



European Polysaccharide
Network Of Excellence

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**“Nature makes polysaccharides,
EPNOE turns them into products”**

editorial

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Dear Readers of the EPNOE Newsletter, This is the 20th issue of the Newsletter. The first issue was sent in November 2006 to a very small amount of persons, mainly the direct partners of EPNOE plus a few “lucky” others.

The first sentence of the editorial was “EPNOE is much more than a classical European project. It is the fruit of the willingness of important research groups in the field of polysaccharides to work together in a new way: common planning of research, common building of research tools, common organisation of education”. This is still true, considering the 60 or more on-going collaborations between the research and academic EPNOE members (see Editorial of issue # 19).

With the emergence of a new bio-based economy that may change the approach to technology, strong scientific networks such as EPNOE, able to couple research and innovation over all disciplinary frontiers are more and more needed. EPNOE is proud to be one of the most successful of these organisations.

New companies are joining EPNOE, and we hope to start a new EPNOE initiative in 2012 with the help of the European Commission. All these news will be described in the next Newsletter issues.

Issue 20 is also the last one of the year. A time for the whole EPNOE community to wish you, your family and all the people you love a very nice, successful and healthy 2012 year.



With my best wishes,



Dr. Patrick Navard
Coordinator of EPNOE
Armines/Mines ParisTech/CNRS
CEMEF - Centre for Material Forming
Sophia-Antipolis
(France)

news

▶ Forthcoming events



Workshop on Cellulose

The 5th Workshop on Cellulose, Regenerated Cellulose and Cellulose Derivatives, arranged by Karlstad University and Umeå University,

will be held on November 13-14, 2012 at Örnköldsvik, Sweden.

For questions, please contact Professor Ulf Germgård at Karlstad University, Karlstad, Sweden: ulf.germgard@kau.se.

▶ Members' info



New staff

- Arnaud Demilecamps started his PhD in CEMEF (Sophia-Antipolis, France) on making cellulose-silica hybrid aerogels for thermal insulation. Supervisor: Tatiana Budtova.

- PhD Chunlin Xu joined the group of Stefan Willför at Åbo Akademi University (Åbo, Finland) for working with hemicelluloses and analytics, in collaboration with the Wallenberg Wood Science Centre (KTH, Sweden).

- PhD Protibha Nath Banerjee, joined the group of Stefan Willför at Åbo Akademi University (Åbo, Finland) for working with extraction of sugars from sugar cane bagasse and conversion of these to bioethanol; post-doc from India within the Johan Gadolin Scholarship program by the Åbo Akademi Process Chemistry Centre.

Award

Dr. Stephan Daus was awarded with the «STIFT-Award for application-oriented research» for his PhD thesis «Wege zur nachhaltigen Nutzung von Hemicellulosen am Beispiel des Xylans» («Paths for sustainable utilization of hemicelluloses using the example of xylan»). (STIFT= Foundation for Technology, Innovation, and Research in Thuringia)

PhD defenses

- Richard J.A. Gosselink will defend his PhD Thesis 'Lignin as a renewable aromatic resource for the chemical industry' on December 7th 2011 at Wageningen university (Netherlands). Promotor: Prof. J.P.M. Sanders; co-promoters: Prof. G. Gellerstedt and Dr. J.E.G. van Dam.

- Kinga Brzoza-Malczewska defended her PhD on December, 2, 2011. Title: « Study on modified antibacterial nonwovens for application in dressing materials». PhD director: Prof. Jaroslaw Janicki, University of Bielsko-Biala.



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EPNOE Member's Event

Farewell-celebration for Dr. Jürgen Puls in Hamburg

On the occasion of the retirement of Jürgen Puls a symposium was held in his honor at the wood science center of the Johann-Heinrich-von Thünen-Institut (vTI) on the 18th of November.



About 140 guests and companions came to Hamburg. The topic of the symposium was called "Variegated use of biomass - from composites to pharmaceutical products". Top-class scientists provided an insight into their work and gave a view through the current state of research.

Dr. Dietmar Peters from the Agency for Renewable Resources (FNR), started with the first topic on the current situation and future perspectives of renewable resources in Germany. Subsequently Prof. Hans-Peter Fink, from the Fraunhofer Institute for Applied Polymer Research presented his research on biobased fibers and composites. The present situation and prospective development for improved raw material efficiency in the pulp and fibre industry was discussed by Dr. Stefan Horner, an industry representative from the pulp and paper mill ZPR in Germany. Further on Prof. Bjarne Holmbom, Åbo Akademi, Finland, talked about wood extractives and their potential for pharmaceutical applications. In the last scientific presentation Prof. Kaisa Poutanen from Finland (VTT & University of Kuopio), reported about xylans and their role in food, nutrition and health.

