N°40 - JULY 2017

European Polysaccharide Network Of Excellence



"Nature makes polysaccharides, EPNOE turns them into products"

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editorial

Dear Readers of the EPNOE Newsletter,

The program of the next EPNOE conference (Jena, Germany, August 21-24, 2017) is now on-line. You will find it at http://www.epnoe2017.de. More than 300 scientists already registered to the conference.

Sunday, August 20th, the day before the conference starts, a PhD workshop entitled "Polysaccharide Solutions: Solvents, Characterisation and Uses" will be organized, featuring topics as, among others, polysaccharide solvents, polysaccharide solution rheology, polysaccharide chemistry in solutions, hydro-aerogels and solution spinning.

Still on the conference side, our collaboration with the Cellulose and Renewable Materials division of the American Chemical Society is continuing. Seventeen symposia have been proposed for the next 255th ACS National Meeting which will be taken place in New Orleans, Louisiana, March 18-22, 2018. Seven of these symposia have co-organizers from EPNOE institutions.

EPNOE is also considering the organization of topical, application-focused meetings in between the EPNOE conference which takes place every two years. We will come back to this point in the next issues.

Summer is now here in Europe with its warm and pleasant climate. I wish all of you to enjoy this period of the year and to come back in September with a lot of new projects and ideas.

With my best wishes,

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

news

Member's info

Masters & PhD defenses:

- At **BOKU University, Austria:**

- **Dr. Andreas Schedl** (PhD) "Development of sensitive and enhanced mass spectrometric methods for anal-ysis of degradation products from aged cellulose matrices"

- **Dr. Josua Oberlerchner** (PhD) "Unconventional methods for the analysis of carbohydrates in biorefinery streams"

- **Dr. Christian Hutterer** (PhD) "Evaluation of the HEM-Extra process" (Supervisors: A. Potthast, T. Rosenau, S. Böhmdorfer), 2017, 179 pages.

- **DI Erika Schaudy** (Master) "Synthesis of natural antioxidants", (Supervisors: H. Hettegger, T. Rosenau), 2017, 90 pages

- **DI Julia Wenger** (Master) "Cellulose derived chromophores in pulp and paper: Analysis with Atmospheric Pressure Ionization Mass Spectrometry and Gas Chromatographic Methods" (joint supervision with Technical University of Munich, Wood Research Munich; A. Potthast, K. Richter, S. Böhmdorfer), 2016, 126 pages.

New staff:

- At **University of Innsbruck, Austria:**

Florian Wurm, new PhD student, working on "Implementation of biopolymeric gels for the temporary occlusion of vessels in medicine" under the supervision of Thomas Bechtold.

- At **Jena University, Germany:**

- **Marcus Fisher** joined the group as diploma student working in the field of hydrogels based on chemically modified agarose. Supervisors: Prof. Dr. Thomas Heinze and Dr. Martin Gericke

- **M. Sc. Henry Lindemann** joined the group as PhD student working in the field of polysaccharide-based nanoparticles as targeted carriers for pharmaceuticals. Supervisors Prof. Dr. Thomas Heinze and Dr. Andreas Koschella

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EPNOE News

2017 Heinzel-Mondi-Sappi Award goes to Dr. Marco Beaumont

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The PhD work of Dr. Marco Beaumont, Department of Chemistry, Division of Chemistry of Renewable Resources, was awarded with the Heinzel-Mondi-Sappi Award 2017, which "recognizes outstanding scientific works having a potentially significant positive effect on the future of the pulp and paper industry".

His PhD thesis "Characterization and Modification of a Cellulose II Gel" focused on a novel nanomaterial from the cellulose II allomorph - a cellulose II gel obtained out of the Lyocell process, its in-depth physicochemical characterization and novel ways for chemical modification. Besides these specific studies, the work opened new general ways to chemically modify all types of celluloses in the never-dried state – this way avoiding hornification effects and reactivity losses – by very clean and straightforward reactions. In addition, a general procedure was elaborated to dry nanocellulosic materials without the notorious losses in reactivity, surface area and re-wettability so that the re-suspended material exhibits largely the same properties as the starting nanocellulose before drying. During these two years and 10 months of his PhD study, done within the framework of the DokIn'Holz Initiative and funded by Lenzing AG and the Austrian Ministry BMWFW, he published a total of 6 first-author papers, including five SCI articles with an accumulated impact factor of 27, and a Wiley book chapter. Dr. Beaumont´s work, performed at the UFT Tulln, Division of Chemistry of Renewable Resources, was supervised by Thomas Rosenau and by Antje Potthast and co-supervised by Martina Opietnik (Lenzing AG) who had graduated from the same institute several years ago.

