N°47 - NOVEMBER 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,

Plastics were seen in the 1960th as an incredible revolution. Cheap, light, able to be processed quickly without any limitation of shape and color, they were offering a lot of facilities for our everyday life. In the next decades, scientific progress allowed to develop a large panel of plastics, from commodity to highly technical grades. Plastics are now nearly in every object we are using. But the fame of plastics started to degrade when we realized that plastics are everywhere including in our oceans, with a deadly threat to marine environment. More and more actions are mounted for preventing using and throwing plastics materials, in particular those which are single-use and which can be easily replaced by more sustainable options (single-use plastic items will be banned in the EU from 2021, for example). Can plastics derived from natural resources such as polysaccharides offer a solution, i.e. being able to degrade or to have no adverse effect in a marine environment if discarded accidentally in the sea? No doubt that such issues will be the topic of some EPNOE workshops in the near future.

The next EPNOE Conference will be held in Aveiro, Portugal, from 6 to 10 October 2019. The program is nearly finalized with sessions such as Advanced Analytical methods, Marine & Microbial polysaccharides, 3D printing, Biomedical, Porous materials, Nanocomposites, Fibers and regenerated cellulose, Biorefinery, Building and Construction, Food, Membranes, Recycling, Biodegradation and Environmental assessment. 55 scientists from all over the world will organize and chair more than 30 sessions. We will send you very soon the first circular.

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 **Jena University, Germany:**

- Dipl. Chem. Marcus Fischer defended his Diploma Thesis entitled "Synthesis, characterization, and hydrogel formation of novel agarose derivatives"

- Dr. Robert Hampe defended his PhD Thesis entitled "Synthesis and characterization of novel water soluble starch derivatives and their application in dialysis processes"

- B. Sc. Larissa Bialucha defended her Bachelor Thesis entitled "Functional polysaccharide hydrogels"

New comers

- At **Jena University, Germany:**

B. Sc. Nicole Slesiona joined the group as Master student working in the field of biosensor applications using nanoparticle decorated DNA

Course

- At **Wageningen, the Netherlands**

Advanced Food Analysis Course, 4-8 February 2019. This course will focus on several (advanced) techniques and applications (to be) used in food analysis and their potential and pitfalls will be discussed.
The course is aimed at PhD candidates and (young) researchers working in the field of food research and scientists from industries involved in food analysis.
More information: https://www.vlaggraduateschool.nl/en/courses/course/Advanced-Food-Analysis-1.htm#tab0



Polysaccharides as Sweet Spot for Innovation, September 17th and 18th, 2018

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Participants of workshop in Leuven with Arenberg castle in the background.

KU Leuven and EPNOE organized a workshop in Leuven in cooperation with European Institutes of Technology (EIT) of Food and Health with attendance of 50 participants and relevant contributions of industry. The workshop was 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 EIT Health and EIT Food. The workshop had four sessions and 24 talks. The first session focused on Innovation potential of polysaccharides according to industry and academics and also about opportunities in European calls and EIT activities. The strategy of innovation and technology transfer of KU Leuven and insights about the future of EPNOE were also presented. The second session had focus on Polysaccharides and Food with presentations from Cargill, University of Nottingham, Jan Dlugosz University in Czestochowa, Food and Biobased Research Wageningen and KU Leuven. The first day of the workshop ended with a reception and networking at the hall of the Thermotechnical Institute.

The second day of the workshop started with session of Polysaccharides and Health and had presentations of Dow, UPM Biochemicals, MineParisTech, University of Nottingham, Wageningen University and Research and Maastricht University. The final session was about Polysaccharides and Nanotechnology with presentations from Sappi, VTT, INRA, TITK and University of Innsbruck. The event was a great success and the core message was that Polysaccharides have outstanding opportunities in emerging bioeconomy while its relevance in European call texts is still overlooked. Our community needs to be more active in promoting the potential scientific and technological breakthroughs of Polysaccharides in Food, Health and Materials. Polysaccharides are common denominators for combining chemical engineering, chemistry, material science, bioscience, biotechnology and medicine to create a completely new generation of sustainable products and we have to benefit of this feature.

