotechnology
LW Agriculture
KTWW Land and Water Management and Engineering
FW/HW Forestry (FW) and Wood Technology (HW)
LAP Landscape Architecture and Planning

Lectures and courses 2003 (Bachelor- and Master- studies)

<u>Lectures and Courses</u>	<u>Lecturers</u>	<u>Hours</u>	<u>Semester</u>
MANDATORY COURSES			
605.101 Introduction to General Chemistry	G. Stingeder / T. Prohaska	VO 2	WS
605.102 Introductory Course to General Chemistry	Inst. Personnel	UE 2	WS
605.103 General and Physical Chemistry	G. Stingeder / T. Prohaska / G. Köllensperger	VO 4	WS
605.104 Analytical Chemistry	G. Stingeder	VO 4	SS
605.105 Practical Course in Classical Analytical Chemistry	Inst. Personnel	UE 6	SS
605.106 Practical Course in Instrumental Analytical and Physical Chemistry	Inst. Personnel	UE 7	SS
605.107 Organic Chemistry for LBT	P. Kosma	VO 3	WS
605.108 Practical Course in Organic Chemistry	Inst. Personnel	UE 3	WS/SS
605.109 Basic Principles in Biochemistry	F. Altmann	VO 3	WS
605.112 Practical Course in Biochemistry I	Inst. Personnel	UE 5	WS/SS
605.036 General and Inorganic Chemistry for LW	C. Obinger	VO 2	WS
605.039 Organic Chemistry and Biochemistry for LW	T. Rosenau / E. Staudacher	VO 3	SS
605.119 General Chemistry	A. Hofinger / B. Hinterstoisser	UE 4	SS
605.120 Chemistry for LAP	A. Hofinger	VO 2	SS
605.150 Chemistry for KTW	B. Hinterstoisser	VO 3	WS
605.111 Biochemistry and microbial Physiology I	C. Obinger	VO 2	SS
605.123 Biochemistry and microbial Physiology II	C. Obinger / M. Sara	VO 2	SS
605.125 Chemical Technology NAWAROS	A.Poththast / H. Sixta	VO 2	SS
605.113 Bakkelaureatsseminar	N.N.	SE 2	WS/SS
605.150 Organic Chemistry for HW	A. Hofinger	VO 2	SS
OPTIONAL COURSES			
605.038 Practical Course in Chemistry for LW	Inst. Personnel	UE 4	WS/SS
605.117 Environmental Analytics	G. Stingeder / A. Loibner T. Prohaska / G. Köllensperger	VO 2	SS
605.116 Renewable Primary Products	W. Praznik	VO 2	WS
605.118 Stoichiometry	T. Prohaska	VU 2	WS/SS
605.300 Biophysical Chemistry	I.B. Wilson	VU 2	SS
605.301 Practical Course in Biochemistry II	Inst. Personnel	UE 5	WS/SS
605.302 Protein Chemistry	B. Fischer	VO 2	WS
605.303 Bioinorganic Chemistry	C. Obinger	VU 2	SS
605.306 Proteomics	F. Altmann	VO 2	SS
605.307 Glycobiology	I.B. Wilson	VO 2	WS
605.309 Biochemistry of Trace Elements	C. Obinger	VO 2	WS

605.310 Bioorganic Chemistry	P. Kosma	VO 2	SS
605.311 Kinetic of Biochemical Reactions	P. Furtmüller	VU 2	SS
605.312 Plant Biochemistry	K. Stich	VO 2	WS
605.313 Modern Methods of Structural Analysis	P. Kosma / A. Potthast		
	A. Hofinger / F. Altmann	VU 3	SS
605.314 Instrumental Analytic Chemistry	G. Stingerder/		
for Master students	T. Prohaska / G. Köllensperger	VU 3	SS
605.315 Practical Courses on Instrumental Analysis	G. Stingerder /		
	T. Prohaska / G. Köllensperger	UE 4	SS
605.316 Seminar in Biochemistry	Inst. Personnel	SE 2	WS
605.318 Chemistry and Analysis			
of Nutritional Additives	W. Praznik	VO 2	SS
605.321 Biochemical and Biotechnological Methods	E. Staudacher / K. Vorauer-Uhl	VU 3	WS
605.325 Polymer Chemistry and Technology	W. Binder	VU 2	WS

ADDITIONAL COURSES

605.003 Seminar for Diploma and Doctoral Candidates	Inst. Personnel	SE 4	WS/SS
605.004 Doctoral Seminar in Analytical Chemistry	Inst. Personnel	SE 2	WS/SS
605.015 Doctoral Seminar in Biochemistry	Inst. Personnel	SE 2	WS/SS
605.031 Instrumental Methods in Analytical Chemistry	G. Stingerder	VO 2	SS
605.040 Seminar in Analytic Chemistry			
for Diploma and PhD Candidates	Inst. Personnel	SE 4	WS/SS
605.049 Technology and its Environment	L. März	VO 2	SS
605.088 Practical Course in Chemistry for KTWW	A. Hofinger / B. Hinterstoisser	UE 4	SS
605.304 Environmental Chemistry	Inst. Personnel	SE 3	SS
605.572 Seminar for Diploma and Doctoral Candidates			
for Organic Chemistry	Inst. Personnel	SE 4	WS/SS
605.803 Doctoral Seminar in Bioorganic Chemistry	Inst. Personnel	SE 2	WS/SS
605.836 Doctoral Seminar in Food Additives	W. Praznik	SE 2	WS/SS

For more details look at <http://blis.ud.boku.ac.at/-lvz/-plan/-inst/instlve.html?nr=605&byear=>

List of abbreviations:

SE	Seminar	LBT	Food Science and Biotechnology
VO	Lecture Course	KTWW	Land and Water Management and Engineering
VU	lecture with exercise	FW/HW	Forestry (FW) and Wood Technology (HW)
UE	Practical Course	LAP	Landscape Architecture and Planning
WS	Winter Semester	LW	Agriculture
SS	Summer Semester		

Doctoral and Diploma Theses

Analytical Chemistry

Begert Pascal

Tagging of bank notes with solid inorganic metal compounds

Diploma thesis 2003

Supervisor: Thomas Prohaska

Kanitsar Katharina

CE and CE-ICP-MS in Rhizosphere Research

Doctoral thesis since 2000

Supervisor: Gerhard Stingeder

Nurmi Johanna

Interfacing CE-ICP-MS for metal speciation studies

Doctoral thesis 2003

Supervisor: Gerhard Stingeder

Prinz Günther

Determination of Platinum-Group-Elements in Inductively Coupled Plasma Mass Spectrometry

Diploma thesis 2001

Supervisor: Gerhard Stingeder, Gunda Köllensperger

Rudolph Elisabeth

Human Biomonitoring of Platinum Group Elements

Doctoral thesis since 2002

Supervisor: Gerhard Stingeder

Schultheis Gerald

Stable Strontium Isotope Ratio Measurements – Characterization of Archeological, Anthropological and Environmental Materials

Doctoral thesis 2003

Supervisor: Gerhard Stingeder

Biochemistry A / Glycobiology

Ahrer Karin

Strukturuntersuchung neutraler N-Glykane aus Arioniden

Diploma thesis 2001

Supervisor: Erika Staudacher

Bindeus Günter

Extraktion und Konfektionierung von Flavonoiden

Doctoral thesis since 1999

Supervisor: Friedrich Altmann

Bencúrová Monika

Recombinant glycosyltransferase as tools for allergy diagnosis

Doctoral thesis since 2001

Supervisor: Friedrich Altmann

Bürgmayr Sabine

Protein-N-Glykosylierung von Gastropoden

Doctoral thesis 2003

Supervisor: Staudacher Erika

Dorfner Georg

Fucosidase aus Mandel

Diploma thesis 2003

Supervisor: Friedrich Altmann

Freilinger Angelika

Reinigung und Charakterisierung rekombinanter Fukosyltransferasen

Diploma thesis 2002

Supervisor: Friedrich Altmann

Grill Erwin Robert

Anwendungsmöglichkeiten der NIR Spektroskopie in der pharmazeutischen Industrie

Diploma thesis 2002

Supervisor: Friedrich Altmann

Gutternigg Martin

Untersuchung der Glykosylierung von Gastropoden: neutrale Glykane aus *Arion lusitanicus*

Diploma thesis 2003

Supervisor: Erika Staudacher

Kaar Waltraud

Glykosylierung des Beifuß-Allergens Art v 1.

Diploma thesis 2001

Supervisor: Friedrich Altmann

Kolarich Daniel

Glycom-Analytik von GM-Nahrungsmittel

Doctoral thesis since 2000

Supervisor: Friedrich Altmann

Kopecky Eva-Maria

Herstellung immunogener N-Glykane mittels rekombinanter Fucosyltransferase

Diploma thesis 2001

Supervisor: Friedrich Altmann

Ludescher Ursula

Analysemethoden für natürliche Farbstoffe aus *Polygonum tinctorium* L. (Färberknöterich) und *Anthemis tinctoria* L. (Färberkamille)

Diploma thesis 2002

Supervisor: Friedrich Altmann

Paschinger Katharina

Glycosylation of *C. elegans*

Doctoral thesis since 2002

Supervisor: Iain Wilson

Peyer Christian

Reinigung und Charakterisierung einer Xylosidase aus Kartoffeln

Diploma thesis 2002

Supervisor: Erika Staudacher

Pörtl Gerald

Struktur-analyse von proteingebundenen Oligosacchariden mit LC-MS

Doctoral thesis since 2002

Supervisor: Friedrich Altmann

Rendić Dubravko

Phosphorylation of β 1,4-galactosyltransferase

Doctoral thesis since 1999

Supervisor: Friedrich Altmann / Iain Wilson

Schenkermayr Hannelore

Untersuchung von Holunderbeeren (*Sambucus nigra*) in Hinblick auf ihren Lektin Gehalt und ihre lebensmitteltechnologische Verwertbarkeit unter besonderer Berücksichtigung der Sorten, des Reifezustands und des Standortes

Diploma thesis 2001

Supervisor: Erika Staudacher / Reinhard Eder

Schmidt Rita

Methodenentwicklung zur Analyse negativ geladener N-Glykane.

Diploma thesis 2001

Supervisor: Erika Staudacher

Schopfhauser Hannelore

Entwicklungsbedingte Änderungen der N-Glykosylierung in Kartoffeln

Diploma thesis 2002

Supervisor: Erika Staudacher

Schwab Christina

Verwendung metabolisch kompetenter menschlicher Hepatoma Zellen (Hep G2) und subzellulärer Enzymfraktionen zur Untersuchung DNA-schädigender Effekte von heterozyklischen aromatischen Aminen.

Diploma thesis 2001

Supervisor: Leopold März

Siebenhandl Susanne

Antioxidative Wirkung von Flavonoiden

Doctoral thesis 2002

Supervisor: Friedrich Altmann / Emmerich Berghofer

Simmerstatter Markus

Glykosylierung von Artvl

Diploma thesis 2002

Supervisor: Friedrich Altmann

Weissmann Ingrid Josefine

Herstellung polyvalenter Kohlenhydratderivate aus Glykoproteinen

Diploma thesis 2001

Supervisor: Friedrich Altmann

Wiedeck Elisabeth

Transmembrane connections: Cell surface gangliosides link to the cytoskeleton

Diploma thesis 2003

Supervisor: Friedrich Altmann

Biochemistry B / Metalloprotein Research Group

Allegra Mario

Melatonin oxidation by myeloperoxidase

Visiting PhD student (2 months) 2001, University of Palermo, Italy

Supervisor: Obinger Christian, Furtmüller Paul G.

Ardissone Silvia

Hydroperoxidase from *Sinorhizobium meliloti*

Visiting PhD student (2 months) 2003, University of Turino, Italy

Supervisor: Obinger Christian, Furtmüller Paul G.

Auer Markus

Mechanismus der H_2O_2 -Oxidation in Catalase-Peroxidase

Diploma thesis since 2002

Supervisor: Obinger Christian

Bernroitner Margit

Reaction of cyanobacterial cytochrome oxidase with plastocyanin and cytochrome c_6

Diploma thesis since 2003

Supervisor: Obinger Christian, Furtmüller Paul G.

Ciaccio Chiara

Heme linkage in human peroxidases

Visiting PhD student (6 months) 2003, University of Roma Tor Vergata, Italy

Supervisor: Obinger Christian, Furtmüller Paul G.

Dornstauder Eva Elisabeth

Untersuchungen zur Kinetik der Oxidation aliphatischer und aromatischer Thiole durch Horseradish Peroxidase.

Diploma thesis 2001

Supervisor: Obinger Christian, Furtmüller Paul G.

Feichtinger Markus

Cytochrom c_6 in *Synechocystis* PCC 6803

Diploma thesis since 2002

Supervisor: Obinger Christian

Jakopitsch Christa

Structure-function in multifunctional catalase-peroxidase

Doctoral thesis 2003

Supervisor: Obinger Christian

Jantschko Walter

Developing inhibitors for human myeloperoxidase

Doctoral thesis since 2001

Supervisor: Obinger Christian, Furtmüller Paul G.

Kaltenegger Karl

Entwicklung eines Myeloperoxidase-spezifischen Assays auf Fluoreszenzbasis

Diploma thesis 2002

Supervisor: Obinger Christian, Furtmüller Paul G.

Laaha Ulrike

Die Eisen-Superoxiddismutase in *Anabaena variabilis*: Klonierung, Sequenzierung, Überexpression in *E. coli* und Charakterisierung eines sauerstoffentgiftenden Enzyms.

Diploma thesis 2001

Supervisor: Obinger Christian

Lanz Martina

Produktion rekombinanter Lactoperoxidase

Diploma thesis since 2003

Supervisor: Obinger Christian, Furtmüller Paul G.

Paumann Martina

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

Doctoral thesis since 2001

Supervisor: Obinger Christian, Peschek Günter

Plasser Lisa

Überexpression, Reinigung und Charakterisierung der Thioredoxin-Peroxidase aus dem Cyanobakterium *Anabaena* PCC 7120

Diploma thesis 2002

Supervisor: Obinger Christian, Regelsberger Günther

Petutschnig Gabriele

Identifizierung von Proteinradikalen in Catalase-Peroxidasen

Diploma thesis since 2003

Supervisor: Obinger Christian

Pichler Hans

Produktion rekombinanter humaner Lactoperoxidase in *Pichia pastoris*.

Diploma thesis since 2002

Supervisor: Obinger Christian, Furtmüller Paul G.

Probst Olivia

Nickelhaltige Superoxiddismutase aus *Prochlorococcus marinus*

Diploma thesis 2003

Supervisor: Obinger Christian

Rodriguez R. Daniel

Mechanism of halogenation reactions in human peroxidases

Visiting PhD student (14 months) 2002-2003, Universidade de A Corunia, Spain

Supervisor: Obinger Christian, Furtmüller Paul G.

Schmuckenschlager Florian

Charakterisierung des Substratkanals von Catalasen-Peroxidasen

Diploma thesis since 2003

Supervisor: Obinger Christian

Schwaiger Hans Jörg

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

Diploma thesis since 2001

Supervisor: Obinger Christian

Wiesinger Christoph

Expression of human myeloperoxidase in *Pichia pastoris* and *Escherichia coli*

Diploma thesis 2001

Supervisor: Obinger Christian, Furtmüller Paul G.

Zederbauer Martina

Mechanismen der Inhibierung humaner Myeloperoxidase mit Isonicotinsäure-Derivaten

Diploma thesis 2002

Supervisor: Obinger Christian, Furtmüller Paul G.

Zederbauer Martina

Structure-function in human peroxidases

Doctoral thesis since 2002

Supervisor: Obinger Christian, Furtmüller Paul G.

Zehner Florian

Monofunktionale Catalase aus *Nostoc punctiforme*.

Diploma thesis since 2003

Supervisor: Obinger Christian, Furtmüller Paul G.

Wood Chemistry Group

Nowotny Manuela

Lignin- und Extraktstoffgehalt von Kiefern aus Extremstandorten

Diploma thesis since 1999

Supervisor: Hinterstoisser Barbara

Stich Leo

Investigation of subfossil wood originating from Northern Finland

Diploma thesis since 1998

Supervisor: Hinterstoisser Barbara

Schwanninger Manfred

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

Doctoral thesis since 1999

Supervisor: Hinterstoisser Barbara

Organic Chemistry and Christian Doppler-Laboratory of Pulp Reactivity

Adelwöhrer Christian

Chemie der Aminoxide

Doctoral thesis since 2001

Supervisor: Kosma Paul, Rosenau Thomas

Adorjan Immanuel

Chemie des Lyocellprozesses

Doctoral thesis since 2001

Supervisor: Kosma Paul, Rosenau Thomas

Amer Hassan Abdel Zahir

Chemical Synthesis of O-Glycoside Antigens Related to *Toxocara canis*

Doctoral thesis 2001

Supervisor: Kosma Paul, Hofinger Andreas

Bohrn Rainer

Strukturuntersuchungen an Xanthan

Diploma thesis 2002

Supervisor: Kosma Paul, Potthast Antje

Bohrn Rainer

Determination of carboxylic groups in cellulose

Doctoral thesis since 2002

Supervisor: Kosma Paul, Potthast Antje

Glück Andreas

Synthese von LPS-Teilstrukturen der Gattung *Acinetobacter*

Diploma thesis 2001

Supervisor: Kosma Paul

Graziani Andrea

Synthesis of ADP Heptose analogs

Doctoral thesis since 2001

Supervisor: Kosma Paul, Zamyatina Alla

Kronsteiner Michael

Synthesis of UDP-N-Acetylmannosaminuronsäure

Diploma thesis 2002

Supervisor: Kosma Paul, Zamyatina Alla

Kühr Romana

Vergleichende chemische und elektrochemische Oxidation ausgewählter Mono- und Disaccharide

Diploma thesis 2001

Supervisor: Kosma Paul, Rosenau Thomas

Preininger Kurt

Acute troglitazone action in isolated perfused rat liver

Diploma thesis 2001

Supervisor: Kosma Paul, Rohden M. (AKH)

Möslinger Roland

Rheologie von technischen Spinnmassen

Doctoral thesis since 2002

Supervisor: Schausberger Alois (Univ. Linz), Kosma Paul

Reiter Andreas

Synthese dephosphorylierter Core-Strukturen von *Pseudomonas aeruginosa* Lipopolysacchariden

Doctoral thesis 2001

Supervisor: Kosma Paul

Röhring Jürgen

Oxidative Modifikation und Fluoreszenzmarkierung von Zellstoffen

Doctoral thesis 2003

Supervisor: Kosma Paul, Potthast Antje

Rußler Axel

Determination of substituent patterns in viscose

Doctoral thesis since 2002

Supervisor: Kosma Paul, Lange Thomas

Sartori Jürgen
Untersuchung von Alkalicellulose
Doctoral thesis since 2003
Supervisor: Kosma Paul, Rosenau Thomas

Stefke Barbara
Untersuchungen zur intramolekularen Glycosylierung von Aminosuckern
Diploma thesis 2001
Supervisor: Kosma Paul, Müller Renate

Thim Julia
Cyclodextrinmodifikation von Viskose
Diploma thesis 2003
Supervisor: Kosma Paul, Schmid Walther (Univ. Wien)

Wimmer Norbert
Synthese von Disacchariden aus der Kernregion von Lipopolysacchariden aus *Acinetobacter* und *Burkholderia*.
Doctoral thesis 2001
Supervisor: Kosma Paul

Research Group - Plant Carbohydrates

Kocsisova Laura
Qualitätskriterien für Topinambur zur Anwendung in der LMI
Doctoral thesis since 2000
Supervisor. Praznik Werner

Maghuly Fatemeh
Doctoral thesis 2003
Monitoring of genetic diversity in norway spruce (*Picea abies*)
Supervisor. Praznik Werner

Mohammad Matinizadeh
Ecophysiological study of *Quercus libanii* var. *persicain* in Iran
Doctoral thesis since 2001
Supervisor: Praznik Werner

Research Activities

Analytical Chemistry



ICP-DRC-MS (Elan DRC plus, Perkin Elmer Sciex). This inductively coupled plasma mass spectrometer allows ultratrace and isotopic analysis over the whole mass range. It was installed at the Institute in 2002 in combination with a laser ablation (LA) system. The LA allows direct solid sampling at an area down to 20 μm . LA-ICP-MS combines the capabilities of high spatial resolution and quasi destruction free analysis with the ultratrace

and isotopic analysis capabilities. The instrumentation is involved in a wide range of investigations from industrial products, biogenic material to minerals and cultural goods.

The research group is working in the field of elemental ultra trace analysis by ICP-MS (inductively coupled plasma mass spectrometry). The potential of ICP-MS is explored by methodological developments and applications for solving problems in fields such as environmental sciences, biology / medicine and anthropology / archaeology.

Sample preparation and operation of the instrument (Element, Finnigan MAT) are performed in clean room facilities to utilise the capabilities of ICP-MS in the ultra trace concentration range of ng.g⁻¹ to sub pg.g⁻¹.

Current activities:

Methodological developments:

Isotopic ratio measurements with high precision (Sr, Pb, S, U)

Coupling of ICP-MS with HPLC and HPIC for speciation studies and trace matrix separation to eliminate matrix effects

Development of μ -HPLC-ICP-MS interface

Coupling of ICP-MS with CE (capillary electrophoresis) for speciation studies (interface development, speciation protocols)

Development of CE methods for analysis of amino acids and low molecular weight organic acids

Development of enrichment procedures for the determination of low molecular weight organic acids at ultratrace levels

Coupling of ICP-MS with laser ablation for direct analysis and isotope ratio measurement of solid materials

Certification of reference materials (within EU-programs)

Investigation of gas phase reactions for elimination of spectral interferences in dynamic reaction cell–DRC-ICP-MS

Evaluation of uncertainty in analytical measurement and implementation of protocols for traceability in chemical analysis (including speciation analysis and laser ablation)

Current applications:

Isotopic ratio measurements and elemental pattern in prehistoric human bones, historical glasses and archaeological findings

Isotopic ratio measurements and elemental pattern in soil profiles

Analysis of platinum group elements in road dust/urban aerosol and biological samples

Analysis of cancerogenic platinum compounds in urine, in hospital waste water and in the aquatic environment

Analysis of exudation patterns (amino acids, organic acids) of hyperaccumulating plants by CE

Metal complexes formed by exudates in the rhizosphere (CE-ICP-MS)

Stability of metal complexes formed in the Lyocell process during solvation of cellulose (CE-ICP-MS)

Characterization of metallo-proteins by SEC-ICP-MS and CE-ICP-MS

Selenium speciation in nutritional supplements

Determination of iodine containing x-ray contrast agents in the aquatic environment

Ultra trace analysis in TlBr solid state detector material

Ultra trace analysis of U and Th in geological and environmental samples

Investigation of inorganic metal compounds for tagging of banknotes

Biochemistry A / 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) which we got in January 2003. 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.

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.

Biochemistry B / 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 [(e.g. in *Escherichia coli*, *Pichia pastoris*, Chinese hamster ovary (CHO) 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. The group is sponsored mainly by the Austrian Science Fund (FWF, 3 projects) and by cooperation with PLANTA Natural Products. The group is part of the Cost D21 network (Metalloproteins and Biomimetics) sponsored by the European Union. In detail, it leads the project "Small molecule activation by metalloproteins" and is member of the project "Peroxidases and model compounds".

Ongoing projects:

(I) Structure function relationships of **monofunctional catalases** (CAT) and bifunctional **catalase-peroxidases** (KatG). Little is known about the hydrogen peroxide oxidation reaction catalyzed by these enzymes. 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 H₂O₂ oxidation and reduction reaction. New covalent KatG-specific links could be identified. Recently, it has been shown that two distinct protein radicals are involved in KatG catalysis. With high-field electron paramagnetic resonance in combination with isotopic labeling the site of the tryptophanyl radical could be identified.