Finally Prof. Bodo Saake reflected in an honorific speech the key aspects of Jürgen Puls professional career and research achievements. After studying wood science and technology Jürgen Puls achieved his doctoral thesis on the immobilization of xylanolytic enzymes at Hamburg University. He was a pioneer of biorefinery processes like steam treatment, organosolv pulping, and enzymatic hydrolysis. He worked further on various aspects of wood quality, carbohydrate analytics, polysaccharide chemistry and biotechnology in pulp and paper. During his career Jürgen Puls published approximately 250 papers and patents. In 1998 Jürgen Puls became Director and Professor at the former Federal Research Center of Forestry and Forest Products (BFH; now changed into: vTI). Since 2008 he was acting director of the Institute of Wood Technology and Wood Biology of the vTI.

EPNOE members wish Jürgen the best for his new life and look forward to continuing a fruitful collaboration with him.

news (continued)

▶ Forthcoming articles



Thermostability of Imidazolium Ionic Liquids as Direct Solvents for Cellulose; *F. Wendler, L-N. Todi, F. Meister* - *Thermochimica Acta*

Employing perichromism for probing the properties of carboxymethyl cellulose films: an expedient, accurate method for the determination of the degree of substitution of the biopolymer derivative; *L. C. Fidale, P. M. Lima, L. M. A. Hortêncio, P. A. R. Pires, Th. Heinze, O. A. El Seoud* - *Cellulose*

Composite PP/modified bacterial cellulose surgical mesh for hernia treatment; *D. Ciechanska, J. wietecha, J. Kazimierczak*

Waterproof electrospun nano- and microfibrils from mixture of chitosan-PEO; *W. Tomaszewski, W. Swieszkowski, M. Kudra, M. Szadkowski, D. Ciechanska* - *Fibres & Textiles in Eastern Europe*

Electrospun cellulosic micro- and nanofibres regenerated from solution in ionic liquids; *W. Tomaszewski, S. Troshenkova, D. Ciechanska* - *Fibres & Textiles in Eastern Europe*

Properties of chitosan fibres modified with silver nanoparticles; *D. Wawro, I. Krucinska, D. Ciechanska, W. Steplewski* - *Fibres & Textiles in Eastern Europe*

Cellulosic microfibrils obtained by air-blown technique from solutions in ionic liquids; *S. Troshenkova, W. Tomaszewski, D. Ciechanska* - *Fibres & Textiles in Eastern Europe*

Effect of varying flow regimes upon elution behaviour and apparent molecular characteristics and hydrodynamic properties of amylopectin isolated from normal corn starch using Asymmetrical Flow Field-Flow Fractionation; *S. Juna, A. Huber* - *Journal of Chromatography*

Characterisation of normal corn starch using asymmetrical flow field-flow fractionation; *S. Juna, A. Huber* - *Starch/Stärke*

Molecular characteristics of native sago starch and isolated fractions determined using asymmetrical flow field-flow fractionation; *S. Juna, A. Huber* - *Starch/Stärke*

Determination of molar mass distribution of tapioca starch using asymmetrical flow field flow fractionation; *S. Juna, A. Huber* - *Starch/Stärke*



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EPNOE 2012 Industrial meeting

9th International Symposium «Werkstoffe aus Nachwachsenden Rohstoffen» with the EPNOE Industrial Meeting

The material use of sustainable raw materials is an essential part of a sustainable economy. In view of the limitations when it comes to fossil fuel reserves, sustainable raw materials open up future-oriented opportunities for industry, local authorities and consumers in Thuringia and beyond. The 9th International Symposium on «Resources from Sustainable Raw Materials» with EPNOE Industrial Meeting at **Messe Erfurt on 5th and 6th September 2012** will provide an appropriate platform for scientists, developers and manufacturers from Germany, Europe and beyond to exchange knowledge and ideas about sustainable and innovative products and services. The call for papers is directed at experts from science and production to submit application-oriented presentation concepts.

