



European Polysaccharide
Network Of Excellence

N°31 - NOVEMBER 2015



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

editorial

Dear Readers of the EPNOE Newsletter,

Originally, the EPNOE Newsletter was aimed at giving information about the EPNOE network. As some of you know, EPNOE established beginning of 2015 a new newsletter (epnoe-at-large) with a much wider scope, giving information about polysaccharides coming from outside the EPNOE network. These two newsletters induced some confusion and we made the decision to merge them. This issue of the EPNOE Newsletter will thus have the classical sections about EPNOE's member activities but will also bear a section on other news of interest for our community.

The epnoe-at-large newsletter was sent jointly with the bulletin of our South American colleagues, RIADICYP (Red Iberoamericana de Docencia e Investigación en Celulosa y Papel). We will continue this collaboration. This is why you also received the RIADICYP bulletin with the present Newsletter.

We changed the periodicity of the EPNOE Newsletter, which will be published every two months.

We hope these changes will benefit our community.

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



Nomination:

- **Tatiana Budtova** (CEMEF, Mines ParisTech) was nominated associate editor in Carbohydrate Polymers journal.

- **Patrick Navard** is the series editor of the new Springerbriefs on "Biobased Polymers".

New staff:

• At **ARMINES-CEMEF**, France:

- Master student **Lucile Druelle** is working in CEMEF, Mines ParisTech, supervised by Tatiana Budtova, on her Master degree preparing starch aerogels. Some of modified starches are kindly provided by Robert Hampe, PhD student of Thomas Heinze, Jena university.

- Master student **Marine Michel** worked in CEMEF, Mines ParisTech, supervised by Tatiana Budtova, on making aerogels from wood, in the frame of ERA-NET EU project "Aerowood".

• At **"Petru Poni" Institute**, Romania:

- **Alina Diaconu**: Magnetic composites and nanocomposites bearing natural and artificial polymers. PdD supervisor: Dr. Maria Pinteala.

Masters & PhD defenses:

• At **"Petru Poni" Institute**, Romania:

- **Alina Spatareanu**: Pullulan and its oxidized derivatives for medical and pharmaceutical applications. (July 2015). PhD supervisor: Dr. Valeria Harabagiu.



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EPNOE Activities

Agreement between four knowledge-transfer and innovation organizations in Europe signed in Warsaw

Four European knowledge-transfer and innovation organizations, EPNOE, Polintegra (Poland), Céréales Vallée (France) and the Bioeconomy Cluster (Germany) signed a common Agreement on 22 October 2015 in Warsaw during the EPNOE 2015 conference.

Considering the missions of EPNOE, Polintegra, Céréales Vallée and Bioeconomy Cluster, this Agreement establishes terms and conditions under which these organizations may cooperate in developing a series of common actions in order to foster and enlarge effective relations between academic, research and industrial activities. The objective is to help the members of the four organizations to better interact with each other. The goal is to increase their overall competence and their knowledge of the activities performed in other member's laboratories and companies in order to boost the possibilities of knowledge transfer and ultimately innovation.

The cooperation activities and exchanges between the members of the four will include the following:

- Exchange of information.
- Organization of meetings.
- Brain-storming sessions.
- Building of R&D proposals and establishment of projects between members of the four organizations.
- Common participation to stakeholder's events.

After a first phase dedicated to foster a better knowledge of each other, the first practical actions are planned for the second semester of 2016.



news (continued)

Member's info



Masters & PhD defenses:

- At **ARMINES CEMEF**, France:

- **Richard Bardl** defended his Master degree on starch-based aerogels; the work was done in CEMEF, Mines ParisTech, supervised by Tatiana Budtova, in collaboration with Waltraud Vorverg, Fraunhofer IAP.

- **Arnaud Demilecamps** successfully defended his PhD in July 2015 (supervisors: Tatiana Budtova (CEMEF, Mines ParisTech) and Arnaud Rigacci (PERSEE, Mines ParisTech)) on composite cellulose-silica aerogels as thermal superinsulating materials. The work was done in the frame of EU project "AEROCOINS".

- **Florian Gourdon** defended his master thesis on natural plant filled composites at Université de Bretagne-Sud. Work supervised by Patrick Navard.

- **Christophe Bertho** defended his master thesis in University of Nice on the processing of cellulose acetate in the framework of the EC Eranet Hemicell project. Supervisors: Tatiana Budtova and Patrick Navard.

- **Renato de Melo** defended his PhD in Federal University of Rio de Janeiro, Brazil, on processing of plant-based polyamide composites. Work co-supervised by Patrick Navard.