The role of **human peroxidases** in immunology and inflammation: Myeloperoxidase (MPO) and eosinophil peroxidase are isolated from leukocytes (neutrophils and eosinophils, respectively). Recombinant wild-type and mutant MPO is 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 protein radicals in enzyme activity and the nature of the extraordinary heme linkage to the apoprotein and its impact on redox chemistry and catalysis are investigated. Furthermore, both myeloperoxidase and eosinophil peroxidase as pharmacological targets are tested in order to develop mechanism-based inhibitors (e.g. suicide substrates). Myeloperoxidase and eosinophil peroxidase 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.

(II) 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 c₆ and plastocyanin, a type-I copper protein. Both potential donors occur in same compartments as the Cu_A-domain (periplasmic and intrathylakoidal lumen). The group recently succeeded in the heterologous overexpression of the Cu_A-domain of subunit II of cyanobacterial cytochrome c oxidase as well as of cytochrome c₆ and plastocyanin. This allows now the study of the kinetics of electron transfer between the binuclear copper site and both endogenous donors and 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.

Wood Chemistry Group:

Different wood components like lignin, cellulose and extractives, their occurrence, their native composition and structure are the objective of investigation of the group. The main project at present deals with the **"Modification of lignocellulosic materials for improved composites"**. This "Area 1" within the **"Wood Composites and Chemistry Competence Center Austria (WOOD)"** is coordinated by the Institute of Chemistry.

The Competence Center in general focuses on the joint utilisation of facilities and pooling of experience by several academic institutes and industrial partners. The aim is to improve the level of scientific expertise and the infrastructure for the innovation process in the wood products industry in Austria.

The aim of area 1 is to modify lignocellulosic material, in particular wood fibres and particles, to provide better and homogeneous raw material for high-value wood composites. Improved dimensional stability, biological resistance and gluing behaviour of the raw material wood, as well as environmentally harmless processes are the main targets. Biochemistry, biotechnology and chemistry supply the tools to reach these goals.

Methodologies for both the enzymatic and chemical modification, for the modification of wood fibres by fungal laccases, screening for suitable fungal strains used in the biopulping, and methodology for the structural and chemical characterization of (modified) wood are developed.

The work is done at the Institute of Chemistry (Boku), the Institute of Food Technology (Boku), the Institute of Physics (Boku), the Institute of Biochemical Technology and Microbiology (TU-Vienna) and Fritz Egger GmbH as main industrial partner.

The area focuses on the determination and investigation of technologies that may significantly improve the quality of lignocellulosic material, predominantly wood, used for the production of medium density fibreboard (MDF), oriented strand board (OSB) and particle board. The properties are evaluated in comparison with those achieved with present technology using non-modified material. Through "biopulping" processes, a partial maceration to remove lignin from the middle lamella should reduce energy consumption during refining and also improve the internal bonding for MDF. Fibres are modified chemically using new agents with improved specificity of the targeted polymers. Synergistic effects with enzymatic-modified fibres will be investigated. Novel analytical methods will be utilised to correlate structural with physico-mechanical properties of composites. The goal is to develop and optimise technologies to modify wood for improved and high-performance composites.

Organic Chemistry Research Group



Organic Chemistry Research Group and Christian Doppler Laboratory Group

The major research activities of the group are focused on biomedically important carbohydrates located at the surface of cells. For a thorough understanding of the interactions between those carbohydrate ligands and proteins at the molecular level, knowledge of the chemical and three-dimensional structures is required, which also pertains to the dynamic behaviour of the biomolecules in solution as well as in the binding process.

The expertise of the group covers the chemical synthesis of complex carbohydrates, which are provided as multifunctional ligands to be linked via spacer groups to affinity matrices for the purification of antibodies or to be conjugated to proteins for immunochemical studies, *i.e.* the generation and characterization of monoclonal antibodies for diagnostic and therapeutic application.

In particular, the components of bacterial lipopolysaccharides are being studied, comprising endotoxins of human, animal and plant pathogenic species. The intracellular parasite *Chlamydia* is recognized to be associated with coronary heart diseases and one of the major projects deals with the chemical synthesis of chlamydial lipid-linked sugars which are potent inducers of inflammatory responses. Chemical synthesis is the only means to provide this material for immunobiological studies, since only microgram amounts of the native compounds may be obtained from cell cultures with the highly infectious agent. With the successful completion of the synthesis, chlamydial tetra- and pentaacyl lipid A is now available in pure form and sufficient quantities. Moreover, several high-resolution crystal structures of antigen-bound Fab complexes have been obtained, which allow for the first time to study protein-carbohydrate interactions with a charged sugar (Kdo).

In addition, progress has been achieved in the synthesis of nucleotide activated sugars, which were of particular value in the elucidation of the biosynthetic pathway of the bacterial heptose region, which now offers various targets for the development of enzyme inhibitors as novel antibacterial drugs. The synthetic compounds are presently being used to study cocrystals with the *E. coli* heptosyl transferase I and the ADP heptose epimerase.

Nmr spectroscopy is of prime importance not only as support for the synthetic projects, but also as key method in the structural and biosynthetic studies of Surface-Layer glycoproteins which are performed in close cooperation with the Center of Ultrastructure Research.

Christian Doppler Laboratory of Pulp Reactivity

Cellulose constitutes the most important renewable resource on a worldwide scale, which however, has so far been used as a supply for the chemical industry only to a very small extent. The CD Laboratory is involved in various basic and applied studies relevant to the production of dissolving pulps, including cooking and bleaching processes as well as derivatisation and regeneration steps. The chemical and physicochemical changes of cellulosic substrates as well as residual materials such as lignin and hemicelluloses are under investigation using modern instrumental analytical techniques. The detailed knowledge of chemical functional groups, the amorphous and crystalline regions and the solution state on the molecular level is expected to lead to a rational analysis of the properties of cellulose in the Viscose process as well as in the modern Lyocell process using *N*-methyl-morpholine-*N*-oxide hydrate (NMMO) as solvent.

Thus, projects are dealing with the investigation of reaction mechanisms, elucidation of side reactions, determination of substituent distributions along the cellulose chains, yellowing processes, the role of stabilizers and the impact of metal ions. A broad spectrum of instrumental techniques is being used, such as static and dynamic Light Scattering, Electron microscopy, Liquid- and Solid State NMR (CPMAS), Infrared- and Raman spectroscopy, Electron Spin Resonance Spectroscopy and X-ray crystallography, as well as Dielectric Resonance Spectroscopy and Mass Spectrometry. The CD Lab operates a modern GPC system with a fluorescence and a multiple angle laser light scattering detector, allowing for the determination of absolute molecular weight distributions of cellulose in the solvent system DMAc / LiCl.

The results are expected to contribute to a better specification profile of cellulosic substrates, to improved process control and product properties and enhanced use of other wood components and process by-products. The expertise of the group is reflected as partner in the EU Network of Excellence "The Saccharides". In addition the group collaborates with the K plus center Wood in area 6 (Wood Chemistry) in the characterization of lignincompounds.

Research Group Plant Carbohydrates and Interuniversity Research Group: Native Polymers & Colloids

The group is working in the following areas:

Investigating correlations between molecular structures, biological functionality and options to transfer selected features to technological applications.

Structure analysis and characterization of biopolymers by means of physico-chemical methods

Software/hardware development combined with customizable data-manipulation in the field of polymer-characterization

Biochemical techniques for synthesis and characterization of carbohydrate-type biopolymers (in particular for glucans and fructans)

Investigation of interactive potentials causing coherently acting supermolecular polysaccharide structures

Isolation, purification, fractionation, preparation and modification of plant raw materials

Investigations with respect to control mechanisms in plants (e.g. carbohydrate / nitrogen metabolism), stress-related metabolites (secondary metabolites)

Application of agronomical crops as 'Novel Food'

Establishing quality criteria for classification of plant raw-materials with respect to nutritional (food) and technological (non-food) value

Isolation / preparation of carbohydrates / enzymes / other compounds of interest from renewable materials

Qualitative and quantitative analysis of carbohydrates

Oligomer/polymer-characterization of native and modified plant glucans and fructans

Correlation of molecular characteristics with technological qualities + development and synthesis of reference-materials

Application of fructan and fructan plants in healthy foods (jerusalem artichoke, agave) – nutritional properties of fructooligosaccharides and polymeric fructan

Structure investigation of hemicellulose from different plants

Development of mitochondrial marker systems for plant population analysis

Ecophysiological study of oaks (*Quercus libanii* var. *persicain* in Iran).

Scientific Projects

Analytical Chemistry

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 ^{234}U , ^{235}U , ^{238}U and ^{232}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

Ultratrace analysis in technological samples

Start: 31 10 2001
End: 31 12 2004
Financing:

Stable strontium isotope ratio measurements of prehistoric and historic human bone samples

Start: 01 08 1998
End: 31 07 2001
Cooperation: Department of Archaeological Biology and Anthropology, Museum of Natural History, Austria
Financing: FWF, Austrian Science Fund

Determination of ^{234}U , ^{235}U , ^{238}U and ^{232}Th in industrial ores by on-line high performance ion chromatography inductively coupled plasma mass spectrometry (HPIC-ICP-SMS)

Start: 01 03 1998
End: 01 03 2001
Financing: Treibacher Industrie AG

Production and certification of a road dust reference material for platinum, palladium and rhodium used in automotive catalytic converters

Start: 01 01 1999
End: 31 03 2001
Financing: European Commission

Analysis of platinum, palladium and rhodium in Viennese urban aerosol by ICP-SMS

Start: 01 10 1999
End: 01 06 2003

Financing: Hochschuljubiläumsstiftung der Stadt Wien
Bodenkulturpreis 2001 der Wirtschaftskammer Wien

The fate of arsenic in the rhizosphere - Participation in project: Rhizosphere processes: Modelling and experimental assessment of metal interaction with organic ligands exuded by plant roots

Start: 01 10 2001
End: 01 10 2002
Financing: BOKU-Project 16

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

CE-ICP-MS for the determination of metal complexes. Hyphenation of capillary electrophoresis hyphenated to inductively coupled plasma sector-field mass spectrometry (CE-ICP-SMS) – A novel analytical technique for metal complexation studies of *N*-methyl morpholine-*N*-oxide and its degradation products

Start: 01 08 2000
End: 01 08 2003
Financing: FWF, Austrian Science Fund

Determination of Sr isotope ratios in soil profiles for identification of geogenic and anthropogenic origin of heavy metal contamination in soil

Start: 01 01 2001
End: 01 06 2002
Financing: Hochschuljubiläumsstiftung der Stadt Wien

Biochemistry A / Glycobiology

Post-translational Modifications of autologous und heterologous expressed proteins

Start: 02 12 2002
End: 31 12 2005
Financing: Federal Ministry of Transport, Innovation and Technology; Vienna; Austria

Caenorhabditis elegans glycosylation

Start: 01 01 2002
End: 31 12 2004
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

N-glycosylation in gastropods: Analysis of the oligosaccharide structures and characterisation of the corresponding glycosidases and glycosyltransferases

Start: 01 02 2000
End: 31 12 2003
Financing: Neose Technologie Grant and Hochschuljubiläumsstiftung der Stadt Wien

Phosphorylation of β 1,4-galactosyltransferase

Start: 01 06 1999
End: 30 09 2003
Financing: FWF, Austrian Science Fund

The structural, biosynthetic and genetic basis of anti-horseradish peroxidase carbohydrate epitopes in *Drosophila melanogaster* and *Caenorhabditis elegans*

Start: 01 10 1999
End: 30 09 2002
Financing: FWF, Austrian Science Fund

New methodology for assessing the potential of unintended effects in genetically modified food crops (GMO CARE)

Start: 01 02 2000
End: 31 01 2003
Financing: European Commission

Preparation and use of flavonoid extracts

Start: 01 10 1999
End: 31 08 2001
Financing: BOKU - University of Natural Resources and Applied Life Sciences, Vienna, Austria

Phosphorylation of lysosomal enzymes

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

Interaktionsstudien von β 1,4-Galactosyltransferase und PITS/LRE β 1 Kinase;

Start: 01 12 2002
End: 31 12 2003
Financing: Hochschuljubiläumsstiftung der Stadt Wien; Austria

Biochemistry B / Metalloprotein Research Group

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

Scavenging of reactive oxygen species in vegetative cells and protection of nitrogenase in heterocysts of the cyanobacterium *Anabaena variabilis* ATCC 29413.

Start: 01 12 1998
End: 31 11 2001
Financing: FWF, Austrian Science Fund

X-ray structure of cyanobacterial catalase-peroxidases

Start: 01 02 1999
End: 31 01 2001
Financing: Österreichische Nationalbank, ÖNB

Developing of inhibitors of human myeloperoxidase

Start: 01 08 2000
End: 31 07 2003
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 Chemistry Group

Wood K plus: Area 1

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

Products from modified wood: technical features and markets

Start: 01 10 1999
 End: 30 09 2001
 Financing: BOKU - University of Natural Resources and Applied Life Sciences, Vienna, Austria

Christian Doppler-Laboratory of Pulp Reactivity

4 Project Modules

Start: 01 10 1998
 End: 30 09 2005
 Financing: Christian-Doppler-Society

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.

L. Gille, VMU, Mitantragsteller: T. Rosenau

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

EU Network of Excellence "European Polysaccharide Network Association"

Start: 2004

K+ Wood composites and wood chemistry

Area 6 (Wood chemistry): Work package lignin

Start: 2005

Oxidative modification of cellulosic substrates

Start: 02 01 2001

End: 31 12 2001

Financing: Commission of the European Communities; Brussels; European Union

Organic Chemistry**ADP-Heptose Analoga**

Start: 15 09 2001

End: 14 09 2004

Financing: FWF, Austrian Science Fund

Chemical synthesis and biological activity of chlamydial lipopolysaccharide

Start: 01 12 1999

End: 31 01 2003

Financing: FWF, Austrian Science Fund

Interaction of microorganisms with the Fusarium toxin deoxynivalenol

Start: 04 07 2001

End: 31 12 2002

Financing: BOKU - University of Natural Resources and Applied Life Sciences, Vienna, Austria

Synthesis of *Toxocara canis* antigens

Start: 01 03 1997

End: 28 02 2001

Financing: OEAD-Stipendium

Synthesis of nucleotide-activated sugars involved in the biosynthesis of *Pseudomonas* O-antigens

Start: 01 09 2000

End: 30 06 2001

Financing: Univ. Guelph

Research Group - Plant Carbohydrates**Relationship between technological value and composition of cereals**

Start: 01 01 1995

End: 31 12 2002

Financing: Wiss. – techn. Zusammenarbeit Österreich-Polen, Project 16/99

Erstellung von Qualitätskriterien für die Anwendung von Fruktanpflanzen in gesundheitsfördernden Nahrungsmittel

Start: 01 01 2001

End: 31 12 2003
 Financing: Bertha von Suttner-Stipendium

Monitoring of genetic diversity in Norway spruce (*Picea abies*).

Start: 01 10 1999
 End: 31 09 2002
 Financing: OEAD (Nord-Süd-Dialog-Stipendium)

Nutritional value of the new varieties of *Jerusalem artichoke* and of their usage in production of functional food

Start: 01 01 2000
 End: 31 12 2002
 Financing: Wiss. – techn. Zusammenarbeit Österreich-Polen, Project 14/00

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

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

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

For more details about Scientific Projects look at http://hal.boku.ac.at/research/en_research_database_search

Cooperation Partners

Analytical Chemistry

European Joint Research Center IRMM Geel, Belgium

European Space Agency, Netherlands

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Laboratory of Inorganic Chemistry, ETH Zürich, Switzerland

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Institut for Forensic Medicine, University of Vienna, Austria
Division of Oncology, Department of Internal Medicine I, Vienna University School of Medicine
Academy of Fine Arts, Vienna, Austria
Austrian Research Center, ARC, Seibersdorf, Austria
Treibacher Chemische Werke, Austria
Laboratorium für Umweltanalytik GmbH, Austria
Interuniversitäres Forschungsinstitut für Argrarbiotechnologie, IFA Tulln, Austria
Institute of Geological Sciences, University Vienna, Vienna, Austria
Institute of Prehistory, University of Vienna, Vienna, Austria
Christian Doppler Laboratory of Pulp Reactivity, BOKU
Institut für Bodenforschung, BOKU
Institut für Botanik, BOKU
Institut für Waldökologie, BOKU
Institut für Lebensmitteltechnologie, BOKU
Zentrum für Angewandte Genetik, BOKU
Institut für Ökologischen Landbau, BOKU
Institut für Pflanzenbau und Pflanzenzüchtung, BOKU
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Biochemistry A / Glycobiology

Weinbauschule Klosterneuburg, Austria
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Institute of Nutrition, Vienna, Austria
Forschungszentrum Borstel, Borstel, Germany
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Istituto Superiore di Sanita, Roma, Italy
Utrecht University, Utrecht, Netherlands

Biochemistry B / Metalloprotein Research Group

Institute of Physical Chemistry, University of Vienna, Austria
Institute of Applied Microbiology, BOKU
University of Essex, Colchester, U.K.
University of Manitoba, Canada

University of Florence, Italy

Section de Bioenergetique, URA CNRS, Saclay, France

Max-Planck-Institut für Biochemie, Protein Crystallographie, Martinsried, Germany

Christchurch School of Medicine, New Zealand

Institute of Medical Physics and Biophysics, University of Leipzig, Germany

Institut für Anorganische Chemie, ETH Zürich, Switzerland

University of Brussels, Applied Genetics, Belgium

Department of Biochemistry, Michigan State University, USA

Planta Natural Products, Vienna, Austria

Wood Chemistry Group

Institute of Meteorology & Physics, BOKU

Institute of Botany, BOKU

Institute of Analytical Chemistry, Technical University Vienna, Austria

Institute of Inorganic Chemistry, University of Vienna, Austria

Institut für Holzforschung, Universität München, Germany

INRA, Orleans, France

STFI Swedish Pulp and Paper Research Institute, Stockholm, Sweden

ETH Zürich, Switzerland

METLA research station Rovaniemi, Finland

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Institute of Physical and Theoretical Chemistry, University of Regensburg, Germany

Institute of Pharmacology and Toxicology, Veterinary University Vienna

Institute of Chemical Technology of Organic Compounds, Technical University of Vienna

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CERMAV-Grenoble, France

Tokyo University, Japan

Tottori University, Japan

Abo Akademi, Finland

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Department of Chemistry, Technion, Haifa, Israel
Auburn University, Alabama, USA
UMIST, Manchester, UK

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Carlsberg Laboratories, Dept. of Chemistry, Valby, Denmark
Department of Microbiology and Immunology, University of Ottawa, Canada
Department of Membrane Research and Biophysics, Weizmann Institute of Science, Rehovot, Israel
Department of Zoology, Animal and Population Genetics, University of Edinburgh, UK
Zentrum für Ultrastrukturforschung, BOKU
Department of Microbiology, University of Guelph, Canada
NIH, Laboratory of Diabetes and Kidney diseases, Bethesda, USA
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Research Group Plant Carbohydrates

Department of Polymer-Characterization, Institute of Chemistry, KF-University, Graz
Institute of Agronomy and Plant Breeding, BOKU
Institute of Food-and Biotechnology, BOKU
IFA-Tulln, Centre of Analytical Chemistry, Austria
Research Centre Seibersdorf, Institute of Life Science, Austria
Bundesamt für Landwirtschaft, Gumpenstein, Irdning, Austria
Inulinia-Stift Ges.m.b.H., Eggendorf, Austria
Institute of General Botany, Humboldt-University of Berlin, Berlin, Germany,
Institute of Human Nutrition and Institute of Carbohydrate Technology, Agricultural University Cracow, Poland
Research Institute of Forest and Rangelands, Karaj, Iran
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Publications

Analytical Chemistry

Original articles and reviews in refereed journals

2003

Buchberger, W., Czizsek, B., Hann, S., Stingeder, G. (2003): Preliminary comparison of inductively coupled plasma mass spectrometry and electrospray mass spectrometry hyphenated with ion chromatography for trace analysis of iodide. *J. Anal. Atom. Spectrom.*, 18, 512-514.

Kanitsar, K., Köllensperger, G., Hann, S., Limbeck, A., Puxbaum, H., Stingeder, G. (2003): Determination of Pt, Pd and Rh by inductively coupled plasma sector field mass spectrometry (ICP-SFMS) in size-classified urban aerosol samples. *J. Anal. Atom. Spectrom.*, 18, 239-246.

Hann, S., Köllensperger, G., Obinger, C., Furtmüller, P.G., and Stingeder G. (2003): SEC-ICP-DRC-MS and SEC-ICP-SF-MS for determination of metal-sulphur ratios in metalloproteins. *J. Anal. Atom. Spectrom.*, in press

Hann, S., Köllensperger, G., Stefánka, Z., Fürhacker, M., R. Mader, M., Buchberger, W., Stingeder, G. (2003): Application of HPLC-ICP-MS to cisplatin speciation in aquatic media. *J. Anal. Atom. Spectrom.* in press

Fitz, W. J., Wenzel, W. W., Zhang, H., Nurmi, J., Köllensperger, G., Štipek, K., Fischerova, Z., Schweiger, P., Ma, L.Q., Stingeder, G. (2003): Rhizosphere Characteristics of the Arsenic Hyperaccumulator *Pteris vittata* L. and Monitoring Techniques for Its Use in Phytoextraction. *Environ. Sci. Technol.*, in press

Berger, T. W., Köllensperger, G., Wimmer, R. (2003): The use of Dendrochemistry to Record Plant-soil Feedback in Spruce (*Picea abies*) and Mixed Spruce-beech (*Fagus sylvatica*) Stands. *Plant and Soil*, in press

Köllensperger, G., Hann, S., Nurmi, J., Prohaska, T., Stingeder G. (2003): Uncertainty of species unspecific quantification strategies in hyphenated ICP-MS analysis. *J. Anal. Atom. Spectrom.*, 2003, 18, 1047-1055

Hann, S., Köllensperger, G., Kanitsar, K., Stingeder, G., Brunner, M., Erovic, B., Müller, M., Reiter, C. (2003): Platinum determination by ICP-SFMS in different matrices relevant for human biomonitoring. *Anal. Bioanal. Chem.*, 2003, 376, 198–204

2002

Hann, S., Stingeder, G., Ahner, W., Buchberger, W. (2002): Determination of Iodine-Containing X-ray Contrast Media in Surface Water by HPLC-ICP-SFMS. *ICP Information Newsletter*, 27, 10-13.

Köllensperger, G., Nurmi, K., Hann, S., Stingeder, G., Fitz, W.J., Wenzel, W.W. (2002): CE-ICP-SFMS and HPIC-ICP-SFMS for arsenic speciation in soil solution and water extracts. *J. Anal. Atom. Spectrom.*, 17, 1042-1047.

Mladenov, E., Granegger, S., Hann, S., Sinzinger, H. (2002): Platelet Labeling for Determination of Lifespan. *Turk. J. Haematol.*, 19, 275-281.

Nurmi, J., Köllensperger, G., Kanitsar, K., Stingeder, G. (2002): Hyphenation of Capillary Electrophoresis to Inductively Coupled Plasma Sector Field Mass Spectrometry. *ICP-MS Newsletters*, 27, 4, 28.

Prohaska, T., Schultheis, G., Latkoczy, C., Tescher-Nicola, M., Stingeder, G. (2002): Investigation of Sr isotope ratios in prehistoric human bones and teeth using Laser Ablation ICP-MS and ICP-MS after Rb/Sr separation. *J. Anal. Atom. Spectrom.*, 17, 887-891.

Wenzel, W.W., Brandstetter, A., Wutte, H., Lombi, E., Prohaska, T., Stingeder, G., Adriano, D.C. (2002): Arsenic in field-collected soil solutions and extracts of contaminated soils and its implication to soil standards. *J. Plant Nutr. Soil Sci.* 165, 221-228.