The Heinzel-Mondi-Sappi Award 2017 was awarded on Wednesday, May 31th, by the president of Austropapier, Dr. Christian Skilich, during the annual Paper & Biorefinery Conference in Graz, Austria.

Dr. Marco Beaumont receives the Mondi-Sappi-Heinzel Award from Dr. Christian Skilich.

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The Slovenian national smart specialization program - *POTENTIAL OF BIOMASS FOR DEVELOPMENT OF ADVANCED MATERIALS AND BIO-BASED PRODUCTS*

Mojca Božič1, Manja Kurečič1,2, Silvo Hribernik1, Alenka Ojstršek1, Karin Stana Kleinschek 1,2

1- Laboratory for Characterization and Processing of Polymers (LCCP), Faculty of Mechanical Engineering, University of Maribor, Smetanova 17, 2000 Maribor, Slovenia

2- Institute for Chemistry and Technology of Materials (ICTM), Graz University of Technology, Stremayrgasse 9, 8010 Graz, Austria

Circular economy, based on positive materials loops, focused on re-use, repair and recycling of existing materials and products is becoming more and more popular these days. EU-funding and industry are therefore facilitating R&D projects and infrastructure in biomass research and utilization on the national and international levels. Slovenia has recently started a large scale project in the field. In the frame of the national smart specialization program, CEL.CYCLE project - http://celkrog.si with a budget of 10 M EUR over 4 years involves 12 industrial and 9 academic participants. With synergies arising from cross-sector partnership, which represent comprehensive value chain for material and energy utilization of biomass, the project contributes to long-term competitiveness of an important part of Slovenian industry: chemical, textile, paper, wood processing and automotive industry, construction, engineering and energy. Project encompasses 5 conceptual sections:

1. Valorization of biomass potential and development of bio-based products: nanocellulose and green chemicals
2. Development of advanced and multifunctional materials with integrated nanocellulose and environmentally acceptable additives: paper, board and yarn
3. Development of products with higher proportion of bio-based components and improved functionalities: construction, automotive, textile and electrical industry
4. Development of procedures for biological and mechanical processing of solid waste into products with added value
5. Development of innovative system for energy recovery from waste

University of Maribor, Laboratory for Characterization and processing of polymers is a leader of section 3, where overall objective is to development of new, environmentally friendly bio-composite materials with comparable or even better properties, compared to current commercially available ones. The focus is to developed of new (i) bio-based filtering materials, (ii) lightweight polymer composites for automotive industry, (iii) innovative cellulose-based battery separators, (iv) high-performance insulating materials and (v) and lignin based modifiers and binders.

Project is a cooperation platform for top research teams mastering materials, chemical engineering, manufacturing and processing technologies, biotechnologies and nanotechnologies. Collaborating within new value chains helps us move beyond fragmentation and strengthens our capabilities to achieve international excellence in research and technological development.

The project is open for associated partners from foreign countries with the benefit of having access to results.

The authors would like to acknowledge the financial support received in the frame of Slovenian smart specialization program (CEL.CYCLE - grant number C3330-16-529004).

This article was proposed by Mojca Božič, University of Maribor, Slovenia

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EPNOE News

Combination of advanced techniques of 3D printing, electrospinning and spin-coating with the support of active substances (analgesics, cells, growth factors) for development of novel materials for effective chronic wound care

Tina Maver (University of Maribor)

This postdoctoral project combines the most advanced techniques in materials science (3D printing of bio-materials, nanofiber manufacturing by electrospinning and model film preparation by spin-coating), sophisticated approaches in pharmaceutical technology (with the incorporation of analgesics and growth factors) and follows recent trends in biomedical applications (modern in vitro testing of release, evaluation of wound healing physiology, and functional human derived cell testing). Such an interdisciplinary approach will lead to substantial findings in the development of biomaterials for wound care, as well as in the field of controlled release of active substances.

