

Final program

7th International Conference on
POLYSACCHARIDES-GLYCOSCIENCE



2nd - 4th November, 2011

Novotného lávka 5,
Prague, Czech Republic



Czech Chemical Society



**INSTITUTE OF
CHEMICAL TECHNOLOGY
PRAGUE**



ESF EuroGlycoSciences Forum
Research Network Programme



2nd November, 2011

16:00 – 18:00 Registration, Conference Opening (glass of wine)

VINOGRAF - Enosfera s.r.o.
Míšeňská 68/8
118 00 PRAGUE 1 - Malá Strana



3rd November, 2011

08:00 – 09:00 Registration

Novotného lávka 5
116 68 PRAGUE 1

Oral session

09:00 WELCOME
JANA ČOPIKOVÁ, *Institute of Chemical Technology, Prague, Czech Republic*



09:10 – 10:35 Oral session 1 “PHYSIOLOGICAL EFFECTS OF POLYSACCHARIDES ”
chairman: Ján Hirsch

09:10 – 09:50 Keynote lecture: PLANT POLYSACCHARIDES AS TAILOR-MADE FOOD INGREDIENTS
M. A. Coimbra
Departamento de Química, Universidade de Aveiro, Aveiro, Portugal
mac@ua.pt



09:50 – 10:05 β -1,3-D-GLUCAN-RESVERATROL-VITAMIN C COMBO OFFERS SUPERIOR BIOLOGICAL ACTIVITIES
V. Vetvicka, J. Vetvickova
Department of Pathology, University of Louisville, Louisville, Kentucky, USA
vaclav.vetvicka@louisville.edu



10:05 – 10:20 BIOLOGICAL EFFECTS OF β -GLUCANS ON THE MOLECULAR LEVEL
M. Novák, J. Čopíková
Institute of Chemical Technology in Prague, Department of Chemistry and Technology of Carbohydrates, Prague, Czech Republic
Miroslav.Novak@vscht.cz



10:20 – 10:35 THE ROLE OF β -D-GLUCAN IN PLANT CELL WALL AND ITS SIGNIFICANCE DURING ENVIRONMENTAL STRESS
M. Havrlentova
Plant Production Research Centre Piešťany, Piešťany, Slovak Republic
havrlentova@vurv.sk



10:35 – 11:30 Coffee Break / Exhibition

11:30 – 12:30 Oral session 2 “POLYSACCHARIDES INFLUENCING FOOD AND FILM PROPERTIES”
chairman: Krzysztof Surowka

11:30 – 11:45 INFLUENCE OF EXOPOLYSACCHARIDES FROM LACTIC ACID BACTERIA ON THE RHEOLOGICAL PROPERTIES OF MILK GELS – cancelled
S. Mende, S. Thomas, D. Jaros, H. Rohm
Institute of Food Technology and Bioprocess Engineering, Technische Universität Dresden, Germany
susann.mende@tu-dresden.de

11:45 – 12:00 INFLUENCE OF THICKENING AGENT ON THE SENSORY PERCEPTION OF SWEET TASTE
K. Cmejlova, Z. Panovska, K. Hurkova
Institute of Chemical Technology in Prague, Czech Republic
katerina.cmejlova@vscht.cz



12:00 – 12:15 CHITOSAN FILMS STABLE IN ACID MEDIUM AND WITH INCREASED ANTIOXIDANT ACTIVITY
É. Maricato, C. Nunes, M.A. Coimbra
Departamento de Química, Universidade de Aveiro, Portugal
mac@ua.pt



12:15 – 12:30 DIETARY FIBRE CONTENT AND EFFECT OF CEREAL PROCESSING TECHNOLOGY
M. Sluková, I. Honců, L. Krejčířová, N. Velebná
Department of Carbohydrate Chemistry and Technology, Institute of Chemical Technology in Prague, Czech Republic
Marcela.Slukova@vscht.cz



12:30 – 13:30 LUNCH

**13:30 – 15:15 Oral session 3 “ISOLATION, CHARACTERIZATION AND SYNTHESIS OF POLYSACCHARIDES”
chairman: Manuel A. Coimbra**

13:30 – 14:10 Keynote lecture: NOVEL POLYSACCHARIDE ARCHITECTURES FOR BIOMEDICAL APPLICATIONS



K.A. Kristiansen, H. B. Tomren, S.P. Strand, K. Tømmeraas, K.M. Vårum, B. E. Christensen
NOBIPOL, Department of Biotechnology, NTNU, Trondheim, Norway
b.christensen@biotech.ntnu.no