2001

Berger, T.W., Eagar, C., Likens, G.E., Stingeder, G. (2001): Effects of calcium and aluminum chloride additions on foliar and throughfall chemistry in sugar maples. *For. Ecol. Manage.*, 149, 75-90.

Eis, C., Watkins, M., Prohaska, T., Nidetzky, B. (2001): Fungal trehalose phosphorylase: kinetic mechanism, pH dependence of the reaction and some structural properties of the enzyme from *Schizophyllum commune*. *Biochem. J.*, 356, 757-767.

Hann, S., Köllensperger, G., Kanitsar, K., Stingeder, G. (2001): ICP-SFMS determination of palladium using IDMS in combination with on-line and off-line matrix separation. *J. Anal. Atom. Spectrom.*, 16, 1057-1063.

Hann, S., Zenker, A., Galanski, M., Bereuter, T.L., Stingeder, G., Keppler, B.K. (2001): HPLC-UV-ICP-SFMS study of the interaction of cisplatin with guanosine monophosphate. *Fresenius J. Anal. Chem.*, 370, 581-586.

Köllensperger, G., Hann, S., Prinz, G., Stingeder, G., Bujatti-Narbeshuber, M. (2001): Analysis of Ir in Kőfelsit rocks by inductively coupled plasma sector field mass spectrometry (ICP-SFMS). *Fresenius J. Anal. Chem.*, 370, 559-565.

Latkoczy, C., Prohaska, T., Watkins, M., Stingeder, G., Teschler-Nicola, M. (2001): Strontium isotope ratio determination after on-line matrix separation by coupling ion chromatography (HPIC) to an inductively coupled plasma sector field mass spectrometer (SF-ICP-MS). *J. Anal. Atom. Spectrom.*, 16, 806-811.

Nelms, S., Quetel, C.R., Prohaska, T., Vogl, J., Taylor, P. (2001): Evaluation of detector dead time calculation models for ICPMS. *J. Anal. Atom. Spectrom.*, 16, 233-238.

Wenzel, W.W., Kirchbaumer, N., Prohaska, T., Stingeder, G., Lombi, E., Adriano, D.C. (2001): Arsenic fractionation in soils using an improved sequential extraction procedure. *Anal. Chim. Acta*, 436/2, 309-323.

Conference & workshop proceedings, abstracts**2003**

Köllensperger, G., Hann, S. Stefánka, Z., Nurmi, J., Stingeder G. (2003): Speciation by CE/LC-ICP-MS. Invited lecture at ETH Zürich, Switzerland, 9. Dec. 2003

Hann, S. Köllensperger, G. Furtmüller, P.G. Obinger, C., Kolarich, D., Altmann, F. and Stingeder, G. (2003): Characterization of metalloproteins via high resolution ICP-SFMS and ICP-DRC-MS. 4th International Conference on High Resolution Sector Field ICPMS, Venice, Italy, 15 – 17 Oct. 2003

Limbeck, A., Hann, S., Rudolph, E., Köllensperger, G., Stingeder, G., Puxbaum, H. and Reiter, C. (2003): Simultaneous analysis of Pt, Pd and Rh in environmental and biological samples via on-line preconcentration and matrix separation coupled to ICP-SFMS. 4th International Conference on High Resolution Sector Field ICPMS, Venice, Italy, 15 – 17 Oct. 2003

Prohaska, T., Köllensperger, G., Hann, S. and Stingeder, G. (2003): Spectral Interferences and Isotop Ratio Determination: High Mass Resolution and Chemical Resolution – Uncertainties Challenges and Limits. 4th International Conference on High Resolution Sector Field ICPMS, Venice, Italy, 15 – 17 Oct. 2003

Köllensperger, G. Hann, S. Stefánka, Z., Nurmi, J., Stingeder, G. (2003): Capabilities and limitations of CE/LC-ICP-MS. Invited lecture at the "6. Symposium Massenspektrometrische Verfahren der Elementspurenanalyse" and 18. ICP-MS Anwendertreffen, Berlin; 6 – 9 Oct. 2003

Hann, S., Stingeder, G., Buchberger, W. (2003): HPLC-ICP-MS determination of X-ray contrast agents in surface water. Lecture at the "6. Symposium Massenspektrometrische Verfahren der Elementspurenanalyse" and 18. ICP-MS Anwendertreffen, Berlin; 6 – 9 Oct. 2003

Schultheis, G., Prohaska, T., Stingeder, G., Teschler-Nicola, M., Ramsil, P., Schreiner, M., Dietrich, K. (2003): Characterization of archaeological artefacts by LA-ICP-MS. Lecture at the "6. Symposium Massenspektrometrische Verfahren der Elementspurenanalyse" and 18. ICP-MS Anwendertreffen, Berlin; 6 – 9 Oct. 2003

Rudolph, E., Hann, S., Stingeder, G., Reiter, C. (2003): Human biomonitoring of platinum by ICP-SFMS. Lecture at the "6. Symposium Massenspektrometrische Verfahren der Elementspurenanalyse" and 18. ICP-MS Anwendertreffen, Berlin; 6 – 9 Oct. 2003

Köllensperger G. and Hann, S. (2003): Quantification strategies and inter-elemental ratio measurement in CE/LC-ICP-MS. Invited lecture at the "5. International Symposium on Speciation of Elements in Biological, Environmental and Toxicological Sciences", Almunecar, Spain, 13 – 17 Sept. 2003

Nurmi, J., Köllensperger, G., Metzke, D., Jakubowski N., Stingeder, G. (2003): Speciation of selenium compounds by CE-ICP-MS. Lecture at the Colloquium Spectroscopicum Internationale XXXIII, Granada, Spain, 7 – 12 Sept. 2003

Hann, S. and Köllensperger G. (2003): On-line IDMS zur Quantifizierung von Pt-Spezies nach Trennung mittels Adsorptions-chromatographie. Invited lecture at the Institute of Analytical Chemistry, Vienna University of Technology, Vienna, Austria, 18-22. Nov. 2003

Hann, S. (2003): Nachweis von Platin in Krankenhausabwässern mittels LC-ICP-MS. Invited lecture at the 20. Agilent Forum Analytik at the University of Natural Resources and Applied Life Sciences, Vienna, 11. –12. Feb. 2003

Hann, S., Köllensperger, G., Stingeder, G., Fuerhacker, M., Mader, R.M., Buchberger W. (2003): Application of LC-ICP-SFMS to cisplatin speciation in the aquatic environment. Lecture at the European Winter Conference on Plasma Spectrochemistry, Garmisch-Partenkirchen, Germany, 12 - 17 Jan. 2003

Köllensperger, G., Nurmi, J., Hann, S., Prohaska, T., Stingeder G. (2003): Uncertainty of Species – Unspecific Quantification in CE/LC-ICP-MS. Poster presentation at the European Winter Conference on Plasma Spectrochemistry, Garmisch-Partenkirchen, Germany, 12 - 17 Jan. 2003

Kanitsar, K., Köllensperger, G., Hann, S., Stingeder, G. (2003): Distribution of Platinum Group Elements in Urban Aerosol. Poster presentation at the European Winter Conference on Plasma Spectrochemistry, Garmisch-Partenkirchen, Germany, 12 - 17 Jan. 2003

Prohaska, T., Schultheis, G., Köllensperger, G., Hann, S. and Stingeder G. (2003): HR-ICP-MS/DRC-ICP-MS and Isotope Ratio Determination: Uncertainties Challenges and Limits. Invited lecture at the FACSS, Fort Lauderdale, 19 - 23 Oct. 2003

2002

Berger, T.W., Köllensperger, G., Wimmer, R. (2002): The use of dendrochemistry to record plant-soil feedback in spruce and mixed spruce-beech stands. In: T. Peschel, J. Mrzljak and G. Wiegand (eds.): Kurzfassungen der Beiträge zur 32. Jahrestagung der Gesellschaft für Ökologie in Cottbus vom 16.-20. Sept. 2002: Landschaft im Wandel - Ökologie im Wandel. Verhandlungen der Gesellschaft für Ökologie, Band 32, ISBN 3-89533-379-3, Verlag Die Werkstatt, Göttingen, p. 203.

Pavicevic, M.K., Wild, E.M., Priller, A., Kutschera, W., Boev, B., Prohaska, T., Berger, M., Steffan, I. (2002): AMS measurements of ²⁶Al in quartz to assess the cosmic ray background for the geochemical solar neutrino LOREX. 9th International Conference on Accelerator Mass Spectrometry, Sept. 2002, Nagoya, Japan.

Prohaska, T., Schultheis, G., Stingeder, G., Latkoczy, C., Teschler-Nicola, M. (2002): Stable Strontium Isotope Ratio Measurements by means of Laser Ablation ICP-MS in Prehistoric and Historic Human Bones. Plasma Winter Conference, Jan. 2002, Scottsdale, USA.

Prohaska, T. (2002): The role of ICP-MS in environmental science. 8th Durham Conference, Sept. 2002, Durham, UK.

Köllensperger, G., Hann, S., Stingeder, G. (2002): Species unspecific calibration in LC and CE-ICP-MS. 2nd RCM for the CRP on Development and Validation of Speciation Analysis Using Nuclear Techniques, 18. - 22. Nov. 2002, Vienna, Austria.

Nurmi, J., Köllensperger, G., Hann, S., Stingeder, G., Fitz, W., Wenzel, W. (2002): Rhizosphere studies of the arsenic hyperaccumulator *pteris vittata*. Winter Conference on Plasma Spectrochemistry, 6. - 12. Jan. 2002, Scottsdale, USA.

Hann, S., Köllensperger, G., Stingeder, G. (2002): LC-ICP-MS zur Spezierung von Cisplatin in wässrigen Systemen. 8. Edelmetallforum, 7. - 8. Oktober 2002, Karlsruhe, Germany.

Hann, S., Köllensperger, G., Stingeder, G. (2002): LC-ICP-MS for speciation of cisplatin in aquatic media. 2nd RCM for the CRP on Development and Validation of Speciation Analysis Using Nuclear techniques, 18. - 22. Nov. 2002, Vienna, Austria.

Hann, S., Köllensperger, G., Stingeder, G. (2002): ICP-SFMS as a detector in separation sciences. 7th International Symposium: Advances in Analytical Separation Science, 3. Juni 2002, Pörschach, Austria.

Hann, S., Köllensperger, G., Kanitsar, K., Stingeder, G. (2002): Environmental monitoring of platinum group elements by ICP-SFMS. 8th International Conference on Plasma Source Mass Spectrometry, 8. - 13. Sept. 2002, Durham, UK.

Köllensperger, G., Nurmi, J., Kanitsar, K., Hann, S., Stingeder, G. (2002): CE-ICP-SFMS / Möglichkeiten und Limitierungen. 5. Agilent CE Anwendertreffen, 20. Juni 2002, Linz, Austria.

Kanitsar, K., Köllensperger, G., Puschenreiter, M., Wenzel, W., Stingeder, G. (2002): CE-ICP-MS Speciation studies of root exudates. Winter Conference on Plasma Spectrochemistry, 6. - 12.- Jan. 2002, Scottsdale, USA.

Köllensperger, G., Hann, S., Nurmi, J., Stingeder, G. (2002): Biomedical applications of CE/LC-ICP-MS. 8th International Conference on Plasma Source Mass Spectrometry, 8. - 13. Sept. 2002, Durham, UK.

Köllensperger, G., Hann, S., Kanitsar, K., Stingeder, G., Limbeck, A., Puxbaum, H. (2002): Bestimmung von Platin, Palladium und Rhodium in Wiener Stadtaerosol. 8. Edelmetallforum, 7. - 8. Okt. 2002, Karlsruhe, Germany.

Köllensperger, G. (2002): Applications of CE-ICP-SFMS. , 2. Aug. 2002, ISAS Dortmund, Germany.

Granegger, S., Hann, S., Stingeder, G., Sinzinger, H. (2002): Stable isotope labeling of human platelets for determination of kinetics in children and pregnant. International Congress on Atherothrombosis and Hemostasis, 18. - 20. April 2002, Assisi, Italy.

2001

Fitz, W.J., Wenzel, W.W., Köllensperger, G., Nurmi, J., Mentler, A., Štipek, K., Fischerova, Z., Schweiger P. and Ma, L.Q. (2001): Rhizosphere Studies on the Arsenic Hyperaccumulator *Pteris vittata*, Workshop "Arsenic in the Asia-Pacific Region ", Adelaide, Australien

Stingeder, G., Prohaska, T., Köllensperger, G., Hann, S. (2001): ICP-MS - Inductively coupled plasma mass spectrometry – A very versatile method for analytical chemistry, 17th Croatian Meeting of Chemists and Chemical Engineers, Osijek, Croatia, June 3-6 2001.

Stingeder, G. (2001): Element-Ultraspurenanalyse und Messung von Isotopenverhältnissen mit ICP-MS - Inductively Coupled Plasma Mass Spectrometry, Institut für Isotopenforschung und Kernphysik, Universität Wien, 10. Mai 2001.

Kanitsar, K., Köllensperger, G., Stingeder, G., Puschenreiter, M., Fitz, W. and Wenzel, W., (2001): CE-ICP-SFMS for speciation in rhizosphere research. 17. ICP-MS Anwendertreffen, Vienna, Austria, Sept. 2001

Nurmi, J., Köllensperger, G., Stingeder, G., (2001): Interfacing capillary electrophoresis to inductively coupled plasma mass spectrometry. 17. ICP-MS Anwendertreffen, Vienna, Austria, Sept. 2001.

Hann, S., Köllensperger, G., (2001): HPLC-ICP-SFMS for PGE analysis. Eingeladener Vortrag beim Technical Meeting „Validation of Nuclear Analytical Methods for Platinum Group Elements in Environmental and Industrial Samples“, Internationale Atomenergiebehörde - IAEA, Wien, Österreich, am 03.12.2001

Köllensperger, G., Hann, S., (2001): Analytical strategies for determination of platinum group elements by inductively coupled plasma sector field mass spectrometry – application to environmental and geological samples, Technical Meeting „Validation of Nuclear Analytical Methods for Platinum Group Elements in Environmental and Industrial Samples“, Internationale Atomenergiebehörde - IAEA, Wien, Österreich, am 03.12.2001

Hann, S. (2001): Neue Anwendungsgebiete der Kopplung LC-ICP-SFMS, Seminar „Moderne Analytik“, Technische Universität Wien, Österreich, am 23.11.2001

Hann, S., Latkoczy, C., Prohaska, T., Stingeder, G., Reiter C., (2001): Reconstruction of a murder by TI-poisoning using LA-ICP-SFMS European Winter Conference on Plasma Spectrochemistry, Lillehammer, Norway, 4. - 8. Feb. 2001.

Hann, S., Latkoczy, C., Prohaska, T., Stingeder, G., Reiter, C. (2001): Reconstruction of a Murder by TI-Poisoning using Laser Ablation Inductively Coupled Plasma Sectorfield Mass Spectrometry (LA-ICP-SFMS) Forum Analytik, Vienna, Austria, Jan. 2001.

Hann, S., Stingeder, G., Ahrer, W., Buchberger, W., (2001): Determination of iodine-containing X-ray contrast media in surface water by HPLC-ICP-SFMS 17. ICP-MS Anwendertreffen 10. - 12. Sept. 2001 Universität für Bodenkultur Wien, Österreich.

Köllensperger, G., Hann, S., Kanitsar, K., Stingeder, G. (2001): Determination of Palladium by ICP-SFMS - Comparison of Different Analytical Strategies European Winter Conference on Plasma Spectrochemistry, Lillehammer, Norway, 4. - 8. Feb. 2001.

Nurmi, J., Hann, S., Krachler, M., Prohaska, T., Köllensperger, G., Stingeder, G. (2001): Multielemental Analysis of Amniotic Fluid by ICP-SFMS European Winter Conference on Plasma Spectrochemistry, Lillehammer, Norway, 4. - 8. Feb. 2001.

Nurmi, J., Hann, S., Krachler, M., Prohaska, T., Köllensperger, G., Stingeder, G. (2001): Multielemental Analysis of Amniotic Fluid by ICP-SFMS Forum Analytik, Vienna, Austria, Jan. 2001.

Prohaska, T., Latkoczy, C., Teschler-Nicola, M., Stingeder, G. 2001: Stable strontium isotope ratio measurements by means of laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) in prehistoric and historic archaeological findings COLA 2001, Tsukuba, Japan, Oct. 2001.

Prohaska, T., Quetel, C.R., Aregbe, Y., Hennessy, C., Liesegang, D., Taylor, P. (2001): ICP-ID-MS measurements of Pb, Cu, Cd and Cr in Sediment and Fly-ash in the scope of the IMEP-14 certification campaign European Conference on Environment, Health and Safety, Paris, France, June 2001.

Quetel, C.R., Held, A., Prohaska, T., Wellum, R., Taylor, P. (2001): Environmental Nuclear Safeguards Monitoring: Uranium Measurements Using Double Focusing Magnetic Sector Multicollector ICP-MS Instrumentation European Winter Conference on Plasma Spectrochemistry, Lillehammer, Norway, Feb. 2001.

Schultheis, G., Prohaska, T., Latkoczy, C., Watkins, M., Teschler-Nicola, M., Stingeder, G. (2001): Measurement of Sr isotope ratios in skeletal human remains using ICP-MS. 17. ICP-MS Anwendertreffen, Vienna, Austria, Sept. 2001.

Nurmi, J., Kanitsar, K., Köllensperger, G., Stingeder, G., Puschenreiter, M., Fitz, W. and Wenzel, W., (2001): Analytical methodology for studying metal uptake processes in the rhizosphere, BOKU-Kongress, Wien, Nov. 2001.

Fitz, W., Wenzel, W., Mentler, A., Stipek, K., Fischerova, Z., MA, L.Q., Nurmi, J., Köllensperger, G., Schweiger, P., (2001): Novel approaches to study the fate of arsenic in the rhizosphere will enhance phytoremediation technologies, BOKU-Kongress, Wien, Nov. 2001.

Prohaska, T., Hann, S., Schultheis, G., Stingeder, G., Wenzel, W. (2001): The potential of laser ablation ICP-MS in rhizosphere research. BOKU-Kongress, Wien, Nov. 2001

Books and book chapters

2003

Prohaska, T., Köllensperger, G., Hann, S., Stingeder, G., Fitz, W., Wenzel, W. (2003) Application of ICP-MS in Environmental Science. In: Plasma Source Mass Spectrometry: Applications and emerging technologies, G. Holland and S.D. Tanner (eds.), The Royal Society of Chemistry, UK, 2003, 93-104

Hann, S., Köllensperger, G. (2003): Speciation by CE-ICP-MS. in: Inductively Coupled Plasma Mass Spectrometry, Simon Nelms (Ed.), Blackwell, Oxford, UK, 2003. submitted

Vanhaecke, F. Köllensperger, G. (2003): Detection by ICPMS
Handbook of Elemental Speciation, ed. Rita Cornelis, Wiley & Sons, New York

2001

Prohaska, T., Quétel, C., Taylor, P.D., Nelms, S., Latkoczy, C., Stingeder, G., Hann, S., Köllensperger, G. (2001): Application and Quality of ICP-MS. In: Holland, G., Tanner, S.D. (Eds.): Plasma Source Mass Spectrometry: The new Millennium, 270-279. The Royal Chemical Society, Cambridge, UK.

Quétel, C., Prohaska, T., Nelms, S., Diemer, J., Taylor, P.D., Latkoczy, C., Stingeder, G. (2001): ICP-MS applied to isotope abundance ratio measurements: performance study and development of a method for combining uncertainty contributions from measurement correction factors. In: Holland, G., Tanner, S.D. (Eds.): Plasma Source Mass Spectrometry: The new Millennium, 270-279. The Royal Chemical Society, Cambridge, UK.

Biochemistry A / Glycobiology

Original articles and reviews in refereed journals

2003

Bencúrová, M., Rendić, D., Fabini, G., Kopecky, E.-M., Altmann, F., Wilson, I.B.H. (2003): Expression of eukaryotic glycosyltransferases in the yeast *Pichia pastoris*. *Biochimie*, 85, 413-422.

Bublín M, Radauer C, Wilson I.B.H, Kraft D, Scheiner O, Breiteneder H, Hoffmann-Sommergruber K. (2003): Cross-reactive N-glycans of Api g 5, a high molecular weight glycoprotein allergen from celery, are required for immunoglobulin E binding and activation of effector cells from allergic patients. *FASEB J.*, 17, 1697-1699.

Faveeuw, C., Malleveay, T., Paschinger, K., Wilson, I.B.H., Fontaine, J., Mollicone, R., Oriol, R., Altmann, F., Lerouge, P., Capron, M., Trottein, F. (2003): Schistosome N-glycans containing core α -3-fucose and core β -2-xylose epitopes are strong inducers of Th2 responses in mice. *Eur. J. Immunol.*, 33, 1271-1281.

Foetisch, K., Westphal, S., Lauer, I., Retzek, M., Altmann, F., Kolarich, D., Scheurer, S., Vieths, S. (2003): Biological activity of IgE specific for cross-reactive carbohydrate determinants. *J. Allergy Clin. Immunol.*, 111, 889-896.

Himly, M., Jahn-Schmid, B., Dedic, A., Kelemen, P., Wopfner, N., Altmann, F., Van Ree, R., Briza, P., Richter, K., Ebner, C., Ferreira, F. (2003): Art v 1, the major allergen of mugwort pollen, is a modular glycoprotein with a defensin-like and a hydroxyproline-rich domain. *FASEB J.*, 17, 106-108.

Krebitz M, Wagner B, Ferreira F, Peterbauer C, Campillo N, Witty M, Kolarich D, Steinkellner H, Scheiner O, Breiteneder H. (2003): Plant-based heterologous expression of Mal d 2, a thaumatin-like protein and allergen of apple (*Malus domestica*), and its characterization as an antifungal protein. *J. Mol. Biol.*, 329, 721-730

Koprivova, A., Altmann F., Gorr, G., Kopriva, S., Reski, R., Decker, E.L. (2003): N-Glycosylation in the moss *Physcomitrella patens* is organized similarly to higher plants. *Plant Biology*, in press

Westphal, S., Kolarich, D., Foetisch, K., Lauer, I., Altmann, F., Conti, A., Crespo, J.F., Rodriguez, J., Enrique, E., Vieths, S., Scheurer, S. (2003): Molecular characterization and allergenic activity of Lyc e 2 (β -fructofuranosidase), a glycosylated allergen of tomato. *Eur. J. Biochem.*, 270, 1327-1337.

Wilson, I.B.H. (2003) The never-ending story of peptide O-xylosyltransferase. *Cell Mol Life Sci*, in press

Zhang, W., Cao, P., Chen, S., Spence, A.M., Zhu, S., Staudacher, E., Schachter, H. (2003): Synthesis of paucimannose N-glycans by *Caenorhabditis elegans* requires prior actions of UDP-N-acetyl-d-glucosamine: α -3-d-mannoside β 1,2-N-acetylglucosaminyltransferase I, α 3,6-mannosidase II and a specific membrane-bound β -N-acetylglucosaminidase. *Biochem. J.*, 372, 53-64.

2002

Bouyain, S., Silk, N.J., Fabini, G., Drickamer, K. (2002): An Endogenous *Drosophila* Receptor for Glycans Bearing α 1,3-Linked Core Fucose Residues. *J. Biol. Chem.*, 277, 22566-72.

Fabini, G. and Wilson, I.B.H. (2002) Stage and tissue specific expression of a sialyltransferase-like gene (CG4871) in *Drosophila melanogaster*. *Dros Inf Serv* 85: 45-49

Müller, R., Altmann, F., Zhou, D., Hennet, T. (2002): The *Drosophila melanogaster* brainiac Protein is a Glycolipid-specific β 1,3 N-Acetylglucosaminyltransferase. *J. Biol. Chem.* 277, 32417-32420.