Scaffolds for wound care will be prepared by 3D bio-printing of the currently most promising materials for wound care, exhibiting a proven positive effect on healing (alginate, carboxymethyl cellulose, etc.). The in-situ incorporation of human skin cells will follow. An additional layer of nanofibrous network prepared by electrospinning will be applied on the surface of the 3D scaffold. The electrospun nanofibres will have a positive effect on the healing process on three levels; pain relief through the incorporation of analgesic active substances, acceleration of wound healing by the included growth factors and through the similar structure and morphology of the electrospun nanofiber mesh with the skins native extracellular matrix. A systematic characterization of the manufactured materials will be conducted using various methods. Finally, the determination of the safety and effectiveness of the prepared materials will be performed using human skin derived cell cultures. Verification and understanding of the processes and interactions between the polymeric materials and the incorporated active components as well as the polymeric materials and its physiological environment in the wound, will be obtained through preparation of model films, prepared by spin coating of the same material compositions as used for the 3D bio-printed materials. QCM-D, SPR, AFM and IR methods will be used to characterize the model films also in simulated physiological environments of the wound (simulation of conditions in wounds).

Despite being a basic scientific project at its core, this project will nevertheless be directed towards designing patentable advanced materials, which could in the future significantly improve the quality of life of patients, suffering from chronic wounds. The basic conclusions will be upgraded with the biocompatibility studies, performed at the Institute of Biomedical Sciences in Maribor. There are also possibility to continue the research with clinical studies at the University Clinical Centre Ljubljana in the case of positive in vitro results.

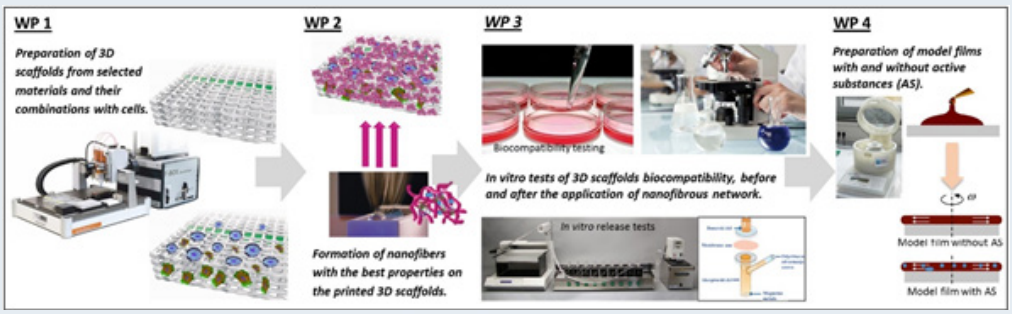

Figure 1: Shematical abstract of the postdoctoral project

This article was proposed by Tina Maver, University of Maribor, Slovenia

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EPNOE News

FERIA project – Functionalization of natural fibers induced by radiation grafting

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Sophie Rouif, Ionisos SA, France

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The FERIA project is a continuation of a collaborative French project called BIONICOMP. It is funded by Ecole des Mines d'Alès (Institut Mines-Telecom) and aims to study the functionalization of ligno-cellulosic fibers through γ and e-beam radiation. Indeed, even if cellulose is highly sensitive to chain scissions induced by radiations, various monomers can be easily grafted onto fibers even at room temperature and low radiation doses (< 20 kGy). Besides, it is worth mentioning that at low radiation doses (< 30 kGy), natural fibers undergo limited degradation, while tailored surface properties in terms of physico-chemistry and topography can be obtained by controlling the radiation conditions according to ligno-cellulosic substrates [1]. The procedure applied to treat a flax fabric is shown in Figure 1 and consists in three steps. The first one is the 1 min-soaking of the fabrics into a solution containing the functionalizing monomers (here phosphorus flame retardants) to be grafted. The second step is the e-beam irradiation of the fabrics. The third step is the fabric washing to remove the ungrafted molecules.