The local organizers were Pedro Fardim, Paula Moldenaers and Wim Thielemans.

Pedro Fardim

@Chemenghealth



Report on the Workshop

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

held in Alès (France) on October 16 and 17th 2018

The workshop organized by C2MA IMT-Mines Alès and EPNOE aimed to gather researchers interested in the flame retardancy of biobased materials. About 40 researchers and industrials from 9 countries participated to this two-day event to exchange their ideas and their needs in a friendly atmosphere.

In order to reach sustainable development requirements, not only polymers and reinforcements but also additives, including flame retardants, should move from oil-based to biobased. Biobased resources can offer great opportunities to prepare new flame retardants thanks to their high content in chemical groups that can be functionalized. Moreover, many biobased materials as aliphatic biopolyesters or natural fibers are highly flammable and many applications require them to be flame retarded. Research is nowadays active to meet these challenges.

In the course of the workshop, 18 oral communications focused on recent innovations about the flame retardancy of natural fibres and biocomposites, paper and wood, and the use of various biobased building blocks to prepare efficient flame retardants. A visit of the C2MA facilities focused on the processing of polymers and composites and fire testing was organized and allowed the participants to exchange around their expertise on the different experimental tools.

Overall the event was a great success given the number of participants and the high level of scientific contributions. The organizers would like to thank all the participants that made this event possible.



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EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND INVESTING IN YOUR FUTURE

WIBRANT

New project: Wearable integrated smart brace for rehabilitation monitoring and diagnostic of disorders in muscular functions

Silvo Hribernik[1,2], Karin Stana Kleinschek[1,2], Manja Kurečič[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 of automation, Faculty of Electrical Engineering and Computer Science, University of Maribor, Koroška cesta 46, 2000 Maribor, Slovenia

Researchers of Laboratory for Characterization and Processing of Polymers (University of Maribor), working in the frame of the Faculty of Electrical Engineering and Computer Science, have just started work on a new project "Wearable integrated smart brace for rehabilitation monitoring and diagnostic of disorders in muscular functions – WIBRANT'' which aims to develop a cutting-edge wearable sensory system in a form of an easy to wear smart flexible brace that will allow for improved teledignostics and telerehabilitation of muscular disorders, suited for elderly. Project consortia is coordinated by company SkyLabs and also include company Inova IT, Laboratory for Geometric Modeling and Multimedia Algorithms at Faculty of Electrical Engineering and Computer Science (University of Maribor) and Institute for Sports Medicine at Medical Faculty (University of Maribor).

With aging population becoming one of the greatest socioeconomic challenges facing EU, deterioration of muscular strength and functions that is inevitably related with aging is coming into focus of contemporary research and development of new clinical practices. A holistic solution for telediagnostics and telerehabilitation based provided by WIBRANT concept, will, consists of the following components that define primary industrial research direction: (i) carrier brace textile, designed comfortable wearing form smart materials that will allow for integration of sensory system; (ii) integrated flexible electronic sensory system, capable of performing energy efficient patient monitoring in real-world environment; (iii) mobile application that will provide efficient data transmission services interface, and (iv) data analytics platform with data storage and management capacities. Active aging encompasses a myriad of aspects, far beyond a simplified term of ''healthy aging''; physical and cognitive health, an ability to exert control in day-to-day activities, as well as a social aspect of being actively engaged in social relationships. While such a concept must be supported by a broad system of health policies and institutions, a vital element in ensuring active aging is availability of user-friendly smart technological devices. Specifically, proposed wearable smart brace will enable a elderly people to no longer be contained to supervised spaces and constant medical control, which requires patients to be physically present for check-up. Rather, vital muscle functions, an immensely important factor in leading an active lifestyle, will be remotely monitored and in situ providing necessary data for physicians, thus providing patients with an opportunity to fully engage themselves with health-promoting outdoor activities, as well as participate actively in social endeavours. In addition to monitoring and diagnostics, gathered data will also enable prevention of risk factors, stemming from one's lifestyle, alerting the patient and physician in advance about the possible health complications.

