



# 23<sup>rd</sup> Austrian Carbohydrate Workshop

# Graz, 14 – 15 February 2019

## Graz University of Technology, HS H 'Ulrich Santner' Kopernikusgasse 24, Chemistry

Program

# Thursday, February 14, 2019

12:30 Welcome

## Session 1: 12:45 – 14:15

#### **Synthesis of Bismuth-Sugar Conjugates: Scope and Limitations** <u>Martin Thonhofer<sup>1</sup></u>, Roland Fischer<sup>2</sup>, Carina Sampl<sup>2,3</sup>, Berenike Doler<sup>2</sup>, Daniel

Garstenauer<sup>2</sup>, Richard Amering<sup>2</sup>, Rupert Kargl<sup>1</sup> and Karin Stana Kleinschek<sup>1</sup> <sup>1</sup> University of Maribor, Faculty of Mechanical Engineering

<sup>2</sup> University of Maribor, Faculty of Mechanical Engineeri

<sup>2</sup> TUGraz, Institute of Inorganic Chemistry

<sup>3</sup> TUGraz, Institute of Paper, Pulp and Fibre Technology

### First Synthesis of 5-Fluoro-Isofagomine

<u>Michaela Haider<sup>1</sup>, Philipp Toplack<sup>1</sup></u>, Roland Fischer<sup>3</sup>, Arnold E. Stütz<sup>1</sup>, Martin Thonhofer<sup>1,2</sup>, Patrick Weber<sup>1</sup>, Fabian Wiedemaier<sup>1</sup> and Tanja M. Wrodnigg<sup>1</sup> 1 Glycogroup, TUGraz, Institute of Organic Chemistry <sup>2</sup> University of Maribor, Faculty of Mechanical Engineering <sup>3</sup> TUGraz, Institute of Inorganic Chemistry

## Novel Cyclopentanoid Inhibitors of Protein O-GlcNAcase

Patrick Weber, Arnold E. Stütz Glycogroup, TUGraz, Institute of Organic Chemistry

*N*-Heterocyclic Carbene Mediated Activation of Aldoses: Controlled Dehomologation or Redox-lactonization by Choice of Catalyst <u>Markus Draskovits</u>, Hubert Kalaus, Christian Stanetty, Marko Mihovilovic TU Wien, Institute of Applied Synthetic Chemistry

# Quantification of the Open Chain Content of Aldoses: A Photometric Kinetic Assay of an Aldehyde-specific Adduct Formation

<u>Hubert Kalaus</u>, Alexander Reichetseder, Christian Stanetty, Marko Mihovilovic TU Wien, Institute of Applied Synthetic Chemistry

Application of the Indium-mediated Allylation Reaction for the Synthesis of 3-Deoxy-2-uloses Manuel Gintner

Department of Organic Chemistry, University of Vienna

#### Diastereoselective Elongation of Disaccharides Taking Advantage of the Indiummediated Allylation Reaction <u>Christian Denner</u> Department of Organic Chemistry, University of Vienna

### COFFEE BREAK 14:15 - 14:45

#### Session 2: 14:45 - 16:00

Investigation of 4-amino-4-deoxy-L-arabinose transferases from Gram-negative bacteria involved in antibiotic resistance <u>C. Olagnon, Paul Kosma</u>

BOKU Vienna, Department of Chemistry

#### Synthetic endeavours towards C-glycoside inhibitors of 4-amino-4-deoxy-Larabinose transferases

L. Kerner, Paul Kosma BOKU Vienna, Department of Chemistry

# Product Solubility Control in Cellooligosaccharide Synthesis by Coupled Cellobiose and Cellodextrin Phosphorylase

<u>Chao Zhong<sup>1</sup></u>, Christiane Luley<sup>2</sup>, Bernd Nidetzky<sup>1,2</sup>

<sup>1</sup> TUGraz, Institute of Biotechnology and Biochemical Engineering

<sup>2</sup> Austrian Centre of Industrial Biotechnology (acib)

