N°45 - MAY 2018

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 3rd International EPNOE Junior Scientists meeting organized by the Maribor team took place on 14-15 May in Maribor. It was a great pleasure to see 95 young researchers from 18 different countries being so active and so enthusiastic. I wish to thank Rupert Kargl and all the persons who organized this event for their wonderful job. This was the second meeting organized by EPNOE this year. The first one was a 3-day course on proposal writing which took place in Sophia Antipolis, very useful for all of us who are struggling with the complexity of preparing a convincing answer to call for projects. During this meeting, EPNOE participants organized themselves for being ready to the next calls from the European Commission.

Several other meeting are already planned for boosting collaboration between members and other stakeholders and for knowledge dissemination such as a meeting between EPNOE and the Controlled Release Society in Roma in June, a meeting with BioNanoNet in Paris also in June and two workshops, one in Leuven, Belgium ("Polysaccharides as Sweet Spot for Innovation" 17-18 September 2018) and one in Alès, France ("Towards flame retardant biopolymers and biocomposites: current research strategies, scientific barriers and perspective applications" 16-17 October 2018).

To join EPNOE is offering the opportunity to be part of the EPNOE community. I recall that aside institutional membership, all individuals can join EPNOE and that is free for undergraduate and PhD students.

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. nat. techn. Nele Zwirchmayr**, Chromophores in pulp and paper: approaches towards their detection and degradation mechanisms (Supervisors: U. Henniges, A. Potthast, T. Rosenau).

New comers:

• At **Armines-CEMEF, France:**

Vincent BOURASSIER joined Cemef for a training period to work on the crystallisation of polypropylene in the presence of plant fragments. His supervisors are S. Boyer, J-M Haudin and P. Navard

• At **Jena University, Germany:**

- **M. Sc. Manuel Arnold** working in the field of bioassays, supervised by Prof. Thomas Heinze.

- **M. Sc. Dominik Büchner** working in the field of polysaccharide-based hydrogels for medical applications, supervised by Prof. Thomas Heinze.

- **Jan Gregor Himanek** joined the group as bachelor student working in the field of ammonium salt based cellulose solvents.

EPNOE meeting:

On the 14th of June 2018, a meeting with research teams of EPNOE and of the Italian Chapter of the Controlled Release Society will take place in Rome (Sapienza University) aiming to boost potential collaborations between these two important european organizations. Around 20 participants will be present.

European Polysaccharide Network Of Excellence



Report on the last EPNOE event

3rd International EPNOE Junior Scientists meeting

May 14-15, 2018
Maribor (Slovenia)

From 14th-15th of May 2018, the Laboratory for Characterization and Processing of Polymers (LCPP) under the head Prof. Karin Stana Kleinschek hosted the "3rd International EPNOE Junior Scientists Meeting - Advances in Fundamental and Applied Polysaccharide Research" in Maribor Slovenia. Within these two days 95 young scientist from 18 different countries presented their scientific work and exchanged their ideas on a large variety of research topics related to food, biomedicine, technical applications and basic science. The plenary lectures resembled an overview on a network on biomedicine, the Austrian based initiative BioNanoNet - www.bionanonet.at - and a newly established European Center of Excellence Innorenew CoE on wood and biomass research in Slovenia - innorenew.eu. Scientific plenary contributions were given by Prof. Wim Thielemans from KU Leuven Belgium, on the thermodynamics of cellulose interfaces, and Dr. Martin Thonhofer from the University of Maribor on the organic chemistry of monosaccharides. All presentations of lectures and posters were well received and of high quality and scientific impact. Awards for the best lecture and poster, both sponsored by the Slovene company Litia, were chosen by direct votes of the participants and awarded to Mrs. Deborah Senf, Max Planck Institute of Colloids and Interfaces, Germany and Mr. Tiago Carvalho CICECO - Aveiro Institute of Materials, Portugal. The travel grant, sponsored and chosen by Lenzing, was awarded to Idalina Gonçalves from the same institution. Overall the event was a huge success given the high number of participants and the high level of scientific contributions and smooth implementation. The organizers would like to thank all contributors that made this event possible and are looking forward to the next EPNOE Junior meeting in 2020.