Presented concept of WIBRANT project brings forth an integral approach towards material design, with all the requirements of individual components, which will form and be integrated into a smart brace, taken into account in the development stage. Our approach centres on the fabrication of surface conductive tracks, deposited with different printing techniques, resulting in precise patterns. Focusing on these versatile techniques, integration of electronic components into a wearable piece will be easily facilitated, since the placement of individual components, their connections to one another and overall assembly of the product can be easily altered, according to the need of the user and the requirements of the device.

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New bilateral project between Austria and Slovenia:

FWF Der Wissenschaftsfonds.

Slovenian Research Agency

GO DEFC - Graphene oxide based MEAs for the direct ethanol fuel cell

Mojca Božič[1,2], Karin Stana Kleinschek[1,2,3]

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

[2]Institute of automation, Faculty of Electrical Engineering and Computer Science, University of Maribor, Koroška cesta 46, 2000 Maribor, Slovenia

[3]Institute for Chemistry and Technology of Materials (ICTM), Graz University of Technology, Stremayrgasse 9, 8010 Graz, Austria

TU Graz Graz University of Technology

Univerza v Mariboru

University of Ljubljana Faculty of Chemistry and Chemical Technology

The growing global energy demand and the large-scale use of CO2 emitting fossil fuels have created a tremendous strain on the planet's natural resources. Hence, developing renewable energy sources at a global scale is critical for sustainable growth. Fuel cells are identified as one of the key technologies for the clean energy industry of the future. Anyhow, there a three critical technical barriers for fuel cells, which limit their commercialization: performance (activity), durability (stability) and costs.

The aim of GO DEFC project will be to address all identified barriers in order to increase effectiveness and introduce sustainability to ongoing efforts in the global energy sector. In regard to this, we will unravel the potential of completely biobased membrane materials and new catalysts material for alkaline fuel cells. GO DEFC is a bilateral project between Austria and Slovenia and will start in the 2019. It brings together three well known partners groups:

- Institute of Chemical Engineering and Environmental Technology, Graz University of Technology, Austria

Associate Professor Dr. Viktor Hacker, a project coordinator is running the fuel cell research group at the Institute of Chemical Engineering and Environmental Technology Graz University of Technology in Graz. Their strategic area of the project will be development of membrane electrode assemblies with advanced electrode materials.

- Faculty of Electrical Engineering and Computer Science, University of Maribor, Slovenia

Professor Dr. Karin Stana Kleinschek with her group will focus on new polysaccharide based anionic exchange membrane development and characterization. Nanofibrillated cellulose unique properties, such as outstanding intrinsic mechanical properties, attractive nanoscale dimensions, high surface areas suitable for chemical functionalization, ability to design a nanopapers or integration into bioinspired nanocomposites will be explored for new anionic exchange membrane formation. Cost effective papermaking procedure for production of membranes from nanofibrillated cellulose and functionalized graphene oxide in combination with polysaccharide polymers is planned to applied.

- Faculty of Chemistry and Chemical Technology, University of Ljubljana, Slovenia

The team involved in the project, is led by Assistant Professor Dr. Boštjan Genorio, who possesses the extensive knowledge of graphene oxide and other graphene related material synthesis, functionalization and characterization. Their strategic area of the project will be graphene functionalization and development for catalyst and membrane fuel cell parts.

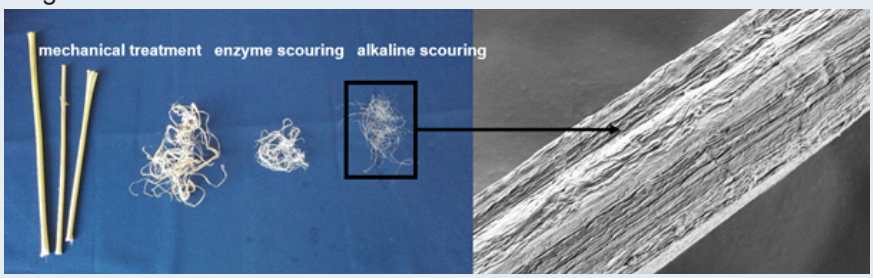
Cultivation of industrial hemp (Cannabis sativa L.) in Slovenia

Silvo Hribernik[1], Tanja Kos[1], Karin Stana Kleinschek[1] and Barbara Čeh[2]