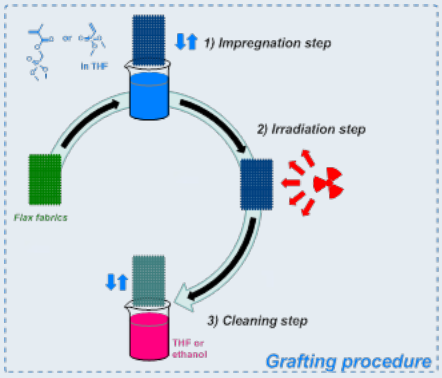

Figure 1 – Radiation-grafting procedure

Because natural fibers are porous, diffusion of molecules into fiber bulk can be achieved to reach a high grafting content. Grafting yield and molecules location can also be tuned by a suitable choice of solvents. The procedure also offers the opportunity to develop multi-functionalized flax fabrics through one dipping step. Fundamental investigations especially include the location of grafted molecules into the complex structure of natural fibers.

Several properties are targeted. Flame retarded (self-extinguished) fabrics have been successfully developed by grafting up to 4 wt% of phosphorus into fiber bulk (i.e. around 15-20 wt% of monomers) [2]. Resistance to UV, hydro and oleophobization are other properties of interest. We also attempt to modify intrinsic mechanical behaviour of flax fibers. In order to develop performant biocomposites, the grafting of coupling agents between the polymer matrix and natural fibers is also considered.

The authors acknowledge the French Fonds Unique Interministériel and the Pôles de Compétitivité for supporting the BIONICOMP project.

[1] N. Le Moigne, R. Sonnier, R. El Hage, Radiation-induced modifications in natural fibres and their biocomposites: Opportunities for controlled physico-chemical modification pathways? Industrial Crops and Products, under review

[2] R. Sonnier, B. Otazaghine, A. Viretto, G. Apolinario, P. Ienny, Improving the flame retardancy of flax fabrics by radiation grafting of phosphorus compounds, European Polymer Journal 68 (2015), 313-325

This article was proposed by Nicolas Le Moigne, Armines-C2MA, France

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EPNOE News

Cellulose films with nano-scale layers and surface patterns

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VTT has demonstrated various functionalization techniques to improve water resistance and barrier properties and to alter the surface architecture of cellulose nanofibril films. These approaches enable the introduction of cellulosic nanomaterials in completely new applications in fields such as optics, electronics and biosensors.

One of the demonstrated techniques was roll-to-roll nanoimprinting of micro- and nanostructures on cellulose nanofibril films (CNF films). For the first time custom-made nanoimprinting lithography device was used. In addition, the patterning of the hydrophobic coating increased surface hydrophobicity significantly. The contact angle was increased from 103° to 130° with the surface patterning. Patterned CNF films show a huge potential for future applications in optics and electronics (Figure 1).

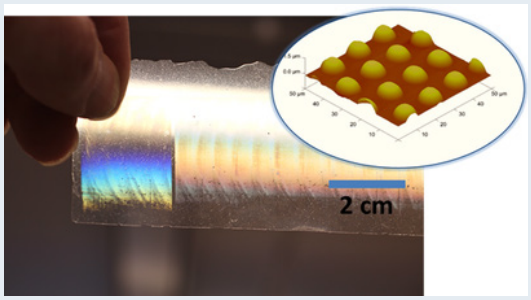

Figure 1. CNF film with micropatterned surface. ting Pillars with a diameter of 7.5 µm d a height of 1.5 µm were printed.

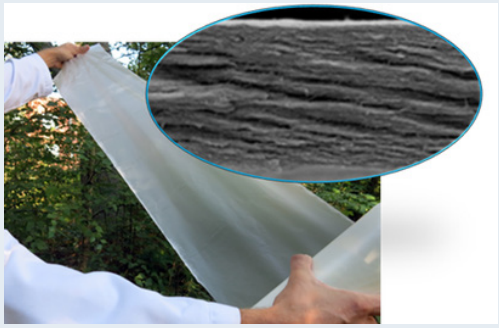

Figure 2. CNF film with an inorganic protec- layer with a thickness of 20 nm.