LCPP LABORATORY FOR CHARACTERIZATION AND PROCESSING OF POLYMERS

Patrick Navard
President of EPNOE

Rupert Kargl
Chairman of the Organization Committee

Lenzing Innovative by nature

Litia PREDILNICA LITIJA

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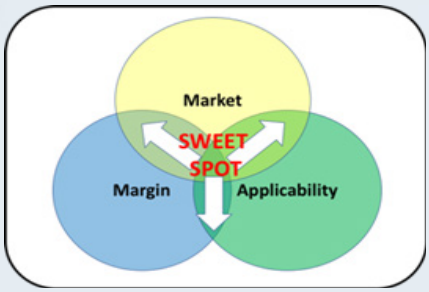
Next EPNOE events

"Polysaccharides as Sweet Spot for Innovation"

September 17-18th, 2018, KU Leuven, Leuven, Belgium



Polysaccharides play a key role in food, medicine and materials. They are a common denominator for combining chemical engineering, chemistry, material science, bioscience, biotechnology and medicine to create a completely new generation of sustainable products and to boost the emerging bioeconomy in Europe.

This two-day workshop is a unique opportunity to look at current innovation and future trends for polysaccharides in food, health and materials and to learn about numerous initiatives for collaboration within European funding opportunities and initiatives such as European Institutes of Technology of Food and Health.

Do not miss this opportunity to explore lively discussions and networking with company experts, policy makers and top scientists working in the field of polysaccharides. Enjoy the beautiful and creative Leuven.

Preliminary program (Speaker names to be updated):

September 17th

Session 1: Setting the Scene for Polysaccharide Innovations

9h Opening - Welcome to Leuven. What is EPNOE.
9h30 - 10h45 Innovation and Technology Transfer at KU Leuven: A road to success
10h45-11h15 Coffee break
11h15-12:15 Setting up Successful Collaborations - Case studies & Key elements
12h15-13:00 Opportunities for polysaccharides in EU calls: European Commission
13:00-14:00 - Network lunch

Session 2: Polysaccharides and food - Moderator: Paula Moldenaers

14:00 -15:00 Keynote Industry - Polysaccharides for food innovation: what is needed?
15:00- 16:00 Research presentations (3 topics)
16:00- 17:00 Inspirational talk - idea collector - the future of food
17:00 Reception and Networking

(continued overleaf)

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(continued)

"Polysaccharides as Sweet Spot for Innovation"

September 17-18th, 2018, KU Leuven, Leuven, Belgium

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September 18th

Session 3: Polysaccharides and Health - Moderator: Pedro Fardim

9:00-9:45 Keynote Industry - Polysaccharides for health: what is needed?
9:45-10:45 Research presentations (3 topics)
10:45-11:15 Coffee break
11:15-12:00 EIT Health: Opportunities
12:00-13:00 Inspirational talk - idea collector - the future of health
13:00-14:00 - Network lunch

Session 4: Polysaccharides and Nanotechnology - Moderator: Wim Thielemans

14:00 -15:00 Keynote Industry - Polysaccharides and nanotechnology: what is needed?
15:00- 16:00 Research presentations (3 topics)
16:00- 17:00 Inspirational talk - idea collector - the future of polysaccharide nanotechnology
17:00 End of the day

Registration fees:

Students (include a free EPNOE membership for 2018): 100€
EPNOE Members: 150€
Participants willing to join EPNOE (registration fees include EPNOE membership fees for 2018): 220€
Non-Members: 250€

How to register?

Via web: https://www.surveymonkey.com/r/5YW9YSS

QR code or via email to pedro.fardim@kuleuven.be. You will receive instructions for payment using EPNOE website via email.