# Investigating the swelling behavior of cellulose thin films by multilayer density analysis using AFM/SPR spectroscopy

<u>Carina Sampl<sup>1,2</sup></u>, Katrin Niegelhell<sup>1,2</sup>, David Reishofer<sup>1</sup>, Roland Resel<sup>3</sup>, Stefan Spirk<sup>1,2</sup>, Ulrich Hirn<sup>1,2</sup>

<sup>1</sup> TUGraz, Institute for Paper, Pulp and Fibre Technology

<sup>2</sup>TUGraz, CD-Laboratory for Fibre Swelling and Paper Performance,

<sup>3</sup> TUGraz, Institute of Solid State Physics

#### Industrially relevant cationic starches and cellulose

Katrin Niegelhell<sup>1,2</sup>; <u>Stefanie M. Müller<sup>1</sup></u>; Angela Chemelli<sup>3</sup>; Josefine Hobisch<sup>4</sup>; Thomas Griesser<sup>5</sup>; Heidemarie Reiter<sup>2,6</sup>; Ulrich Hirn<sup>1,2</sup>; Stefan Spirk<sup>1,2</sup>

<sup>1</sup> TUGraz, Institute for Paper, Pulp and Fiber Technology,

<sup>2</sup> CD-Laboratory for Fibre Swelling and Paper Performance

<sup>3</sup> TUGraz, Institute for Inorganic Chemistry

<sup>4</sup> TUGraz, Institute for Chemistry and Technology of Materials

<sup>5</sup> University of Leoben, Chair of Polymeric Materials

<sup>6</sup> Mondi Uncoated Fine & Kraft Paper GmbH, Austria

### A Green Procedure to Manufacture Nanoparticle-Decorated Paper Substrates

<u>Werner Schlemmer</u><sup>1</sup>, Wolfgang Fischer<sup>1</sup>, Armin Zankel<sup>2</sup>, Tomislava Vukušić<sup>3</sup>, Gregor Filipič<sup>4</sup>, Andrea Jurov<sup>4,5</sup>, Damjan Blažeka<sup>6</sup>, Walter Goessler<sup>7</sup>, Wolfgang Bauer<sup>1</sup>, Stefan Spirk<sup>1</sup>,Nikša Krstulović<sup>6</sup>

<sup>1</sup> TUGraz, Institute of Paper-, Pulp- and Fibre Technology (IPZ)

<sup>2</sup> TUGraz, Institute of Electron Microscopy and Nanoanalysis (FELMI)

- <sup>3</sup> Faculty of Food Technology and Biotechnology, University of Zagreb
- <sup>4</sup> Jožef Štefan Institute, Jamova 39, Slovenia.
- <sup>5</sup> Jožef Stefan International Postgraduate School, Slovenia.
- <sup>6</sup> Institute of Physics, Croatia.
- <sup>7</sup> University of Graz, Institute of Chemistry

### COFFEE BREAK 16:00 - 16:30

### Guest Lecture 16:30

#### Glycosidase-catalyzed synthesis of glycosyl esters and phenolic glycosides

<u>Vladimír Křen<sup>1</sup></u>, Ivan Bassanini<sup>2</sup>, Lucie Petrásková<sup>1</sup>, Jana Kapešová<sup>1</sup>, Šergio Riva<sup>2</sup> <sup>1</sup>Institute of Microbiology of the Czech Academy of Sciences, Laboratory of Biotransformation, Czech Republic.

<sup>2</sup> Istituto di Chimica del Riconoscimento Molecolare, Consiglio Nazionale delle Ricerche, Italy.

#### Discussion 17:15

Generell topics of the Austrian Network of Carbohydrates and Glycoconjugates Future Meetings, Conferences and Symposia <u>Paul Kosma</u>

End of scientific program 18:00

## Friday, 15 February 2019

### Guest Lecture 9:00 - 09:45

**Bioorthogonal Ligations Reactions for Imaging Glycoconjugates** <u>Valentin Wittmann</u> University of Konstanz, Department of Chemistry

#### COFFEE BREAK 09:45 - 10:15

### Session 3: 10:15 - 11:30

Man-7 and Man-9: oligomannoside target molecules against HIV-1 <u>M. Cattin</u>, Paul Kosma BOKU Vienna, Department of Chemistry