The feasibility of a novel low temperature atomic layer deposition process was successfully demonstrated for applying thin inorganic nanolayers on sensitive CNF substrates (Figure 2). Especially when substrates were coated with the SiO2/Al2O3 multilayers, the oxygen and water vapor transmission rates were significantly decreased. These findings pave the way towards novel application areas for using these biobased building blocks, e.g., as moisture sensing elements and components in electronic devices.

Self-assembled structures of sugar based glycopolymers were fabricated on flexible, self-standing CNF films. Nanopatterned structures could be formed despite the surface roughness. The horizontal glycopolymer orientation seems to follow the nanoscaled topography of the CNF surface, which opens novel possibilities for example in biosensors.

The results were produced in the EU project GreeNanoFilms, which was co-ordinated by CERMAV, Grenoble, France. VTT was one of the core partners with several technical and scientific tasks related to production and functionalization of thin bio-based films from cellulose nanofibrils. The scientific research project with ten partners received funding from the European Union Seventh Framework Programme under grant agreement n° 603519.

Further information is available at http://www.greenanofilms.eu/.

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EPNOE News

Development of innovative injection moulded food packaging

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At present, biobased plastics are rarely used in injection moulded food packaging, such as salad or butter containers. A new research project aimed at price-competitive food packaging based on biobased plastics wants to change this. The specific challenge of the new project is to produce thin walled transparent food packaging via injection moulding, using biobased plastics that are usually too viscous for this application.

Although food producers are interested in biobased plastic packaging, injection moulded salad, butter or tomato containers are not available on the market on a large scale. "The interest in biobased packaging decreases dramatically when people calculate what the switch to these materials would cost," says Gerald Schennink, senior polymer scientist at Wageningen Food & Biobased Research. This is also the experience of Niels L'Abée, director of SFA Packaging. "From clients we see no explicit willingness to pay extra, but at the same time everyone feels that there should be more environmentally friendly packaging available. This trend is even more evident among consumers."

Injection moulding thin walled biobased plastics

With the above in mind, L'Abée and Wageningen Food & Biobased Research took the initiative to study whether commercially available biobased plastics could be made more suitable for this type of application. A public private research consortium funded by the Dutch government's Agri&Food Top Sector and also including Arburg BV and TN Plastics BV, was recently established with this goal.

There are several biobased plastics on the market, and most are suitable for film applications. Schennink: "Ideally, food packaging films must be strong and stiff . Polylactic acid (PLA), that is biobased by origin, possesses these properties. Production of an injection moulded food packaging demands different material characteristics, however." Complex shaped food packaging can be produced via injection moulding, in which molten plastic is injected and subsequently cooled down in a mould. Commercial available biobased polyesters do not flow easily, and therefore one-to-one replacement of conventional plastic with biobased plastic is difficult.

Thinner and cheaper

The new project focuses on three innovations. The first involves the use of additives that improve the flow behaviour of biobased plastics. Secondly, the project partners will look into more sophisticated production procedures. A possible concept is not to close the mould entirely, but inject the plastic first and close the mould after some specific time. This so-called injection compression moulding technique isn't new. However, it has yet to be determined whether it leads to the desired biobased plastics – food packaging with thinner walls than conventional plastics so that less plastic is required and the costs of biobased products can be reduced. "This is where the mechanical properties of biobased plastics are an advantage," says Schennink. "They are often more stiff than fossil based plastics. " A thin wall is essential in this project as it is the only way reduce material use.

Extra layer

The third focus point are the barrier requirements of the packaging . As well as keeping products clean, a container for cookies also keeps them fresh since hardly any water vapour will permeate through the packaging. "We will not be able to achieve this with polylactic acid as its water vapour barrier is limited," says L'Abée. "We will try to add an extra layer in the container that provides the required barrier properties". Although this sounds complicated, multi-layered food packaging is quite common. An extremely thin printed film is pressed into the mould and fuses with the plastic to provide an imprint on the packaging. This technology – in-mould labelling – is already applied in various packaging products.The final goal of the project is to develop profitably biobased plastic packaging with around half the CO_2 emissions in material and production per unit as compared to conventional plastics. It would also offer consumers the opportunity to select a 'greener' alternative. l'Abée: "Consumers don't have that choice at this time as at present there is no alternative. In the future, the product may cost a little more, but the market will show whether consumers are willing to pay for environmental benefits."