How to reach Leuven:

Location of the meeting: Thermotechnical Institute, Kasteelpark Arenberg 41, Heverlee (Leuven)

Leuven is located in the center of Belgium at 20 km from Brussels Airport and is easy to reach by car, bus and train.
By train Leuven is only 20 minutes from Brussels, 40 minutes from Antwerp, 50 minutes from Liège and at 2 to 3 hours from cities like Düsseldorf, Paris, Amsterdam, Calais, ...
Information on the schedules of all Belgian and international train services can be found on : www.nmbs.be

The university city is also only a 15 minute train ride away from Brussels International Airport.
As to car traffic, Leuven is at the junction of two major motorways: E40 and E314.

Busses of the public transport company De Lijn will swiftly take you anywhere in the city.
By plane: the airport train is located below the terminal (-1). Up to 2 trains an hour connect the airport to Leuven.
Information on the schedules of all Belgian and international train services can be found on :
www.nmbs.be. Enter" Bruxelles-Nat-Aeroport" as departure station.
Taxi from Brussels Airport to Leuven : price : approx. 60 euro



Next EPNOE events

IMT Mines Alès
École Mines-Télécom

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"Towards flame retardant biopolymers and biocomposites: current research strategies, scientific barriers and perspective applications"

Alès, France, October 16th – 17th, 2018
Chairs: Prof. L. Ferry and Dr. R. Sonnier

C2MA (Centre des Matériaux des Mines d'Alès) part of IMT (Institut Mines-Télécom), Alès and EPNOE (European Polysaccharide Network of Excellence) are organizing a workshop entitled "Towards flame retardant biopolymers and biocomposites: current research strategies, scientific barriers and perspective applications".

This workshop is a unique opportunity to gather experts in flame retardant technology and specialists in polymers and composites based on bioresources. These two communities will be brought together to enable them to work more closely. The replacement of oil-based materials by bio-based ones is one of the main trends driving the development of innovative functional materials. This leads to new challenges which need to be overcome: Which bioresources and building blocks are available to develop flame retardants from bio-based materials? Which synthesis and functionalization strategies are required? How to improve the flame retardancy of biobased materials such as, for example, natural fibres which are already used as reinforcements in composite materials?

This meeting aims to review the existing knowledge, share ideas and envisage new strategies enabling the improvement of the thermal and fire retardant behavior of biobased materials and/or to develop biobased flame retardant additives through biomimetic approaches. It is expected that the workshop will foster collaborative projects between academics and industry.

Registration

- *Student 100€*
- *Members 150€*
- *Participants willing to join EPNOE*
  (registration fees include EPNOE membership fees for 2018) 200€
- *Non Members 250€*

Dates

Opening of online submission & registration	*May 20th, 2018*
Deadline for abstract submission	*July 31st, 2018*
Abstract acceptance	*September 1st, 2018*
Closing date for registration	*September 30th 2018*

Find more information: ***https://epnoefire2018.sciencesconf.org/***

Contact: ***Nicolas.Le-Moigne@mines-ales.fr; Rodophe.Sonnier@mines-ales.fr; Sylvie.Massol@mines-paristech.fr***


Next EPNOE events

"Chitosan and other polysaccharide materials for biomedical applications"

Lyon, France, January, 2018

Polysaccharides are of particular interest for the design of medical devices owing to their cyto-compatibility, their specific physicochemical properties (complex formation, gelation...) and their biological properties (e.g. resorption, wound healing). However, their use in the context of marking a medical device requires the control of the purity and the material fluctuations inherent to their extraction from biomass.

This conference is thus positioned from the oligo/polysaccharide molecule (its extraction, characterization, microstructure of materials, chemical modification and processing) to the medical device (marking steps, performance and clinical relevance). It concerns in particular "bioactive" polysaccharides such as chitosan and its association with other polysaccharides or derivatives (composites, polyelectrolyte complexes, multilayer combinations, etc.).

"Nature makes polysaccharides, EPNOE turns them into products"



Polish Chitin Society Conference

Polish Chitin Society invites to participate in the XXIV Conference "New Aspects of the Chemistry and Applications of Chitin and its Derivatives" which will be held in **Tyniec Benedictine Monastir** (near to Cracow), **Poland, 19 – 21 September, 2018**.