# *Paenibacillus alvei*: Synthesis and biosynthetic studies of pyruvylated cell wall fragments

<u>S. Krauter, Paul Kosma</u> BOKU Vienna, Department of Chemistry

Novel nanomolar inhibitors of the gram negative bacterial heptose pathway <u>M. Blaukopf</u>, Paul Kosma BOKU Vienna, Department of Chemistry

# Synthesis of modified Iminoxylitol based building blocks towards ligands and tools for lysosomal β-glucocerebrosidase

<u>Andreas Wolfsgruber</u>, Tanja M. Wrodnigg Glycogroup, TUGraz, Institute of Organic Chemistry

Design of Iminosugar based probes for activity-based protein profiling of glycoprocessing enzymes

<u>Michael Schalli</u>, Tanja M. Wrodnigg Glycogroup, TUGraz, Institute of Organic Chemistry

#### Epimerization of nucleotide sugars

<u>Christian Rapp</u><sup>1</sup> and Bernd Nidetzky<sup>1,2,</sup> <sup>1</sup> TUGraz, Institute of Biotechnology and Biochemical Engineering <sup>2</sup> Austrian Centre of Industrial Biotechnology (acib)

#### COFFEE BREAK 11:30 - 12:00

### Session 4: 12:00 - 13:15

# Gluconoylation - a frequent *N*-terminal modification - studied in isotope-labeled proteins by NMR spectroscopy

D Schweida<sup>1</sup>, P Barraud<sup>2,3</sup>, C Regl<sup>1,4</sup>, FE Loughlin<sup>2,5</sup>, CG Huber<sup>1,4</sup>, C Cabrele<sup>1,4</sup>, <u>M</u> Schubert<sup>1,2,4</sup>

<sup>1</sup> Dept. Biosciences, University of Salzburg, Billrothstr. 11, 5020 Salzburg, Austria <sup>2</sup> Institute of Molecular Biology and Biophysics, ETH Zürich,

<sup>3</sup> Institut de biologie physico-chimique (IBPC), Université Paris Diderot, France

<sup>4</sup> Christian Doppler Laboratory for Innovative Tools for Biosimilar Characterization, University of Salzburg

<sup>5</sup> Monash Biomedicine Discovery Institute, Department of Biochemistry & Molecular Biology, Monash University, Australia

#### Sialic Acid of Caco2 cell: analysis and modification of glycans surface Erika Gasparotto

Institute of Pathophysiology and Allergy Research, Center for Pathophysiology, Infectiology and Immunology, Medical University of Vienna, Division of Macromolecular Chemistry, Institute of Applied Synthetic Chemistry, Vienna University of Technology

### Sialic Acid and Pathology

Davide Ret

Institute of Pathophysiology and Allergy Research, Center for Pathophysiology, Infectiology and Immunology, Medical University of Vienna; Division of Macromolecular Chemistry, Institute of Applied Synthetic Chemistry, Vienna University of Technology

# Human Milk Oligosaccharides in Pregnancy: predictive markers for gestational diabetes?

Evelyn Jantscher-Krenn

Deptartment of Obstetrics and Gynecology, Medical University of Graz

# Production of sialylated human milk oligosaccharides in optimized enzymatic one-pot reactions

<u>Sabine Schelch</u><sup>1</sup>, Barbara Petschacher<sup>1,2</sup>, Stefanie Gross Belduma<sup>1,2</sup>, Manuel Eibinger<sup>2</sup>, Bernd Nidetzky<sup>1,2</sup>

<sup>1</sup> Austrian Centre of Industrial Biotechnology (acib)

<sup>2</sup> TUGraz, Institute of Biotechnology and Biochemical Engineering

# Isolation and biophysical characterisation of heparan sulfate from human lung tissues

Tanja Gerlza<sup>1</sup>, Rupert Derler<sup>1</sup>, Nikola Kitic<sup>1</sup>, Friedrich Anderhuber<sup>2</sup> and Andreas Kungl<sup>1</sup> <sup>1</sup> Karl-Franzens-Universität Graz, Institute of Pharmaceutical Chemistry

<sup>2</sup> Medical University Graz, Institute of Anatomy

Closing 13:15