[1] Laboratory for characterization and processing of polymers, Faculty of Mechanical Engineering, University of Maribor, Slovenia

[2] Slovenian Institute of Hop Research and Brewing, Žalec, Slovenia

Hemp-derived products are exhibiting many advantageous properties and are being used in an array of applications, ranging from food to technical and textile products, with a great emphasis on implementation of hemp fibres in development of biocomposites. A multidisciplinary team of research institutions from Slovenia are cooperating in a project, dedicated to establishing an environment for a widespread growth and production of industrial hemp; consortia members, led by Slovenian Institute of Hop Research and Brewing (Žalec), include Department of Agronomy and Department of Food Technology at Biotechnical Faculty (University of Ljubljana), Institute of Nutrition (Ljubljana) and Laboratory for characterization and processing of polymers (LCPP) at Faculty of Mechanical Engineering (University of Maribor). Partners are performing a comprehensive study of the possibilities of successful production of industrial hemp in Slovene growing conditions – aiming to find suitable varieties for production in Slovenia for the purpose of seed and fibre production. In addition, agrotechnical considerations are put forward in order to secure stable production and quality of the yield. Partners, with their individual expertise, are performing following activities: (i) Examination of the adequacy of varieties of industrial hemp from the European list of varieties for cultivation in Slovene agricultural areas, and examination of the existing technology of production of hemp in Slovenia and around the world; (ii) Variety and technological experiments with industrial hemp; (iii) Chemical analyses of soil, seeds and oils; (iv) Evaluation of the nutritional value of hemp seed and hemp seed oil; (v) Analysis of hemp fibre with the aim of selecting the most suitable varieties for the production of fibres; (vi) Creating the basis for production of our own varieties; (vii) Economic evaluation of the production of industrial hemp and (viii) Development of hemp harvesting machine. The basis of the project are varietal and technological field trials with different varieties of industrial hemp from the EU variety list in two different regions of Slovenia. Seeds produced in these field trials will serve as raw material for chemical analysis in the continuation of the project, for the analysis of the nutritional value and stems for fibre analysis. At the same time, we will consider the existing research results at home and abroad, and the experience of growers.



Activities, pertaining to fibre analysis, carried out by Laboratory for characterization and processing of polymers (LCPP), involve fibre procurement from different hemp varieties, targeting the isolation of single fibres rather than fibrous agglomerates. Single or elementary fibres possess a variety of favourable properties which can be exploited in different applications, while at the same time present a platform for functionalization and as such act as building blocks for new materials. Extensive analysis of mechanical and morphological properties of fibres is being performed, yielding essential information regarding the quality of fibres extracted from different hemp species and serving as an evidence-based tool for the selection of the most suitable varieties to be grown for future implementation in material development (ranging from more traditional usage in textile sector to advanced applications in medicine and biocomposite development).

Project ''Cultivation of industrial hemp (Cannabis sativa L.) in Slovenia'' is financed by Slovenian Research Agency and the Ministry of Agriculture, Forestry and Food of Republic of Slovenia.



European Polysaccharide Network Of Excellence

EPNOE Member's Scientific Publications

At Jena University, Germany:

Genes on sugar - Developing bio-based carrier systems for gene transfer / Gene auf Zucker - Entwicklung biobasierter Trägersysteme für den Gentransfer D. Fischer, Th. Heinze q&more, 2018

Furfuryl- and maleimido polysaccharides: Synthetic strategies toward functional Biomaterials Th. Elschner, F. Obst, Th. Heinze Macromolecular Bioscience (2018) DOI: 10.1002/mabi.201800258

Bottom up layer-by layer assembling of antibacterial freestanding nanobiocomposite films A. Francesko, K. Ivanova, J. Hoyo, S. Pérez-Rafael, P. Petkova, M. Macedo Fernandes, Th. Heinze, E. Mendoza, T. Tzanov Biomacromolecules (2018) DOI: 10.1021/acs.biomac.8b00626

At Armines - Mines ParisTech - CEMEF, France:

S. GROULT, T. BUDTOVA , "Tuning structure and properties of pectin aerogels", European Polymer Journal 108 , 250–261 (2018)