The aim of the conference is to present the results of recent research, development and applications of chitin and chitosan.

The following sessions are provided:

- Polymer session,
- Medical session,
- Biotechnological session
- Agricultural session and
- Posters session

The Conference fee is 700 PLN (approx. 160 EUR) and covers all meals, including lunches, dinners, conference trip (Benedictine Monastir guided tour, in English) and Conference materials. The Conference fee is discounted for PhD students and retirement scientists: 550 PLN (approx. 125 EUR).
The cost doesn't include the cost of the hotel.
Fee can be paid on the day of arrival

Registration Deadline is May 31st.
The deadline for receipt of Abstracts is July 31st.
Abstracts should be prepared in accordance with the instruction (http://ptchit.lodz.pl/en11,abstract_form.html) and sent to ptchit@ibwch.lodz.pl.

Please fulfil the registration form (http://ptchit.lodz.pl/en283,registration_form.html) **before the deadline of registration.**

Hotel accommodation:
"Dom Gosci" at Benedictine Monastir (http://domgosci.benedyktyni.com/english)
Ul. Benedyktynska 37, 30-398 Cracow
Single room — 150 PLN/night (approx. 50 Euro)
Double room — 110 PLN/night/person (approx. 35 Euro)
Triple room - 100 PLN/night/person (approx. 35 Euro)
Prices include breakfast. Reservation of the hotel will be made by Polish Chitin Society on the basis of information in Registration form

For more information please contact:

CONFERENCE SECRETARY

M. Sklodowskiej-Curie 19/27, 90-570 Lodz, Poland

tel. (+48) 42 638 03 339, fax (+ 48) 42 637 62 14

e-mail:ptchit@ibwch.lodz.pl

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Offer of the Institute of Biopolymers and Chemical Fibres

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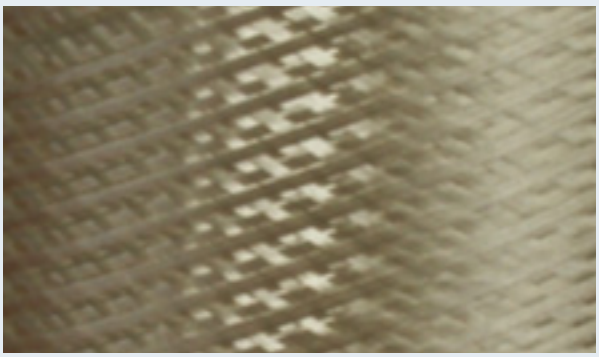
Multifilament Chitosan Yarn

The Institute of Bioploymers and Chemical Fibres is in possession of the know- how and equipment to start the production of continuous chitosan fibres on an extended lab scale. The Institute is highly experienced in the wet – spinning of polysaccharides, especially chitosan. The Fibres from Natural Polymers department, run by Prof. Dariusz Wawro, has elaborated a proprietary environmently-friendly method of producing continuous chitosan fibres with bobbins wound on in a form suitable for textile processing and medical application.



We are ready, in cooperation with our customers, to conduct investigations aimed at the preparation of staple and continuous chitosan fibres tailored to specific needs in preparing non-woven and knit fabrics. We presently offer a number of chitosan yarns with a variety of mechanical properties, and with single filaments in the range of 3.0 to 6.0 dtex. The fibres offer new potential uses in medical products like dressing, implants and cell growth media.

For more information please contact: Dariusz Wawro Ph.D., D. Sc., Eng; dariusz.wawro@ibwch.lodz.pl

This article was proposed by the Institute of Biopolymers and Chemical Fibres, Poland



Processing of Chitosan Yarn into Knitted Fabrics

European Polysaccharide Network Of Excellence

Derivatives of chitin like chitosan and dibutyrylochitin find uses in new generations of biomaterials. Fibrous forms of polymers like nano- and microfibres, staple fibres and yarns have been used widely in several application domains especially in medicine. These fibrous forms are frequently modified or functionalized by the addition of multi-wall carbon nanotubes, nanoparticles of various metals, calcium phosphate, collagen, fibroin or keratin. At the Institute of Biopolymers and Chemical Fibres (IBWCh), Lodz Poland, a method was developed to produce multifilament chitosan yarn. The material was applied in the preparation of semi-absorbable surgical meshes and prostheses of nerves.