14:10 – 14:25 ENZYMATIC SYNTHESIS OF FUCOSYLATED MOLECULES

E. Benešová, P. Lipovová, J. Čopíková, B. Králová
Institute of Chemical Technology in Prague, Czech Republic
Eva.Benesova@vscht.cz



14:25 – 14:40 NEUTRAL SUGAR BONDING IN FUNGAL POLYSACCHARIDES

G.K. Gomba, M.A. Coimbra, J. Čopíková, C. Nunes, A. Synytsya
Department of Carbohydrate Chemistry and Technology, Institute of Chemical Technology Prague, Czech Republic; QOPNA, Departamento de Química, Universidade de Aveiro, Portugal
gkgomba@vscht.cz



14:40 – 14:55 MICROWAVE-ASSISTED EXTRACTION OF BREWERS' SPENT GRAIN ARABINOXYLANS

M.A.M. Rocha, J. Saraiva, M.A. Coimbra
QOPNA, Departamento de Química, Universidade de Aveiro, Portugal
angelicamartins@ua.pt



14:55 – 15:30 Coffee Break

Novotného lávka 5
116 68 PRAGUE 1



15:30 – 16:30

**Concert. Parnas Ensemble.
(Members of the Prague Symphony Orchestra)**
1st violin - Eva Nykrýnová; 2nd violin - Jan Nykrýn Sr.;
viola - Jan Nykrýn Jr.; cello - Richard Žemlička
double-bass - Jan Buble

W. A. **Mozart** (1756-1791): Divertimento for strings.
A. **Vivaldi** (1678-1706): The Four Seasons – Summer.

J. S. **Bach** (1685-1750): Air.
 W. A. **Mozart** (1756-1791): A Little Night Music.
 A. **Dvořák** (1841-1904): Largo from the New World Symphony.
 A. **Dvořák** (1841-1904): Slavonic Dance.
 F. **Schubert** (1797-1828): Ave Maria.
 P. I. **Tchaikovsky** (1840-1893): Valse D Major.
 G. **Bizet** (1838-1875): Suite from Carmen.
 J. **Brahms** (1843-1907): Hungarian Dance.

Posters

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|-------|---|--|
| 1.1. | <i>A. V. Singh, L. K. Nath</i> | Evaluation of modified starch based biomaterial as controlled drug delivery polymer |
| 1.2. | <i>P. Bartošková, I. Kulišanová, A. Veselá, An. Synytsya, G. K.Gomba, J. Čopíková</i> | Identification of hydrocolloids in confectionery jelly |
| 1.3. | <i>R. Bleha, An. Synytsya, Al. Synytsya, J. Brindza, J. Čopíková</i> | Spectroscopic identification of fructose and hydrocolloids in bee pollen samples |
| 1.4. | <i>M. Matulová, P. Capek, J. Turjan, S. Kaneko, L. Navarini, F.S. Liverani</i> | NMR structural study of instant coffee arabinogalactan-protein oligosaccharides |
| 1.5. | <i>L. Duchoňová, M. Vargovičová, R. Kozáková, E. Šturdík</i> | Development of bread based on colored wheat fortified with beta-glucans |
| 1.6. | <i>V. Dvořáček, L. Papoušková, A. Prohasková, B. Riljáková</i> | Effect of technological parameters of grain polysaccharide complex on final backing value in common wheat |
| 1.7. | <i>O. Faměra, L. Dotlačil, L. Kouřimská</i> | The effect of wheat grain amylase activity on selected quality characteristics |
| 1.8. | <i>D. Gałkowska, T. Fortuna</i> | Effect of resistant starch on physical properties of pasta |
| 1.9. | <i>A. Malovíková, I. Sroková, L. Rychlá, I. Janigová, K. Csomorová, J. Hirsch, Z. Košťálová, A. Ebringerová</i> | A structure/function relationship study of modified pectins |
| 1.10. | <i>Z. Hromádková, Z. Košťálová, J. Hirsch</i> | Structural features of pectic polysaccharide from the leaves of <i>Fallopia sachalinensis</i> |
| 1.11. | <i>M. Hrušková, J. Dvořáková, I. Švec</i> | Image analysis of Czech wheat bread |
| 1.12. | <i>I. Maciejaszek, J. Banaś, K. Surówka</i> | An attempt to apply anionic polysaccharides for immobilization of proteolytic enzymes by the electrosynthesis method |
| 1.13. | <i>I. Maciejaszek, D. Żmudziński</i> | Mechanical properties of corn extrudates |
| 1.14. | <i>M. Marounek, Z. Volek, E. Skřivanová, O. Savka</i> | Effect of chitosan and deae-cellulose on cholesterol metabolism in rats |