«Sustainable behaviour can only come from society,» says Minister-president Christine Lieberknecht on the World Decade of Education for Sustainable Development. «Each individual must have a sense of responsibility for our environment.» Economic activity with resources taken from natural materials fulfils this political requirement. From cutlery to water treatment; there is a wealth of possibilities.

Thuringia possesses a range of outstanding production locations for water-soluble and biodegradable packaging materials made from bioplastics. Tailor-made cellulose-based functional fibres can, depending on requirements, be given specific electric, bioactive or heat-storing or -absorbing properties. Together with biopolymers and alternative cellulose solutions, innovations from the natural fibre, wood fibre composite and wooden composite materials sectors will also be key elements of the agenda at the symposium.

Sustainable raw materials are the next generation of resources. In view of climate change, high land use and the endangerment of biodiversity, the International Symposium demonstrates future-oriented opportunities for industry, local authorities and consumers: Resource and cost efficiency, closed material cycle systems (eco-efficiency) and waste avoidance, excellent CO₂ balances and high quality of life.

The organisers of the symposium, the Forschungsvereinigung Werkstoffe aus nachwachsenden Rohstoffen (Research Association for Resources from Sustainable Raw Materials), are expecting it to form a constructive bridge between theory and praxis. The **call for papers** is due to be sent out over the next few days. Experts from science and production will be able to **submit recommendations for innovative and application-oriented presentations up to 31st January 2012**.

The naro.tech symposium is working with the applied industry forum of the European Polysaccharide Network of Excellence (EPNOE) for the first time and EPNOE coordinator Dr. Patrick Navard will be bringing his specialist knowledge to the table of the scientific advisory board. «The partnership with the EPNOE is an alliance for sustainability and the future,» explains Wieland Kniffka, Managing Director of Messe Erfurt.

More information: www.narotech.eu



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EPNOE 2011 Satellite meeting

"The Stability and Degradation of Complex Carbohydrate Structures: Mechanisms and Measurement"

The satellite meeting of the 2nd EPNOE International Polysaccharide Conference («EPNOE 2011: Polysaccharides as Source of Advanced and Sustainable Products», Wageningen, 29 August - 2nd September 2011), was held at the **Royal Society of Chemistry (RSC), Burlington House, London, on 5th September 2011.**

Complex carbohydrates such as high molecular weight polysaccharides like starch and cellulose, are well known for their importance in foodstuffs, paper and wood, but their importance extends far beyond that into the biopharmaceutical, healthcare, oil and printing industries. In many cases their ability to be degraded is highly favourable – for example in nutrition, paper/agrowaste, recycling and their use as potential biofuels. In other instances retarding degradation is preferred – in their use as biopharmaceuticals for example, or in preserving old wood structures in archaeology. So we put together this one-day meeting – a Satellite of the main EPNOE meeting that had been held in Wageningen the week previous - to bring together representatives from the polysaccharide and glycoconjugate communities to review and discuss in detail one specific area of carbohydrate polymer research, namely the importance of the stability and degradation of these substances – the biochemical mechanisms involved and methods for studying stability and degradation at the molecular level.

The meeting – which included talks from 3 EPNOE members (Patrick Navard, Anna Suurnäkki and Steve Harding) - was oversubscribed with almost 50 people who packed into the Council Room at the historic Burlington House, home of the Royal Society of Chemistry in London. It was generously sponsored also by the Chemistry Biology Interface Division of the RSC together with Nestle (York) and Glycomix Ltd (Reading). Many younger scientists participated: feedback from them said how much they had thoroughly enjoyed and benefited from being in the presence of distinguished experts in their respective fields. Many of them presented posters during the extended lunch and tea breaks at the meeting – all were of very high quality - and the prize of £100 for the best poster was awarded to Dr. Terri Grassby (Kings College London) for her poster on Plant cell walls as barriers to lipid bioaccessibility in a model plant food: *in silico* methods for estimating lipid release.

A volume based on the meeting will be published in 2012 by the Royal Society of Chemistry in their Special Publication series, and a more detailed report summarising the presentations of the speakers can be seen on:

http://www.rsc.org/images/Conference_Report_Stability_of%20Carbohydrates_2011_tcm18-210254.pdf



Poster prize winners: (left to right) Kenzi Clark (Institute of Food Research, Norwich) and Fuad Hajji (Nottingham university) (joint 2nd prize) with Terri Grassby (Kings College London), winner of the 1st Prize. Far right is Prof Rob Field (Chairman, RSC Carbohydrate Group).

Steve Harding, Nottingham University