Chitosan-metal complexes reveal an enhanced antibacterial activity when compared with virgin chitosan; the chitosan-copper complex exerts anti-tumor properties. Silver nanoparticles penetrate the walls of Escherichia coli and Staphylococcus aureus cells and appear to be more effective than antibiotics. Nanoparticles of silver and copper are similarly effective in inhibiting the growth of bacteria, which might have a better effect if carbon or polymers underpin the metals' activity.

This article focuses on a preliminary investigation into the preparation of knitted fabrics from a 300-filament chitosan yarn containing nanoparticles of silver, platinum, copper and gold. The chitosan yarn was assessed with respect to its suitability for the preparation of knitted fabrics on a numerically controlled flat bed knitting machine. Estimated were mechanical and sorption properties, apparent density, thickness and air permeability of knitted fabrics made up of chitosan yarn functionalised by nanoparticles.

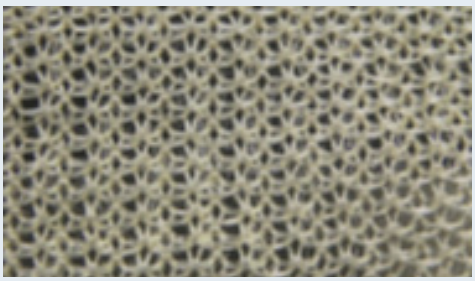
(a)   (b)

Image of chitosan knitted fabric with content of silver nanoparticles - a - face side; b - reverse side

Conclusion: The addition of gold, copper and platinum in nano- form gave rise to quality deterioration of the chitosan fibres. Consequently yarn with these metals could not be qualified as suitable material for textile processing. Nanoparticles of silver proved to be the right additive for chitosan fibres, conferring enhanced bacteriostatic and bactericidal properties upon them. Yarn bearing such properties is a promising material for medical use like dressings, scaffolds, and surgery meshes. To achieve this purpose, it needs to be processed into textile forms, like knitted fabrics. Attempts to prepare knitted materials from chitosan yarn containing nanoparticles of silver produced positive results.

This article was proposed by Dariusz Wawro from the Institute of Biopolymers and Chemical Fibres, Poland

"Nature makes polysaccharides, EPNOE turns them into products"

Thermoplastic polysaccharides – Basis for environmentally begnin hot melt adhesives

Fossil resources are finite, while plant resources regrow. Therefore, there is a lot of interest in both conserving the fossil resources as well as in protecting the environment. Synthesis technologies for the production of biogenic polymers from renewable raw materials have been developed and patented. In a simple synthesis, starch (e. g., from potatoes) or dextran can be converted to esters by reaction with naturally-based fatty acids. These products melt upon heating and adhere to many surfaces. Properties like melting range and viscosity of the products can be tailored by the synthesis pathway. By assembling the products to granules, films, and rods, these new biopolymer esters can be transformed to a variety of intermediates. In particular, the use as a hot melt adhesive has great potential because many target groups can be addressed. These new hot melt adhesives are not just for applications in the field the packaging industry; energy conservation through lowering of the processing temperature can take place. It also succeeds in replacing the questionable products (i. e., adhesives containing hazardous ingredients) used in medicine and cosmetics with biocompatible materials.

The team in the Heinze groups working in the field of starch ester products consists of P. Laudeley, L. Wöckel, N. Kuhl, S. Blohm, and B. Scherer.

This interesting topic had been presented during the trade fair "Hannover Messe" in April 2018.