- 1.15. Z. Panovska, K. Cmejlova, A. Vachova Effect of guar gum and carrageen addition on perceived acid taste
- 1.16. C.P. Passos, J.M.G.V. Neves, M.A. Coimbra Microwave-assisted extraction of arabinogalactans from coffee residue – study of process conditions
- 1.17. I. Švec, M. Hrušková, I. Jurinová Bakery potential of the tritordeum lines
- 1.18. T. Taubner, An. Synytsya, J. Čopíková Preparation of various oxidized cellulose amides
- 1.19. J. Tůma, An. Synytsya, M. Marounek, D. Dušková, J. Čopíková Hydrophobic sorbents based on chemically modified polysaccharides
- 1.20. I. Pawlaczyk, O. Lisowska, J. Turjan, P. Capek, R. Gancarz Isolation process of phenolic glycoconjugates from *Fragaria vesca* (L.) with the anticoagulant activity on human blood plasma
- 1.21. K. Vaculová, M. Balounová, R. Mikulíková, K. Benešová, J. Ehrenbergerová Differences in the type of starch and grain given by pedigree and their impact on important barley grain nutrients and agronomic characters

4th November, 2011

Novotného lávka 5
116 68 PRAGUE 1

Oral session

09:00 – 10:10

Oral session 4 “STARCH: CHEMISTRY, TECHNOLOGY AND PROPERTIES”
chairman: Evžen Šárka

09:00 – 09:40 Keynote lecture: ISOLATION, PROPERTIES AND USES OF RICE STARCH

W. Bergthaller, K. Piyachomkwan

*Lage, German; National Center for Genetic Engineering and Biotechnology (BIOTEC), Bangkok, Thailand
wolfgang.bergthaller@t-online.de*



09:40 – 09:55 THE EFFECT OF AMYLOSE/AMYLOPECTIN RATIO ON SPRAY DRIED POWDER PROPERTIES OBTAINED FROM DISSOLVED AND DISPERSED STARCHES

M. B. K. Niazi, A. Broekhuis

*Department of Chemical Engineering/Institute for Technology and Management, University of Groningen, the Netherlands
m.b.k.niazi@rug.nl, a.a.Broekhuis@rug.nl*



09:55 – 10:10 RESISTANT STARCH CONTENT IN THE MILLED AND CZECH BAKERY PRODUCTS

A. Šípková, D. Leitnerová, J. Dostálová, M. Bouzová

*Institute of Chemical Technology in Prague, Czech Republic
anna.sipkova@vscht.cz*



10:10 – 11:10 **Coffee Break / Exhibition**

11:10 – 12:35 **Oral session 5 “FILMS AND COMPOSITES BASED ON STARCH”**
chairman: Jiří Kotek

11:10 – 11:25 **THERMOPLASTIC STARCH FILMS FROM SOLUTION SPRAY DRYING: PROPERTIES, PLASTICIZERS AND RETROGRADATION**

M. Zijlstra, M.B.K. Niazi, A.A. Broekhuis
University of Groningen, the Netherlands
markuszijlstra@gmail.com



11:25 – 11:40 **INFLUENCE OF POTATO STARCH MODIFICATIONS ON MECHANICAL PROPERTIES OF COMPOSITES WITH MONTMORILLONITE**



P. Duchek, M. Špírková, J. Dlouhý
Faculty of Mechanical Engineering, University of West Bohemia, Plzeň, Czech Republic; Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague
duchekpe@kmm.zcu.cz

11:40 – 11:55 **WHEAT B-STARCH BASED POLYMERIC MATERIALS**

J. Kotek, Z. Kruliš, E. Šárka



Institute of Macromolecular Chemistry, Academy of Sciences of the Czech Republic, Prague; Faculty of Food and Biochemical Technology, Institute of Chemical Technology in Prague, Czech Republic
kotek@imc.cas.cz

11:55 – 12:10 **MECHANICAL PROPERTIES OF STARCH-ZrO₂ COMPOSITES – THEIR RELATION TO COMPOSITION AND MICROSTRUCTURE**



E. Gregorová, A. Musilová, W. Pabst
Institute of Chemical Technology in Prague, Czech Republic
eva.gregorova@vscht.cz

12:10 – 12:35 **STARCH-MONTMORILLONITE HYBRIDES: COMPARISON OF PREPARATION METHODS IN VIEW OF MECHANICAL PROPERTIES OF COMPOSITES**