- At **Friedrich Schiller University of Jena**, Germany:

- **Jonas Holste**: Studies on enzymatic desulfation of pentosan polysulfate

- **Linda Schmidt**: Studies on desulfation of pharmaceutically active polysaccharide sulfates

- **Florian Schnurrer**: Synthesis and characterization of novel amino deoxy chitosans



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EPNOE News

EPNOE 2015 Conference : a great success

The 4th Conference EPNOE 2015 "Polysaccharides and Polysaccharide-based advanced materials: From Science to Industry" took place in Warsaw (Poland) from 19 to 22 October 2015 under the auspices of the European Polysaccharide Network of Excellence (EPNOE) and the Cellulose and Renewable Materials division of the American Chemical Society (ACS).

EPNOE 2015 was organized by the Institute of Biopolymers and Chemical Fibres (IBWCh) in cooperation with the scientific/industrial Centre POLINTEGRA, Poland. The chair person was Dr Danuta Ciechańska.

The conference was held in a very unusual and very comfortable place: the new Football stadium of Warsaw (it is possible to see the red and white seats on the pictures). All conference rooms and poster hall were located at the same place, which contributed a lot to exchanges between participants.

On Sunday 18 October, 80 courageous scientists gathered for a Pre Conference Workshop entitled "Physics and Chemistry in Polysaccharide Science: From Molecules to Materials" co-organised by EPNOE and the European commission COST Action FP1205 "Innovative applications of regenerated wood cellulose fibres" (<http://www.costfp1205.com>).

We will give a full account of the various meetings which took place during this week in the next issue of the EPNOE Newsletter.



Dr Danuta Ciechańska



Panel Discussion



Posters session



Oral presentation



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EPNOE News

Two ACS-EPNOE symposia during the 251st ACS National Meeting to be held March 13-17, 2016 in San Diego, California

EPNOE scientists are organizing two symposia during the next ACS national meeting in the division of Cellulose and Renewable Materials:

Functional lignocellulosics and nanotechnology

The aim of this symposium is to discuss the latest achievements in basic and applied research in the field of lignocellulosic materials. The symposium will be organized under the following topics:

- 1) Functional lignocellulosics, including responsive materials,
- 2) surface interactions on ligno-nanocellulosic materials,
- 3) dispersions, gels, foams, colloids, films,
- 4) cellulose nanomaterials and their applications, and
- 5) lignocellulosic hybrid materials.

The symposium organizers are Tiina Nypelö (BOKU University of Natural Resources and Life Sciences Vienna, Austria), Maria Soledad Peresin (VTT - Technical Research Centre of Finland), Ilari Filpponen (Aalto University School of Chemical Technology, Espoo, Finland) and Stefan Spirk (Graz University of Technology, Austria)

Frontiers in Sustainable Materials

This is a multidisciplinary joint symposium co-organized by the ACS Cellulose and Renewable Materials Division (CELL) and the European Polysaccharide Network of Excellence (EPNOE). It is meant to highlight the work of outstanding young scientists in the field of Sustainable Materials, and will serve as a lead in to the new CELL Kingfa Young Investigators Award, for which nominations will be solicited for the first time in 2016. The symposium will run over two days and will include a panel discussion on New Frontiers at the end among participants as well as senior leaders in the field.

The symposium organizers are Kevin Edgar (Virginia Tech, USA) and Patrick Navard (Mines ParisTech/CNRS, France).



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EPNOE Member's News

CONQUER project

CONQUER - Polysaccharides as key components for the development of new magnetic resonance imaging technologies

Recently, a multidisciplinary research team of five universities under strong participation of the EPNOE members University of Technology Graz (coordinator) and University of Maribor was granted a prestigious grant (2.4m Euros) of the REA in the Future and Emerging Technology (FET) program. The approach in the project called CONQUER is to develop a new methodology in MRI which uses quadrupole resonance cross relaxation to form a contrast.

MRI today

Magnetic resonance imaging (MRI) is an indispensable tool in everyday clinical diagnosis. In special cases, contrast agents are applied to patients in order to provide additional information such as in angiography or tumor diagnosis. However, so far MRI plays only a minor role in molecular (biomarker) imaging, due to only moderate sensitivity when compared with e.g. positron emission tomography, thus leaving room for improvement.

Generally, in MRI strong static magnetic and high-frequency electromagnetic fields are required, which temporarily excite the spins of hydrogen nuclei (such as in human tissue). This phenomenon, which occurs at the so-called resonance frequency, generates signals which give information about the composition and structure of tissues because the nuclei return to their original state at different speeds depending on the type of tissue. These differences described through the so-called relaxation times form the most important contrast mechanism of MRI.