Wilson, I.B.H. (2002): Functional Characterization of *Drosophila melanogaster* Peptide O-Xylosyltransferase, the Key Enzyme for Proteoglycan Chain Initiation and Member of the Core 2/I N-Acetylglucosaminyltransferase Family. *J. Biol. Chem.*, 277, 21207-21212.

Wilson, I.B.H. (2002): Glycosylation of proteins in plants and invertebrates. *Curr. Opin. Struct. Biol.*, 12, 569-577.

2001

Alisi, C., Afferni, C., Iacovacci, P., Barletta, B., Tinghio, R., Butterino, C., Puggioni, E.M.R., Wilson, I.B.H., Federico, R., Schinina, M.E., Ariano, R., Felice, G. Di., Pini, C. (2001): Rapid Isolation, characterization and glycan analysis of Cup a 1, the major allergen from Arizona cypress (*Cupressus arizonica*) pollen. *Allergy*, 56, 978-984.

Altmann, F., Fabini, G., Ahorn, H., Wilson, I.B.H. (2001): Genetic model organisms in the study of N-glycans. *Biochimie*, 83, 703-712.

Ballmer-Weber, B.K., Wüthrich, B., Wangorsch, A., Fötisch, K., Altmann, F., Vieths, S. (2001): Carrot allergy: Double-blinded, placebo-controlled food challenge and identification of allergens. *J. Allergy. Clin. Immunol.*, 108, 301-307.

Bürgmayr, S., Grabher-Meier, H., Staudacher, E. (2001): Sialic acids in gastropods. *FEBS Lett.*, 508, 95-98.

Fabini, G., Freilinger, A., Altmann, F., Wilson, I.B.H. (2001): Identification of Core α 1,3-Fucosylated Glycans and Cloning of the Requisite Fucosyltransferase cDNA from *Drosophila melanogaster*. Potential Basis of the neural anti-horseradish peroxidase epitope. *J. Biol. Chem.*, 276, 28058-28067.

Fabini, G., Raijmakers, R., Hayer, S., Fouraux, M.A., Pruijn, G.J.M., Steiner, G. (2001): The Heterogeneous Nuclear Ribonucleoproteins I and K Interact with a Subset of the Ro Ribonucleoprotein-associated Y RNAs in Vitro and in Vivo. *J. Biol. Chem.*, 276, 20711-20718.

Fabini, G., Wilson, I.B.H. (2001): Glycosyltransferases in *Drosophila melanogaster*. *Dros. Inf. Serv.*, 84, 122-129.

Hemmer, W., Focke, M., Kolarich, D., Wilson, I.B.H., Altmann, F., Wöhrl, S., Götz, M., Jarisch, R. (2001): Antibody binding to venom carbohydrates is a frequent cause for double positivity to honeybee and yellow jacket venom in patients with stinging-insect allergy. *J. Allergy Clin. Immunol.*, 108, 1045-1052.

Mucha, J., Svoboda, B., Fröhwein, U., Strasser, R., Mischinger, M., Schwihla, H., Altmann, F., Hane, W., Schachter, H., Glössl, J., Mach, L. (2001): Tissues of the clawed frog *Xenopus laevis* contain two closely related forms of UDP-GlcNAc: 3-D-mannoside β -1,2-N-acetylglucosaminyltransferase I. *Glycobiology*, 11, 769-778.

Siebenhandl, S., Lestario, L.N., Trimmel, D., Berghofer, E. (2001): Studies on tape ketan - an Indonesian fermented rice food. *International Journal of Food Sciences and Nutrition*, 52, 347-357.

Wagner, T., Vadon, M., Staudacher, E., Schmarda, A., Gassner, C., Helmberg, W., Lanzer, G., Flegel, W.A., Wagner, F.F. (2001): A new h allele detected in Europe has a missense mutation in α (1,2)-fucosyltransferase motif II. *Transfusion*, 41, 31-8.

Wilson, I.B.H. (2001): Identification of a cDNA encoding a plant Lewis-type α 1,4-fucosyltransferase. *Glycoconjugate J.*, 18, 439-447.

Wilson, I.B.H., Rendić, D., Freilinger, A., Dumić, J., Altmann, F., Mucha, J., Müller, S., Hauser, M-T. (2001): Cloning and expression of cDNAs encoding α 1,3-fucosyltransferase homologues from *Arabidopsis thaliana*. *Biochim. Biophys. Acta (General Subjects)*, 1527, 88-96.

Wilson, I.B.H., Zeleny, R., Kolarich, D., Staudacher, E., Stroop, C.J.M., Kamerling, J.P., Altmann, F. (2001): Analysis of Asn-linked glycans from vegetable foodstuffs: Widespread occurrence of Lewis a, core α 1,3-fucose and xylose substitutions. *Glycobiology*, 11, 261-274.

Conference & workshop proceedings, abstracts

2003

Fabini, G., Rendić, D., Paschinger, K., Wilson, I.B.H. (2003): Fucosylation and the anti-horseradish peroxidase epitope in *Drosophila melanogaster*. 8th Annual Conference of the Society for Glycobiology, 3.-6. Dec. 2003, San Diego, USA; *Glycobiology*, 13, 895, (Abstract 263)

Fabini, G., Rendić, D., Paschinger, K., Wilson, I.B.H. (2003): Fucosylation and the anti-horseradish peroxidase epitope in *Drosophila melanogaster*. 18th European Drosophila Research Conference, 2.-4. Oct. 2003, Göttingen, H34

Kolarich, D., Polacsek, K., Altmann, F. (2003): Proteomics / Glycomics of wasp venom. Annual meeting of the Austrian Biochemical Society, Sept. 2003, Graz.

Kolarich, D., Altmann, F. (2003): The protein-linked glycans of wasp venom. 1st Austrian-Hungarian Carbohydrate Conference, Sept. 2003, Schlaining, Austria.

Léonard, R., Petersen, B.O., Duus, J., Himly, M., Wopfner, N., Ferreira, F., Altmann, F. (2003): The two types of glycosylation of Art v 1 and their contribution to antibody binding. Annual meeting of the Austrian Society for Allergy and Immunology, Dec. 2003, Salzburg.

Staudacher, E., Bürgmayr, S., Gutternigg, M. (2003): Land- and Watersnails: Comparison of Their N-Glycosylation Capacities. 1st Austrian-Hungarian Carbohydrate Conference, Sept. 2003, Schläining, Austria.

Peyer, C., Bonay, P., Häusler, H., Stütz A., and Staudacher E. (2003): Characterisation and functional purification of a beta-xylosidase from potato. XVII International Symposium on Glycoconjugates, Jan. 12-16. Bangalore, India.

2002

Altmann, F. (2002): An echo of evolution: Protein glycosylation in plants and invertebrates. Invited lecture at the XIXth Journées de Chimie at Biochimie des Glucides (Société Française de Chimie), Albé, France.

Bencúrová, M., Wilson, I.B.H., Hemmer, W., Focke-Tejkl, M., Altmann, F. (2002): Creating plant IgE-binding epitopes on a human glycoprotein. 6th Jenner glycobiology and medicine symposium 14-17 Sept. 2002, Seillac, France

Bencúrová, M., Focke-Tejkl, M., Hemmer, W., Wilson, I.B.H., and Altmann, F. (2002): Enzymatically remodelled human glycoprotein is suitable for detection of anti-carbohydrate IgE. Austrian society for allergology and immunology, annual meeting, Nov. 21-23, 2002, Innsbruck

Bencúrová, M., Wilson, I.B.H., Altmann, F. (2002): Enzymatic synthesis of plant-like N-glycans using recombinant α 1,3-fucosyltransferase and β 1,2-xylosyltransferase. 3rd International Symposium on Glycosyltransferases, 19-22 Sept. 2002, Stockholm, Sweden

Fabini, G., Wilson, I.B.H. (2002): Specific N-glycan modification in the neural system of *Drosophila melanogaster*. 3rd International Symposium on Glycosyltransferases, 19-22 Sept. 2002, Stockholm, Sweden

Fabini, G., Wilson, I.B.H. (2002): Specific N-glycan modification in the neural system of *Drosophila melanogaster*. Joint annual meeting of the ÖGBM, ÖGGGT and ÖGBT, Life Sciences Sept. 2002, Salzburg, Short talk ST9

Paschinger, K., Altmann, F., Wilson, I.B.H. (2002): Structure and Biosynthesis of N-glycans in *Caenorhabditis elegans*. 3rd International Symposium on Glycosyltransferases, 19-22 Sept. 2002, Stockholm, Sweden

Leonard, R., Kaar, W., Himly, M., Wopfner, N., Ferreria, F., Altmann, F. (2002): A hydroxyproline linked oligosaccharide as immunogenic entity in an allergen. 6th Jenner Glycobiology and Medicine Symposium, Sept. 2002, Seillac, France.

Leonard, R., Kaar, W., Himly, M., Wopfner, N., Ferreria, F., Altmann, F. (2002): The major allergen of *Artemisia vulgaris* has a new allergenic O-glycan structure. 13th Joint meeting of the Studiengruppe Glykobiologie der Gesellschaft für Biochemie und Molekularbiologie, Nov. 21-23, 2002, Münster, Germany.

Wilson, I.B.H. (2002): Peptide O-xylosyltransferases of *Caenorhabditis elegans* and *Drosophila melanogaster* (Short talk). 3rd International Symposium on Glycosyltransferases, 19-22 Sept. 2002, Stockholm, Sweden

Wilson, I.B.H. (2002): Glycans from plants and invertebrates: structures and antibody interactions (invited talk) Euroworkshop III on Interdisciplinary Perspectives of Diagnostic Pathology, Cell Biology, and Morphometry. Dec. 6 – 8, 2002, Madrid, Spain

Wilson, I.B.H. (2002): Peptide O-xylosyltransferases of *Caenorhabditis elegans* and *Drosophila melanogaster*. In: Society for Glycobiology (Ed.): 7th Annual Conference of the Society for Glycobiology, 9-12 Nov. 2002, Boston, USA; Glycobiology, 12, 680, Abstract 112.

Westphal, S., Fötisch, K., Lauer, I., Conti, A., Kolarich, D., Altmann, F., Hausteiner, D., Vieths, S., Scheurer, S. (2002): Cloning and Characterization of β -Fructofuranosidase, a Newly Identified Glycoprotein as a Minor Allergen of Tomato (*Lycopersicon Esculentum*). (AAAAI 58th Annual Meeting, New York, 1.– 6. 3. 02). J. Allergy Clin. Immunol., 109, S274 (Abs. 947).

2001

Ahrer, K., Staudacher, E. (2001): Complex neutral N-glycans of *Arion lusitanicus* and *Arion rufus*. XVI International Symposium on Glycoconjugates, Den Haag; Glycoconj. J., 18, 154.

Altmann, F., Fabini, G., Bencúrová, M., Kolarich, D., Wilson, I.B.H. (2001): N-glycosylation in model organisms. 6th Annual Conference of the Society for Glycobiology; Glycobiology, 11, 912, Abs. 152.

Bindeus, G., Siebenhandl, S., Altmann, F., Berghofer, E. (2001): Enrichment and stabilisation of flavonoid extracts of *Anthemis tinctoria* L. In: Royal Society of Chemistry (Ed.): Proc., EUROFOODCHEM XI "Biologically-active Phytochemicals in Food: Analysis, Metabolism, Bioavailability and Function", 330-331. Norwich Research Park, Norwich, UK, 26-28 Sep. 2001. ISBN 0-85404-806-5.

Bindeus, G., Siebenhandl, S., Altmann, F., Berghofer, E. (2001): Preliminary screening of antioxidant activity of different ethanol extracts of *Anthemis tinctoria* L. European Conference "Bioactive Compounds in Plant Foods". Final COST 916 Conference, 26-28 April, 2001. Tenerife, Canary islands, Spain.

Bürgmayr, S., Staudacher, E. (2001): Sialylation of gastropod glycoproteins. XVI International Symposium on Glycoconjugates, Den Haag; Glycoconj. J., 18, 155.

Bürgmayr, S., Staudacher, E. (2001): Sialylation - a new feature for gastropods. Joint annual meeting of the ÖGBM, ÖGGGT and ÖGBT, Life Sciences 24.9.01 Vienna, Poster P38.

Fabini, G., Freilinger, A., Altmann, F., Wilson, I.B.H. (2001): Potential basis of the neural anti-HRP epitope in *Drosophila melanogaster*: identification of core α 1,3-fucosylated glycans and cloning of the requisite fucosyltransferase cDNA. 6th Annual Conference of the Society for Glycobiology; Glycobiology 11, 885, Abs. 66.

Fabini, G., Freilinger, A., Altmann, F., Wilson, I.B.H. (2001): Molecular basis of the neural anti-horseradish peroxidase epitope: Identification of core α 1,3-fucosylated glycans and cloning of the requisite fucosyltransferase cDNA from *Drosophila melanogaster*. GLYCO XVI, 19-24.8., The Hague; Glycoconj. J., 18, 53.

Fabini, G., Freilinger, A., Altmann, F., Wilson, I.B.H. (2001): Potential basis of the *Drosophila* neural anti-HRP epitope. Joint annual meeting of the ÖGBM, ÖGGGT and ÖGBT, Life Sciences 25.9.01 Vienna, Poster P6.

Kolarich, D., Fabini, G., Wilson, I.B.H., Altmann, F. (2001): More structures than cells? The N-glycans of *Caenorhabditis elegans*. GLYCO XVI, 19. - 24. 8., The Hague; Glycoconj. J., 18, 51.

Rendić, D., Wilson, I.B.H. (2001): Towards understanding the phosphorylation of β 1,4-galactosyltransferase. GLYCO XVI, 19. - 24. 8., The Hague; Glycoconj. J., 18, 53.

Siebenhandl, S., Wagner, M., Berghofer, E. (2001): Potent antioxidative compounds in peas fermented with *Rhizopus oligosporus*. In: Royal Society of Chemistry (Ed.): Proc., EUROFOODCHEM XI "Biologically-active Phytochemicals in Food. Analysis, Metabolism, Bioavailability and Function", 533-535. Norwich Research Park, Norwich, UK, 26-28 Sept. 2001. ISBN 0-85404-806-5.

Rendić, D., Wilson, I.B.H. (2001): Towards understanding the phosphorylation of β 1,4-galactosyltransferase. GLYCO XVI, 19. - 24.8., The Hague; Glycoconj. J., 18, 53.

Rendić, D., Wilson, I.B.H. (2001): Towards understanding the phosphorylation of β 1,4-galactosyltransferase. Joint annual meeting of the ÖGBM, ÖGGGT and ÖGBT, Life Sciences 25.9.01 Vienna, Poster P24.

Staudacher, E., Ahrer, K. (2001): Analysis of the complex neutral N-glycans of *Arionidae*. Joint annual meeting of the ÖGBM, ÖGGGT and ÖGBT, Life Sciences 24.-26. 9. 01 Vienna, Short talk ST-IV.

Wilson, I.B., Rendić, D., Freilinger, A., Dumic, J., Altmann, F., Mucha, J., Müller, S., Hauser, M.-T. (2001): Cloning and expression of cDNAs encoding α 1,3-fucosyltransferase homologues from plants. GLYCO XVI, 19. - 24.8., The Hague; Glycoconj. J. 18, 64 (Abs. C10.7).

Wilson, I.B.H, Rendić, D., Freilinger, A., Bencúrová, Dumic, J., Altmann, F., Mucha, J., Müller, S., Hauser, M.-T. (2001): Cloning and expression of cDNAs encoding α 1,3-fucosyltransferase homologues from plants. Joint annual meeting of the ÖGBM, ÖGGGT and ÖGBT, Life Sciences 24. - 26. 9. 01 Vienna, Poster P18.

Patents

2001

Glössl, J., Strasser, R., Mucha, J., Steinkellner, H., Mach, L., Altmann, F., Wilson, I.B. (2001): Xylosyltransferase Gen. Österreichische Patentanmeldung Nr. A 355/2000. Internationale Patentanmeldung PCT/EP01/02352.

Biochemistry B / Metalloprotein Research Group

Original articles and reviews in refereed journals

2003

Arnhold J.; Furtmüller P.G.; Obinger C. (2003): Redox properties of myeloperoxidase. *Redox Report*, 8, 4, 179-186.

Furtmüller, P.G., Arnhold, J., Jantschko, W., Pichler, H., Obinger, C. (2003): Redox Properties of the Couples Compound I/Compound II and Compound II/Native Enzyme of Human Myeloperoxidase. *Biochem. Biophys. Res. Commun.*, 301, 551-557.

Ivancich, A., Jakopitsch, C., Auer, M., Sun, U., Obinger, C. (2003): Protein-based Radicals in the catalase-peroxidase of *Synechocystis* PCC 6803: A multifrequency EPR investigation of wild type and selected mutants on the environment of the heme active site. *J. Am. Chem. Soc.* 125. 14093-14102.

Jakopitsch, C., Auer, M., Ivancich, A., Rüker, F., Furtmüller, P.G., Obinger, C. (2003): Total conversion of bifunctional catalase-peroxidase (KatG) to monofunctional peroxidase by exchange of a conserved distal side tyrosine. *J. Biol. Chem.*, 278, 22, 20185-191.

Jakopitsch, C., Auer, M., Regelsberger, G., Jantschko, W., Furtmüller, P.G., Rüker, F., Obinger, C. (2003): The catalytic role of the distal site asparagine-histidine couple in catalase-peroxidases. *Eur. J. Biochem.*, 270, 1006-1013.

Jakopitsch, C., Auer, M., Regelsberger, G., Jantschko, W., Furtmüller, P.G., Rüker, F., Obinger, C. (2003): Distal Site Aspartate Is Essential in the Catalase Activity of Catalase-Peroxidases. *Biochemistry*, 18, 42, 5292-5300.

Jakopitsch, C., Kolarich, D., Petutschnig, G., Furtmüller, P.G., and Obinger, C. (2003): Distal side tryptophan, tyrosine and methionine in catalase-peroxidases are covalently linked in solution. *FEBS Lett.* 552, 2-3, 135-140.

Jantschko, W., Furtmüller, P.G., Zederbauer, M., Lanz, M., Jakopitsch, C., and Obinger, C. (2003): Direct conversion of ferrous myeloperoxidase to compound II by hydrogen peroxide: an anaerobic stopped-flow study. *Biochem. Biophys. Res. Commun.* 312. 292-298.

Paumann, M., Lubura, B., Feichtinger, M., Köllensperger, G., Jakopitsch, C., Furtmüller, P.G., Peschek, G. A., Obinger, C. (2003) Soluble Cu_A domain of *Synechocystis* PCC 6803 cytochrome *c* oxidase. *J. Biol. Chem.*, 278. in press.

Peschek, G.A., Obinger, C. and Paumann, M. (2003): The respiratory chain of blue-green algae (*cyanobacteria*). *Physiol. Plant.* 120. in press

Santoni, E., Jakopitsch, C., Obinger, C., Smulevich, G. (2003): Structural implications of the mutation of the covalently linked Met-Tyr-Trp in catalase-peroxidase. *Biopolymers*, in press

2002

Atzenhofer, W., Regelsberger, G., Jacob, U., Peschek, G.A., Furtmüller, P.G., Huber, R., Obinger, C. (2002): The 2.0 Å resolution structure of the catalytic portion of a cyanobacterial membrane-bound manganese superoxide dismutase. *J. Mol. Biol.*, 321, 479-489.

Furtmüller, P. G., Jantschko, W., Regelsberger, G., Jakopitsch, C., Arnhold, J. and Obinger, C. (2002): Reaction of Lactoperoxidase Compound I with Halides and Thiocyanate. *Biochemistry* 41. 11895-11900.

Heering, H. A., Indiani, C., Regelsberger, G., Jakopitsch, C., Obinger, C., Smulevich, G. (2002): New Insights into the Heme Cavity Structure of Catalase-Peroxidase: A Spectroscopic Approach to the Recombinant *Synechocystis* Enzyme and Selected Distal Cavity Mutants. *Biochemistry*, 41. 9237-9247.

Jakopitsch, C., Regelsberger, G., Furtmüller, P.G., Rüker F., Peschek, G.A., Obinger, C. (2002): Engineering the proximal heme cavity of catalase-peroxidase. *J. Inorg. Biochem.*, 91. 78-86.

Jantschko, W., Furtmüller, P.G., Allegra, M., Livrea, M.A., Jakopitsch, C., Regelsberger, G., Obinger, C. (2002): Redox Intermediates of Plant and Mammalian Peroxidases: A Comparative Transient-Kinetic Study of Their Reactivity Toward Indole Derivatives. *Arch. Biochem. Biophys.*, 398, 1, 12-22.

Regelsberger, G., Atzenhofer, W., Rüker, F., Peschek, G.A., Jakopitsch, C., Paumann, M., Furtmüller, P.G., Obinger, C. (2002): Biochemical characterization of a membrane-bound manganese-containing superoxide dismutase from the cyanobacterium *Anabaena* PCC 7120. *J. Biol. Chem.*, 277, 46, 43615-4362.

Regelsberger, G., Jakopitsch, C., Plasser, L., Schwaiger, H., Furtmüller, P.G., Peschek, G. A., Zámocký, M. and Obinger, C. (2002): Occurrence and biochemistry of hydroperoxidases in oxygenic phototrophic prokaryotes (*cyanobacteria*). *Plant Physiol. Biochem.* 40. 479–490.

2001

Allegra, M., Furtmüller, P.G., Regelsberger, G., Turco-Liveri, M.L., Tesoriere, L., Perretti, M., Livrea, M.A., Obinger, C. (2001): Mechanism of Reaction of Melatonin with Human Myeloperoxidase. *Biochem. Biophys. Res. Commun.* 282, 380-386.

Arnhold, J., Furtmüller, P.G., Regelsberger, G., Obinger, C. (2001): Redox properties of the couple compound I/native enzyme of human myeloperoxidase and eosinophil peroxidase. *Eur. J. Biochem.*, 268, 5142-5148.

Furtmüller, P.G., Jantschko, W., Regelsberger, G., Jakopitsch, C., Moguilevsky, N., Obinger, C. (2001): A transient-kinetic study on the reactivity of recombinant unprocessed monomeric myeloperoxidase. *FEBS Lett.*, 503, 2-3, 147-150.

Furtmüller, P.G., Jantschko, W., Regelsberger, G., Obinger, C. (2001): Spectral and Kinetic Studies on Eosinophil Peroxidase Compound I and II and their Reaction with Ascorbate and Tyrosine. *Biochim. Biophys. Acta*, 1548, 1, 121-128.

Jakopitsch, C., Regelsberger, G., Furtmüller, P.G., Rüker, F., Peschek, G.A., Obinger, C. (2001): Catalase-Peroxidase from *Synechocystis* Is Capable of Chlorination and Bromination Reactions. *Biochem. Biophys. Res. Commun.*, 287, 3, 682-687.

Kreitner, M., Wagner, K.-H., Alth, G., Ebermann, R., Foissy, H., Elmadfa, I. (2001): Haematoporphyrin – and sodium chlorophyllin-induces phototoxicity towards bacteria and yeasts – a new approach for safe foods. *Food Control*, 12, 529-532.

Regelsberger, G., Jakopitsch, C., Furtmüller, P.G., Rücker, F., Switala, J., Loewen, P., Obinger, C. (2001): The Role of Distal Tryptophan in the Bifunctional Activity of Catalase-Peroxidases. *Biochem. Soc. Trans.*, 29, 99-105.

Zámocký, M., Regelsberger, G., Jakopitsch, C., Obinger, C. (2001): The molecular peculiarities of catalase-peroxidases. *FEBS Lett.*, 492, 3, 177-182.