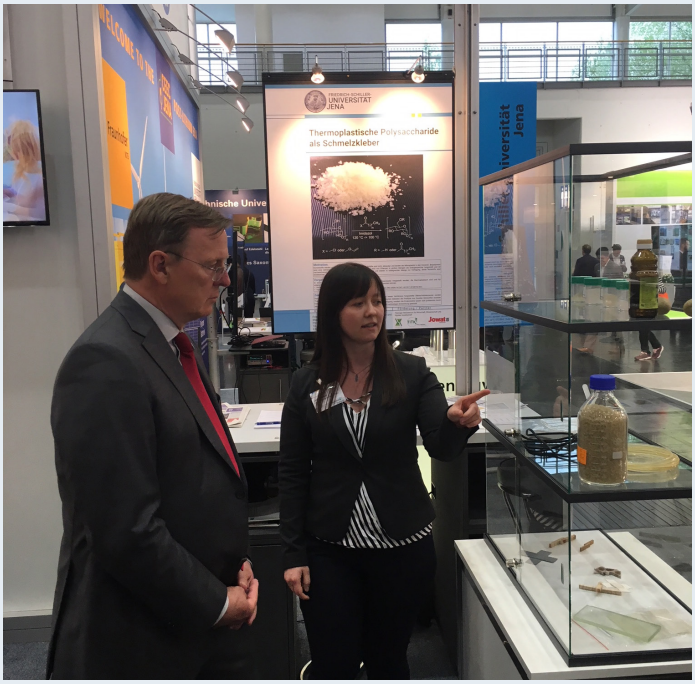


Figure caption: Lydia Wöckel from the Heinze group in a discussion with Bodo Ramelow, prime minister of Thuringia

This article was proposed by Thomas Heinze and Andreas Koschella from Friedrich Schiller University of Jena, Germany



EPNOE Member's Scientific Publications

At BOKU University, Austria:

Plappert, S., Quraishi, S., Nedelec, J.M., Konnerth, J., Rennhofer, H., Lichtenegger, H., Liebner, F., Conformal Ultrathin Coating by scCO2-Mediated PMMA Deposition: A Facile Approach To Add Moisture Resistance to Lightweight Ordered Nanocellulose Aerogels. Chemistry of Materials 30/7 (2018) 2322-2330.

Fontenot, K., Liebner, F., Pircher, N., Condon, B., Edwards, V., Structure/Function Analysis of Cotton-Based Peptide-Cellulose Conjugates: Spatiotemporal/Kinetic Assessment of Protease Aerogels Compared to Nanocrystalline and Paper Cellulose. International Journal of Molecular Sciences, Int. J. Mol. Sci. 19 (2018) 840.

Böhmdorfer, S., Oberlerchner, J. T., Rosenau, T., Fuchs, C., Grausgruber, H., Profiling and quantification of grain anthocyanins in purple pericarp × blue aleurone wheat crosses by high-performance thin-layer chromatography and densitometry. Plant Methods 14 (2018) 29.

Sharazi, A.M., van Heiningen, A.R.P., Sumerskii, I., Bacher, M., Sugarcane straw lignin obtained by sulfur dioxide-alcohol-water (SAW) fractionation: Effect of solvent. Ind. Crop Prod. 115 (2018) 235-242.

Köhnke, J., Rennhofer, H., Lichtenegger, H., Mahendran, A., Unterweger, C., Prats-Mateu, B., Gierlinger, N., Schwaiger, E., Mahler, A.-K., Potthast, A., Gindl-Altmutter, W., Electrically Conducting Carbon Microparticles by Direct Carbonization of Spent Wood Pulping Liquor. ACS Sustainable Chemistry & Engineering 6/3 (2018) 3385-3391.

Nypelö, T., Amer, H., Konnerth, J., Potthast, A., Rosenau, T., Self-Standing Nanocellulose Janus-Type Films with Aldehyde and Carboxyl Functionalities. Biomacromolecules 19/3 (2018) 973-979.

Völkel, L., Ahn, K., Hähner, U., Gindl-Altmutter, W., Potthast, A., Nano meets the sheet: adhesive-free application of nanocellulosic suspensions in paper conservation. Heritage Sci. 5 (2017) 23/1-23/17.