M. E. RIES, A. RADHI, S. M. GREEN, J. MOFFAT, T. BUDTOVA, "Microscopic and Macroscopic Properties of Carbohydrate Solutions in the Ionic Liquid 1-Ethyl-3-methyl-imidazolium Acetate", J. Phys. Chem. B, 122, 8763−8771 (2018)

At University of Maribor, Slovenia:

Novel electrospun fibers with incorporated commensal bacteria for potential preventive treatment of the diabetic foot
Manja Kurečič, Tomaž Rijavec, Silvo Hribernik, Aleš Lapanje, Karin S Kleinschek & Uroš Maver
Nanomedicine, Vol. 13, NO. 13.
July 23, 2018
https://doi.org/10.2217/nnm-2018-0014

Fabrication of cellulose acetate/chitosan blend films as efficient adsorbent for anionic water pollutants
Sreerag Gopi, Anitha Pius, Rupert Kargl, Karin Stana Kleinschek, Sabu Thomas
Polymer Bulletin, Pages 1–15.
July 25, 2018
https://doi.org/10.1007/s00289-018-2467-y

Time-of-flight secondary ion mass spectrometry analysis of chitosan-treated viscose fibres
Matjaž Finšgar, Tijana Ristić, Pedro Fardim, Lidija Fras Zemljič
Analytical Biochemistry, Vol. 557, Pages 131-141.
July 27, 2018
https://doi.org/10.1016/j.ab.2018.07.021

EPNOE Member's Scientific Publications

At University of Maribor, Slovenia:

Synthesis of Gold Nanoparticles with Ultrasonic Spray Pyrolysis and its Feasibility for Ink-Jet Printing on Paper
*Mohammed Shariq, Nik Maric, Gaj Kren Gorse, Rupert Kargl, Rebeka Rudolf**
Micro and Nanosystems
August 2, 2018
10.2174/1876402910666180802113859

Surface modification of Magnesium and its alloy as orthopedic biomaterials with biopolymers
Hanuma Reddy Tiyyagura, Tamilselvan Mohan, Snehashis Pal, Mantravadi Krishna Mohan
Book Chapter in Fundamental Biomaterials: Metals
Woodhead Publishing Series in Biomaterials
2018, Pages 197-210
August 19, 2018
https://doi.org/10.1016/B978-0-08-102205-4.00009-X

Aspects of structural order in 209Bi-containing particles for potential MRI contrast agents based on quadrupole enhanced relaxation
Hermann Scharfetter, Christian Gösweiner, Paul Josef Krassnig, Carina Sampl, Martin Thonhofer, Roland Fischer, Stefan Spirk, Rupert Kargl, Karin Stana-Kleinschek, Evrim Umut, Danuta Kruk
Molecular Physics - An International Journal at the Interface Between Chemistry and Physics
August 27, 2018
https://doi.org/10.1080/00268976.2018.1511869ylvie

Surface modification of silicone with colloidal polysaccharides formulations for the development of antimicrobial urethral catheters
Matej Bračič, Olivera Šauperl, Simona Strnad, Ivan Kosalec, Olivija Plohl, Lidija Fras Zemljič
Applied Surface Science, Vol. 463, Pages 889-899.
September 10, 2018
https://doi.org/10.1016/j.apsusc.2018.09.015

Renewable chitosan-graphene oxide nanocomposites as potencial material for ethanol fuel cells
Barbara Kaker, Silvo Hribernik, Tamilselvan Mohan, Rupert Kargl, Karin Stana Kleinschek, Egon Pavlica, Shingjiang Jessie Lue, Mojca Božič
24th Conference of Polish Chitin Society
September 19, 2018
http://www.ptchit.lodz.pl/en402,conference_materials.html



EPNOE Member's Scientific Publications

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At University of Maribor, Slovenia:

Physicochemical properties of chitosan-based films depending on the pH of chitosan solution
Urška Jančič, Silvo Hribernik, Tamilselvan Mohan, Rupert Kargl, Karin Stana Kleinschek, Mojca Božič
24th Conference of Polish Chitin Society
September 19, 2018
http://www.ptchit.lodz.pl/en402,conference_materials.html