For more information, please contact:

Niels l'Abée, director SFA Packaging - niels@sfa.nl

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"Nature makes polysaccharides, EPNOE turns them into products"



EPNOE News

Polymerisation pilot facilities can accelerate the development of biobased materials

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While the polymerisation of biobased monomers is an important step in making plastics, resins and coatings from plant materials which can compete with their fossil counterparts, there are currently no pilot facilities for this process available in the Dutch R&D ecosystem. Industry, regional bodies and research institutes all see a clear need to realise such facilities in the near future. Two new initiatives in the Netherlands are aimed at realising an open access pilot plant for polymerisation.

The catalyst for both initiatives is the Biobased Performance Materials research programme, coordinated by Wageningen Food & Biobased Research. The programme facilitates fundamental and applied research into new biobased materials that can compete with their fossil counterparts and is sponsored by the Dutch government's top sector Chemistry.

"When the end market is not sufficiently in sight, a dedicated polymerisation pilot plant is often too costly and risky for individual companies," says Christiaan Bolck, director of the BPM programme. "This is why the BPM programme aims to scale up the production of new polymers with open access pilot initiatives that can result in unique properties and/or application possibilities. There are currently no facilities with the required specialist knowledge available to companies who are looking to scale up but cannot or will not invest in a dedicated pilot plant on their own. Due to the economic opportunities for upscaling – and potential spin-off – it would be best if such a pilot is linked to a suitable industrial infrastructure."

Catalyst for a biobased economy

Both Chemport Europe region in the North of the Netherlands and the Biobased Delta region in the South West of the Netherlands have a good starting position in this regard for different reasons. This is why the regions have joined forces with BPM to establish world-class shared facilities.

The first pilot facility, planned in Etten-Leur, is focused on ring-opening polymerisation of biobased monomers. Jan Noordegraaf (general director at Synbra Technology): "The realisation of this pilot, adjacent to the Synbra premises, enables the development of new copolymers which can convert new biobased monomers into polymers in an infrastructure that we have always wanted to achieve with the parties in the Biobased Delta." Five larger and ten smaller companies have already indicated a desire to make use of the pilot.

The second pilot facility is planned in Emmen, at the Sustainable Polymer Innovation Campus (SPIC). "The SPIC innovation cluster already has all the required hardware, and enables us to easily make the link to applications, such as multifilament yarns or monofilaments for 3D printing," says Gerard Nijhoving (managing director of Senbis, a company that carries out applied research in the field of polymers). "Emmen has already realised lots of research into polycondensation to improve the performance of polyester and polyamide yarns. We have received many questions over recent years regarding biopolymers, in particular, as they often have a polyester-like structure. As upscaling these can be difficult we are initiating a polycondensation pilot facility with a capacity of 50 to 100 kg a day."

Ring-opening and polycondensation polymerisation

According to Bolck, the two routes – ring-opening and polycondensation – fit within the BPM programme well and are aligned to the research of Wageningen University & Research. "We can now make polymers on the kilogram scale and the pilot facilities can be a significant catalyst for marketing biobased building blocks. They therefore meet a major precondition for transforming the fossil economy into a biobased economy. We encourage the industry to join this initiative so that we can realise successful, large-scale facilities."