Conference & workshop proceedings, abstracts**2003**

Furtmüller, P.G., Zederbauer, M., Jantschko, W., Moguilevsky, N., and Obinger, C. (2003): Manipulating the covalent link in human myeloperoxidases. In: (Hrsg.) / (Ed.) / (Eds.): Casella, L.: Metalloenzymes and Chemical Biometrics, 18-21 Sept. 2003, Thessaloniki, 10, Thessaloniki Greece.

Ivancich, A., Jakopitsch, C., and Obinger, C. (2003): Identification of the radical intermediates formed by the catalase-peroxidase of *Synechocystis* PCC 6803: A multifrequency EPR spectroscopy study combined with isotope labelling and site directed mutagenese. In: (Hrsg.) / (Ed.) / (Eds.): Casella, L.: Metalloenzymes and Chemical Biometrics, 8-21 Sept. 2003, Thessaloniki, 15, Thessaloniki, Greece.

Jakopitsch, C., Petutschnig, G., Zehner, F., Rüker, F., Furtmüller, P. G., and Obinger C. (2003): Do we really understand the catalatic reactivity? In: (Hrsg.) / (Ed.) / (Eds.): Halliwell, B and Sies, H.: Plant Stress, Reactive Oxygen and Antioxidants, 10. -13. Sept., Freising-Weihenstephan; Free Radical Research, 37, 8, Oxfordshire, UK; ISSN 1071-5762.

Petutschnig, G., Jakopitsch, C., Auer, M., Rüker, F., Furtmüller, P. G., and Obinger, C. (2003): Engineering catalase-peroxidases: The structural basis of the activity of catalase-peroxidases. In: (Hrsg.) / (Ed.) / (Eds.): Pifat-Mrzljak, G.: Eighth International Summer School on Biophysics, 14 -26 Sept., 2003, Rovinj, Croatia, 170, Zagreb, Croatia; ISBN 953-6690-28-4.

Ramos, D. R., Canle, L. M., Garcia, M. V., Santabella, J. A., Obinger, C. (2003): Taurine chlorination by myeloperoxidase/H₂O₂/Cl⁻ system: a kinetic steady-state study. In: (Hrsg.) / (Ed.) / (Eds.): Vladimir Kren, 6th International symposium on Biocatalysis and Biotransformations, 28. June-3. July 2003 Olomouc, Czech Republic.

Ramos, D. R., Garcia, M. V., Santabella, J. A., Obinger, C. (2003): Myeloperoxidase-catalyzed chlorination mechanism: HOCl released in medium, or enzyme-bound chlorinating intermediate? In: (Hrsg.) / (Ed.) / (Eds.): P. Kolsaker. 9th European Symposium on Organic Reactivity, 12-17 July 2003, OR22, Oslo, Norway.

Santoni, E., Jakopitsch, C., Obinger, C., and Smulevich, G. (2003): Comparison between catalase-peroxidase and cytochrom c peroxidase: A resonance raman study. In: (Hrsg.) / (Ed.) / (Eds.): Casella, L.: Metalloenzymes and Chemical Biometrics, 18-21 Sept. 2003, Thessaloniki, 14, Thessaloniki, Greece.

Santoni, E., Jakopitsch, C., Obinger, C., Smulevich, G. (2003): New insight into the structural properties of catalase-peroxidase. 10th European Conference on the Spectroscopy of Biological Molecules (ECSBM), Szeged, Hungary.

Zederbauer, M., Ciaccio, C., Moguilevsky, N., Jantschko, W., Furtmüller, P. G., and Obinger, C. (2003): Converting Myeloperoxidase to Lactoperoxidase. In: (Hrsg.) / (Ed.) / (Eds.): Pifat-Mrzljak, G.: Eighth International Summer School on Biophysics, 14 -26. Sept., 2003, Rovinj, Croatia, 200, Zagreb, Croatia; ISBN 953-6690-28-4.

2002

Furtmüller, P.G., Arnhold, J., Obinger, C. (2002): Use of stopped-flow spectrophotometry to establish reduction potentials of peroxidase redox intermediates. In: Acosta-Echeverria, M., Pedreno, A. (Eds.): VI International Plant Peroxidase Symposium, Murcia, Spain. 2002, Book of Abstract S2-P3.

Furtmüller, P.G., Jantschko, W., Regelsberger, G., Arnhold, J., Moguilevsky, N., Obinger, C. (2002): Structure-function relationships within the mammalian peroxidase superfamily. In: Mortem Bjerrum, Ebbe Nordlander (Ed.): 6th European Conference on Bioinorganic Chemistry, Eurobic-6, July 29 -August 3 2002, Book of Abstract P177.

Furtmüller, P.G., Jantschko, W., Regelsberger, G., Jakopitsch, C. Moguilevsky, N., Obinger, C. (2002): A transient-kinetic study on the reactivity of monomeric, unprocessed recombinant myeloperoxidase. In: Etienne Pays (Ed.): Abstr. 180th meeting of the Belgian Society of Biochemistry and Molecular Biology (BMB).

Jakopitsch, C., Obinger, C., Ivancich, A. (2002): Identification of the electronic structure of radical intermediates in peroxidases and catalase-peroxidases by multifrequency (9-285 GHz) EPR spectroscopy. In: Acosta-Echeverria, M., Pedreno, A. (Eds.): VI International Plant Peroxidase Symposium, Murcia, Spain. 2002, Book of Abstract S1-O3.

Jakopitsch, C., Regelsberger, G., Rucker, F., Peschek, G.A., Obinger, C. (2002): Manipulating the distal asparagine-histidine couple in catalase-peroxidase. In: Acosta-Echeverria, M., Pedreno, A. (Eds.): VI International Plant Peroxidase Symposium, Murcia, Spain. 2002, Book of Abstract S1-P1.

Jantschko, W., Furtmüller, P.G., Obinger, C. (2002): Redox intermediates of plant and mammalian peroxidases: A comparative transient-kinetic study of their reactivity towards indole derivatives. In: Acosta-Echeverria, M., Pedreno, A. (Eds.): VI International Plant Peroxidase Symposium, Murcia, Spain. 2002, Book of Abstract S2-P5.

Obinger, C., Jakopitsch, C., Regelsberger, G., Santoni, E., Smulevich, G., Ivancich, A. (2002): Catalase-peroxidases: What have they got in their heme pocket? In: Acosta-Echeverria, M., Pedreno, A. (Eds.): VI International Plant Peroxidase Symposium, Murcia, Spain. 2002, Book of Abstract S1-O2.

Obinger, C. (2002): Heme peroxidases: oxidation capacity and/or substrate specificity? Workshop: Biooxidations – New Enzymes, Variants and Applications, TU-Graz, Austria.

Obinger, C. (2002): structure function relationship in human peroxidases. 5th Meeting of the Management Committee of COST D21 "Metalloenzymes and Chemical Biomimetics", Orsay, France.

Paumann, M., Peer, M., Goldfuhs, M., Regelsberger, G., Obinger, C., Peschek, G. A. (2002): Cu_A containing soluble subunit II domain of *Synechocystis* PCC6803 cytochrome c oxidase and its reactivity towards recombinant cytochrome c₆ and plastocyanin. 5th European Workshop on the Molecular Biology of Cyanobacteria, Stockholm, Sweden, Book of Abstracts P60

Regelsberger, G., Jakopitsch, C., Rücker, F., Peschek, G.A., Obinger, C. (2002): Hydroperoxidases in oxygenic phototrophic prokaryotes- comparison to plant chloroplasts. In: Acosta-Echeverria, M., Pedreno, A. (Eds.): VI International Plant Peroxidase Symposium, Murcia, Spain. 2002, Book of Abstract S2-O8.

Rodrigues, J.C., Pereira, H., Schwanninger, M., Haltrich, D., Galhaup, C., Hinterstoisser, B. (2002): Characterization of Enzymatically Treated Spruce Wood by Analytical Pyrolysis and FT-IR. In: Humphrey, P.E. (Ed.): The 6th Pacific Rim Bio-Based Composites Symposium & Workshop on The Chemical Modification of Cellulosics, Nov. 10th to 13th 2002, Portland, Oregon; Proceedings of The 6th Pacific Rim Bio-Based Composites Symposium & Workshop on The Chemical Modification of Cellulosics, Vol. II, 638, Portland, Oregon, USA.

Rodrigues, J.C., Pereira, H., Schwanninger, M., Haltrich, D., Galhaup, C., Hinterstoisser, B. (2002): Characterization of Enzymatically Treated Spruce Wood by Analytical Pyrolysis and FT-IR. In: Institut für Chemie der Kunststoffe (Ed.): 5th International Symposium on Analytical and Applied Pyrolysis, Sept. 17th to 20th 2002, Leoben, Austria; Abstracts Volume, 158, Leoben, Austria.

Santoni, E., Heering, H. A., Indiani, C., Regelsberger, G., Jakopitsch, C., Obinger, C., Smulevich, G. (2002): Characterization of the recombinant *Synechocystis* catalase-peroxidase and selected distal and proximal mutants. XVIII International Conference on Raman Spectroscopy, Budapest, Hungary, Book of Abstracts P151.

Santoni, E., Heering, H.A., Indiani, C., Regelsberger, G., Jakopitsch, C., Obinger, C., Smulevich, G. (2002): UV-Visible and resonance raman study of selected mutants of recombinant catalase-peroxidase from *Synechocystis*. In: Acosta-Echeverria, M., Pedreno, A. (Eds.): VI International Plant Peroxidase Symposium, Murcia, Spain. 2002, Book of Abstract S1-P2.

Smulevich, G., Santoni, E., Heering, H. A., Indiani, C., Jakopitsch, C., Regelsberger, G., and Obinger, C. (2002): Understanding the Heme Cavity of Catalase-Peroxidase via Site-Directed Mutagenesis and Resonance Raman Spectroscopy. In: Bjerrum, M., Nordlander, E. (Eds.), 6th European Conference on Bioinorganic Chemistry, Eurobic-6, July 29 -August 3, Lund, Sweden and Copenhagen, Denmark, Cost4, Lund, Sweden.

Wang, Z., Obinger, C., Carter, D. C. (2002): Structural studies of human myeloperoxidase reveals unusual heme binding. Annual Meeting of ACA (American Crystallographic Association), San Antonio, USA, Book of Abstracts W0346.

2001

Allegra, M., Furtmüller, P.G., Turco-Liveri, M.L., Tesoriere, L., Obinger, C., Livrea, M.A. (2001): Mechanism of reaction of melatonin with myeloperoxidase. In: Rotilio, G. Virgili, F. (Eds.): *Annale Meeting of the Society for Free Radical Research Europe*, Rome, Italy; Abstract 75.

Furtmüller P.G., Jantschko, W., Obinger, C. (2001): Spectral and kinetic studies on the formation of eosinophil peroxidase compound I and its reaction with one- and two-electron donors. 10th International Conference on Bioinorganic Chemistry, Florence, Italy. *J. Inorg. Biochem.*, 86, 1, 225.

Furtmüller P.G., Jantschko, W., Obinger, C. (2001): Reaction of human eosinophil peroxidase with halides, ascorbate and tyrosine. In: Bayer, K., Schneider, J.W., Weitzer, G. (Eds.): *Annual Meeting of the Österreichische Gesellschaft für Biochemie und Molekularbiologie (ÖGBM)*, Abstract, Vienna, Austria.

Jakopitsch, C., Regelsberger, G., Rüker, F., Peschek, G.A., Obinger, C. (2001): Probing active site residues of catalase-peroxidases. In: Bayer, K., Schnieder, J.W., Weitzer, G. (Eds.): *Jahrestagung der Österreichischen Gesellschaft für Biochemie und Molekularbiologie*, Abstracts, 53, P13, Vienna, Austria.

Jakopitsch, C., Regelsberger, G., Rüker, F., Peschek, G.A., Obinger, C. (2001): The catalatic acitivity of catalase-peroxidases. In: Etienne, A.-L., Houmard, J. (Eds.): *Abstracts European Research Conference Molecular Bioenergetics of Cyanobacteria*, p. 47, Obernai, France.

Jakopitsch, C., Regelsberger, G., Rüker, F., Peschek, G.A., Obinger, C. (2001): Molecular engineering of catalase-peroxidases. 10th International Conference on Bioinorganic Chemistry, Florence, Italy. *J. Inorg. Biochem.*, 86, 1, 277.

Jakopitsch, C., Regelsberger, G., Rüker, F., Peschek, G. A., Obinger, C. (2001): The molecular and functional peculiarities of catalase-peroxidases. 5th Conference on Oxygen, free radicals and oxidative stress in plants, Nice, France, poster.

Jantschko, W., Furtmüller P.G., Allegra, M., Obinger, C. (2001): A comparative study of horseradish peroxidase, lactoperoxidase and myeloperoxidase compound I and II reactivity towards indole derivatives. 10th International Conference on Bioinorganic Chemistry, Florence, Italy. *J. Inorg. Biochem.*, 86, 1, 279.

Jantschko, W., Furtmüller P.G., Allegra, M., Obinger, C. (2001): A comparative study on the reactivity of the redox intermediates of peroxidases from superfamilies I and II. In: Bayer, K., Schneider, J.W., Weitzer, G. (Eds.): *Annual Meeting of the Österreichische Gesellschaft für Biochemie und Molekularbiologie (ÖGBM)*, Abstract, Vienna, Austria.

Obinger, C., Regelsberger, G., Jakopitsch, C., Peschek, G.A., Rüker, F. (2001): The molecular and functional peculiarities of class I peroxidases. 10th International Conference on Bioinorganic Chemistry, Florence, Italy. *J. Inorg. Biochem.*, 86, 1.

Obinger, C. (2001): Struktur-Funktionsbeziehungen in Peroxidasen: Von der Wasserstoffperoxid-Entsorgung über die Ligninbiosynthese bis zur Immunabwehr und Hormonbiosynthese. Graduiertenkolleg über Mechanistische und Anwendungsaspekte nichtkonventioneller Oxidationsreaktionen, University of Leipzig, Germany

Paumann, M., Hiser, C., Rüker, F., Obinger, C., Ferguson-Miller, S., Peschek, G. A. (2001): The cyanobacterial *aa₃*-type cytochrome *c* oxidase: Biochemical characterization and expression of the *Synechocystis* sp. PCC 6803 *cta* genes in *Rhodobacter sphaeroides*. Gordon Research Conference on Bioenergetics, Kimball Union Academy, Meriden, NH (USA), 17-22 June 2001, Poster #29.

Peschek, G.A., Zoder, R., Maghakian, B., Jandrasits, W., Regelsberger, G., Obinger, C., Ahorn, H (2001): A monofunctional catalase from cyanobacteria. 10th International Conference on Bioinorganic Chemistry, Florence, Italy. J. Inorg. Biochem., 86, 1, 377.

Plasser, L., Regelsberger, G., Rüker, F., Peschek, G. A., Obinger, C. (2001): Cloning, overexpression and characterization of a cyanobacterial thioredoxin peroxidase. In: Bayer, K., Schneider, J.W., Weitzer, G. (Eds.): Annual Meeting of the Österreichische Gesellschaft für Biochemie und Molekularbiologie (ÖGBM), Abstract, 60, P43, Vienna, Austria.

Plasser, L., Regelsberger, G., Rüker, F., Peschek, G.A., Obinger, C. (2001): Hydrogen peroxide removal in *Anabaena variabilis*: Cloning, overexpression and characterization of a thioredoxin peroxidase. In: Etienne, A.-L., Houmard, J. (Eds.): Abstracts European Research Conference Molecular Bioenergetics of Cyanobacteria, p. 54, Obernai, France.

Regelsberger, G., Laaha, U., Dagmar, D., Rüker, F., Peschek, G.A., Obinger, C. (2001): Characterization of the superoxide dismutases in the filamentous cyanobacterium *Anabaena variabilis*. In: Etienne, A.-L., Houmard, J. (Eds.): Abstracts European Research Conference Molecular Bioenergetics of Cyanobacteria, p. 56, Obernai, France.

Regelsberger, G., Laaha, U., Dietmann, D., Rüker, F., Peschek, G.A., Obinger, C. (2001): Molecular and kinetic characterization of cyanobacterial iron- and manganese-containing superoxide dismutases. 10th International Conference on Bioinorganic Chemistry, Florence, Italy. J. Inorg. Biochem., 86, 1, 395.

Regelsberger, G., Laaha, U., Dietmann, D., Rüker, F., Peschek, G.A., Obinger, C. (2001): Iron and manganese containing cyanobacterial superoxide dismutases. In: Bayer, K., Schnieder, J.W., Weitzer, G. (Eds.): Jahrestagung der Österreichischen Gesellschaft für Biochemie und Molekularbiologie, Abstracts, 55, P22, Vienna, Austria.

Regelsberger, G., Jakopitsch, C., Plasser, L., Rüker, F., Peschek, G. A., Obinger, C. (2001): Hydroperoxidases and superoxide dismutases in oxygenic phototrophic prokaryotes. 5th Conference on Oxygen, free radicals and oxidative stress in plants, Nice, France,

Schwaiger, H., Regelsberger, G., R ker, F., Peschek, G.A., Z mock y, M., Obinger, C. (2001): Cloning, overexpression and characterization of a cyanobacterial monofunctional catalase. In: Bayer, K., Schnieder, J.W., Weitzer, G. (Eds.): Jahrestagung der  sterreichischen Gesellschaft f r Biochemie und Molekularbiologie, Abstracts, 61, P44, Vienna, Austria.

Zoder, R., Maghakian, B., Jandrasits, W., Regelsberger, G., Obinger, C., Ahorn, H., Peschek, G.A. (2001): A monofunctional catalase (EC 1.11.1.6) from *Chlorogloeopsis fritschii* and other cyanobacteria. In: Etienne, A.-L., Houmar, J. (Eds.): Abstracts European Research Conference Molecular Bioenergetics of Cyanobacteria, p. 65, Obernai, France.

Zoder, R., Maghakian, B., Jandrasits, W., Regelsberger, G., Obinger, C., Ahorn, H., Peschek, G. A. (2001): Monofunctional and bifunctional catalases from *cyanobacteria* - a survey Abstracts VIIIth Cyanobacterial Workshop, "A Signal Event", Asilomar, Pacific Grove, CA (USA), Poster 127.

Zoder, R., Maghakian, B., Jandrasits, W., Regelsberger, G., Obinger, C., Ahorn, H., Peschek, G.A. (2001): A monofunctional catalase from *Chlorogloeopsis fritschii*. 27th FEBS-Meeting, Lissabon, Portugal. Eur. J. Biochem., 268, 226-227.

Books and book chapters

2003

Regelsberger, G., Jakopitsch, C., Plasser, L., Furtm ller, P.G., Paumann, M., Peschek, G.A., Obinger, C. (2003): Hydroperoxidases in oxygenic phototrophic organelles and organisms: a comparison of chloroplasts and cyanobacteria. In: Acosta, M., Rodriguez-Lopez, J.N., Pedreno, M.A. (Eds.), Plant Peroxidases, 77-85; Universidad de Murcia, Servicio de Publicaciones, Printed in Spain.

Santoni, E., Jakopitsch, C., Heering, H.A., Indiani, C., Regelsberger, G., Obinger, C., Smulevich, G., (2003): Spectroscopic and kinetic investigations of selected mutants of recombinant catalase-peroxidase from *Synechocystis*. In: Acosta, M., Rodriguez-Lopez, J.N., Pedreno, M.A. (Eds.), Plant Peroxidases, 40-46; Universidad de Murcia, Servicio de Publicaciones, Printed in Spain.

Wood Chemistry

Original articles and reviews in refereed journals

2003

Gierlinger, N., Jacques, N., Schwanninger, M., Wimmer, R., Hinterstoisser, B., P ques, L.E. (2003): Rapid prediction of natural durability of larch heartwood using FT-NIR spectroscopy. Can. J. For. Res., 33, 1727-1736.

Gierlinger, N., Jacques, D., Schwanninger, M., Wimmer, R., Pâques, L.E. (2003): Extractives and lignin content of different species and origins of *Larix* sp. and relationships to brown-rot decay-resistance, *Trees*. in press

Gierlinger, N., Jacques, D., Grabner, M., Wimmer, R., Schwanninger, M., Rozenberg, P., Pâques, L.E. (2003): Colour of larch heartwood and relationships to extractives and brown-rot decay resistance, *Trees*. in press

Schwanninger, M., Rodrigues, J., Pereira, H., Hinterstoisser B. (2003): Short-time vibratory ball milling of wood and cellulose: Effects on the shape of FT-IR spectra. (1st Revision in progress)

Schwanninger, M., Hinterstoisser, B., Gierlinger, N., Wimmer, R., Hanger, J. (2003): Application of Fourier Transform Near Infrared Spectroscopy (FT-NIR) to thermally modified wood. *Holz Roh- Werkst.* in press.

2002

Galhaup, C., Wagner, H., Hinterstoisser, B., Haltrich, D. (2002): Enhanced production of laccase activity by the wood-degrading basidiomycete *Trametes pubescens*. *Enzyme Microb. Technol.*, 30, 529-536.

Gierlinger, N., Schwanninger, M., Hinterstoisser, B., Wimmer, R. (2002): Rapid determination of heartwood extractives in *Larix* sp. by means of Fourier transform near infrared spectroscopy. *J. Near Infrared Spectrosc.*, 10, 203-214.

Hess, J., Leitner, C., Galhaup, C., Kulbe, K.D., Hinterstoisser, B., Steinwender, M., Haltrich, D. (2002): Enhanced formation of laccase activity by the white-rot fungus *Trametes multicolor*. *Appl. Biochem. Biotechnol.* 98-100. 229-241.

Müller, U., Rätzsch, M., Schwanninger, M., Steiner, M., Zöbl, H. (2002): Yellowing and IR-changes of spruce wood as result of UV-irradiation. *J. Photochem. Photobiol. B: Biol.*, 69, 2, 97-105.

Schwanninger, M., Hinterstoisser, B. (2002): Klason Lignin: Modifications to improve the precision of the standardized determination. *Holzforschung*, 56, 2, 161-166.

Schwanninger, M., Hinterstoisser, B. (2002): Comparison of the classical extraction method using a Soxhlet apparatus with an advanced extraction method. *Holz Roh- Werkst.*, 60, 5, 343-346.

Smidt, E., Lechner, P., Schwanninger, M., Haberhauer, G., Gerzabek, M.H. (2002): Characterization of Waste Organic Matter by FT-IR Spectroscopy: Application in Waste Science. *Appl. Spectrosc.* 56, 9, 1170-1175.

2001

Gindl, W., Teischinger, A., Schwanninger, M., Hinterstoisser, B. (2001): The relationship between near infrared spectra of radial wood surfaces and wood mechanical properties. *J. Near Infrared Spectrosc.*, 9, 255-261.

Hinterstoisser, B., Åkerholm, M., Salmén, L. (2001): Effect of fiber orientation in dynamic FTIR study on native cellulose. *Carbohydr. Res.*, 334, 1, 27-37.

Hinterstoisser, B., Jalkanen, R., Nowotny, M., Schwanninger, M. (2001): Lignification of Scots Pine from Polar Circle up to timberline. *Buvisindi Icel. Agr. Sci.*, 14, 55-59.

Conference & workshop proceedings, abstracts

2003

Fackler, K., Schwanninger, M., Hinterstoisser, B., Messner, K. (2003): Bio-Modification of Spruce Wood by *Ceriporiopsis subvermispota*: Comparison of the Effects of Three Different Strains. In: University of Wisconsin-Madison, Department of Forest Ecology and Management (Ed.): 12th ISWPC, International Symposium on Wood and Pulping Chemistry, June 9th to 12th 2003, Madison, Wisconsin; Proceedings of the 12th International Symposium on Wood and Pulping Chemistry, Vol. III, 291-294, Madison, Wisconsin, USA.