Quadrupole resonance for enhancing signals

Contrast media can alter relaxation times through their magnetic characteristics and thus increase the explanatory power of the images. An extremely versatile contrast mechanism is the so-called quadrupole cross relaxation, which occurs in the presence of nuclei with a so-called electrical quadrupole moment and characteristic quadrupole resonance frequencies. If hydrogen nuclei enter into resonance with the quadrupole nuclei, this accelerates their relaxation, which in turn leads to an enhancement of the contrast. The effect only occurs, however, when the resonance frequencies of both nuclei are the same. However, cross relaxation has never been considered for extrinsic MRI contrast agents until now. Designing the chemical environment of the quadrupole nuclei so that their resonance frequencies lie in the range of the target frequency for clinical MRI will be a huge challenge. It is very likely that considerably more processes can be visualised using the newly presented concept than with previous ones.

Smart and sensitive

The idea offers numerous possibilities to develop highly specific, smart contrast media. The quadrupole frequency depends on the electrical field around the quadrupole nuclei and the magnetic field. If the chemical environment changes, the distribution of the electrons around the nuclei and thus the cross relaxation frequency also changes. This is the point where polysaccharides come into play. They provide a matrix which stabilizes the nuclei, provide smart properties (i.e. conformation changes upon pH changes), and additionally may assist in targeting the right resonance frequency and relaxation rates of the nuclei.

*This article was proposed by **Univ. prof. DI Dr. Herman Scharfetter** (Institute of Medical Engineering, Graz University of Technology) Coordinator of the CONQUER project, **Rupert Kargl** (University of Maribor) and **Stefan Spirk** (TU Graz)*



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EPNOE Member's News

InnoRenew CoE project

Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (InnoRenew CoE)

In brief: The Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (InnoRenew CoE) is a new institute being developed by a consortium of research groups in Slovenia with the aid of an advanced partner (an existing Centre of Excellence) from Germany. One of the purposes of the new CoE is to support and revitalise the Slovenian forest products sector.

The University of Primorska is coordinating a consortium dedicated to developing new Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (InnoRenew CoE) using the Horizon 2020 Teaming grant instrument. The consortium is comprised of Fraunhofer Institute for Wood Research – Wilhelm-Klauditz-Institut which serves as a mentor for the centre's development and 7 institutions from Slovenia: the University of Maribor, the Institute for the Protection of Cultural Heritage of Slovenia, the Slovenian National Building and Civil Engineering Institute, the Pulp and Paper Institute, EuroCloud Slovenia, the National Institute of Public Health, and the Regional Development Agency of the Ljubljana Urban Region. This partnership brings together expertise on renewable materials in a wide variety of disciplines including health, information technology and computing, engineering, construction, urban development, cultural heritage, material science, and sustainability. The emphasised renewable material is wood, its products and derivatives in all forms, ranging from solid timber and wood fibre to "green" chemicals and energy. The InnoRenew CoE will build upon the group's diverse expertise to bring Slovenia to the forefront of the European construction and renewable materials sectors by developing new, smart, sustainable, and modern built environments for all generations. The new InnoRenew CoE will pursue original research as well as provide research, development, and innovation support to the industry and undertake an extensive outreach project to promote the use of renewable materials in sustainable development (Figure 2).

The overall strategic objective and long-term vision of the new InnoRenew CoE is to harness and upgrade the talents and expertise of all collaborators and relevant stakeholders in order to create, improve, and communicate innovative products, processes, services, business models, and systems for smart, sustainable and modern built environments for all generations. The CoE will contribute to Slovenia's transformation into a society focused on sustainability, a cyclical economy, human well-being, and use of its renewable resources and assets. To meet this objective, a strong and detailed business plan is being produced.



Figure 2: Schematic presentation of the InnoRenew CoE concept – to convert scientific, fundamental and applied, research excellence into value added innovations.