For more information, please contact:

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At BOKU University, Austria:

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Geroldinger, G.; Tonner, M.; Hettegger, H.; Bacher, M.; Monzote, L.; Walter, M.; Staniek, K.; Rosenau, T.; Gille, L., Mechanism of ascaridole activation in Leishmania. Biochem. Pharmacol. 2017, Ahead of Print. DOI: 10.1016/j.bcp.2017.02.023

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Ahead of Print

Böhmdorfer, S.; Hosoya, T.; Röder, T.; Potthast, A.; Rosenau, T., A cautionary note on thermal runaway reactions in mixtures of 1-alkyl-3-methylimidazolium ionic liquids and N-methylmorpholine-N-oxide. Cellulose 2017, DOI: 10.1007/s10570-017-1257-2

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At Jena University, Germany:

- Cellulose-polyhydroxylated fatty acid ester-based bioplastics with tuning properties: Acylation via a mixed anhydride system J. A. Heredia-Guerrero, L. Goldoni, J. J. Benítez, A. Davis, L. Ceseracciu, R. Cingolani, I. S. Bayer, Th. Heinze, A. Koschella, A. Heredia, A. Athanassiou Carbohydrate Polymers 173 (2017) 312-320.

- Preparation of sodium cellulose sulfate oligomers by free-radical depolymerization B. Muhitdinov, Th. Heinze, N. Normakhamatov, A. Turaev Carbohydrate Polymers 173 (2017) 631-637.

- Reactive maleimido dextran thin films for cysteine-containing surfaces adsorbing BSA Th. Elschner, F. Obst, Th. Heinze, R. Kargl, K. Stana-Kleinschek Macromolecular Chemistry and Physics (2017), DOI: 10.1002/macp.201600535.

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5th EPNOE International Polysaccharide Conference
POLYSACCHARIDES AND POLYSACCHARIDE-BASED MATERIALS: FROM SCIENCE TO INDUSTRIAL APPLICATION
Jena, Germany, August 21-24-, 2017

EPNOE International Polysaccharide Conferences are now key features of the calendar of European scientific events. The conference has been organized biannually since 2009. The conference aim is to bring together students, scientists and specialists working in industry, universities and research institutes to exchange experiences, present research results, develop a platform for mutual scientific contacts and intensify academic/industry cooperation.

Since 2013, the EPNOE International Polysaccharide Conference has been promoted and organised jointly by the European Polysaccharide Network of Excellence (EPNOE) and the Cellulose and Renewable Materials Division of the American Chemical Society (ACS). On behalf of EPNOE and ACS, we have the pleasure to invite you to participate.

A pre-conference course on "Polysaccharide Solutions: Solvents, Characterisation and Uses" will be organized on Sunday August 20, 2017.

Contact: http://www.epnoe2017.de

Permanent Research Position Open in functional Biobased Polymers

In order to reinforce the «Biobased Polymers and Composites» group, MINES ParisTech opens a "Chargé de recherche" position on functional biobased polymers for its Centre for Materials Forming (CEMEF, http://www.cemef.mines-paristech.fr/). The candidate is expected to perform fundamental and applied research in the area of biobased polymers, to participate to various teaching activities in MINES ParisTech, to be involved in tutoring of Post-Master students as well as in advising PhD students and to develop high-level research attracting inter¬national recognition, in collaboration with CEMEF researchers.

Deadline for applying: October 1st, 2017. More information at: http://www.cemef.mines-paristech.fr/sections/actualites/poste-charge-recherche-h

Contact: Dr. Tatiana Budtova / tatiana.budtova@mines-paristech.fr

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"Textile and Polymer Science" course
18-29 September 2017 at the University of Innsbruck, Austria.

This course (7.5 ECTS Credits) is divided in three parts: basics, advance understanding and lab training. The first two parts teach a basic and later advance understanding in textile chemistry and physics as well as in polymer science. These lectures will be held in the morning in the first six days. The lab training and project work in small groups is placed in the afternoon and later the whole day. Within the framework of this training, the previously received knowledge will be applied. The lab trai¬ning will be supervised by the institute's research staff based on actual research topics.

Location: Research Institute of Textile Chemistry and Textile Physics, Höchsterstraße 73, 6850 Dornbirn, Austria

Costs: € 1,500

Enrolment: until the 31 July 2017

For further Information please visit our website http://bit.ly/texpol or contact us (Dr. Manian - Avinash.Manian@uibk.ac.at or Weiterbildung@uibk.ac.at).