Chitin nanowhisker – Inspired electrospun PVDF membrane for enhanced oil-water separation
Sreerag Gopi, Rupert Kargl, Karin Stana Kleinschek, Anitha Pius, Sabu Thomas
Journal of Environmental Management, Vol. 228, Pages 249-259.
September 24, 2018
https://doi.org/10.1016/j.jenvman.2018.09.039

Effect of different surface active polysaccharide derivatives on the formation of ethyl cellulose particles by the emulsion-solvent evaporation method
Mojca Božič, Thomas Elschner, Doris Tkaučič, Matej Bračič, Silvo Hribernik, Karin Stana Kleinschek, Rupert Kargl
Cellulose
October 9, 2018
https://doi.org/10.1007/s10570-018-2062-2(0123456789().,-volV()0123456789().,-volV)

Strengthening of paper by treatment with a suspension of alkaline nanoparticles stabilized by trimethylsilyl cellulose
Lunjakorn Amornkitbamrung, Mattea-Coco Marnul, Thirvengadam Palani, Silvo Hribernik, Adriana Kovalcik, Rupert Kargl, Karin Stana Kleinschek, Tamilselvan Mohan
Nano-Structures & Nano-Objects, Vol. 16, Pages 363-370.
October 13, 2018
https://doi.org/10.1016/j.nanoso.2018.09.009

Novel protein-repellent and antimicrobial polysaccharide multilayer thin films
Matea Korica, Lidija Fras Zemljič, Matej Bračič, Rupert Kargl, Stefan Spirk, David Reishofer, Katarina Mihajlovski, Mirjana Kostić
Wood Research and Technology, Holzforschung, Cellulose – Hemicelluloses – Lignin – Wood Extractives
October 17, 2018
https://doi.org/10.1515/hf-2018-0094

Bioactive Functionalisation of Silicones with Polysaccharides
Matej Bračič, Simona Strnad, Lidija Fras Zemljič
Book (Part of the SpringerBriefs in Molecular Science book series and Biobased Polymers book sub series)
October 19, 2018
https://link.springer.com/book/10.1007/978-3-030-02275-4



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Other news

9th Edition of International Conference on Biopolymers & Bioplastics 8-9 November, 2018, London, UK

More information: https://biopolymers-bioplastics.euroscicon.com/

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 break-throughs 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

International Symposium on Green Chemistry (ISGC 2019) 13-17 May 2019, La Rochelle, France

ISGC is the largest international scientific event putting together actors involved in sustainable chemistry: researchers from private and academic laboratories, business developers, start-ups founders, investment funds, SATT.

ISGC 2019 scientific program : 240 oral communications and 80 industrial communications

More information: https://www.isgc-symposium.com/

EUBCE 2019 - 27th European Biomass Conference and Exhibition, 27-30 May 2019, Lisbon, Portugal

The Conference will be structured along the following main topics:

1. BIOMASS RESOURCES

2. BIOMASS CONVERSION TECHNOLOGIES FOR HEATING, COOLING AND ELECTRICITY

3.BIOMASS CONVERSION TECHNOLOGIES FOR ENERGY CARRIERS, CHEMICALS AND MATERIALS

4. BIOMASS SUSTAINABILITY, IMPACTS AND POLICIES

5. BIOENERGY INTEGRATION IN ENERGY SYSTEMS

More information at http://www.eubce.com



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Other news

Fourth International Conference on Nanomaterials: Synthesis, Characterization and Applications (ICN 2019) 12-14 April 2019 at Mahatma Gandhi University, Kottayam, Kerala, India

More information at: http://www.nanomaterials.macromol.in

Biobased Coatings Europe 2019, 19th & 20th June, Düsseldorf, Germany

Demand for bio-based coatings is on the rise. Volumes of bio-based solvents are following a similar upward trajectory. The most important or largest outlet for bio-based solvents is paints, surface coatings and printing inks, with a 40% share. Experts forecast that Europe alone will account for 1 million tonnes by 2020 and will enjoy an annual average growth rate (CAGR) of 8.8% over the period 2015 to 2020

The two day conference will once again bring together senior executives and experts from the coatings industry, policy makers, consultants, technology innovators and leading market analysts to discuss the latest challenges and developments within the industry and engage in excellent networking opportunities.