More: <http://innorenew.eu/en>
Contact us: CoE@innorenew.eu

This article was proposed by **Manja Kurečič** (University of Maribor) and **Črtomir Tavzes** (Institute for the Protection of Cultural Heritage of Slovenia) (University of Primorska)



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EPNOE Member's News

New water soluble cellulosic derivatives for unconventional applications

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Cellulose, among the most versatile and widely prevalent biopolymers in nature, has been used for millennia for human basic needs, e.g. as building material, for clothing fabrication and as energy source, but founded today, through its derivatives, new and exotic applications in food industry, medicine, cosmetic, flexible display panels, electronic devices and many others, Figure 1.1-3 Chemical modifications of polysaccharides represent the most important route to design new materials with new structures and properties. Cellulose, having three reactive hydroxyl groups (one primary and another two, secondary) in its repeating unit, can be easily modified, following typical alcohol group chemistry, most important transformations referring to esterification, etherification, and oxidation. Particularly, the oxidation reaction aroused many researcher groups around the world, due to the large variety of the products which could be obtained, depending on the reactive site, and employed reagents, offering a broad spectrum of cellulose derivatives for industrial applications.4-9



Figure 1. Old vs new applications of cellulosic products

Many attempts has been made in order to improve the reaction selectivity of the cellulose oxidation, to found benign and cheap reagents, and even to found new paths, able to supply new and highly value-added products. There are hitherto, two main approaches for the cellulose selective oxidation: i) nitroxyl radical-mediated oxidation of the primary OH groups, and ii) periodate oxidation of the two secondary OH groups, see Figure 2. These two protocols are considered the most selective processes, in this kind of transformations.

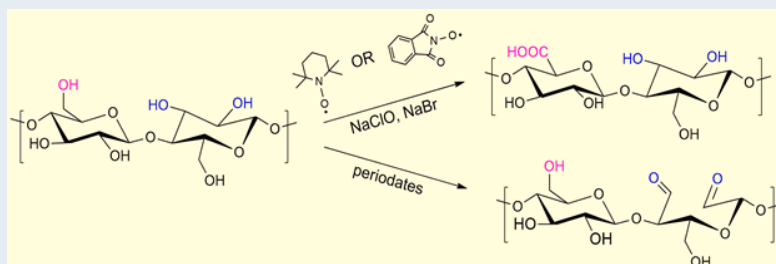


Figure 2. Existing protocols for the selective oxidation of cellulose

The simultaneous presence of TEMPO (or NHPI) and periodate will fulfill the conditions for the oxidation of all the three hydroxyl groups in anhydroglucose unit, as is suggested in Figure 3.

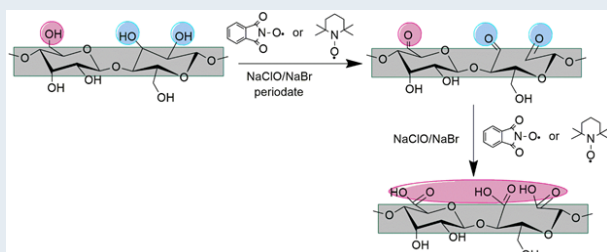


Figure 3. Simultaneously oxidation of the three hydroxyl groups in cellulose unit, in the presence of both periodate and nitroxyl radicals.



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EPNOE Member's News (continued)

In the first stage of the reaction, the three hydroxyl groups, are converted to aldehydes, as follow: the accessible C6-OH groups on the crystalline surface are converted due to the presence of the nitroxyl radicals (TEMPO or NHPI) in the presence of sodium hypochlorite, whereas the two secondary OH groups, at C2 and C3, are being converted into 2,3-dialdehyde cellulose, in a classic periodate oxidation mechanism, concomitantly with the cleavage of the cellulose's glucopyranose rings between C2-C3 bond. In the next step, due to the presence of nitroxyl radicals and sodium hypochlorite, the aldehyde groups are further oxidized, to form the final oxidation product: the carboxylic groups.

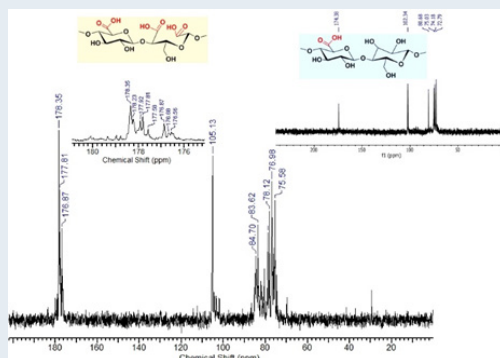


Figure 4. ^{13}C -NMR spectrum in D_2O of T4s sample. Inset: magnified peaks of "carboxylic" signals.

Due to the high content of carboxylic groups incorporated, cellulose sample becomes highly water soluble, allowing therefore the acquisition of the ^{13}C NMR spectra in deuterated water. Figure 4 shows the typical spectrum of such compounds. Therefore, the sample exhibit in ^{13}C NMR spectra a quite intense peaks signal, between 176.87 and 178.35 ppm, which are characteristic for carbons originating from carboxylic groups. The presence of three peaks (see the inset of Figure 4) prove that there are three distinctive COOH groups inside the anhydro glucose unit, contrasting with the case of preparation of other water soluble cellulose derivative, i.e. 6-carboxylcellulose, ^{13}C NMR spectrum, when, there is only one carbon peak around 175 ppm, (corresponding only to one carboxylic group type formed) according with C6 oxidation performed with nitroxyl radical and sodium hypochlorite (no periodate was present).