Ahead of Print

Korntner, P., Schedl, A., Sumerskii, I., Zweckmair, T., Mahler, A. K., Rosenau, T., Potthast, A., Sulfonic Acid Group Determination in Lignosulfonates by Headspace Gas Chromatography. ACS Sustainable Chem. Eng. 2018, DOI: 10.1021/acssuschemeng.8b00011.

Monzote, L., Geroldinger, G., Tonner, M., Bergmann, S., Staniek, K., Gille, L., Monzote, L., Scull, R., De, S. S., Chatterjee, M., Bacher, M., Rosenau, T., Interaction of ascaridole, carvacrol, and caryophyllene oxide from essential oil of Chenopodium ambrosioides L. with mitochondria in Leishmania and other eukaryotes. Phytother Res 2018. DOI: 10.1002/ptr.6097

Stutzenstein, P., Bacher, M., Rosenau, T., Pfeifer, C., Optimization of Nutrient and Carbon Recov-ery from Anaerobic Digestate via Hydrothermal Carbonization and Investigation of the Influence of the Process Parameters. Waste and Biomass Valorization 2017. DOI: 10.1007/s12649-017-9902-4.



European Polysaccharide Network Of Excellence

EPNOE Member's Scientific Publications

At Jena University, Germany:

Diversity of polysaccharide structures designed by aqueous Ugi-multi-compound reaction L. Gabriel, Th. Heinze Cellulose (2018) DOI: 10.1007/s10570-018-1754-y

Synthesis of xylan carbonates - An approach towards reactive polysaccharide derivatives showing self-assembling into nanoparticles M. Gericke, L. Gabriel, K. Geitel, S. Benndorf, P. Trivedi, P. Fardim, Th. Heinze Carbohydrate Polymers 193 (2018) 45-53.

Chitosan-cellulose multifunctional hydrogel beads: Design, characterization and evaluation of biocompatibility with breast adenocarcinoma and osteoblast cells P. Trivedi, T. Saloranta-Simell, U. Maver, L. Gradišnik, N. Prabhakar, J.-H. Smatt, T. Mohan, M. Gericke, Th. Heinze, P. Fardim Bioengineering 5 (2018) DOI:10.3390/bioengineering5010003

At INRA Nantes - BIA, France:

Analysis of the morphometric variations in natural fibres by automated laser scanning: Towards an efficient and reliable assessment of the cross-sectional area
By: Garat, William; Corn, Stephane; Le Moigne, Nicolas; et al.
COMPOSITES PART A-APPLIED SCIENCE AND MANUFACTURING Volume: 108 Pages: 114-123 Published: MAY 2018

Polypropylene reinforcement with flax or jute fibre; Influence of microstructure and constituents properties on the performance of composite
By: Tanguy, Morgane; Bourmaud, Alain; Beaugrand, Johnny; et al.
COMPOSITES PART B-ENGINEERING Volume: 139 Pages: 64-74 Published: APR 15 2018

Chemical composition of processed bamboo for structural applications
By: Bhavna Sharma, Darshil U. Shah, Johnny Beaugrand, Emma-Rose Janeček, Oren A. Scherman, Michael H. Ramage
CELLULOSE 2018 https://doi.org/10.1007/s10570-018-1789-0

At Armines-CEMEF, France:

Sophie Groult, Tatiana Budtova, "Thermal conductivity/structure correlations in thermal super-insulating pectin aerogels", Carbohydrate Polymers 196 (2018) 73–81

Ghazaleh Afsahi, Katarina Dimic-Misic, Patrick Gane, Tatiana Budtova, Thaddeus Maloney, Tapani Vuorinen, "The investigation of rheological and strength properties of NFC hydrogels and aerogels from hardwood pulp by short catalytic bleaching (Hcat)", Cellulose (2018) 25:1637–1655

Y. A Youssef Akil, Romain Castellani, Ralph Lehnen, Tatiana Budtova, Bodo Saake , "Hydroxyalkylation of xylan using propylene carbonate: comparison of products from homo- and heterogeneous synthesis by HRMAS NMR and rheology" Cellulose (2018) 25:217–231



Other News

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Open positions in Lunds University, Sweden