Fackler, K., Schwanninger, M., Sentjurc, M., Humar, M., Tavzes, C., Messner, K. (2003): Fungal Surface Modification of Soft Woods with White Rot Basidiomycete *Ceriporiopsis subvermispota*. In: van Acker, J., Hill, C. (Eds.): The 1st European Conference on Wood Modification: The 1st European Conference on Wood Modification, April 2nd to 4th 2003, Ghent, Belgium, 405-410, Ghent, Belgium; ISBN 9080656526.

Gierlinger, N., Schwanninger, M., Wimmer, R., Hinterstoisser, B., Jacques, D., Pâques, L.E. (2003): Estimation of extractives, lignin and natural durability of larch heartwood (*Larix sp.*) by FT-NIR spectroscopy. In: University of Wisconsin-Madison, Department of Forest Ecology and Management (Ed.): 12th International Symposium on Wood and Pulping Chemistry, June 9th to 12th 2003, Madison, Wisconsin; Proceedings of the 12th International Symposium on Wood and Pulping Chemistry, Vol. III, 51-54, Madison, Wisconsin, USA.

Hinterstoisser, B., Schwanninger, M., Stefke, B., Stingl, R., Patzelt, M. (2003): Surface Analyses of Chemically and Thermally Modified Wood by FT-NIR. In: van Acker, J., Hill, C. (Eds.): The 1st European Conference on Wood Modification: First International Conference of the European Society for Wood Mechanics, April 2nd to 4th 2003, Ghent, Belgium, 65-70, Ghent, Belgium; ISBN 9080656526.

Schwanninger, M., Gierlinger, N., Hanger, H., Hansmann, C., Hinterstoisser, B., Wimmer, R. (2003): Characterization of thermally treated beech wood by UV-VIS microspectrophotometry, FT-MIR and FT-NIR spectroscopy. In: University of Wisconsin-Madison, Department of Forest Ecology and Management (Ed.): 12th International Symposium on Wood and Pulping Chemistry, June 9th to 12th 2003, Madison, Wisconsin; Proceedings of the 12th International Symposium on Wood and Pulping Chemistry, Vol. III, 55-58, Madison, Wisconsin, USA.

Wimmer, R., Gierlinger, N., Grabner, M., Pâques, L.E., Jacques, D., Schwanninger, M. (2003): Wood anatomical, chemical and physico-mechanical properties of various larch (*Larix sp.*) provenances, grown at different sites in Europe. In: IUFRO (Ed.): IUFRO – All Division 5 Conference, Forest Products Research

Providing For Sustainable Choiches, March 11th to 15th 2003, Rotura, New Zealand; Proceedings of the IUFRO – All Division 5 Conference, 89, Rotura, New Zealand.

2002

Fackler, K., Wulz, P., Schild, D., Schwanninger, M., Hinterstoisser, B., Lamaipis, B., Tavzes, C., Messner, K. (2002): Influence Of White Rot Biodegradation On The Surface Properties Of Spruce Wood. In: Humphrey, P.E. (Ed.): The 6th Pacific Rim Bio-Based Composites Symposium & Workshop on The Chemical Modification of Cellulosics, Nov. 10th to 13th 2002, Portland, Oregon, Vol. II, 628, Portland, Oregon, USA.

Fackler, K., Wulz, P., Schild, D., Schwanninger, M., Hinterstoisser, B., Lamaipis, P., Tavzes, C., Messner, K. (2002): Biopulping of Spruce Wood with *Ceriporiopsis subvermispora*: Influence of Short Incubation Times on the Wood Surface Properties. In: Teischinger, A., Stingl, R. (Eds.): International Symposium on Wood Based Materials, Sept. 19th to 20th 2002, Vienna, Austria; Proceedings of the International Symposium on Wood Based Materials, Wood Composites and Chemistry, 277-282, Vienna, Austria.

Fackler, K., Wulz, P., Schild, D., Schwanninger, M., Hinterstoisser, B., Lamaipis, P., Tavzes, C., Messner, K. (2002): Effect of biopulping on the surface properties of wood. In: EWLP (Ed.): 7th European Workshop on Lignocellulosics and Pulp, August 26th to 29th 2002, Turku, Finland; Proceeding of the Seventh European Workshop on Lignocellulosics and Pulp, Towards molecular-level understanding of wood, pulp and paper, 289-292, Turku/Åbo, Finland.

Gierlinger, N., Jacques, D., Marchal, M., Wimmer, R., Schwanninger, M., Pâques, L.E. (2002): Heartwood extractives and durability of larch - relationships and their prediction by FT-NIR spectroscopy. INRA (ed.): Improvement of larch (*Larix sp.*) for better growth, stem form and wood quality. Proceedings of an International Symposium Gap (Hautes-Alpes) - Auvergne & Limousin, Sept. 16-21, 2002, 414-421.

Gierlinger, N., Rosner, S., Gindl, W., Grabner, M., Wimmer, R., Schwanninger, M., Pâques, L.E. (2002): Wood anatomical and chemical characteristics of different larch wood resources in Europe. INRA (ed.): Improvement of larch (*Larix sp.*) for better growth, stem form and wood quality. Proceedings of an International Symposium Gap (Hautes-Alpes) - Auvergne & Limousin, Sept. 16-21, 2002, 388-395.

Grabner, M., Gierlinger, N., Rosner, S., Wimmer, R., Gindl, W., Schwanninger, M., Pâques, L.E. (2002): Effects of ring-width on wood properties of larch. INRA (ed.): Improvement of larch (*Larix sp.*) for better growth, stem form and wood quality. Proceedings of an International Symposium Gap (Hautes-Alpes) - Auvergne & Limousin, Sept. 16-21, 2002, 380-387.

Hinterstoisser, B., Schwanninger, M., Stefke, B., Fackler, K., Weichselberger, G., Haltrich, D., Messner, K. (2002): Potential of Infra-Red Spectroscopy to Trace Wood Modification. In: Humphrey, P.E. (Ed.): The 6th Pacific Rim Bio-Based Composites Symposium & Workshop on The Chemical Modification of Cellulosics, Nov. 10th to 13th 2002, Portland, Oregon; Proceedings of The 6th Pacific Rim Bio-Based Composites Symposium & Workshop on The Chemical Modification of Cellulosics, Vol. II, 467-477, Portland, Oregon, USA.

Hinterstoisser, B. and Schwanninger, M. (2002): Infrared Spectroscopy plus Cluster Analysis: A Tool for Wood Assessment. Spectroscopy, Metabonomics and Multivariate Data Analysis Minisymposium, Umea 3-4 Oct. 2002, Sweden.

Hinterstoisser, B. (2002) Moderne Analysenverfahren zur Charakterisierung der organischen Substanz. 4.KGVÖ-ON Fachtagung: Humus -das Qualitätskriterium für Kompost. Wien (Austria) 16. Mai 2002.

Hinterstoisser, B., Burgert, I., Fackler, K., Galhaup, C., Haltrich, D., Kuncinger, T., Messner K., Schwanninger M., Srebotnik E., Steinwender M., Stefke B., Tschegg S. (2002): Wood Modification for higher Quality Composites COST E13, Vienna, Austria.

Messner K., Fackler K., Srebotnik E., Hinterstoisser B., Steinwender M. (2002): Biotechnological Wood Modification COST E 13, Vienna, Austria.

Schwanninger, M., Hinterstoisser, B., Stefke, B., Stingl, R., Patzelt, M. (2002): Quality Control of Thermally and Chemically Modified Wood by Means of FT-NIR Spectroscopy Using a Fibre-optic Probe. In: Humphrey, P.E. (Ed.): The 6th Pacific Rim Bio-Based Composites Symposium & Workshop on The Chemical Modification of Cellulosics, Nov. 10th to 13th 2002, Portland, Oregon; Proceedings of The 6th Pacific Rim Bio-Based Composites Symposium & Workshop on The Chemical Modification of Cellulosics, Vol. II, 639, Portland, Oregon, USA.

Smidt, E., Lechner, P., Schwanninger, M., Hinterstoisser, B. (2002) FT-IR Spektroskopie zur Charakterisierung der organischen Substanz in Abfällen. 10. Österr. Abfallwirtschafts-tagung 10 Jahre Abfallwirtschaft im ÖWAV.

Stefke, B., Schwanninger, M., Haltrich, D., Messner, K., Fackler, K., Wulz, P., Srebotnik, E., Kuncinger, T., Emsenhuber, G., Hinterstoisser, B. (2002): Chemical and Biochemical Modification of Wood. In: Humphrey, P.E. (Ed.): The 6th Pacific Rim Bio-Based Composites Symposium & Workshop on The Chemical Modification of Cellulosics, Nov. 10th to 13th 2002, Portland, Oregon; Proceedings of The 6th Pacific Rim Bio-Based Composites Symposium & Workshop on The Chemical Modification of Cellulosics, Vol. II, 595-605, Portland, Oregon, USA.

2001

Gindl, W., Schwanninger, M., Hinterstoisser, B. (2001): Relating Chemical Composition of Wood to its Mechanical Properties: Results from UV-Microscopic and Near Infrared Spectroscopic Studies. In: Swiss Federal Institute of Technology (Ed.): First International Conference of the European Society for Wood Mechanics, April 19th to 21st 2001, Lausanne, Switzerland, 15-19, Lausanne, Switzerland.

Hinterstoisser, B., Schwanninger, M., Rosner, S., Gindl, W. (2001): Variability of lignin within and between defined spruce clones. In: Centre Technique Papeterie (Ed.): 11th ISWPC, International Symposium on Wood and Pulping Chemistry, Vol. I, 167-170; June 11-14, Nizza.

Hinterstoisser, B. (2001): Bruker Tagung Bestimmung von Lignin im Rohstoff Holz – Eine weitere Möglichkeit der NIR Technik. 17. Mai 2001 Karlsruhe, NIR-Seminar Papieranalytik (Veranstalter Bruker-Optik).

Hinterstoisser, B. (2001) Holzmodifikations-Verfahren, 27. Juni 2001, Kuchler Holzfachtagung, (2001): Thermische Behandlung von Holz – neue Entwicklungen im Bereich der Wärmebehandlung und der Trocknung von Holz.

Hinterstoisser, B., Åkerholm M., Salmén, L (2001) Load distribution within native cellulose, Polymertagung Leoben 12. - 14. Sept. 2001.

Schwanninger, M., Hinterstoisser, B. (2001): Determination of the lignin content in wood by FT-NIR. In: Centre Technique Papeterie (Ed.): 11th ISWPC, International Symposium on Wood and Pulping Chemistry, Nice, Volume III, 641-644.

Books and book chapters

2002

Wimmer, R., Hinterstoisser, B., Stanzl-Tschegg, S., Grabner, M., Wallner, G., Halbwachs, G., Schär, E., Wagenführ, R. (2002): Anatomical, Chemical and Mechanical Trends in Norway Spruce (*Picea abies* (L.) Karst.) Tree-rings as Indicators of Environmental Stresses, in Particular SO₂-pollution. In: Lomsky, B., Materna, J., Pfan, H. (Eds.); SO₂-Pollution and Forests Decline in the Ore Mountains, 239-260; VULHM, Jiloviste-Strnady ISBN 80-86461-24-6.

Christian Doppler-Laboratory of Pulp Reactivity

Original articles and reviews in refereed journals

2003

Stolze, K., Udilova, N., Rosenau, T., Hofinger, A., Nohl, H. (2003): Spin trapping of superoxide, alkyl- and lipid-derived radicals with derivatives of the spin trap EPPN. *Biochem. Pharmacol.* 66. 1717-1726.

Stolze, K., Udilova, N., Rosenau, T., Hofinger, A., Nohl, H. (2003): Synthesis and characterization of EMPO-derived 5,5-disubstituted 1-pyridine N-oxides as spin traps forming exceptionally stable superoxide spin adducts. *Biol. Chem.* 384. 493-500.

Potthast, A., Röhrling, J., Rosenau, T., Borgards, A., Sixta, H., Kosma, P. (2003): A novel method for the determination of carbonyl groups in celluloses by fluorescence labeling. 3. Monitoring oxidative processes. *Biomacromolecules*, 4. 743-749.

Potthast, A., Rosenau, T., Sartori, J., Sixta, H., Kosma, P. (2003): Hydrolytic processes and condensation reactions in the cellulose system N,N-dimethylacetamide/lithium chloride. Part 2: degradation of cellulose. *Polymer*, 44. 7-17.

Rosenau, T., Hofinger, A., Potthast, A., Kosma, P. (2003): On the conformation of the cellulose solvent N-methylmorpholine-N-oxide (NMMO) in solution. *Polymer*, 44. 6153-6158.

Sartori, J., Potthast, A., Ecker, A., Sixta, H., Rosenau, T., Kosma, P. (2003): Alkaline degradation kinetics and CE-separation of cello- and xylooligomers. Part I. *Carbohydrate Research*, 338. 1209-1216.

Adelwöhrer, C.; Rosenau, T.; Gille, L.; Kosma, P. (2003): Synthesis of novel 3-oxa-tocopherol type antioxidants. *Tetrahedron* 59. 2689-2693

Adelwöhrer, C.; Rosenau, T.; Binder, W. H.; Kosma, P. (2003): Novel Tocopheryl Compounds XV. One-pot Formation of Furotocopheryl Derivatives. C. *Tetrahedron* 59. 3231-3235.

Adelwöhrer, C.; Rosenau, T.; Kosma, P. (2003): Novel Tocopheryl Compounds XVI. Nitration of α -Tocopheryl Acetate – a Mechanistic Study. *Tetrahedron* 59. 8177-8182.

Chrapava, S.; Touraud, D.; Rosenau, T.; Potthast, A.; Kunz, W. (2003) The investigation of the influence of water and temperature on the LiCl/DMAc/cellulose system. *Phys. Chem. Chem. Phys.* 5. 1842-1847.

Lange, T.; Berger-Nicoletti, E.; Kosma, P.; Sixta, H. (2003): Eine Methode zur Bestimmung der Substituentenverteilung bei Viskosen. *Lenzinger Berichte*, in press.

Kosma, P. (2003): Bakterielle Polysaccharide-Struktur und biologische Aktivität. *Das Papier*, 2003, In press.

Rosenau, T.; Potthast, A.; Kosma, P. (2003): Studies on carbenium-iminium ions derived from N-methylmorpholine-N-oxide (NMMO). *Tetrahedron*, in press.

2002

Röhring, J., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): Determination of carbonyl groups in cellulosic substrates. *Lenzinger Ber.* 81, 95-104.

Rosenau, T., Potthast, A., Kosma, P. (2002): Studies into reactions of N-Methyl-morpholine-N-oxide (NMMO) and its hydrates with cyanuric chloride. *Tetrahedron* 58, 9809-9815.

Rosenau, T., Potthast, A., Elder, T., Kosma, P. (2002): Stabilization and first direct spectroscopic evidence of the *ortho*-quinone methide derived from vitamin E. *Org. Lett.* 4, 4285-4288.

Rencurosi, A., Röhring, J., Pauli, J., Potthast, A., Jäger, C., Perez, S., Kosma, P., Imberty, A. (2002): Polymorphism in the crystal structure of the cellulose fragment analogue Methyl 4-O-methyl- β -D-glucopyranosyl-(1-4)- β -D-glucopyranoside. *Angew. Chem. Int. Ed.*, 41, 22, 4277-4281.

Rosenau, T., Potthast, A., Ebner, G., Hofinger, A., Kosma, P. (2002): On a novel Chromanone-naphthalenetrione rearrangement related to vitamin E. *Org. Lett.* 4, 1257-1258.

Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): Degradation of cellulosic materials by heating in DMAc / LiCl. *Tetrahedron Lett.* 43, 7757-7759.

Röhring, J.; Potthast, A.; Rosenau, T.; Lange, T.; Borgards, A.; Sixta, H., Kosma, P. (2002): A novel method for the determination of carbonyl groups in cellulose by fluorescence labeling. Part 2: Validation and applications. *Biomacromolecules* 3, 969-975.

Röhring, J., Potthast, A., Rosenau, T., Lange, T., Ebner, G., Sixta, H., Kosma, P. (2002): A novel method for the determination of carbonyl groups in cellulose by fluorescence labeling. Part I: Method development. *Biomacromolecules* 3, 959-968.

Röhring, J.; Potthast, A., Lange, T., Rosenau, T., Adorjan, I., Hofinger, A., Kosma, P. (2002): Synthesis of oxidized Methyl β -D-glucopyranosides and Methyl 4-O-methyl-(1 \rightarrow 4)- β -D-glucopyranosides as substrates for fluorescence labeling reactions. *Carbohydr. Res.* 337, 691-700.

Mackie, I.D., J. Röhring, J., Gould, R.O., Pauli, J., Jäger, C., Walkinshaw, M., Potthast, A., Rosenau, T., Kosma, P. (2002): Crystal and molecular structure of methyl 4-O-methyl- β -D-glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranoside. *Carbohydr. Res.* 337, 161-166. Corrigendum: *Carbohydr. Res.* 337, 1065.

Rosenau, T., Potthast, A., Sixta, H., Kosma, P. (2002): Radicals derived from *N*-methylmorpholine-*N*-oxide (NMMO): structure, trapping and recombination reactions. *Tetrahedron* 58, 3073-3078.

Rosenau, T., Potthast, A., Hofinger, A., Sixta, H., Firgo, H., Kosma, P. (2002): Cellulose solutions in *N*-methylmorpholine-*N*-oxide (NMMO) - Degradation processes and stabilizers. *Cellulose* 122, 1-10.

Rosenau, T., Potthast, A., Elder, T., Lange, T., Sixta, H., Kosma, P. (2002): Synthesis and oxidation behavior of 2,4,5,7,8-pentamethyl-4*H*-1,3-benzodioxin-6-ol, a multifunctional oxa-tocopherol type oxidant. *J. Org. Chem.* 67, 3607-3614.

Rosenau, T., Potthast, A., Hofinger, A., Kosma, P. (2002): Synthesis and oxidation behavior of a "Siamese Twin" vitamin E model compound. *Angew. Chem. Int. Ed.* 41, 1171-1173.

Potthast, A., Rosenau, T., Buchner, R., Röder, T., Ebner, G., Sixta, H., Kosma, P. (2002): The cellulose solvent system *N,N*-Dimethylacetamide / Lithium chloride revisited: The effect of water on physicochemical properties and chemical stability. *Cellulose* 9, 41-53.

Rosenau, T., Potthast, A., Hofinger, A., Sixta, H., Kosma, P. (2002): Instabilities in the system NMMO / Water / Cellulose (Lyocell Process) caused by Polonowski Type Reactions. *Holzforschung* 56, 199–208.

Rosenau, T., Potthast, A., Röhrling, J., Hofinger, A., Sixta H., Kosma, P. (2002): A solvent-free and formalin-free Eschweiler-Clark type methylation for amines. *Synth. Commun.* 32, 457-465.

Röder, T., Potthast, A., Rosenau, T., Kosma, P., Baldinger, T., Morgenstern, B., Glatter, O. (2002): The effect of water on Cellulose Solutions in DMAc / LiCl. *Macromol. Symp.* 190, 151-159.

2001

Röder, T., Morgenstern, B., Schelosky, N., Glatter, O. (2001): Solutions of cellulose in *N,N*-Dimethylacetamide / Lithium Chloride studied by Light scattering methods. *Polymer*, 42. 6765-6773.

Potthast, A., Rosenau, T., Fischer, K. (2001): Oxidation of benzyl alcohols by the Laccase-Mediator system (LMS) - a comprehensive kinetic description. *Holzforschung*, 55. 47-56.

Röhrling, J., Potthast, A., Rosenau, T., Lange T., Borgards, A., Sixta, H., Kosma, P. (2001): Synthesis and testing of a novel fluorescence label for carbonyls in carbohydrates and celluloses. *Synlett.*, 5, 682-684.

Rosenau, T., Kosma, P. (2001): The Tocopherol-acetaminophen reaction - a new [1,4]-rearrangement discovered in Vitamin E chemistry. *Eur. J. Org. Chem.*, 947-955.

Rosenau, T., Potthast, A., Sixta, H., Kosma, P. (2001): The Chemistry of Side Reactions and Byproduct Formation in the System NMMO / Cellulose (Lyocell Process). *Progr. Polym. Sci.*, 26. 1763-1837.

Rosenau, T., Potthast, A., Hofinger, A., Kosma, P. (2001): Hydrolytic Processes and Condensation Reactions in the Cellulose Solvent System *N,N*-Dimethylacetamide / Lithium Chloride. Part I. *Holzforschung*, 55. 661-666.

Patents

2003

Adelwöhrer, C.; Kosma, P.; Potthast, A.; Renfrew, H.; Rosenau, T.; Sixta, H., (2003) submitted (Lenzing AG). Pulp and viscose fiber modification with covalently linked reagents showing slow-release of active substances.

Berger-Nicoletti, E.; Lange, T.; Jary, S.; Kosma, P.; Potthast, A.; Rosenau, T.; Sixta, H.; Thim, J.; Möslinger, R., (2003) submitted (Lenzing AG). Preparation of cyclodextrin-modified viscose fibres.

2001

LZ 342 Österr. Patent A 1780/2001, Kl. C07B. „Verfahren zur in-situ Generierung von Oxidationsmitteln“

Rosenau, T., Potthast, A., Ebner, G., Kosma, P. Austrian Patent A 143/2001, 29.01.2001. Procedure for oxidation of alcohols.

Conference & workshop proceedings, abstracts

2003

Rencurosi, A.; Kosma, P.; Pereda-Miranda, R.; Imberty, A.; Perez, S. *Abstracts*, 12th European Carbohydrate Symposium, Grenoble, France, July 6-11, 2003. PA 001.

Sartori, J.; Potthast, A.; Sixta, H.; Rosenau, T.; Kosma, P. (2003): Preparation and alkaline degradation of model compounds related to branched xylan. 12th European Carbohydrate Symposium, Grenoble, France, July 6-11, 2003. PD 041. Abstracts,

Sartori, J.; Potthast, A.; Sixta, H.; Rosenau, T.; Kosma, P. (2003): Preparation and alkaline degradation of model compounds related to branched xylan. 12th European Carbohydrate Symposium, Grenoble, France, July 6-11, 2003. Post-symposium on cellulose. Abstracts,

Gille, L.; Gregor, W.; Rosenau, T.; Nohl, H. (2003): Tocopheryl quinone and spin-labeled ubiquinone: Competition for binding sites of the mitochondrial bc₁ complex. Jahrestagung der ÖGBM, Graz, Sept. 2003. Abstracts,

Lange, T.; Kosma, P.; Sixta, H. (2003): Approach to the determination of substituent distribution in viscoses. 4th International Symposium "Materials from renewable resources", Erfurt, D, Sept. 11-12, 2003. S4-19. (oral presentation) Abstracts,

Kosma, P.; Potthast, A.; Rosenau, T.; Röhring, J.; Lange, T.; Borgards, A.; Sixta, H. (2003): Determination of Carbonyl Groups in Cellulosics by Fluorescence Labeling: Novel Applications of the CCOA Method. 12th International Symposium on Wood and Pulping Chemistry, Madison, USA, June 9-12, 2003. I-147.

Adorjan, I.; Rosenau, T.; Potthast, A.; Sixta, H.; Kosma, P. (2003): Studies into Chromophore Formation in NMMO Dopes. 12th International Symposium on Wood and Pulping Chemistry, Madison, USA, June 9-12, 2003. III-251.

Potthast, A.; Rosenau, T.; Sixta, H.; Kosma, P. (2003): The Chemistry of the Cellulose Solvent System *N,N*-Dimethylacetamide / Lithium Chloride: Condensation Reactions, Reactive Intermediates, and Cellulose Degradation. 12th International Symposium on Wood and Pulping Chemistry, Madison, USA, June 9-12, 2003. III-259.

Rosenau, T.; Elder, T.; Potthast, A.; Sixta, H.; Kosma, P. (2003): The Lyocell Process: Cellulose Solutions in *N*-Methylmorpholine-*N*-oxide (NMMO) – Degradation Processes and Stabilizers. 12th International Symposium on Wood and Pulping Chemistry, Madison, USA, June 9-12, 2003. I-305.