References

1. D. Klemm, F. Kramer, S. Moritz, T. Lindstrom, M. Ankerfors, D. Gray, A. Dorris, *Angew. Chem. Int. Ed.*, 2011, **50**, 5438-5466.
2. Y. Habibi, L. Lucia, O. J. Rojas, *Chem. Rev.*, 2010, **110**, 3479-3500.
3. R. J. Moon, A. Martini, J. Nairn, J. Simonsen, J. Youngblood, *Chem. Soc. Rev.*, 2011, **40**, 3941-3994.
4. T. Heinze, T. Liebert, *Prog. Polym. Sci.*, 2001, **26**, 1689-1762.
5. S. C. Fox, B. Li, D. Xu, K. J. Edgar, *Biomacromolecules*, 2011, **12**, 1956-1972.
6. S. Coseri, G. Biliuta, B. C. Simionescu, K. Stana-Kleinschek, V. Ribitsch, V. Harabagiu, *Carbohydr. Polym.*, 2013, **93**, 207-215.
7. S. Coseri, G. Nistor, L. Fras, S. Strnad, V. Harabagiu, B. C. Simionescu, *Biomacromolecules*, 2009, **10**, 2294-2299.
8. G. Biliuta, L. Fras, S. Strnad, V. Harabagiu, S. Coseri, *J. Polym. Sci., Part A: Polym. Chem.*, 2010, **48**, 4790-4799.
9. G. Biliuta, L. Fras, V. Harabagiu, S. Coseri, *Dig. J. Nanomater. Bios.*, 2011, **6**, 293-299.

This article was proposed by PhD Sergiu Coseri, "Petru Poni" Institute of Macromolecular Chemistry Iasi, Romania



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EPNOE Member's News

New 3D Printer University of Maribor, Slovenia

3D Printer (MakerBot Replicator 2X) with two extruders is a new addition to our lab. This 3D printer is optimized for printing acrylonitrile butadiene styrene (ABS) filament at 70° C. The latter filament is a ductile petroleum-based thermoplastic material with excellent elastic deformation properties that make it good for snaps, living hinges and threadability. The materials can be print in two colors through precisely aligned dual nozzles, without swapping filament or pausing your print. The extruders can be heated accurately up to 280° C and evenly with better temperature control. Six-sided enclosure in the printer stabilizes ABS cooling: draft-blocking enclosure prevents uneven cooling, shrinking and cracking. At present, we are able to print all types of complex 3D geometries with good reproducibility for various non-life science applications.

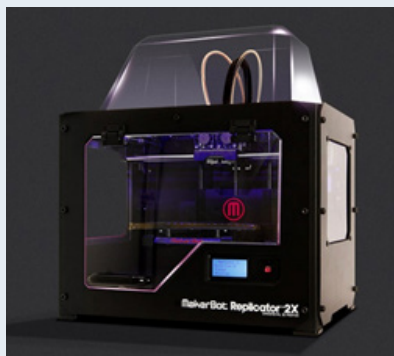


Figure 1. 3D Printer (MakerBot Replicator 2X)

SOLIDE project, Amiens, France

The project SOLIDE, involving 5 partners, and supported by the Conseil Régional de Picardie, started on October 2015 coordinated by José Kovensky, director of the Laboratoire de Glycochimie, des Antimicrobiens et des Agroressources (LG2A, CNRS FRE 3517) at the Université de Picardie Jules Verne (UPJV). In this project, biosourced anionic polysaccharides as pectins and alginates will be converted to oligosaccharides. By fractionation and chemical modification, the resulting oligosaccharides will be tested in different systems in order to identify new biologically active compounds. Rachid Naitaleb has just started his PhD on this subject, he will also complement this approach with chemical synthesis of oligosaccharides and analogues.