2-year postdoctoral position in characterization of man-made cellulose fibers using small and wide angle X-ray scattering Univ Lund, Sweden

More information on https://lu.mynetworkglobal.com/en/what:job/jobID:205373/

13th Global Summit and Expo on Biomass and Bioenergy; September 04-05, 2018 at Zurich, Switzerland

More at https://biomass.global-summit.com/scientific-program

International Conference of theEuropean Industrial Hemp Association 12 - 13 June 2018, Maternushaus, Cologne, Germany

The EIHA Conference is established as the largest meeting of experts on industrial hemp in Europe. Specialists from all over the world will meet in order to exchange information regarding the latest developments in hemp applications for fibres, shivs, seeds and oil as well as cannabinoids. Applications are biocomposites in automotive and construction, textiles, food, food supplements and pharmaceuticals. We are expecting again more than 300 international participants from more than 40 countries

More information: http://eiha-conference.org/

Future Technologies for Food and Biomass Production: New Solutions to old Challenges ; 1 – 2 October 2018, Maritim Hotel Cologne (Germany)

Topics: Precision farming, robotics, drones and Artificial Intelligence (AI); Biostimulants – nitrogen fixation, mycorrhiza, biopesticides; Home, urban and vertical farming; Agriculture under extreme conditions (desert, ice, outer space) and in combination with solar energy; Improved plant varieties for the future; Alternative protein sources – insects, bacteria, artificial meat and CO2 utilization; Future of organic and smallholder farming; Mariculture or marine farming, algae and aquaculture; Biorefineries for food, chemicals, materials and fibres

More information at: http://refab.info/

Sixth International Conference on Natural Polymers, Bio-Polymers, Bio-Materials, their Composites, Nanaocomposites, Blends, IPNs, Polyelectrolytes and Gels: Macro to Nano Scales (ICNP – 2018) 7-9 December 2018, Kottayam, Kerala, India

This symposium will bring together a panel of highly-accomplished experts in the field of Natural Polymers and Biomaterials. Talks will encompass basic studies and applications and will address topics of novel issues. During the three-day conference, we will listen to recognized authorities in the field as they discuss recent advances, difficulties, and breakthroughs in the field of Natural Polymers and Biomaterials The conference will feature keynote addresses, a number of plenary sessions, invited talks and contributed lectures focusing on specific tenets of Natural Polymers and Biomaterials. Additionally, there will be several poster sessions, and four best poster presentations will be selected for the award.

Conference website: www.biopolymers.macromol.in



Other News

Conference on Wood Nanotechnology to take place at Monte Verita, Ascona, Ticino, Switzerland from Sep 2nd to Sep 5th, 2018.

The conference at the Congressi Stefano Franscini (CSF) (http://www.csf.ethz.ch/) should bring together researchers from different research fields, such as wood science, materials science and materials chemistry, who are interested in utilizing the renewable resource wood as a scaffold or template for the design of novel sustainable materials. We intend to facilitate more interdisciplinary research activities and to stimulate new breakthroughs in the field of wood materials.
Specific focus is laid on Methods to use wood as a scaffold or a template to develop hierarchically structured materials with improved material properties and novel functionalities; Characterization techniques for the in-depth analysis of such modified materials with high spatial resolution; Performance analysis of modified wood materials with regard to added functionality or property improvements.

More information http://woodnanotechconf-2018.ethz.ch/

12th International IUPAC Conference on Polymer-Solvent Complexes and Intercalates" Grenoble (France), on September 4-7, 2018.

The conference will focus on the formation mechanisms, the morphology, the molecular structure, and the properties of compounds from synthetic polymers, biopolymers, proteins, and supramolecular polymers. Bulk state, solutions and systems formed at surfaces/interfaces will be considered. Polysolvat-12 will consist of invited lectures, oral communications and poster contributions. Once again, IUPAC has kindly accepted to endorse the conference and the extended proceedings should be published in a special issue of Macromolecular Symposia.

More information: https://workshops.ill.fr/e/polysolvat12

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……
dont la forme et le capital sont (*which form and capital are*):
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