J. Dlouhý, P. Duchek
University of West Bohemia, Plzeň, Czech Republic;
jdlouhy@kmm.zcu.cz



Posters

- 2.1. *E. Gregorová, W. Pabst, Z. Cílová* Polysaccharides as creators of different ceramic microstructures
- 2.2. *L. Juszcak, S. Pietrzyk, T. Fortuna, K. Królikowska, D. Galkowska* The effect of potassium and magnesium ions on rheological characteristic of oxidized starches
- 2.3. *J. Koláček, An. Synytsya, K. Hrušková, E. Šárka* Spectral analysis of benzylated starch
- 2.4. *L. Papoušková, V. Dvořáček, L. Dotlačil, O. Faměra* Sensitivity of SRC test and Mixolab measurement to the damage starch in wheat materials
- 2.5. *S. Pietrzyk, L. Juszcak, T. Fortuna, K. Królikowska, D. Galkowska* Thermodynamic characteristic and susceptibility to retrogradation of oxidized corn starch modified by incorporation of mineral elements
- 2.6. *P. Pająk, S. Pietrzyk, T. Fortuna* A comparison between the physicochemical properties of chemically modified waxy maize and cassava starches
- 2.7. *P. Smrčková, K. Hrušková* Study of B-starch hydrolysis products with various DE by GPC
- 2.8. *E. Šárka, J. Maixner, M. Weider, P. Smrčková, Z. Bubník* Shape and crystallinity of potato starch granules after wet ultrafine grinding
- 2.9. *T. Witczak, L. Juszcak, J. Korus, R. Ziobro, M. Witczak* Effect of inulin addition on rheological properties of gluten-free dough
- 2.10. *M. Witczak, L. Juszcak, J. Korus, R. Ziobro, T. Witczak* Effect of composition on thermal and rheological characteristic of gluten-free dough
- 2.11. *I. Kwaśniewska-Karolak, J. Rosicka-Kaczmarek, B. Siurek, T. Zięba, A. Gryszkin* Effect of storage and packaging of bread on the changes of polymorphic form of resistant starch and bread texture
- 2.12. *J. Rosicka-Kaczmarek, E. Nebesny, I. Kwaśniewska-Karolak, T. Zięba, A. Gryszkin* The influence of non-carbohydrate components on the physicochemical properties of starch grains in dependence of their size and wheat hardness
- 2.13. *J. Rosicka-Kaczmarek, B. Siurek, E. Nebesny, A. Antczak, M. Tkaczyk* Effect of hardness and wheat growing period on the content of non-starch polysaccharides on flour, husk, starch and pentosan layer
- 2.14. *G. Kireeva, S. Razumovski, A. Kovarski, V. Kasparov, S. Varfolomeev* Mass-spectrometry and ESR investigation of destructed products of some plant oligosaccharides after mechanochemical treatment
- 2.15. *G. Kireeva, V. Kurova, A. Ryabokon, A. Kononikhin, O. Korneeva, I. Cheremushkina* Characterisation of the variable parts of IgG synthesized in *Mus musculus domesticus* depending on carbohydrate nutrition by mass spectrometry

- 2.16. *K. Buksa, H. Gambuś, A. Nowotna, R. Ziobro* Chemical composition and molecular properties of innovative preparation of water soluble β -glucan isolated from oat grain
- 2.17. *K. Buksa, R. Sabat, H. Gambuś, A. Nowotna, K. Nowakowski, M. Gibiński* The influence of native and modified water soluble arabinoxylans on storage properties of rye bread baked from flour type 1150
- 2.18. *M. Szymańska-Chargot, J. Cybulska, A. Zdunek* Influence of pectins and hemicelluloses on the cellulose structure
- 2.19. *P. Slavičková, M. Novák, O. Gedeon, P. Slepíčka, J. Čopíková* Preparation of advanced materials on the basis of β -glucan
- 2.20. *F.J. Gonçalves, S.M. Rocha, M.A. Coimbra* Interactions of red wine polymeric material with phenolic compounds - study of the retention capacity
- 2.21. *S. Santos, R. Guiné, A. Barros* Sugar composition of rocha pear (*Pyrus communis* L.) – influence of drying treatments

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