Prof. José KOVENSKY
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33 rue Saint Leu 80039 AMIENS



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EPNOE Member's Scientific Publications

University of Maribor, Slovenia:

- MAVER Tina, HRIBERNIK Silvo, MOHAN Tamilselvan, SMRKE Dragica Maja, MAVER Uros, STANA-KLEINSCHEK Karin. Functional Wound Dressing Materials with Highly Tunable Drug Release Properties. RSC Advances, Received 21 Jun 2015, Accepted 09 Sep 2015
First published online 09 Sep 2015. <http://pubs.rsc.org/en/content/articlelanding/2015/ra/c5ra11972c#!divAbstract>. doi:10.1039/C5RA11972C.
- ROEMHILD Katrin, NIEMZ Frank, MOHAN Tamilselvan, HRIBERNIK Silvo, KURECIC Manja, GANSER Christian, TEICHERT Christian, SPIRK Stefan. The Cellulose Source Matters—Hollow Semi Spheres or Fibers by Needleless Electrospinning. Macromolecular Materials and Engineering, Article first published online: 11 AUG 2015. <http://onlinelibrary.wiley.com/doi/10.1002/mame.201500191/abstract>. doi:10.1002/mame.201500191.
- OJSTRŠEK, Alenka, KUREČIČ, Manja, FAKIN, Darinka. Fabrication of superhydrophilic polyester fabrics using various TiO₂ colloidal dispersions. V: ORAL, Ahmet Yavuz (ur.) Special issue of the 4th International Congress on Advances in Applied Physics and Materials Science (APMAS2014), Fethiye, Turkey, April 24-27, 2014, Warsaw: Polish Academy of Sciences, Institute of Physics, 2015, vol. 127, no. 4, str. 953-956. doi:10.12693/APhysPolA.127.953. [COBISS.SI-ID 18796310].
- MOHAN Tamilselvan, RATHNER Raffael, REISHOFER David, KOLLER Martin, ELSCHNER Thomas, SPIRK Stefan, HEINZE Thomas, STANA-KLEINSCHEK Karin, KARGL Rupert Johann. Designing Hydrophobically Modified Polysaccharide Derivatives for highly efficient enzyme immobilization. Biomacromolecules, Publication Date (Web): July 22, 2015. doi:10.1021/acs.biomac.5b00638.
- EHMANN, Heike M. A., MOHAN, Tamilselvan, STANA-KLEINSCHEK, Karin, SPIRK, Stefan, et al. Surface-sensitive approach to interpreting supramolecular rearrangements in cellulose by synchrotron grazing incidence small-angle X-ray scattering. ACS macro letters, ISSN 2161-1653, 2015, vol. 4, str. 713-716. doi:10.1021/acsmacrolett.5b00306. [COBISS.SI-ID 18797846]
- MAVER, Tina, MAVER, Uroš, STANA-KLEINSCHEK, Karin, SMRKE, Dragica, KREFT, Samo. A review of herbal medicines in wound healing. International journal of dermatology, ISSN 0011-9059. [Print ed.], Article first published online: 24 Mar. 2015, str. [1-12]. <http://onlinelibrary.wiley.com/doi/10.1111/ijd.12766/abstract> doi:10.1111/ijd.12766. [COBISS.SI-ID 18578710]
- FAKIN, Darinka, STANA-KLEINSCHEK, Karin, OJSTRŠEK, Alenka. The role of TiO₂ nanoparticles on the UV protection ability and hydrophilicity of polyamide fabrics. V: ORAL, Ahmet Yavuz (ur.) Special issue of the 4th International Congress on Advances in Applied Physics and Materials Science (APMAS2014), Fethiye, Turkey, April 24-27, 2014. Warsaw: Polish Academy of Sciences, Institute of Physics, 2015, vol. 127, no. 4, str. 943-946. doi:10.12693/APhysPolA.127.943. [COBISS.SI-ID 18797590]
- KOLAR, Metod, MOZETIČ, Miran, STANA-KLEINSCHEK, Karin, FRÖHLICH, Mirjam, TURK, Boris, VESEL, Alenka. Covalent binding of heparin to functionalized PET materials for improved haemocompatibility. Materials, ISSN 1996-1944, 2015, vol. 8, no. 4, str. 1526-1544. doi:10.3390/ma8041526. [COBISS.SI-ID 28469543]
- EHMANN Heike M. A., WERZER Oliver, PACHMAJER Stefan, MOHAN Tamilselvan, AMENITSCH Heinz, RESEL RolanD, KORNHERR Andreas, STANA-KLEINSCHEK Karin, KONTTURI Eero, SPIRK Stefan. Surface-Sensitive Approach to Interpreting Supramolecular Rearrangements in Cellulose by Synchrotron Grazing Incidence Small-Angle X-ray Scattering. ACS Macro Lett., 2015, vol. 4, str. 713-716. <http://pubs.acs.org/doi/full/10.1021/acsmacrolett.5b00306> [COBISS.SI-ID 18797846]



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University of Innsbruck, Austria:

- Hossam E. Emam, Thomas Bechtold "Cotton fabrics with UV blocking properties through metal salts deposition", Applied Surface Science (2015), Ahead of Print. DOI:10.1016/j.apsusc.2015.09.095
- Markus Kofler, Margit Lenninger, Gertz Mayer, Hannes Neuwirt, Michael Grimm, Thomas Bechtold "Multi-chamber electroosmosis using textile reinforced agar membranes - A promising concept for the future of hemodialysis", Carbohydrate Polymers (2016), 136, 81-86. DOI:10.1016/j.carbpol.2015.09.013



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News from outside the EPNOE Network

Postdoctoral position for 18 months open at INRA – Nantes (France)

Preparation and characterization of hybrid nanoparticles involving cellulose nanocrystals for coating formulations

We propose a post-doctoral position for 18 months (starting as soon as possible), to prepare and characterize hybrid nanoparticles cellulose / titane dioxide. This is a part of a larger program aiming at preparing alternative particles with photocatalytic properties to be included in various commercial formulations in collaboration with industrials. It will be located at INRA (the French National Institute for Agricultural Research) in Nantes in the Biopolymers, Interactions Assemblies unit (about 170 people involved in research on biopolymers). The applicant will have access to the instruments available at the institute (NMR, AFM, TEM, IR/UV spectroscopies, QCM-D) as well as other instruments available locally or via the labex network.

Applicants should send (see email below) a CV and description of research interests, and provide letters of recommendation if possible to isabelle.capron@nantes.inra.fr. A good experimental background is required. Knowledge of at least one of the following topics is particularly welcome: Cellulose, Physico-chemistry of biopolymers, nanotechnology.

Isabelle Capron & Bernard Cathala

Unité de Recherche sur les Biopolymères, Interactions et Assemblages

Rue de la Géraudière – B.P. 71627 – 44316 NANTES Cedex 3

Contact : isabelle.capron@nantes.inra.fr - Tel : 02 40 67 50 95

14th International Symposium on Bioplastics, Biocomposites and Biorefining, Guelph, Canada, 31 May – 3 June 2016

The 14th International Symposium on Bioplastics, Biocomposites and Biorefining combines the areas of biobased materials and biorefinery research. It will feature presentations covering recent developments in the areas of biopolymers, biocomposites and biorefining, supply chain and logistics management, as well as sustainability issues.

Focus areas OCUS AREAS

- Biocomposites and Green Composites
- Sustainable Materials for Manufacturing
- Bioplastics for Durable Applications
- Modern Biorefinery

For poster and/or oral presentations, submit your abstract using the online form at: <http://isbbb.org/Submissions/Abstract>

The deadline for abstract submission is December 10th, 2015. For more information visit: <http://isbbb.org/home>

Contact: isbbb@uoguelph.ca

New €106 million released by BBI JU to research innovative ways of using renewable resources

Second call for proposals for the Bio-Based Industries Joint Undertaking (BBI JU) has been published. New €106 million for research and development are unveiled for bio-based initiatives to turn renewable resources into useful bio-based products.

The announcement comes in the form of a second call for proposals for the Bio-Based Industries Joint Undertaking (BBI JU), and will support research and innovation actions, including demonstration actions for making the best use of biomass.

See more at: <http://bbi-europe.eu/news/new-%E2%82%AC106-million-released-bbi-ju-research-innovative-ways-using-renewable-resources#sthash.Qqb1RNv4.dpuf>



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"Nature makes polysaccharides, EPNOE turns them into products"



News from outside the EPNOE Network (continued)

EPNOE SpringerBriefs on Biobased Polymers

EPNOE, the European Polysaccharide Network of Excellence and Springer are launching a SpringerBriefs series on Biobased Polymers.

SpringerBriefs present concise summaries of cutting-edge research and practical applications across a wide spectrum of fields. Featuring compact volumes of 50 to 125 pages, the series covers a range of content from professional to academic.

Every manuscript will be peer reviewed by independent senior scientists as per the procedure for journal article publications.

All aspects of basic and applied Biobased Polymer Science and Technology will be considered. The series aims to cover all fields and sectors (such as for example genetics and agronomy of polysaccharides, plant based-concrete or bioplastics).

To have more information or submit a book proposal, contact Patrick Navard at patrick.navard@mines-paristech.fr.