Sartori, J.; Potthast, A.; Rosenau, T.; Sixta, H.; Kosma, P. (2003): Reactions of Cello- and Xylooligosaccharides in Alkaline Media. 12th International Symposium on Wood and Pulping Chemistry, Madison, USA, June 9-12, 2003. III-255.

Sjoberg, J. (2003): A combined enzymatic and CE approach towards the analysis of carbohydrates in the surface layer of chemical pulps. 6. Agilent Anwendertreffen Kapillarelektrophorese. Linz, Oktober 8, 2003.

Kosma, P. (2003): Bakterielle Polysaccharide-Struktur und biologische Aktivität. Zellcheming, "Celluloseprodukte in Biologie und Medizin" 16.-18. Juni 2003 Wiesbaden

2002

Adorjan, I., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): Studies in the Lyocell process: formation of chromophores from different carbohydrates in NMMO. In: Teischinger, A. (Ed.), International Symposium on Wood Based Materials, COST E 13, Sept. 2002, Vienna, Austria, 291-297, Vienna.

Adorjan, I., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): Studies into the Lyocell process: formation of chromophores from different carbohydrates in NMMO. In: Fin. Carbohydrate Soc. (Ed.), 7th European Workshop on Lignocellulosics and Pulp, August 2002, Turku, Finland; Book of Abstracts, 467-470, Turku.

Adorjan, I., Rosenau, T., Potthast, A., Kosma, P. (2002): Studies on chromophore formation in Lyocell dopes. In: Cell. Soc. Jpn. (Ed.), 1st International Cellulose Conference, Nov. 2002, Kyoto, Japan; Book of Abstracts, 12, Kyoto.

Kosma, P. (2002): Advances in Chemistry and Analysis of Cellulose. Annual Meeting of the Committee of Carbohydrate Chemistry of the Hungarian Academy of Sciences, May 2002, Matrafüred, Hungary.

Kosma, P., Rencurosi, A., Röhring, J., Pauli, J., Potthast, A., Jäger, C., Imberty, A. (2002): Structural characterization of two crystalline conformers of Methyl 4-O-methyl-beta-D-glucopyranosyl-(1-4)-beta-D-glucopyranoside as cellulose model compounds. In: Teischinger, A. (Ed.), International Symposium on Wood Based Materials, COST E 13, Sept. 2002, Vienna, Austria; Book of Abstracts, 291-297.

Potthast, A., Röhring, J., Rosenau, T., Kosma, P. (2002): The "CCOA Method": A novel method for determination of carbonyl profiles in cellulosic substrates. In: Cell. Soc. Jpn. (Ed.), 1st International Cellulose Conference, Nov. 2002, Kyoto, Japan; Book of Abstracts, 19-20, Kyoto.

Rencurosi, A., Perez, S., Kosma, P., Imberty, A. (2002): Polymorphism in crystal structure of a cellulose fragment analogue: Methyl 4-O-methyl-beta-D-glucopyranosyl-(1-4)-beta-D-glucopyranoside. In: Italian Carbohydrate Society (Ed.), 8th National Meeting, June 2002, Milano, Italy; Book of Abstracts, 18, Milano.

Rencurosi, A., Röhring, J., Pauli, J., Potthast, A., Jäger, C., Perez, S., Kosma, P., Imberty, A. (2002): Polymorphism in crystal structure of a cellulose fragment analogue. In: Cell. Soc. Jpn. (Ed.), 1st International Cellulose Conference, Nov. 2002, Kyoto, Japan; Book of Abstracts, 5, Kyoto.

Röhring, J., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): Application of the CCOA method for the determination of carbonyl group profiles in dissolving pulps. In: Fin. Carbohydrate Soc. (Ed.), 7th European Workshop on Lignocellulosics and Pulp, August 2002, Turku, Finland; Book of Abstracts, 23-26, Turku.

Röhring, J., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): Carbonylgruppenbestimmung in cellulosischen Substraten. Zellcheming, Baden-Baden, Germany, June 2002

Röhring, J., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): A novel method for the determination of carbonyl functions in cellulosic substrates. 223rd ACS National Meeting, Orlando, USA, April 2002, CELL 143

Röhring, J., Jäger, C., Pauli, J., Gould, R., Potthast, A., Rosenau, T., Kosma, P. (2002): Structural characterization of two crystalline conformers of methyl 4-O-methyl- β -D-glucopyranosyl-(1 \rightarrow 4)- β -D-glucopyranoside as cellulose model compounds. 223rd ACS National Meeting, Orlando, USA, April 2002, CARB 16

Rosenau, T., Potthast, A., Elder, T., Lange, T., Sixta, H., Kosma, P. (2002): Synthesis and oxidation behavior of 2,4,5,7,8-pentamethyl-4*H*-1,3-benzodioxin-6-ol, a multi-functional oxa-tocopherol type antioxidant. 223rd ACS National Meeting, Orlando, USA, April 2002, ORGN 19

Rosenau, T., Potthast, A., Hofinger, A., Gille, L., Kosma, P. (2002): Synthesis and Oxidation Behavior of a "Siamese Twin" Vitamin E Model Compound. 223rd ACS National Meeting, Orlando, USA, April 2002, CELL 20.

Rosenau, T., Potthast, A., Sixta, H., Kosma, P. (2002): The chemistry of the system cellulose/N-methylmorpholine-N-oxide (Lyocell Process). In: Cell. Soc. Jpn. (Ed.), 1st International Cellulose Conference, Nov. 2002, Kyoto, Japan; Book of Abstracts, 29-30, Kyoto.

Rosenau, T., Potthast, A., Sixta, H., Kosma, P. (2002): The chemistry of the Lyocell process. Euro-Japanese Workshop on functional polysaccharides, Nov. 11-13, Kyoto, Japan

Sartori, J., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): Cellooligosaccharides – separation by capillary electrophoresis and reactions kinetics under alkaline conditions. 223rd ACS National Meeting, Orlando, USA, April 2002, CELL 140.

Sartori, J., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): Reactions of cello- and xylooligosaccharides in alkaline media. In: Teischinger, A. (Ed.), International Symposium on Wood Based Materials, COST E 13, Sept. 2002, Vienna, Austria; Book of Abstracts, 291-297, Vienna.

Sartori, J., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2002): Reactions of cello- and xylooligosaccharides in alkaline media. In: Fin. Carbohydrate Soc. (Ed.), 7th European Workshop on Lignocellulosics and Pulp, August 2002, Turku, Finland; Book of Abstracts, 165-168, Turku.

2001

Potthast, A., Rosenau, T., Röder, T., Sixta, H., Kosma, P. (2001) The cellulose solvent system *N,N*-dimethylacetamide/LiCl revisited: The effect of water, physicochemical properties and stability. ACS-Meeting, April 1-5, San Diego

Röhring, J., Lange, T., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2001) Studies toward an accurate determination of carbonyl functions in cellulosic substrates. ACS-Meeting, April 1-5, 2001, San Diego

Rosenau, T., Potthast, A., Lange, T., Hofinger, A., Kosma, P. (2001) Tocopherol derivatives oxidized at the pyran ring structure. ACS-Meeting, April 1-5, San Diego

Rosenau, T., Potthast, A., Hofinger, A., Kosma, P. (2001) Investigations into the chemistry of the Lyocell process. 11th ISWPC, June 11-14, 2001, Nizza, Book of Abstracts, Vol II, 35-38.

Rosenau, T., Potthast, A., Hofinger, A., Schelosky, N., Kosma, P. (2001) Hydrolytic processes and condensation reactions in the cellulose solvent system *N,N*-dimethylacetamide / Lithium chloride. 11th ISWPC, June 11-14, 2001, Nizza, Book of Abstracts, Vol III, 675-678.

Röhring, J., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2001) Studies toward an accurate method for the determination of oxidized structures in cellulose. 11th ISWPC, June 11-14, Nizza, Book of Abstracts, Vol I, 211-214.

Potthast, A., Rosenau, T., Röder, T., Ebner, G., Kosma, P., Buchner, R., Schelosky, N. (2001) The water content in the solvent system *N,N*-dimethylacetamide / LiCl and its effects on the dissolution of cellulose. 11th ISWPC, June 11-14, Nizza, Book of Abstracts, Vol III, 671-674.

Sixta, H., Schelosky, N., Milacher, W., Baldinger, T., Röder, T. (2001) Characterization of alkali-soluble pulp fractions by chromatography. 11th ISWPC, June 11-14, Nizza, Book of Abstracts, Vol III, 655-658.

Röhring, J., Lange, T., Potthast, A., Rosenau, T., Sixta, H., Kosma, P. (2001) Novel methods to determine carbonyl functions in cellulosic substrates. Advanced Methods for Lignocellulosics and Paper Products characterization, June 18-19, Grenoble Book of Abstracts, 94-97.

Rosenau, T., Potthast, A., Hofinger, A., Sixta, H., Kosma, P. (2001) Trapping reactions as analytical tools to study the system NMMO/ Cellulose (Lyocell Process). Advanced Methods for Lignocellulosics and Paper Products characterization, June 18-19, Grenoble, Book of Abstracts 183-186.

Röhring, J., Potthast, A., Rosenau, T., Kosma, P. (2001) Oxidative Modifikation und Fluoreszenzmarkierung von cellulosischen Substraten. 6. Österr. Kohlenhydratworkshop, 14. Februar, Universität Wien.

Röhring, J., Potthast, A., Rosenau, T., Kosma, P. (2001) Synthesis of 2,3-diketosugars –new model compounds for oxycellulose. Sigma-Aldrich Symposium für Synthetische Chemie, Stadt Schlaining, 1.-2. März.

Potthast, A., Rosenau, T., Röder, T., Röhring, J., Sartori, J., Lange, T., Nicoletti, E., Hofinger, A., Kosma, P. (2001) Vom Holz zur „High-Tech-Faser“: Das Themenspektrum des Christian-Doppler-Labors für Zellstoffreaktivität. Sustain Life – Secure Survival, International Congress Vienna, Nov. 18 –21. Book of Abstracts, p. 218

Potthast, A. (2001) Bestimmung von Carbonylgruppen in Cellulose. Analytik Workshop im DFG Schwerpunkt Cellulose und Cellulosederivate, 23.-24. Nov., Braunschweig

Röder, T. (2001) Dynamische Lichtstreuung / Röntgenkleinwinkelstreuung / Raman und Molekülbewegung in Lösung. Analytik Workshop im DFG Schwerpunkt Cellulose und Cellulosederivate, 23.-24. Nov., Braunschweig

Books and book chapters

2003

Stevens, C.V.; Janas, P.; Kordowska-Wiater, M.; Kosma, P.; Targonski, Z.; Vaca Garcia, C. (2003): Handbook on Renewable resources. Chapter 5: Industrial Products from Carbohydrates, Wood and Fibres. Wiley, in press

Organic Chemistry

Original articles and reviews in refereed journals

2003

Amer, H., Hofinger, A., Kosma, P. (2003): Synthesis of neoglycoproteins containing O-methylated trisaccharides related to excretory/secretory antigens of *Toxocara larvae*. Carbohydr. Res., 338, 35-45.

Pfoestl, A., Hofinger, A., Kosma, P., Messner, P. (2003): Biosynthesis of dTDP-3-acetamido-3,6-dideoxy- α -D-galactose in *Aneurinibacillus thermoaerophilus* L420-91T. J. Biol. Chem., 278, 26410-17.

Graziani, A.; Zamyatina, A.; Kosma, P. (2003): A convenient synthesis of GDP D-glycero-D-manno-heptopyranose. Carbohydr. Res., in press.

Zamyatina, A.; Gronow, S.; Puchberger, M.; Graziani, A.; Hofinger, A.; Kosma, P. (2003): Efficient chemical synthesis of both anomers of ADP L-glycero- and D-glycero-D-manno-heptopyranose. *Carbohydr. Res.*, 338, 2571-2589.

Nguyen, H.P.; Seto, N.O.L.; MacKenzie, C.R.; Brade, L.; Kosma, P.; Brade, H.; Evans, S.V. (2003): Germline antibody recognition of distinct carbohydrate epitopes. *Nature Struct. Biol.*, in press.

2002

Kneidinger, B., Marolda, C., Graninger, M., Zamyatina, A., McArthur, F., Kosma, P., Valvano, M.A., Messner, P. (2002): Biosynthesis pathway of ADP-L-glycero-beta-D-manno-heptose in *Escherichia coli*. *J. Bacteriol.*, 184, 363-369.

Kosma, P., Strobl, M., Hofinger, A., Duus, J., Petersen, B.O., Bock, K., Brade, H. (2002): Synthesis of C-8 deuterated glycosides of 3-deoxy-D-manno-oct-2-ulosonic acid (Kdo) related to chlamydial lipopolysaccharide. *Chem. Monthly*, 133, 561-570.

Müller-Loennies, S.; Grimmecke, D.; Brade, L.; Lindner, B.; Kosma, P.; Brade, H. (2002): A novel strategy for the synthesis of neoglycoconjugates from deacylated deep rough lipopolysaccharides. *J. Endotoxin Res.*, 8, 295-305.

Valvano, M.A., Messner, P., Kosma, P. (2002): Novel pathways for the biosynthesis of nucleotide-activated glycero-manno-heptose precursors utilized in the assembly of cell surface polysaccharides and bacterial glycoproteins. *Microbiol.*, 148, 1979-1989.

Brade, L., S. Gronow, S., Wimmer, N., Kosma, P., Brade, H. (2002): Monoclonal antibodies against 3-deoxy- α -D-manno-oct-2-ulosonic acid (Kdo) and D-glycero-D-talo-oct-2-ulosonic acid (Ko). *J. Endotoxin Res.*, 8, 357-364.

2001

Amer, H., Hofinger, A., Puchberger, M., Kosma, P. (2001): Synthesis of O-methylated Disaccharides related to excretory / secretory Antigens of *Toxocara* larvae. *J. Carbohydr. Chem.*, 20, 719-731.

Gronow, S., Oertelt C., Ervelä, E., Zamyatina, A., Kosma, P., Skurnik, M., Holst, O. (2001): Characterization of the physiological substrate for lipopolysaccharide heptosyltransferases I and II. *J. Endotoxin Res.*, 7, 263-270.

Kneidinger, B., Graninger, M., Adam, G., Puchberger, M., Kosma, P., Zayni, S., Messner, P. (2001): Identification of two GDP-6-deoxy-D-lyxo-4-hexulose reductases synthesizing GDP-D-rhamnose in *Aneurinibacillus thermoaerophilus* L420-91T. *J. Biol. Chem.*, 276, 5577-5583.

Kneidinger, B., Graninger, M., Puchberger, M., Kosma, P., Messner, P. (2001): Biosynthesis of nucleotide-activated D-glycero-D-manno-heptose. *J. Biol. Chem.*, 276, 20935-20944.

Nguyen, H.P., Seto, N.O.L., Brade, L., Kosma, P., Brade, H., Evans, S.V. (2001): Crystallization and preliminary x-ray diffraction analysis of two homologous antigen-binding fragments in complex with different carbohydrate antigens. *Acta Cryst.*, D57, 1872-1876.

Reiter, A., Brade, L., Sanchez-Carballo, P., Brade, H., Kosma, P. (2001): Synthesis and immunochemical characterization of neoglycoproteins containing epitopes of the inner core region of *Pseudomonas aeruginosa* RNA group I lipopolysaccharide. *J. Endotoxin Res.*, 7, 125-131.

Schäffer C., Scherf, T., Christian, R., Kosma, P., Zayni, S., Messner, P., Sharon, N. (2001): Purification and structure elucidation of the N-acetylglucosamine-containing polysaccharide from *Bacillus licheniformis* ATCC 9945. *Eur. J. Biochem.*, 268, 857-864.

Conference & workshop proceedings, abstracts

2003

Zamyatina, A.; Sekljic, H.; Brade, H.; Kosma, P. (2003): Synthesis of chlamydial tetra- and pentaacyl lipid A. 12th European Carbohydrate Symposium, July 6-11, 2003, Grenoble, PB093

Graziani A.; Zamyatina, A.; Kosma, P. (2003): A convenient synthesis of GDP D-glycero-D-manno-heptopyranose. 12th European Carbohydrate Symposium, July 6-11, 2003, Grenoble, OC014.

Pfösl, A.; Hofinger, A.; Schäffer, C.; Novotny, R.; Kosma, P.; Messner, P. (2003): Biosynthesis of nucleotide-activated 3-Acetamido-3,6-dideoxy hexoses in S-Layer glycoproteins, 1st Austrian-Hungarian Carbohydrate Conference, 24.-26. Sept. Burg Schlaining.

Zamyatina, A.; Sekljic, H.; Brade, H.; Kosma, P. (2003): Efficient synthesis of chlamydial tetra- and pentaacyl lipid A. 1st Austrian-Hungarian Carbohydrate Conference, 24.-26. Sept. Burg Schlaining

Graziani A.; Zamyatina, A.; Kosma, P. (2003): Chemical synthesis of native phosphorylated heptoses. 1st Austrian-Hungarian Carbohydrate Conference, 24.-26. Sept. Burg Schlaining

Kosma, P.; Nguyen, H.P.; Seto, N.O.L.; MacKenzie, C.R.; Brade, L.; Brade, H.; Evans, S.V. (2003): Recognition of bacterial Kdo-epitopes. 1st Austrian-Hungarian Carbohydrate Conference, 24.-26. Sept. Burg Schlaining

2002

Kneidinger, B., Zamyatina, A., Valvano, M., Messner, P., Kosma, P. (2002): Chemical synthesis and biosynthetic pathways of nucleotide-activated heptoses. In: International Carbohydrate Organization (Ed.), 21st Int. Carbohydrate Symposium, Juli, Cairns, -, Cairns, Australia; ISBN 1 876892 04 8.

Kneidinger, B., Zamyatina, A., Messner P., Kosma, P. (2002): Synthetic and biosynthetic studies of nucleotide-activated *glycero-D-manno*-heptoses. 2nd German-Polish-Russian Meeting on Bacterial Carbohydrates, Moscow, Sept. 2002 (Invited lecture).

Müller-Loennies, S., Grimmecke, D., Brade, L., Lindner, B., Kosma, P., Brade, H. (2002): A novel strategy for the synthesis of neoglycoconjugates from deacylated deep rough lipopolysaccharides. In: Int. Carbohydrate Association (Ed.), XXIst International Carbohydrate Symposium, July 2002, Cairns, Australia, 44, Cairns.

Nguyen, H.P., Seto, N.O.L., MacKenzie, C.R., Brade, L., Kosma, P., Brade, H., Evans, S.V. (2002): Structures of two homologous antibodies in complex with different carbohydrate antigens. In: American Crystallographic Association (Ed.), Annual Meeting American Crystallographic association, May 25-30, 2002, San Antonio; Book of Abstracts, 15, San Antonio.

Pfösti, A., Hofinger, A., Novotny, R., Kosma, P., Messner, P. (2002): N-Acetyl-D-fucosamine biosynthesis in *Aneurinibacillus thermoaerophilus* L420-91. In: Österr. Ges. für Hygiene, Mikrobiologie und Präventivmedizin (Ed.): Proc., 28. Jahrestagung der Österr. Ges. für Hygiene, Mikrobiologie und Präventivmedizin, Meran, Südtirol. Book of Abstracts No 41.

Kovacova, E., Sekeyova, Z., Cmarko, D., Kosma, P., Mucha, V., Krauss, H., Toman, R. (2002): Mapping of the binding of anti-Priscilla and anti-Nine Mile monoclonal antibodies. In: Petrovec, M., Avsic-Zupanc, T. (Eds.), International Conference on Rickettsiae and Rickettsial Diseases, Sept. 2002, Ljubljana, Slovenia; Book of Abstracts, 82, Ljubljana; ISBN 961-6264-39-7.

KOSMA, P. (2002): Chemical and biosynthetic studies of nucleotide-activated D-*glycero-D-manno*-heptoses Glycostructures in Biosystems VIII, Symposium at the occasion of the 80th birthday of Hans Paulsen, May 2002, Hamburg, Germany (Invited lecture)

Zamyatina, A., Sekljic, H., Brade, H., Kosma, P. (2002): Synthesis of protected chlamydial tetra- and pentaacyl lipid A derivatives. The Carbohydrate Workshop, Borstel, Germany, March 2002, (Lecture)

2001

Graninger, M., Kneidinger, B., Puchberger, M., Kosma, P., Schäffer, C., Messner, P. (2001): A model for the biosynthesis of the S-layer glycoprotein of *Aneurinibacillus thermoaerophilus* DSM 10155. Glycoconjugate J., 18, 72, Abstract C12.25.

Kneidinger, B., Graninger, M., Novotny, R., Pföstl, A., Puchberger, M., Zayni, S., Scheberl, A., Kosma, P., Schäffer, C., Sleytr, U.B., Messner, P. (2001): Molecular characterization of S-layer glycoproteins from Gram-positive bacteria. In: ÖGBM, ÖGGGT, ÖGBT (Hrsg.): Life Sciences 2001, Gem. Jahrestagung ÖGBM, ÖGGGT, ÖGBT; Abstract P40, Book of Abstracts p.60, Wien.

Gould, R., Walkinshaw, M., Wimmer, N., Kosma, P. (2001) Crystal and molecular structure of a brucine-salt of α -Kop(2-4)- α -Kdop(2-OAll) related to the LPS core of *Burkholderia*. EUROCARB XI, Lissabon, 2.-7. Sept., Book of Abstracts PB053.

Potthast, A., Rosenau, T., Röder, T., Röder, T., Röhring, J., Sartori, J., Lange, T., Nicoletti, E., Hofinger, A., Ebner, G., Kosma, P. (2001): Vom Holz zur "High-Tech-Faser": Das Themenspektrum des Christian-Doppler-Labors für Zellstoffreaktivität. In: Univ. f. Bodenkultur Wien, Tschechische Agraruniversität Prag, Univ. Westungarn (Hrsg.): Tagungsband, Boku-Kongress "Leben und Überleben - Konzepte für die Zukunft", Abstracts, 218. 19-21 Nov. 2001, Hofburg, Wien.

Graninger, M., Kneidinger, B., Puchberger, M., Zamyatina, A., Kosma, P., Messner P. (2001) Biosynthesis of GDP-Heptose. XIVth Kdo-Symposium Borstel (BRD), 9. February

Books and book chapters

2002

Kosma, P., Strobl, M., Hofinger, A., Duus, J., Petersen, P.O., Bock, K., Brade, H. (2002): Synthesis of C-8 deuterated glycosides of 3-deoxy-D-manno-oct-2-ulosonic acid (Kdo) related to chlamydial lipopolysaccharide. Timely research perspectives in Carbohydrate Chemistry; Springer-Verlag, Heidelberg; ISBN 3-211-83777-9.

Research Group - Plant Carbohydrates

Original articles and reviews in refereed journals

2003

Nowotna, H. Gambus, Liebhard, P., Praznik, W., Ziobro, R., Berski, W., Cygankiewicz, A. (2003): The Importance of Main Components of Grains on Baking Quality of Wheat, Electronic Journal of Polish Agricultural Universities, Vol.6, Issue 1

2002

Praznik W., E. Cieślík and A. Filipiak-Florkiewicz (2002): Soluble dietary fibres in Jerusalem artichoke powders: Composition and application in bread. *Nahrung/Food* 3, 151-157.

2001

Pavis, N., N.J. Chatterton, P.A. Harrison, S. Baumgartner, W. Praznik, J. Boucaud and M.P. Prud'homme (2001): Structure of fructans in roots and leaf tissues of *Lolium perenne* New Phytologist, 150, 83-95.