More information at: https://www.wplgroup.com/aci/event/biobased-coatings-europe/

Plant-Based Summit 2019, May 22-24, 2019, Lyon, France

2019 FOCUS: The Markets of Biobased Solutions

The focus of the 2019 conference is to stimulate biobased products development through a market driven approach. The conference program intends to demonstrate how a higher uptake of biobased solutions in everyday-life products will benefit to consumers and meet their expectations. Your application should therefore highlight the added value and benefits that your products and services bring to the value chain and in particular to the consumers.

More information at: http://www.plantbasedsummit.com/

Third International Conference ICBBM2019 Bio-Based Building Materials, June 26th -28th 2019 Belfast, UK

Biomaterials are processed or engineered products obtained partially or fully from renewable Following up the great success of ICBBM 2017 and ICBBM2015, in 2017 ICBBM2017 International Conference on Bio-Based Building Materials was one of the biggest conferences worldwide in the area on bio-based materials (3BM) used in construction and provided also an excellent platform for networking with more than 260 participants from all over the world and an exhibition. The purpose of this international conference ICBBM2019 is to present the latest available scientific and technical information in the field of bio-based building materials, natural fibres, earthen ramped, innovative hybrid composites natural fibres, sustainable binders for sustainability and energy efficiency of buildings, life cycle analysis of 3BM.

More information at: https://www.qub.ac.uk/sites/ICBBM2019/



Other news

New comprehensive market and trend report "Bio-based Building Blocks and Polymers – Global Capacities and Trends 2017-2022" published by German nova-Institute

The production capacities of bio-based polymers continue to grow at around 3 to 4% per annum, i.e. at about the same rate as petrochemical polymers. Therefore, the market share of bio-based polymers in the total polymer market remains constant at around 2%. But the individual development of different bio-based polymers varies considerably. While some are virtually collapsing compared to previous forecasts (e.g. bio-PET), many are showing constant or slightly increasing capacities and a few are even showing significant growth (such as PLA). Additionally, for some bio-based polymers such as PHA, PEF, bio-PE and bio-PP, the prospects for the future are quite positive. Overall, the market environment remains challenging with low crude oil prices, little political support and partially underutilized capacities. Until now, the biodegradability of some bio-based polymers has not yet been able to generate a real advantage globally.

More information at : www.nova-institute.eu

4th edition of ICNF - International Conference on Natural Fibers – Smart Sustainable Solutions, 1st to 3rd July 2019, Porto, Portugal

Following up the great success of ICNF2013, ICNF2015 and ICNF2017 covering the topics, "Sustainable materials for advanced applications", "From nature to market" and "Advanced Materials for a Greener World", ICNF2019 will focus on "Smart Sustainable Solutions", aiming to explore the potential of natural fibres as key materials to design smart and sustainable solutions for the future generations. To fulfil this important goal, along with the scientific sessions, Natural Fibrenamics Award contest will be organized to promote and show new innovative natural fibre based products from all over the world.

More information at: https://www.icnf2019.fibrenamics.com/

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Je, *I,* (nom et prénom, *name and firstname*):

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Organisation (*organization*):

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dont l'adresse est (*which address is*):

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e-mail : ……

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*(declare to join as **Individual** Affiliated Member the **EPNOE Association**, 60 Bd St Michel 75006 Paris, declared under law of 1901 on December 14th 2007 and published in the French Journal Officiel on January 5th 2008 under number 1006, and accept its statutes.)*

L'adhésion est effective pour l'année calendaire en cours dès le paiement de la cotisation annuelle.

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Sylvie Massol, CEMEF ARMINES, CS10207
F-06904 Sophia Antipolis – France

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Nous, *We,* (nom du centre de recherche/institut, *name of the research centre/institute*):
……
dont la forme et le capital sont (*which form and capital are*):
……
dont l'adresse est (*which address is*):
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Fait à (lieu), ***done in*** *(place)*:……
Date: ……

Par (nom), ***By*** *(name)*: ……..
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dûment habilité(e) à cet effet (*duly empowered to that effect*).

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