9th International Conference on Bio-based Materials, 5-6 April 2016, Maternushaus, Cologne, Germany

Highlights of the worldwide bioeconomy: Policy and Markets – Bio-based Building Blocks and Polymers – Biorefineries and Industrial Biotechnology

Call for papers: if you would like to present your latest products, technologies or developments, please send us the title and an abstract of your presentation as soon as possible. The deadline is end of November. Please send your proposal to: Florence Aeschelmann, florence.aeschelmann@nova-institut.de

Upcoming recruitment for a position of University Professor of Microbiology in Reims, France

A position for a University Professor of Microbiology (CNU section 64) will soon be added at UMR FARE (http://www6.lille.inra.fr/fare_eng/), renowned for its national and international activities in the field of non-food use of lignocellulose, especially for biorefinery applications (building blocks, materials, bioenergy). These applications make use of white biotechnology approaches in complex and heterogeneous environments, which must be specific, selective and innovative.

To fill this position, we are seeking a candidate with skills in biological fractionation of lignocellulosic biomass, microbiology in complex and high dry matter environments, and microbial physiology (lignocellulolytic fungi and bacteria). Skills in microbial growth modelling would be an asset. The candidate must have significant experience in coordinating research projects (national and international) and good skills in managing research teams. The candidate should also have extensive networks within academic circles and the private sector in the field of biorefinery.

The professor will also lead the URCA's White Biotechnology Chair, which will be set up in early 2016 in association with UMR FARE. The professor will have a very favourable environment (partial exemption from teaching obligations, substantial financial resources) in which to develop the Chair's research projects in connection with UMR FARE's research themes.

The professor will be in charge of teaching microbiology and biotechnologies for undergraduate level Life and Earth Sciences degrees as well as for various Masters' degrees from URCA. The professor will work with researchers and teachers at UMR FARE, namely with three associated professors and one professor working in the field of white biotechnology.

Contacts:

Prof Caroline Rémond, Deputy Head, UMR FARE; e-mail: caroline.remond@univ-reims.fr

Dr Bernard Kurek, Head, UMR FARE; e-mail: bernard.kurek@reims.inra.fr



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News from outside the EPNOE Network (continued)

First I&S Workshop on insights and strategies towards a bio-based economy, 22-25 November 2016, Montevideo, Uruguay

This event aims to:

- provide an opportunity for meeting and participation of key stakeholders in the sustainable and
- efficient use of lignocellulosic biomass.
- create a framework of discussion about the latest developments with regard to materials
- prepared from lignocellulosic biomass of interest.
- facilitate the update on the activities being developed in the area of lignocellulosic materials
- worldwide with the participation of major players in the sector.
- allow experts all over the world to reflect on their needs and opportunities for future
- cooperation

More information at: <http://is2016.com/>

email: contact@is2016.com

International Conference on Advanced Polymers, Biomaterials, Bioengineering & Nano Drug Delivery in Mauritius during September 5-7, 2016

Asian Polymer Association (APA), Centre for Biomedical and Biomaterials Research (CBBR), University of Mauritius and Indo-Italian Forum (IIF) for Biomaterials & Tissue Engineering are organizing an International Conference on Advanced Polymers, Biomaterials, Bioengineering & Nano Drug Delivery in Mauritius during September 5-7, 2016. The conference involves very innovative domains of polymeric biomaterials, nanomaterials, material-tissue interaction, wound care systems, drug delivery systems, pharmaceutical science, tissue engineering, antimicrobial chemistry, biodesign and biomedical applications. This conference is proposed to exchange information on new dimensions in healthcare systems and would help in formulating the action plan to face the challenges ahead in biomaterials and biomedical technology. This conference offers a very focused platform for the stakeholders to discuss, analyse and bring out policies and joint working groups in different areas of biomedical technology. More information at www.apa2016.com

32nd International Conference of the Polymer Processing Society (PPS-32), July 25 to 29, 2016 in Lyon

General Symposia: Blow Molding, Thermoforming and Rotomolding ; Nanocomposites and filled Polymers; Extrusion and Extrusion Processes; Polymer Blend and Alloys; Polymer Foams and Lightweight structures; Biopolymers and Polymer from Renewable Resources; Process Modeling and Simulation; Process Monitoring, Control and Sensors; Reactive Processing; Rheology and Rheometry ; Elastomers and thermoplastic Elastomers; Fiber, Films, and membranes; Injection Molding and Mold; Mixing and Compounding; Morphology and Structure Development (Honoring Symposia - J-M. Haudin) Special Symposia : Plastic Solutions for Eco-conception; High performance composite processing; Additive Manufacturing for Plastic Components; Microtechnology and smart materials ; Biobased Plastics and Materials for Renewable Energy

Short Abstract Submission : November 30, 2015

Conference website : <http://pps-32.sciencesconf.org>.

Email: pps-32@sciencesconf.org.