Participants have the possibility to get financial support from the Province of Vorarlberg. This spon¬sorships are individual related, hence we request you to get in touch with the relevant staff: http://www.bildungszuschuss.at/de/zuschuesse/

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European Polysaccharide Network Of Excellence

Other News

The European Commission: Bioeconomy Report 2016

Report published in june 2017 providing horizontal analysis of the EU Bioeconomy. Main summary: (1) the Bioeconomy cuts across several economic sectors, academic disciplines and policy areas. (2) Bioeconomy R&I are heavily supported by EU funds (3) The EU bioeconomy provides more than 18 million jobs with overall decreasing tendency due to structural changes, e.g. in agriculture (4) The EU bioeconomy creates a turnover of 2 trillion € with increasing tendency

To download the report: https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/bioeconomy-report-2016

Confederation of European Paper Industries (CEPI) Key Statistics 2016

In 2016 CEPI members produced 90.9 million tonnes of paper and board, which is a small decrease of 0.1% (-51,000 tonnes) over the past year and -0.2% in 2015, confirming the relative stability seen over the last few years. The peak production of 102.1 million tonnes was recorded in 2007.

Paper and board delivered within CEPI countries decreased by 0.4% when compared with 2015. Imports from non-CEPI member countries rose by 4.5% (+240,000 tonnes) whilst exports of paper and board to non-CEPI member countries showed a decrease of 0.3% (-56,000 tonnes).

The overall output performance of the CEPI countries in total during 2016 should be considered against the performance of the other main paper-producing countries of the world: Brazil (-0.2%), the USA (-0.8%) and Canada (-1.6%) on the negative side and Japan (+0.2%), South Korea (+0.4%) and China (+1.4%) on the positive side, all compared to 2015 levels.

More information: http://www.cepi.org/node/21674

7th Avancell Conference at Chalmers University of Technology, Göteborg 23-24 October, 2017

Chalmers, Göteborg, Sweden in Oct,

Special topic this year, October 23: Creating a novel pulp fiber.

On October 23 we will follow the general theme Creating Value from the Swedish Forest Resources. Researchers are invited to contribute to the conference´s technical program with oral and poster presentations. Participation in the conference is free of charge. Last day for submitting abstracts for oral presentation or posters is July 5 and the deadline for registration is October 7.

More information: www.avancell.se

2nd International Bioeconomy Congress

12-13 September 2017 in Stuttgart, Germany

The congress will be an interdisciplinary meeting dedicated to systemic approaches of bioeconomy for experts from research and industry and stakeholders. Basic research will be covered in addition to implementation strategies for markets and society in order to develop future bioeconomy scenarios.

www.bioeconomy-congress.de

Biopolymers and Bioplastics 2017

7th International Conference and Exhibition on Biopolymers and Bioplastics

October 19-21, 2017 San Francisco, USA

For more information: https://goo.gl/sqwJa2

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Commercialisation Updates of Bio-based Building Blocks

New market report, published by nova-Institute, offers "Commercialisation Updates of Bio-based Building Blocks" with latest market data. The author is well-known Doris de Guzman from Tecnon OrbiChem. Nowhere else can you find such comprehensive insider information on the 16 most important new bio-based building blocks. More information in the newsletter. All new market and trend reports are available at www.bio-based.eu/reports.

7th Biocomposites Conference Cologne (BCC)
6 – 7 December 2017, Maternushaus, Germany

Producers and inventors of innovative, new applications for WPC and NFC are invited to hand in their applications to the Innovation Award "Biocomposite of the Year 2017" until End of July. Also, the first version of the preliminary programme is now online. 16 speakers will present on the topics: Biocomposites in Automotive, Wood-Plastic Composites, Injection Moulding: Granulates and Applications, Biocomposites in 3D Printing, Structural Applications, Raw materials for Biocomposites – wood and natural fibres and polymers and more.
More information: http://biocompositescc.com/home?lng=en

The Collaborative Research Center 1278 "Polymer-based nanoparticle libraries for targeted anti-inflammatory strategies - PolyTarget" was established by the German Science Foundation in July 2017. The CRC brings together experts from different scientific fields located around Jena in order to develop new strategies for the treatment of infection-triggered inflammatory states.

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