Books and book chapters**2003**

Huber, A. Praznik, W. (2003): Contribution of Size Exclusion Chromatography to Starch Glucan Characterization, in: Handbook of Size Exclusion Chromatography, 2nd Ed., ed.: C. Wu, M. Dekker, Chpt 14, 385-437

Praznik, W. Huber, A. Cieslik E. (2003): Fructans: Occurrence and Application in Food, in: Chemical and Functional Properties of Food Saccharides, ed.: P. Tomasik, CRC, Oct. 2003

Huber, A. Praznik, W. (2003): Analysis of Molecular Characteristics of Starch Polysaccharides, in: Chemical and Functional Properties of Food Saccharides, ed.: P. Tomasik, CRC, Oct. 2003

Huber, A. Praznik, W. (2003): Identification and Quantification of Renewable Crop Materials, in: Renewable Resources, Eds.: C. Stevens, R. Verhe, in press, Wiley 2003

Praznik, W. Stevens, C. (2003): Integral Valorisation, in: Renewable Resources Eds.: C. Stevens, R. Verhe, in press, Wiley 2003

Conference & workshop proceedings, abstracts**2003**

Löppert, R. (2003): Fructan: Occurrence and application in food. Lecture, Intensive course of Novel and Functional Foods, Nitra, SK, 26.01 - 08.02.03

Koscisova, L. (2003): Technological and nutritional function of fructan. Lecture, Intensive course of Novel and Functional Foods, Nitra, SK, 26.01 - 08.02.03

Praznik, W. (2003): Composition of nutritional components in *Agave tequila* Weber, Tequilla production. Lecture, Intensive course of Novel and Functional Foods, Nitra, SK, 26.01 - 08.02.03

Praznik, W. (2003): Identification and characterization of plant components. Lecture, Intensive course, Agriculture: Source and Raw Material for Industry, Vienna, 09.02 - 22.02.03

Praznik, W. Cieřlik, E. (2003): Structure and properties of fructans and their application in food. Lecture, 54th Starch Convention, Detmold (D) April 2003

Praznik, W. Huber, A. (2003): The Molecular Dimension of Wheat and Potato Starches by means of End group Fluorescence Labeling. Lecture, 54th Starch Convention, Detmold (D) April 2003

Maghuly, F. Fluch, S. Praznik, W. (2003): Studying genetic diversity between and among Austrian Norway spruce (*Picea abies* L.) population. Tree biotechnology 2003, Umea, Sweden, June 2003

Maghuly, F. Burg, K. Fluch, S. (2003): Identification of variable regions in the mitochondrial genome of Norway spruce (*Picea abies* L.). Tree biotechnology 2003, Umea, Sweden, June 2003

Praznik, W. and Cieřlik, E. (2003): Agave fructan as useful source for healthy food products, Lecture, 9th European Nutrition Conference, Rome, It, Oct. 1-4, 2003

Cieřlik, E. Florkiewicz, A. Filipiak-Florkiewicz, A. Praznik, W. (2003): Sensory quality changes in juices with varied fructan content. 9th European Nutrition Conference, Rome, It, Oct. 1-4, 2003

Praznik, W. (2003): Changing of the degree of polymerisation of inulin in the course of bread production. Lecture, Minisymposion Fructan and Human Health, Lugano, Ch, Oct. 23-25, 2003

Löppert, R. Praznik, W. (2003): Nutritional and technological properties of structurally different fructans. Lecture, Minisymposion Fructan and Human Health, Lugano, Ch, Oct. 23-25, 2003

2002

Praznik, W., Cieřlik, E. and Lopez, M.G. (2002): Composition of nutritional components in *Agave tequila* Weber var. Azul. IX.Seminar on Inulin, Budapest, Hungary, April 18-19, 2002

Cieřlik, E., Kopec, A. Praznik, W. (2002) Functional properties of fructans. IX.Seminar on Inulin, Budapest, Hungary, April 18-19, 2002

Kocsisova L., Praznik, W. and Cieřlik, E. (2002): Fructan content in cereals and vegetables cultivated under conventional and organic conditions. IX.Seminar on Inulin, Budapest, Hungary, April 18-19, 2002

Cieřlik, E., Florkiewicz, A. Praznik W. and Filipiak-Florkiewicz, A. (2002): Quality of fruit juices enriched with fructans. IX.Seminar on Inulin, Budapest, Hungary, April 18-19, 2002

Kocsisova, L.and Praznik, W. (2002): The potential of soluble dietary fibre in commonly used vegetables and cereals for application in functional food. Conference of Nutrition and Food for 3rd Millennium, Nitra, Slovakia, 2002

Praznik, W. and Huber, A. (2002): Molecular Weight Distribution of Native and Modified Starches by Absolute Techniques. X. Int. Starch Convention, Cracow, Poland, June 11- 14, 2002

Fikselova, M., and Praznik, W. (2002): Carrots (*Daucus carota L.*) cultivated under different conditions as source of carotenoids. Conference über die Bedeutung von herkömmlichen und alternativen Pflanzen in der Ernährung und Landwirtschaft, Nitra, Slovakia, Dec., 2002

Praznik, W. and Huber, A. (2002): Komplexe Systeme- die molekularen Dimensionen von Stärkepoly-sacchariden. Stärkereichaussschußsitzung, Copenhagen, Danmark, Sept. 26-27, 2002

Praznik, W. and Cieslik, E. (2002): Vom Tequila zum funktionellen Lebensmittel- die Zusammensetzung der Inhaltsstoffe von *Agave tequila Weber var. Azul*. Stärkereichaussschußsitzung, Copenhagen, Danmark, Sept. 26-27, 2002

Maghuly, F., Praznik, W. Burg, K. and Fluch, S. (2002): Development of maternally inherited markers for Norway spruce (*Picea abies*) Dygen Conference, Strasbourg, France, Dec. 2-5, 2002

Praznik, W. (2002): 53. Stärketagung, Detmold / FRG, Apr. 24-26, 2002

2001

Huber, A., Praznik, W., Pelzl, B. and Marx, D. (1001): Supermolecular Structures of Cereal Starch Glucans. Oral presentation at the 52. Stärketagung, Detmold / FRG, Apr. 24-27, 2001

Huber, A., Pelzl, B. and Praznik, W. (2001): Molecular dimensions and interactive properties of polysaccharides. 15th Bratislava Internat. Conference on Polymers, Bratislava, Slovakia, Sept. 4-8, 2001

Praznik, W. and Huber A. (2001): Structure and molecular characteristics of wrinkled pea starch. Legumins congress, Krakow, Poland, July 7-10

Praznik, W. Kocsisova, L. and Cieolik, E. (2001): Fructans – soluble dietary fibre in cereals and vegetables. 17th ICN, Congress of Nutrition, Vienna, Austria, August 27-31, 2001

Praznik, W. (2001): Occurrence and structure of fructans in plant. 1st Internat. Agave-Tequila Symposium, Irapuato, Mexico, Nov. 12-17, 2001

Praznik, W., Kocsisova, L., and Ciešlik, E. (2001): Fructans – soluble dietary fibre in cereals and vegetables. 17th ICN, Congress of Nutrition, Vienna, Austria, August 27-31, 2001

Praznik, W. (2001): Molecular weight characterization of fructans. (2001): Enzymatic and Chromatographic Techniques. 1st Internat. Agave-Tequila Symposium, Irapuato, Mexico, Nov. 12-17, 2001

Prostak A., Cieřlik, E., Pisulewski P.M., and Praznik, W. (2001): The effects of dietary inulin on serum triacylglycerol (TAG) concentrations in rats. 17th ICN, Congress of Nutrition, Vienna, Austria, August 27-31, 2001

Prostak, A., Cieřlik, E., Pisulewski, P.M., and Praznik, W. (2001): The effects of dietary inulin on serum triacylglycerol (TAG) concentrations in rats 17th ICN, Congress of Nutrition, Vienna, Austria, August 27-31, 2001

Publications are also available at http://hal.boku.ac.at/research/en_research_database.search

Research Activities Abroad

Adelwřhrer, C. Oct.-Dec. 2003. Institut de Chimie de l'Universite Louis Pasteur, Strasbourg, France

Hinterstoisser, B. Aug.-Sept 2002: STFI (Swedish Pulp and Paper Research Institute), Stockholm, Sweden

Jantschko, W., Okt. 2001 – April 2002. Department of Applied Genetics, Gosselies, Belgium

Kanitsar, K. March 2001 –June 2001. CSIRO Land and Water, „Analysis of organic acids by CE“ Adelaide, Australia

Köllensperger, G. Forschungsaufenthalt auf Einladung am Institut für Spektrochemie und Angewandte Spektroskopie (ISAS) Dortmund, Deutschland, 2002.

Kronsteiner, M. Nov.-Dez. 2001 (Univ. Guelph, Dept. Microbiology)

Sartori, J. Oct. 15 –19, 2001. Workshop for Pulp and Paper Basics, North Carolina State University, USA

Paumann, M. (2001) 12 months at the Department of Biochemistry, Michigan, USA

FEBS Advanced Course on Glycoconjugates, Sep. 2001, Dubrovnik, Croatia

Wilson, I.B.H. (June 2002) Visit/talk (2 days) at CERMAV, Grenoble, France, as guest of Dr. Anne Imberty

External Teaching Activities

Hann, S. 28.-30. April 2003, Arrangement of Workshop “Measurement of isotope ratios using ICP-SFMS” at the Institute of Environmental Geochemistry, University of Heidelberg, Germany, (duration 1 week)

Praznik, W. Contribution with 2 Lectures on Socrates Intensive Kurs, Agriculture: Source of Raw Material for Industry, Gent, Belgium, January, 2002

Prohaska, T. 25.01.2003, Short course "Isotope dilution mass spectrometry" at the ISMAS Silver Jubilee Conference, Goa, Indien

Prohaska, T. 24.09.2003, Tutorial lecture at the ANORGANICA, organized by Perkin Elmer in Vienna, Austria

Habilitation Theses

Iain B.H. Wilson for Biochemistry (2001)

Lecture: Antibody Binding and Structural Analysis of Core α 1,3-Fucosylated Glycans of Potential Relevance in Allergy.

Gunda Köllensperger for Analytical Chemistry (2003)

Lecture: Trends in der Elementspurenanalytik mittels ICP-MS- Instrumentelle Entwicklung und neue Anwendungen.

Antje Potthast for Wood Chemistry (2003)

Lecture: Neue Strategien in der chemischen Zellstoff- und Papieranalytik

Thomas Prohaska for Analytical Chemistry (2002)

Lecture: Isotopen- und Elementverteilungsanalytik mittels induktiv gekoppelter Plasma Massenspektrometrie (ICP-MS)-Methoden und Anwendung.

Thomas Rosenau for Organic Chemistry (2003)

Lecture: Der LYOCELL-Prozess - chemische Grundlagen einer umweltfreundlichen Cellulosefasertechnologie.

Awards

G. Köllensperger and S. Hann, 2001 Bodenkulturpreis der Wiener Wirtschaftskammer / „Analyse von Platinguppenelementen in Wiener Stadtaerosol“

T. Prohaska, Feigl Award of the Austrian Society of Analytical Chemistry (ASAC), 2003.

Invited Seminar Lectures

Hann, S. Nachweis von Platin in Krankenhausabwässern mittels LC-ICP-MS. Invited lecture at the 20. Agilent Forum Analytik at the BOKU, Vienna, 11. –12. Februar 2003

Hann, S. Köllensperger, G. Stingeder, G. LC-ICP-MS for Speciation of Cisplatin in Aquatic Media. 2nd RCM for the CRP on "Development and Validation of Speciation Analysis Using Nuclear Techniques" hosted by the Institute of Analytical Chemistry, Vienna University of Technology, Vienna, Austria, 18.-22.11.2002

Hann S. Köllensperger G. HPLC-ICP-SFMS for PGE Analysis. Technical Meeting „Validation of Nuclear Analytical Methods for Platinum Group Elements in Environmental and Industrial Samples“, Internationale Atomenergiebehörde - IAEA, Vienna, Austria, am 03.12.2001

Köllensperger, G., Hann, S., Stefánka, Z., Nurmi, J., Stingeder G. Speciation by CE/LC-ICP-MS
Invited lecture at ETH Zürich, Switzerland, 9. Dec. 2003

Köllensperger, G., Hann, S., Stefánka, Z., Nurmi, J., Stingeder G. Capabilities and limitations of CE/LC-ICP-MS
Invited lecture at the "6. Symposium Massenspektrometrische Verfahren der Elementspurenanalyse" and 18. ICP-MS Anwendertreffen, Berlin; 6 – 9 Oct. 2003

Köllensperger, G., Hann, S., Quantification strategies and inter-elemental ratio measurement in CE/LC-ICP-MS
Invited lecture at the "5. International Symposium on Speciation of Elements in Biological, Environmental and Toxicological Sciences" Almunecar, Spain, 13 – 17 Sept. 2003

Köllensperger, G. Hann, S. Stingeder G. Species Unspecific Calibration in LC and CE-ICP-MS. 2nd RCM for the CRP on "Development and Validation of Speciation Analysis Using Nuclear Techniques" hosted by the Institute of Analytical Chemistry, Vienna University of Technology, Vienna, Austria, 18.-22.11. 2002

Köllensperger, G. Applications of CE-ICP-SFMS. Institut für Spektrochemie und angewandte Spektroskopie – ISAS Dortmund, 02. 08. 2002

Köllensperger, G. Nurmi, J. Kanitsar, K. Hann, S. Stingeder G. CE-ICP-SFMS / Möglichkeiten und Limitierungen. 5. Agilent CE Anwendertreffen, in Linz, 20. 6. 2002

Köllensperger G. Hann S. Analytical Strategies for Determination of Platinum Group Elements by Inductively Coupled Plasma Sector Field Mass Spectrometry – Application to Environmental and Geological Samples. Technical Meeting „Validation of Nuclear Analytical Methods for Platinum Group Elements in Environmental and Industrial Samples“, Internationale Atomenergiebehörde - IAEA, Vienna, Austria, am 03.12.2001

Kosma, P. Synthese und bioaktive Konformation von bakteriellen Kohlenhydratantigenen. Institute of Organic Chemistry, University of Rostock, Germany, (GdCh-Lecture) Oct. 26, 2001

Kosma, P. Chemical and biosynthetic studies of nucleotide-activated *glycero-manno*-heptoses. 2nd German-Polish-Russian Meeting on bacterial Carbohydrates, N.D. Zelinsky Institute of Organic Chemistry, Moscow, Sept. 9-13, 2002

Kosma, P. Biosynthesis of nucleotide-activated heptoses. National Institutes of Health, Laboratory of Diabetes and Kidney Diseases, Bethesda, MA, April 5, 2002

Kosma, P. Chemical and biosynthetic studies of nucleotide-activated *glycero-manno*-heptoses. Festkolloquium at the 75th birthday of H. Paulsen, University Hamburg. May 24, 2002

Kosma, P. Advances in the chemical characterization of celluloses. Hungarian Academy of Sciences, Matrafüred, May 22, 2002

Kosma, P. Synthese, Struktur und Immunreaktivität bakterieller Glykolipid-Antigene, GdCh-Vortrag, Universität Jena, 5. Nov. 2003

Kosma, P. Synthese, Struktur und Immunreaktivität bakterieller Glykolipid-Antigene, Institut für Organische Chemie, Universität Wien, 17. Dec. 2003

Hinterstoisser, B. (2002): Holzforschung: Was tut sich an der Boku Wien? Institutsseminar für Holzforschung München, 16. Juli 2002, München, Germany.

Potthast, A. Möglichkeiten der chemischen Untersuchung des Alterungszustandes von Cellulose. Staatliche Akademie der Bildenden Künste, Stuttgart, 14.7.2003

Potthast, A. Bestimmung von Carbonylgruppen in Cellulose. Analytik-Workshop im DFG Schwerpunkt Cellulose und Cellulosederivate, TU Braunschweig, Nov. 23, 2001

Potthast, A. Kopplung GPC/Multi Angle Laser Light Scattering Detection MALLS. HPCL-Symposium, BOKU, Sept. 19, 2001

Prohaska, T. The potential of LA-ICP-MS, Lecture at the Vienna Environmental Research Accelerator, University of Vienna, Austria. 8. July 2003

Prohaska T. LA-ICP-MS – a modern tool in elemental trace analysis. Lecture at the University of Vienna, Institute of Analytical Chemistry, 22. May 2003

Prohaska, T. LA-ICP-MS in Analytical Chemistry. Institute of Inorganic, Analytical and Physical Chemistry, Vienna University of Technology. 24. May 2002

Prohaska, T. IMEP educational. Lecture at the European Joint Research Center in Geel, Belgium. 15. July 2003

Sjöberg, J. A combined enzymatic and CE approach towards the analysis of carbohydrates in the surface layer of chemical pulps. AGILENT Anwendertreffen Kapillarelektrophorese, Universität Linz, Austria. Oct. 8, 2003

Rosenau, T. The chemistry of vitamin E-type antioxidants and their *ortho*-quinone Methides. Institut für Org. Chemie, Univ. Göttingen, 26. April 2003

Public Lectures

Kosma, P. Cellulose: Molecular and Material Properties. EU-Master course Renewable Resources, BOKU, February 12, 2003

Kosma, P. Cellulose- Molekül und Material der Superlative. Science Week, (Mödling, St. Pölten) June 10 and 14, 2002

Kosma, P. Hightech-Zukunftswerkstoffe von Acker und Wald. Forum Land, IFA-Tulln, Nov. 7, 2002

Potthast, A. Cellulosic fibres. EU-Master course Renewable Resources, BOKU, February 12, 2003

Invited Speakers

Erata T. (2003) Hokkaido University, Sapporo, Japan. The NMR approach to cellulose: structure and biosynthesis

Mischnick, P. (2003) TU Braunschweig, Substitutionsmuster in Cellulosederivaten-analytische Strategien

Stanger, A. (2003) Technion, Haifa, Can strained aromatic compounds tell a new story about aromaticity?

Beyer, M. (2002) TU Dresden, Photochemisch und thermisch verursachte Veränderungen an Lignocellulosen

Franck-Neumann, M. (2002) Directeur du Laboratoire de Chimie Organique Synthétique, Institut de Chimie de l'Université Louis Pasteur, Strasbourg, France. Eisencarbonylkomplexe als Hilfsmittel für die organische Synthese.

Ivancich, A. (2002) Radical intermediates formed by catalases and catalase-peroxidase.

Kadla, J.F. (2002) (NC-State University, Raleigh) Lignin-polymer blends.

Ona, T. (2002) The application of FT-Raman spectroscopy and pyrolysis-GC for characterization and utilization of wood based materials.

Buchtel, K. (2001) Atominsitutit der Österr. Universitäten, Grundlagen der Radioaktivitätsmessung.

Nakatsubo, F. (2001) Lab. of Biomaterials (Div. Forest and Biomaterials Sciences) Graduate School of Agriculture, Kyoto University, Japan. The First Chemical Synthesis of Cellulose and Related Polysaccharides.

Uraki Y. (2001) Hokkaido University, Fractionation of woody biomass by solventpulpung and utilization of resulting woody components.

Saake B. (2001) Bundesforschungsanstalt für Holz- und Forstwirtschaft, Hamburg, Germany. Enzymunterstützte Charakterisierung und Modifizierung von Cellulosederivaten und Xylanen.

Sano, and Kishimoto, T. (2001) Hokkaido University, Homolysis of phenolic β -ether during high-boiling solvent pulping.

Sherwood Rowland, F. (2001) Donald Bren Research Professor of Chemistry and Earth System Science, University of California, Irvine, USA. Atmospheric Problems of the 21th Century: Stratospheric Ozone Depletion, Global Warming and the Greenhouse Effect, and Global Smog.

Scientific Events

CDA Program: meeting in Vienna

Internat. Intensive course: Agriculture: Source and Raw Materials for Industry, Jan/Feb 2003,

8. Österr. Kohlenhydrat-Workshop, 13 Feb. 2003,

Organizer: Working group of Organic Chemistry and Christian-Doppler-Laboratory

Vienna 2001 ICP-MS Conference Series:

17th ICP-MS D/A/CH user meeting

Sept. 10-12, 2001, Vienna, Austria

Organizer: Working group of Analytical Chemistry

<http://www.boku.ac.at/chemie/conferences/conferences.htm>

2nd Intl. Conference on high resolution and magnetic sector field ICP-MS

Sept. 12-15, 2001, Vienna, Austria

Organizer: Working group of Analytical Chemistry

<http://www.boku.ac.at/chemie/conferences/conferences.htm>

Minisymposium, Qualitätssicherung und Qualitätskontrolle in der Bioanalytik.

16. Nov., 2001, Vienna, Austria

Organizer: Working group of Analytical Chemistry and Austrian Society for Analytical Chemistry (ASAC)

Wood Chemistry Workshop

8. June 2001, Vienna, Austria.

Organizer: Christian-Doppler-Labor "Zellstoffreaktivität" and Institute for Chemistry, BOKU

Other External Activities of the Members of the Institute

Ao.Univ.Prof. Dr. G. Köllensperger, Sachverständige des Arbeitskreises „Analysen in biologischem Material“ der Arbeitsstoffkommission“ der deutschen Forschungsgemeinschaft

Ao.Univ.Prof. Dr. G. Köllensperger and Dr. S. Hann are advisers of the "Internationalen Atomenergiebehörde - IAEA" in the context of the Projects: „Development and Validation of Speciation Analysis Using Nuclear Techniques“

Ao.Univ.Prof. Dr. G. Köllensperger and Dr. S. Hann are advisers of the "Internationalen Atomenergiebehörde - IAEA" in the context of the Projects: „Validation of Nuclear Analytical Methods for Platinum Group Elements in Environmental and Industrial Samples“

Univ.Prof. Dr. P. Kosma is National representative of Austria in the European (ECO) and International Carbohydrate Organization (ICO) and member of the Editorial Board of Journal of Endotoxin Research. Prof. Kosma is member of the board of the Austrian Science Fund (FWF) and Zellcheming-Fachausschuss (Germany).

Ao.Univ.Prof. Dr. W. Praznik is member of scientific committee of International Starch Convention, Cracow / Poland, of the Advisory Board of Starch / Stärke, International Journal for the Investigation, Processing and Use of Carbohydrates and their Derivatives and of the Starch Experts Committee, Germany

Ao.Univ.Prof. Dr. W. Praznik, Participation on a CDA-meeting for the organisation of EU-master-program of Renewable materials

Ao.Univ.Prof. Dr. W. Praznik, Austrian Association of Biotechnology – Leader of Working group: Renewable Resources

Ao.Univ.Prof. Dr. T. Prohaska, Oct. 1999 – Jan. 2004 – Official speaker of the german speaking (D-A-CH) ICPMS user.

Ao.Univ.Prof. Dr. T. Prohaska, Jan. 2000 – Dec. 2001 - Member of the Advisory Panel for the JRC Alumni network of the European Commission

Ao.Univ.Prof. Dr. T. Prohaska, March 2000 - Jan. 2001 - Participation in the “Round Table Science” organized by the Austrian representation in Brussels.

Ao.Univ.Prof. Dr. T. Prohaska, Jan. 2000 and May 2001 - project evaluator within the MIT programme of the 5th framework programme of the European Commission

Ao.Univ.Prof. Dr. T. Prohaska, June 2002 – onward: expert for the IMEP (International Measurement Evaluation Programme) educational programme of the European Commission

Ao.Univ.Prof. Dr. T. Prohaska, June 2000 – onward: Chairman of the International Conference on High Resolution and Magnetic Sectorfield ICP-MS

Univ.Prof. Dr. G. Stingeder is member of the board of the Austrian Society for Analytical Chemistry.

Ao.Univ.Prof. Dr. Iain Wilson is the Mini-Review Editor (Europe) for the Glycoconjugate Journal

Acknowledgements

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

We acknowledge financial support of following sponsors:



*CA · Rilkeplatz,
die Bank zum Erfolg*



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Impressum

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